

ADT850Commands Set

1 Commands Instruction

(1) Each function command is divided into two parts: mnemonic and parameter, and the mnemonic and parameter are separated by spaces;

For example, the MEASure[:SCALar]:CH? <value> command, MEASure[:SCALar]:CH? is a mnemonic, and <value> indicates the parameter to be input, which needs to be separated by spaces. If users use this command to get the current measurement value, they can input MEASure:CH? PV

(2) About mnemonic

- [] in mnemonic means optional, not input is ok

For example, MEASure[:SCALar]:AElectricity? There are two kinds of actual input: MEASure:SCALar:AElectricity? or MEASure:AElectricity?

- (num1:num2) in the mnemonic indicates the range of serial numbers, which need to be replaced with real numbers during actual input

For example, SENSE:ELECtricity:TCCHannel(1:4)? If users need to get the configuration of the first TC channel, need to enter SENSE:ELECtricity:TCCHannel1?

(3) About parameters

Each parameter in the commands set is identified by <> (do not enter angle brackets when converting to actual instructions), and separated by commas.

(4) End character

The SCPI command must be accompanied by a command end character, which can be one of the end characters (excluding double quotes): "\r\n", "\r", "\n" or "\0".

1.1 IEEE488.2 common commands

NO.	Command	Explanation	Parameters	Returning values
1	*CLS	This command eliminates the following registers Register of standard event Register of searching event Register of operating event Register of status byte Error queue	-	-
2	*IDN?	To search instrument identifies, the returned data is divided into 2 parts a. product sequence number b. software version number	-	product sequence number and software version number
3	*RST	main program reset	-	-

1.2 Output Commands

NO.	Command	Explanation	Parameters	Returning values
1	MEASure[:SCALar][:TEMPerature#(1:2)]?	Get current status and data of control panel	None	10 values by default 1actual temperature 2target value 3units 4control status 5stable or not 6Measurement configuration

NO.	Command	Explanation	Parameters	Returning values
				7Whether the target value is reached 8key value 9 Knob position 10 heating power When using the additional number suffix 2, 13 additional values are returned: 11ambient temperature 12Middle original temperature 4EXT original temperature 5Left original temperature 6 Right original temperature 7 M cold junction temperature 8 EXT cold junction temperature 9 L cold junction temperature 10 R cold junction temperature 11 M mV value 12 EXT mV value 13 L mV value 14 R mV value ...
1	[SOURce:]TEMPerature:STATus:MEASur e	Set to enter the measurement state	None	None
2	[SOURce:]TEMPerature:STATus:CONTrol <TargetTemperature>,<unitId>[<slewType >,<SlewRate>]	Set to enter control state	4values TargetTemperature: target temperature unitId temperature unit Id	None

NO.	Command	Explanation	Parameters	Returning values
			[slewType: rate type, 0 means percentage (0~100), 1 means absolute value (unit temperature per minute) SlewRate: temperaturecontrol rate,] can be omitted , if omitted, it will default to the current setting temperature control speed	
3	[SOURce:]TEMPerature:STATus?	Read the temperature control state	None	1 value: Measure=0 (Automatic) Control Control=1 Semi-automatic control SemiAutoControl=2 Manual control Manual=3 Maintenance mode Maintenance=4
4	[SOURce:]TEMPerature:TARGet<target_Temperature>,<unitId>	Set target temperature (automatic control)	2 values target_Temperature target temperature unitId temperature unit id	None
5	[SOURce:]TEMPerature:TARGet?	Read target temperature	None	2 values,Comma separated: Current target temperature, Current temperature unit Id
6	[SOURce:]TEMPerature:OPTions?	Read control settings	None	10 values, separated by commas Current temperature unit Id, Volatility, Stable residence time ((1~600) minutes) Allowable deviation of target value, Percentage of temperature control rate

NO.	Command	Explanation	Parameters	Returning values
				<p>Absolute value of temperature control rate, Whether to enable set point limit 1 0 Set point limit lower limit, Set point limit upper limit, Temperature control configuration,</p> <p>The temperature control configuration: Internal temperature control=0 inserts = 1</p>
7	[SOURce:]TEMPerature:OPTions<unitId>,<stability>,<DwellMinutes>,<TargetTolerance>,<slewType>,<SlewRate>,<IsEnableLimits>,<LimitsLower>,<LimitsUpper>,<ControlConfig>[,<controlConfig>]	Set temperature control settings	<p>11 values 1 unitId temperature unit Id 2 stability volatility, 3 DwellMinutes stable residence time, 4 Allowable deviation of TargetTolerance target value, 5 slewType rate type, 0 means percentage (0~100), 1 means absolute value (temperature unit per minute) 6 SlewRate temperature control rate 7 IsEnableLimits whether to enable the set point limit, 8 LimitsLower limit lower limit, 9 LimitsUpper limit upper limit, 10 ControlConfig temperature control type</p>	None

