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OPERATION MANUAL

TH2692

Insulation Resistance Tester. Covers front-panel operation, measurement/comparator setup, system configuration, file management and the instrument interfaces; see the companion *TH2692 SCPI Command Reference* for the full remote-command set.

Techmize Electronic GmbH · Ismaning, Germany · an international subsidiary of Changzhou Tonghui Electronic Co., Ltd.

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TH2692 Operation Manual

Insulation Resistance Tester

This manual describes the operation of the TH2692 Insulation Resistance Tester. The TH2692 measures insulation resistance and leakage current up to 1000 V DC, with a 7" touchscreen interface, 16-file memory, and comparator, contact-check and short-circuit-check functions.

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The full SCPI command reference is issued as a separate companion document, TH2692 SCPI Command Reference, in line with Techmize's standard practice for command sets of this size. Chapter 4 of this manual covers the remote interfaces and command-structure overview only. The TH2692 uses the SCPI command set only; it does not support MODBUS.

CHAPTER 1

Overview

1.1 Introduction

The TH2692 is an insulation resistance tester with a fast high-voltage ramp rate, high accuracy and high stability. It provides high/low-end contact-check and upper/lower-limit pickout functions, and is equipped with a 37-pin EXT.I/O interface, an RS232C interface and a USB Device interface, making it well suited to automated production-line testing. Its built-in low-voltage short-circuit check function is particularly suited to battery-cell micro-short testing, avoiding the risk of a good part being misjudged as defective because a micro-short inside the cell was burned open by the applied high voltage. An electric-current zero-clearing function can be used to reduce the measurement bias caused by ambient temperature, humidity and similar factors when testing a highly insulating object.

Key performance features:

- Adjustable test voltage up to 1000 V, maximum test current 2.4 mA
- Resistance measurement range 10 kΩ – 100 GΩ
- Single-measurement speed down to 50 ms
- Upper/lower-limit pickout on both resistance and current
- Four-terminal contact-check function
- Short-circuit check function (battery micro-short test)
- Noise-check function · current zero-clearing function
- 16 storable test files, for fast switching between test conditions
- 7" touchscreen, 800×480 resolution
- Interfaces: USB Device, RS232C, EXT.I/O, Analog Output, USB-A

1.2 Conditions of use

1.2.1 Power supply

Item	Specification
Supply voltage	220 V / 110 V (1±10%)
Supply frequency	50 Hz / 60 Hz (1±5%)
Power consumption	< 50 VA

1.2.2 Environment temperature and humidity

Condition	Temperature	Humidity
Normal operating	0–40 °C	< 90% RH
Reference operating	20 °C ±8 °C	< 80% RH
Transport / storage	0–55 °C	≤ 93% RH

1.2.3 Warm-up

Allow a warm-up time of at least **20 minutes** after power-on before relying on the rated accuracy given in Chapter 5.

1.2.4 Notes

- Do not use the instrument in a dusty, vibrating, direct-sunlight or corrosive-gas environment.
- If the instrument will not be used for an extended period, store it in its original packaging or a similar box, in a well-ventilated room at 5–40 °C and ≤85% RH, away from corrosive gases and direct sunlight.
- The instrument is designed to minimize noise picked up from the AC supply, but should still be used in as low-noise an environment as practical; fit a power-line filter ahead of the instrument if this cannot be avoided.
- Do not switch the instrument on and off frequently, to avoid losing stored data.

1.3 Dimensions and weight

Item	Specification
Dimensions (W×H×D, excl. protrusions such as test ends and connectors)	215 mm × 89 mm × 154 mm
Weight	Approx. 1.9 kg

1.4 Safety requirements

The instrument is a Class I safety-class instrument, complying with the Low Voltage Directive (LVD) 2014/35/EU and EN 61010-1:2010+A1:2019, *Safety requirements for electrical equipment for measurement, control, and laboratory use* (see §5 for the full CE compliance summary).

