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CMD

SCPI COMMAND REFERENCE

TH2554 Series

Data Acquisition / Switch System. Companion document to the TH2554 Series Operation Manual. Covers the complete SCPI command set across the Common, SENSe1, TRIGger, ROUTe, CALCulate and SYSTem subsystems.

Techmize Electronic GmbH · Ismaning, Germany
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TH2554 Series Command Reference

SCPI command set

This document is the companion command reference to the *TH2554 Series Operation Manual*. It lists the complete SCPI command set for the TH2554 series. For instrument setup, the physical remote interfaces (RS232, USB Device, LAN, optional IEEE-488/GPIB) and general front-panel operation, see the Operation Manual, Chapter 7.

The TH2554 remote interface uses SCPI only — there is no MODBUS implementation on this series.

Contents

Section	
1. SCPI syntax & conventions	§1
2. Common commands	§2
3. SENSe1 subsystem — measurement function & per-function settings	§3
4. TRIGger subsystem	§4
5. ROUTe subsystem — scan-list management	§5
6. CALCulate subsystem — limits, math, relative	§6
7. SYSTem subsystem	§7

Approximately 75 commands in total. Commands are case-insensitive; the capitalized letters in each keyword are the required short form (e.g. `FUNCtion` *may be sent as* `FUNC` *or* `FUNCTION`*).*

SECTION 1

SCPI Syntax & Conventions

1.1 Command structure

Commands follow standard SCPI hierarchical syntax: colon-separated keywords, a space before any parameter, and a question mark appended for a query form (e.g. `SENSe1:VOLTage:RANGe 10` / `SENSe1:VOLTage:RANGe?`). Multiple commands can be chained on one line with a semicolon. Commands are terminated with LF (0x0A).

1.2 Parameter types

Type	Description
Numeric	Decimal or scientific-notation value, e.g. `10`, `1.5E+2`.
Boolean	`ON` / `OFF` or `1` / `0`.
Discrete	One of a fixed set of keyword values, e.g. `AUTO`, `FIXed`.
`MIN` / `MAX` / `DEF`	Where supported, substitutes the parameter's minimum, maximum, or default value instead of a literal number — e.g. `SENSe1:VOLTage:RANGe MAX` selects the largest available range.

1.3 Channel addressing

Multiplexer-module channels are addressed with the syntax `(@…)`, used by the `ROUTe` and `TRIGger` commands that act on a scan list:

Form	Meaning
`(@101:120)`	A contiguous channel range — here, channels 101–120 (slot 1, channels 1–20).
`(@101,105,110)`	A comma-separated list of individual channels.
`(@SLOT1)`	Every channel on the module fitted in slot 1.
`(@ALLSLOTS)`	Every channel on every fitted multiplexer module.

Channel numbers are formed as `<slot><channel>`, e.g. channel 5 of slot 1 is addressed as `101`+4 = `105`; slot 2 channel 1 as `201`. The `SENSe1` subsystem commands (§3) instead apply to whichever channel is currently selected by the front panel or by a scan in progress — they do not take a channel-list parameter directly.

SECTION 2

Common Commands

Command	Description
`*IDN?`	Query instrument identification. Returns manufacturer, model, serial number and firmware version. *Example response:* `TECHMIZE,TH2554,00000000,1.0.23`.
`*RST`	Reset the instrument to its factory default settings.
`*OPC?`	Query operation-complete status. Returns `1` once all pending commands have finished executing — used to synchronize a remote program with instrument state.
`TERMinal <mode>`	Parameters: `FRONt`, `REAR`. Select the active input terminal.
`TERMinal?`	Query the active input terminal. Returns `FRON` or `REAR`.
`SLOT:INFO? <n>`	Query the module fitted in slot <n> (1–5). Returns the module model string (e.g. `TH2554-01`) or an empty string if the slot is unpopulated.

> **NOTE — *IDN? FORMAT**
>
> The returned firmware-version field follows the instrument's internal version numbering (as shown on the System → Info page, e.g. `TH2554@V1.0.23`) and increments with each firmware release; the example above reflects the version current at the time of writing.

