PR

SCPI COMMAND REFERENCE

TH9130 Series

Multifunction Safety Compliance Analyzer — TH9130 / TH9131 / TH9130A / TH9131A. Complete remote-command set for RS232C, GPIB, USB Device and LAN control. Companion to the TH9130 Series Operation Manual.

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TH9130 Series SCPI Command Reference

Multifunction Safety Compliance Analyzer — TH9130 / TH9131 / TH9130A / TH9131A

This reference is the companion volume to the *TH9130 Series Operation Manual*, covering every remote command supported over RS232C, GPIB (optional), USB Device and LAN. Command syntax is presented as compact reference tables.

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CHAPTER 1

Introduction & Command Syntax

The instrument can be remote-controlled over RS232C (standard) or GPIB (optional) — not simultaneously — using the same command set on different hardware and transport; USB Device and LAN are also available. See the Operation Manual, Chapter 7, for interface setup (baud rate, GPIB address, etc.).

1.1 Command subsystems

Commands are grouped into five subsystems:

Subsystem	Purpose
DISPlay	Selects the instrument's displayed screen and measurement-page view mode.
FUNCtion	Configures test-step programs and every test mode's parameters, including the Breakdown voltage test.
SYSTem	Test-related and environment-related system settings.
MMEM / USB	File management on internal storage and on a USB drive.
FETCh	Retrieves measurement results.

A small set of common commands outside these subsystems is covered in Chapter 9 (`*IDN?` , `FUNC:START` , `*STOP`).

1.2 Syntax rules

- Only the literal characters sent or received by the instrument are shown; all command text is ASCII.
- A data field shown as `<value>` is an ASCII string, typically an integer or floating-point number in the instrument's default unit for that parameter — the unit itself is not included in the command.
- Every command must end with a terminator: **NL** (line feed, decimal 10 / 0x0A) over RS232C/USB/LAN, or the IEEE-488 **EOI** signal over GPIB. Without a terminator, the instrument does not parse the command.
- Most FUNCtion:SOURce commands address a specific test step with `<sn>` , an integer step number (range 1–50, matching the 50-steps-per-file storage limit).
- A trailing `?` turns a setting command into a query, returning the current value in the same units/encoding as the set command's parameter.
- Where a keyword is shown in mixed case (e.g. `FUNC:SOURce:STEP`), the capitalised part (`SOUR`) is the minimum the instrument accepts; the lower-case remainder is an optional long-form spelling. Both `FUNC:SOUR:STEP` and `FUNC:SOURCE:STEP` are valid — this reference uses the short form in every worked example for brevity.
- Commands marked * in this reference apply to TH9130 / TH9131 only (or, where noted, TH9130 only) — they are not available on TH9130A / TH9131A.

> **NOTE**
> RS232C on this instrument uses software (character-echo) handshaking rather than hardware handshake lines — see Operation Manual §7.1 for the full protocol. Implement RS232C control with a standard serial library for your platform (e.g. PySerial for Python), applying the handshake rules in the Operation Manual together with the command syntax in this reference.

CHAPTER 2

DISPlay Subsystem

Sets which screen the instrument shows and how the measurement screen is laid out.

Command	Query	Parameter / Range	Description
`DISP:PAGE <page>`	`DISP:PAGE?`	`TEST` / `SETUP` / `SYST` / `FILE`	Switches the active screen to the measurement (TEST), parameter setup (SETUP), system settings (SYST) or file list (FILE) page.
`DISP:MODE <mode>`	`DISP:MODE?`	`0` = step mode, `1` = list mode	Sets the measurement-screen display layout.
`DISP:STEP <sn>:OFFSET <mode>`	`DISP:STEP <sn>:OFFSET?`	`0` = zero off, `1` = zero on, `2` = TH90022 zero	Controls the zero/offset operation for the given step.

Example — switch to the measurement screen: set `DISP:PAGE TEST`; query `DISP:PAGE?` returns `TEST`.

CHAPTER 3

FUNCtion Subsystem — Program Control

These commands manage the step list of the active test program, independent of any one test mode's parameters.