1.4.1 Insulation resistance

Under reference operating conditions, the insulation resistance between the power-supply terminals and the enclosure is not less than 50 MΩ; under humid transport conditions, not less than 2 MΩ.

1.4.2 Dielectric strength

Under reference operating conditions, the power-supply terminals and the enclosure withstand a rated AC voltage of 1.5 kV at 50 Hz for 1 minute, with no breakdown or flashover.

1.4.3 Leakage current

Leakage current does not exceed 3.5 mA.

1.5 Electromagnetic compatibility

The instrument complies with the EMC Directive 2014/30/EU, EN IEC 61326-1:2021 (*Electrical equipment for measurement, control and laboratory use — EMC requirements*), and with CISPR 11:2015+A1:2016+A2:2019 (radiated and conducted emissions, Group 1, Class A), supported by the following immunity standards: EN 61000-4-2:2009 (electrostatic discharge), EN 61000-4-3:2020 (radiated RF field), EN 61000-4-4:2012 (electrical fast transient/burst), EN 61000-4-5:2014+A1:2017 (surge), EN 61000-4-6:2014 (conducted RF), EN 61000-4-11:2020 (voltage dips and interruptions), EN 61000-3-2:2019+A1:2021 (harmonic current emissions) and EN 61000-3-3:2013+A1:2019+A2:2021 (voltage fluctuations and flicker).

WARNING — HIGH TEST VOLTAGE

The TH2692 outputs a DC test voltage of up to **1000 V** at the front-panel High/Low test terminals. Never touch the test terminals, the device under test, or any connected lead while the instrument is testing (status bar showing "HIGH VOLTAGE DANGER") or while it is discharging. Always wait until the test is stopped and the output has discharged before touching the test circuit.

CAUTION

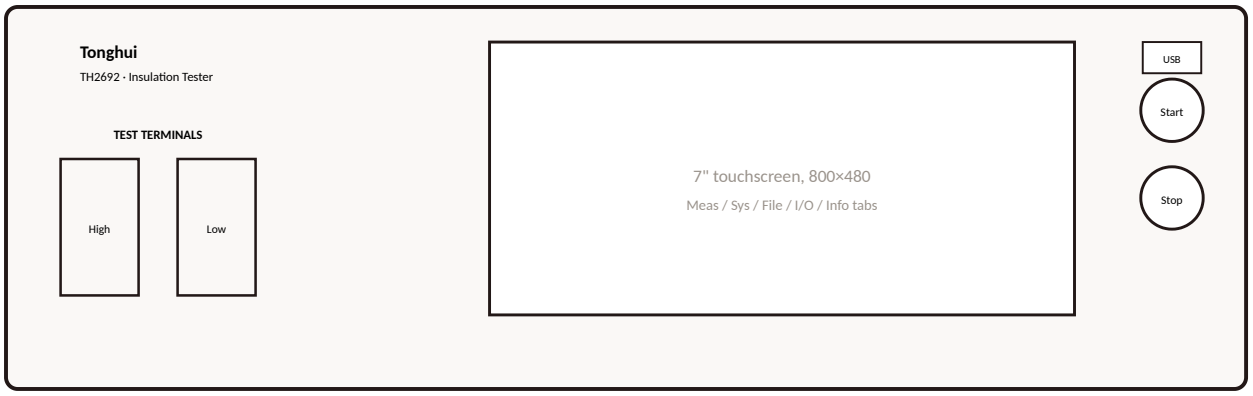
Use only the test leads and the 37-pin EXT.I/O adapter supplied or specified by Techmize/Tonghui. Do not short-circuit the output terminal to the chassis, and do not insert or remove test leads while the instrument is outputting.

CHAPTER 2

Panel Description

This chapter gives a brief overview of the front and rear panels; detailed operation of each setting is covered in Chapter 3, and the EXT.I/O and communication interfaces in Chapter 4.

