

East Tester®

ET3255 5½ Benchtop Digital Multimeter SCPI Agreement



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ET3245X series multimeter programming manual

This guide is intended to guide the user to control the ET32XX digital multimeter programmatically through a remote interface using the SCPI command.

ET32XX digital multimeter can communicate with PC through USB, RS232 and other remote interfaces.

Note: the end of the RS232 command used by ET32XX is "|" or "0x71".

SCPI language conventions

In this guide, the following syntax conventions are used when programming SCPI commands for remote interfaces:

- within curly braces ({}) is the parameter selection for the given command string. Curly braces are not sent with the command string.
- bar (|) separates multiple parameter selections for a given command string.
- Angle brackets (< >) indicate that a value must be specified for the argument in brackets. Angle brackets are not sent with the command string.
- some parameters are enclosed in square brackets ([]). This means that the parameter is optional and can be omitted. Square brackets are not sent with the command string. If you do not specify a value for the optional parameter, the instrument chooses the default value.

Remote interface configuration

ET32XX supports RS232 and USB ports. All interfaces are enabled during power on. The screen displays "remote" whenever the remote interface is active.

- RS232 interface: you need to set the baud rate of the serial port of the instrument (baud rate is 115200) and the check bit (check bit is no check).
- USB interface: no instrument configuration is required for USB connection. Just connect the instrument to the PC with a USB 2.0 cable.

Command system

The * IDN?

Command format: *IDN?

Function description: inquiry device information.

Return format: ZC,< model >,< serial number >,< version number >

Example: query device information.

Send instruction: *IDN?

Return information: ZC, ET3255, 08401503001, V1.00.1503.001

The READ?

Command format: READ?

Function description: read the measured values

Return format: < measure value >

Example: under DCV measurement, the screen shows the measured value is 0.0001v.

Send instructions: READ?

Return message: 0.00001

APERture

PS: above command, uppercase part is short instruction, namely send APER? For enquiries; If you put the lowercase part as long, that means APERture, right? . The following is not repeated.

APERture?

Command format: APERture?

Function description: query measurement speed.

Return format: < measurement speed >

Example: under DCV measurement, the current measurement speed is slow.

Send instruction: APER?

Return information: SLOW

APERture {missile | MIDDLE | FAST}

APERture {SLOW|MIDDLE|FAST}

Function description: set the measuring speed.

Return format: none

Example: change the measurement speed to slow under DCV measurement.

Send instruction: APER SLOW

XMODE

XMODE?

Command format: XMODE?

Function description: query model number.

Return format: < model >

Example: 5-bit half multimeter.

Send commands: XMOD?

Return message: ET3255

XMODE < value >

Command format: XMODE <value>

Function description: set the model number.

Return format: none

Example: set the multimeter model to ET3255.

Send command: XMOD ET3255

XSERial

XSERial?

Command format: XSERial?

Function description: query serial number.

Return format: < serial number >

For example:

Send instructions: XSERial?

Return information: 08401503001

XSERial < value >

Command format: XSERial <value>

Function description: set the serial number.

Return format: none

Example: set the multimeter serial number to 08401503001.

Send instruction: XSERial 08401503001

XVERsion

XVERsion?

Command format: XVERsion?

Function description: query software version number.

Return format: < software version number >

For example:

Send instruction: XVERsion?

Return message: V1.00.1503.001

XVERsion < value >

Command format: XVERsion <value>

Function description: set the software version number.

Return format: none

Example: set the multimeter serial number to V1.00.1503.001.

Send instruction: XVERsion V1.00.1503.001

The FUNCtion

FUNCtion: the RANGE: AUTO?

FUNCtion:RANGE:AUTO?

Function description: query whether the current automatic range mode.

Return format: {ON|OFF}

Example: currently working under automatic range.

FUNCtion:RANGE:AUTO?

Return message: ON

FUNCtion: the RANGE: AUTO

FUNCtion:RANGE:AUTO

Function description: set the current range mode to automatic.

Return format: none

Example: switch from manual range to automatic range.

FUNCtion:RANGE:AUTO

FUNCtion: the RANGE: the VALue?