SECTION 3

SENSe1 Subsystem

Configures the active measurement function and its per-function settings on the DMM module. All commands apply to the currently selected channel (front-panel input, or the channel currently addressed during a scan).

3.1 Function selection

Command	Parameters	Description
`SENSe1:FUNCtion <func>`	"VOLT:DC", "VOLT:AC", "CURR:DC", "CURR:AC", "RES", "FRES", "FREQ", "PER", "TEMP", "CAP", "CONT", "DIOD", "RAT"	Select the active measurement function.
`SENSe1:FUNCtion?`	—	Query the active function.

3.2 DC/AC voltage

Command	Parameters	Description
`SENSe1:VOLTage:RANGe <value>`	100mV, 1, 10, 100, 300 (V) · MIN/MAX/DEF	Set a fixed DCV/ACV range. **Default range: 300 V.**
`SENSe1:VOLTage:RANGe?`	—	Query the DCV/ACV range.
`SENSe1:VOLTage:RANGe:AUTO ON|OFF`	ON / OFF	Enable/disable DCV/ACV auto-ranging.
`SENSe1:VOLTage:RANGe:AUTO?`	—	Query auto-range state.
`SENSe1:VOLTage:NPLC <value>`	0.02, 0.2, 1, 10, 100 · MIN/MAX/DEF	Set the DCV integration time, in power-line cycles.
`SENSe1:VOLTage:NPLC?`	—	Query NPLC.
`SENSe1:VOLTage:IMPedance <mode>`	AUTO, 10M	Set DCV input impedance mode (Auto applies to the 100 mV/1 V/10 V ranges; the 100 V and 300 V ranges always use fixed 10 MΩ).
`SENSe1:VOLTage:IMPedance?`	—	Query input impedance mode.
`SENSe1:VOLTage:AZERo ON|OFF`	ON / OFF	Enable/disable DCV auto-zero.
`SENSe1:VOLTage:AZERo?`	—	Query auto-zero state.
`SENSe1:VOLTage:AC:BANDwidth <value>`	3, 20, 200 (Hz)	Set the ACV filter bandwidth (slow/medium/fast).
`SENSe1:VOLTage:AC:BANDwidth?`	—	Query ACV filter bandwidth.

> **CAUTION — MAXIMUM INPUT**
>
> The DCV/ACV range default and maximum is **300 V**, matching the instrument's maximum rated input (300 V_{DC}/300 V_{rms}). Do not apply a signal above this level to the measurement terminals. Channels on a TH2554-03 high-speed multiplexer module are rated to a maximum of **60 V**.

3.3 DC/AC current

Command	Parameters	Description
`SENSe1:CURRent:RANGe <value>`	10u, 100u, 1m, 10m, 100m, 1, 3 (A) · MIN/MAX/DEF	Set a fixed DCI/ACI range.
`SENSe1:CURRent:RANGe?`	—	Query the DCI/ACI range.
`SENSe1:CURRent:RANGe:AUTO ON|OFF`	ON / OFF	Enable/disable DCI/ACI auto-ranging.
`SENSe1:CURRent:RANGe:AUTO?`	—	Query auto-range state.
`SENSe1:CURRent:AZERo ON|OFF`	ON / OFF	Enable/disable DCI auto-zero.
`SENSe1:CURRent:AZERo?`	—	Query auto-zero state.
`SENSe1:CURRent:AC:BANDwidth <value>`	3, 20, 200 (Hz)	Set the ACI filter bandwidth.
`SENSe1:CURRent:AC:BANDwidth?`	—	Query ACI filter bandwidth.

Current measurement through a multiplexer module uses the dedicated current channels of the TH2554-01 or TH2554-02. The TH2554-03 measures voltage only.