2.1 Front panel



Simplified front-panel layout (schematic, not to scale)

1 **Trademark & model** plate.

2 **Test terminals** — High: voltage test high end · Low: voltage test low end.

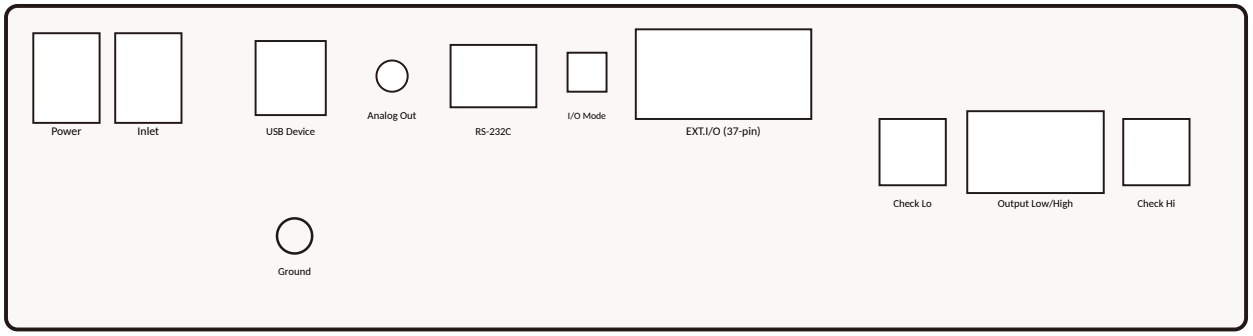
3 **7" touchscreen**, 800×480 resolution — all setup and monitoring (§2.3, Chapter 3).

4 **USB port** — for USB-drive firmware upgrade and screenshot capture.

5 **Start** — in the Stop state, starts the output/test.

6 **Stop** — in the Output state, stops the output; in the Stop state, clears the displayed parameters.

2.2 Rear panel



Simplified rear-panel layout (schematic, not to scale)

1 **Power switch** — mains on/off.

2 **Power inlet** — 3-wire AC inlet with fuse holder.

3 **USB Device port** — serial communication interface (§4.2).

4 **Analog Output** — 0–4 V analog output proportional to the measured insulation resistance (§3.4.7).

5 **RS232C port** — serial communication interface (§4.1).

6 **EXT.I/O Mode switch** — selects sink (NPN) / source (PNP) input-circuit mode; switch only with power off (§4.3.2).

7 **EXT.I/O** — 37-pin external control interface (§4.3).

8 **Contact-check terminals & test port** — Check Low/High for 4-terminal contact check; Output Low/High: High = voltage test high end, Low = voltage test low end.

9 **Ground terminal**.

CHAPTER 3

Operating Instructions

The touchscreen interface is organized into five pages, selected from the menu bar at the top of the screen: **Meas** (measurement), **Sys** (system), **File**, **I/O** (communication) and **Info** (information). This chapter covers each page's settings in turn.

3.1 Measurement page

The default page after power-on. It shows the V/I/T monitor readings, the upper/lower-limit comparator display, the main-parameter measurement value, and the quick-setting row for voltage, speed, timer, comparator beeper, range/zero, delay, comparator mode and main parameter.

3.1.1 Comparator upper/lower limits

Upper/lower-limit comparison can be applied to either current or insulation resistance, selected by the main parameter (§3.1.10). When the main parameter is insulation-resistance mode, the limit range is 0.000–1000 GΩ; when it is current mode, the limit range is 0.000–1000 A. Tap the main-parameter field to toggle between the two modes, then tap the upper/lower-limit field to open the numeric keypad and enter the limit value and its unit.

Judgment display: the upper/lower-limit keys and the main-parameter display area turn green for a pass and red for a fail. The result is also available via RS-232C/USB Device (§3.4.2), at the EXT.I/O output (§4.3), and the comparator beeper can sound on the result (§3.1.5).