NO.	Command	Explanation	Parameters	Returning values
			(0=internal temperature control, 1=external temperature control)	
8	[SOURce:]TEMPerature:STABility <sta>,<unitId>	Set volatility of temperature control	2values Sta temperature volatility unitId temperature Id	None
9	[SOURce:]TEMPerature:STABility?	Get temperature control volatility	None	2 values, separated by commas: Temperature control fluctuation, Temperature unit Id
10	[SOURce:]TEMPerature:STABility:LIMit?	Read volatility range of temperature control	None	3 values, separated by commas: Lower limit of volatility, Upper limit of volatility, Temperature unit Id, the unit is fixed in degrees Celsius
11	[SOURce:]TEMPerature:DWELLminutes?	Read stabilization time of control temperature	None	None
12	[SOURce:]TEMPerature:DWELLminutes <Numeric>	Set the control temperature stabilization time	None	None
13	[SOURce:]TEMPerature:TARTolerance?	Read allowable variation of target value	None	2 values, separated by commas: The target value allowable deviation, Temperature Unit ID
14	[SOURce:]TEMPerature:TARTolerance <tTolerance>,< unitId >	Set allowable variation of target value	2 values, separated by commas: The target value allowable deviation, Temperature Unit ID	None
15	[SOURce:]TEMPerature:TARTolerance:LI	Read allowable variation range	None	3 values, separated by commas:

NO.	Command	Explanation	Parameters	Returning values
	Mit?	of target value		The lower limit of allowable deviation of the target value, Upper limit Temperature unit Id, fixed at Celsius
16	[SOURce:]TEMPerature:SLEW <slew>,<unitId >	Set temperature control rate	2 values Slew control temperature rate, temperature per minute Unitid temperature unit ID	None
17	[SOURce:]TEMPerature:SLEW?	Read temperature control rate	None	2 values, separated by commas Temperature control rate, temperature per minute Temperature unit Id, fixed at Celsius
18	[SOURce:]TEMPerature:PERslew<slew>	Set temperature rate	1value slew temperature control rate(percentage 0~100)	None
19	[SOURce:]TEMPerature:PERslew?	Read temperature control rate	None	2 values, separated by commas Temperature control rate (percentage 0~100), Temperature Unit ID
20	[SOURce:]TEMPerature:SLEW:LIMit?	Read the upper and lower limits of temperature control rate (absolute value, °C/	None	3 values, separated by commas: Lower limit of temperature control rate, Upper limit,

NO.	Command	Explanation	Parameters	Returning values
		minute)		Temperature unit Id, fixed at Celsius
21	[SOURce:]TEMPerature:SLEW:PERLimit?	Read the upper and lower limits of temperature control rate percentage	None	2 values, separated by commas Temperature control rate percentage lower limit, fixed at 0 Percentage upper limit fixed at 100
22	[SOURce:]TEMPerature:SETPoints:LIMit?	Read the upper and lower limits which can be set	None	3 values, separated by commas: Temperature control set point lower limit, Temperature control set point upper limit, Current unit ID
23	[SOURce:]TEMPerature:CLIMit?	Read the upper and lower limits of temperature control ability	None	3 values, separated by commas: Lower limit of temperature control capacity, Upper limit of temperature control capacity, Current unit ID
24	[SOURce:]TEMPerature:SLIMit?	Read the upper and lower limits of temperature control Settings	None	4 values, separated by commas: Whether to enable upper and lower limit control, Lower limit of temperature control, upper limit, Current unit ID
25	[SOURce:]TEMPerature:SLIMit <IsEnable>,<lower>,<upper>	Set temperature control upper and lower limit which can be set	3 values, fixed in degrees Celsius Enable the setting of upper and lower limit 0= Off 1= Enable, The lower The upper	None

NO.	Command	Explanation	Parameters	Returning values
26	[SOURce:]TEMPerature:CONFig?	Obtain the operating state of temperature control	None	1value 0 =internal temperature control 1 = insert
27	[SOURce:]TEMPerature:CONFig <config>	Set the operating state of temperature control	1value Config operating state: 0=internal temperature control 1=insert	None
28	[SOURce:]TEMPerature:Resolution?	Query the current display number of temperature control	None	Display precision
29	[SOURce:]TEMPerature:Resolution <Numeric>	Sets the current display number of control temperature	1 value Display precision	None
30	[SOURce:]TEMPerature:CONTRol:MODE?	Reads the currently active control mode	1value	Return value 1: The serial number corresponding to the control mode: 0, noble metal long furnace + clean tube 1. base metal long furnace + empty chamber 2. base metal long furnace + porous 3. base metal long furnace + empty cup 4. noble metal short furnace + clean tube 5. base metal short furnace + empty chamber 6. base metal short furnace + porous 7, base metal short furnace + empty cup 8. Long annealing furnace

