TECHMIZE by TONGHUI

OM

OPERATION MANUAL

TH2554 Series

Data Acquisition / Switch System. Covers front-panel operation, module configuration, measurement setup, scanning, system settings and file management; see Chapter 7 for the remote-control interfaces and the companion SCPI Command Reference for the full command set.

Techmize Electronic GmbH · Ismaning, Germany
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TH2554 Series Operation Manual

Data Acquisition / Switch System

This is the English-language edition of the TH2554 Series Operation Manual. The TH2554 is a 5-slot modular data acquisition/switch mainframe: fit a **TH2554-DMM** 6½-digit measurement module together with up to four **TH2554-01** (20-channel), **TH2554-02** (40-channel) and/or **TH2554-03** (20-channel high-speed) multiplexer modules, in any combination, for up to 160 switched channels.

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The full SCPI command reference (≈75 commands across 6 subsystems) is issued as a separate companion document, TH2554 Series SCPI Command Reference, in line with Techmize's standard practice for command sets of this size. Chapter 7 of this manual covers the remote interfaces and command structure only.

CHAPTER 1

Safety & Compliance

1.1 About this manual

This is the original-language (English) edition of the operation manual for the Techmize TH2554 data acquisition/switch system. Where this manual and the instrument itself appear to disagree, or where a described function is not present on your particular module configuration, contact Techmize or your authorized distributor using the details in §1.9 before relying on the instrument for measurement decisions.

Techmize continually improves the performance, features and construction of its instruments; content, specifications and accessories described here are subject to change without notice.

1.2 Safety symbols used in this manual

WARNING — a hazard that, if not avoided, could result in personal injury or death.

CAUTION — a hazard that, if not avoided, could damage the instrument or invalidate a measurement.

NOTE — supplementary information that helps with correct or efficient use.

Protective ground — this terminal must be connected to protective earth.

1.3 General safety requirements

The TH2554 is a **Protection Class I** instrument: protective earthing of the chassis, via the three-wire AC power cord, is essential to safety and must not be defeated.

> **WARNING — ELECTRIC SHOCK**
>
> Always use a supply outlet with a protective earth contact. Never operate the instrument with the protective ground disconnected.

The instrument's AC inlet accepts a **90–264 V** supply, **50 Hz/60 Hz (1 ±5%)**, power consumption **< 250 VA** — no manual voltage-range selector switch is required.

> **CAUTION — FUSE RATING**
>
> Replace the fuse only with the specified 1 A type, and disconnect the power cord first. See the fuse-replacement steps in §2.2.

> **WARNING — TEST TERMINALS**
>
> Do not connect any input signal exceeding 300 V_{DC} or 300 V_{rms} to the DMM module's measurement terminals or to any TH2554-01/TH2554-02 multiplexer channel, or exceeding 60 V to any TH2554-03 channel. Never connect the Guard terminal to any output, common circuit, chassis ground or other protective terminal — this can damage the instrument. Never apply current to the chassis ground terminal.

Environment. Normal operation: 0–40 °C, ≤90% RH (reference condition for rated accuracy: T_{CAL} ±5 °C after a 60-minute warm-up). Avoid dusty, vibrating, direct-sunlight or corrosive-gas environments; ensure good ventilation — the instrument draws air in at the sides and exhausts at the rear, so keep these clear. Install a power-line filter if operating in an electrically noisy environment. Avoid frequent power-cycling, to prevent loss of stored data.

General specifications	
Overall dimensions (W×H×D)	235 mm × 154 mm × 480 mm
Weight	≈ 7.8 kg

1.4 Safety & EMC standards

Category	Standard
Safety	Class I equipment; complies with Directive 2014/35/EU; EN 61010-1:2010+A1:2019
Insulation resistance	≥ 50 MΩ (reference conditions), ≥ 2 MΩ (humid transport conditions), supply terminals to chassis
Dielectric withstand	1.5 kV AC, 50 Hz, 1 minute, supply terminals to chassis — no breakdown or flashover
Leakage current	≤ 3.5 mA (AC RMS)
EMC	Complies with Directive 2014/30/EU; EN 61326-1:2021
Emissions	CISPR 11:2015+A1:2016+A2:2019, Group 1 Class A
Immunity	EN 61000-4-2:2009 (ESD) · EN 61000-4-3:2020 (RF field) · EN 61000-4-4:2012 (burst) · EN 61000-4-5:2014+A1:2017 (surge) · EN 61000-4-6:2014 (conducted RF) · EN 61000-4-11:2020 (dips/interruptions)
Supply harmonics/flicker	EN 61000-3-2:2019+A1:2021 · EN 61000-3-3:2013+A1:2019+A2:2021

1.5 Warm-up

Allow at least **60 minutes** of warm-up after switch-on before relying on the rated accuracy figures in Chapter 6.

