TH600 Series

Modular Integrated Test System for Wiring Harness & Cables

A cascadable, modular cable/harness test platform covering short/open-circuit, continuity, welding-resistance, AC/DC withstand-voltage and insulation-resistance testing in one system. Seven models span two architectures — cost-optimised two-wire scanning and precision four-wire (Kelvin) measurement — across two withstand-voltage classes, so the test channel count and voltage rating can be matched to the harness or busbar under test without over-specifying the instrument.

7 models · 160–2,560 test points per unit (up to 10,240 with instrument cascading) · AC up to 2,000 V / DC up to 3,000 V · Insulation resistance up to 10 GΩ



TH615-1280 shown

- **µΩ-level welding-resistance testing** — 1 A constant current, four-wire (Kelvin) measurement, resolution to 1 µΩ
- Patented millisecond-level open/short-circuit judgment — **640 points in 0.1 s** on four-wire models
- Withstand voltage up to **AC 2,000 V / DC 3,000 V**; insulation resistance up to **10 GΩ**
- Patented high/low-voltage separation raises the instrument's own insulation impedance to 100 GΩ
- Real-time hardware **test-lead contact check** (four-wire models) — flags poor contact before it causes a false pass
- Built-in **NTC (thermistor)** resistance + temperature testing with automatic R–T table pass/fail judgment
- Cascadable architecture — link multiple units for up to **10,240** test channels
- 7" TFT colour display (800×480), English UI, PC software with MES support and manual wire-list editing
- Five high-voltage test methods: dichotomy, one-to-others, all-to-ground, automatic, adjacent-pin
- Programmable I/O, sequential testing, on-line self-check diagnostics; RS232, LAN, USB, HANDLER standard

Applications

Automotive & new-energy vehicles

EV battery FPC, busbar welding-resistance (CCS), automotive PDU, ECU connectors, wiring harnesses, navigation and in-vehicle electronics connectors.

Communication, IT & electronics

USB-C/USB/HDMI/VGA/SATA cables, laptop and phone screen cables, ribbon and flat cables, connectors, power cords, multi-pin sockets.

Safety & component testing

AC/DC withstand-voltage and insulation-resistance (safety) testing; passive components — capacitors, inductors, resistors, diodes.

Additional functions

Software & automation

PC software with MES-system support and manual wire-list editing; programmable I/O; sequential testing; on-line self-check diagnostics for fault isolation.

External device support

Optional picoammeter/high-resistance meter (pA-level current, TΩ-level insulation resistance) and high-end LCR bridge (capacitance/inductance) can be integrated for extended measurement ranges.

Broader industries served

Aerospace, rail transit, lithography equipment and nuclear-energy engineering are listed as application fields alongside automotive, EV, communications/IT and general electronics.

One platform, three voltage/wiring configurations

All seven models share the same 7" TFT front panel, control logic and PC software. They differ in wiring method (two-wire vs. four-wire/Kelvin), withstand-voltage class, and the number of test points shipped as standard — build the system by combining a main-unit chassis with scanning cards and test-cable kits (see Ordering information, page 5).

TH615 (2-wire)

Cost-optimised, high channel count

Models	-1280-2W, -2560-2W
AC / DC withstand	1000 V / 1500 V
O/S test speed	640 pts/150 s
Contact check	Not available

TH615 (4-wire)

Precision Kelvin measurement

Models	-640, -1280
AC / DC withstand	1000 V / 1500 V
O/S test speed	640 pts/0.1 s
Contact check	Yes

TH630

3 kV-class four-wire

Models	-160, -320, -640
AC / DC withstand	2000 V / 3000 V
O/S test speed	640 pts/0.1 s
Contact check	Yes

All voltage ranges start at 5 V. Insulation-resistance range is 1 MΩ–10 GΩ on every model. Welding-resistance resolution (1 µΩ) and maximum test current (1 A) are identical across the series.

