TECHMIZE by TONGHUI

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OPERATION MANUAL

TH8300 Series

Covers the TH8300 and TH8310 modular programmable DC electronic loads: mainframe and module overview, front/rear panel operation, mode setup, system configuration, protection functions, and remote-control interfaces.

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

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TH8300 Series Operation Manual

Modular Programmable DC Electronic Load — TH8300 / TH8310

TH8300 and TH8310 are empty mainframes (5-slot/10-channel and 2-slot/4-channel respectively) populated with load modules ordered separately; this manual describes the mainframe controls, menu structure and communication interfaces common to both, and the nine available load modules. Where this manual and the instrument itself appear to disagree, or a described function is not present on your unit, contact Techmize or your authorized distributor using the details in the Appendix before relying on the instrument for a measurement or production decision.

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The full SCPI command tables are issued as a separate companion document, TH8300 Series SCPI Command Reference, in line with Techmize's standard practice for command sets of this size. Chapter 6 of this manual covers the remote interfaces and protocol overview only.

CHAPTER 1

Safety & Operating Conditions

1.1 About this manual

This manual covers the TH8300 (5-slot, up to 10 channels) and TH8310 (2-slot, up to 4 channels) mainframes, together with the nine load modules available for them: TH8301-80-20, TH8301A-80-20, TH8302-80-40, TH8303-80-60, TH8304-80-80, TH8305-80-80 (80 V tier), and TH8302-600-10, TH8303-600-15, TH8305-600-30 (600 V tier). Both mainframes share the same control platform, front-panel layout, display, menu structure and communication interfaces; module-specific setting ranges are given in Chapter 7, Technical Specifications. Techmize continually improves the performance, features and construction of its instruments; content, specifications and accessories described here are subject to change without notice.

> **WARNING — HAZARDOUS VOLTAGE AND STORED ENERGY**
> A DC electronic load is connected directly across a live power source or a battery under test. Never touch the module's current terminals, Vsense terminals or any connected test leads while a module is pulling current, and never exceed a module's rated input voltage or current (Chapter 7). Disconnect and discharge the device under test before connecting or disconnecting test leads; disconnect the AC supply cord before opening the mainframe — there are no operator-serviceable parts inside.

1.2 Power connection

Before connecting the AC supply cord:

1. Confirm the local mains voltage and frequency are within the mainframe's rated AC input range (Chapter 7). The TH8310 rear-panel voltage selector must be set to match the local mains before switch-on.
2. Use the supplied EU power cable (Schuko, CEE 7/7); confirm the cable and plug are undamaged.
3. Connect the power cable to a properly earthed outlet. The protective-earth conductor must not be defeated or bypassed.
4. Fit and wire each load module before applying power, using current terminals and test leads rated for the module's maximum input current and the expected short-circuit current of the device under test.

> **WARNING — ELECTRIC SHOCK**
> Always use a supply outlet with a protective earth contact. Never operate the mainframe with the protective ground disconnected or with a two-wire (ungrounded) adapter.

1.3 Operating conditions

Item	Requirement
Operating temperature	0–40 °C
Operating humidity	10–90% RH, non-condensing
Storage temperature	−20–70 °C
Altitude	Up to 2000 m (operating)
Pollution degree	2
Safety class	Class I (protective earth)

Do not use the instrument in a dusty, vibrating, direct-sunlight or corrosive-gas environment. Keep the ventilation openings on all four sides clear at all times: each module has its own independent, intelligent cooling fan whose speed varies with load power, and a module stops pulling current automatically if it reaches its over-temperature trip point (§5.3).

1.4 Precautions

- Do not use the instrument if the enclosure, a module, test leads or the supply cord shows signs of damage.
- Do not exceed the current rating of the test leads and any connected fixture, or the module's maximum short-circuit input current.
- Connect the ground/earth reference correctly before connecting a device under test, and verify the safety markings on the module before use.
- Do not modify the instrument, install replacement parts yourself, or attempt unauthorized internal repairs.
- Do not operate the instrument with any cover removed or loose.
- This instrument is not designed or certified for life-support or other safety-critical applications.
- Keep the ventilation openings on all four sides clear; do not block the cooling-fan airflow.
- Clean the enclosure with a soft, dry cloth only; do not clean the interior.
- Avoid frequent power-cycling, as this can risk data loss.
- The instrument is designed to reduce AC-input noise interference, but should still be used in a low-noise environment; install a power-line filter if a noisy supply cannot be avoided.
- If the instrument will not be used for an extended period, store it in its original packaging at 5–40 °C, ≤85% RH, away from direct sunlight.