3.4 2-wire / 4-wire resistance

Command	Parameters	Description
`SENSe1:RESistance:RANGe <value>`	10–100E+6 (Ω) · MIN/MAX/DEF	Set a fixed 2-wire resistance range.
`SENSe1:RESistance:RANGe?`	—	Query 2-wire resistance range.
`SENSe1:RESistance:RANGe:AUTO ON|OFF`	ON / OFF	Enable/disable 2-wire resistance auto-ranging.
`SENSe1:RESistance:NPLC <value>`	0.02, 0.2, 1, 10, 100	Set 2-wire resistance integration time.
`SENSe1:RESistance:LOWCurr ON|OFF`	ON / OFF	Enable/disable 2-wire resistance low-current test mode.
`SENSe1:RESistance:AZERo ON|OFF`	ON / OFF	Enable/disable 2-wire resistance auto-zero.
`SENSe1:FRESistance:RANGe <value>`	10–100E+6 (Ω) · MIN/MAX/DEF	Set a fixed 4-wire resistance range.
`SENSe1:FRESistance:RANGe?`	—	Query 4-wire resistance range.
`SENSe1:FRESistance:RANGe:AUTO ON|OFF`	ON / OFF	Enable/disable 4-wire resistance auto-ranging.
`SENSe1:FRESistance:NPLC <value>`	0.02, 0.2, 1, 10, 100	Set 4-wire resistance integration time.
`SENSe1:FRESistance:AZERo ON|OFF`	ON / OFF	Enable/disable 4-wire resistance auto-zero.

3.5 Frequency / period

Command	Parameters	Description
`SENSe1:FREQuency:RANGe <value>`	100m, 1, 10, 100, 750 (V, input-level range) · MIN/MAX/DEF	Set the input-level range used for frequency/period measurement.
`SENSe1:FREQuency:RANGe?`	—	Query range.
`SENSe1:FREQuency:RANGe:AUTO ON|OFF`	ON / OFF	Enable/disable auto-ranging.
`SENSe1:FREQuency:APERture <value>`	3, 20, 200 (Hz, gate bandwidth)	Set the frequency/period gate (aperture) bandwidth.
`SENSe1:FREQuency:APERture?`	—	Query gate bandwidth.
`SENSe1:FREQuency:MODE <mode>`	FREQ, PER	Select Frequency or Period display mode.
`SENSe1:FREQuency:MODE?`	—	Query display mode.

3.6 Capacitance

Command	Parameters	Description
`SENSe1:CAPacitance:RANGe <value>`	1n–10m (F) · MIN/MAX/DEF	Set a fixed capacitance range.
`SENSe1:CAPacitance:RANGe?`	—	Query range.
`SENSe1:CAPacitance:RANGe:AUTO ON|OFF`	ON / OFF	Enable/disable auto-ranging.

3.7 Diode / continuity

Command	Parameters	Description
`SENSe1:DIODe:THReshold <value>`	Numeric, V	Set the diode test threshold voltage.
`SENSe1:DIODe:THReshold?`	—	Query diode threshold.
`SENSe1:CONTinuity:THReshold <value>`	Numeric, Ω	Set the continuity test threshold resistance.
`SENSe1:CONTinuity:THReshold?`	—	Query continuity threshold.

3.8 Temperature

Command	Parameters	Description
`SENSe1:TEMPerature:NPLC <value>`	0.02, 0.2, 1, 10, 100	Set temperature-measurement integration time.
`SENSe1:TEMPerature:NPLC?`	—	Query NPLC.
`SENSe1:TEMPerature:AZERo ON|OFF`	ON / OFF	Enable/disable temperature-measurement auto-zero.
`SENSe1:TEMPerature:AZERo?`	—	Query auto-zero state.
`SENSe1:TEMPerature:TRANsducer <type>`	TCouple, THERmistor, RTD, TRTD, FRTD	Select the temperature transducer type (thermocouple; thermistor; RTD 2-wire; RTD 3-wire — TRTD; RTD 4-wire — FRTD).
`SENSe1:TEMPerature:TRANsducer?`	—	Query transducer type.
`SENSe1:TEMPerature:TCouple:TYPE <type>`	B, E, J, K, N, R, S, T	Select the thermocouple type.
`SENSe1:TEMPerature:TCouple:TYPE?`	—	Query thermocouple type.
`SENSe1:TEMPerature:TCouple:RJUNction:SIMulated <value>`	Numeric, ℃	Set the thermocouple simulated (fixed) cold-junction reference value.
`SENSe1:TEMPerature:TCouple:RJUNction:SIMulated?`	—	Query the simulated cold-junction value.
`SENSe1:TEMPerature:TCouple:RJUNction:AUTO ON|OFF`	ON / OFF	Enable/disable automatic (vs. simulated) cold-junction compensation.
`SENSe1:TEMPerature:THERmistor:R25 <value>`	Numeric, Ω	Set the thermistor's R25 (resistance at 25 ℃) parameter.
`SENSe1:TEMPerature:THERmistor:B <value>`	Numeric	Set the thermistor's B (beta) parameter.
`SENSe1:TEMPerature:RTD:STANdard <type>`	PT100, PT385	Select the RTD standard.
`SENSe1:TEMPerature:RTD:STANdard?`	—	Query RTD standard.