NO.	Command	Explanation	Parameters	Returning values
				Return value 2: Corresponding ruler
31	[SOURce:]TEMPerature:CONTRol:MODE <Numeric>	Set control mode	control mode	None
32	[SOURce:]TEMPerature:CONTRol:MODE: POSItion<Numeric>,<Numeric>	Set control mode parameters and switchable	Parameter 1, the parameter corresponding to the control mode, Parameter 2. Corresponding ruler position, unit mm. (greater than 0 integer)	
33	[SOURce:]TEMPerature:CONTRol:MODE: POSItion?<Numeric>	Read the parameters associated with the control mode	Parameter 1, the parameter corresponding to the control mode, 0, noble metal long furnace + clean tube 1. base metal long furnace + empty chamber 2. base metal long furnace + porous 3. base metal long furnace + empty cup 4. noble metal short furnace + clean tube 5. base metal short furnace + empty chamber 6. base metal short furnace + porous 7, base metal short furnace + empty cup 8. Long annealing furnace	Corresponding ruler position, in mm.(integer greater than 0)
34	[SOURce:]TEMPerature:ACParams?	Again grid frequency	None	Grid frequency :50Hz, 60Hz
	[SOURce:]TEMPerature:ACParams <Numeric>	Set Grid Frequency	Grid frequency; 50 60	None
	[SOURce:]TEMPerature:TCS:RAW?	Get the original Tc	None	1. Original value of TC on the left side

NO.	Command	Explanation	Parameters	Returning values
		temperature		2. The original value of intermediate TC 3. Original value of TC on the right 4. Original value of external TC
	[SOURce:]TEMPerature:STEP:POINT?	Gets a list of step points	None	N step points, each step point returns the step point ID, step point value, step point unit ID, and step point stabilization time. Separated by commas, separated by semicolons between step points
	[SOURce:]TEMPerature:STEP:POINTt <QuoteStr>	Set the step point	String with quotation marks, N step points, each step point returns step point ID, step point value, step point unit ID, step point stability time. Comma separated, step separated by semicolon	None
	DIAGnostic:DTM:Version? 1 2	Read DTM version	Parameter1 : 1- DTM-LEFT 2- DTM-Right	Returns the firmware version of the DTM
	TEMPerature:SETPoint:CUToff?	Read the set point soft shutdown information	None	1, 0 1 soft shutdown open close 2. Set the soft shutdown deviation value of the fixed point
	TEMPerature:SETPoint:CUToff 0 1,<Numeric>	Facility set point soft shutdown information	1, 0 1 soft shutdown open close 2. Setting point soft shutdown deviation value	None

1.3 Calibration Commands

NO.	Command	Explanation	Parameters	Returning values
1	CALibration:CONTroller:DATA:INDication:INCRement ManufacTOR User,<UnquoStr>,<Numeric>,<Numeric>,<QuoteStr>,<QuoteStr>,<Numeric>,<Numeric>,<Numeric>	Write calibration data of indicating value, incremental	1. Manufacturer User 2. Factory Password User Password 3. Temperature field mode 4. Number of calibration points 5. List of standard values 6. List of calibration values 7. years 8, month 9, day	None
2	CALibration:CONTroller:DATA:FIELD:LOCAtion? <Numeric>	Obtain temperature field calibration position	Temperature field mode	Temperature field model Location point 1 Location point 2 Location point 3
3	CALibration:CONTroller:DATA:FIELD? ManufacTOR User,<UnquoStr>,<Numeric>	Read temperature field calibration data	1, the factory users 2. Manufacturer password or user password 3. Temperature field mode	1. Temperature field mode 2. Number of calibration points 3. List of calibration points 4, TIL list 5. TIM list 6. TIR list 7. year 8, month 9. day

NO.	Command	Explanation	Parameters	Returning values
	eStr>,<QuoteStr>,<QuoteStr>,<Numeric>,<Numeric>,<Numeric>		3. Temperature field mode 4. Number of calibration points 5. List of standard values 6. TIL list 7. TIM list 8. TIR list 9. Tair list (ambient temperature) 10. Year 11, month 12, day	
6	CALibration:CONTroller:TCPParams:Data <Numeric>,<Numeric>,<Numeric>,<QuoteStr>,<QuoteStr>,<Numeric>,<Numeric>,<Numeric>,<UnquoStr>	Write calibration data for temperature control thermocouple Explain that the auxiliary temperature control couple can only change the type of the couple, and the calibration data should be written as 0 at the same time.	Item code of temperature control couple (same parameter) The couple type of temperature control (0-s,3-k,4-n) Number of calibration points List of standard values, N Calibration value list N year month	None

