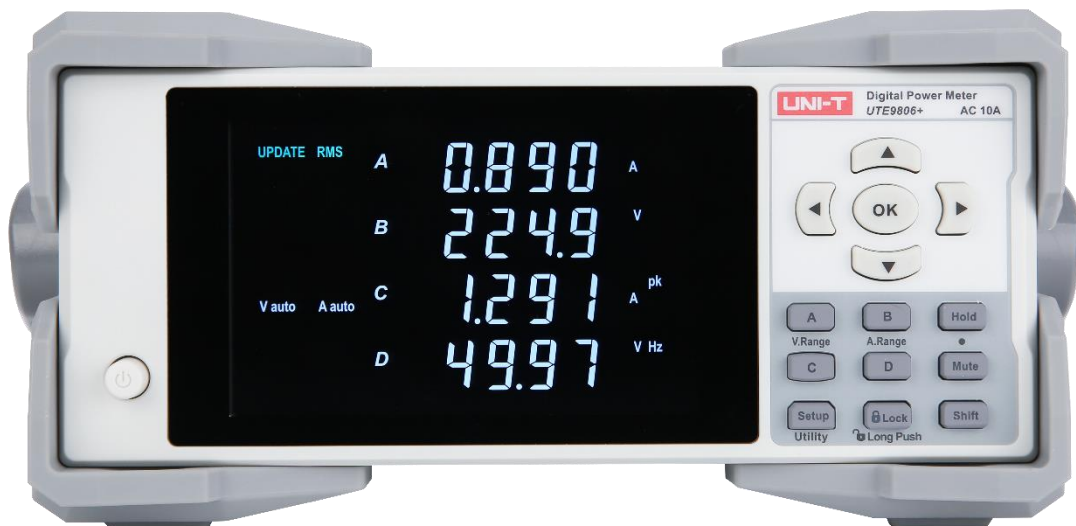


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SCPI Programming Manual

UTE9806+Smart Digital Power Meter

Chapter 1 SCPI

1.1 SCPI

SCPI is also called standard commands for programmable instruments. It defines the communication mode for bus controller communicate with the instrument. It is instrument command based on ASCII for measuring instrument.

1.2 Instruction Format

Command is consisting of a keyword, separator, parameter domain and end mark. Take the following command as an example.

`:VOLTage:RANGe 60`

VOLTage, RANGe is keyword, “:” and blank is separator, “60” is parameter (some commands have multiple parameters and separated by“,”), the line separator or carriage return after the command is the end mark.

For the convenience of description, the following conventions are adopted for subsequent symbols.

- Square Brackets “[]”
The contents in square brackets (command keywords) can be omitted.
- Braces “{ }”
It represents the parameter in command string.
- Angle Braces “< >”
The parameter enclosed in the angle brackets must be a numerical parameter.
- Vertical Bar “|”
It is used to separate multiple parameters.
- End Mark: line separator <LF> (0x0A) or carriage return <CR> (0x0D)

1.3 Parameter Format

The data type of programming parameters include numeric, character and Boolean type. Regardless of the type, it is expressed as an ASCII. For details, see the following table.

Symbol	Meaning	Example
<NR1>	Integer	123,0123
<NR2>	Fixed floating point number	123.,12.3,0.123, .123
<NR3>	Floating point number	123,12.3,123E+3
<NRF>	It may be <NR1>, <NR2> or <NR3>	
<Boolean>	Boolean data	0 1 ON OFF

Chapter 2 Communication Interface and Setting

The detailed description can refer to “Chapter 6 Communication Setting” and “Chapter 8 Communication Interface in UTE9806+ User’s Manual.

