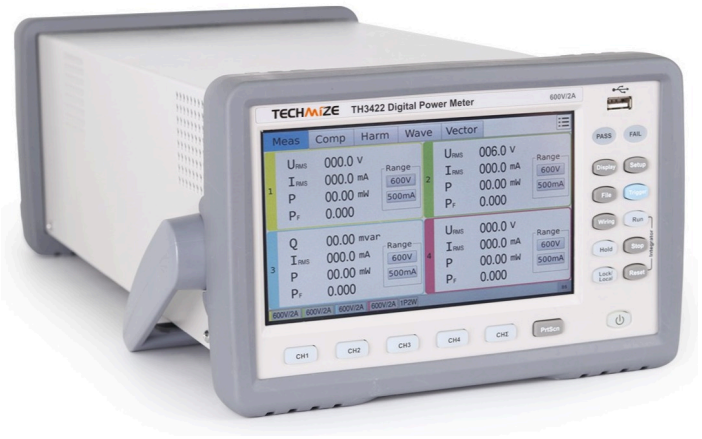
TH342X Series

4-Channel Digital Power Meter

A 4-channel digital power meter for mains-frequency electrical parameter testing — voltage/current RMS, active/reactive/apparent power, power factor, harmonics up to the 50th order, energy integration and waveform/vector display. A phase-locked-loop frequency multiplication technique keeps multi-channel synchronous sampling stable and consistent across the DC/45 Hz–420 Hz input range, covering most of the world's power-grid frequencies. Built for source and load testing on motors, transformers, household and industrial appliances, and power-supply production lines.

Working size: 236(W) × 154(H) × 475.5(D) mm · Shelf size: 215(W) × 132(H) × 441(D) mm · 8.1 kg



- **0.15% basic accuracy** (reading + range + 1 digit), 4 fixed measurement channels
- Broadband input **DC / 45 Hz–420 Hz** (21 kHz bandwidth, 5 kHz filter) — suited to mains-frequency power systems worldwide
- 7" (800×480) color TFT resistive touch screen, mouse operation supported
- 5 selectable wiring modes: 1P2W / 1P3W / 3P3W / 3P4W / 3V3A
- Harmonic analysis up to the 50th order on power-frequency signals, list and bar-graph display
- Waveform display (input signal + integrated power) and vector display
- 8-channel programmable comparator output via HANDLER interface
- Flexible energy integration: continuous timed or manually controlled run/stop
- USB Host (FAT16/32, U-disk storage), USB Device, LAN, RS232 standard; RS485 available as a factory-installed option
- SCPI command set and MODBUS protocol supported for automated test systems

Two models

TH3421

Higher-current 4-channel model

Current range	10 mA – 20 A
Voltage range	5 V – 600 V
Power range	5 mW – 12 kW
Micro current	—

TH3422

Low-current / micro-current model

Current range	1 mA – 2 A
Voltage range	5 V – 600 V
Power range	0.5 mW – 1.2 kW
Micro current	Yes

Both models are fixed 4-channel instruments with identical wiring modes, display modes and chassis; TH3421 targets higher-current loads (up to 20 A) while TH3422 adds a dedicated micro-current measurement capability for low-power devices (down to 1 µA resolution). All models support SCPI and MODBUS protocols.

Applications

Source equipment

AC power supplies, DC power supplies, linear and switching power supplies, inverters and other source-output equipment.

Load equipment

Household appliances, industrial appliances, electronic loads and other power-consuming equipment.

Industry & new energy

Motors and transformers, electronic production lines, lighting, aerospace/military, monitoring, solar batteries, EVs and e-bikes, automation-line integration.