NO.	Command	Explanation	Parameters	Returning values
			day SN (string)	
7	CALibration:CONTroller:TCParams:Data?1 2 3 4"	Read calibration data of temperature control couple	1、 temperature control couple Left 2、 temperature control couple Middle 3、 temperature control couple Right 4、 auxiliary temperature control couple Ext	Item code of temperature control couple (same parameter) The type of temperature control couple Number of calibration points List of standard values, N Calibration value list N year month day SN (string)
8	CALibration:CONTroller:DTM:DATA? Manufacor User,0 1,<UnquoStr>,<Numeric>	Read mV and cold end calibration of DTM	1. Manufacturer/User 2. The password corresponding to the manufacturer or user 3. 0 DTM_LEFT, 1 DTM-Right 4. Calibration item code (6-TC1, 7-TC2, 8-TC1_Cold, 9-TC2_Cold)	Number of calibration points Standard value list Calibration value list year month day
9	CALibration:CONTroller:DTM:DATA Manufacor User,<UnquoStr>,0 1,<Numeric>,<Numeric>,<QuoteStr>,<QuoteStr>,<N	Write mV and cold end calibration of DTM	Manufacturer/User The password corresponding to the manufacturer or user	None

NO.	Command	Explanation	Parameters	Returning values
	umeric>,<Numeric>,<Numeric>		0 DTM_LEFT, 1 DTM-Right Calibration item code (6, 7, 8, 9) Number of calibration points Standard value list Calibration value list year month day	
10	CALibration:CONTroller:DATA:FIELD:COPY Manufacturer User,<UnquoStr>,0 4,<Numeric>	Temperature field calibration data mapping. Description. Temperature field mode: 0- Long furnace empty chamber 1- Long furnace empty cup 2- Long furnace porous 3- Long furnace cleaning tube 4- Short furnace empty chamber 5- Short furnace empty cup 6- Short furnace porous 7- Short furnace cleaning tube 8- Annealing furnace	Parameter 1: Manufacturer User Parameter 2: Factory password User password Parameter 3: Mapping source (0 or 4) Parameter 4: Mapping target (when the source is 0, the mapping target can be 1, 2, 3, 4, 8; when the source is 4, the mapping target can be 5, 6, 7)	None

1.4 System Commands

NO.	Command	Explanation	Parameters	Returning values
1	SYSTem:VERSion? [<module>]	Query the version numbers of different modules according to the parameters. If this parameter is ignored, the SCPI version number followed by the system will be returned.	“APPLication”: software version No. of main program “CONTroller:FIRMware”: firmwareVersion No.of controller; “CONTroller:HARDware”: hardwire version No. of controller ;	Version No.
2	SYSTem:ERRor[:NEXT]?	Query the next error item in the error queue and delete the item from the queue. The error queue can store 50 error messages. If it exceeds 50, use -350, "Queue overflow" instead of the last one. System power off or *CLS command can clear the error queue.	None	Wrong information
3	SYSTem:DATE<year>,<month>,<day>	set system data	year: year month:month day :day	None
4	SYSTem:DATE?	search system data	-	year, month, day
5	SYSTem:TIME<hour>,<minute>,<second>	set system time	hour: hour minute:minute second:second	None
6	SYSTem:TIME?	Read system time		
7	SYSTem:KLOCK<Boolean> ON OFF	Set the local lock status of the system, only lock the function operation of the panel	1, ON:system locked; 0, OFF: system unlocked.	None

NO.	Command	Explanation	Parameters	Returning values
8	SYSTem:KLOCK?	Query the local locking status of the system	None	1:lock 0:unlock
9	SYSTem:BEEPer:ALARm <Boolean> ON OFF	Sets the state of the prompt tone	Enable or nor	None
10	SYSTem:BEEPer:TOUCh <Boolean> ON OFF	Set key tone state	Open or not	None
11	SYSTem:COMMunicate:SOCKet:WLAN[:STA Te] <Boolean> ON OFF	Set WIFI status Note: After turning on the WIFI, the serial port of the controller will be closed. During the period from turning on WIFI to establishing WIFI connection, communication with the controller can only be done via Ethernet.	1, ON:openWIFI; 0, OFF: closeWIFI	None
12	SYSTem:COMMunicate:SOCKet:WLAN[:STA Te]?	Query WIFI state	None	1: WIFI open; 0: WIFI close
13	SYSTem:COMMunicate:SOCKet:WLAN:ADD Ress<IP address>	Set WIFI IP address Before setting the WIFI DHCP, IP, subnet mask and gateway, you should confirm that the WIFI module is turned on and not connected to any hotspots	IP address: string without quotation marks , the format is <NR1>.<NR1>.<NR1>.<NR1>	None
14	SYSTem:COMMunicate:SOCKet:WLAN:ADD Ress?	Query the IP address of WIFI	None	IPAddress
15	SYSTem:COMMunicate:SOCKet:WLAN:MAS	Set the WIFI subnet mask	IP address: string without quotation marks ,	None