Command	Parameter	Description
`FUNC:SOUR:STEP?`	—	Query only — returns the number of steps in the active program.
`FUNC:SOUR:STEP <sn>:INS`	`<sn>`: 1–50	Inserts a new step after the given step number.
`FUNC:SOUR:STEP <sn>:DEL`	`<sn>`: 1–50	Deletes the given step from the active program.
`FUNC:SOUR:STEP <sn>:NEW`	`<sn>`: 1–50	Creates a new, empty test program for editing from scratch.
`FUNC:SOUR:STEP <sn>:PRJ <mode>` `FUNC:SOUR:STEP <sn>:PRJ?`	`<sn>`: 1–50 (step being addressed is 0–7 internally per mode index) `<mode>`: `AC`(0) / `DC`(1) / `IR`(2) / `GB`(3) / `CONT`(4) / `RUN`(5)* / `LC`(6)* / `OSC`(7)	Sets or queries the test mode assigned to a step. Query returns the numeric code with the mode name, e.g. `2(IR)`.

* RUN (electrical performance) and LC (leakage current) modes apply to TH9130 / TH9131 only.

Example — set step 1 to Insulation Resistance mode: set `FUNC:SOUR:STEP 1:PRJ IR`; query `FUNC:SOUR:STEP 1:PRJ?` returns `2(IR)`.

Once a step's mode is set, configure that step's parameters using the mode-specific commands in Chapter 4 (or Chapter 5 for Breakdown), all addressed the same way: `FUNC:SOURce:STEP <sn>:<mode>:<parameter> <value>`.

CHAPTER 4

FUNCtion Subsystem — Test-Mode Parameters

All commands below take the form `FUNC:SOURce:STEP <sn>:<mode>:<param> <value>` to set, or the same with a trailing `?` to query. `<sn>` is the step number (1–50). Compare each parameter's range and default against Operation Manual Chapter 4 for context.

4.1 AC withstand-voltage (ACW) — `:AC:`

Parameter (command)	Type	Range	Precision / Unit
`VOLT` — test voltage	Float	0.050–5.000	0.001 kV
`UPPC` — current upper limit	Float	0.001–120.000 (V≤4kV) / 0.001–100.000 (V>4kV)	0.001 mA
`LOWC` — current lower limit	Float	0 – upper limit (0 = off)	0.001 mA
`ARC` — arc-current limit	Float	0, 1.0–20.0 (0 = off)	0.1 mA
`FREQ` — test frequency	Char	50 / 60	Hz
`RTIM` — rise time	Float	0–999.0 (0 = off)	0.1 s
`TTIM` — test time	Float	0, 0.3–999.0 (0 = off)	0.1 s
`FTIM` — fall time	Float	0–999.0 (0 = off)	0.1 s
`CONTI`* — continuity test	Char	OFF(0) / ON(1)	—
`DUTOUT`* — rear-panel output mode	Char	0–2 (0:P-G, 1:S-G, 2:P-S)	—

* TH9130 / TH9131 only. `UPPC`'s documented range is the shared hardware/firmware range across all four models; the current actually achievable is lower on TH9131/TH9131A, limited by that model's rated AC output power (200 VA vs 500 VA — see the datasheet).

Example — set step 1's ACW voltage to 1 kV, rise time 1 s: `FUNC:SOUR:STEP 1:AC:VOLT 1.000` then `FUNC:SOUR:STEP 1:AC:RTIM 1`.

4.2 DC withstand-voltage (DCW) — `:DC:`

Parameter (command)	Type	Range	Precision / Unit
`VOLT` — test voltage	Float	0.050–6.000	0.001 kV
`UPPC` — current upper limit	Float	0.0001–25 (V≥1.5kV) / 0.0001–20 (V<1.5kV)	0.0001 mA
`LOWC` — current lower limit	Float	0 – upper limit (0 = off)	0.0001 mA
`RAMP` — ramp-up judgment	Char	OFF(0) / ON(1)	—
`RAMPARC` — ramp arc limit	Float	0, 1.0–10.0 (0 = off)	0.1 mA
`ARC` — arc-current limit	Float	0, 1.0–10.0 (0 = off)	0.1 mA
`RTIM` — rise time	Float	0–999.0 (0 = off)	0.1 s
`WTIM` — delay time	Float	0–999.0 (0 = off)	0.1 s
`TTIM` — test time	Float	0, 0.3–999.0 (0 = off)	0.1 s
`FTIM` — fall time	Float	0–999.0 (0 = off)	0.1 s
`CONTI`* — continuity test	Char	ON/OFF or 1/0	—
`DUTOUT`* — rear-panel output mode	Char	0–2 (0:P-G, 1:S-G, 2:P-S)	—

* TH9130 / TH9131 only.