Technical specifications

Parameter	TH3421	TH3422
Number of channels	4	
Display	7" (800×480) color TFT resistive touch screen	
Wiring modes	1P2W · 1P3W · 3P3W · 3P4W · 3V3A	
Basic features	AC, DC, precision type, harmonic analysis, electric energy test	
Micro current	No	Yes
Display modes	Data, integration data, waveform graph, vector analysis, histogram	
Basic accuracy (1 year)	0.15% reading + 0.2% range + 1 digit	
Voltage range	5 V – 75 V / 150 V / 300 V / 600 V	
Voltage resolution	0.01 V	
Voltage input impedance	3 MΩ	
Voltage max. input	1000 V (1 s) / 700 V (continuous)	
Current accuracy	±(0.15% RDG + 0.2% RNG + 1 digit), DC & 45–75 Hz ±(0.3% RDG + 0.2% RNG + 1 digit), 75–420 Hz	Same accuracy classes as TH3421
Current range	10/30/100/400 mA (200 mΩ) 1.5/5/20 A (4 mΩ)	1/3/10/40 mA (2 Ω) 150/500 mA, 2 A (40 mΩ)
Current resolution	0.01 mA	0.001 mA
Current min. resolution	10 µA	1 µA
Current max. input	40 A (1 s) / 30 A (continuous)	4 A (1 s) / 3 A (continuous)
Max. display	Range × 110%	
Power range	5 mW – 12 kW	0.5 mW – 1.2 kW
Power resolution	0.01 mW	0.001 mW
Frequency range	DC / 45 Hz – 420 Hz, bandwidth 21 kHz, 5 kHz filter	
Frequency resolution	0.01 Hz	
Power factor	−1.000 – 1.000, resolution 0.001	
Harmonic analysis	±(5% reading + 0.3% range); up to the 50th order on power-frequency signals	
Energy integration	0 – 99999 kWh, resolution 0.001 Wh, accuracy ±(0.2% RDG + 0.3% RNG)	
Energy timing	0 – 9999:59:59, resolution 1 s, accuracy ±0.05%	
Measuring speed	~7 readings/s (4 readings/s with harmonic/waveform display active)	
Range method	Auto / manual	
Lock function	Data lock; keyboard/touch-screen lock	
Comparator	Over-limit sound and light alarm, 8-channel programmable relay output (HANDLER)	
Data storage	Buffered test results to USB disk for PC-side statistical analysis; measurement/system settings save & load	
Storage media	USB waveform data, setting files	
Power supply	AC 220 V ±10%, 50/60 Hz ±5%, soft power switch	
Working / shelf size	236 × 154 × 475.5 mm (with sleeve) / 215 × 132 × 441 mm	
Weight	8.1 kg	

Interfaces

USB Host	USB Device	LAN	Handler	SCPI / MODBUS	RS232	RS485
standard	standard	standard	standard	standard	standard	option[1]

[1] RS485 is available as a factory-installed option in place of RS232 — specify before shipment. USB Host accepts FAT16/FAT32 U-disks. USB Device complies with USBTMC-USB488 / USB 2.0 (CDC or TMC mode selectable).

Standard accessories

Item	Description
–	EU power cable (Schuko, CEE 7/7)

Related series

Series	Description
TH343X/	Wideband digital power meter, DC/0.1 Hz–100 kHz, 1/3/4-channel — see separate datasheet
TH344X	for signals beyond the 420 Hz mains-frequency range covered here

TH342X and TH343X/TH344X are separate Tonghui product series with different frequency bandwidths and accuracy classes — see the TH343X/TH344X datasheet for wideband/harmonic-rich signal testing.

Techmize Electronic GmbH
Office 125–126, Regus
Carl-Zeiss-Ring 15a, 85737 Ismaning, Germany
An international subsidiary of Changzhou Tonghui Electronic Co., Ltd. (China)

Contact
Mobile: +49 171 4981898
Email: dx.han@tonghui.com.cn
Web: en.tonghui.com.cn

Registration
Managing Director: Haohua Zhao
Register Court: Amtsgericht München
HRB 312530
VAT ID DE463170824

Website LinkedIn YouTube

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