



UDP3000S-Programming Manual

Chapter 1 Programming Manual

V1.0: It's suitable for the device which the software version is 1.02 and below ;

Original version.

V1.1: It's suitable for the device which the software version is 1.03 and above ;

Output list, delay resolution changes to 0.1 second, the related command should also change accordingly;

Output list adds checking error and error-alarm functions, the list status query command should change accordingly.

V1.2: It's suitable for the device which the software version is 1.05 and above ;

It adds key lock and remote lock instructions; **OUTPUT[:STATE]** instruction adds "ALL" channel parameter.

Set up remote communication

This device can remote communicate with computer via USB, LAN and RS232 interface.

When using USB interface, this device will be recognize as USB-TMC , VISA programming source descriptor is "USB0::0x0483::0x5740::UDP51183557335E::INSTR"

When using LAN interface, the device is VXI compatible device, VISA programming source descriptor is "TCPIP::192.168.10.142::INSTR"

When using RS232 interface, please use cross serial wire and set the proper baud rate, end mark is "\n".

Command List:

1. APPLy

:APPLy [CH1|CH2|CH3|SER|PARA],[<volt>|MINimum|MAXimum],[<curr>|MINimum|MAXimum]

:APPLy? [CH1|CH2|CH3|SER|PARA],[CURRent|VOLTagE]

2. INSTrument

:INSTrument[:SELEct]{CH1|CH2|CH3|SER|PARA}

:INSTrument[:SELEct]{CH1|CH2|CH3|SER|PARA}

:INSTrument[:SELEct]?

:INSTrument[:SELEct]?

:INSTrument:NSELEct {1|2|3|5|6}

:INSTrument:NSELEct?

3. SOURce

:SOURce:Mode {NORMal|SER|PARA}

:SOURce:Mode?

[:SOURce#]:VOLTagE[:LEVel[:IMMediate[:AMPLitude]]{<vol>|MINimum|MAXimum}

[:SOURce#]:VOLTagE[:LEVel[:IMMediate[:AMPLitude]]?

[:SOURce#]:VOLTagE:PROTection[:LEVel]{<vol>|MINimum|MAXimum}

[:SOURce#]:VOLTagE:PROTection[:LEVel]?

[:SOURce#]:VOLTagE:PROTection:STATe {0|1|OFF|ON}

[:SOURce#]:VOLTagE:PROTection:STATe?

[:SOURce#]:CURRent[:LEVel[:IMMediate[:AMPLitude]]{<curr>|MINimum|MAXimum}

[:SOURce#]:CURRent[:LEVel[:IMMediate[:AMPLitude]]?

[:SOURce#]:CURRent:PROTection[:LEVel]{<curr>|MINimum|MAXimum}

[:SOURce#]:CURRent:PROTection[:LEVel]?

[:SOURce#]:CURRent:PROTection:STATe {0|1|OFF|ON}

[:SOURce#]:CURRent:PROTection:STATe?

4. OUTPut

:OUTPut[:STATe][CH1|CH2|CH3|SER|PARA|ALL,] {0|1|OFF|ON}

:OUTPut[:STATe]? [CH1|CH2|CH3|SER|PARA]

:OUTPut:CVCC? [CH1|CH2|CH3|SER|PARA]

:OUTPut:OVP:VALue [CH1|CH2|CH3|SER|PARA,] {<vol>|MINimum|MAXimum}

:OUTPut:OVP:VALue? [CH1|CH2|CH3|SER|PARA]

:OUTPut:OVP[:STATe][CH1|CH2|CH3|SER|PARA,] {0|1|OFF|ON}

:OUTPut:OVP[:STATe]? [CH1|CH2|CH3|SER|PARA]

:OUTPut:OCP:VALue [CH1|CH2|CH3|SER|PARA,] {<curr>|MINimum|MAXimum}

:OUTPut:OCP:VALue? [CH1|CH2|CH3|SER|PARA]

```
:OUTPut:OCP[:STATe][CH1|CH2|CH3|SER|PARA,] {0|1|OFF|ON}
:OUTPut:OCP[:STATe]? [CH1|CH2|CH3|SER|PARA]
```

5. MEASure

```
:MEASure:ALL[:DC]? [CH1|CH2|CH3|SER|PARA]
:MEASure[:VOLTage[:DC]? [CH1|CH2|CH3|SER|PARA]
:MEASure:CURRent[:DC]? [CH1|CH2|CH3|SER|PARA]
:MEASure:POWER[:DC]? [CH1|CH2|CH3|SER|PARA]
```

6. LISTout

```
:LISTout[:STATe] {0|1|OFF|ON}
:LISTout[:STATe]?
:LISTout:BASE <StrN>, <Grpn>, <CycN>, {OFF|LAST}
:LISTout:BASE?
:LISTout:PARAMeter <index>, <volt>, <curr>, <time>
:LISTout:PARAMeter? <index>[, <count>]
:LISTout:TEMPlEt:SELEct {SINE|PULSE|RAMP|UPIDN|UPDN|RISE|FALL}
:LISTout:TEMPlEt:SELEct?
:LISTout:TEMPlEt:OBJect {VIC}
:LISTout:TEMPlEt:OBJect? {VIC}
:LISTout:TEMPlEt:STARt <index>
:LISTout:TEMPlEt:STARt?
:LISTout:TEMPlEt:POINTs <point>
:LISTout:TEMPlEt:POINTs?
:LISTout:TEMPlEt:MAXValue {<value>|MINimum|MAXimum}
:LISTout:TEMPlEt:MAXValue?
:LISTout:TEMPlEt:MINValue {<value>|MINimum|MAXimum}
:LISTout:TEMPlEt:MINValue?
:LISTout:TEMPlEt:INTERval <value>
:LISTout:TEMPlEt:INTERval?
:LISTout:TEMPlEt:INVErt {0|1|OFF|ON}
:LISTout:TEMPlEt:INVErt?
:LISTout:TEMPlEt:WIDTh <value>
:LISTout:TEMPlEt:WIDTh?
:LISTout:TEMPlEt:PERIod <value>
:LISTout:TEMPlEt:PERIod?
:LISTout:TEMPlEt:SYMMetry <value>
:LISTout:TEMPlEt:SYMMetry?
:LISTout:TEMPlEt:EXPRate <value>
```

:LISTout:TEMPIet:EXPRate?
 :LISTout:TEMPIet:CONSTRuct

7. DELAY

:DELAY[:STATe] {0|1|OFF|ON}
 :DELAY[:STATe]?
 :DELAY:STARt <StrN>
 :DELAY:STARt?
 :DELAY:GROUPs <Grpn>
 :DELAY:GROUPs?
 :DELAY:CYCLEs <CycN>
 :DELAY:CYCLEs?
 :DELAY:ENDState {ON|OFF|LAST}
 :DELAY:ENDState?
 :DELAY:STOP {NONE|<V|>V|<C|>C|<P|>P}[,<value>]
 :DELAY:STOP?
 :DELAY:PARAmeter <index>,{ON|OFF},<time>
 :DELAY:PARAmeter? <index>[,<count>]
 :DELAY:GENerate:STAT <index>,<point>,{01P|10P}
 :DELAY:GENerate:FIX<index>,<point>,<time_on>,<time_off>
 :DELAY:GENerate:INC<index>,<point>,<time_base>,<time_step>
 :DELAY:GENerate:DEC<index>,<point>,<time_base>,<time_step>
 :DELAY:GENerate?

