

Note: Before communicating with the calibrator, please manually turn on the communication function on the setting interface of calibrator. Baud rate of serial port is 115200bps. Line feed by “Enter” button denotes the end of all instructions sent. The instruction is case-insensitive.

1. *IDN?

Example:

*IDN?

Description: Query device information.

2. BEEP

The instruction is for the control of the buzzer of calibrator, and is not controlled by the buzzer switch on the system setting interface.

Example:

BEEP 100

Description: The buzzer sounds for 100ms. The instruction can accept the integers between 0 and 1500 as parameters.

Example:

BEEP 100,6

Description: The buzzer sounds for 6 times, with duration and interval for each time at 100ms respectively.

Example:

BEEP?

Description: Query buzzer state. The function is same as SYST:BEEP?. If the buzzer is in ON state, then return to “ON”, otherwise to “OFF”.

3. SYST

The instruction is for system parameter setting. Partial instructions is equivalent to the corresponding operation of the setting interface of calibrator.

Example:

SYST?

Description: Query if the calibrator is in work state or system state. If in work state (normal measurement/output interface), then return to “WORK”; if in system state (system setting interface), then return to “SYSTEM”.

Example:

SYST WORK

Description: If the calibrator is in system state (system setting interface), the system state can be switched to work state (normal measurement/output interface) by sending the instruction. Equivalent to ESC button and also to SYST:ESC instruction.

Example:

SYST SYSTEM

Description: if the calibrator is in work state (normal measurement/output interface), the system state can be switched to system state (system setting interface) by sending the instruction.

3.1 [: STAT]

Example:

SYST:STAT?

Description: Query if the calibrator is in work state or system state. If in work state (normal measurement/output interface), then return to "WORK"; if in system (system setting interface), then return to "SYSTEM".

Example:

SYST:STAT WORK

Description: If the calibrator is in system state (system setting interface), the system state can be switched to work state (normal measurement/output interface) by sending the instruction. Equivalent to ESC button and also to SYST:ESC instruction.

Example:

SYST:STAT SYSTEM

Description: If the calibrator is in work state (normal measurement/output interface), the system state can be switched to system state (system setting interface) by sending the instruction.

3.2: APO

Example:

SYST:APO 20

Description: The APO time of calibrator is set at 20 minutes. The instruction can accept the integers between 0 and 60 as parameters. The parameter "0" denotes APO is disabled.

Example:

SYST:APO?

Description: Query the current APO time of calibrator.

3.3: BRIG

Example:

SYST:BRIG 20

Description: Set the screen brightness of calibrator at 20%. The instruction can accept the integers between 10 and 100 as parameters.

Example:

SYST:BRIG?

Description: Query the current screen brightness of calibrator.

3.4: UNIT

Example:

SYST:UNIT °C

Description: Set the temperature unit of calibrator as °C. The instruction can accept °C or °F as parameter.

Example:

SYST:UNIT?

Description: Query the current temperature unit of calibrator.

3.5: BEEP

Example:

SYST:BEEP?

Description: Query the current buzzer state of calibrator.

Example:

SYST:BEEP ON

Description: Set the buzzer switch of calibrator. The instruction can accept ON or OFF as parameter.

3.6: ESC

Example:

SYST:ESC

Description: The function is same as the ESC button of calibrator. On the system setting interface, the calibrator can exit the setting interface by sending the instruction; in ramp output function, the calibrator can exit the ramp output and others.

4. FUNC

The instruction is for querying the current function of calibrator. All measurement and output functions.

Example:

FUNC?

FUNC?@2 (query the function of upper screen of calibrator)

Description: Query the current function of calibrator. In measurement function, the return format takes the form of "0,Vin", "0" denotes the current function is measurement; in output function, the return format takes the form of "1,Vout", "1" denotes the current function is output; in system setting interface, the return format takes the form of "2,Vin", "2" denotes the current interface is system setting, "Vin" denotes the function prior to entering system setting interface is voltage measurement function.

5. READ

The instruction is for reading measurement values of measurement functions. Applicable for measuring millivolt (upper and lower screens), voltage (upper and lower screens), current (upper and lower screen), loop current (upper screen), 2-wire resistance (upper screen), continuity (upper screen), 2/3/4-wire resistance (lower screen), frequency (lower screen), pulse (lower screen), switch quantity (lower screen), thermocouple (lower screen), and 2/3/4-wire thermal resistance (lower screen).

