Hantek

HTM200 series

Multi-channel Temperature Recorder

Programming Manual

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1 Document Overview

This document is to guide users to quickly understand the front and rear panels, user interfaces, and basic operations of the HTM200 series products.

Tip:

The latest version of this manual can be downloaded at http://www.hantek.com

Software version

Software update may change or add product functions. Please visit Hantek website to obtain the latest version.

Document format conventions:

1 Button

Use icons to represent front panel buttons, for example, 

represents “Utility" button.

2 Menu

Use "Menu text (bold) + color (blue)" to represent a menu option. For example, **Serve** represents clicking "Serve" on the current operation interface to enter the function configuration menu of "Serve".

3 Operation step

Use the arrow ">" to indicate the next operation. For example, 

> Edit represents pressing the button 

before clicking **Edit**.

Document content conventions:

HTM200 series multi-channel temperature recorders include the following models. Unless otherwise specified, this document uses HTM208 as an example to introduce the series and basic operations.

Model	Channel	U disk	Bluetooth	SD card	4G (General)	4G (China)
HTM202B	2	Yes	No	No	No	No
HTM202C	2	Yes	Yes	Yes	No	No

Model	Channel	U disk	Bluetooth	SD card	4G (General)	4G (China)
HTM202D	2	Yes	Yes	Yes	Support	No
HTM202E	2	Yes	Yes	Yes	No	Support
HTM204B	4	Yes	No	No	No	No
HTM204C	4	Yes	Yes	Yes	No	No
HTM204D	4	Yes	Yes	Yes	Support	No
HTM204E	4	Yes	Yes	Yes	No	Support
HTM208B	8	Yes	No	No	No	No
HTM208C	8	Yes	Yes	Yes	No	No
HTM208D	8	Yes	Yes	Yes	Support	No
HTM208E	8	Yes	Yes	Yes	No	Support

Table1.1Model List

2 SCPI Command Overview

SCPI (Standard Commands for Programmable Instruments) is a standardized instrument programming language that is built upon the existing standard IEEE 488.1 and IEEE 488.2 and conforms to various standards, such as the floating point operation rule in IEEE 754 standard, ISO 646 7-bit coded character set for information interchange (equivalent to ASCII programming). The SCPI commands provide a hierarchical tree structure, and consist of multiple subsystems. Each command subsystem consists of one root keyword and one or more sub-keywords.

Syntax

The command line usually starts with a colon; the keywords are separated by colons, and following the keywords are the parameter settings available. The command ending with a quotation mark indicates querying a certain function and returns the query results. The keywords of the command and the first parameter are separated by a space.
For example:
:ACQuire:TYPE <type>
:ACQuire:TYPE?
ACQuire is the root keyword of the command, TYPE is the second-level keyword. The command line starts with a colon ":", and different levels of keywords are also separated by colons. <type> indicates a settable parameter. The command ending with a quotation mark "?" indicates querying a certain function. The command keywords :ACQuire:TYPE and the parameter <type> are separated by a space.
In some commands with parameters, ", " is often used to separate multiple parameters. For example:
[:TRACe[<n>]]:DATA:VALue volatile, <points>, <data>

Symbol Description

The following symbols are not sent with the commands.

1. Braces { }

The contents in the braces can contain one or multiple parameters. These parameters can be omitted or used for several times. Parameters are usually separated by the vertical bar "|". When using the command, you must select one of the parameters.

2. Vertical Bar |

The vertical bar is used to separate multiple parameters. When using the command, you must select one of the parameters.

3. Square Brackets [ ]

The contents in the square brackets can be omitted.

4. Angle Brackets < >

The parameter enclosed in the angle brackets must be replaced by an effective value.

Parameter Type

1. Bool

The parameter can be set to ON, OFF, 1, or 0. For example:
:MEASure:ADISplay <bool>
:MEASure:ADISplay?
Wherein, <bool> can be set to {{1|ON}|{0|OFF}}. The query returns 1 or 0.

2. Discrete

The parameter can be any of the values listed. For example:
:ACQuire:TYPE <type>
:ACQuire:TYPE?
Wherein,
- <type> can be set to NORMal|AVERages|PEAK|HRESolution.
- The query returns an abbreviated form: NORM, AVER, PEAK or HRES.

3. Integer

Unless otherwise specified, the parameter can be any integer (NR1 format) within the effective value range.

NOTE

Do not set the parameter to a decimal, otherwise, errors will occur.

For example:
:DISPlay:GBRightness <brightness>
:DISPlay:GBRightness?
Wherein, <brightness> can be set to an integer ranging from 0 to 100. The query returns an integer ranging from 0 to 100.

4. Real

The parameter can be any real number within the effective value range, and this command accepts parameter input in decimal (NR2 format) and scientific notation (NR3 format). For example:
:TRIGger:TIMeout:TIME <time>
:TRIGger:TIMeout:TIME?
Wherein, <time> can be set to any real number ranging from 1.6E-8 (that is, 16 ns) to 1E+1 (that is, 10 s). The query returns a real number in scientific notation.

5. ASCII String

The parameter can be the combinations of ASCII characters. For example:
:SYSTem:OPTion:INSTall <license>
Wherein,< license > can be set to PDUY9N9QTS9PQSWPLAETRD3UJHYA

Command Abbreviation

All the commands are case-insensitive. They can all be in upper case or in lower case. If abbreviation is used, you must input all the capital letters in the command. For example:
:DISPlay:GBRightness?
can be abbreviated to
:DISP:GBR?