FUNCtion:RANGE:VALue?

Function description: query the current range.

Return format: {B|C|D|E|F|G|H}

Note: B is the lowest tap of this function and CDEFG increments it.

Example: currently working in DCV200mV file.

FUNCTion:RANGe:VALue?

Return message: B

FUNCTion: the RANGe: the VALue < VALue >

FUNCTion:RANGe:VALue < VALue >

Note: value is the name of specific tap position, such as 200mV, 2V, etc.

Function description: set the current range.

Return format: none

Example: currently working under DCV automatic range, want to cut to manual 200mV file.

FUNCTion:RANGe:VALue 200mV

CALCulate

CALCulate: FUNCTion?

CALCulate:FUNCTion?

Function description: query the current additional function

{NULL|DB|DBM|MAX|MIN|HLIMit|LLIMit|SAVE|HOLD|ACDC}

Example: current work under DCV, at the maximum measurement.

CALCulate:FUNCTion?

Return message: MAX

CALCulate: the FUNCTion {NULL | DB | DBM | | MAX MIN |

HLIMit | LLIMit | SAVE | HOLD | ACDC | EXIT | ENTER}

NULL	Zero clearing operation (relative operation)
The DB	The dB operation
DBM	DBm operation
MAX	Maximum operation
MIN	Minimum operation

HLIMit	Comparison upper limit operation
LLIMit	Comparison lower limit operation
The SAVE	save
HOLD	keep
ACDC	AC + DC measurements
ENTER	Identify key
The EXIT	Escape key

CALCulate:FUNCTION {NULL

|DB|DBM|MAX|MIN|HLIMit|LLIMit|SAVE|HOLD|ACDC|EXIT |0 ENTER}

Function description: set/cancel additional function

Return format: none

Example: current work under DCV, want to turn on maximum measurement

Send instruction: CALCulate:FUNCTION MAX

The current work is under DCV, I want to cancel the maximum measurement

Send instruction: CALCulate:FUNCTION MAX

CALCulate: LIMit: the LOWEr value > <

CALCulate:LIMit:LOWEr <value>

Function description: under the lower limit test, set the lower limit comparison value

Return format: none

Example: the current work is under DCV, at the lower limit test, set the lower limit comparison value as 2.

Send instruction: CALCulate:LIMit:LOWEr 1V

CALCulate: LIMit: the UPPer

CALCulate:LIMit:UPPer <value>

Function description: under the upper limit test, set the upper limit comparison value

Return format: none

Example: the current work is under DCV, in the upper limit test, set the upper limit comparison value as 2.

Send instruction: CALCulate:LIMit:UPPer 2

CALCulate:business:MAX?

CALCulate:AVERage:MAX?

Function description: under maximum test, query the current maximum value

Return format: < maximum >

Example: the current work is under DCV, under the maximum test, with a value of 1V

Send instruction: CALCulate:AVERage:MAX?

Return message: 1.000000

CALCulate:business:MIN?

CALCulate:AVERage:MIN?

Function description: under the minimum test, query the current minimum

Return format: < minimum >

Example: currently working under DCV, at the minimum test, the value is 0.1v

CALCulate:AVERage:MIN?

Return information: 0.10000

The CONF

The CONF?

Command format: CONF?

Function description: query the current status information

Return format: < function >< range mode >< range information >< measurement speed >

Example: the current work is under DCV automatic measuring range 2V, measuring speed is slow

Send command: CONF?

Return information: DCV,B,B,A

function	Range model	Range information	Measurement speed
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Dc voltage DCV	Automatic range A		Slowly A
Ac voltage ACV	Minimum position B	Minimum position B	Medium speed B
Dc current DCI	Increment by C	C	Rapid C
Ac current ACI	D	D	
Two-wire resistor R2	E	E	
Four-wire resistor R4	F	F	
Frequency FREQ	G	G	
Cycle PERIOD	H.	H.	
Capacitance CAP			
DIODE DIODE			
On-off CONT			
DUTY than a DUTY			
Square wave lose SWAVE			

