TH2840X Series

Automatic Transformer Test System

A dual-CPU, embedded-Linux test system developed as a functional extension of the TH2840 platform and optimized specifically for transformer testing. A 10.1" capacitive touchscreen with graphical pin-association mapping puts winding setup, scan conditions and pass/fail limits on a single page — for switching-transformer and network-transformer scanning, balun/isolation-transformer testing, multi-channel DCR scanning and comprehensive passive-component and impedance-network analysis.

Three models: TH2840AX & TH2840BX share a compact 265 mm-deep enclosure (11 kg); TH2840NX uses a deeper 405 mm chassis with an internal scan board, up to 288 test pins (17 kg).



- Dual-CPU architecture, embedded Linux — smooth touch / mouse / keyboard operation, built-in help
- **10.1" 1280×800 capacitive touchscreen**; up to **288 test pins** on TH2840NX
- Test speed up to **1800 readings/s** (0.56 ms Fast+, ≥2 kHz); electronic range switching — no relay noise or wear
- Test level up to 20 Vrms; built-in DC bias **±40 V / ±100 mA**, internal current source to **2 A**
- Graphical pin-association mapping page — wiring is no longer guesswork
- Lk (leakage inductance) setup — enter nominal value and limits directly at each winding pin, no separate Lk-pin entry
- Balance scan enhanced from 5 points to **10 points**
- Single-page setup for all transformer test conditions and series/parallel pin wiring
- SCPI & MODBUS standard; RS232, LAN, 2×USB Host, USB Device, HANDLER, external DC-bias control all standard
- Optional **TH2840X-LCR** enables the full four-parameter LCR bridge function

TH2840X and TH2840

TH2840X extends the TH2840 platform with functions dedicated to transformer testing. The standard TH2840X focuses on transformer measurement and **does not include a standalone LCR-meter function**, so its parameters do not fully cover those of TH2840. Order the **TH2840X-LCR** option to enable complete four-parameter LCR measurement (Cp/Cs, Lp/Ls, Rp/Rs, |Z|, D, Q, etc., see page 3); TH2840X then also covers the TH2840 functions, alongside transformer scanning.

Three models, one platform

TH2840AX

Compact bench platform, 20-PIN scanning

Frequency	20 Hz – 500 kHz
Test pins	20 PIN (TH1901)
Enclosure	430×177×265 mm
Weight	11 kg

TH2840BX

Same enclosure, extended to 2 MHz

Frequency	20 Hz – 2 MHz
Test pins	20 PIN (TH1901)
Enclosure	430×177×265 mm
Weight	11 kg

TH2840NX

Deep chassis, internal scan board to 288 PIN

Frequency	20 Hz – 500 kHz
Test pins	48–288 PIN
Enclosure	430×177×405 mm
Weight	17 kg

TH2840AX and TH2840BX share an identical 265 mm-deep enclosure and connect to the DUT through the external TH1901 scan fixture (20 PIN). TH2840NX uses a different, deeper 405 mm chassis with an internal 48-PIN scan board, expandable in 48-PIN steps (up to six boards) to 288 PIN — the two enclosure families are not interchangeable. All three models support the optional TH2840X-LCR function and ship with SCPI/MODBUS as standard.

Applications

Transformer & inductive components

Switching-transformer and network-transformer scanning with comprehensive characteristic analysis; balun and isolation-transformer testing.

Discrete passive & relay lines

Multi-channel scanning of discrete L, R and C components; relay drive-coil and contact-resistance multi-channel testing.

Production integration

Multi-channel DCR scanning; comprehensive impedance-network analysis; HANDLER-based bin sorting for automated test cells.

Two chassis, one platform



TH2840AX / TH2840BX — front
265 mm-deep enclosure, external 20-PIN scan connector



TH2840AX / TH2840BX — rear
RS-232C · LCR Handler · Trans Controller · Trigger · Trans Handler · Device · LAN · Trans Scanner — no internal scan board



TH2840NX — front
Deeper 405 mm chassis, dual A1/A2 winding-scan display



TH2840NX — rear
Same interface row plus internal A–L scan-board bay, up to six boards / 288 PIN

TH2840NX's deeper chassis is required to house the internal scan-board bay — it is not simply a rebadged TH2840BX.

Technical specifications

Parameter	TH2840AX	TH2840BX	TH2840NX
Display	10.1" capacitive touchscreen, 1280×RGB×800, 16:9		
Test PIN	20 PIN (via TH1901 scan box)	20 PIN (via TH1901 scan box)	48–288 PIN (48×6 internal boards)
Frequency range	20 Hz – 500 kHz	20 Hz – 2 MHz	20 Hz – 500 kHz
Frequency accuracy	0.01%		
Frequency resolution	0.1 mHz (20–99.9999 Hz) · 1 mHz (100–999.999 Hz) · 10 mHz (1–9.99999 kHz) · 100 mHz (10–99.9999 kHz) · 1 Hz (100–999.999 kHz) · 10 Hz (1–2 MHz, BX only)		
AC test signal mode	Rated value (ALC OFF): set voltage = open-circuit Hcur voltage; set current = short-circuit Hcur current. Constant value (ALC ON): holds DUT voltage/current at the set value.		
Test voltage range	5 mVrms – 20 Vrms	5 mVrms–20 Vrms (≤1 MHz) / 5 mVrms–15 Vrms (>1 MHz)	5 mVrms – 20 Vrms
Test voltage accuracy	±(10%×setting + 2 mV) (AC≤2 Vrms); ±(10%×setting + 5 mV) (AC>2 Vrms)		
Test current range	50 µArms – 100 mArms		
RDC test signal	Voltage 100 mV–20 V (1 mV/10 mV res.); Current 0–100 mA (10 µA/100 µA res.)		
DC bias	Voltage 0–±40 V (1 mV/10 mV res.); Current 0–±100 mA (10 µA/100 µA res.)		
Built-in current source	0–2 A, accuracy ±(2%×setting + 2 mA) at I>5 mA, 1 mA resolution		
Output impedance	30 Ω ±4%@1 kHz or 100 Ω ±2%@1 kHz, selectable		