8. PRESet

:PRESet#[:APPLy]
 :PRESet#:SET:VOLTagE {CH1|CH2|CH3|SER|PARA}, {<volt>|MINimum|MAXimum}
 :PRESet#:SET:VOLTagE? {CH1|CH2|CH3|SER|PARA}
 :PRESet#:SET:CURREnt{CH1|CH2|CH3|SER|PARA}, {<curr>|MINimum|MAXimum}
 :PRESet#:SET:CURREnt? {CH1|CH2|CH3|SER|PARA}
 :PRESet#:SET:OVP {CH1|CH2|CH3|SER|PARA}, {0|1|OFF|ON}[,<volt>|MINimum|MAXimum}
 :PRESet#:SET:OVP? {CH1|CH2|CH3|SER|PARA}
 :PRESet#:SET:OCP {CH1|CH2|CH3|SER|PARA}, {0|1|OFF|ON}[,<curr>|MINimum|MAXimum}
 :PRESet#:SET:OCP? {CH1|CH2|CH3|SER|PARA}

9. MONItor

```

:MONItor[:STATe] {0|1|OFF|ON}
:MONItor[:STATe]?
:MONItor:VOLTage {<V|>V|NONE}[,<volt>|MINimum|MAXimum]
:MONItor:VOLTage?
:MONItor:CURRent {<C|>C|NONE}[,<curr>|MINimum|MAXimum]
:MONItor:CURRent?
:MONItor:POWER {<P|>P|NONE}[,<watt>|MINimum|MAXimum]
:MONItor:POWER?
:MONItor:LOGic {1|2},{AND|OR}
:MONItor:LOGic? {1|2}
:MONItor:STOPway {OUTOFF|MSG|BEEPER},{ON|OFF}
:MONItor:STOPway?

```

10. TRIGger

```

:TRIGger:IN[:ENABLE] {D0|D1|D2|D3},{0|1|OFF|ON}
:TRIGger:IN[:ENABLE]? {D0|D1|D2|D3}
:TRIGger:IN:SOURce {D0|D1|D2|D3},{CH1|CH2|CH3|SER|PARA}[,{CH1|CH2|CH3|SER|PARA}][,{CH1|CH2|CH3|SER|PARA}]
:TRIGger:IN:SOURce? {D0|D1|D2|D3}
:TRIGger:IN:TYPE {D0|D1|D2|D3},{RISE|FALL|HIGH|LOW}
:TRIGger:IN:TYPE? {D0|D1|D2|D3}
:TRIGger:IN:SENSitivity {D0|D1|D2|D3},{LOW|MID|HIGH}
:TRIGger:IN:SENSitivity? {D0|D1|D2|D3}
:TRIGger:IN:RESPonse {D0|D1|D2|D3},{ON|OFF|ALTER}
:TRIGger:IN:RESPonse? {D0|D1|D2|D3}
:TRIGger:OUT[:ENABLE] {D0|D1|D2|D3},{0|1|OFF|ON}
:TRIGger:OUT[:ENABLE]? {D0|D1|D2|D3}
:TRIGger:OUT:SOURce {D0|D1|D2|D3},{CH1|CH2|CH3|SER|PARA}
:TRIGger:OUT:SOURce? {D0|D1|D2|D3},
:TRIGger:OUT:CONDition {D0|D1|D2|D3},{AUTO|OUTOFF|OUTON|>V|<V|=V|>C|<C|=C|>P|<P|=P}[,<value>]
:TRIGger:OUT:CONDition {D0|D1|D2|D3}
:TRIGger:OUT:POLArity {D0|D1|D2|D3},{POSitive|NEGAtive}
:TRIGger:OUT:POLArity? {D0|D1|D2|D3}

```

11. SYSTem

```

:SYSTem:BEEPer[:STATe] {0|1|OFF|ON}
:SYSTem:BEEPer[:STATe]?
:SYSTem:COMMunicate:LAN:APPLY
:SYSTem:COMMunicate:LAN:DHCP[:STATe] {0|1|OFF|ON}

```

:SYSTem:COMMunicate:LAN:DHCP[:STATe]?
:SYSTem:COMMunicate:LAN:IPADdress "x.x.x.x"
:SYSTem:COMMunicate:LAN:IPADdress?
:SYSTem:COMMunicate:LAN:SMASK "x.x.x.x"
:SYSTem:COMMunicate:LAN:SMASK?
:SYSTem:COMMunicate:LAN:GATEway "x.x.x.x"
:SYSTem:COMMunicate:LAN:GATEway?
:SYSTem:COMMunicate:RS232:BAUD {4800|7200|9600|14400|19200|38400|57600|115200|128000}
:SYSTem:COMMunicate:RS232:BAUD?
:SYSTem:BRIGHtness <value>
:SYSTem:BRIGHtness?
:SYSTem:LOCK
:SYSTem:LOCK?
:SYSTem:KLOCK:STATe
:SYSTem:KLOCK:STATe?
:SYSTem:RWLock[:STATe]
:SYSTem:RWLock[:STATe]?

Chapter 2 Command Explanation

1. APPLy

:APPLy[CH1|CH2|CH3|SER|PARA],[<volt>|MINimum|MAXimum],[<curr>|MINimum|MAXimum]

Function: Set the specified channel as the current channel, and set the voltage and current value of this channel.

Description: "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode. "volt" and "curr" parameter will be ignored. It only sets the the specified channel as the current channel, not change the voltage and current value of the channel.

For Example: :APPLy CH1,15.00V, 2.000A

:APPLy?[CH1|CH2|CH3|SER|PARA],[CURRent|VOLTagE]

Function: Query the voltage and current value of a certain channel.

Description: If the channel parameter is ignored, then the current channel is the channel which need to be queried by default. If it assigns "CURRent", then return the current value; If it assigns "VOLTagE", then return the voltage value; If it has no specified assignment, then return voltage and current value.

For Example: :APPLy? CH1, VOLT

Return: CH1, 15.00

2. INSTrument

:INSTrument[:SELEct]{CH1|CH2|CH3|SER|PARA}

:INSTrument[:SELEct]{CH1|CH2|CH3|SER|PARA}

Function: Set the specified channel as the current channel.

Description: "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode.

Set the power mode refer to command ":SOURce:Mode {NORMa||SER|PARA}"

For Example: :INSTrument:SELE Ch3

:INSTrument[:SELEct]?

:INSTrument[:SELEct]?

Function: Query the current channel.

Description: It returns "CH1|CH2|CH3|SER|PARA"

For Example: :INSTrument:SELE?

Return: CH1

:INSTrument:NSELEct{1|2|3|5|6}

Function: Set the specified channel as the current channel.

Description: 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :INSTrument:NSElect 3

:INSTrument:NSElect?

Function: Query the current channel.

Description: It returns "1|2|3|5|6".

For Example: :INSTrument:NSElect?

Return: 3

3. SOURce

:SOURce:Mode {NORMal|SER|PARA}

Function: Set the work mode of the power supply.

Description: NORMAL sets to normal independent mode; SER sets to serial mode; PARA sets to parallel mode. It takes some time for the power supply to switch modes, during this time if executing the commands related to work mode of the power supply, it may cause the command execution to fail. Therefore, after switching work mode of the power supply, a new command is executed after an interval of at least 500 milliseconds.

For Example: :SOURce:Mode SER

:SOURce:Mode?

Function: Query the current work mode of the power supply.

Description: It returns "NORMAL|SER|PARA"

For Example: :SOURce:Mode?

Return: SER

[:SOURce#]:VOLTage[:LEVel][:IMMediate][:AMPLitude] {<vol>|MINimum|MAXimum}

Function: Set the voltage value of a certain channel and set the channel as the current channel.

Description: The optional value for # is "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURce#] or # is ignored, then the default is CH1. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :SOURce1:VOLTage 25.00

[:SOURce#]:VOLTage[:LEVel][:IMMediate][:AMPLitude]?

Function: Set the voltage value of a certain channel.

Description: The optional value for # "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURce#] or # is ignored then the default is CH1.

For Example: :SOURce1:VOLTage?

Return: 25.00

are

[:SOURce#]:VOLTage:PROTection[:LEVel]{<vol>|MINimum|MAXimum}

Function: Set the overvoltage protective value of a certain channel and set the channel as the current channel.

Description: The optional value for # "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURce#] or # is ignored, then the default is CH1. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :SOURce1:VOLTage:PROTection 30.00

[:SOURce#]:VOLTage:PROTection[:LEVel]?

Function: Query the overvoltage protective value of a certain channel.

Description: The optional value for # "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURce#] or # is ignored, then the default is CH1.

For Example: :SOURce1:VOLTage:PROTection?

Return: 30.00

[:SOURce#]:VOLTage:PROTection:STATe {0|1|OFF|ON}

Function: Set the overvoltage protective switch of a certain channel and set the channel as the current channel.