1.6 CE marking

The TH2554 series carries the CE mark.

1.7 WEEE — disposal of electrical and electronic equipment



This symbol indicates that the instrument must not be disposed of as unsorted municipal waste at the end of its service life. Within the European Union, return the instrument to Techmize, your distributor, or a designated collection point, in accordance with the WEEE Directive (2012/19/EU) and its national transposition in your country.

1.8 Warranty & service

Techmize warrants this instrument to be free from defects in material and workmanship for a period of **two (2) years** from the date of delivery to the original purchaser. A warranty card is required to claim warranty service. This warranty does not cover damage from misuse, accident, unauthorized modification or repair, or operation outside the environmental limits in §1.3. The instrument must be serviced or calibrated only by qualified technical personnel — do not replace internal components without authorization; after any repair, the instrument must be recalibrated before further use. Techmize is not liable for data loss on a USB storage device used with the instrument.

1.9 Manufacturer & EU contact

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Registration

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CHAPTER 2

Out of the Box

2.1 Unpacking

Inspect the shipping container for damage after unpacking. It is not recommended to power on the instrument if the container shows signs of damage — contact your carrier and your Techmize distributor before proceeding. Check the contents against the packing list below.

Item	Qty
TH2554 mainframe (with ordered modules fitted)	1
EU power cable (Schuko, CEE 7/7)	1
1 A fuse	2
Operation manual	1
Test report	1
Warranty card	1

Keep the original packaging — it is the recommended way to store or return the instrument. Store the instrument in a dry, well-ventilated room when not in use for an extended period, away from corrosive gases and direct sunlight.

2.2 Connecting the power supply

Item	Specification
Supply	90–264 V AC, 50 Hz/60 Hz (1 ±5%) — auto-ranging, no voltage selector switch
Power consumption	< 250 VA
Fuse	1 A, rear-panel fuse holder

Match the L (line), N (neutral) and E (earth) conductors of the supply cable to the instrument's rear-panel power inlet, and confirm reliable grounding before switching on.

Fuse-replacement procedure

1. Switch off the instrument and disconnect the power cable.
2. Use a screwdriver to remove the fuse-holder cover, then remove the fuse.
3. Fit a replacement fuse of the specified rating, refit the fuse holder and cover.

> **WARNING**
>
> To avoid electric shock or fire, use only the specified fuse rating (1 A).

2.3 Fitting plug-in modules

The TH2554 mainframe provides 5 rear slots, accepting any combination of up to 5 modules (one TH2554-DMM measurement module is mandatory; TH2554-01, TH2554-02 and TH2554-03 multiplexer modules are optional). When a module is inserted into a slot, the front-panel setup page automatically identifies and shows the corresponding slot position.

> **CAUTION**
>
> Switch off the instrument and disconnect the power cable before inserting or removing a module.

2.4 Starting the instrument for the first time

1. Connect the EU power cable to the rear-panel inlet, confirming reliable earth-ground connection.
2. Press the front-panel **POWER** switch.
3. The instrument detects the fitted modules; this can take a few seconds to tens of seconds depending on the number of modules — no user operation is possible while module detection is in progress.
4. The display opens on the default <Measure> page.

If the instrument does not start normally: (1) check that the power cable is correctly connected; (2) check that the front-panel power switch is on; (3) disconnect the power cable and check that the fuse is intact — if blown, request a replacement; (4) after these checks, restart the instrument; if the fault persists, contact Techmize.

Allow at least 60 minutes of warm-up before relying on the rated accuracy (§1.5). For an overview of the front panel, rear panel and module layout, continue to Chapter 3.

CHAPTER 3

Getting to Know the Instrument

3.1 Front panel



Power switch — turns the instrument on/off; LED is green when on, red when off.

USB connector — for USB flash-drive storage. After disconnecting a USB drive, wait 10 seconds before reconnecting it or connecting a new one.