Chapter 3 Instruction

3.1 Instruction List

Instruction	Function
*IDN?	Query the instrument information.
*RST	Restore to the factory setting.
*STB?	Query status byte register.
*SAV	Save the current setting into nonvolatile memory for next time use.
:HOLD	Turn on or off hold mode.
:VOLTage:RANGe	Set the voltage range.
:VOLTage:AUTO	Turn on or off auto range of voltage.
:CURRent:RANGe	Set the current range.
:CURRent:AUTO	Turn on or off auto range of current.
:RATE	Set update rate.
:AVERaging	Set the average switch state and average count.
:MUTE	Turn on or off mute key.
:ALARm:FLAG?	Query the alarm state.
:ALARm:VOLTageFLAG?	Query the voltage alarm state.
:ALARm:CURRentFLAG?	Query the current alarm state.
:ALARm:ACTiveFLAG?	Query the alarm state of active power.
:ALARm:APParentFLAG?	Query the alarm state of apparent power.
:ALARm:FACTorFLAG?	Query the alarm state of power factor.
:ALARm:SWItch:Total	Set the main switch of alarm.
:ALARm:SWItch:VOLTage	Set the voltage alarm switch.
:ALARm:SWItch:CURRent	Set the current alarm switch.
:ALARm:SWItch:POWer:ACTive	Set the alarm switch of active power.
:ALARm:SWItch:POWer:APParent	Set the alarm switch of apparent power.
:ALARm:SWItch:POWer:FACTor	Set the alarm switch of power factor.
:ALARm:SWItch:Oout	Set the alarm switch of zero point.
:ALARm:SWItch:LEDf	Set the alarm switch of LED.
:ALARm:ALARmpar:VOLTage:HIGH	Set the upper limit of voltage alarm.
:ALARm:ALARmpar:VOLTage:LOW	Set the lower limit of voltage alarm.
:ALARm:ALARmpar:CURRent:HIGH	Set the upper limit of current alarm.
:ALARm:ALARmpar:CURRent:LOW	Set the lower limit of current alarm.
:ALARm:ALARmpar:POWer:ACTive:HIGH	Set the upper limit of active power.
:ALARm:ALARmpar:POWer:ACTive:LOW	Set the lower limit of active power.
:ALARm:ALARmpar:POWer:APParent:HIGH	Set the upper limit of apparent power.
:ALARm:ALARmpar:POWer:APParent:LOW	Set the lower limit of apparent power.
:ALARm:ALARmpar:POWer:FACTor:HIGH	Set the upper limit of power factor.
:ALARm:ALARmpar:POWer:FACTor:LOW	Set the lower limit of power factor.

:ALARm:ALARmpar:DELY	Set alarm delay times.
:ALARm:ALARmpar:BEEp	Set alarm beeper times.
:MEASure:FREQuency:VOLTage?	Query the measuring frequency of voltage.
:MEASure:FREQuency:CURRent?	Query the measuring frequency of current.
:MEASure:VOLTage?	Query the currently measured value of AC voltage.
:MEASure:VOLTage:PEAK+?	Query the currently measured value of voltage positive peak.
:MEASure:VOLTage:PEAK-?	Query the currently measured value of voltage negative peak.
:MEASure:CURRent?	Query the currently measured value of current.
:MEASure:CURRent:PEAK+?	Query the currently measured value of current positive peak.
:MEASure:CURRent:PEAK-?	Query the currently measured value of current negative peak.
:MEASure:POWer:ACTive?	Query the currently measured value of active power.
:MEASure:POWer:APParent?	Query the currently measured value of apparent value.
:MEASure:POWer:FACTor?	Query the currently measured value of power factor.
:SYSTem:ERRor?	Query error information.
:LOCK	Set the lock key state on the front panel.

3.2 Instruction Parsing

*IDN?

Function Query the instrument information.

Syntax *IDN?

Example *IDN?

-> UNI-T,UTE9806+,012345678,F1.02

Description

The return format of instrument information is <manufacturer>, <model>, <serial number>, < firmware version>.

*RST

Function Restore to the factory setting.

Syntax *RST

Example *RST

Description

Except communication configuration parameter (instruction type, baud rate, address) , other configuration parameter will restore to the factory setting.