3.1.2 Voltage setting

Test voltage range: 25–1000 V; resolution: 1 V.

3.1.3 Speed setting

Three speed settings are available: **Fast**, **Medium** and **Slow**. Fast measures at 50 ms (80 ms on the 2 µA range), not including screen-refresh time; Medium measures and displays the result at 200 ms; Slow measures and displays the result at 500 ms. See Chapter 5 for the full per-range speed table.

3.1.4 Timer setting

Sets the test duration — the length of time the test voltage is applied to the device under test. The test time includes the contact-check time but excludes the short-circuit-check time. If the timer is set too short, the screen will not refresh the measured value before the test stops; measurement values may also need time to stabilize, so the timer should be set with enough margin for the device under test to settle.

3.1.5 Comparator beeper

Setting	Behavior
Off	No beep on comparator judgment
Pass	Beeps when the upper/lower-limit judgment passes
Fail	Beeps when the upper/lower-limit judgment fails
End	Beeps when the test ends

3.1.6 Range setting

Auto range or manual range. In auto range, the instrument automatically selects a suitable range; once the range has settled, the quick-setting field shows the currently selected range. Manual range (2 mA, 200 µA, 20 µA, 2 µA) saves the range-decision time (about 2 ms) but requires the operator to pre-select the correct range for the device under test; if unsure which range to use, first measure once in auto range, note the range selected, and then switch to that range manually.

3.1.7 Current zero-clearing

Ambient temperature, humidity and similar factors can cause a small no-load current drift; the current zero-clearing function removes this baseline. During zero-clearing, the high/low output terminals may be left open or connected to the device under test; no range needs to be pre-selected. Tap the Zero key to acquire and display the zero baseline to the left of the Clear key; the information bar then shows "Zero calibration complete!". Once acquired, the instrument automatically subtracts the baseline from subsequent output measurements. The Clear key resets the stored baseline to 0.00000 nA.

Note: the current baseline is only subtracted from the output on the 2 µA range, since on the other ranges the baseline has negligible effect on the measurement.

3.1.8 Delay setting

The delay time is counted from the moment the test voltage is applied, and reserves time for the applied voltage to reach and settle at its set value; the instrument does not read or display voltage/current values during the delay (the time-monitor area shows "Delay"). If a manual delay time is set, make sure it is long enough — the correct delay depends on the device under test and should be confirmed by trial.

> **CAUTION**
>
> If the manual delay time is set too short for a device under test with significant capacitance, the test voltage may be read before the device has finished charging, giving a measured resistance that is lower than actual. If auto delay is selected, the instrument measures only once the test voltage has settled.

3.1.9 Comparator mode

Mode	Behavior
Continuous	Upper/lower-limit judgment is performed on every measurement, until the test ends
Pass-stop	Test ends as soon as a measurement passes the upper/lower-limit judgment
Fail-stop	Test ends as soon as a measurement fails the upper/lower-limit judgment
Terminate-compare	Upper/lower-limit judgment is performed once, when the test is terminated

3.1.10 Main parameter setting

Two main-parameter modes are available: **Insulation Resistance (IR)** and **Current**. In IR mode, the central display area shows the insulation-resistance value, and the upper/lower limits judge the resistance; in Current mode, the central display area shows the current value, and the upper/lower limits judge the current. Tap the main-parameter field to toggle between the two modes.

3.2 System page

Reached via the **Sys** tab. Contains the instrument-wide settings below.