NO.	Command	Explanation	Parameters	Returning values
	K <IP address>	Before setting the WIFI DHCP, IP, subnet mask and gateway, you should confirm that the WIFI module is turned on and not connected to any hotspots	the format is <NR1>.<NR1>.<NR1>.<NR1>	
16	SYSTem:COMMunicate:SOCKet:WLAN:MASK?	Query subnet mask of WIFI	None	IPAddress
17	SYSTem:COMMunicate:SOCKet:WLAN:GATEway <IPAddress>	Set WIFI gateway Before setting the WIFI DHCP, IP, subnet mask and gateway, you should confirm that the WIFI module is turned on and not connected to any hotspots	IP address: string without quotation marks , the format is <NR1>.<NR1>.<NR1>.<NR1>	None
18	SYSTem:COMMunicate:SOCKet:WLAN:GATEway?	Query WIFI gateway	None	IPAddress
19	SYSTem:COMMunicate:SOCKet:WLAN:MAC?	Query WIFI physical address	None	physical address
20	SYSTem:COMMunicate:SOCKet:WLAN:DHCP[STATE] <Boolean> OFF ON	Set WIFIDHCP status, Before setting the WIFI DHCP, IP, subnet mask and gateway, you should confirm that the WIFI module is turned on and not connected to any hotspots	1=ON:openDHCP; 0=OFF:closeDHCP	None
21	SYSTem:COMMunicate:SOCKet:WLAN:DHCP[STATE]?	Query state of WIFI DHCP	None	1: DHCPopen; 0: DHCPclose
22	SYSTem:COMMunicate:SOCKet:WLAN:SSID	If the parameter is ALL, the search is	None	{["ssid: encryption way"]}

NO.	Command	Explanation	Parameters	Returning values
	D? [ALL]	performed and all the searched SSID names and encryption methods are returned. If the parameter is omitted, the SSID name and encryption method of the current connection will be returned. If there is no connection or no hotspot is searched, it will return ""		
23	SYSTem:COMMunicate:SOCKet:WLAN:CON Nect <"ssid">,<"encryptionMode">[,<"password">]	Connect WiFi to the specified hotspot	1)"ssid": hotspot name,character string with quotation; 2) "encryptionMode": way of encryption, WEP_OFF, WEP_ON, WEP_AUTO, WPA_PSK, WPA_TKIP, WPA2_PSK, WPA2_AES, CCKM_TKIP, WEP_CKIP, WEP_AUTO_CKIP, CCKM_AES, WPA_PSK_AES, WPA_AES, WPA2_PSK_TKIP, WPA2_TKIP, WAPI_PSK, WAPI_CERT; 3) "password":password, character string with quotation	None
24	SYSTem:COMMunicate:SOCKet:WLAN:CON Nect?	Query WIFI connection state	None	Successfully, Initialization, SSIDNotFound SSIDNotConfigured, JoinFaile

NO.	Command	Explanation	Parameters	Returning values
				ScanningConfiguredSSID WaitingIPConfiguration ModuleJoinedListeningSockets
25	SYSTem:COMMunicate:SOCKet:WLAN:DIS Connect	Disconnect WiFi connection	None	None
26	SYSTem:COMMunicate:SOCKet:WLAN:DBM ?	Query signal intensity dBm value of WIFI	None	DBM value, Unit is dBm
27	SYSTem:COMMunicate:SOCKet:ETHernet:D HCP?	Obtain the Ethernet DHCP status	None	1=DHCP, 0=static state
28	SYSTem:COMMunicate:SOCKet:ETHernet:D HCP <enable>	Set the Ethernet DHCP status	Enable or nor,enable, 1=ON=openable, 0=OFF=close	None
29	SYSTem:COMMunicate:SOCKet:ETHernet:A DDress?	Obtain the Ethernet IP address	None	IP address
30	SYSTem:COMMunicate:SOCKet:ETHernet:A DDress <ip>	Set the static Ethernet IP address	Ip address	None
31	SYSTem:COMMunicate:SOCKet:ETHernet:M ASK?	Obtain the Ethernet subnet mask	None	Subnet mask
32	SYSTem:COMMunicate:SOCKet:ETHernet:M ASK <mask>	Sets the Ethernet subnet mask in static state	masksubnet mask	None
33	SYSTem:COMMunicate:SOCKet:ETHernet:G ATeway?	Obtaining Ethernet Gateway	None	Gateway
34	SYSTem:COMMunicate:SOCKet:ETHernet:G ATeway <gateway>	Set up the Ethernet gateway in static state	gateway	None