Example:

READ?

READ?@2

Description: Instruction suffixed with @2 is the instruction of upper screen (this will not be described hereinafter).

5.1: MILL

The instruction is for reading the measurement value of millivolt measurement function. To use the instruction, the calibrator must be in millivolt measurement mode, otherwise the instruction will report an error.

Example:

READ:MILL?

READ: MILLivolt?

READ:MILL?@2

READ:MILLivolt@2

Description: To read millivolt value, it is recommended to use READ? / READ?@2 instruction directly.

5.2: VOLT

The instruction is for the reading measurement value of voltage measurement function. To use the instruction, the calibrator must be in voltage measurement mode, otherwise the instruction will report an error.

Example:

READ:VOLT?

READ:VOLTtage?

READ:VOLT?@2

READ:VOLTtage?@2

Description: To read voltage, it is recommended to use READ? / READ?@2 instruction directly.

5.3: RES

The instruction is for reading the measurement value of 2-wire resistance measurement function. To use the instruction, the calibrator must be in 2-wire resistance measurement mode, otherwise the instruction will report an error.

Example:

READ:RES?

READ:RESistance?

READ:RES?@2

READ:RESistance?@2

Description: To read 2-wire resistance, it is recommended to use READ? / READ@2 instruction directly.

5.4: TRES

The instruction is for reading the measurement value of 3-wire resistance measurement function. To use the instruction, the calibrator must be in 3-wire resistance measurement mode, otherwise the instruction will report an error.

Example:

READ:TRES?

READ?TRESistance?

Description: To read 3-wire resistance, it is recommended to use READ? Instruction directly.

5.5: FRES

The instruction is for reading the measurement value of 4-wire resistance measurement function. To use the instruction, the calibrator must be in 4-wire resistance measurement mode, otherwise, the instruction will report an error.

Example:

READ:FRES?

READ:FRESistance?

Description: To read 4-wire resistance, it is recommended to use READ? Instruction directly.

5.6: CONT

The instruction is for reading the measurement value of continuity measurement function (upper screen). To use the instruction, the calibrator must be in continuity measurement mode, otherwise, the instruction will report an error.

Example:

READ:CONT?@2

READ:CONTInuity?@2

Description: To read the measurement value of continuity measurement function (upper screen), it is recommended to use READ?@2 instruction directly.

5.7: TC

The instruction is for reading the temperature of thermocouple measurement function. To use the instruction, the calibrator must be in

thermocouple measurement mode, otherwise, the instruction will report an error.

Example:

READ:TC?

READ:TCouple?

Description: To read temperature of thermocouple measurement function, the READ? Instruction can be used directly.

5.8: RTD

The instruction is for reading the temperature of 2-wire thermal resistance measurement function. To use the instruction, the calibrator must be in 2-wire thermal resistance measurement mode, otherwise, the instruction will report an error.

Example:

READ:RTD?

Description: To read the temperature of 2-wire thermal resistance measurement function, the READ? Instruction can be used directly.

5.9: TRTD

The instruction is for reading the temperature of 3-wire thermal resistance measurement function. To use the instruction, the calibrator must be in 3-wire thermal resistance measurement mode, otherwise, the instruction will report an error.

Example:

READ:TRTD?

Description: To read the temperature of 3-wire thermal resistance measurement function, the READ? Instruction can be used directly.

5.10: FRTD

The instruction is for reading the temperature of 4-wire thermal resistance measurement function. To use the instruction, the calibrator must be in 4-wire thermal resistance measurement mode, otherwise, the instruction will report an error.

Example:

READ:FRTD?

Description: To read the temperature of 4-wire thermal resistance measurement function, the READ? Instruction can be used directly.

5.11: CURR

The instruction is for reading the measurement value of current measurement function. To use the instruction, the calibrator must be in current measurement mode, otherwise, the instruction will report an error.

Example:

READ:CURR?

READ:CURR?@2

Description: To read the measured current, it is recommended to use the READ?/ instruction directly.

5.12: LOOP

The instruction is for reading the measurement value of loop current measurement function. To use the instruction, the calibrator must be in loop current measurement mode, otherwise, the instruction will report an error.