Setting	Description
3.2.1 Contact check	Checks the test-circuit connection between the instrument and the device under test (see below)
3.2.2 Double-action start	Requires Stop then Start within 1 s to begin output, preventing an accidental start
3.2.3 Beeper switch	Turns the touchscreen/key tone on or off
3.2.4 Short-circuit check	Applies a 3–4 V pre-test to detect a shorted device under test before ramping to the full test voltage (see below)
3.2.5 Line frequency	Auto-detect, 50 Hz or 60 Hz, to reject line-frequency interference
3.2.6 Data refresh	Turns the on-screen result refresh on/off during a test, to save refresh time at very high test speeds
3.2.7 Noise check	Suppresses measurement-value jitter caused by an open test circuit, useful for hand-probe testing
3.2.9 System reset	Restores factory default settings, after confirmation

3.2.1 Contact check (detail)

Checks for an open or poor connection in the test loop formed by the instrument and the device under test — commonly used to check for poor contact at the test terminals or a broken test cable. With contact check enabled, the instrument performs a contact check every time it reads the measurement voltage, so a connection that opens mid-test is also caught. On a contact-check failure, the main-parameter area shows the corresponding fault code and the test is terminated.

Judgment	Display
High-end poor contact	`ContH`
Low-end poor contact	`ContL`
High and low-end poor contact	`ContHL`

Two contact-check types are supported: a **4-terminal contact check**, which requires the system-page contact-check function to be enabled and the Check High/Low terminals on the rear panel to be wired per Chapter 2; and a **2-terminal contact check**, which uses the comparator's upper/lower-limit judgment in software and must *not* have the contact-check function enabled, nor the contact-check terminals connected.

3.2.4 Short-circuit check (detail)

When enabled, the instrument first applies a small 3–4 V pre-test voltage to the device under test to check for a short circuit, before ramping to the configured test voltage. If the measured resistance is below **100 kΩ**, the device is judged shorted, the main-parameter area shows `Short`, and the test ends. If the short-circuit check passes, the instrument proceeds to apply the set test voltage, and the information bar reports the check duration. The short-circuit-check time is not counted toward the timer setting (§3.1.4); if a longer manual check time is set, the time-monitor area shows "SC" during the check.

The short-circuit check is particularly useful for insulation testing of battery cells: testing at a low voltage first avoids the risk that a genuine micro-short inside the cell gets burned open by the subsequent high-voltage test, which would otherwise let a defective cell pass as good.

The short-circuit check can be set to automatic (instrument-determined duration) or manual (0.010–999.999 s, user-set).

3.3 File page

Reached via the **File** tab. The instrument has 16 internal files, each able to store the complete set of measurement-page parameters, for fast switching between test conditions.

Operation	Description
Load	Confirm to load the selected file's stored settings as the active configuration
Rename	Enter a new name for the selected file via the on-screen keyboard
Delete	Confirm to delete the selected file
Save	Confirm to save the current measurement-page settings to the selected file

3.4 Communication page

Reached via the **I/O** tab. Contains the settings below; see Chapter 4 for the physical RS232C/USB Device/EXT.I/O interfaces themselves.

3.4.1 RS232C baud rate

Selectable: 9600 / 19200 / 38400 / 57600 / 115200 bps.

3.4.2 Data output format

Three options: Off, Format 1, Format 2. With Format 1 or Format 2 selected, the instrument automatically uploads the test result to the host PC over RS-232C or USB Device once the test stops; with Off, no automatic upload occurs.

Format 1 sends a fixed-width record: index, test result, unit, and upper/lower-limit judgment (PASS / LFAIL / UFAIL / ULFAIL / NOCOMP), or a fault code such as `Short`, `C.Hi`, `C.Lo`, `C.HL`, `O.F.` or `U.F.` in place of the reading. **Format 2** returns the measured value in scientific notation only — in Ω for insulation resistance, or in A for current — with `Over.F` / `Under.F` in place of an out-of-range reading.

3.4.3 Command monitor

When enabled, the measurement page shows a live log of commands received and responses sent, for troubleshooting a remote-control link.

3.4.4 External interface test signal

Sets the timing of the EXT.I/O `TEST` output signal's transition after a `STOP` input is received during a test: **Fast** pulls `TEST` high immediately on receiving `STOP`; **Slow** pulls `TEST` high only once the output voltage has fallen below 10 V. See §4.3.4 for the full timing diagrams.