Quick model selection matrix

Model	Wiring	AC withstand	DC withstand	Insulation R.	Test points[1]	O/S speed	Contact check	Weight
TH615-1280-2W	Two-wire	5V–1000V	5V–1500V	1MΩ–10GΩ	1,280	640 pts/150s	No	appr. 35 kg
TH615-2560-2W	Two-wire	5V–1000V	5V–1500V	1MΩ–10GΩ	2,560	640 pts/150s	No	appr. 60 kg
TH615-640	Four-wire	5V–1000V	5V–1500V	1MΩ–10GΩ	640	640 pts/0.1s	Yes	appr. 35 kg
TH615-1280	Four-wire	5V–1000V	5V–1500V	1MΩ–10GΩ	1,280	640 pts/0.1s	Yes	appr. 60 kg
TH630-160	Four-wire	5V–2000V	5V–3000V	1MΩ–10GΩ	160	640 pts/0.1s	Yes	appr. 28 kg
TH630-320	Four-wire	5V–2000V	5V–3000V	1MΩ–10GΩ	320	640 pts/0.1s	Yes	appr. 35 kg
TH630-640	Four-wire	5V–2000V	5V–3000V	1MΩ–10GΩ	640	640 pts/0.1s	Yes	appr. 60 kg

[1] Test points shown are the standard full configuration for that model (main unit + standard scanning-card quantity, see Ordering information). Each platform can be expanded up to 20 scanning cards per unit — up to 2,560 points (TH615 two-wire), 1,280 points (TH615 four-wire) or 640 points (TH630). Contact check is a four-wire-mode function and is not available on the two-wire TH615-1280-2W/-2560-2W models.

Interfaces

RS232	LAN	USB Host	USB Device	HANDLER	GPIB
STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	OPTIONAL

RS232, LAN, USB Host (front panel), USB Device and HANDLER are standard on every TH600-series model. GPIB is available as an optional interface.

Technical specifications

Parameter	TH615 (2-wire)	TH615 (4-wire)	TH630
Display	7" TFT LCD true-colour display, 800×480, 16-bit colour depth		
Max. test points / unit	2,560	1,280	640
Max. scanning cards / unit	20		
Test signal source			
AC signal source	Frequency 50Hz–100kHz (±0.02%); amplitude 1Vrms (±10%)		
Programmable DC source	Voltage 0.1V–5V, ±(2% set + 0.1% F.S.); Current 1–20mA/100mA/1A, ±(2% set + 0.1% F.S.)		
Programmable HV — DC	5V–1500V	5V–1500V	5V–3000V
— accuracy	±(1% of set value + 0.5% of full scale)		
Programmable HV — AC	5V–1000V	5V–1000V	5V–2000V
— accuracy	±(1% of set value + 0.5% of full scale)		
Test speed	Depends on channel count — see instrument manual for detailed timing tables		
Capacitance measurement			
Range	10pF – 1000µF		
100pF–220pF	±(10% of reading + 0.5% F.S.)		
220pF–330nF	±(5% of reading + 0.3% F.S.)		
330nF–1.5µF	±(5% of reading + 1% F.S.)		
1.5µF–33µF	±(5% of reading + 0.5% F.S.)		
33µF–1000µF	±(5% of reading + 0.3% F.S.)		
Resistance testing (range 10µΩ–10MΩ)			
Welding resistance	10µΩ–10mΩ, range 10mΩ, ±(1% of reading + 0.05% of range); resolution 1µΩ; max. current 1A		
Continuity	10mΩ–1kΩ, ranges 1Ω/10Ω/100Ω/1kΩ, ±(1% of reading + 0.05% of range)		
DC resistance	1kΩ–10MΩ, ranges 10kΩ/100kΩ/1MΩ/10MΩ, ±(1% of reading + 0.05% of range)		
Open/short-circuit testing			
Range / accuracy	1kΩ–50kΩ, ±10%		
Speed	640 pts / 150s	640 pts / 0.1s	640 pts / 0.1s
Insulation, leakage & diode testing			
Diode test	0–10V, ±(5% of reading + 1% F.S.)		
Insulation resistance	Range 1MΩ–10GΩ		
— 1MΩ–100MΩ	±(3% of reading + 0.1% F.S.)		
— 100MΩ–1GΩ	±(4% of reading + 1% F.S.)		
— 1GΩ–10GΩ	±(7% of reading + 2% F.S.)		
DC leakage current	1µA–5mA; ranges 5.5/55/550µA, 1.1/5mA, ±(5% of reading + 0.04% F.S.)		
AC leakage current	10µA–5mA; ranges 55/550µA, 5mA, ±(10% of reading + 0.1% F.S.)		
Contact check	Real-time hardware test-lead contact check — four-wire mode only		
HANDLER interface	8-ch. output (custom signal assignment); 8-ch. input for start/stop/gear-select (up to 30 profiles)		

Key technologies

01 Millisecond-level open/short-circuit judgment

A patented dichotomy (binary-search) measurement method judges open/short status across thousands of channels at the millisecond level, keeping large-channel-count testing fast on four-wire models (640 points in 0.1s).