3 Command System

This chapter introduces the syntax, functions, parameters, and usage of each command.

NOTE

1. Unless otherwise specified, the descriptions in this manual take HTM208B as an example to illustrate the commands of the series.
2. For the parameter setting command (time, frequency, amplitude, etc.), the digital oscilloscope can only recognize the numbers, unable to recognize the unit sent together with them. The unit of the parameter is a default one. For the default units of various parameters, refer to the descriptions for the specified command.

3.1 General commands

General commands are used to query basic instrument information or perform commonly used basic operations. These commands usually start with "*" and the length of the command keyword is 3 characters.

3.1.1 *IDN?

Syntax

*IDN?

Description

Query the ID string of the instrument.

Parameter

N/A

Return Format

Query returns HANTEK ,<model>,<serial number>,<software version>。
Among them,
<model>: Instrument model;
<serial number>: instrument serial number;
<software version>: Instrument software version.

Example

IDN? / Hantek,HTM208B,CN2148065000119,HV01-FV18 */

3.2 OUTPut

Syntax

OUTPut <ch_state>
OUTPut?

Description

Set or query the status of the channel switch.

Parameter

<ch_state>: 8-digit number represents 8 channels (0 indicates off, 1 indicates on). For example：11111110，indicates: Channel 1 is closed, while Channels 2 to 8 are open.

Return Format

<int>
Query the status of the return channel

Example

```
OUTP 255          /* All eight channels are fully open. */
OUTP?             /* The query returned the status of eight channels. */
```

3.3 TEMPerature Commands

This command is used to set and query the unit, upper limit and lower limit of temperature.

3.3.1 TEMPerature:UNIT

Syntax

TEMPerature:UNIT <unit>
TEMPerature:UNIT?

Description

Set or query the temperature unit.

Parameter

<unit>: <C|F>, temperature unit: Celsius/Fahrenheit.

Return Format

<C|F>
Query returns temperature unit

Example

```
TEMPerature:UNIT C                /* Set the temperature unit to Celsius */
TEMPerature:UNIT?                 /* Query returns temperature unit */
```

3.3.2 TEMPerature:LIMit:UPPEr

Syntax

TEMPerature:LIMit:UPPEr <upper,ch>
TEMPerature:LIMit:UPPEr? <ch>

Description

Set or query the upper limit temperature of the channel.

Parameter

<upper>: float type value (two decimal places of significant figures)
<ch>: <1|2|3|4|5|6|7|8>, corresponding to 8 channels

Return Format

<float>
Query to return the upper limit value of the channel.

Example

```
TEMPerature:LIMit:UPPEr 1800.0,1  /* Set the upper limit value of Channel 1
                                     to 1800.0*/
TEMPerature:LIMit:UPPEr? 1        /* Query returns the upper limit value of
                                     channel 1 */
```

3.3.3 TEMPerature:LIMit:LOWEr

Syntax

TEMPerature:LIMit:LOWEr <lower,ch>
TEMPerature:LIMit:LOWEr? <ch>

Description

Set or query the lower limit temperature value of the channel.

Parameter

<lower>: float type value (two decimal places of significant figures)
<ch>: <1|2|3|4|5|6|7|8>, corresponding to 8 channels

Return Format

<float>
Query the lower limit value of the return channel.

Example

TEMPerature:LIMit:LOWEr -200.0,1	/* Set the lower limit value of Channel 1 to -200.0*/
TEMPerature:LIMit:LOWEr? 1	/* Query returns the lower limit value of channel 1 */

3.4 MEASure Commands

This command is used to query the temperature measurement values.

3.4.1 MEASure:TEMPerature?

Syntax

MEASure:TEMPerature? <ch>

Description

Query the temperature measurement value of a single channel.

Parameter

<ch>: <1|2|3|4|5|6|7|8>, corresponding to 8 channels

Return Format

<float>
The query returns the measured temperature value of the channel.
If the channel is open, it returns <N/A>; if the channel is closed, it returns OFF.

Example

MEASure:TEMPerature? 1 /* Query the temperature value of channel 1 */

3.4.2 MEASure:TEMPerature:ALL?

Syntax

MEASure:TEMPerature:ALL?

Description

Query the temperature measurement values of all channels.

Parameter

N/A

Return Format

<float,float,float,float,float,float,float,float>
The query returns the measured temperature value of the channel.
If the channel is open, it returns <N/A>; if the channel is closed, it returns OFF.

3.5 THERmocouple Commands

This command is used to set or query the type of thermocouple selected for the channel.

3.5.1 THERmocouple:TYPE

Syntax

THERmocouple:TYPE <type,ch>
THERmocouple:TYPE? <ch>

Description

Set or query the type of thermocouple used in the channel.

Parameter

<type>: <R|S|B|K|N|E|J|T|A|C>, thermocouple type
<ch>: <1|2|3|4|5|6|7|8>, corresponding to 8 channels

Return Format

<R|S|B|K|N|E|J|T|A|C>
Query returns the type of the channel thermocouple.

Example

```
THERmocouple:TYPE K,1      /* Set channel 1 as a K-type thermocouple */
THERmocouple:TYPE? 1       /* Query the type of thermocouple for channel 1 */
```

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