*STB?

Function Query status byte register.

Syntax *STB?

Example *STB? -> 4

Description

If returned value is 4, it represents the status byte register set to 00000100; it means the error queue is not empty, which also means an error has been generated.

*SAV

Function Save the current setting into nonvolatile memory for next time use.

Syntax *SAV

Example *SAV

:HOLD

Function Turn on/off hold mode.

Syntax :HOLD {<Boolean>}
:HOLD?

Example :HOLD OFF
:HOLD? -> 0

:VOLTage:RANGe

Function Set the voltage range.

Syntax :VOLTage:RANGe {<Voltage>}
:VOLTage:RANGe?
<Voltage> = 60,600

Example :VOLTage:RANGe 60
:VOLTage:RANGe? -> 60

:VOLTage:AUTO

Function Turn on or off auto range of voltage.

Syntax :VOLTage:AUTO {<Boolean>}
:VOLTage:AUTO?

Example :VOLTage:AUTO 1
:VOLTage:AUTO? -> 1

:CURRent:RANGe

Function Set the current range.

Syntax :CURRent:RANGe {<Current>}
:CURRent:RANGe?
<Current> = 0.05, 0.1, 10

Example :CURRent:RANGe 0.05
:CURRent:RANGe? -> 0.05

:CURRent:AUTO

Function Turn on or off auto range of current.

Syntax :CURRent:AUTO {<Boolean>}
:CURRent:AUTO?

Example :CURRent:AUTO 1
:CURRent:AUTO? -> 1

:AVERaging

Function Set the average switch state and average count.

Syntax :AVERaging {<Average>}
:AVERaging?
<Average> = OFF, 8,16,32,64

·OFF = Average is turned off.

·8,16,32,64 = Average is turned on and it represents the average count.

Example :AVERaging 16
:AVERaging? -> 16

:MUTe

Function Turn on or off mute key.

Syntax :MUTe {<Boolean>}
:MUTe?

Example :MUTe 1
:MUTe? ->1

:ALARm:FLAG?

Function Query the alarm state.

Syntax :ALARm:FLAG? {<State>}
<State> = 0- not detecting, 1- PASS, 2- NG

Example :ALARm:FLAG?-> 0 # acquire the alarm state.

:ALARm:VOLTageFLAG?

Function Query the voltage alarm state.

Syntax :ALARm:VOLTageFLAG? {<State>}
<State> = 0- not detecting, 1- PASS, 2- NG

Example :ALARm:VOLTageFLAG?-> 0 # acquire the voltage alarm state.

:ALARm:SWItch:Total

Function Set the main switch of alarm.

Syntax :ALARm:SWItch:Total {<bool>}
:ALARm:SWItch:Total?

Example :ALARm:SWItch:Total ON
:ALARm:SWItch:Total? -> ON

Description

If it need to read the main switch or other switch, change the third parameter Total.

:ALARm:ALARmpar:VOLTage:HIGH

Function Set the upper limit of voltage alarm.

Syntax :ALARm:ALARmpar:VOLTage:HIGH {<NR3>}
:ALARm:ALARmpar:VOLTage:HIGH?

Example :ALARm:ALARmpar:VOLTage:HIGH 250.5
:ALARm:ALARmpar:VOLTage:HIGH? -> 250.5

Description

If it need to read the upper limit of voltage alarm or the upper limit of other parameter, change the third parameter **VOLTage**.

Example Set the upper limit of current alarm.

:ALARm:ALARmpar:CURREnt:HIGH 1.065

:ALARm:ALARmpar:VOLTage:HIGH? -> 1.065

Set the upper limit of power.

:ALARm:ALARmpar:POWer:ACTive:HIGH 500

:ALARm:ALARmpar:POWer:ACTive:HIGH? -> 500

:ALARm:ALARmpar:VOLTage:LOW

Function Set the lower limit of voltage alarm.