CAUTION — WARM-UP

Allow at least **30 minutes** of warm-up after switch-on before relying on the instrument for a measurement or production decision.

1.5 Safety symbols



WARNING — a hazard that, if not avoided, could result in personal injury or death.



NOTE — supplementary information that helps with correct or efficient use, but is not itself a hazard.



CAUTION — a hazard that, if not avoided, could damage the instrument or the device under test, or invalidate a measurement.



Protective ground — this terminal must be connected to protective earth. Also printed next to the mainframe's power-inlet ground terminal.

The on/off switch symbols (● for on, ○ for off) and an electric-shock warning triangle also appear on the front panel, next to the power switch and current terminals respectively.

1.6 CE marking

The TH8300 series carries the CE mark, as shown on the instrument's rear-panel nameplate, confirming conformity with the applicable EU directives.

1.7 RoHS compliance

The TH8300 series complies with Directive 2011/65/EU (RoHS); supporting documentation is available from Techmize on request.

1.8 WEEE — disposal of electrical and electronic equipment



This symbol indicates that the instrument must not be disposed of as unsorted municipal waste at the end of its service life. Within the European Union, return the instrument to Techmize, your distributor, or a designated collection point for electrical and electronic equipment, in accordance with the WEEE Directive (2012/19/EU) and its national transposition in your country.

1.9 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. During the warranty period, Techmize will repair or replace, at its discretion, a product that proves defective, provided it has been used within the specified operating conditions. A warranty card is required to claim warranty service.

This warranty does not cover damage from misuse, accident, unauthorized modification or repair, or damage from operation outside the environmental limits given in §1.3. Repair must be carried out by qualified technical personnel; after any repair, the instrument must be re-measured and re-calibrated to avoid affecting test accuracy.

1.10 Manufacturer & EU contact

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CHAPTER 2

Overview

2.1 Mainframe & modules

TH8300 and TH8310 are empty mainframes; load modules are ordered and installed separately. TH8300 accepts up to five modules (up to ten channels using dual-channel modules); TH8310 accepts up to two modules (up to four channels). Each module is a self-contained load channel (or pair of channels) with its own current terminals, Vsense terminals, display and controls, fitted into one of the mainframe's slots.

2.2 Front panel

Power switch — switches the mainframe on/off.

Trademark & model label.

USB port — for a USB drive (file save/load) or firmware update.

Current terminals — the module's main power connection to the device under test.

Vsense terminals — remote voltage-sense connection; reduces the effect of test-lead voltage drop, particularly useful in CR or CV testing (§3.5).

Module label — shows the installed module's model.

Display — 2.8″ colour LCD, 320 × 240 resolution, one per module.

Menu — responds to the module's on-screen menu functions.

Mode / **ADVA** — select General mode (CC/CR/CV/CP) or Advanced mode (§3.2–3.3).

Load — starts or stops the module pulling current; also used with ALLRUN (§5.1).

Adjustment knob — scrolls through menu fields or adjusts a value; press to change the editing position.

2.3 Rear panel

Item	Description
RS232 interface	Serial communication (Chapter 6)
LAN port	Ethernet communication with a host PC (Chapter 6)
USB interface	USB device port for communication with a host PC
System I/O interface	Electrically isolated digital inputs/outputs for external signalling (§5.4)
GPIB interface	IEEE-488 remote control (Chapter 6)
Fuse	Mains-input protection fuse
Power inlet	AC mains input; TH8310 additionally carries a rear-panel voltage-range selector switch (§1.2)
Cooling fans	One per installed module, speed-controlled by module load

The TH8310 is a compact, two-slot version of the same platform: its front panel holds up to two modules, and its rear panel carries the same RS232, USB, System I/O and GPIB interfaces alongside the LAN port and voltage selector, in a smaller enclosure (Chapter 7).