Description: The optional value for # "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURce#] or # is ignored, then the default is CH1. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :SOURce1:VOLTage:PROTection:STATe 1

are

[:SOURce#]:VOLTage:PROTection:STATe?

Function: Query the overvoltage protective switch of a certain channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURce#] or # is ignored, then the default is CH1. It returns "ON | OFF".

For Example: :SOURce1:VOLTage:PROTection:STATe?

Return: ON

[:SOURce#]:CURRent[:LEVel]:IMMediate[:AMPLitude]{<curr>|MINimum|MAXimum}

Function: Set the current value of a certain channel and set the channel as the current channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURCE#] or # is ignored, then the default is CH1. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :SOURCE1:CURRENT 5.000

are

[:SOURCE#]:CURRENT[:LEVEL][:IMMEDIATE][:AMPLITUDE]?

Function: Query the current value of a certain channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA.

If [:SOURCE#] or # is ignored, then the default is CH1.

For Example: :SOURCE1:CURRENT?

Return: 5.000

[:SOURCE#]:CURRENT:PROTECTION[:LEVEL]{<curr>|MINIMUM|MAXIMUM}

Function: Set the overcurrent protective value of a certain channel and set the channel as the current channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURCE#] or # is ignored, then the default is CH1. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :SOURCE1:CURRENT:PROTECTION 5.000

[:SOURCE#]:CURRENT:PROTECTION[:LEVEL]?

Function: Query the overcurrent protective value of a certain channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURCE#] or # is ignored, then the default is CH1.

For Example: :SOURCE1:CURRENT:PROTECTION?

Return: 5.000

are

[:SOURCE#]:CURRENT:PROTECTION:STATE {0|1|OFF|ON}

Function: Set the overcurrent protective switch of a certain channel and set the channel as the current channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURCE#] or # is ignored, then the default is CH1. "1, 2" can only be selected when in normal mode; "5" can only be selected when in serial mode; "6" can only be selected when in parallel mode.

For Example: :SOURCE1:CURRENT:PROTECTION:STATE 1

[:SOURCE#]:CURRENT:PROTECTION:STATE?

Function: Query the overcurrent protective switch of a certain channel.

Description: The optional value for "1|2|3|5|6". 1 is corresponding to CH1; 2 is corresponding to CH2; 3 is corresponding to CH3; 5 is corresponding to SER; 6 is corresponding to PARA. If [:SOURCE#] or # is ignored, then the default is CH1. It returns "ON | OFF".

For Example: :SOURCE1:CURRENT:PROTECTION:STATE?

Return: ON

are"

4. OUTPUT

:OUTPUT[:STATE][CH1|CH2|CH3|SER|PARA|ALL,] {0|1|OFF|ON}

Function: Turn on/off output switch of a certain channel and set the channel as the current channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be controlled by default. "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode.

For Example: :OUTPUT:STATE CH1, ON

:OUTPUT[:STATE]? [CH1|CH2|CH3|SER|PARA]

Function: Query the status of the output switch of a certain channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default. It returns "ON | OFF".

For Example: :OUTPUT:STATE? CH1

Return: ON

:OUTPUT:CVCC? [CH1|CH2|CH3|SER|PARA]

Function: Query the status of the constant voltage and constant current.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default. It returns "CV | CC".

For Example: :OUTPUT:CVCC? CH1

Return: CV

:OUTPUT:OVP:VALUE [CH1|CH2|CH3|SER|PARA,] {<vol>|MINIMUM|MAXIMUM}

Function: Set the overvoltage protective value of a certain channel and set the channel as the current channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be controlled by default. "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode.

For Example: :OUTPUT:OVP:VALUE CH1, 5

:OUTPUT:OVP:VALUE? [CH1|CH2|CH3|SER|PARA]

Function: Query the overvoltage protective value of a certain channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default.

For Example: :OUTPut:OVP:VALue? CH1

Return: 5.00

:OUTPut:OVP[:STATe][CH1|CH2|CH3|SER|PARA,] {0|1|OFF|ON}

Function: Set the overvoltage protective switch of a certain channel and set the channel as the current channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be controlled by default. "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode.

For Example: :OUTPut:OVP:STATe CH1, ON

:OUTPut:OVP[:STATe]? [CH1|CH2|CH3|SER|PARA]

Function: Query the overvoltage protective switch of a certain channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default. It returns "ON | OFF".

For Example: :OUTPut:OVP:STATe? CH1

Return: ON

:OUTPut:OCP:VALue [CH1|CH2|CH3|SER|PARA,] {<curr>|MINimum|MAXimum}

Function: Set the overcurrent value of a certain channel and set the channel as the current channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be controlled by default. "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode.

For Example: :OUTPut:OCP:VALue CH1, 5.1

:OUTPut:OCP:VALue? [CH1|CH2|CH3|SER|PARA]

Function: Query the overcurrent value of a certain channel

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default.

For Example: :OUTPut:OCP:VALue? CH1

Return: 5.100

:OUTPut:OCP[:STATe][CH1|CH2|CH3|SER|PARA,] {0|1|OFF|ON}

Function: Set the overcurrent protective switch of a certain channel and set the channel as the current channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be controlled by default. "CH1, CH2" can only be selected when in normal mode; "SER" can only be selected when in serial mode; "PARA" can only be selected when in parallel mode.

For Example: :OUTPut:OCP:STATe CH1, ON

:OUTPut:OCP[:STATe]? [CH1|CH2|CH3|SER|PARA]

Function: Query the overcurrent protective switch of a certain channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default. It returns "ON | OFF".

For Example: :OUTPut:OCP:STATe? CH1

Return: ON

5. MEASure

:MEASure:ALL[:DC]? [CH1|CH2|CH3|SER|PARA]

Function: Query the actual voltage, current and power value at the output terminal of the specified channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default.

For Example: :MEASure:ALL? CH1

Return: 05.10,0.089,00.45

:MEASure[:VOLTage[:DC]? [CH1|CH2|CH3|SER|PARA]

Function: Query the actual voltage value at the output terminal of the specified channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default.

For Example: :MEASure:VOLTage? CH1

Return: 05.10

:MEASure:CURREnt[:DC]? [CH1|CH2|CH3|SER|PARA]

Function: Query the actual current value at the output terminal of the specified channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default.

For Example: :MEASure:CURREnt? CH1

Return: 0.089

:MEASure:POWER[:DC]? [CH1|CH2|CH3|SER|PARA]

Function: Query the actual power value at the output terminal of the specified channel.

Description: If the channel parameter is ignored, then the current channel which is the channel need to be queried by default.

For Example: :MEASure:POWER? CH1

Return: 00.45

6. LISTout

:LISTout[:STATe] {0|1|OFF|ON}

Function: Start or stop the list output mode of the current channel.

Description: It can set and query the current channel by command of "INSTrument" chapter.

For Example: :LISTout:STATe ON

:LISTout[:STATe]?

Function: Query the list output status mode of the current channel.

Description: It returns "Status(ON|PAUSED|ERROR|OFF), remaining time, the current point, termination point, remaining cycle count, stop status(OFF|LAST)".

For Example: :LISTout[:STATe]?

Return: ON,1.0,7,2047,0,OFF

:LISTout:BASE <StrN>, <Grpn>, <CycN>, {OFF|LAST}

Function: Set the basic parameter for list output mode of the current channel.

Description: StrN: Output initial group number, range 0-2047, StrN + Grpn can not greater than 2048.

Grpn: Output group number, range 1-2048, StrN + Grpn can not greater than 2048.

CycN: Cycle count, range 1-99999.

OFF|LAST: Stop status, close output or keep the last output status.

Notice: When list output is running, the parameter can not be set.

For Example: :LISTout:BASE 1,100,1,OFF

:LISTout:BASE?

Function: Query the basic parameter of list output mode of the current channel.

Description: It returns "StrN, Grpn, CycN, {OFF|LAST}"

StrN: Output initial group number, range 0-2047.

Grpn: Output group number, range 1-2048.

CycN: Cycle count, range 1-99999.

OFF|LAST: Stop status, close output or keep the last output status.

For Example: :LISTout:BASE?