SECTION 4

TRIGger Subsystem

Command	Parameters	Description
`ABORt`	—	Abort a measurement or scan in progress and return the instrument to the idle state.
`*TRG`	—	Trigger one measurement. Effective when the trigger source is `BUS`.
`FETCh?`	—	Fetch the result of the most recent measurement, without initiating a new one.
`READ?`	—	Initiate a measurement and return its result once complete (equivalent to `*TRG` followed by `FETCh?`).
`TRIGger:SOURce <source>`	CONTinue, MANual, BUS	Set the trigger source: internal continuous; front-panel `Trigger` key; remote-command (`*TRG` / `READ?`).
`TRIGger:SOURce?`	—	Query trigger source.
`TRIGger:COUNt <value>`	Numeric · MIN/MAX/DEF	Set the number of measurements/scans to perform per trigger.
`TRIGger:COUNt?`	—	Query trigger count.
`TRIGger:DELay <value>`	Numeric, s · MIN/MAX/DEF	Set the delay between trigger and the start of measurement.
`TRIGger:DELay?`	—	Query trigger delay.

SECTION 5

ROUTe Subsystem

Manages the multi-channel scan list, using the channel-addressing syntax defined in §1.3.

Command	Parameters	Description
`ROUTe:SCAN:CREAte (@<list>)`	Channel list, e.g. (@101:120)	Create a new scan list from the specified channels, replacing any existing scan list.
`ROUTe:SCAN:ADD (@<list>)`	Channel list	Add the specified channels to the existing scan list.
`ROUTe:SCAN:COUNt <value>`	Numeric · MIN/MAX/DEF	Set the number of scan-list loop repetitions.
`ROUTe:SCAN:COUNt?`	—	Query scan-loop count.
`ROUTe:SCAN:CLEAr`	—	Clear the current scan list.
`ROUTe:SCAN:LOOP:DELay <value>`	Numeric, s	Set the delay inserted between successive scan-list loops.

SECTION 6

CALCulate Subsystem

Covers the limit (pass/fail), math (Mx+b) and relative (null) functions described in the Operation Manual §4.2.

Command	Parameters	Description
`CALCulate:LIMit1:STATe ON|OFF`	ON / OFF	Enable/disable Limit 1.
`CALCulate:LIMit2:STATe ON|OFF`	ON / OFF	Enable/disable Limit 2.
`CALCulate:LIMit1:FAIL?`	—	Query whether the last reading failed Limit 1. Returns 0 (pass) or 1 (fail).
`CALCulate:LIMit2:FAIL?`	—	Query whether the last reading failed Limit 2.
`CALCulate:LIMit:BEEP ON|OFF`	ON / OFF	Enable/disable the audible limit-fail alarm.
`CALCulate:LIMit:CLEAr:AUTO ON|OFF`	ON / OFF	Enable/disable automatic clearing of limit settings when the measurement configuration changes.
`CALCulate:LIMit1:LOWer:DATA <value>` / `CALCulate:LIMit1:UPPer:DATA <value>`	Numeric	Set Limit 1 lower / upper bound.
`CALCulate:LIMit2:LOWer:DATA <value>` / `CALCulate:LIMit2:UPPer:DATA <value>`	Numeric	Set Limit 2 lower / upper bound.
`CALCulate:MATH:STATe ON|OFF`	ON / OFF	Enable/disable the Mx+b math function.
`CALCulate:MATH:MBFactor <value>`	Numeric (gain, m)	Set the math gain factor m.
`CALCulate:MATH:MMFactor <value>`	Numeric (offset, b)	Set the math offset factor b.
`CALCulate:RELative <value>`	Numeric	Set the stored relative (null) reference value.
`CALCulate:RELative:STATe ON|OFF`	ON / OFF	Enable/disable the relative (null) function.