NO.	Command	Explanation	Parameters	Returning values
35	SYSTem:COMMunicate:SOCKet:ETHerNet:P HYSicaladdress?	Read the Ethernet physical address	None	Physical address
36	SYSTem:PASSword:EDIT <oldPassword>,<newPassword>,<newPassw ordRepeat>	Edit user password	Three values, comma-separated, and the password is numeric only oldPassword/ super management password newPassword newPasswordRepeat	None
37	SYSTem:PASSword:ENABLE:TASK?	Query if task password protection is enabled	None	1 value Enable or not 1=Open, 0=close
38	SYSTem:PASSword:ENABLE:TASK <enable>	Set task password protection	1 value enable, 0 =close, 1 =open	None
39	SYSTem:PASSword:ENABLE:SENSor?	Query whether sensor library password protection is enabled	None	1 value Enable or not 1=Open, 0=close
40	SYSTem:PASSword:ENABLE:SENSor <enable>	Set sensor library password protection	1 value enable,0=close, 1=open	None
41	SYSTem:VOLume?	Read system volume	None	1value Percentage of System Volume (0~100)
42	SYSTem:VOLume <per>(question: setting 99, read 98)	Set system volume	1 value per, system volume percentage(0~100)	None

1.5 Display Commands

NO.	Command	Explanation	Parameters	Returning values
1.	DISPlay:BRIGhtness Percentage Value,<Numeric>	set brightness		
2.	DISPlay:BRIGhtness? Percentage Value	Query brightness		
3.	DISPlay:MESSAgebox <"Message">	Display dialog box	1value: Message content"Message"	None
4.	DISPlay:DECimals:CONTrol?	Obtain decimal digits of temperature control display	None	1 value: Decimal digits
5.	DISPlay:DECimals:CONTrol <decimal>	Set decimal digits of temperature control display	1value: Decimal digits decimal (0,3)	None
6.	DISPlay:HOME?	Query "on the main screen or not"	None	0 not on mian screen, 1 on mian screen
7.	DISPlay:HOME	From the current interface, return to the main interface (For the time being, only the system setting interface return is supported)	None	None
8.	DISPlay:THEMe?	Gets the current theme mode	None	1value: Theme name
9.	DISPlay:THEMe:ALLNames?	Obtain the names of all currently supported topics	None	Several values, separated by commas Topic Name 1, Topic Name 2...
10.	DISPlay:THEMe <themeName>	Set the system theme (effective after reboot)	1value support theme name	None

1.6 Unit Commands

NO.	Command	Explanation	Parameters	Returning values
1	UNIT:TEMPerature <unit_ID> <"unit_name">	Set temperature unit of current system	one value Unit: unit name or unit ID unit_name is the character string with quotation unit_ID is figure	None
2	UNIT:TEMPerature?	Obtain temperature unit of current system	None	2values, comma separated Name of temperature unit, temperature unit id

1.7 Sensor Commands

NO.	Command	Explanation	Parameters	Returning values
1	SENSor:COUNT? <SenorType>	Obtain the number of sensor	1 value Sensor Type SenorType:RTD SPRT CVD NTC NTC_SH2 SMART UUT	1value custom sensor RTD SPRT CVD NTC NTC_SH2 SMART UUT Number of sensors And UUT stands for all sensors
2	SENSor:CATalog? <SensorType>,<offset>,<count>	Obtain the information of sensor head	3 values Sensor Type SensorType: UUT SPRT RTD CVD NTC NTC_SH2 SMART,	A semicolon separates the different sensors: 5 values, separated by commas:

			Starting position offset, Count UUT refers to all sensors	Sensor id, name, SN, Types Whether it is Smart, 1=YES 0=NO
3	SENSor:INFormations? <id>	Obtain the information of single sensor	1value Sensor id	7 values, separated by commas: Sensor data class name, Sensor Id, Sensor name Sensor SN Is it Smart Base64 character data CRC16 check code
4	SENSor:SETSensorinfo:ADD <SensorType >,<"Info">	new constructed sensor	2 value Sensor type SensorType:RTD SPRT CVD NTC NTC_S H2 "Info" is the character data of Base64	None
5	SENSor:SETSensorinfo:UPDate <SensorType >,<"Info">	Modify sensor	2 value, sensor type SensorType:RTD SPRT CVD NTC NTC_S H2 "Info" is the character data of Base64	None
6	SENSor:Delete <ids>	Delete sensor	1 value,	None