Home — returns the display to the HOME (measure) screen.

Menu — opens the main menu (Channel / Measure / Graph / Trigger / Script / System icons).

Trigger — accesses trigger-related settings and actions; its behaviour depends on instrument state.

PrtScn — with a USB drive connected, saves the current screen content as a *.bmp file.

Rear — switches the display between front-panel-input settings and rear-slot module settings.

Measurement terminals — High Force, Low Force, High Sense, Low Sense, Guard and chassis ground.

Rotary knob — for fast channel selection and menu navigation/data entry.

7" capacitive touchscreen — 800×480 resolution; access via sliding screens and menu options.

> **WARNING — GUARD TERMINAL**
>
> Do not connect the Guard terminal to any output, common circuit, chassis ground or other protective terminal — this can damage the instrument. Never apply current to the chassis ground terminal.

3.2 Rear panel



Power inlet & fuse — AC supply inlet, 90–264 V AC, 50/60 Hz, fuse holder (1 A).

LAN connector — 10/100Base-T; left LED = activity, right LED = link.

USB connector — for connecting a USB storage device.

RS232 connector — general-purpose communication interface for remote control (all parameter settings and commands are accessible remotely).

IEEE-488/GPIB & Handler connector — a shared DSUB25 female connector: IEEE-488/GPIB (optional) or Handler general-purpose I/O (optional, data input/output, trigger input/output).

5 module slots — accept any combination of up to 5 modules; automatic module recognition and slot-position display on the front panel.

3.3 Plug-in module overview

Module	Description
TH2554-DMM	6½-digit measurement module (mandatory). Measurement functions: DCV, ACV, DCI, ACI, 2-wire resistance, 4-wire resistance, frequency, period, temperature, and arbitrary-sensor input. Do not connect an input signal above 300 V_{DC} or 300 V_{rms} to the analog bus once a DMM module is fitted.
TH2554-01	20-channel differential multiplexer, optional. All 20 channels can switch HI and LO inputs, providing fully isolated signals to the DMM module. Divided into two rows of 10 two-wire channels each (A and B); when performing a 4-wire resistance measurement, row-A and row-B channels are automatically paired. Two additional dedicated current channels are provided for current measurement. All channels added to the scan list are break-before-make; a channel not added to the scan list may be closed alongside other channels. Built-in thermocouple cold-junction compensation. Max. rating 300 V / 1 A. Scan speed 90 CH/s.
TH2554-02	40-channel multiplexer, optional. Divided into two groups of 20 channels each; all 40 channels switch HI only, sharing one common LO for the module. Two additional dedicated current channels are provided for current measurement. Built-in thermocouple cold-junction reference connection minimizes error from thermal gradients during thermocouple measurement. Max. voltage measurement 300 V, max. current measurement 1 A. Test ports have a common terminal, supporting 1-to-many configuration. Fast scan speed, 90 CH/s.
TH2554-03	20-channel high-speed multiplexer, optional. 20 × 2-wire / 10 × 4-wire channels switched by solid-state relays, scan speed 300 CH/s. Built-in thermocouple cold-junction compensation. Max. voltage 60 V; voltage measurement only — the TH2554-03 has no current channels and does not measure current.

3.4 Main menu

Tap the drop-down menu icon in the top-left of the touchscreen to open the main menu, with four options:

Menu item	Function
Measure	Opens the <Measure> page — live measurement display, function selection, settings, statistics, trigger and graph tabs (Chapter 4). The [Home] key also opens this page directly.
Channel	Opens channel setup, channel control and scanning setup for multi-channel scanning (§4.2).
Graph	Opens the buffered-data chart display — histogram, line chart (time on X, result on Y) or data table, for a single channel or all scanned channels (§4.3).
System	Opens system settings, I/O configuration and data/file settings (Chapter 5).

3.5 User interface

The 7" capacitive touchscreen supports direct touch operation throughout: tap a function button to select it, tap a settings field to open its value entry, and use the rotary knob for fast channel selection, menu navigation and data entry (confirm with the knob's push-button). Measurement results can be tapped to enlarge the result display and collapse the function-setting area, or tapped again to restore it.

> **NOTE**
>
> The TH2554 user interface is English-language only.