SECTION 7

SYSTem Subsystem

7.1 General system settings

Command	Parameters	Description
`SYSTem:BEEP ON|OFF`	ON / OFF	Enable/disable the system beeper.
`SYSTem:POW <state>`	LAST, FACTory	Set the power-on state (restore last settings, or factory default).
`SYSTem:POW?`	—	Query power-on state.
`SYSTem:PRECision <value>`	AUTO, 3, 4, 5, 6	Set the display precision (digit count).
`SYSTem:PRECision?`	—	Query display precision.
`SYSTem:DATE <yyyy>,<mm>,<dd>`	Date fields	Set the system date.
`SYSTem:DATE?`	—	Query system date.
`SYSTem:TIME <hh>,<mm>,<ss>`	Time fields	Set the system time.
`SYSTem:TIME?`	—	Query system time.

7.2 LAN communication settings

Command	Parameters	Description
`SYSTem:COMMunication:LAN:DHCP ON|OFF`	ON / OFF	Enable/disable DHCP.
`SYSTem:COMMunication:LAN:MACaddress?`	—	Query the LAN MAC address (read-only).
`SYSTem:COMMunication:LAN:PORT <value>`	Numeric	Set the LAN communication port.
`SYSTem:COMMunication:LAN:PORT?`	—	Query LAN port.
`SYSTem:COMMunication:LAN:IP <addr>`	IPv4 address	Set the static IP address (when DHCP is OFF).
`SYSTem:COMMunication:LAN:IP?`	—	Query IP address.
`SYSTem:COMMunication:LAN:SUBnet <mask>`	IPv4 subnet mask	Set the subnet mask.
`SYSTem:COMMunication:LAN:SUBnet?`	—	Query subnet mask.
`SYSTem:COMMunication:LAN:GATEway <addr>`	IPv4 address	Set the default gateway.
`SYSTem:COMMunication:LAN:GATEway?`	—	Query gateway address.

7.3 RS232 communication settings

Command	Parameters	Description
`SYSTem:COMMunication:RS232:BAUDrate <value>`	4800–115200	Set the RS232 baud rate.
`SYSTem:COMMunication:RS232:BAUDrate?`	—	Query baud rate.
`SYSTem:COMMunication:RS232:DATAbits <value>`	5–8	Set the RS232 data bits.
`SYSTem:COMMunication:RS232:PARity <mode>`	NULL, EVEN, ODD, SPACE, MARK	Set the RS232 parity.
`SYSTem:COMMunication:RS232:STOPbits <value>`	OneStop, TwoStop, OneAndHalfStop	Set the RS232 stop bits.

See the Operation Manual §5.2.2 for the equivalent front-panel RS232 settings page.

Related documents

- TH2554 Series Operation Manual (Techmize) — instrument setup, front-panel operation, physical remote-interface setup, module configuration
- TH2554 Series Datasheet (Techmize)

Techmize Electronic GmbH

Office 125–126, Regus
Carl-Zeiss-Ring 15a, 85737 Ismaning, Germany
An international subsidiary of Changzhou Tonghui Electronic Co., Ltd. (China)

Contact

Mobile: +49 171 4981898
Email: sales@techmize-instruments.eu
Web: www.techmize-instruments.eu

Registration

Managing Director: Haohua Zhao
Register Court: Amtsgericht München
HRB 312530 · VAT ID DE463170824