

DT4250 Series
DIGITAL MULTIMETER

Remote Operation Manual

HIOKI E. E. CORPORATION

Aug. 2021

Revised edition 3

Contents

1.	Remote Interface Overview	3
2.	Interface Parameters	3
3.	About Command.....	4
3.1.	Terminator	4
3.2.	Return result	4
3.3.	Data Types	4
4.	Summary of Commands	5
5.	Detail of Commands	6
5.1.	Description of Commands	6
5.2.	Combination response string function and range.....	10
5.3.	Count value of abnormal data	11
6.	Compatible command with earlier products	11
	Please note.....	11

1. Remote Interface Overview

Step1. Connect the USB cable to the USB port on the computer.

Step2. Once the USB cable is connected and the USB driver is installed, a virtual COM port is created on the computer.

2. Interface Parameters

In order to operate the meter via a host computer or terminal, the parameters in interface within the DT4251,DT4252,DT4253,DT4254,DT4255,DT4256 have to match the parameters the serial interface provided by the host or terminal.

The following procedures will guide to set up interface parameters within these models.

Table.1

Item	Parameter	Setting
1	Baud Rate	9600 bps
2	Data Length	8 bit
3	Parity Check	None
4	Stop Bit	1 bit

3. About Command

3.1. Terminator

A terminator is a character sent by a host, which identified the end of a command string. A valid terminator consists of two-byte data.

<CR>	(Carriage Return, ASC(&H0D))
<LF>	(Line Feed, ASC(&H0A))

3.2. Return result

After execution of query command, digital multimeter will return the following format.

<Result> + <CR> <LF>

3.3. Data Types

Returned message is the ASCII string from the digital multimeter responding to a query.

Table.2

Data Type	Explanation	Example
<NR1>	An integer	+10000, -10000, 123, -100
<NR2>	This numeric representation has an explicit radix point.	+13.234, -.00002, 3.4567
<NR3>	This representation has an explicit radix point and an exponent.	-1.000000E+02
<Boolean>	String ASCII-encoded byte, is return for the setting query.	0 or 1
<Literal>	ASCII string	ACV, DCV

4. Summary of Commands

Table.3

Command	Parameter	Description
QPID		Query the Meter model.
*IDN		Query the Meter identification.
:SYST:RST		Put the meter to reset.
:SYST:LLO		Put the meter into the local lockout state.
:SYST:GTL		Put the meter into the local state.
:CONF?		Query the main function of the display.
:CONF2?		Query the sub function of the display.
:CONF	<function,range>	Configure the range.
:FETCCNT?		Query main measured count value.
:FETCCNT2?		Query sub measured count value.
:CALC:STAT:MAX?		Query measured maximum count value.
:CALC:STAT:MIN?		Query measured minimum count value.
:CALC:STAT:AVER?		Query measured average count value.
:CALC:REL:OFFS?		Query the offset value of the relative.
:SYST:APS	<0 1>	Set the APS.
:SYST:BEEP	<0 1>	Set the action of the beeper.
:SYST:BLIT	<0 1>	Set the backlight.
:SYST:BLA	<0 1>	Set the auto backlight.
:SYST:BATT?		Query the battery level.
:SYST:REL	<0 1>	Set the relative.
:SYST:FILTER	<0 1>,<100 500>	Set the filter.
:MEAS:AUTOV?		Query the status DC or AC of AutoV function.
:SYST:INIT		Put the meter to power-on-reset state.
:STAT?		Query the status of the meter.

5. Detail of Commands

5.1. Description of Commands

The DT4251,DT4252,DT4253,DT4254,DT4255,DT4256 only accepts the UPPERCASE command. (Except Unit etc.)

Table.4

Command	Explanation
QPID	Query the Meter model. Syntax QPID Response “DT4251” or “DT4252” or “DT4253” or ”DT4254” or “DT4255” or “DT4256”
*IDN	Query the Meter identification. Syntax *IDN? Response <data×3> <data> maker name, model number, serial, version Example; “HIOKI,DT4251,130501234,Ver 1.00”
:SYST:RST	Put the meter to reset. Syntax :SYST:RST Response “OK”
:SYST:LLO	Put the meter into the local lockout state. Syntax :SYST:LLO Response “OK”
:SYST:GTL	Put the meter into the local state. Syntax :SYST:GTL Response “OK”
:CONF? :CONF2?	Query the function of the display. Syntax :CONF? [:CONF2?] Response <data×2> <data> function,range Example; “ACV, 600m” → 5.2 Combination response string function and range
:CONF	Configure the range. Syntax :CONF <data×2> <data> function,range Example; “:CONF RES, 60k” → 5.2 Combination response string function and range Response “OK” or “CMD ERR” or “EXE ERR”

Command	Explanation
:FETCCNT? :FETCCNT2?	Query measured count value. Syntax :FETCCNT? [:FETCCNT2?] Response <data×1> <data> count value Example; “3000”
:CALC:STAT:MAX?	Query measured maximum count value. (1) Syntax :CALC:STAT:MAX? Response <data×1> <data> count value Example; “5000”
:CALC:STAT:MIN?	Query measured minimum count value. (1) Syntax :CALC:STAT:MIN? Response <data×1> <data> count value Example; “2000”
:CALC:STAT:AVER?	Query measured average count value. (1) Syntax :CALC:STAT:AVER? Response <data×1> <data> count value Example; “3500”
:CALC:REL:OFFS?	Query the offset value of the relative. Syntax :CALC:REL:OFFS? Response <data×2> <data> offset value, range Example; “20, 600m”
:SYST:APS	Set the APS. Syntax :SYST:APS <data×1> <data> “0” (off) or “1” (on) Example; “:SYST:APS 1” Response “OK” or “CMD ERR”
:SYST:BEEP	Set the action of the beeper. Syntax :SYST:BEEP <data×1> <data> “0” (off) or “1” (on) Example; “:SYST:BEEP 1” Response “OK” or “CMD ERR”

(1) Since the internal count value is returned, the value beyond the display range is not guaranteed to be accurate.