2.4 Display layout

Each module's 2.8″ colour LCD (320 × 240) is divided into four regions: a title area showing the module's active mode (e.g. "CC"); a measurement-result area showing the live voltage, current and power readings; a shortcut-setting area used for quick adjustments in General mode; and a menu area along the bottom, showing the active softkey functions — for example the CC/CR/CV/CP quick-select labels in General mode.

2.5 Basic operation

2.5.1 General mode

1. Press **Mode** on the module to select General mode, then use the on-screen menu keys to choose CC, CR, CV or CP.
2. Press **SETUP** to open the mode's setup page and enter the required range and set value(s) with the knob (§3.2).
3. Press **Load** to start pulling current; press it again to stop.

2.5.2 Advanced mode

1. Press **ADVA** on the module to select Advanced mode, then use the on-screen menu keys to choose the required test mode (§3.3).
2. Press **SETUP** to open the mode's setup page and enter its parameters with the knob.
3. Press **Load** to start the test; press it again to stop.

2.6 Power-on

The power switch is at the lower-left of the front panel. On switch-on, each installed module's display shows its trademark, model and firmware version while it runs a self-test; a module that fails self-test remains on this screen rather than proceeding to the measurement display. Allow at least 30 minutes of warm-up (§1.4) before relying on the instrument for a measurement or production decision.

CHAPTER 3

Operation & Configuration

3.1 Measurement Display

Each module shows its own Measurement Display page, updating continuously once the module is loading. In General mode the title area shows CC, CR, CV or CP; in Advanced mode it shows the active test mode (e.g. DYN, BATT, LIST). Live voltage, current and power readings are shown in the measurement-result area; in dynamic/pulsed modes an additional peak-voltage pair (V_{p+}, V_{p-}) is shown.

3.2 General Mode setup

General mode provides the four fundamental load functions: constant current (CC), constant resistance (CR), constant voltage (CV) and constant power (CP). Each range (high/medium/low) and its numeric span depend on the installed module; the figures below use the TH8302-80-40 module as a worked example — see Chapter 7 for every module's exact ranges.

Mode	Function	Setup fields
CC	Holds a constant current regardless of the input voltage. Minimum starting current is 0.1% of the selected current range.	Current range (H/M/L, e.g. 40 A / 4 A / 400 mA), Voltage range (H/M/L, 80/16/6 V), Set value A, Set value B, Rising slope, Falling slope
CR	Behaves as a fixed resistance: current changes linearly as the input voltage changes.	Resistance range (H/M/L, e.g. 9000/2160/60 Ω), Current range (H/M/L), Set value A, Set value B
CV	Regulates the input voltage to the set value by adjusting the pulled current; current range is fixed to high.	Voltage range (H/M/L, 80/16/6 V), Set value A, Set value B
CP	Holds a constant power: as input voltage V rises, current I is reduced to keep P = V×I constant.	Power range (H/M/L, e.g. 200/20/4 W), Voltage range (H/M/L), Set value A, Set value B, Rising slope, Falling slope

Set values A and B let the operator store two working points and switch between them without re-entering a value; rising/falling slope controls how quickly the pulled current moves to a new set value, in A/µs or mA/µs.

3.3 Advanced Mode setup

Advanced mode adds twelve specialized test functions, each built on the CC/CR/CP structure of General mode. Select a mode with ADVA and the on-screen menu keys, then press SETUP to configure it.