4.3 Insulation resistance (IR) — `:IR:`

Parameter (command)	Type	Range	Precision / Unit
`VOLT` — test voltage	Float	0.050–6.000	0.001 kV
`UPPR` — resistance upper limit	Float	0, lower limit – 50.0 GΩ (0 = off)	0.001 MΩ
`LOWR` — resistance lower limit	Float	0.05 MΩ – 50.0 GΩ	0.001 MΩ
`TTIM` — test time	Float	0, 0.3–999.0 (0 = continuous)	0.1 s
`RTIM` — rise time	Float	0–999.0 (0 = off)	0.1 s
`WTIM` — delay time	Float	0–999.0 (0 = off)	0.1 s
`FTIM` — fall time	Float	0–999.0 (0 = off)	0.1 s
`RANG` — current range	Integer	0–6 (0:auto, 1:10mA, 2:3mA, 3:300µA, 4:30µA, 5:3µA, 6:300nA)	—
`DUTOUT`* — rear-panel output mode	Char	0–2 (0:P-G, 1:S-G, 2:P-S)	—

* TH9130 / TH9131 only.

4.4 Ground bond (GB) — `:GB:`

Parameter (command)	Type	Range	Precision / Unit
`CURRent` — test current	Float	1.00–40.00	0.01 A
`VOLT` — test voltage	Float	3.00–8.00	0.01 V
`UPPR` — resistance upper limit	Integer	0–600	1 mΩ
`LOWR` — resistance lower limit	Integer	0 – upper limit	1 mΩ
`TTIM` — test time	Float	0, 0.5–999.9 (0 = continuous)	0.1 s
`FREQ` — test frequency	Char	50 / 60	Hz
`DUAL` — synchronous test mode	Char	0–2 (0:OFF, 1:AC, 2:DC)	—
`OFFSET` — zero offset	Char	0–200	mΩ

4.5 Continuity (CONT) — `:CONT:`

Parameter (command)	Type	Range	Precision / Unit
`UPPR` — resistance upper limit	Float	0.00–10000.00	0.01 Ω
`LOWR` — resistance lower limit	Integer	0 – upper limit	1 Ω
`TTIM` — test time	Float	0, 0.5–999.9 (0 = continuous)	0.1 s
`CONTI`* — continuity point	Char	0–2 (0:GND, 1:OFF, 2:L-N)	—

* TH9130 / TH9131 only.

4.6 Open/short-circuit detection (OSC) — `:OSC:`

Parameter (command)	Type	Range	Precision / Unit
`OPEN` — open-circuit threshold	Integer	10–100	10 %, step 10
`SHOT` — short-circuit threshold	Integer	0, 100–500 (0 = off)	10 %, step 10
`GET` — sample reference capacitance	—	No parameter — triggers an auto-sample of the impedance-derived reference value	—
`STAND` — reference capacitance	Float	0.001–40.000	0.001 nF

Example — sample a reference capacitance for step 1: `FUNC:SOUR:STEP 1:OSC:GET`; then read it back with `FUNC:SOUR:STEP 1:OSC:STAND?`.