Example:

```
READ:LOOP?@2
```

Description: To read the continuity measurement value, it is recommended to use the READ?@2 instruction directly.

5.13: FREQ

The instruction is for reading the measurement value of frequency measurement function. To use the instruction, the calibrator must be in frequency measurement mode, otherwise, the instruction will report an error.

Example:

```
READ:FREQ?
```

Description: To read the measured frequency, it is recommended to use the READ? Instruction.

5.14: PULS

The instruction is for reading the number of pulse of the pulse measurement function. To use the instruction, the calibrator must be in pulse measurement mode, otherwise, the instruction will report an error.

Example:

```
READ:PULS?
```

Description: To read the number of pulse, it is recommended to use the READ? Instruction directly.

5.15: SWIT

The instruction is for reading the switch state of the switch quantity measurement function. To use the instruction, the calibrator must be in switch quantity measurement mode, otherwise, the instruction will report an error.

Example:

READ:SWIT?

Description: To read the switch state, it is recommended to use the READ? Instruction directly.

6. CONF

The instruction is for the control of measurement functions of calibrator. Applicable for measuring millivolt (upper and lower screens), voltage (upper and lower screen), current (upper and lower screen), loop current (upper screen), 2-wire resistance (upper screen), continuity (upper screen), frequency (lower screen), 2/3/4-wire resistance (lower screen), thermocouple (lower screen), 2/3/4-wire thermal resistance (lower screen), pulse (lower screen), and switch quantity (lower screen).

Example:

CONF?

CONF?@2

Description: Query the name of current measurement function. If the current function is not measurement function, the instruction will report an

error. If the instruction is used in system setting interface, the instruction will also report an error.

6.1: MILL

Example:

CONF:MILL

CONF:MILL@2

Description: Switch from other functions to millivolt measurement function. Instruction suffixed with @2 is the instruction of upper screen.

Example:

CONF:MILL?

CONF:MILL?@2

Description: Query the name of current measurement function. If the current function is not millivolt measurement, the instruction will report an error.

6.2: VOLT

Example:

CONF:VOLT

CONF:VOLT@2

Description: Switch from other functions to voltage measurement function.

Example:

CONF:VOLT?

CONF:VOLT?@2

Description: Query the name of current measurement function. If the current function is not voltage measurement, the instruction will report an error.

6.3: RES

Example:

CONF:RES

CONF:RES@2

Description: Switch from other functions to 2-wire resistance measurement function

Example:

CONF:RES?

CONF:RES?@2

Description: Query the name of current measurement function. If the current function is not 2-wire resistance measurement, the instruction will report an error.

6.4: TRES

Example:

CONF:TRES

Description: Switch from other functions to 3-wire resistance measurement function.

Example:

CONF:TRES?

Description: Query the name of current measurement function. If the current function is not 3-wire resistance measurement, the instruction will report an error.

6.5: FRES

Example:

CONF:FRES

Description: Switch from other functions to 4-wire resistance measurement function.

Example:

CONF:FRES?

Description: Query the name of current measurement function. If the current function is not 4-wire resistance measurement, the instruction will report an error.

6.6: CONT

Example:

CONF:CONT@2

Description: Switch from other functions to continuity measurement function.

Example:

CONF:CONT?@2

Description: Query the name of current measurement function. If the current function is not continuity measurement, the instruction will report an error.

6.7: TC

Example:

CONF:TC

Description: Switch from other functions to thermocouple measurement function.

Example:

CONF:TC?

Description: Query the current graduation of thermocouple measurement function. If the current function is not thermocouple measurement, the instruction will report an error.

6.7.1 [:TYPE]

Example:

CONF:TC:TYPE S

Description: Switch from other functions to thermocouple measurement function, and set the graduation as S. The instruction can accept parameters including: R, S, K, E, J, T, N, B, L, U, XK, BP.

Example:

CONF:TC:TYPE?

Description: Query the current graduation of thermocouple measurement function. If the current function is not thermocouple measurement, the instruction will report an error.

6.7.2: VAL

Example:

CONF:TC:VAL?

Description: Query the current temperature of thermocouple measurement function. If the current function is not thermocouple measurement, the instruction will report an error.

6.7.2.1 [:TEMP]

Example:

CONF:TC:VAL:TEMP?

Description: Query the current temperature of thermocouple measurement function. If the current function is not thermocouple measurement, the instruction will report an error.