Mode	Function	Key setup fields
DYN	Dynamic load: alternates between two current levels at programmable timing and slope, for ripple/transient-response testing.	Current range, Voltage range, Load 1, Load 2, Time 1, Time 2, Rising/Falling slope
SWP	Dynamic frequency sweep: alternates between two current levels while sweeping the switching frequency, to find a power supply's worst-case response frequency.	Current range, Voltage range, Load 1, Load 2, Start/End/Step frequency, Dwell time
CR-LED	Simulates an LED's forward-conduction behaviour: the load only draws current once the input voltage exceeds a set conduction voltage, like a real diode.	Resistance range, Resistance set value, Voltage set value (conduction voltage)
BATT	Battery discharge test in CC, CR or CP mode, terminating on voltage, elapsed time, discharged capacity or energy.	Discharge mode, Current/Voltage range, Set value, Termination mode, Termination threshold, Rising/Falling slope
TIMING	Precision elapsed-time measurement (0–100,000 s) between a start and end voltage threshold, e.g. for battery discharge timing.	Test mode, Current/Voltage range, Set value, Trigger mode, Start/End voltage, Time-out
MPPT	Maximum-power-point tracking: automatically finds the voltage and current at which a source (e.g. a solar simulator) delivers maximum power.	Voltage range, Test speed (fast/medium/slow)
OCPT	Over-current protection test: steps the pulled current upward to verify a power supply's OCP trip point and behaviour.	Current/Voltage range, Start/End current, Step count, Dwell time, Trigger voltage, Lower/Upper current limit, Pull-load lock
OVPT	Over-voltage protection test: captures the DUT's output voltage peak and the time from peak to the OVP trigger level (response time, 10 µs resolution).	Voltage range, Trigger voltage
OPPT	Over-power protection test: steps the pulled power upward to verify a power supply's OPP trip point and behaviour.	Current/Voltage range, Start/End power, Step count, Dwell time, Trigger voltage, Lower/Upper power limit, Pull-load lock
SINE	Superimposes a sine-wave ripple on a DC current level, to simulate ripple current on a DC source.	Current/Voltage range, DC current, AC current, Frequency
LIST	Arbitrary multi-step current sequence, for complex precision test patterns.	Current/Voltage range, Repeat count, Total sequence steps, per-step Level / Dwell / Slope
AUTO	Fully automatic multi-step test program (up to 10 programs, up to 100 steps each) with pass/fail judgement per step, for production-line testing.	Program, Program type (List/Step), Chained program, Repeat count, per-step Mode / Range / Dwell / Set value(s) / limits / slopes

3.4 System Setup

Press **System** to open System Setup.

Field	Description
Power-on parameters	Default or User — whether the module restarts with factory-default settings or with the settings active at the last power-off.
Backlight	Display backlight brightness, 10 steps (1–10).
Key sound	On/off — audible feedback for front-panel key presses.
System reset	Reboots the module.
Factory defaults	Restores all module settings to factory defaults.

3.5 Function Setting

Field	Description
Start voltage (Von) / Shutdown voltage (Voff)	When enabled, the module only pulls current once the input voltage reaches Von, and stops once it falls below Voff. Voff should generally be set ≤ Von.
Soft start / Start-up time	Ramps the pulled current up gradually over the set time rather than stepping directly to the set value.
Positive timing / Countdown / Countdown time	Elapsed-time or countdown display options shown alongside the measurement while the module is loading.
Low-voltage protection (LVP)	On/off — stops the module pulling current if the input voltage falls too low.
All Pull-load (All Run)	On/off — see ALLRUN Function, §5.1.
Voltage response	Sets the module's voltage-loop response speed.
CV type	Current PSU / Voltage PSU — matches the module's constant-voltage control behaviour to the type of source under test.
External waveform	In CC mode, lets the module follow an externally supplied drive-current waveform.
V-Sense	On/off — enables the remote voltage-sense terminals, compensating for test-lead voltage drop; recommended for precise CR or CV testing (§2.2).
Lock mode	Alone / All — whether the front-panel **Lock** function locks only the active module, or every installed module at once.

3.6 Limit Settings

Limit Settings let the module judge each measurement against a reference value and an upper/lower window, independently of the active protection trip points, and report a pass/fail-style result over SCPI.

Field	Description
Limit state	On/off — enables limit judgement.
Limit mode	Value or Percent — whether the upper/lower window is entered as an absolute value or a percentage of the reference.
Reference / Upper / Lower — current	Reference current and its upper/lower acceptance window.
Reference / Upper / Lower — voltage	Reference voltage and its upper/lower acceptance window.
Reference / Upper / Lower — power	Reference power and its upper/lower acceptance window.