4.7 Electrical performance (RUN) — `:RUN:` (TH9130 / TH9131 only)

Parameter (command)	Type	Range	Precision / Unit
`UPPV` — voltage upper limit	Float	0.0–277.0	0.1 V
`LOWV` — voltage lower limit	Float	0.0 – upper limit	0.1 V
`UPPC` — current upper limit	Float	0.00–16.00	0.01 A
`LOWC` — current lower limit	Float	0.00 – upper limit	0.01 A
`UPPP` — power upper limit	Integer	0–4500	1 W
`LOWP` — power lower limit	Integer	0 – upper limit	1 W
`UPPF` — power-factor upper limit	Float	0.000–1.000	0.001
`LOWF` — power-factor lower limit	Float	0.000 – upper limit	0.001
`UPPL` — leakage upper limit	Float	0.00–10.00 (0 = off)	0.01 mA
`LOWL` — leakage lower limit	Float	0.00 – upper limit	0.01 mA
`TTIM` — test time	Float	0, 0.1–999.9 (0 = off)	0.1 s
`WTIM` — wait time	Float	0.2–999.9	0.1 s
`PLC` — remote-control memory group	Char	0–6 (group 1–7)	—

Built-in AC power supply — `:RUN:ACSOUR:` (TH9130 only)

Parameter (command)	Type	Range	Precision / Unit
`VOLT` — source voltage	Float	0.0–277.0 (0 = off)	0.1 V
`FREQ` — source frequency	Float	45.0–500.0	0.1 Hz
`UPPC` — source current upper limit	Float	0.0–4.2 (low range) / 0.0–2.1 (high range), 0 = off	0.1 A
`NG` — neutral grounding	Char	OFF(0) / ON(1)	—
`RANG` — voltage range	Char	0–1 (0:LOW, 1:HIGH)	—
`FOLD` — overload constant-current	Char	OFF(0) / ON(1)	—

4.8 Leakage current (LC) — `:LC:` (TH9130 / TH9131 only)

Parameter (command)	Type	Range	Precision / Unit
`UPPL` — leakage upper limit	Float	0.0–10000 (0 = off)	0.1 µA
`LOWL` — leakage lower limit	Float	0.0 – upper limit	0.1 µA
`UPPV` — voltage upper limit	Float	0.0–277.0	0.1 V
`LOWV` — voltage lower limit	Float	0.0 – upper limit	0.1 V
`TTIM` — test time	Float	0, 0.1–999.9 (0 = continuous)	0.1 s
`WTIM` — wait time	Float	0.5–999.9	0.1 s
`NEUT` — neutral switch (S1)	Char	0–1 (0:closed, 1:open)	—
`REVE` — reverse-polarity switch (S2)	Char	0–2 (0:off, 1:on, 2:auto)	—
`TGND` — ground switch (S3)	Char	0–1 (0:closed, 1:open)	—
`MD` — body-impedance network	Char	0–10 — see table below	—
`PROBE` — probe position	Char	0–4 (0:Ground-to-Line, 1:Probe-to-Line, 2:Probe-to-Probe, 3:Ground-to-Neutral, 4:Auto)	—
`RMSPEAK` — value mode	Char	0–1 (0:RMS, 1:Peak)	—
`ACDC` — waveform	Char	0–2 (0:AC, 1:DC, 2:AC+DC)	—
`RANG` — auto range	Char	0–1 (0:off, 1:on)	—
`PLC` — remote-control memory group	Char	0–6 (group 1–7)	—

MD command values

Value	Network	Value	Network
0	UL544NP	6	IEC60990 Fig.5-U1
1	UL544P	7	IEC60990 Fig.5-U3
2	UL2601	8	External
3	UL1563	9	Frequency Check
4	IEC60990 Fig.4-U1	10	GB4793.1 (→ IEC61010-1 for the EU market)
5	IEC60990 Fig.4-U2		

This enumeration may be ordered differently from the network list in Operation Manual §4.7.2, which follows the front-panel picker's grouping and includes the EU standards mapping. Both describe the same physical networks.