3.4.5 External interface interlock

The interlock function lets an external device jointly control the instrument, for fast power cut-off and to prevent accidental operation. Interlock is disabled by default; when enabled, the status bar shows "Interlock Open", and the touchscreen, Start key and Stop key are all disabled.

Communication-page interlock function	EXT.I/O INTERLOCK pin level	EXT.I/O input can control the instrument?	Front panel locked?
On	1 (high)	No	Yes
	0 (low)	Yes	No
Off	1 (high)	Yes	No
	0 (low)	Yes	No

To disable the interlock function when the front panel is locked: (1) hold the Stop key while switching the instrument on, until it finishes starting up; (2) send `IO:ILOCK OFF` over RS232C or USB Device; or (3) with the input circuit in NPN mode, pull the EXT.I/O INTERLOCK pin low (opposite for PNP), then disable the interlock function from the front panel.

3.4.6 External interface check

Lets the user: view whether the EXT.I/O input circuit is wired as sink (NPN) or source (PNP); manually drive each EXT.I/O output pin high/low for bench testing; and view the live high/low state of each input pin. The LOAD0–LOAD3 lines are decoded from binary to decimal and the corresponding file name is shown.

3.4.7 Analog output range

Converts the measured insulation resistance to a proportional 0–4 V output at the rear-panel Analog Output jack; the output holds the previous test's result once a test ends.

Mode	Behavior
Off	Analog output disabled
Full range	Output independent of the active range: 0–100 V setting → 0–400 MΩ maps to 0–4 V (>400 MΩ also outputs 4 V); 100–1000 V setting → 0–4 GΩ maps to 0–4 V (>4 GΩ also outputs 4 V)
Range-relative	Output scaled to the active current range's maximum resistance span: 2 mA→4 MΩ, 200 µA→40 MΩ, 20 µA→400 MΩ, 2 µA→4 GΩ, each mapped 0–4 V (below 0.3125% of the range span, output is 0 V)

3.5 USB software upgrade

Name the upgrade firmware file `update2692.sec`, copy it to the root directory of a FAT-formatted USB drive (≤32 GB), and insert it into the front-panel USB port. Tap "USB Software Upgrade — Execute" on the communication page and confirm to begin the automatic upgrade.

3.6 Test sequence overview

A test proceeds through the following stages, shown here for the short-circuit check (if enabled):

Stage	Typical duration	Description
Short-circuit check	≈5 ms (auto)	3–4 V pre-test for a shorted device under test (§3.2.4)
Voltage ramp	≈10 ms per 0–1000 V	Test voltage ramps from the short-circuit-check level to the set voltage
Range switch / contact check	2–6 ms	Auto-range settling and 4-terminal contact check, if enabled
Data measurement, comparison & display	≥20 ms (per §3.1.3 speed setting)	Measurement, comparator judgment and screen update (if data refresh is on)

Full timing diagrams for continuous, pass-stop, fail-stop and terminate-compare modes, each with the timer on or off, are given in §4.3.4 together with the EXT.I/O signal behavior.

CHAPTER 4

Instrument Interfaces

4.1 RS232C interface

The RS232C interface can be used for PC communication; through it a host computer can carry out almost all front-panel functions remotely. The instrument's serial port does not strictly implement the full RS-232 standard, but provides only a minimal subset:

Signal	Label	Connector pin
Transmit data	TXD	3
Receive data	RXD	2
Ground	GND	5

The instrument's serial connector uses a 9-pin female D-sub socket, with pin numbering matching a standard DB-9 connector, so a standard DB-9 male plug connects directly.

> **WARNING**
>
> To avoid electric shock, switch off the instrument before connecting or disconnecting the serial cable. Do not short the output terminals to each other or to the chassis, to avoid damaging the instrument.

4.2 USB Device interface

The USB Device interface can likewise be used for PC communication; through it a host computer can carry out almost all front-panel functions remotely.

