TH2554 Series

Data Acquisition / Switch System

A high-precision, high-stability, multi-channel scanning data acquisition system built around a 5-slot modular mainframe. The TH2554 combines a 6½-digit DMM measurement module with plug-in multiplexer modules to support up to 160 switched channels, giving an extremely low cost per test point for mixed-signal data logging, production testing and R&D bench use.

Overall dimensions: 235(W) × 154(H) × 480(D) mm · 7.8 kg



- 7-inch capacitive touchscreen, 800×480 resolution, menu-driven operation
- **6½-digit DMM module** — DCV, DCI, ACV, ACI, 2-wire/4-wire resistance, frequency, period, temperature (thermocouple, thermistor, RTD), capacitance, continuity, diode and ratio
- **5-slot modular mainframe** — up to 160 switched channels, automatic module recognition
- Independent per-channel configuration: function, Mx+b scaling, pass/fail limits
- Reading rate up to **1,000 readings/second**; scan buffer stores up to 100,000 timestamped readings
- Standard SCPI remote-control command set
- RS232, USB Host, USB Device and LAN standard; IEEE-488/GPIB and Handler optional (shared rear slot)
- Direct USB data logging in CSV, TXT or DAT format

Plug-in modules

TH2554-DMM

Mandatory measurement module

Resolution	6½ digits
Functions	DCV/DCI/ACV/ACI/Ω/Freq/Temp
Max input	300 V / 3 A

TH2554-01

20-channel differential multiplexer

Channels	20×2W / 10×4W
Current channels	2
Scan speed	90 CH/s
Max rating	300 V / 1 A

TH2554-02

40-channel differential multiplexer

Channels	40×2W / 20×4W
Current channels	2
Scan speed	90 CH/s
Max rating	300 V / 1 A

TH2554-03

20-channel high-speed multiplexer

Channels	20×2W / 10×4W
Relays	Solid-state
Scan speed	300 CH/s
Max rating	60 V (voltage only)

All multiplexer modules provide built-in cold-junction compensation (CJC) for thermocouple temperature measurement. Any combination of up to 5 modules can be fitted, with automatic module recognition by the mainframe. TH2554-03 measures voltage only (no current channels).

Applications

Industrial

Temperature testing for motors, transformers, magnetic cores, thermal-rise evaluation, resistance sintering furnaces, new-energy batteries, charging stations, automotive motors, LED lamps and semiconductor chips.

Agriculture & environmental

Temperature monitoring in vegetable greenhouses, fruit greenhouses, seed/cold-storage facilities and outdoor meteorological observation sites.

Chemical, medical & transportation

Temperature monitoring for reaction furnaces and production equipment; hospital wards, pharmaceutical storage and sperm banks; refrigerated transportation and automotive electronics. Also used in animal husbandry (livestock sheds, cold-storage warehouses) and traffic/expressway infrastructure monitoring.

TH2554-DMM measurement accuracy

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

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

DC current	Range	Resolution	24 h accuracy	1-year accuracy
DCI	10 µA	0.01 nA	0.020 + 0.030	0.050 + 0.040
	100 µA	0.1 nA	0.010 + 0.006	0.050 + 0.006
	1 mA	1 nA	0.007 + 0.006	0.050 + 0.006
	10 mA	10 nA	0.007 + 0.006	0.050 + 0.006
	100 mA	100 nA	0.010 + 0.004	0.050 + 0.005
	1 A	1 µA	0.050 + 0.006	0.100 + 0.010
	3 A	1 µA	0.180 + 0.020	0.200 + 0.020

DC resistance	Range	Test current	24 h accuracy	1-year accuracy
DCR (2W/4W)	10.00000 Ω	10 mA	0.0050 + 0.0040	0.0120 + 0.0080
	100.0000 Ω	10 mA	0.0030 + 0.0020	0.0100 + 0.0040
	1.000000 kΩ	1 mA	0.0020 + 0.0005	0.0100 + 0.0010
	10.00000 kΩ	100 µA	0.0020 + 0.0005	0.0100 + 0.0010
	100.0000 kΩ	10 µA	0.0020 + 0.0005	0.0100 + 0.0010
	1.000000 MΩ	5 µA	0.0020 + 0.0010	0.0100 + 0.0010
	10.00000 MΩ	500 nA	0.0150 + 0.0010	0.0400 + 0.0010
	100.0000 MΩ	500 nA // 10 MΩ	0.3000 + 0.0100	0.8000 + 0.0100

Resistance measurement range: 10 µΩ – 120 MΩ. Continuity (1 kΩ range): 0.010 + 0.030, 1-year. Diode test (5 V range, 1 mA): 0.010 + 0.030, 1-year. Temperature: PT100 (DIN/IEC 751) probe accuracy + 0.05°C; 5 kΩ thermistor probe accuracy + 0.10°C.

AC voltage	Frequency	24 h accuracy	1-year accuracy	Temp. coeff./°C
ACV, 0.1 µV – 300 V	3 Hz – 5 Hz	1.00 + 0.02	1.00 + 0.03	0.100 + 0.003
	5 Hz – 10 Hz	0.35 + 0.02	0.35 + 0.03	0.035 + 0.003
	10 Hz – 20 kHz	0.04 + 0.02	0.06 + 0.03	0.005 + 0.003
	20 kHz – 50 kHz	0.10 + 0.04	0.12 + 0.05	0.011 + 0.005
	50 kHz – 100 kHz	0.55 + 0.08	0.60 + 0.08	0.060 + 0.008
	100 kHz – 300 kHz	4.00 + 0.50	4.00 + 0.50	0.200 + 0.020

AC current	Range	Frequency	1-year accuracy	Temp. coeff./°C
ACI, 1 nA – 3 A	100 µA – 100 mA	3 Hz – 5 kHz	0.10 + 0.04	0.015 + 0.006
	100 µA – 100 mA	5 kHz – 10 kHz	0.10 + 0.04	0.030 + 0.006
	1 A	3 Hz – 5 kHz	0.10 + 0.04	0.015 + 0.006
	1 A	5 kHz – 10 kHz	0.10 + 0.04	0.030 + 0.006
	3 A	3 Hz – 5 kHz	0.23 + 0.04	0.015 + 0.006
	3 A	5 kHz – 10 kHz	0.23 + 0.04	0.030 + 0.006

General & environmental specifications

Parameter	Value
Capacitance	0.0001 nF – 10.000 mF, 1-year accuracy 0.2+0.05 to 1.0+0.50 depending on range
Frequency / period	3 Hz – 300 kHz
Temperature sensors	Thermocouple (B/E/J/K/N/R/S/T), thermistor, RTD (2W/3W/4W, PT100/PT385)
Scan buffer	Up to 100,000 timestamped readings
Reading rate	Up to 1,000 readings/second
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
Safety	Class I; complies with Directive 2014/35/EU; EN 61010-1:2010+A1:2019
EMC	Complies with Directive 2014/30/EU; EN 61326-1:2021

Multiplexer module specifications

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

Interfaces

RS232	USB Host	USB Device	LAN	SCPI	GPIB	Handler
STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	OPTIONAL	OPTIONAL

IEEE-488/GPIB and Handler share a single rear-panel connector slot (one or the other, not both simultaneously). 5 rear module slots accept any combination of TH2554-DMM / TH2554-01 / TH2554-02 / TH2554-03 modules.



Standard accessories

Item	Description
–	EU power cable (Schuko, CEE 7/7)
–	1 A fuse × 2
–	Operation manual, test report, warranty card

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

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