6.7.2.2: COLD

Example:

CONF:TC:VAL:COLD 0

Description: Set the cold junction temperature of thermocouple measurement function at 0. The unit is °C or °F (subject to the system). After sending the instruction, the cold junction of thermocouple will switch to manual cold junction. To exit manual cold junction, please use SYST:ESC or CONF:TC:VAL:COLD AUTO instruction.

Example:

CONF:TC:VAL:COLD AUTO

Description: Set the cold junction temperature of thermocouple measurement function as automatic cold junction mode.

Example:

CONF:TC:VAL:COLD?

Description: Query the cold junction temperature of thermocouple measurement function.

6.7.2.3: VOLT

Example:

CONF:TC:VAL:VOLT?

Description: Query the voltage value (in unit of millivolt) corresponding to the temperature of thermocouple measurement function.

6.7.3: UNIT

Example:

CONF:TC:UNIT °C

Description: Set the unit of thermocouple measurement function as °C. The instruction can accept °C or °F as parameter.

Example:

CONF:TC:UNIT?

Description: Query the temperature unit of thermocouple measurement function.

6.8: RTD

Example:

CONF:RTD

Description: Switch from other functions to thermal resistance measurement function (2-wire measurement mode).

Example:

CONF:RTD?

Description: Query the current graduation of thermal resistance measurement function. If the current function is thermal resistance measurement, the instruction will report an error.

6.8.1 [:TYPE]

Example:

CONF:RTD:TYPE Pt100

Description: Switch from other functions to thermal resistance measurement function (2-wire measurement mode), and set the graduation as Pt100. The instruction can accept parameters including Pt100, Pt200, Pt500, Pt1000, Cu10, Cu50, Cu100, Pt100-392, Pt100-JIS, and Ni120.

Example:

CONF:RTD:TYPE?

Description: Query the current graduation of thermal resistance measurement function. If the current function is not thermal resistance measurement (2-wire measurement mode), the instruction will report an error.

6.8.2: VAL

Example:

CONF:RTD:VAL?

Description: Query the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (2-wire measurement mode), the instruction will report an error.

6.8.2.1 [:TEMP]

Example:

CONF:RTD:VAL:TEMP?

Description: Query the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (2-wire measurement mode), the instruction will report an error.

6.8.2.2: RES

Example:

```
CONF:RTD:VAL:RES?
```

Description: Query the resistance corresponding to the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (2-wire measurement mode), the instruction will report an error.

6.8.3: UNIT

Example:

```
CONF:RTD:UNIT °C
```

Description: Set the unit of thermal resistance measurement function as °C. The instruction can accept °C or °F as parameter.

Example:

```
CONF:RTD:UNIT?
```

Description: Query the temperature unit of thermal resistance measurement function (2-wire measurement mode).

6.9: TRTD

Example:

```
CONF:TRTD
```

Description: Switch from other functions to thermal resistance measurement function (3-wire measurement mode).

Example:

CONF:TRTD?

Description: Query the current graduation of thermal resistance measurement function. If the current function is not thermal resistance measurement (3-wire measurement mode), the instruction will report an error.

6.9.1 [:TYPE]

Example:

CONF:TRTD:TYPE Pt100

Description: Switch from other functions to thermal resistance measurement function (3-wire measurement mode), and set the graduation as Pt100. The instruction can accept parameters including Pt100, Pt200, Pt500, Pt1000, Cu10, Cu50, Cu100, Pt100-392, Pt100-JIS, and Ni120.

Example:

CONF:TRTD:TYPE?

Description: Query the current graduation of thermal resistance measurement function. If the current function is not thermal resistance measurement (3-wire measurement mode), the instruction will report an error.

6.9.2 VAL

Example:

CONF:TRTD:VAL?

Description: Query the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (3-wire measurement mode), the instruction will report an error.

6.9.2.1 [:TEMP]

Example:

CONF:TRTD:VAL:TEMP?

Description: Query the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (3-wire measurement mode), the instruction will report an error.

6.9.2.2: RES

Example:

CONF:TRTD:VAL:RES?

Description: Query the resistance corresponding to the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (3-wire measurement mode), the instruction will report an error.

6.9.3: UNIT

Example:

CONF:TRTD:UNIT °C

Description: Set the unit of thermal resistance measurement function as °C. The instruction can accept °C or °F as parameter.