Built-in AC power supply — `:LC:ACSOUR:` (TH9130 only)

Parameter (command)	Type	Range	Precision / Unit
`VOLT` — source voltage	Float	0.0–277.0 (0 = off)	0.1 V
`FREQ` — source frequency	Float	45.0–500.0	0.1 Hz
`UPPC` — source current upper limit	Float	0.0–4.2 (low range) / 0.0–2.1 (high range), 0 = off	0.1 A
`NG` — neutral grounding	Char	OFF(0) / ON(1)	—
`RANG` — voltage range	Char	0–1 (0:LOW, 1:HIGH)	—
`FOLD` — overload constant-current	Char	OFF(0) / ON(1)	—

Example — configure step 1 as a leakage-current test using the UL544NP network, Ground-to-Line probe position, RMS, AC+DC:

```
FUNC:SOUR:STEP 1:PRJ LC
FUNC:SOUR:STEP 1:LC:MD 0
FUNC:SOUR:STEP 1:LC:PROBE 0
FUNC:SOUR:STEP 1:LC:RMSPEAK 0
FUNC:SOUR:STEP 1:LC:ACDC 2
```

CHAPTER 5

FUNCtion Subsystem — Breakdown Voltage Test

The Breakdown voltage test sweeps the withstand-voltage output upward in steps to find a DUT's insulation breakdown point (referenced as "Breakdown" in the SYSTem test-mode setting — see Operation Manual §3.4.1). Unlike the other test modes, these commands are not addressed by step number — they configure a single, instrument-wide breakdown-test setup for DC.

5.1 DC breakdown — `FUNC:BREAKdown:DC:`

Parameter (command)	Type	Range	Precision / Unit
`VOLTStart` — start voltage	Float	0.050 – end voltage	0.001 kV
`VOLTEnd` — end voltage	Float	0.050–6.000	0.001 kV
`STEPVOLT` — voltage step size	Float	0.005–0.500	0.001 kV
`STEP` — number of steps	Integer	2–999	1
`UPPC` — current upper limit	Float	0.0001–25	0.0001 mA
`LOWC` — current lower limit	Float	0 – upper limit (0 = off)	0.0001 mA
`TTIM` — test time (per step)	Float	0, 0.3–999.0 (0 = off)	0.1 s
`RTIM` — rise time	Float	0–999.0 (0 = off)	0.1 s
`WTIM` — wait time	Float	0–999.0 (0 = off)	0.1 s
`ARC` — arc-current limit	Float	0, 1.0–10.0 (0 = off)	0.1 mA
`CONTinue` — continue-on-breakdown	Integer	0–1 (0:OFF, 1:ON)	—
`SAVE` — save the breakdown setup	—	No parameter	—

Example — sweep 1 kV to 5 kV DC in 50 V steps: `FUNC:BREAK:DC:VOLTS 1.000`, `FUNC:BREAK:DC:VOLTE 5.000`, `FUNC:BREAK:DC:STEPVOLT 0.050`, then `FUNC:BREAK:SAVE`.

CHAPTER 6

Multi-Parameter (CAL) Quick-Set Commands

Each of the 8 test modes also has a single "CAL" command that configures every one of that step's parameters in one line, instead of issuing one command per parameter. Its general form is:

```
FUNC:SOUR:STEP <sn>:CAL <mode> <param1> <param2> …
```

The first number after `CAL` is always the test-mode code (`0`:AC, `1`:DC, `2`:IR, `3`:GB, `4`:CONT, `5`:RUN, `6`:LC, `7`:OSC); every subsequent value is a parameter for that mode, in a fixed order — all parameters must always be supplied, in order, even ones you don't need to change. TH9130A/TH9131A CAL commands omit the two TH9130/TH9131-only fields (continuity test and rear-panel output) found on the ACW/DCW/IR variants.

6.1 ACW — `CAL 0 …`

Parameter order: voltage (0.050–5.000 kV) · current upper limit (0.001–100.000 mA) · current lower limit (0 – upper) · arc limit (0, 1.0–20.0 mA) · frequency (0:50Hz, 1:60Hz) · rise time · test time · fall time · continuity test* (0:OFF, 1:ON) · rear-panel output* (0:P-G, 1:S-G, 2:P-S).

```
TH9130/TH9131:  FUNC:SOUR:STEP 1:CAL 0 1.5 1 0 0 0 1 3 1 0 0
```

```
TH9130A/TH9131A:  FUNC:SOUR:STEP 1:CAL 0 1.5 1 0 0 0 1 3 1
```