Transformer scan fixtures — TH1901 series

TH2840X connects to transformer DUTs through the TH1901 scan fixture family (20-PIN pin map, compatible with TH1831 scan boxes). Two clamp options are available:



TH1901A

Pneumatic clamp — production-line option

Actuation	Pneumatic auto-clamp, START/RESET buttons, NG/GOOD indicator
Best for	High-throughput, repeatable-force line integration
Air supply	Requires an external compressed-air source



TH1901B

Manual clamp — default configuration

Actuation	Manual lever clamp
Best for	Bench use, engineering & incoming inspection
Air supply	Not required

Default configuration ships with TH1901B (manual). Order TH1901A for pneumatic, production-line operation — a compressed-air supply must be provided on site. The transformer-contact fixture head on either TH1901A or TH1901B can be custom-machined to match a specific transformer footprint; please supply mechanical drawings of the DUT/pin layout when ordering a custom fixture head.

Parameter	TH2840AX	TH2840BX	TH2840NX
LCR bridge function — optional, TH2840X-LCR			
Measurement parameters	Cp/Cs, Lp/Ls, Rp/Rs, |Z|, |Y|, R, X, G, B, θ, D, Q (AC); RDC, VDC, IDC (DC) — any 4 parameters simultaneously		
Test terminal	4-terminal-pair (5-terminal DUT connection)		
Basic accuracy	0.05% (see manual for the full accuracy formula)		
Measurement speed	Fast+ 0.56 ms · Fast 3.3 ms · Medium 90 ms · Slow 220 ms		
Display range	Cs/Cp 0.00001 pF–9.99999 F · Ls/Lp 0.00001 µH–99.9999 kH · D 0.00001–9.99999 · Q 0.00001–99999.9 · R/X/Z/RDC 0.001 mΩ–99.9999 MΩ		
Transformer measurement			
Test parameters	Cs/Cp, Ls/Lp, DCR, Zx, Rs/Rp, D, Q, dZ (phase angle), Lk (leakage inductance), Phase, Balance, Turns-Ratio (Ns:Np=U2/U1), Turns (Ns=Np×U2/U1)		
Test mode	Continuous — one trigger measures all set parameters; Step — one trigger per parameter		
Measurement speed	Fast+ 1 ms (>10 kHz) · Fast 3.3 ms · Medium 90 ms · Slow 220 ms		
Averaging / delay	Each test parameter: independent averaging (0–255 readings) and independent delay time		
Transformer scanning			
Internal scan board	None — external TH1901 scan box	None — external TH1901 scan box	1 board standard, expandable to 6 (24×2 PIN/board, 288 PIN max)
Handler pin definition	NS1–NS9, GOOD, NG, TEST, TRIGGER, RESET		NS1–NS30, GOOD, NG, TEST, TRIGGER, RESET
Windings	Primary up to 60, Secondary up to 9		
Test lead interface	25×2-pin FRC socket, pin order compatible with TH2840X series		
External scan box	Compatible with TH1901 series, TH1831		
Other functions & interfaces			
Storage	Internal ~100 MB non-volatile memory, up to 500 setting files; USB for settings, screenshots, log files		
Interfaces	RS232C · LAN (10/100BaseT) · 2×USB Host · USB Device · HANDLER · external DC-BIAS control (TH1778A, up to 6 units / 120 A)		
Remote protocols	SCPI, MODBUS — standard on all models		
Power / warm-up	100–120 VAC / 198–242 VAC selectable, 47–63 Hz, ≥100 VA; 60-minute warm-up		
Dimensions (W×H×D)	430×177×265 mm	430×177×265 mm	430×177×405 mm
Weight	11 kg	11 kg	17 kg

Standard accessories

Item	Description
—	EU power cable (Schuko, CEE 7/7)
TH26011BS	Four-terminal Kelvin test cable
TH26004B	Two-terminal test cable
TH26016	36-PIN scan control cable (AX/BX only)
TH1801-001	Foot switch (AX/BX only)
TH1901B	Manual transformer scan fixture (AX/BX only)
TH2829AX-001	Foot switch (NX only)

Optional fixtures

Item	Description
TH1901A	Pneumatic transformer scan fixture (needs air supply)
TH26007A	Toroidal-core test fixture
TH26008A	SMD component test fixture
TH26009B	SMD component test tweezers
TH26077	Dielectric test fixture

More fixtures — including TH26047/TH26048B/TH26062A/TH26063/TH26108C four-terminal-pair fixtures and custom fixture heads — available on request; ask your Techmize contact or authorized distributor.

Interfaces

RS232	LAN	Handler	USB Host	USB Device	External DCI	SCPI / MODBUS	LCR function
standard	standard	standard	standard	standard	standard	standard	optional

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