Return: 1,100,1,OFF

:LISTout:PARAMeter <index>, <volt>, <curr>, <time>

Function: Set the group parameter for list output mode of the current channel.

Description: index: The group serial number for the group need to be set, range 0-2047.

volt: Output voltage of the group, unit is volt.

curr: Output current of the group, unit is ampere.

time: Output time of the group, unit is second.

Notice: When list output is running, the parameter can not be set.

For Example: :LISTout:PARAMeter 0, 10.00, 3.00, 1.5

:LISTout:PARAMeter? <index> [, <count>]

Function: Query the group parameter of list output of the current channel.

Description: index: Query the setting parameter start from the serial number of the group, range 0-2047.

count: Number of group that need to be queried, range 1-10. When this parameter is ignored, query 1 group by default.

Return Format: It returns data by data block, data field is serial number, voltage, current, time of each

group. Such as "#2190,10.000,3.000,1.5;", #219 represents data field have 19 data—"0,10.000,3.000,1.5;", data contents shows group number 0, voltage 10.000, current 3.000, time 1.5s.

For Example: :LISTout:PARAMeter? 0

Return: #2190,10.000,3.000,1.5;

:LISTout:TEMPlet:SElect {SINE|PULSE|RAMP|UPIDN|UPDN|RISE|FALL}

Function: Select the template mode for list output of the current channel.

Description: SINE: Template of sine wave;

PULSE: Template of pulse mode;

RAMP: Template of rampe mode;

UP: Template of stair-rising;

DN: Template of stair-down;

UPDN: Template of up/down;

RISE: Template of exponential rise;

FALL: Template of exponential fall.

For Example: :LISTout:TEMPlet:SElect SINE

:LISTout:TEMPlet:SElect?

Function: Query the template mode of list output of the current channel.

Description: It returns {SINE|PULSE|RAMP|UPIDN|UPDN|RISE|FALL}.

For Example: :LISTout:PARAMeter?

Return: SINE

:LISTout:TEMPlet:OBject {VIC}

Function: Set the build object of the template for the list output mode of the current channel.

Description: V: Voltage; C: Current;

For Example: :LISTout:TEMPlet:OBject V

:LISTout:TEMPlet:OBject? {VIC}

Function: Query the build object of the template for the list output mode of the current channel.

Description: It returns {VIC}, V: Voltage; C: Current.

For Example: :LISTout:TEMPlet:OBject?

Return: V

:LISTout:TEMPlet:STARt < index>

Function: Set the initial constructed group number of the template for the list output mode of the current channel.

And this group is the constructed point of the first template.

Description: index, initial constructed group, the range from 0 to (2048 minus the group number that need to construct) .

For Example: :LISTout:TEMPlet:STARt 0

:LISTout:TEMPlet:START?

Function: Query the initial constructed group number of the template for the list output mode of the current channel. And this group is the constructed point of the first template.

Description: It returns <index>, initial constructed group, the range from 0 to (2048 minus the group number that need to construct) .

For Example: :LISTout:TEMPlet:START?

Return: 0

:LISTout:TEMPlet:POINTs <point>

Function: Set the constructed group number of list output mode for the current channel.

Description: point, constructed group number, start to constructing from initial group, group number specified by common constructed point, it not chang the setting value of other group. Pulse template needs to constructe 2 groups at least. Other template needs to constructe 10 groups at least.

For Example: :LISTout:TEMPlet:POINTs 50

constructed point

:LISTout:TEMPlet:POINTs?

Function: Query the constructed group number of list output mode for the current channel.

Description: It returns < point >, constructed group.

For Example: :LISTout:TEMPlet:POINTs?

Return: 50

:LISTout:TEMPlet:MAXValue {<value>|MINimum|MAXimum}

Function: Set the maximum value of the template for the list output mode of the current channel.

Description: value: real numerical value, specifying a number.

MINimum: 0

MAXimum: The maximum value of each channel.

For Example: :LISTout:TEMPlet:MAXValue 5.55

:LISTout:TEMPlet:MAXValue?

Function: Query the maximum value of the template for the list output mode of the current channel.

Description: It returns< value >, real numerical value.

For Example: :LISTout:TEMPlet:MAXValue?

Return: 5.55

:LISTout:TEMPlet:MINValue{<value>|MINimum|MAXimum}

Function: Set the minimum value of the template for the list output mode of the current channel.

Description: value: real numerical value, specifying a number.

MINimum: 0

MAXimum: The maximum value of each channel.

For Example: :LISTout:TEMPIet:MINValue 1.11

:LISTout:TEMPIet:MINValue?

Function: Query the minimum value of the template for the list output mode of the current channel.

Description: It returns < value >, real numerical value.

For Example: :LISTout:TEMPIet:MINValue?

Return: 1.11

:LISTout:TEMPIet:INTERval <value>

Function: Set the interval time of the template for the list output mode of the current channel.

Description: value: floating-number numerical value, unit is second, duration time of specified group parameter, range: 0.1—9999.9.

For Example: :LISTout:TEMPIet:INTERval 1.0

:LISTout:TEMPIet:INTERval?

Function: Query the interval time of the template for the list output mode of the current channel.

Description: It returns < value >, floating-number numerical value, unit is second.

For Example: :LISTout:TEMPIet:INTERval?

Return: 1.0

:LISTout:TEMPIet:INVErt {0|1|OFF|ON}

Function: Set the phase invert switch of the template for the list output mode of the current channel.

Description: Only the template of sine wave, pulse and rampe have phase invert function. The command can only be used when these template is using.

For Example: :LISTout:TEMPIet:INVErt ON

:LISTout:TEMPIet:INVErt?

Function: Query the phase invert switch of the template for the list output mode of the current channel.

Description: It returns {OFF|ON}.

For Example: :LISTout:TEMPIet:INVErt?

Return: ON

:LISTout:TEMPIet:WIDTh <value>

Function: Set the pulse width of the pulse width template for the list output mode of the current channel.

Description: value: floating-number numerical value, unit is second. To specifies pulse width, range: 0.1—(period-0.1). The command can only be used when in pulse width template.

For Example: :LISTout:TEMPIet:WIDTh 5.0

:LISTout:TEMPIet:WIDTh?

Function: Query the pulse width of the pulse width template for the list output mode of the current channel.

Description: It returns <value>, floating-number numerical value, unit is second.

For Example: :LISTout:TEMPlet:WIDTH?

Return: 5.0

:LISTout:TEMPlet:PERIod <value>

Function: Set the period of the pulse width template for the list output mode of the current channel.

Description: value: floating-number numerical value, unit is second. To specifies the period of pulse, range: (pulse width + 0.1) —9999.9. The command can only be used when in pulse width template.

For Example: :LISTout:TEMPlet:PERIod 10.

:LISTout:TEMPlet:PERIod?

Function: Query the period of the pulse width template for the list output mode of the current channel.

Description: It returns <value>, floating-number numerical value, unit is second.

For Example: :LISTout:TEMPlet:PERIod?

Return: 10.0

:LISTout:TEMPlet:SYMMetry<value>

Function: Set the symmetry of the rampe template for the list output mode of the current channel.

Description: value: integer numerical value, to specifies the symmetry of the rampe, range: 0—100. The command can only be used when in rampe template.

For Example: :LISTout:TEMPlet:SYMMetry 50

:LISTout:TEMPlet:SYMMetry?

Function: Query the symmetry of the rampe template for the list output mode of the current channel.

Description: It returns <value>, integer numerical value.

For Example: :LISTout:TEMPlet:SYMMetry?

Return: 50

:LISTout:TEMPlet:EXPRate<value>

Function: Set the exponent of the exponential template for the list output mode of the current channel.

Description: value: integer numerical value, range: 0—10. When using the exponential rise template, use the command to set rise exponent; When using the exponential fall template, use the command to set fall exponent; The command can not be used in other template.

For Example: :LISTout:TEMPlet:EXPRate 5

:LISTout:TEMPlet:EXPRate?

Function: Query the symmetry of the rampe template for the list output mode of the current channel.

Description: It returns <value>, integer numerical value.

For Example: :LISTout:TEMPlet:EXPRate?

Return: 5

:LISTout:TEMPIet:CONSTRUCT

Function: Start to constructing the list group parameter.