Example:

CONF:TRTD:UNIT?

Description: Query the temperature unit of thermal resistance measurement function (3-wire measurement mode).

6.10: FRTD

Example:

CONF:FRTD

Description: Switch from other functions to thermal resistance measurement function (4-wire measurement mode).

Example:

CONF:FRTD?

Description: Query the current graduation of thermal resistance measurement function. If the current function is not thermal resistance measurement (4-wire measurement mode), the instruction will report an error.

6.10.1 [:TYPE]

Example:

```
CONF:FRTD:TYPE Pt100
```

Description: Switch from other functions to thermal resistance measurement function (4-wire measurement mode), and set the graduation as Pt100. The instruction can accept parameters including Pt100, Pt200, Pt500, Pt1000, Cu10, Cu50, Cu100, Pt100-392, Pt100-JIS, and Ni120.

Example:

```
CONF:FRTD:TYPE?
```

Description: Query the current graduation of thermal resistance measurement function. If the current function is not thermal resistance measurement (4-wire measurement mode), the instruction will report an error.

6.10.2: VAL

Example:

```
CONF:FRTD:VAL?
```

Description: Query the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (4-wire measurement mode), the instruction will report an error.

6.10.2.1 [:TEMP]

Example:

CONF:FRTD:VAL:TEMP?

Description: Query the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (4-wire measurement mode), the instruction will report an error.

6.10.2.2: RES

Example: CONF:FRTD:VAL:RES?

Description: Query the resistance corresponding to the current temperature of thermal resistance measurement function. If the current function is not thermal resistance measurement (4-wire measurement mode), the instruction will report an error.

6.10.3: UNIT

Example:

CONF:FRTD:UNIT

Description: Set the unit of thermal resistance measurement function as °C. The instruction can accept °C or °F as parameter.

Example:

CONF:FRTD:UNIT?

Description: Query the temperature unit of thermal resistance measurement function (4-wire measurement mode).

6.11: CURR

Example:

CONF:CURR

Description: Switch from other functions to current measurement function.

Example:

CONF:CURR?

Description: Query the name of current measurement function. If the current function is not current measurement, the instruction will report an error.

6.12: LOOP

Example:

CONF:LOOP@2

Description: Switch from other functions to loop current measurement function.

Example:

CONF:LOOP?@2

Description: Query the name of current measurement function. If the current function is not loop current measurement, the instruction will report an error.

6.1.3: FREQ

Example:

CONF:FREQ

Description: Switch from other functions to frequency measurement function.

Example:

CONF:FREQ?

Description: Query the name of current measurement function. If the current function is not frequency measurement, the instruction will report an error.

6.14: PULS

Example:

CONF:PULS

Description: Switch from other functions to pulse measurement function.

Example:

CONF:PULS?

Description: Query the name of current measurement function. If the current function is not pulse measurement, the instruction will report an error.

6.14.1: STAR

Example:

CONF:PULS:STAR

Description: Start measuring the number of pulse.

6.14.2: STOP

Example:

CONF:PULS:STOP

Description: Stop measuring the number of pulse.

6.14.3: STAT

Example:

CONF:PULS:STAT?

Description: Query the state of pulse measurement function (query if in pulse measurement state or not)

6.15: SWIT

Example:

CONF:SWIT

Description: Switch from other functions to switch quantity measurement function.

Example:

CONF:SWIT?

Description: Query the name of current measurement function. If the current function is not switch quantity, the instruction will report an error.

6.16: PRES

Example:

CONF:PRES

CONF:PRES@2

Description: Switch from other functions to pressure measurement function.

Example:

CONF:PRES?

CONF:PRES?@2

Description: Query the name of current measurement function. If the current function is not pressure measurement, the instruction will report an error.

7. SOUR

The instruction is for the control of output function of calibrator. Applicable for outputs including millivolt, voltage, resistance, thermocouple, thermal resistance, frequency, pulse, and switch quantity.

Example:

SOUR?

Description: If the current function is output function, the instruction will return to the name of current function, otherwise it will report an error.

7.1 [:MILL]

Example:

SOUR:MILL

Description: Switch from other functions to millivolt output function.

Example:

SOUR:MILL 12

Description: Set the millivolt output value as 12mV.

Example:

SOUR:MILL?