CHAPTER 4

Basic Measurement Operation

This chapter covers single-channel measurement (front-panel input or a single scanning-board channel) and multi-channel scanning measurement, reached from the <Measure> and <Channel> pages.

4.1 <Measure> page

Opened with the Home key or Menu → Measure. Four tabs: **Function** (select the active measurement function), **Settings** (configure the selected function), **Statistics** (peak-to-peak, average, standard deviation, maximum, minimum of buffered readings) and **Trigger** (trigger source and scan start/stop), plus the **Graph** tab described in §4.3.

Measurement function	Settings
DC voltage (DCV)	Range: 100 mV / 1 V / 10 V / 100 V / 300 V / Auto. NPLC: 0.02 / 0.2 / 1 / 10 / 100. Input impedance: Auto / 10 MΩ (100 V and 300 V ranges always use fixed 10 MΩ; Auto applies to 100 mV/1 V/10 V ranges). Auto-zero: On/Off.
DC current (DCI)	Range: 100 µA / 1 mA / 10 mA / 100 mA / 1 A / 3 A / Auto. NPLC, auto-zero as above.
2-wire / 4-wire resistance	Range: 10 Ω to 100 MΩ / Auto. NPLC, auto-zero as above; low-current test mode available for 2-wire resistance.
AC voltage / AC current	Range as DCV/DCI; AC filter bandwidth: 3 Hz (slow) / 20 Hz (medium, default) / 200 Hz (fast) — choose the filter matching the lowest frequency expected; a lower filter setting gives longer settling time.
Frequency / period	Range: 100 mV / 1 V / 10 V / 100 V / 750 V / Auto. Display mode: Frequency or Period.
Temperature	Sensor: Thermocouple (B/E/J/K/N/R/S/T) / Thermistor / RTD (2-wire/3-wire/4-wire, PT100 or PT385 standard). Thermocouple cold-junction compensation: simulated fixed value or automatic.
Capacitance	Range: 1 nF to 10 mF / Auto.
Continuity / diode / ratio	Fixed test parameters per §6.1; no user-configurable range.

Auto-range adjusts upward at 120% of the current range and downward at 10% of the current range for all functions.

NPLC (integration time) trades measurement speed against accuracy and noise rejection: a longer integration time improves accuracy and noise rejection but slows the reading rate; 100 PLC gives the best noise rejection but the slowest speed.

4.2 Math and limit functions

Function	Description
Null (relative)	Subtracts a stored reference value from subsequent readings: displayed reading = actual reading − reference. When enabled, the current reading is captured as the reference. The reference is shared across all ranges of the active function, and is reset when re-enabled. Does not change the maximum allowed input signal.
Math (Mx+b)	Applies gain (m) and offset (b) to every reading during a scan, per multiplexer channel: Y = mX + b, where X is the raw displayed reading and Y is the calculated result shown on screen.
Limit 1 / Limit 2	Upper/lower pass-fail limits, set via the numeric keypad, with an optional audible alarm. When auto-clear is on, changing the measurement configuration disables the alarm and clears the limit settings.

4.3 Buffered data & charting

The instrument buffers up to **100,000** timestamped readings. Buffered data supports a timeline (line-chart) display and statistical analysis. From the <Graph> page (Menu → Graph), buffered data can be displayed as:

- **Histogram** — distribution of buffered readings.
- **Line chart** — X axis = time, Y axis = measured result; single channel or overlay of all scanned channels.
- **Data table** — tabular list of index/time/reading/channel, for a single measurement or multi-channel scanning.

Test data can be stored in .CSV, .TXT or .DAT format, with scientific or floating-point numeric formatting, including channel, time and function columns as selected; data export supports direct USB flash-drive file exchange (§5.3).

4.4 Trigger

Trigger source: `CONTinue` (continuous internal trigger) / `MANual` (front-panel **Trigger** key) / `BUS` (remote-command trigger). Trigger count and trigger delay are independently configurable per the active function/channel.

4.5 Single-channel measurement

The TH2554 supports measurement either from the front-panel input terminals or from any channel on a fitted scanning module, switched with the front-panel channel-select key. All measurement functions and settings in §4.1 are available in both input modes.

Input source	Description
Front-panel input	High Force/Low Force/High Sense/Low Sense/Guard terminals — used for direct bench measurement without a scanning module channel.
Scanning-board channel	Any single channel (e.g. CH101) on a fitted TH2554-01/TH2554-02/TH2554-03 module, addressed by slot and channel number.