Description: After the instrument receives the command, start to constructing the group parameter for list output by the template parameter that has been set.

For Example: :LISTout:TEMPIet:CONSTRUCT

7. DELAY**:DELAY[:STATe] {0|1|OFF|ON}**

Function: Start or stop the delayer of the current channel.

Description: It can set and query the current channel by command of "INSTRUMENT" chapter.

For Example: :DELAY:STATe ON

:DELAY[:STATe]?

Function: Query the delayer status of the current channel.

Description: It returns "Running status(ON|OFF), remaining time, the current point, termination point, remaining cycle count, stop status(OFF|LAST|ON)".

For Example: :DELAY[:STATe]?

Return: ON,1,12,2047,0,OFF

:DELAY:START <StrN>

Function: Set the initial group number of delayer output for the current channel.

Description: StrN: output initial group number, integer numerical value, range 0-2047, (initial group number + output group number) cannot greater than 2048.

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:START 0

:DELAY:START?

Function: Query the initial group number of delayer output for the current channel.

Description: It returns "StrN", integer numerical value.

For Example: :DELAY:START?

Return: 0

:DELAY:GROUPs <Grpn>

Function: Set the output group number of delayer for the current channel.

Description: Grpn: output group number, integer numerical value, range 1-2048, (initial group number + output group number) cannot greater than 2048.

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:GROUPs 100

:DELAY:GROUPs?

Function: Query the output group number of delayer for the current channel.

Description: It returns "Grpn", integer numerical value.

For Example: :DELAY:GROUPs?

Return: 100

:DELAY:CYCLEs <CycN>

Function: Set the cycle count of delayer for the current channel.

Description: CycN: cycle count, integer numerical value., range 1-99999.

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:CYCLEs 1

:DELAY:CYCLEs?

Function: Query the cycle count of delayer for the current channel.

Description: It returns "CycN: cycle count, integer numerical value.

For Example: :DELAY:CYCLEs?

Return: 1

:DELAY:ENDState { ON|OFF|LAST }

Function: Set the stop status of delayer for the current channel.

Description: ON: When the delayer is stop, the output is enabled.

OFF: When the delayer is stop, the output is disabled.

LAST: When the delayer is stop, the last output status will be kept.

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:ENDState OFF

:DELAY:ENDState?

Function: Query the stop status of delayer for the current channel.

Description: It returns "{ ON|OFF|LAST }".

ON: When the delayer is stop, the output is enabled.

OFF: When the delayer is stop, the output is disabled.

LAST: When the delayer is stop, the last output status will be kept.

For Example: :DELAY:ENDState?

Return: OFF

:DELAY:STOP { NONE|<V|>V|<C|>C|<P|>P } [, <value>]

Function: Set the stop condition of delayer for the current channel.

Description: When the delayer is running and meet the stop condition, the delayer will stop automatically. When <value> parameter is ignored, it only set the judgement condition, not change the original judgement value.

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:STOP >V, 10.00

:DELAY:STOP?

Function: Query the stop condition of delayer for the current channel.

Description: It return“(NONE|<V|>V|<C|>C|<P|>P[,<value>]”, if the first return parameter is “NONE”, it will not have the second parameter.

For Example: :DELAY:STOP?

Return: >V,10.000

:DELAY:PARAMeter <index>, {ON|OFF}, <time>

Function: Set the group parameter of delayer for the current channel.

Description: index: group serial number of the group that need to be set, range 0-2047.

ON|OFF: Output status of the group.

time: Running time of the group, unit is second.

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:PARAMeter 0, ON, 10

:DELAY:PARAMeter? <index>[,<count>]

Function: Query the group parameter of delayer for the current channel.

Description: index: Query the setting parameter start from the serial number of the group, range 0-2047.

count: Number of group that need to be queried, range 1-10. When the parameter is ignored, query 1 group by default.

Return Format: It returns data by data block, data field is serial number, output switch status and time of each group. Such as “#190,ON,1.0;”, #19 represents data field have 19 data —“0,ON,1.0;”, data contents shows group number 0, the output is enabled, time is 1.0s.

For Example: :DELAY:PARAMeter? 0

Return: #190,ON,1.0;

:DELAY:GENerate:STAT <index>, <point>, {01P|10P}

Function: The group parameters of the delayer are automatically generated according to the state generation mode.

Description: After the instrument receives the command, the group parameters of the delayer are automatically generated according to the state generation mode. The parameters of unspecified group are not affected.

index: The group number of the first point, from which generation begins;

point: Point number need to be generated;

01P|10P: It generated by specifies 01 code or 10 code;

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:GENerate:STAT 0, 10, 01P

:DELAY:GENerate:FIX< index>, <point>, <time_on>, <time_off>

Function: The group parameters of the delayer are automatically generated according to the fixed time generation mode.

Description: After the instrument receives the command, the group parameters of the delayer are automatically generated according to the fixed time generation mode. The parameters of unspecified group are not affected.

index: The group number of the first point, from which generation begins;

point: Point number need to be generated;

time_on: Running time for when output status is open group;

time_off: Running time for when output status is closed group;

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:GENerate:FIX 0, 10, 5, 10

:DELAY:GENerate:INC< index>, <point>, <time_base>, <time_step>

Function: The group parameters of the delayer are automatically generated according to single rise generation mode.

Description: After the instrument receives the command, the group parameters of the delayer are automatically generated according to single rise generation mode. The parameters of unspecified group are not affected.

index: The group number of the first point, from which generation begins;

point: Point number need to be generated;

time_base: time base value;

time_step: step value;

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:GENerate:INC 0, 10, 10, 2

:DELAY:GENerate:DEC < index>, <point>, <time_base>, <time_step>

Function: The group parameters of the delayer are automatically generated according to single fall generation mode.

Description: After the instrument receives the command, the group parameters of the delayer are automatically generated according to single fall generation mode. The parameters of unspecified group are not affected.

index: The group number of the first point, from which generation begins;

point: Point number need to be generated;

time_base: time base value;

time_step: step value;

Notice: When the delayer is running, the parameter can not be set.

For Example: :DELAY:GENerate:DEC 0, 10, 100, 1

:DELAY:GENerate?

Function: Query the automatic generated parameter of delayer for the current channel.

Description: It returns: "STAT, <index>,<point> , {01P|10P}" or
 "FIX, <index>,<point> , <time_on>, <time_off>" or
 "{INC|DEC}, <index>,<point> , <time_base>, <time_step>"

For Example: :DELAY:GENerate?

Return: DEC,0,10,100,1

8. PRESet

:PRESet#[[:APPLY]]

Function: Apply the preset parameter of the specified group to the output setting parameter

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group.

For Example: :PRESet1:APPLY

:PRESet#:SET:VOLTage {CH1|CH2|CH3|SER|PARA}, {<volt>|MINimum|MAXimum}

Function: Set the voltage value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group.

For Example: :PRESet1:SET:VOLTage CH1, 5.00

:PRESet#:SET:VOLTage? {CH1|CH2|CH3|SER|PARA}

Function: Query the voltage value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group. It returns the real numerical value of voltage.

For Example: :PRESet1:SET:VOLTage? CH1

Return: 05.00

:PRESet#:SET:CURREnt{CH1|CH2|CH3|SER|PARA}, {<curr>|MINimum|MAXimum}

Function: Set the current value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group.

For Example: :PRESet1:SET:CURREnt CH1, 1.258

:PRESet#:SET:CURREnt? {CH1|CH2|CH3|SER|PARA}

Function: Query the current value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group. It returns the real numerical value of current.

For Example: :PRESet1:SET:CURREnt? CH1

Return: 1.258

:PRESet#:SET:OVP {CH1|CH2|CH3|SER|PARA}, {0|1|OFF|ON} [, {<volt>|MINimum|MAXimum}]

Function: Set the overvoltage protective switch and value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group.
When parameter {<volt>|MINimum|MAXimum} is ignored, it can only set overvoltage switch, not change the protective value.