4.3 External interface (EXT.I/O)

The rear-panel 37-pin EXT.I/O interface lets external equipment (a PLC, handler or sorter) control the instrument and read its measurement data, for integration into automated test systems.

4.3.1 Pin functions

Pin	Signal	Type	Function
1	START	Input	Starts the test on a ≥5 ms pulse (edge-triggered)
3	LOCK	Input	Interlock pin (§3.4.5)
4, 5, 22, 23	LOAD1, LOAD3, LOAD0, LOAD2	Input	4-bit binary file-number selection (0–15); clear to 0 after loading so the front panel/keys/commands work normally
7, 13–19, 29, 31–37	BCD0–BCD15	Output	16-bit binary-coded output of the main-parameter measurement value
8	ISO_5V	—	±5 V isolated supply (+5 V in NPN mode, −5 V in PNP mode)
9, 27	ISO_COM	—	Isolated power common
10	ERR	Output	Contact-check error, short-check error, or output-voltage error (>1.02× set voltage + 5 V)
11	UPPER FAIL	Output	Comparator judged over the upper limit
12	LOWER FAIL	Output	Comparator judged under the lower limit
20	STOP	Input	Stops the test on a ≥5 ms pulse (edge-triggered)
24–26	DP0–DP2	Output	Decimal-point position for the BCD output
28	TEST	Output	Active while the instrument is testing; discharge-period behavior per §3.4.4
30	PASS	Output	Comparator judged a pass

Pins 2, 6 and 21 are not used.

4.3.2 Input-circuit connection mode

The rear-panel EXT.I/O MODE switch selects the EXT.I/O input circuit as sink (NPN) or source (PNP), to match the connected external equipment. The switch must only be changed with the instrument powered off.

4.3.3 Circuit connection

Input pins can be wired to a switch, relay or PLC control circuit; output pins can be wired to an LED, relay or PLC input circuit. Output pins are open-collector/open-drain, rated ≤50 mA, referenced to either the positive or negative common, per the NPN/PNP mode selected.

4.3.4 Timing diagrams

The EXT.I/O interface supports six timing variants, covering every combination of comparator mode (Continuous / Pass-stop / Fail-stop / Terminate-compare) with the Timer function on or off:

- Continuous mode, Timer off
- Continuous mode, Timer on
- Pass-stop mode, Timer off
- Fail-stop mode, Timer off
- Terminate-compare mode, Timer on
- Terminate-compare mode, Timer off

In every variant, the sequence is: `START` input (≥5 ms) → short-circuit check → voltage ramps from 3–4 V to the set voltage (the 36 V level and the set-voltage threshold are the reference points for the output-voltage behavior) → measurement/display/comparator-judgment cycles → on a `STOP` input (≥5 ms) or test completion, the output ramps down (through 10 V) and the `PASS` / `UPPER FAIL` / `LOWER FAIL` and `ERR` output lines clear. With Timer on, the test instead runs for the configured duration before ramping down automatically. The `PASS` / `UPPER FAIL` / `LOWER FAIL` outputs reflect, at minimum, the most recent measurement's judgment throughout the cycle (or every cycle, in Continuous mode); the `ERR` output reflects the short-circuit-check and contact-check results per cycle. A contact-check error immediately stops the output and pulls `TEST` high.

4.4 USB (front-panel) port

4.4.1 Software upgrade

See §3.5.

4.4.2 Screenshot

With a USB drive inserted in the front-panel USB port, tap the status-bar area at the top right of the screen to save a screenshot to the `PIC` folder at the root of the USB drive (created automatically if absent). Screenshots are named `TH2692_000.gif` through `TH2692_999.gif`, with the counter resetting to 0 at each power-on. Clear old screenshots from the `PIC` folder before capturing new ones, since a filename clash is not overwritten. The USB drive must be FAT-formatted and ≤32 GB.