4.6 Multi-channel scanning measurement

Reached from the drop-down menu's Channel page, with three configuration areas plus a results view:

Area	Description
Main channel scanning parameters	Per-channel switch (enable/disable), measurement function and range for the module's primary scanning channels.
Independent current-channel parameters	Separate function/range/filter settings for the module's dedicated current-only channels (available on TH2554-01/TH2554-02).
Scanning control & display	Scan list management (add/remove channels), scan count, loop delay, start/stop control, and live scan-result display.

The scan list can be built from any combination of fitted-module channels (e.g. `(@101:120)`), with configurable scan-loop count and inter-loop delay. Scanning results can be viewed directly on the Channel page's scan-list view, switching between channels without leaving the scanning interface.

CHAPTER 5

System Setup & File Management

5.1 System settings

Field	Options / range
Beeper	On / Off
Language	English (user interface is English-language only)
Power-on state	Last (restores the state at last power-off) / Factory (factory default state)
Display precision	Auto / 3 / 4 / 5 / 6 digits
Date & time	Year/month/day, hour/minute/second — user-adjustable

5.2 I/O configuration

5.2.1 Network (LAN) settings

Field	Description
DHCP	On / Off
IP address	User-configurable (static) or assigned automatically when DHCP is on
Subnet mask	User-configurable
Gateway	User-configurable
MAC address	Read-only, factory-assigned

5.2.2 RS232C serial-port settings

Field	Options
Baud rate	4800 / 9600 / 19200 / 38400 / 57600 / 115200
Data bits	5 / 6 / 7 / 8
Parity	None / Even / Odd / Space / Mark
Stop bits	1 / 2 / 1.5

5.2.3 Handler settings

Configuration for the optional Handler interface (shares the rear-panel DSUB25 connector with IEEE-488/GPIB — only one can be fitted at a time). Contact Techmize for the Handler pin assignment and timing diagram if integrating with an automated test system.

5.3 Data & file settings

5.3.1 Data settings

Field	Options
Save fields	Channel / Time / Function — each independently selectable for inclusion in saved records
File format	.CSV / .TXT / .DAT
Data format	Scientific / Floating-point
Buffer actions	Clear data / Save data / Record data (start continuous logging)

The system page shows live internal-memory and USB-storage fill percentage. A data-record file is generated automatically when data logging is started.

5.3.2 File settings

Flexible file handling supports data exchange via a connected USB flash drive — settings, screen captures and logged data can be written to and read from USB storage directly from the System page.

5.4 Version information

The System → Info page shows the firmware version (e.g. `TH2554@V1.0.23`), serial number, compile time and control-board firmware version, and provides firmware upgrade controls (via USB flash drive or network connection) without requiring the unit to be returned to the factory. Per-slot module information is also available from this page.

CHAPTER 6

Performance & Specifications

Specifications apply after a 60-minute warm-up, 1-year calibration cycle, T_{CAL} ± 5°C, with accuracy stated as ±(% of reading + % of range) unless noted.

6.1 DC voltage & DC current

DCV range	Resolution	24 h accuracy	90 day accuracy	1-year accuracy
100.0000 mV	0.1 µV	0.0030 + 0.0030	0.0040 + 0.0035	0.0050 + 0.0035
1.000000 V	1 µV	0.0020 + 0.0006	0.0030 + 0.0007	0.0040 + 0.0007
10.00000 V	10 µV	0.0015 + 0.0004	0.0020 + 0.0005	0.0035 + 0.0005
100.0000 V	100 µV	0.0020 + 0.0006	0.0035 + 0.0006	0.0045 + 0.0006
300.000 V	1 mV	0.0020 + 0.0006	0.0035 + 0.0010	0.0045 + 0.0010

DCI range	Int. R / V drop	24 h accuracy	90 day accuracy	1-year accuracy
10 µA	< 0.11 V	0.020 + 0.030	0.040 + 0.040	0.050 + 0.040
100 µA	< 0.011 V	0.010 + 0.006	0.040 + 0.006	0.050 + 0.006
1 mA	< 0.011 V	0.007 + 0.006	0.030 + 0.006	0.050 + 0.006
10 mA	< 0.05 V	0.007 + 0.006	0.030 + 0.006	0.050 + 0.006
100 mA	< 0.5 V	0.010 + 0.004	0.030 + 0.005	0.050 + 0.005
1 A	< 0.7 V	0.050 + 0.006	0.080 + 0.010	0.100 + 0.010
3 A	< 2.0 V	0.180 + 0.020	0.200 + 0.020	0.200 + 0.020