			Sensor ids, Commas separate multiple	
7	SENSor:SEARCh? <"condition">	Search sensor	1 value, separated by commas: Sensor search condition "condition", Base64 character data	N+1 values, separated by commas: The total number of qualified sensors, Sensor 1 brief data, Base64 character data (the brief information includes id, name, type, minimum temperature, maximum temperature, calibration date, expiration date, SN, remarks, whether it is smart) CRC16 check code of sensor 1, Sensor N brief data, Base64 character data CRC16 check code of sensor N
8	SENSor:REF:AVailable?	Obtain online state of external connected sensor	None	3 values, separated by commas Whether the external sensor is online, 1=online, 0=offline Whether the external sensor is smart, 1=smart, 2=not smart Is it available, 1=available,

				0=unavailable
9	SENSor:REF[:SENSorinfo]?	Obtain information of external connected sensor	None	7 values, separated by commas: Sensor data class name, Sensor Id, Sensor name Sensor SN Is it Smart Base64 character data CRC16 check code
10	SENSor:REF[:SENSorinfo]:ORDinary <SensorType >,<"Info">	Design information of ORDinary external connected sensor, write in sensor bank and the external connected sensor works, the not-smart external connected sensor must be online	2 value SensorType:SPRT "Info" is the character data of Base64	None
11	SENSor:REF[:SENSorinfo]:SMART <SensorType >,<"Info">	Set the information of SMART external sensor, and the intelligent external sensor must be online	2 value SensorType:SPRT "Info" is the character data of Base64	None

Appendix 1: SCPI unit Id list

Unit Id	Unit
2000	text unit
32767	blank unit
1211	mA
1212	μ A
1209	A
1240	V
1241	mV
1281	Ω
1284	k Ω
1283	M Ω
1000	K
1001	°C
1002	°F

1003	°R
999	°Re
1005	°
1342	%
1133	kPa
1130	Pa
1131	GPa
1132	MPa
1134	mPa
1135	μPa
1136	hPa
1137	bar
1138	mbar
1139	torr
1140	atm

1141	psi
1142	psia
1143	psig
1144	gf/cm ²
1145	kgf/cm ²
1147	inH ₂ O@4°C
1148	inH ₂ O@68°F
1150	mmH ₂ O@4°C
1151	mmH ₂ O@20°C
1153	ftH ₂ O@4°C
1154	ftH ₂ O@68°F
1156	inHg@0°C
1158	mmHg@0°C
2001	mtorr
2002	lb/ft ²
2003	tsi

2004	psf
2005	inH ₂ O@60°F
2006	ftH ₂ O@60°F
2007	cmH ₂ O@4°C
2008	mH ₂ O@4°C
2009	cmHg@0°C
2010	mHg@0°C
2011	kgf/m ²

Appendix 2: Default industrial sensor

Sensor types	Sensor name(used in commands)
R400	400Ω/R400
R4k	4kΩ/R4k
Pt100-385	Pt100(385)

Pt10-385	Pt10(385)
Pt50-385	Pt50(385)
Pt200-385	Pt200(385)
Pt400-385	Pt400(385)
Pt1000-385	Pt1000(385)
Pt25-385	Pt25(385)
Pt100-3916	Pt100(3916)
Pt100-3926	Pt100(3926)
Pt100-391	Pt100(391)
Cu100-428	Cu100(428)
Cu50-428	Cu50(428)
Cu10-427	Cu10(427)
Ni100-617	Ni100(617)
Ni100-617	Ni100(618)
Ni120-672	Ni120(672)
Ni1000	Ni1000

TC-S	S
TC-R	R
TC-B	B
TC-K	K
TC-N	N
TC-E	E
TC-J	J
TC-T	T
TC-C	C
TC-D	D
TC-G	G
TC-L	L
TC-U	U
TC-LR	LR
TC-A	A
mV	mV

3 Error Definition

NO.	Error code	Description of error	explanation
1	0	No error	No error
Command error			
2	120	Commandparameter error	Commandparameter error
3	-108	Parameter not allowed	Parameter not allowed
4	-109	Missing parameter	Missing parameter
5	-110	Command header error	Command header error
6	-114	Header suffix out of range	Header suffix out of range
7	-123	Numeric overflow	Numeric overflow, The absolute value of the exponent of the number is greater than 43
8	-151	Invalid string data	Invalid string data, such as unmatched quote mark
9	-171	Invalid expression	Invalid expression, such as unmatched brackets
Execution error			
10	-200	Execution error	Execution error
11	-221	Settings conflict	Settings conflict
12	-222	Data out of range	Data out of range
13	-223	Too much data	Too much data
14	-224	Illegal parameter value	Illegal parameter value
15	-230	Data corrupt or stale	Invalid data, or the data is being read and no valid data has been obtained
16	-240	Hardware error	Hardware error
17	-256	File name not found	File name not found
18	-282	Illegal program name	Illegal program name
19	220	Measure error	Measure error
20	221	Failed to set measure function	Failed to set measure function