For Example: :PRESet1:SET:OVP CH1, OFF
:PRESet1:SET:OVP CH1, ON
:PRESet1:SET:OVP CH1, OFF, 20.00
:PRESet1:SET:OVP CH1, ON, 15.00

:PRESet#:SET:OVP? {CH1|CH2|CH3|SERIPARA}

Function: Query the overvoltage protective switch and value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group. It returns "{OFF|ON}, <value>".

OFF|ON: The switch status of overvoltage protective;
<value>: Integer numerical value, overvoltage protective value.

For Example: :PRESet1:SET:OVP? CH1
Return: ON,15.000

:PRESet#:SET:OCP {CH1|CH2|CH3|SERIPARA}, {0|1|OFF|ON} [, {<curr>|MINimum|MAXimum}]

Function: Set the overcurrent protective switch and value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group.
When parameter {<curr>|MINimum|MAXimum} is ignored, it can only set overcurrent switch, not change the protective value.

For Example: :PRESet1:SET:OCP CH1, OFF
:PRESet1:SET:OCP CH1, ON
:PRESet1:SET:OCP CH1, OFF, 2.000
:PRESet1:SET:OCP CH1, ON, 1.500

:PRESet#:SET:OCP? {CH1|CH2|CH3|SERIPARA}

Function: Query the overcurrent protective switch and value for the preset group.

Description: The optional values for # are "1|2|3|4|5", cannot be **omitted** and the corresponding preset group. It returns "{OFF|ON}, <value>".

OFF|ON: The switch status of overcurrent protective;
<value>: Integer numerical value, overcurrent protective value.

For Example: :PRESet1:SET:OCP? CH1
Return: ON,1.500

9. MONItor

:MONItor[:STATe] {0|1|OFF|ON}

Function: Start or stop the monitor of the current channel.

Description: It can set and query the current channel by command of "INSTrument" chapter.

For Example: :MONItor:STATe ON

:MONItor[:STATe]?

Function: Query the monitor status of the current channel.

Description: It returns "{ON|OFF}".

For Example: :MONItor:STATe?

Return: ON

:MONItor:VOLTage {<V>|NONE} [, <volt>|MINimum|MAXimum]

Function: Set the voltage condition in the monitor terms for the current channel.

Description: When the second parameter is ignored, it only set judgement condition, not change the original judgement value.

<V>: When voltage judgement is enabled, it returns "True" if voltage is less than the judgement value;

>V>: When voltage judgement is enabled, it returns "True" if voltage is greater than the judgement value;

NONE: The voltage judgement can be forbidden, but the voltage judgement, current judgement, power judgement cannot be forbidden at the same time;

<volt>: Integer numerical value, voltage judgement value.

For Example: :MONItor:VOLTage >V, 15.58

:MONItor:VOLTage?

Function: Query the voltage condition in the monitor terms of the current channel.

Description: It returns "{<V>|NONE}, <volt>"; <volt>: Integer numerical value, voltage judgement value.

For Example: :MONItor:VOLTage?

Return: >V,15.58

:MONItor:CURRent {<C>|NONE} [, <curr>|MINimum|MAXimum]

Function: Set the current condition in the monitor terms for the current channel.

Description: When the second parameter is ignored, it only set judgement condition, not change the original judgement value.

<C>: When current judgement is enabled, it returns "True" if current is less than the judgement value;

>C>: When current judgement is enabled, it returns "True" if current is greater than the judgement value;

NONE: The current judgement can be forbidden, but the voltage judgement, current judgement, power judgement cannot be forbidden at the same time;

<curr>: Integer numerical value, current judgement value.

For Example: :MONItor:CURRent >C, 3.555

:MONItor:CURRent?

Function: Query the current condition in the monitor terms of the current channel.

Description: It returns "{<C>|NONE}, <curr>"; <curr>: Integer numerical value, current judgement value.

For Example: :MONItor:CURRent?

Return: >C,3.555

:MONItor:POWER {<P>PINONE}[,<watt>|MINimum|MAXimum]

Function: Set the power condition in the monitor terms for the current channel.

Description: When the second parameter is ignored, it only set judgement condition, not change the original judgement value.

<P: When power judgement is enabled, it returns "True" if power is less than the judgement value;

>P: When power judgement is enabled, it returns "True" if power is greater than the judgement value;

NONE: The power judgement can be forbidden, but the voltage judgement, current judgement, power judgement cannot be forbidden at the same time;

<watt>: Integer numerical value, power judgement value.

For Example: :MONItor:POWER >P, 60.00

:MONItor:POWER?

Function: Query the power condition in the monitor terms of the current channel.

Description: It returns "{<P>PINONE}, <watt>"; <watt>: Integer numerical value, power judgement value.

For Example: :MONItor:POWER?

Return: >P,60.00

:MONItor:LOGic {1|2}, {AND|OR}

Function: Set the logical symbol in the monitor terms for the current channel.

Description: {1|2}: 1 specifies to set the first logical symbol; 2 specifies to set the second logical symbol;

AND: Set the specified logical symbol to "AND";

OR: Set the specified logical symbol to "OR".

For Example: :MONItor:LOGic 1, AND

:MONItor:LOGic 2, OR

:MONItor:LOGic? {1|2}

Function: the logical symbol in the monitor terms of the current channel.

Description: {1|2}: 1 specifies to set the first logical symbol; 2 specifies to set the second logical symbol;

It returns: "{AND|OR}".

For Example: :MONItor:LOGic? 1

Return: AND

:MONItor:LOGic? 2

Return: OR

:MONItor:STOPway {OUTOFF|MSG|BEEPER}, {ON|OFF}

Function: Set the stop way of the monitor for the current channel.

Description: OUTOFF: Set to turn off output or not; ON: Turn off output; OFF: Turn on output;

MSG: Set to pop-out hint message or not ; ON: Pop-out hint message OFF: Not pop-out hint message;

BEEPER: Set to turn on/off beeper sound; ON: Turn on beeper OFF: Turn off beeper.

For Example: :MONItor:STOPway OUTOFF, ON Turn off output when the monitoring condition is met.

:MONItor:STOPway MSG, OFF Hint message will not be pop-out when the monitoring condition is met.

:MONItor:STOPway BEEPER, ON The beeper will sound when the monitoring condition is met.

:MONItor:STOPway?

Function: Query the stop way of the monitor for the current channel.

Description: It returns: "OutputOff:{ON|OFF}, Msg:{ON|OFF}, Beep:{ON|OFF}".

For Example: :MONItor:STOPway?

Return: OutputOff:ON,Msg:OFF,Beep:ON

10. TRIGger

:TRIGger:IN[:ENABle] {D0|D1|D2|D3},{0|1|OFF|ON}

Function: Start or stop the trigger of input mode; If the trigger is in output mode, the trigger will switch to input mode.

Description: D0|D1|D2|D3: Select trigger IO, D0-I01, D1-I02, D2-I03, D3-I04.

For Example: :TRIGger:IN:ENABle D0, OFF Stop the trigger of I01, I01 will be the input mode.

:TRIGger:IN:ENABle D0, ON Start the trigger of I01, I01 will be the input mode.

:TRIGger:IN[:ENABle]? {D0|D1|D2|D3}

Function: Query the trigger status of input mode.

Description: D0|D1|D2|D3: Select trigger IO, D0-I01, D1-I02, D2-I03, D3-I04.

When IO is in output mode, it must return "OFF";

When IO is in input mode, it will return "OFF" or "ON" by the status of trigger.

For Example: :TRIGger:IN:ENABle? D0

Return: ON

:TRIGger:IN:SOURce {D0|D1|D2|D3}, {CH1|CH2|CH3|SER|PARA}[.]{CH1|CH2|CH3|SER|PARA}[.]{CH1|CH2|CH3|SER|PARA}

Function: Set the controlled source for input mode trigger. When input IO generated trigger signal, the controlled source executes the action according to the setting response.

Description: D0|D1|D2|D3: Select trigger IO, D0-I01, D1-I02, D2-I03, D3-I04.

CH1: Channel 1; CH2: Channel 2; CH3: Channel 3; SER: Serial channel; PARA: Parallel channel.

In the last three parameter, CH1\CH2 cannot show up with SER\PARA at the same time, SER and PARA cannot appears at the same time.