6.2 DC resistance

Range	Test current	24 h accuracy	90 day accuracy	1-year accuracy
10.00000 Ω	10 mA	0.0050 + 0.0040	0.0100 + 0.0060	0.0120 + 0.0080
100.0000 Ω	10 mA	0.0030 + 0.0020	0.0080 + 0.0030	0.0100 + 0.0040
1.000000 kΩ	1 mA	0.0020 + 0.0005	0.0080 + 0.0010	0.0100 + 0.0010
10.00000 kΩ	100 µA	0.0020 + 0.0005	0.0080 + 0.0010	0.0100 + 0.0010
100.0000 kΩ	10 µA	0.0020 + 0.0005	0.0080 + 0.0010	0.0100 + 0.0010
1.000000 MΩ	5 µA	0.0020 + 0.0010	0.0080 + 0.0010	0.0100 + 0.0010
10.00000 MΩ	500 nA	0.0150 + 0.0010	0.0200 + 0.0010	0.0400 + 0.0010
100.0000 MΩ	500 nA // 10 MΩ	0.3000 + 0.0100	0.8000 + 0.0100	0.8000 + 0.0100

Resistance measurement range: 10 µΩ – 120 MΩ. For resistance > 100 kΩ, use shielded test leads — a large test resistance combined with a small test current gives a lower signal-to-noise ratio, which can make the reading unstable. 2-wire resistance measurement without auto-zero enabled adds up to 0.2 Ω of extra error.

6.3 AC voltage & AC current

ACV frequency	24 h accuracy	90 day accuracy	1-year accuracy	Temp. coeff./°C
3 Hz – 5 Hz	1.00 + 0.02	1.00 + 0.02	1.00 + 0.03	0.100 + 0.003
5 Hz – 10 Hz	0.35 + 0.02	0.35 + 0.03	0.35 + 0.03	0.035 + 0.003
10 Hz – 20 kHz	0.04 + 0.02	0.05 + 0.03	0.06 + 0.03	0.005 + 0.003
20 kHz – 50 kHz	0.10 + 0.04	0.11 + 0.05	0.12 + 0.05	0.011 + 0.005
50 kHz – 100 kHz	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008
100 kHz – 300 kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.200 + 0.020

ACV accuracy applies for a sine-wave input > 0.3% of range and > 1 mV_{rms}; the 300 V ACV range is limited to an 8×Volt–Hz product. Three AC filter settings are provided (3 Hz/20 Hz/200 Hz) — no additional error is incurred for frequencies above the selected filter setting.

ACI range / frequency	V drop	24 h accuracy	1-year accuracy	Temp. coeff./°C
100 µA–100 mA, 3–5 kHz	< 0.011–0.5 V	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
100 µA–100 mA, 5–10 kHz	< 0.011–0.5 V	0.10 + 0.04	0.10 + 0.04	0.030 + 0.006
1 A, 3–5 kHz	< 0.7 V	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
1 A, 5–10 kHz	< 0.7 V	0.10 + 0.04	0.10 + 0.04	0.030 + 0.006
3 A, 3–5 kHz	< 2.0 V	0.23 + 0.04	0.23 + 0.04	0.015 + 0.006
3 A, 5–10 kHz	< 2.0 V	0.23 + 0.04	0.23 + 0.04	0.030 + 0.006

ACI accuracy applies for a sine-wave input > 1% of range and > 10 µA AC.