4.5 Remote command set

The TH2692 is controlled remotely with the **SCPI** (Standard Commands for Programmable Instruments) command set only, over RS232C or USB Device — it does not support MODBUS. Commands are organized in a tree structure, with the top level called a subsystem command and lower levels valid only once their subsystem command has been selected, separated by colons (e.g. `:CURRENT:RANGE 0`, `:CURRENT:AUTO:DCLEAR ON`).

Command keywords are case-insensitive and can be abbreviated or spelled out in full; a command followed directly by a question mark (`?`) executes the corresponding query. The command set covers roughly 35 first-level commands — instrument identification and reset, test control (start/stop), main-parameter and comparator setup, voltage/current/speed/timer/delay settings, contact-check and short-circuit-check control, system settings (line frequency, data refresh), the 16-file panel memory, analog-output range, and the EXT.I/O test-signal/interlock/header settings.

For the complete command syntax, parameter tables and worked examples, see the companion *TH2692 SCPI Command Reference*.

CHAPTER 5

Technical Indicator

Item	Specification
Resistance measurement range	10 kΩ – 100 GΩ
Resistance measurement accuracy	Current >100 nA: ±2% of reading · 10 nA<Current≤100 nA: ±5% of reading · 1 nA<Current≤10 nA: ±10% of reading
Resistance display resolution	<1 GΩ: 3¾ digits · 1–10 GΩ: 2 decimal places · ≥10 GΩ: 1 decimal place
Voltage setting range / resolution	25–1000 V / 1 V
Voltage output / reading accuracy	Output: 1% of set voltage ±1 V · Reading: 1% of output voltage ±1 V
Current test range	2 mA range: 220 µA–2.4 mA · 200 µA range: 22–220 µA · 20 µA range: 2.2–22 µA · 2 µA range: 0–2.2 µA
Current display resolution	3¾ digits
Test speed*	Fast: 30–50 ms (2 mA / 200 µA / 20 µA) · 80 ms (2 µA) · Medium: 200 ms · Slow: 500 ms
Comparator function	Resistance upper/lower limits · current upper/lower limits
Range	Auto, 2 mA, 200 µA, 20 µA, 2 µA
Interface	USB, RS232C, USB Device, EXT.I/O, Analog Output
Memory	16 internal test files
Operating temperature / humidity	0–40 °C, ≤80% RH
Power requirement	220 V / 110 V (1±10%), 50/60 Hz (1±5%)
Power consumption	< 50 VA
Dimensions (W×H×D, excl. protrusions)	215 mm × 89 mm × 154 mm
Weight	Approx. 1.9 kg
EU compliance	LVD 2014/35/EU — EN 61010-1:2010+A1:2019 | EMC 2014/30/EU — EN IEC 61326-1:2021

**Fast speed is 30–50 ms on the 2 mA / 200 µA / 20 µA ranges and 80 ms on the 2 µA range. CE certificates of conformity: No. MTZS25033879 (LVD, issued 2025-03-27) and No. MTZS25024065 (EMC, issued 2025-02-28), Shenzhen Most Technology Service Co., Ltd.*

APPENDIX

Sets, Warranty & Related Documents

A.1 Standard accessories

Item	Qty
TH2692 instrument	1
EU power cable (Schuko, CEE 7/7)	1
Test leads	1 pair
37-pin adapter (TH2692-1)	1
Certificate of conformity	1
Test report	1
Warranty card	1

Check the contents against this list when unpacking; if anything does not conform, contact Techmize or your distributor promptly.

A.2 Warranty

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, supported by the instrument's warranty card. Damage caused by improper operation during the warranty period is chargeable to the user. Repair must be carried out by qualified technical personnel; do not replace internal components without authorization, and have the instrument recalibrated after any repair to avoid affecting measurement accuracy. Store the instrument in its original packaging, in the conditions given in §1.2.2, when not in use for an extended period.

A.3 Related documents

- TH2692 Datasheet (Techmize)
- TH2692 SCPI Command Reference (Techmize, companion to this manual)