Description: Query the output value of millivolt output function.

7.1.1: RANG

Example:

SOUR:MILL:RANG?

Description: Query the current range of millivolt output function.

Example:

SOUR:MILL:RANG RANGE1

Description: Set the range of millivolt output function to second range. The instruction can accept RANGE0 and RANGE1 as parameters. There shall be one space at least between instruction and parameter.

7.2: VOLT

Example:

SOUR:VOLT

Description: Switch from other functions to voltage output function.

Example:

SOUR:VOLT 10

Description: Set the voltage output value at 10V. The instruction can accept parameter not greater than 11.

Example:

SOUR:VOLT?

Description: Query the output value of voltage output function.

7.3: CURR

Example:

SOUR:CURR

Description: Switch from other functions to current output function.

Example:

SOUR:CURRE 10

Description: Set the current output value at 10mA. The instruction can accept parameter not greater than 24mA.

Example:

SOUR:CURRE?

Description: Query the output value of current output function.

7.4: SIM

Example:

SOUR:SIM

Description: Switch from other functions to passive current output function.

Example:

SOUR:SIM 10

Description: Set the passive current output value at mA. The instruction can accept parameter not greater than 24mA.

Example:

SOUR:SIM?

Description: Query the output value of passive current output function.

7.5: RES

Example:

SOUR:RES

Description: Switch from other functions to resistance output function.

Example:

SOUR:RES 10

Description: Set the resistance output value at 10Ω. The instruction can accept parameter which is not greater than the maximum value of the function.

Example:

SOUR:RES?

Description: Query the output value of resistance output function.

7.5.1: RANG

Example:

SOUR:RES:RANGE?

Description: Query the current range of resistance output function.

Example:

SOUR:RES:RANGE RANGE1

Description: Set the range of resistance output function to the second range. The instruction can accept RANGE0 and RANGE1 as parameters. There shall be one space at least between instruction and parameter.

7.6: TC

Example:

SOUR:TC

Description: Switch from other functions to thermocouple output function.

Example:

SOUR:TC S

Description: Set the graduation of thermocouple output function as S. The instruction can accept parameters including R, S, K, E, J, T, N, B, L, U, XK, and BP.

Example:

SOUR:TC?

Description: Query the graduation of thermocouple output function.

7.6.1 [:TYPE]

Example:

SOUR:TC:TYPE S

Description: Set the graduation of thermocouple output function as S. The instruction can accept parameters including R, S, K, E, J, T, N, B, L, and U.

Example:

SOUR:TC:TYPE?

Description: Query the graduation of thermocouple output function.

7.6.2: VAL

Example:

SOUR:TC:VAL 100

Description: Set the output value of thermocouple output function at 100. The unit is °C or °F (subject to the system).

Example:

SOUR:TC:VAL?

Description: Query the output temperature of thermocouple output function.

7.6.2.1 [:TEMP]

Example:

SOUR:TC:VAL:TEMP 100

Description: Set the output value of thermocouple output function at 100. The unit is °C or °F (subject to the system).

Example:

SOUR:TC:VAL:TEMP?

Description: Query the output temperature of thermocouple output function.

7.6.2.2: COLD

Example:

SOUR:TC:VAL:COLD 0

Description: Set the cold junction temperature of thermocouple measurement function at 0. The unit is °C or °F (subject to the system). After sending the instruction, the cold junction of thermocouple will switch to manual cold junction. To exit manual cold junction, please use SYST:ESC or SOUR:TC:VAL:COLD AUTO instruction.

Example:

SOUR:TC:VAL:COLD AUTO

Description: Set the cold junction temperature of thermocouple measurement function as automatic cold junction mode.

Example:

SOUR:TC:VAL:COLD?

Description: Query the cold junction temperature of thermocouple measurement function.

7.6.2.3: VOLT

Example:

SOUR:TC:VAL:VOLT?

Description: Query the voltage value (in unit of millivolt) corresponding to the output temperature of thermocouple measurement function.

7.6.3: UNIT

Example:

SOUR:TC:UNIT °C

Description: Set the unit of thermocouple output function as °C. The instruction can accept °C or °F as parameter.

Example:

SOUR:TC:UNIT?

Description: Query the temperature unit of thermocouple output function.

7.7: RTD

Example:

SOUR:RTD

Description: Switch from other functions to thermal resistance measurement function.