3.7 Module Online Settings

Module Online links two or more modules within the same mainframe so they start, stop and share or mirror load current together. See §5.2 for the full behaviour and a worked example; the setup fields are:

Field	Description
Online mode	Standalone / Slave / Host — exactly one module in a linked group must be set as Host.
Online status	On/off — can only be turned on from the Host module; if more than one module is set as Host, the mainframe reports an online failure.
Connection type	Power mode (each linked module is assigned a share of the pulled current proportional to its own rated power; requires CC mode) or Copy mode (every linked module mirrors the Host module's set current; supports CC and DYN mode). Only the Host module's **Load** key is active once online — linked slave modules do not respond to their own Load key (dual-channel modules keep independent L/R key response).

3.8 Digital I/O & Baseboard Setup

The mainframe's shared System I/O interface and communication settings are configured from the baseboard-level **Frame** menu (not per-module).

Field	Description
DIO-Out1 / DIO-Out2	Functional assignment of digital output ports 1/2: e.g. external load on/off status, OCP test pass/fail, overall pass/fail, or an OTP/OVP/OCP/OPP/reverse-polarity alarm flag.
DIO-In1 / DIO-In2	Functional assignment of digital input ports 1/2: e.g. external load on/off control, remote inhibit, or OCP-test pass gating.
Dout-VOLT	Logic-level voltage of the digital outputs: 1.8 V / 3.3 V / 5 V.

Baseboard communication (**Frame COMM**) selects the active bus mode — RS232, LAN, USBTMC, USBCDC or GPIB — and its parameters (baud rate and protocol for RS232; TCP/IP mode, DHCP, port, IP address, gateway and subnet mask for LAN; GPIB address for GPIB). See Chapter 6.

CHAPTER 4

File Management

Each module can save its complete set of parameters to a named file in its internal non-volatile memory, so a configuration can be recalled later without re-entering it manually. Press the File module key to open <Module File>; each module stores up to 40 files internally.

File type	Extension	Purpose
Module configuration	`.STA`	Saves the module's complete parameter settings to internal memory

4.1 Operations

- **Save** — move to an empty file slot and press the corresponding menu key; enter a file name on the character-selection panel and confirm to save.
- **Load** — select a saved file and press Load to recall it into the module's active settings.
- **Unload** — select a loaded file and press Unload to detach it from the module's active settings.
- **Delete** — select a file and press Delete to remove it permanently.

CHAPTER 5

Functions

5.1 ALLRUN function

ALLRUN lets a group of modules start and stop pulling current together, without an Online master/slave relationship. Enable ALLRUN on each module that should join the group (§3.5); pressing **Load** on *any* module in the group then starts or stops every ALLRUN-enabled module synchronously. Modules with ALLRUN turned off are unaffected and continue to respond only to their own **Load** key.

Example. If modules 1 and 2 have ALLRUN on and modules 3, 4 and 5 have it off, pressing **Load** on module 1 or module 2 starts both of them together; modules 3–5 start and stop independently, each from its own **Load** key.

5.2 Module Online function

Module Online links modules within a single mainframe so a Host module controls one or more Slave modules (§3.7). Set exactly one module in the group to Host mode and the others to Slave mode, then turn Online Status on from the Host. Once connected, only the Host module's **Load** key is active.

Connection type	Behaviour	Supported modes
Power mode	Each linked module is assigned a share of the total pulled current proportional to its own maximum rated power.	CC
Copy mode	Every linked module pulls the same current value as set on the Host module.	CC, DYN

ALLRUN and Module Online operate independently and can be combined: a module that is both Online-linked and ALLRUN-enabled still follows its Online Host for load synchronization, while separately joining in an ALLRUN group with any other ALLRUN-enabled modules. For example, if modules 1 and 2 are linked Online (module 1 as Host) and modules 3 and 4 have ALLRUN on but are not Online-linked, pressing Load on module 1 starts both 1 and 2 together, and pressing Load on module 3 or 4 starts both 3 and 4 together — the two groups do not affect each other.

5.3 Protection functions

Every module in the TH8300/TH8310 series supports hardware over-voltage, over-current, over-power, over-temperature and reverse-polarity protection, which cannot be disabled.