6.2 DCW — `CAL 1 …`

Parameter order: voltage (0.050–6.000 kV) · current upper limit (0.0001–20.000 mA) · current lower limit · ramp-up judgment (0:OFF, 1:ON) · ramp arc (1.0–10.0 mA) · arc limit (0, 1.0-10.0mA) · rise time · wait time · test time · fall time · continuity test* · rear-panel output*.

```
TH9130/TH9131:  FUNC:SOUR:STEP 1:CAL 1 2 0.05 0 0 0 3 0 3 3 0 0 0
```

```
TH9130A/TH9131A:  FUNC:SOUR:STEP 1:CAL 1 2 0.05 0 0 0 3 0 3 3 0
```

6.3 IR — `CAL 2 …`

Parameter order: voltage (0.050–6.000 kV) · resistance upper limit (0, lower–50000 MΩ) · resistance lower limit (0.1–50000 MΩ) · range (0–6, 0:auto) · rise time · delay time · test time · fall time · rear-panel output*.

```
TH9130/TH9131:  FUNC:SOUR:STEP 1:CAL 2 1.5 0 1000 0 0 0 6 0 0
```

```
TH9130A/TH9131A:  FUNC:SOUR:STEP 1:CAL 2 1.5 0 1000 0 0 0 6 0
```

6.4 GB — `CAL 3 …`

Parameter order: test voltage (3.00–8.00 V) · test current (1.00–40.00 A) · resistance upper limit (0–600 mΩ) · resistance lower limit · test frequency (0:50Hz, 1:60Hz) · test time · manual zero offset (0–200 mΩ) · synchronous output (0:OFF, 1:AC, 2:DC).

```
FUNC:SOUR:STEP 1:CAL 3 8 40 150 0 0 3 0 0
```

6.5 CONT — `CAL 4 …`

Parameter order: resistance upper limit (0–10000 Ω) · resistance lower limit · test time · continuity point* (0:GND, 1:OFF, 2:L-N).

```
TH9130/TH9131:  FUNC:SOUR:STEP 1:CAL 4 5000 0 3 0
```

```
TH9130A/TH9131A:  FUNC:SOUR:STEP 1:CAL 4 5000 0 3
```

* TH9130 / TH9131 only, throughout this chapter.

6.6 RUN — `CAL 5 …` (TH9130 / TH9131 only)

Parameter order: voltage upper limit (0.0–277.0 V) · voltage lower limit · current upper limit (0.00–16.00 A) · current lower limit · power upper limit (0–4500 W) · power lower limit · power-factor upper limit (0.000–1.000) · power-factor lower limit · leakage upper limit (0.00–10.00 mA) · leakage lower limit · wait time · test time · remote control (0–6) · *then*, *TH9130 only:* source voltage (0.0–277.0 V) · source current upper limit (0–4.2 A) · source voltage range (0:LOW, 1:HIGH) · source frequency (45.0–500.0 Hz) · neutral grounding (0:OFF, 1:ON) · overload constant-current (0:OFF, 1:ON).

```
TH9130:  FUNC:SOUR:STEP 1:CAL 5 230 40 2 0 500 0 1 0 3 0 5 30 0 220 2 1 50 0 0
TH9131:  FUNC:SOUR:STEP 1:CAL 5 230 40 2 0 500 0 1 0 3 0 5 30 0
```

6.7 LC — `CAL 6 …` (TH9130 / TH9131 only)

Parameter order: voltage upper limit (0.0–277.0 V) · voltage lower limit · leakage upper limit (0.0–10000 µA) · leakage lower limit · wait time · test time · body-impedance network (0–9) · value mode (0:RMS, 1:PEAK) · neutral switch (0:closed, 1:open) · reverse-polarity switch (0:closed/off, 1:open/on, 2:auto) · ground switch (0:closed, 1:open) · probe setting (0–4) · waveform (0:AC, 1:DC, 2:AC+DC) · auto range (0:OFF, 1:ON) · remote control (0–6) · *then*, *TH9130 only:* source voltage · source current upper limit · source voltage range · source frequency · neutral grounding · overload constant-current.

```
TH9130:  FUNC:SOUR:STEP 1:CAL 6 230 180 2000 0 5 10 1 0 0 0 0 0 0 1 0 220 2 1 50 0 0
TH9131:  FUNC:SOUR:STEP 1:CAL 6 230 180 2000 0 5 10 1 0 0 0 0 0 0 1 0
```

The LC CAL parameter order lists voltage limits before leakage limits, which is the reverse of the individual `:LC:UPPV` / `:LC:UPPL` command order in §4.8.