For Example: :TRIGger:IN:SOURce D0, CH1, CH2, CH3 Set the cotrolled source of I01 to CH1, CH2 and CH3

:TRIGger:IN:SOURce D0, CH1, CH3 Set the cotrolled source of I01 to CH1 and CH3

:TRIGger:IN:SOURce D0, CH3, SER Set the controlled source of IO1 to CH3 and SER(serial channel)
 :TRIGger:IN:SOURce D0, PARA Set the controlled source of IO1 to PARA(parallel channel)

:TRIGger:IN:SOURce? {D0|D1|D2|D3}

Function: Query the controlled source of the input mode trigger.

Description: D0|D1|D2|D3: Select trigger IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

It returns all combination of controlled channel. Such as: "CH2,CH3", it returns two controlled channel, channel 2 and channel 3.

CH1: Channel 1; CH2: Channel 2; CH3: Channel 3; SER: Serial channel; PARA: Parallel channel.

For Example: :TRIGger:IN:SOURce? d0

Return: CH2,CH3

:TRIGger:IN:TYPE {D0|D1|D2|D3},{RISE|FALL|HIGH|LOW}

Function: Set the trigger signal type for input mode trigger.

Description: D0|D1|D2|D3: Select trigger, IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

RISE: Rising edge signal;

FALL: Falling edge signal;

HIGH: High-level signal;

LOW: Low-level signal.

For Example: :TRIGger:IN:TYPE D0, FALL Set the trigger input signal type of IO1 to be the falling edge.

:TRIGger:IN:TYPE? {D0|D1|D2|D3}

Function: Query the trigger signal type of input mode trigger.

Description: D0|D1|D2|D3: Select trigger IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

It returns "{RISE|FALL|HIGH|LOW}".

RISE: Rising edge signal;

FALL: Falling edge signal;

HIGH: High-level signal;

LOW: Low-level signal.

For Example: :TRIGger:IN:TYPE? D0 Query the trigger signal type of IO1.

Return: FALL Return result: falling edge

:TRIGger:IN:SENSitivity {D0|D1|D2|D3},{LOW|MID|HIGH}

Function: Set the sensitivity of trigger signal for the input mode trigger.

Description: D0|D1|D2|D3: Select trigger IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

LOW: Low sensitivity;

MID: Middle sensitivity;

HIGH: High sensitivity;

For Example: :TRIGger:IN:SENSitivity D0, MID Set the input trigger signal sensitivity of IO1 to middle sensitivity.

For Example: :TRIGger:OUT:ENABle D0, OFF Stop the trigger of IO1, IO1 to be output mode.

:TRIGger:OUT:ENABle D0, ON Start the trigger of IO1, IO1 to be output mode.

:TRIGger:OUT[:ENABLE]? {D0|D1|D2|D3}

Function: Query the status of output mode trigger.

Description: D0|D1|D2|D3: Select trigger IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

When IO is in input mode, it must return "OFF";

When IO is in output mode, it will retrun"OFF"or"ON"by the status of trigger.

For Example: :TRIGger:OUT:ENABle? D0

Return: ON

:TRIGger:OUT:SOURce {D0|D1|D2|D3},{CH1|CH2|CH3|SER|PARA}

Function: Set the controlled source for output mode trigger. IO will output the response signal by the setting output signal when the cotrolled source is meet the trigger condition.

Description: D0|D1|D2|D3: Select output IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

Only one channel can ne the controlled source.

CH1: Channel 1; CH2: Channel 2; CH3: Channel 3; SER: Serial channel; PARA: Parallel channel.

For Example: :TRIGger:OUT:SOURce D0, CH1 Set CH1 to the controlled channel for IO1.

:TRIGger:OUT:SOURce? {D0|D1|D2|D3},

Function: Query the controlled source of output mode trigger.

Description: D0|D1|D2|D3: Select output IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

Return: {CH1|CH2|CH3|SER|PARA}.

CH1: CH1: Channel 1; CH2: Channel 2; CH3: Channel 3; SER: Serial channel; PARA: Parallel channel.

For Example: :TRIGger:OUT:SOURce? D0 Query the controlled source of IO1.

Return: CH1

Return result: CH1 is the controlled source of IO1.

:TRIGger:OUT:CONDition {D0|D1|D2|D3},{AUTO|OUTOFF|OUTON|>V|<V|=V|>C|<C|=C|>P|<P|=P][,<value>]

Function: Set the trigger condition of output mode trigger, when the controlled source is meet thr trigger condition, IO will output the response signal by the setting output signal.

Description: D0|D1|D2|D3: Select output IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

AUTO: Automatic trigger, the instrument can always generate the trigger condition at this time; it cannot have parameter with<value>;

OUTOFF: It will generate the trigger condition when the controlled source turn off the ouput; It cannot have parameter with<value>;

OUTON: It will generate the trigger condition when the controlled source turn on the ouput; It cannot have parameter with<value>;

>V: It will generate the trigger condition when the voltage of the controller source is greater than the judgement value; The parameter <value> cannot be **omitted**;

<V: It will generate the trigger condition when the voltage of the controller source is less than the judgement value; The parameter <value> cannot be **omitted**;

=V: It will generate the trigger condition when the voltage of the controller source is equal to the judgement value; The parameter <value> cannot be **omitted**;

>C: It will generate the trigger condition when the current of the controller source is greater than the judgement value; The parameter <value> cannot be **omitted**;

<C: It will generate the trigger condition when the current of the controller source is greater than the judgement value; The parameter <value> cannot be **omitted**;

=C: It will generate the trigger condition when the current of the controller source is equal to the judgement value; The parameter <value> cannot be **omitted**;

>P: It will generate the trigger condition when the power of the controller source is greater than the judgement value; The parameter <value> cannot be **omitted**;

<P: It will generate the trigger condition when the power of the controller source is less than the judgement value; The parameter <value> cannot be **omitted**;

=P: It will generate the trigger condition when the power of the controller source is equal to the judgement value; The parameter <value> cannot be **omitted**.

For Example: :TRIGger:OUT:CONDition D0,>V,30.00 Set the trigger condition of IO1 to the voltage is greater than 30.00 volts.

:TRIGger:OUT:CONDition {D0|D1|D2|D3}

Function: Query the trigger condition of output mode trigger.

Description: D0|D1|D2|D3: Select output IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

Return: "{AUTO|OUTOFF|OUTON|>V|<V|=V|>C|<C|=C|>P|<P|=P} [,<value>]".

Return "AUTO|OUTOFF|OUTON", it cannot have parameter with <value>;

Return ">V|<V|=V|>C|<C|=C|>P|<P|=P", it have parameter <value>.

For Example: :TRIGger:OUT:CONDition? D0 Query the output trigger condition of IO1.

Return: >V,30.00 Return result: trigger condition is voltage is greater than 30.00 volts.

:TRIGger:OUT:POLArity {D0|D1|D2|D3},{POSItive|NEGAtive}

Function: Set the output signal polarity for output trigger .

Description: D0|D1|D2|D3: Select trigger IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

POSItive: Output positive signal;

NEGAtive: Output negative signa;

For Example: :TRIGger:OUT:POLArity D0, POSItive Set the output signal of IO1 to positive.

:TRIGger:OUT:POLArity? {D0|D1|D2|D3}

Function: Query the output signal polarity for output trigger .

Description: D0|D1|D2|D3: Select trigger IO, D0-IO1, D1-IO2, D2-IO3, D3-IO4.

Return: "{POSITIVE|NEGATIVE}".

POSitive: Output positive signal;

NEGAtive: Output negative signa;

For Example: :TRIGger:OUT:POLARity? D0

Query the output signal polarity of IO1.

Return: POSITIVE

Return result: The output signal polarity of IO1 is positive.

11. SYSTEM

:SYSTEM:BEEPer[:STATe] {0|1|OFF|ON}

Function: Turn on/off beeper sound.

For Example: :SYSTEM:BEEPer:STATe OFF Turn off beeper sound.

:SYSTEM:BEEPer[:STATe]?

Function: Query the switch status of beeper sound.

Description: It returns "{ON|OFF}".

For Example: :SYSTEM:BEEPer:STATe? Query the switch status of beeper sound.

Return: OFF

Return result: Beeper sound is turned off.