Protection	Trip condition	Clearing
OVP (over-voltage)	Input voltage reaches approximately 110% of the active voltage range.	Reduce the DUT voltage to within the active range, disconnect if it exceeds the trip value, then press **Enter** on the front panel to clear.
OCP (over-current)	Load current is hardware-limited to approximately 110% of the active current range.	Reduce the DUT current to within the rated/set value, disconnect if it exceeds the trip value, then press **Enter**.
OPP (over-power)	Load power is hardware-limited to approximately 110% of the active power range.	Press **Enter** once the condition clears.
OTP (over-temperature)	Module internal power-device temperature exceeds approximately 85 °C.	Allow the module to cool to below the trip point, then press **Enter**.
REV (reverse polarity)	Input voltage polarity is reversed; remains active for as long as the reversed voltage is present.	Correct the DUT polarity or disconnect it, then the alarm clears automatically.

On any protection trip, the module stops pulling current immediately, the buzzer sounds, and a pop-up (e.g. "OVP", "OCP", "OPP", "OTP" or "REV") appears on the module's display.

CHAPTER 6

Remote Control & Communication Interface

The TH8300 series mainframe can be controlled remotely over RS232, LAN, USBTMC, USBCDC or GPIB, using the SCPI command language. SCPI is a standard capability across the TH8300 range — not exclusive to any one model or module. The active bus mode and its parameters are configured under Baseboard Setup → Frame COMM (§3.8). For the complete command syntax and parameter ranges, see the companion *TH8300 Series SCPI Command Reference*.

> NOTE
> The TH8300 series does **not** support MODBUS. All remote interfaces (RS232, LAN, USBTMC, USBCDC, GPIB) use SCPI only. Users migrating from the TH7100 or TH7200 series, where MODBUS is available over RS232, should note that RS232 on the TH8300 carries SCPI commands, not MODBUS.

6.1 RS232

The mainframe's RS232 interface uses a 9-pin D-sub connector and implements a minimal subset of the full RS-232 standard: transmit data (TXD), receive data (RXD) and signal ground (GND) only — no hardware flow-control lines.

Signal	Pin
TXD (transmit)	3
RXD (receive)	2
GND	5

Data format is 8 data bits, 1 stop bit, no parity, terminated with <LF>. Baud rate is selectable from 9600, 19200, 28800, 38400, 57600 or 115200 bit/s (factory default 9600).

> NOTE
> Switch off the instrument before connecting or disconnecting the RS232 cable, to avoid an electrical transient. Do not short the current terminals together or to the enclosure.

6.2 LAN

The rear-panel LAN port supports TCP/IP communication with a host PC, with DHCP or a manually configured IP address, TCP port, gateway and subnet mask, set under Baseboard Setup → Frame COMM (§3.8).

6.3 USBTMC & USBCDC

The rear-panel USB interface supports both USBTMC-USB488 (compliant with USBTMC and USB 2.0, for direct instrument control from measurement software) and USBCDC (a USB virtual COM port, operating like the RS232 interface once the Techmize/Tonghui USB driver is installed). No special configuration is required for either mode beyond selecting it as the active bus mode.

6.4 GPIB

The GPIB (IEEE-488.2) interface supports remote control from a GPIB controller or PC. The instrument implements the standard GPIB talker/listener functions (SH1, AH1, T5, L4, RL1, DC1, DT1, E1) but not the controller function (C0). GPIB address is single-addressed, selectable 1–31 (factory default 1); up to 15 instruments may be connected on one bus, with a total cable length not exceeding 20 m.

6.5 SCPI

The SCPI command set is organized into subsystems covering common IEEE 488.2 commands, module selection (`CHANnel`), general/advanced mode configuration (`CURRent` , `POWer` , `RESistance` , `VOLTage` , `ADVance` , `MODE`), system configuration (`CONFigure`), digitizing/data-capture (`DIGitizing`), measurement (`FETCh` , `MEASure`), load control (`LOAD` , `RUN` , `ABORt`), display (`SHOW`) and limit judgement (`SPECification`). The full command list, syntax and examples are published in the companion SCPI Command Reference.