Patent no. 201210021127.2

02 1A constant-current, four-wire welding-resistance measurement

A 1A DC constant-current source combined with four-wire (Kelvin) measurement removes test-lead voltage-drop error and thermoelectric-potential drift, giving stable, repeatable μΩ-level readings on welding points, rivets and fasteners (resolution down to 1μΩ).

03 High/low-voltage separation for wider, more accurate insulation testing

High- and low-voltage, high- and low-frequency signal paths are isolated from each other, removing cross-channel interference and raising the instrument's own insulation impedance to 100GΩ, so the insulation-resistance test range extends past 10GΩ.

Patent no. 202310166151.3

04 Multiple high-voltage measurement methods

Dichotomy, one-to-others, all-to-ground, automatic and adjacent-pin high-voltage test modes are built in, improving system test throughput while preserving accuracy.

Patent no. 201810815965.4

05 Real-time test-lead contact check (four-wire mode)

A hardware contact-check function inspects test-lead/fixture contact quality in real time, catching poor contact before it can cause a defective unit to be misjudged as a pass — available on four-wire models only.

06 NTC (thermistor) resistance + temperature testing

A constant voltage is applied across the NTC under test; the system samples voltage and current to compute resistance, reads the current temperature from a built-in sensor, and checks the result against a customer-supplied R–T table — one-key NTC test setup is supported.

Standard accessories

Item	Description
—	EU power cable (Schuko, CEE 7/7)
TH26060D	Automatic pin-search probe
—	Scanning card(s) and test cable kit(s) matching the ordered configuration — see below

A complete order = main-unit chassis + quantity of scanning cards + quantity of test cable kits, chosen to reach the required number of test points (up to 20 cards per unit). The table below shows the full (maximum) configuration per model; partial configurations with fewer cards/cables can be ordered to match a smaller test-point requirement.

Ordering information — full configuration by model

Code	Item	Qty
TH615-2560-2W — 1.5kV two-wire, 15U, 2,560 pts		
TH615-2560M-2W	Main unit, 1.5kV two-wire, 15U	1
TH615-01-2W	Scanning card, 1.5kV two-wire, 128 channels	20
TH615-02-2W	Test cable kit, two-wire 128-pin, 2m	20
TH615-1280-2W — 1.5kV two-wire, 9U, 1,280 pts		
TH615-1280M-2W	Main unit, 1.5kV two-wire, 9U	1
TH615-01-2W	Scanning card, 1.5kV two-wire, 128 channels	10
TH615-02-2W	Test cable kit, two-wire 128-pin, 2m	10
TH615-640 — 1.5kV four-wire, 9U, 640 pts		
TH615-640M	Main unit, 1.5kV four-wire, 9U	1
TH615-01	Scanning card, 1.5kV four-wire, 64 channels	10
TH615-02	Test cable kit, four-wire 64-pin, 2m	10
TH615-1280 — 1.5kV four-wire, 15U, 1,280 pts		
TH615-1280M	Main unit, 1.5kV four-wire, 15U	1
TH615-01	Scanning card, 1.5kV four-wire, 64 channels	20
TH615-02	Test cable kit, four-wire 64-pin, 2m	20
TH630-160 — 3kV four-wire, 7U, 160 pts		
TH630-160M	Main unit, 3kV four-wire, 7U	1
TH630-03	Scanning card, 3kV four-wire, 16 channels	10
TH630-04	Test cable kit, four-wire 16-pin, 2m	10
TH630-320 — 3kV four-wire, 9U, 320 pts		
TH630-320M	Main unit, 3kV four-wire, 9U	1
TH630-01	Scanning card, 3kV four-wire, 32 channels	10
TH630-02	Test cable kit, four-wire 32-pin, 2m	10
TH630-640 — 3kV four-wire, 15U, 640 pts		
TH630-640M	Main unit, 3kV four-wire, 15U	1
TH630-01	Scanning card, 3kV four-wire, 32 channels	20
TH630-02	Test cable kit, four-wire 32-pin, 2m	20

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