:SYSTEM:COMMunicate:LAN:APPLy

Function: Apply the internet parameter that has been setup.

Description: Use ":SYSTEM:COMMunicate:LAN:xxxx"(xxxx represents the setting command of other internet in LAN) After the command is to set the network parameters, they are not immediately available and are not stored in the device's non-volatile memory, it must execute ":SYSTEM:COMMunicate:LAN:APPLy" to valid the parameter and make it stored forever. It can execute multiple commands, after multiple parameters are modified, and common to perform a command ": SYSTEM: COMMunicate: LAN: APPLy".

For Example: :SYSTEM:COMMunicate:LAN:DHCP:STATe ON Turn on DHCP function.

:SYSTEM:COMMunicate:LAN:APPLy

Apply the parameter that has been setup.

:SYSTEM:COMMunicate:LAN:DHCP[:STATe] {0|1|OFF|ON}

Function: Turn on/off DHCP function of the internet.

Description: After the command is to set the network parameters, they are not immediately available and are not stored in the device's non-volatile memory, it must execut ":SYSTEM:COMMunicate:LAN:APPLy" to valid the parameter and make it stored forever. It can execute multiple commands, after multiple parameters are modified, and common to perform a command ":SYSTEM:COMMunicate:LAN:APPLy".

For Example: :SYSTEM:COMMunicate:LAN:DHCP:STATe ON Turn on DHCP function.

:SYSTEM:COMMunicate:LAN:APPLy

Apply the parameter that has been setup.

:SYSTEM:COMMunicate:LAN:DHCP[:STATe]?

Function: Query the switch status of DHCP function of the internet.

Description: After the internet parameter is setup and before perform

command":SYSTem:COMMunicate:LAN:APPLY" use this command to query the result is temporary parameters. The response is the parameter data that is the used of command ":SYSTem:COMMunicate:LAN:APPLY". Otherwise, the result of the query using this command is the parameter used by the running device.

It returns "{ON|OFF}".

For Example: :SYSTem:COMMunicate:LAN:DHCP:STATe?

Return: ON

:SYSTem:COMMunicate:LAN:IPADdress "x.x.x.x"

Function: Set the internet IP address of the device.

Description: After the command is to set the network parameters, they are not immediately available and are not stored in the device's non-volatile memory, it must execut":SYSTem:COMMunicate:LAN:APPLY" to valid the parameter and make it stored forever. It can execute multiple commands, after multiple parameters are modified, and common to perform a command ":SYSTem:COMMunicate:LAN:APPLY".

For Example: :SYSTem:COMMunicate:LAN:IPADdress "192.168.10.142" Set IP to 192.168.10.142.

:SYSTem:COMMunicate:LAN:APPLY Apply the parameter that has been setup.

:SYSTem:COMMunicate:LAN:IPADdress?

Function: Query the internet IP address of the device.

Description: After the internet parameter is setup and before perform command":SYSTem:COMMunicate:LAN:APPLY" use this command to query the result is temporary parameters. The response is the parameter data that is the used of command ":SYSTem:COMMunicate:LAN:APPLY". Otherwise, the result of the query using this command is the parameter used by the running device.

It returns: "192.168.10.142".

For Example: :SYSTem:COMMunicate:LAN:IPADdress?

Return: "192.168.10.142"

:SYSTem:COMMunicate:LAN:SMASK "x.x.x.x"

Function: Set the internet subnet mask of the device.

Description: After the command is to set the network parameters, they are not immediately available and are not stored in the device's non-volatile memory, it must execut":SYSTem:COMMunicate:LAN:APPLY" to valid the parameter and make it stored forever. It can execute multiple commands, after multiple parameters are modified, and common to perform a command ":SYSTem:COMMunicate:LAN:APPLY".

For Example: :SYSTem:COMMunicate:LAN:SMASK "255.255.255.0" Set subnet mask to 255.255.255.0.

:SYSTem:COMMunicate:LAN:APPLY Apply the parameter that has been setup.

:SYSTem:COMMunicate:LAN:SMASK?

Function: Query the internet subnet mask of the device.

Description: After the internet parameter is setup and before perform

command":SYSTem:COMMunicate:LAN:APPLY" use this command to query the result is temporary parameters. The response is the parameter data that is the used of command

":SYSTem:COMMunicate:LAN:APPLY". Otherwise, the result of the query using this command is the parameter used by the running device.

It returns: "255.255.255.0".

For Example: :SYSTem:COMMunicate:LAN:SMASK?

Return: "255.255.255.0"

:SYSTem:COMMunicate:LAN:GATEway "x.x.x.x"

Function: Set the internet gateway of the device.

Description: After the command is to set the network parameters, they are not immediately available and are

not stored in the device's non-volatile memory, it must execut":SYSTem:COMMunicate:LAN:APPLY" to

valid the parameter and make it stored forever. It can execute multiple commands, after multiple

parameters are modified, and common to perform a command ":SYSTem:COMMunicate:LAN:APPLY".

For Example: :SYSTem:COMMunicate:LAN:GATEway "192.168.10.1" Set the internet gateway to 192.168.10.1.

:SYSTem:COMMunicate:LAN:APPLY

Apply the parameter that has

been setup.

:SYSTem:COMMunicate:LAN:GATEway?

Function: Query the internet gateway of the device.

Description: After the internet parameter is setup and before perform

command":SYSTem:COMMunicate:LAN:APPLY" use this command to query the result is temporary parameters. The response is the parameter data that is the used of command

":SYSTem:COMMunicate:LAN:APPLY". Otherwise, the result of the query using this command is the parameter used by the running device.

It returns: "192.168.10.1".

For Example: :SYSTem:COMMunicate:LAN:GATEway?

Return: "192.168.10.1"

:SYSTem:COMMunicate:RS232:BAUD {4800|7200|9600|14400|19200|38400|57600|115200|128000}

Function: Set the baud rate of RS232 interface.

For Example: :SYSTem:COMMunicate:RS232:BAUD 9600 Set the baud rate of RS232 interface to 9600.

:SYSTem:COMMunicate:RS232:BAUD?

Function: Query the baud rate of RS232 interface.

Description: It returns"{4800|7200|9600|14400|19200|38400|57600|115200|128000}"

For Example: :SYSTem:COMMunicate:RS232:BAUD? Query the baud rate of RS232 interface is 9600.

Return: 9600

Return result: baud rate is 9600.

:SYSTEM:BRiGhtness <value>

Function: Set the backlight brightness of LCD.

Description: value, Integer numerical value, range 1 to 100.

For Example: :SYSTEM:BRiGhtness 80 Set the backlight brightness of LCD to 80%.

:SYSTEM:BRiGhtness?

Function: Query the backlight brightness of LCD.

Description: It returns < value >, Integer numerical value, range 1 to 100.

For Example: :SYSTEM:BRiGhtness? Query the backlight brightness of LCD.

Return: 80 Return result: the backlight brightness of LCD is 80%.

:SYSTEM:LOCK {0|1|OFF|ON}

Function: Turn on/off key lock. Long press "LOCK" to unlock the key.

Description: When the key is locked, "ON/OFF" key of keypad is still valid.

For Example: :SYSTEM:LOCK Lock the keypad.

:SYSTEM:LOCK?

Function: Query the status of the key lock.

Description: It returns "{ON|OFF}".

For Example: :SYSTEM:LOCK? Query the status of the key lock.

Return: OFF Return result: the keypad is not lock.

:SYSTEM:KLOCK:STATe [0|1|OFF|ON]

:SYSTEM:RWLock[:STATe] [0|1|OFF|ON]

Function: Turn on/off remote lock. If the keypad is locked, it can only unlock by the remote command or restart the device.

Description: If the parameter is ignored, the key is locked by default. When the key is locked, "ON/OFF" key of keypad is still valid.

For Example: :SYSTEM:KLOCK:STAT ON Remote lock

:SYSTEM:RWLock Remote lock

:SYSTEM:KLOCK:STATe?

:SYSTEM:RWLock[:STATe]?

Function: Query the status of remote lock.

Description: It returns "{ON|OFF}".

For Example: :SYSTEM:KLOCK:STAT? Query the status of remote lock.

Return: OFF Return result: remote lock is not enabled.