Syntax :ALARm:ALARmpar:VOLTage:LOW {<NR3>
:ALARm:ALARmpar:VOLTage:LOW?

Example :ALARm:ALARmpar:VOLTage:LOW 250.5
:ALARm:ALARmpar:VOLTage:LOW? -> 250.5

Description

If it need to read the lower limit of voltage alarm or the lower limit of other parameter, change the third parameter **VOLTage**.

Example Set the lower limit of current alarm.

:ALARm:ALARmpar:CURRent:LOW 1.065

:ALARm:ALARmpar:VOLTage:LOW? -> 1.065

Set the lower limit of power.

:ALARm:ALARmpar:POWer:ACTive:LOW 500

:ALARm:ALARmpar:POWer:ACTive:LOW? -> 500

:ALARm:ALARmpar:DELY

Function Set the alarm delay.

Syntax :ALARm:ALARmpar:DELY {<NR1>
:ALARm:ALARmpar:DELY?

Example :ALARm:ALARmpar:DELY 5
:ALARm:ALARmpar:DELY? -> 5

:ALARm:ALARmpar:BEEp

Function Set the alarm beeper times.

Syntax :ALARm:ALARmpar:BEEp{<NR1>
:ALARm:ALARmpar:BEEp?

Example :ALARm:ALARmpar:BEEp 10
:ALARm:ALARmpar:BEEp? -> 10

:MEASure:FREQuency:VOLTage

Function Query the measuring frequency of voltage.

Syntax :MEASure:FREQuency:VOLTage?

Example :MEASure:FREQuency:VOLTage? -> 50.00

:MEASure:VOLTage?

Function Query the currently measured value of AC voltage.

Syntax :MEASure:VOLTage?

Example :MEASure:VOLTage? -> 110.36

:MEASure:VOLTage:PEAK+?

Function Query the currently measured value of voltage positive peak.

Syntax :MEASure:VOLTage:PEAK+?

Example :MEASure:VOLTage:PEAK+? -> 110.36

:MEASure:VOLTage:PEAK-?

Function Query the currently measured value of voltage negative peak.

Syntax :MEASure:VOLTage:PEAK-?

Example :MEASure:VOLTage:PEAK-? -> -110.36

:MEASure:CURRent?

Function Query the currently measured value of current.

Syntax :MEASure:CURRent?

Example :MEASure:CURRent? -> 10.23

:MEASure:CURRent:PEAK+?

Function Query the currently measured value of current positive peak.

Syntax :MEASure:CURRent:PEAK+?

Example :MEASure:CURRent:PEAK+? -> 14.53

:MEASure:CURRent:PEAK-?

Function Query the currently measured value of current negative peak.

Syntax :MEASure:CURRent:PEAK-?

Example :MEASure:CURRent:PEAK-? -> -14.53

:MEASure:POWer:ACTive?

Function Query the currently measured value of active power.

Syntax :MEASure:POWer:ACTive?

Example :MEASure:POWer:ACTive? -> 30.5

:MEASure:POWer:APParent?

Function Query the currently measured value of apparent power.

Syntax :MEASure:POWer:APParent?

Example :MEASure:POWer:APParent? -> 30.5

:MEASure:POWer:PFACTOR?

Function Query the currently measured value of power factor.

Syntax :MEASure:PFACTOR?

Example :MEASure:PFACTOR? -> 0.519

:MEASure:POWer:PHase?

Function Query the currently measured value of phase.

Syntax :MEASure:PHase?

Example :MEASure:PHase? -> 60.5

:SYSTem:ERRor?

Function Query the last error code and information.

Syntax :SYSTem:ERRor?

Example :SYSTem:ERRor? -> -113,"Undefined header"

Description

If there is no error, then it return 0,"No error"

:LOCK

Function Set the lock key state on the front panel.

Syntax :LOCK {<Boolean>}

:LOCK?

Example :LOCK 1

:LOCK? -> 1