6.8 OSC — `CAL 7 …`

Parameter order: open-circuit threshold (10–100%) · short-circuit threshold (0, 100–500%) · reference sample capacitance (0.001–40.000 nF).

```
FUNC:SOUR:STEP 1:CAL 7 20 300 10
```

CHAPTER 7

SYSTem Subsystem

These commands mirror the SYSTEM-key settings in Operation Manual §3.4, split into test-related (`SYSTem:MEA:`) and environment-related (`SYSTem:ENV:`) groups. None take a step-number argument — they apply instrument-wide.

7.1 Test-related settings — `SYSTem:MEA:`

Parameter (command)	Type	Range
`TRGMODE` — trigger source	Char	0–2 (0:manual, 1:external, 2:bus)
`TRGDLY` — trigger delay	Float	0.0–99.9 s, 0.1 s precision
`MEAMODE` — test mode	Char	0–4 (0:normal, 1:repeat, 2:loop, 3:single-step, 4:breakdown)
`RPTCNT` — repeat count	Integer	0–999
`RPTINT` — test interval	Float	0.0–99.9 s, 0.1 s precision
`AFTERFAIL` — on-failure behaviour	Char	0–2 (0:continue, 1:retest, 2:stop)
`PASSHOLD` — pass-buzzer time	Float	0.2–99.9 s, 0.1 s precision
`STEPHOLD` — inter-step hold	Float	0.1–99.9 s, or `KEY`; 0.1 s precision
`GFI` — shock protection	Char	ON/OFF or 1/0
`ACSOURCE`* — AC power supply	Char	ON/OFF or 1/0
`DUTOUT`** — rear-panel output	Char	ON/OFF or 1/0

* TH9130 only. ** TH9130 / TH9131 only.

Example — set trigger source to bus and trigger delay to 0.5 s: `SYSTem:MEA:TRGMODE 2` then `SYSTem:MEA:TRGDLY 0.5`.

7.2 Environment-related settings — `SYSTem:ENV:`

Parameter (command)	Type	Range
`KEYVOL` — key-click sound	Char	ON/OFF or 1/0
`BEEPVOL` — buzzer volume	Char	0–3 (0:off, 1:low, 2:medium, 3:high)
`PASSVOL` — pass-tone type	Char	0–2 (0:off, 1:long, 2:double-short)
`FAILVOL` — fail-tone type	Char	0–2 (0:off, 1:long, 2:double-short)
`LANGuage` — UI language	Char	1 (English)
`KEYLOCK` — key-lock source	Char	0–1 (0:manual, 1:bus)
`KEYLOCK:UNLOCK` — release key lock	—	No parameter — releases a bus-sourced key lock
`BRIght` — screen brightness	Integer	20–100
`SOFTKEY` — on-screen keyboard	Char	0–1 (0:off, 1:on)
`DATE` — system date	Char	`<year> <month> <day>`, 2017 1 1 – 9999 12 31
`TIME` — system time	Char	`<hour> <minute> <second>`, 0 0 0 – 23 59 59

Example — set the system date to 17 Nov 2021: `SYSTem:ENV:DATE 2021 11 17`; query returns `2021,11,17`.

CHAPTER 8

MMEM & USB Subsystems

`MMEM` commands act on internal storage; `USB` commands are identical in syntax but act on a USB drive plugged into the front-panel port. Folder and file names are case-sensitive.