Command	Explanation
:SYST:BLIT	Set the backlight. Syntax :SYST:BLIT <data×1> <data> “0” (off) or “1” (on) Example; “:SYST:BLIT 1” Response “OK” or “CMD ERR”
:SYST:BLA	Set the auto backlight. Syntax :SYST:BLA <data×1> <data> “0” (off) or “1” (on) Example; “:SYST:BLA 1” Response “OK” or “CMD ERR”
:SYST:BATT?	Query the battery level. Syntax :SYST:BATT? Response <data×1> <data> Four steps remaining battery level. “3” or “2” or “1” or “0”
:SYST:REL	Set the relative. Syntax :SYST:REL <data×1> <data> “0” (off) or “1” (on) Example; “:SYST:REL 1” Response “OK” or “CMD ERR”
:SYST:FILTER	Set the filter. Syntax :SYST:FILTER <data×2> <data1> “0” (off) or “1” (on) <data2> “100” (100Hz) or “500” (500Hz) Example; “:SYST:FILTER 1,100” Response “OK” or “CMD ERR”
:MEAS:AUTOV?	Query the status DC or AC of AutoV function. Syntax :MEAS:AUTOV? Response “0” (DC) or “1” (AC) or “EXE ERR” (Other than AutoV function)
:SYST:INIT	Put the meter to power-on-reset state. Syntax :SYST:INIT Response “OK”

Command	Explanation
:STAT?	<p>Query the status of the meter.</p> <p>Syntax :STAT?</p> <p>Response "<ABCDEFGHJKLMNOPQRSTUVWXYZ>" (24char)</p> <p>A---Recording "0"(OFF) or "1"(MAX) or "2"(MIN) or "3"(AVG)</p> <p>B---Relative value (REL) "0"(OFF) or "1"(ON)</p> <p>C---Filter "0"(OFF) or "1"(ON)</p> <p>D---Beep "0"(OFF) or "1"(ON)</p> <p>E---APS "0"(OFF) or "1"(ON)</p> <p>F---Battery level "0"~"3"</p> <p>G---Input warning "0"(normal) or "1"(warn)</p> <p>HI---Rotary position "00"~"99"(from OFF)</p> <p>J---HOLD "0"(OFF) or "1"(ON)</p> <p>K---Auto Hold "0"(OFF) or "1"(ON)</p> <p>L---Auto Range "0"(OFF) or "1"(ON)</p> <p>M---Backlight "0"(OFF) or "1"(ON)</p> <p>N---Backlight Auto OFF "0"(OFF) or "1"(ON)</p> <p>O---Filter Cut-off frequency "0"(100Hz) or "1"(500Hz)</p> <p>P---reserved "0"</p> <p>Q--- reserved "0"</p> <p>R--- reserved "0"</p> <p>S--- reserved "0"</p> <p>T--- reserved "0"</p> <p>U--- reserved "0"</p> <p>V--- reserved "0"</p> <p>W---reserved "0" or "1"</p> <p>X---reserved "0"</p>

5.2. Combination response string function and range

Table.5

Function	Range
ACV	6, 60, 600, 1000
DCV	600m (※1) , 6, 60, 600, 1000
DCmV	600m
AutoV	600
CONT	600
RES	600, 6k, 60k, 600k, 6M, 60M
CAP	1u, 10u, 100u, 1m, 10m
DIODE	1500
TEMP	400
CLAMP	10, 20, 50, 100, 200, 500, 1000
ACA	600m (※2) , 6, 10
DCA	60m (※3) , 600m (※4) , 6, 10
DCmA	6m, 60m
DCuA	60u, 600u
VDET	0 (Lo, Hi) (※5)
FREQ	100, 1k, 10k, 100k

(※1) 600mV range is for DT4251 or DT4253 or DT4254 or DT4255 or DT4256.

(※2) 600mA range is only DT4256

(※3) 60mA range is only DT4256

(※4) 600mA range is only DT4256

(※5) 1 is for DT4254 or DT4255 or DT4256

5.3. Count value of abnormal data

Response of count value query return the values shown in Table.6 in the case of abnormal data.

Table.6

Type of abnormal value	Count value
Over Range value	1000000
Invalid data	2000000
Open value (DT4253, TEMP function)	3000000
Internal error value (DT4253, TEMP function)	4000000

6. Compatible command with earlier products

Table.7 shows the command compatibility with earlier products 3800 series.

Table.7

Command	Description
*CLS	Clear the system Error Queue.
*RST	Put the meter to power-on-reset state.
LLO	Put the meter into the local lockout state when in remote control. This means no local key operation at the front panel is allowed during remote control.
GTL	Put the meter into the local state, clearing the remote state and front panel lockout.
FETC? [@2]	Return the primary or secondary function value of output butter. Response : <NR3>

Please note

- 1. Contents subject to change without notice.
- 2. This document contains copyrighted content.
- 3. It is prohibited to copy, reproduce, or modify the content of this document without permission.