CHAPTER 7

Technical Specifications

Specifications are guaranteed for the operating conditions in §1.3, after the warm-up period in §1.4, unless noted otherwise. Specifications are subject to change without notice.

7.1 Mainframe

Parameter	TH8300	TH8310
Module slots / max. channels	5 slots / up to 10 channels	2 slots / up to 4 channels
Mainframe power capacity	Up to 2500 W	Up to 1000 W
AC input voltage	90–130 Vac or 175–253 Vac	100 Vac or 220 Vac, rear-panel selector
AC input frequency	47–63 Hz	
Max. input power	≤300 VA	
ADC sampling rate	500 kHz	
Dynamic-mode pull rate	Up to 50 kHz	
Display	2.8″ colour LCD, 320 × 240, per module	
Interfaces	RS232, LAN, USBTMC, USBCDC, GPIB, System I/O (SCPI)	
Status-memory capacity	40 groups per module	
Dimensions (W×H×D)	477 × 177 × 590 mm	255 × 177 × 590 mm
Weight (empty mainframe)	15 kg	10.5 kg
Operating temperature / safety class	0–40 °C / Class I	

7.2 Load modules — 80 V tier

Model	TH8301-80-20	TH8301A-80-20	TH8302-80-40	TH8303-80-60	TH8304-80-80	TH8305-80-80
Channels / power	2 × 100 W	2 × 200 W	1 × 200 W	1 × 300 W	1 × 400 W	1 × 500 W
Voltage range	0–80 V					
Max. current / channel	20 A	20 A	40 A	60 A	80 A	80 A
CC/CR/CP accuracy	0.2% + 0.2%FS (current/power); 1% (resistance)					
CV accuracy	0.05% + 0.1%FS					
Current/power readback accuracy	0.2% + 0.2%FS					
Dynamic-mode frequency	100 Hz–50 kHz / 0.01 Hz–1 kHz					
Module size / weight	85.5 × 142 × 550 mm / 4.2 kg					

7.3 Load modules — 600 V tier

Model	TH8302-600-10	TH8303-600-15	TH8305-600-30
Channels / power	1 × 200 W	1 × 300 W	1 × 500 W
Voltage range	0–600 V		
Max. current	10 A	15 A	30 A
CC/CR/CP accuracy	0.2% + 0.2%FS (current/power); 1% (resistance)		
CV accuracy	0.05% + 0.1%FS		
Current/power readback accuracy	0.2% + 0.2%FS		
Dynamic-mode frequency	100 Hz–50 kHz / 0.01 Hz–1 kHz		
Module size / weight	85.5 × 142 × 550 mm / 4.2 kg		

7.4 Protection & environmental

Item	Specification
Protection functions	OVP, OCP, OPP, OTP, reverse-polarity (REV) — every module, hardware-implemented
Operating temperature / humidity	0–40 °C / 10–90% RH, non-condensing
Storage temperature	–20–70 °C
Altitude / pollution degree	≤2000 m / 2
Recommended calibration interval	1×/year

APPENDIX

Packing, Warranty & Related Documents

A.1 Standard & optional accessories

Each TH8300/TH8310 mainframe ships with an EU power cable (Schuko, CEE 7/7). This operation manual is issued in PDF only and is not included as a printed item.

Optional accessory	Description
TH26035D	Test cable
TH26035E	Test cable
TH26081	26-pin analog control interface cable

A.2 Transport & storage

Store the instrument in a dry, well-ventilated location at 5–40 °C and ≤85% RH, away from corrosive gases, for any extended period of non-use. During transport, protect the mainframe and installed modules from shock, vibration and moisture; use the original packaging wherever possible.

A.3 Nameplate & markings

Each mainframe's rear-panel nameplate carries: the manufacturer's name/trademark, product name and model, serial number and date of manufacture, the supply-voltage rating, and the CE mark.

A.4 Related documents

- TH8300 Series Datasheet (Techmize)
- TH8300 Series SCPI Command Reference (Techmize, companion to this manual)

A.5 Contacting Techmize

For technical support, accessories or service, contact Techmize directly or through your authorized Techmize distributor.

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