CONFigure: CAPacitance {NULL | 2 nf 20 nf 200 nf | | 2 uf 20 200 uf uf | | 2 mf}

Command format: CONFigure: CAPacitance {NULL | 2 nf 20 nf 200 nf | | 2 uf 20 200 uf uf | | 2 mf}

Function description: cut the capacitance measurement function and set the gear position

Return format: none

Example: currently working under DCV, I want to cut to CAP to measure and set the gear position as 20uf

Send instructions: CONFigure: 20 uf CAPacitance

CONFigure: hold {NULL | r | 2 200 kr 20 kr | | 200 kr 20 Mr Mr | | 2}

CONFigure:RESistance {NULL|200R|2KR|20KR|200KR|2MR|20MR|200MR}

Function description: cut to the two-wire resistance measurement function and set the gear position

Return format: none

Example: currently working under DCV, I want to cut R2, measure and set the gear position to 2KR

Send: CONFigure:RESistance 2KR

CONFigure: FRESistance {NULL | r | 2 200 kr 20 kr | | 200 kr 20 Mr Mr | | 2 | 200 Mr}

Command format: CONFigure: FRESistance {NULL | r | 2 200 kr 20 kr | | 200 kr 20 Mr Mr | | 2}

Function description: cut to the four-wire resistance measurement function and set the gear position

Return format: none

Example: currently working under DCV, I want to cut to R4, measure and set the gear position to 2KR

Send instructions: CONFigure: FRESistance 2 kr

CONFigure: FREQuency

CONFigure:FREQuency function description: cut to the FREQuency measurement function

Return format: none

Example: currently working under DCV, I want to cut the frequency measurement

Send instruction: CONFigure:FREQuency

CONFigure: PERiod

CONFigure:PERiod function description: cut to the PERiod measurement function

Return format: none

Example: currently working under DCV, want to cut to the period measurement

Send: CONFigure:PERiod

CONFigure: CONTinuity

Command format: CONFigure:CONTinuity

Function description: cutting to cut measuring function

Return format: none

Example: the current work under DCV, want to cut to cut off the measurement

Send instruction: CONFigure:CONTinuity

CONFigure: DIODE

Command format: CONFigure: module

Function description: cut to diode measuring function

Return format: none

Example: currently working under DCV, want to cut to diode measurement

Send instruction: CONFigure: module

CONFigure: DUTY

Command format: CONFigure:DUTY

Function description: cut to duty cycle measurement function

Return format: none

Example: currently working under DCV, want to cut duty cycle measurement function

Send: CONFigure:DUTY

CONFigure: SWAVe

CONFigure:SWAVe function description: cut to square wave output function

Return format: none

Example: currently working under DCV, I want to access the square wave output function

Send: CONFigure:SWAVe

CONFigure: CURRent: DC {NULL | 200 ua | 2 ma, 20 ma ma || 200 | | 2 a 10 a}

CONFigure:CURRent:DC {NULL|200UA|2MA|20MA|200MA|2A|10A

Return format: none

Example: currently working under DCV, I want to cut to dc current measuring 20mA gear position

Send instruction: CONFigure:CURRent:DC 20MA

CONFigure: CURRent: AC NULL | 200 ua | 2 ma, 20 ma ma || 200 || 2 a 10 a}

CONFigure:CURRent:AC {NULL|200UA|2MA|20MA|200MA|2A|10A

Return format: none

Example: currently working under DCV, I want to cut to ac current measuring 20mA gear position

Send: CONFigure:CURRent:AC 20MA

CONFigure: VOLTage: DC {NULL | | | 2 v 20 mv v 200 | 1000 v, 200 v}

CONFigure:VOLTage:DC {NULL|200MV|2V|20V|200V|1000V

Return format: none

Example: currently working under DCV, I want to cut dc voltage to measure 20V gear position

Send: CONFigure:VOLTage:DC 20V

CONFigure: VOLTage: AC {NULL | | | 2 v 20 mv v 200 | 750 v, 200 v}

CONFigure:VOLTage:AC {NULL|200MV|2V|20V|200V|750V

Return format: none

Example: currently working under DCV, I want to cut ac voltage to measure 20V gear position