Example:

SOUR:RTD Pt200

Description: Set the graduation of thermal resistance output function as Pt200. The instruction can accept parameters including Pt100, Pt200, Pt500, Pt1000, Cu10, Cu50, Cu100, Pt100-392, Pt100-JIS, and Ni120.

Example:

SOUR:RTD?

Description: Query the graduation of thermal resistance output function.

7.7.1 [:TYPE]

Example:

```
SOUR:RTD:TYPE Pt200
```

Description: Set the graduation of thermal resistance output function as Pt200. The instruction can accept parameters including Pt100, Pt200, Pt500, Pt1000, Cu10, Cu50, Cu100, Pt100-392, Pt100-JIS, and Ni120.

Example:

```
SOUR:RTD:TYPE?
```

Description: Query the graduation of thermal resistance output function.

7.7.2: VAL

Example:

```
SOUR:RTD:VAL 100
```

Description: Set the output value of thermal resistance output function at 100. The unit is °C or °F (subject to the system).

Example:

```
SOUR:RTD:VAL?
```

Description: Query the output temperature of thermal resistance output function.

7.7.2.1 [:TEMP]

Example:

SOUR:RTD:VAL:TEMP 100

Description: Set the output value of thermal resistance output function at 100. The unit is °C or °F (subject to the system).

Example:

SOUR:RTD:VAL:TEMP?

Description: Query the output temperature of thermal resistance output function.

7.7.2.2: RES

Example:

SOUR:RTD:VAL:RES?

Description: Query the resistance corresponding to the output temperature of thermal resistance output function.

7.7.3 UNIT

Example:

SOUR:RTD:UNIT °C

Description: Set the unit of thermal resistance output function as °C. The instruction can accept °C or °F as parameter.

Example:

SOUR:RTD:UNIT?

Description: Query the temperature unit of thermal resistance output function.

7.8: FREQ

Example:

SOUR:FREQ

Description: Switch from other functions to frequency output function.

Example:

SOUR:FREQ 10

Description: Set the frequency output value at 10(k)Hz (the unit of parameter is the unit of current range of current function). The instruction can accept the parameter which is the maximum value of current range of current function.

Example:

SOUR:FREQ?

Description: Query the output value of frequency output function.

7.8.1: RANG

Example:

SOUR:FREQ:RANG?

Description: Query the current range of frequency output function.

Example:

SOUR:FREQ:RANG RANGE1

Description: Set the range of frequency output function to the second range. The instruction can accept RANGE0, RANGE1 and RANGE2 as parameters. There shall be one space at least between instruction and parameter.

7.8.2: AMP

Example:

SOUR:FREQ:AMP?

Description: Query the current frequency amplitude of frequency output function.

Example:

SOUR:FREQ:AMP 5.0

Description: Set the frequency amplitude of frequency output function at 5.0V. There shall be one space at least between instruction and parameter. The instruction can accept parameter range of 0.5~12.0V, if out of this range, the instruction will report an error.

7.8.3: ESC

Example:

SOUR:FREQ:ESC

Description: In the state of editing frequency output amplitude, the calibrator will exit the state of editing frequency output amplitude if the instruction is sent.

7.9: PULS

Example:

SOUR:PULS

Description: Switch from other functions to pulse output function.

Example:

SOUR:PULS 100

Description: Set the pulse frequency at 100Hz. The instruction can accept parameter which is limited by the maximum and minimum values of current range.

Example:

SOUR:PULS?

Description: Query the output frequency of pulse output function.

7.9.1: RANG

Example:

SOUR:PULS:RANG?

Description: Query the current range of pulse output function.

Example:

SOUR:PULS:RANG RANGE1

Description: Set the range of pulse output function to the second range. The instruction can accept RANGE0, RANGE1 and RANGE2 as parameters. There shall be one space at least between instruction and parameter.

7.9.2: CNT

Example:

SOUR:PULS:CNT?

Description: Query the number of current pulse of pulse output function.

Example:

SOUR:PULS:CNT 1000

Description: Set the number of pulse at 1000. There shall be one space at least between instruction and parameter. The instruction can accept parameter range of 0~100000, if out of this range, the instruction will report an error.

7.9.3: AMP

Example:

SOUR:PULS:AMP?

Description: Query the current amplitude of pulse output function.