8.1 Folder operations

Command	Parameter	Returns
`MMEM:NEW <folder>` / `USB:NEW <folder>`	Folder name	`OK`
`MMEM:DEL <folder>` / `USB:DEL <folder>`	Folder name	`OK` or `ERROR`
`MMEM:RENAME <old> <new>` / `USB:RENAME <old> <new>`	Old name, new name	`OK` or `ERROR`
`MMEM:COPY <folder>`	Folder name	Copies an internal folder to USB. `OK` or `ERROR`
`USB:COPY <folder>`	Folder name	Copies a USB folder to internal storage. `OK` or `ERROR`

Example — create an internal folder named "TH9130test": `MMEM:NEW TH9130test` → `OK`.

8.2 File operations

Command	Parameter	Returns
`MMEM:NEW <name>.sta` / `USB:NEW <name>.sta`	File name	`OK`
`MMEM:DEL <name>.sta` / `USB:DEL <name>.sta`	File name	`OK` or `ERROR`
`MMEM:RENAME <old>.sta <new>.sta` / `USB:RENAME …`	Old, new file names	`OK` or `ERROR`
`MMEM:COPY <name>.<ext>`	File name + extension	Copies an internal file to USB. `OK` or `ERROR`
`USB:COPY <name>.<ext>`	File name + extension	Copies a USB file to internal storage. `OK` or `ERROR`
`MMEM:SAVE <name>.sta` / `USB:SAVE <name>.sta`	File name	Saves the current settings. `OK`
`MMEM:LOAD <name>.sta` / `USB:LOAD <name>.sta`	File name	Loads the file as the active setup. `OK` or `ERROR`
`MMEM:LIST <path>` / `MMEM:LIST?`	Folder path (or none, for root)	Semicolon-separated list of `.sta` files, or `ERROR` if the folder doesn't exist
`USB:LIST <path>` / `USB:LIST?`	Folder path (or none, for root)	Same, for the USB drive

Example — save the current setup internally as "TH9130TEST", then reload it: `MMEM:SAVE TH9130TEST.sta` → `OK`; `MMEM:LOAD TH9130TEST.sta` → `OK`.

CHAPTER 9

FETCh Subsystem & Common Commands

9.1 FETCh subsystem

Retrieves measurement results. Issued after a test starts, until the test ends or another command interrupts it.

Command	Parameter	Description
`FETCh:AUTO <mode>` / `FETCh:AUTO?`	`OFF(0)` / `ON(1)` / `EOM(2)`	OFF: no automatic result return. ON: results stream back in real time. EOM: results return automatically once the measurement ends.
`FETCh?`	Query only	Returns the results for every step, one line per step, until the test ends — see the return format below.

Return format (fields vary by test mode):

Mode	Return format
AC / DC	`STEP n:MODE,voltage(kV),current(A),result;`
IR	`STEP n:MODE,voltage(kV),resistance(Ω),result;`
GB	`STEP n:MODE,current(A),resistance(Ω),result;`
CONT	`STEP n:MODE,resistance(Ω),result;`
RUN	`STEP n:MODE,voltage(V),current(A),power(W),PF,leakage(μA),result;`
LC	`STEP n:MODE,source voltage(V),MD voltage(mV),leakage(μA),max leakage(μA),result;`
OSC	`STEP n:MODE,capacitance(F),result;`

Example return: `STEP 1:AC,1.000,1.000e-3,PASS; STEP 2:IR,1.500,1.000e+7,PASS; STEP 3:GB,2.500e+1,1.000e-1,PASS; STEP 4:CONT,9.000e+2,PASS; STEP 5:RUN,220.0,2.000,440.0,1.000,1.000,PASS; STEP 6:LC,230.0,3000.0,3000.000,3006.000,PASS;` — by default, the instrument automatically returns every step's result as it completes.

9.2 Common (non-subsystem) commands

Command	Description
`*IDN?`	Returns `<manufacturer>,<model>,<firmware>`, e.g. `Tonghui,TH9130,Ver1.02`.
`FUNC:START`	Starts the test program from step 1.
`FUNC:START <num>`	In single-step test mode, starts only the specified step.
`*STOP`	Stops the test in progress.

Example — identify the instrument and run a test: `*IDN?` → `Tonghui,TH9130,Ver1.02`; then `FUNC:START`.

APPENDIX

Contact

For questions about any command in this reference, or for support integrating the TH9130 series into a test system, contact Techmize using the details below.

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