6.4 Other functions

Function	Range	1-year accuracy
Continuity (1 kΩ range, 1 mA)	—	0.010 + 0.030
Diode (5 V range, 1 mA)	—	0.010 + 0.030
Frequency / period	3 Hz – 300 kHz	0.010 – 0.100 depending on range/frequency band
Capacitance	0.0001 nF – 10.000 mF	0.2+0.05 to 1.0+0.50 depending on range
Temperature — PT100 (DIN/IEC 751)	—	probe accuracy + 0.05 °C
Temperature — 5 kΩ thermistor	—	probe accuracy + 0.10 °C

6.5 General & system specifications

Parameter	Specification
Mainframe	5-slot modular chassis; up to 160 switched channels
Reading rate	Up to 1,000 readings/second
Scan buffer	Up to 100,000 timestamped readings
Display	7" capacitive color touchscreen, 800 × 480
Remote interfaces	RS232, USB Host, USB Device, LAN standard; IEEE-488/GPIB and Handler optional (shared rear-panel slot)
Remote command set	SCPI
Power supply	90 – 264 V AC, 50/60 Hz (1 ± 5%), < 250 VA
Operating environment	0°C – 40°C, ≤ 90% RH
Dimensions (W×H×D)	235 × 154 × 480 mm
Weight	7.8 kg

6.6 Multiplexer module ratings

Parameter	TH2554-01	TH2554-02	TH2554-03
Channels	20 × 2-wire / 10 × 4-wire, plus 2 current channels	40 × 2-wire / 20 × 4-wire, plus 2 current channels	20 × 2-wire / 10 × 4-wire
Max. voltage	300 V	300 V	60 V
Max. current	1 A	1 A	— (voltage only)
Scan speed	90 CH/s	90 CH/s	300 CH/s
Relay type	Electromechanical	Electromechanical	Solid-state
Thermocouple CJC	Built-in	Built-in	Built-in

PART II

Remote Control

Covers the RS232, USB, LAN and optional IEEE-488/GPIB remote interfaces and the SCPI command structure. The full SCPI command tables are issued separately as the *TH2554 Series SCPI Command Reference*.

CHAPTER 7

Remote Control

The TH2554 can be controlled remotely over RS232, USB Device, LAN, and the optional IEEE-488/GPIB interface, all using the standard **SCPI** command language. For the complete command set, syntax reference and worked examples, see the companion *TH2554 Series SCPI Command Reference*.

7.1 Remote interfaces

Interface	Description
RS232	General-purpose serial communication interface; baud rate, data bits, parity and stop bits configurable (§5.2.2).
USB Device	Rear-panel USB connection for PC control.
LAN	10/100Base-T network interface; DHCP or static IP configuration (§5.2.1).
IEEE-488/GPIB	Optional; shares the rear-panel DSUB25 slot with the Handler interface (one or the other, not both).

7.2 SCPI command structure

Commands follow standard SCPI hierarchical syntax, organized into subsystems: common commands (`*IDN?` , `*RST` , `*OPC?` , `TERMinal` , `SLOT:INFO?`), `SENSe1` (measurement function and per-function range/NPLC/filter settings), `TRIGger` (trigger source, count, delay, abort), `ROUTe` (scan-list management), `CALCulate` (limits, math, relative), and `SYSTem` (language, beeper, date/time, display precision, LAN/RS232 communication settings). Channels are addressed with the syntax `(@XXX)` , e.g. `(@101:120)` , `(@SLOT1)` or `(@ALLSLOTS)` . `MIN` / `MAX` / `DEF` parameter substitution is supported on applicable commands.

A representative identification query:

Command	Example response
`*IDN?`	`TECHMIZE,TH2554,00000000,1.0.23` (manufacturer, model, serial number, firmware version)

APPENDIX

Packing, Warranty & Firmware

A.1 Standard accessories

See §2.1 for the full packing list (mainframe with ordered modules, EU power cable, spare fuses, documentation).

A.2 Ordering information

Model	Description
TH2554	5-slot data acquisition/switch mainframe
TH2554-DMM	6½-digit DMM measurement module (mandatory)
TH2554-01	20-channel differential multiplexer module
TH2554-02	40-channel differential multiplexer module
TH2554-03	20-channel high-speed multiplexer module

A.3 Transport & storage

Store the instrument in its original packaging, in a dry, well-ventilated location, away from corrosive gases and direct sunlight, for any extended period of non-use. During transport, protect the instrument from shock, vibration and moisture.

A.4 Firmware upgrade

Firmware can be upgraded via a USB flash drive or over the network connection, without returning the instrument to the factory. The System → Info page (§5.4) shows the current firmware version and provides the upgrade controls.

A.5 Related documents

- TH2554 Series Datasheet (Techmize)
- TH2554 Series SCPI Command Reference (Techmize, companion to this manual)

A.6 Contacting Techmize

For technical support, accessories, calibration or service, contact Techmize directly or through your authorized Techmize distributor.

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