NO.	Error code	Description of error	explanation
21	222	Failed to read measure value	Failed to read measure value
22	223		
23	224		
24	240	Control error	Control error
25	241		
26	242		
27	243		
28	260	Calibration error	Calibration error
29	261	Calibration secured	Calibration secured, cannot perform calibration
30	262	Invalid calibration secure code	Invalid calibration secure code
31	263	Missing calibration value	This error occurs when current/voltage calibration, and the calibration value is set without setting the calibration point
32	264	Missing calibration data	This error occurs when calibration points are set continuously without setting calibration values
33	265	Failed to set calibration function	Failed to set calibration function
34	266	Calibration data is not enough	This error occurs when saving calibration data if the calibration data does not reach 3 points
35	271	Setion_name_not_found	Setionnamenotfound
36	272	Key_name_not_found	Keynamenotfound
37	291	Update secured	Update secured, cannot update
38	292	Invalid update secure code	Invalid update secure code
39	293	Not found the service pack	Not found the service pack
40	294	The service pack unavailable	The service pack unavailable

NO.	Error code	Description of error	explanation
41	295	AppUpdate not found	AppUpdate not found
Device error			
42	-310	System error	System error
43	-311	Memory error	Memory error
44	-350	Queue overflow	Queue overflow
45	-360	Communication error	Communication error
46	301	Internal module is not connected	Internal module is not connected
47	302	External module is not connected	External module is not connected
48	303	Supply module is not connected	Supply module is not connected
49	304	Vacuum module is not connected	Vacuum module is not connected
50	361	Open WLAN Failed	Open WLAN Failed
51	362	Set WLAN address mode failed	Set WLAN address mode failed
52	363	Set WLAN address failed	Set WLAN address failed
53	364	Communication port to WIFI module is not open	Communication port to WIFI module is not open
54	365	WLANisnotconnected	WLANisnotconnected

4 Status Report

4.1 Status byte register

The status byte register represents the information of other status registers. Its value is not locked. When an event register is cleared, the corresponding bit in the status byte register is also cleared. Its bits are defined as follows:

Bit	Decimal value	Defination	Explanation
0	1	Unused	Always in 0
1	2	Unused	Always in 0
2	4	Error queue	The error queue is not empty
3	8	Problem data	1 or more bits of the problem data register set to 1 (the corresponding bits of the enable register must be enabled)
4	16	Unused	Always in 0
5	32	Standard event	One or more bits of the standard event register are set to 1 (the corresponding bit of the enable register must be enabled)
6	64	service request	One or more bits other than this bit are set to 1 (the corresponding bit of the enable register must be enabled)
7	128	Operation status	One or more bits of the operation register are set to 1 (the corresponding bit of the enable register must be enabled)

Table4-1 Status byte register bit definition

4.2 Standard event register

The standard event register shows the following events: power-on, command syntax error, command execution error, self-test or calibration error, or an *OPC instruction has been executed. Its bits are defined as follows:

Bit	Decimal value	Defination	Explanation
0	1	Operation finished	*OPCAll instructions before the instruction have been executed
1	2	Unused	Always in 0

2	4	Unused	Always in 0
3	8	device error	Self-test, calibration or overload error
4	16	Execution error	An execution error occurred
5	32	Command error	A command syntax error has occurred
6	64	Unused	
7	128	Power on	A power-off operation has occurred

Table4-2standard event register bit defination

4.3 Problem data register

The problem data register provides information about measurement results, such as over-range conditions. Its bits are defined as follows:

Bit	Decimal value	Defination	Explanation
0	1	voltage overload	Voltage over range
1	2	current overload	Current over range
2	4	Unused	Always in 0
3	8	Unused	Always in 0
4	16	Unused	Always in 0
5	32	Unused	Always in 0
6	64	Unused	Always in 0
7	128	Unused	Always in 0
8	256	Unused	Always in 0
9	512	Voltage overload	Voltage over range
10	1024	Unused	Always in 0

11	2048	Unused	Always in 0
12	4096	Unused	Always in 0
13	8192	Unused	Always in 0
14	16384	Unused	Always in 0
15	32768	Unused	Always in 0

Table4-3 Problem data register definition

4.4 Operation status register

The operation status register provides information about the general operation of the device. Its bit is defined as follows:

Bit	Decimal value	Defination	Explanation
0	1	Unused	Always in 0
1	2	Unused	Always in 0
2	4	Unused	Always in 0
3	8	Unused	Always in 0
4	16	Measuring	The device is actively measuring the pressure
5	32	Unused	Always in 0
6	64	Unused	Always in 0
7	128	Unused	Always in 0
8	256	Unused	Always in 0
9	512	Unused	Always in 0
10	1024	Unused	Always in 0
11	2048	Unused	Always in 0
12	4096	Unused	Always in 0
13	8192	Unused	Always in 0

14	16384	Unused	Always in 0
15	32768	Unused	Always in 0

Table 4-4Operation status register bit defination