Example:

SOUR:PULS:AMP 5.0

Description: Set the amplitude of pulse output at 5.0V. There shall be one space at least between instruction and parameter. The instruction can accept parameter range of 0.5~12.0V, if out of this range, the instruction will report an error.

7.9.4: START

Example:

SOUR:PULS:START?

Description: Query if the pulse output function is performing pulse output or not.

Example:

SOUR:PULS:START

Description: Start pulse output. Prior to using the instruction, please confirm that the pulse frequency, the number of pulse and other parameters have been set (not set to 0), otherwise the instruction will report an error.

7.9.5: ESC

Example:

SOUR:PULS:ESC

Description: Exit pulse output. If the instruction is sent when performing pulse output, the pulse output will be stopped and the number of pulse will be cleared.

7.10: SWIT

Example:

SOUR:SWIT

Description: Switch from other functions to switch quantity output function.

Example:

SOUR:SWIT 100

Description: Set the frequency of switch quantity at 100Hz. The instruction can accept parameter which is limited by the maximum and minimum values of current range.

Example:

SOUR:SWIT?

Description: Query the output frequency of switch quantity output function.

7.10.1: RANE

Example:

SOUR:SWIT:RANG?

Description: Query the current range of switch quantity output function.

Example:

SOUR:SWIT:RANG RANGE1

Description: Set the range of switch quantity output function to the second range. The instruction can accept RANGE0, RANGE1 and RANGE2 as

parameters. There shall be one space at least between instruction and parameter.

7.11: PERCENT

Example:

SOUR:PERCENT

Description: Set the output value of current output function to the value of 100% of current range.

Example:

SOUR:PERCENT?

Description: Query the value of 100% of current range of current output function.

7.11.1 [:MAX]

Example:

SOUR:PERCENT:MAX

Description: Set the output value of current output function to the value of 100% of current range.

Example:

SOUR:PERCENT:MAX?

Description: Query the value of 100% of current range of current output function.

7.11.1.1: VAL

Example:

SOUR:PERCENT:MAX:VAL 8

Description: Set the value of 100% of current range of current output function to 8. The unit is the unit of current output function. The parameter value of the instruction shall meet all the conditions below: first, cannot be greater than the maximum value of current range of current output function; secondly, cannot be less than the minimum value of current range of current output function; thirdly, cannot be less than the value of 0% of current range.

Example:

SOUR:PERCENT:MAX:VAL?

Description: Query the value of 100% of current range of current output function.

7.11.2: MIN

Example:

SOUR:PERCENT:MIN

Description: Set the output value of current output function to the value of 0% of current range.

Example:

SOUR:PERCENT:MIN?

Description: Query the value of 0% of current range of current output function.

7.11.2.1: VAL

Example:

SOUR:PERCENT:MIN:VAL 8

Description: Set the value of 0% of current range of current output function to 8. The unit is the unit of current output function. The parameter value of the instruction shall meet all the conditions below: first, cannot be less than the minimum value of current range of current output function; secondly, cannot be greater than the maximum value of current range of current output function; thirdly, cannot be greater than the value of 100% of current range.

Example:

SOUR:PERCENT:MIN:VAL?

Description: Query the value of 0% of current range of current output function.

7.11.3: INC

Example:

SOUR:PERCENT:INC

Description: Increase the current output value by the value of 25% of current range of current output function. The value of 25% depends on the value of 100% and the value of 0%. The output value cannot be greater than the value of 100%.

7.11.4: DEC

Example:

SOUR:PERCENT:DEC

Description: Decrease the current output value by the value of 25% of current range of current output function. The value of 25% depends on the value of 100% and the value of 0%. The output value cannot be less than the value of 0%.

7.12: RAMP

Example:

SOUR:RAMP SINGLE

Description: Set the ramp mode as single ramp in output function. The instruction can accept parameters including SINGLE, DOUBLE and STEP, which correspond to single ramp mode, double ramp mode and step mode respectively. To exit ramp output, please use the SYST:ESC instruction. If the output function indicates overload or other warnings, the instruction will report an error.

Example:

SOUR:RAMP?

Description: Query the current ramp mode.

7.13: STAT

Example:

SOUR:STAT?

Description: Query if overload occurs at the current output function. If overload occurs at the current output function, then return to "LOAD"; if not, then return to "NORMAL".