Send: CONFigure:VOLTage:AC 20V

CALibration: VOLTage: DC

CALibration:VOLTage:DC CALibration

Return format: none

Example: currently working under DCV, want to cut dc voltage calibration
CALibration:VOLTage:DC

CALibration: VOLTage: AC

CALibration:VOLTage:AC VOLTage CALibration

Return format: none

Example: current work under DCV, want to cut to ac voltage calibration
CALibration:VOLTage:AC

CALibration: CURRent: DC

CALibration:CURRent:DC function description: cut to the DC CURRent CALibration

Return format: none

Example: current work under DCV, want to cut to dc current calibration

CALibration:CURRent:DC

CALibration: CURRent: AC

CALibration:CURRent:AC CALibration

Return format: none

Example: current work under DCV, want to cut to ac current calibration

CALibration:CURRent:AC

CALibration: FRESistance

Format: CALibration: FRESistance function description: cut to four wire resistance CALibration

Return format: none

Example: currently working under DCV, want to cut to the four-line resistance calibration

Send instructions: CALibration: FRESistance

CALibration: RESistance

Format: CALibration: RESistance function description: cut to peripheral resistance CALibration

Return format: none

Example: currently working under DCV, want to cut to the line resistance calibration

Send instructions: CALibration: RESistance

CALibration: CAPacitance

Format: CALibration: CAPacitance function description: cut to adjust CAPacitance

Return format: none

Example: currently working under DCV, want to cut capacitance calibration

Send instructions: CALibration: CAPacitance

The TRIGger

The TRIGger?

Command format: TRIGger?

Function description: query the current trigger mode

Return format: {AUTO_TRIGGER|ONCE_TRIGGER| EXTERN_TRIGGER}

Example: the current work is under DCV, and the trigger mode is automatic trigger

TRIGger?

Return information: AUTO_TRIGGER

The TRIGger {AUTO | ONCE | EXTernal}

TRIGger {AUTO|ONCE|EXTernal}

Function description: set the trigger mode

Return format: none

Example: the current work is under DCV, the trigger mode is single trigger, instead of automatic trigger

Send instruction: TRIGger AUTO

The SYSTem

SYSTem: BEEPer: IMMediate

Command form: SYSTem:BEEPer:IMMediate function description: control the BEEPer sound

Return format: none

Example: let the buzzer ring

SYSTem:BEEPer:IMMediate

SYSTem: the BEEPer: STATe {ON | OFF}

Command format: SYSTem:BEEPer:STATe {ON|OFF}

Function description: set the buzzer switch

Return format: none

Example: set the buzzer on

Sending instruction: SYSTem:BEEPer:STATe ON

SYSTem: LANGuage?

Command format: SYSTem:LANGuage?

Function description: query the current language.

Return format: {CHINESE|ENGLISH}

Example: the current language is Chinese

Send instruction: SYSTem:LANGuage?

Return information: CHINESE

SYSTem: LANGuage {ON | OFF}

Command format: SYSTem:LANGuage {ON|OFF} function description: set the LANGuage as Chinese OFF. English ON

Return format: none

Example: set the language to Chinese

Send instruction: SYSTem:LANGuage OFF

SYSTem: LIGHT?

Command format: SYSTem:LIGHT?

Function description: query screen brightness

{LIGHT 1|LIGHT 2|LIGHT 3|LIGHT 4|LIGHT 5}

Note: LIGHT 5 is the brightest and LIGHT 1 is the darkest

Example: the current brightness is 100%

Send instruction: SYSTem:LIGHT?

Return info: LIGHT 5

SYSTem: LIGHT {1 | 2 | 3 | 4 | 5}

Command format: SYSTem:LIGHT {1|2|3|4|5}

Function description: set the screen brightness

Return format: none

Example: current brightness is 100%, set to 20%

Send instruction: SYSTem:LIGHT 1

SYSTem: the LOCal

Command format: SYSTem:LOCal

Function description: return from remote mode to local mode

Return format: none

For example:

Send instruction: SYSTem:LOCal

SYSTem: the VERSIon?Query SCPI version number

SYSTem:VERSion V1.00.1522.001 set SCPI VERSIon number