TECHMIZE by TONGHUI

OM

OPERATION MANUAL

TH1779A

DC Bias Current Source. Covers master/slave setup, front-panel operation, parameter and list configuration, system tools, output control and the instrument interfaces, including the SCPI remote command set.

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

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TH1779A Operation Manual

DC Bias Current Source

This manual describes the operation of the TH1779A DC Bias Current Source. A single unit delivers a 0.1–50.0 A constant-current output and can be chained with up to seven slave units for a combined output of 0.1–400.0 A, for AC/DC-superposition bias testing of inductors, chokes, transformers and other magnetic components in combination with a compatible digital LCR meter or L meter.

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The TH1779A is controlled remotely with the SCPI command set only, over RS-232C or USB Device; it does not support MODBUS. Given the small size of the command set, the full SCPI reference is included in Chapter 4 of this manual rather than issued as a separate companion document.

CHAPTER 1

Overview

SAFETY — READ BEFORE USE

These safety notices apply to both operating and maintenance personnel and must be observed. Do not use the instrument in a flammable or explosive atmosphere, or in an environment with excessive dust, direct sunlight or high humidity. Maintenance, component replacement or adjustment must be carried out by qualified personnel only — contact Techmize, your authorized distributor, or Tonghui's after-sales service department; do not open the rear cover or disassemble/modify the instrument yourself. Unauthorized or partial modification can leave the instrument unable to recover its original performance, or cause it to burn out.

CAUTION — LIVE TEST CONNECTIONS

Do not start the current output while a test connection is unreliable: poor contact at a connection point generates localized heat when current is applied, and accidental contact can cause burns. Do not touch the test leads or contact points while the current output is active. If a contact point opens during an active test, the self-inductance of the device under test can generate a high voltage across the just-opened contact, striking an arc; this arc can melt the contact point, burn nearby personnel, or damage the instrument through the resulting inductive voltage spike.

1.1 Introduction

The TH1779A DC Bias Current Source uses a high-performance microprocessor to deliver a 0.1–50 A constant-current output from a single unit, and can be chained with slave units to extend the maximum combined output to 0.1–400 A, giving excellent scalability. It is equipped with a direct test interface for connection to Techmize digital LCR meters and L meters, making it well suited to AC/DC-superposition testing of magnetic inductors and to providing a convenient, practical magnetizing current source for characterizing magnetic materials.

The instrument accepts a real-time current-value change during operation and responds immediately. It uses a new-generation AC/DC-superposition test principle suited to high-precision, high-frequency test requirements, and provides a newly designed, user-friendly graphical interface with manual key control, foot-switch control and remote command control.

1.2 Key technical parameters

1.2.1 Current range

Configuration	Setting range	Accuracy
Single unit (master only)	0.1–50.0 A	(1±1%)
Master + up to 7 slaves	0.1–400.0 A	(1±1%)

1.2.2 Display

480×800, 16:9, 16-bit true-color TFT LCD.

1.2.3 Control

- **Physical keys** — START/STOP keys start or stop the current output
- **Foot switch** — two foot-switch modes available, each able to start or stop the current output
- **RS-232C** — remote control via command

1.2.4 Frequency response

0 Hz–2 MHz.

1.2.5 Drive

Item	Specification
Maximum output voltage	14 V
Maximum allowable automatic-protection time for open circuit, overload, overheat or imbalance	<100 ms
Minimum scan step	100 mA

$$R_{max} = V_{max} / I \ (\Omega)$$ — *maximum allowable DC resistance of the device under test*

$$L_{max} = V_{max} / (di/dt) \ (mH)$$ — *maximum allowable inductance of the device under test*

1.2.6 Interfaces

Equipped with RS-232C, USB Device, SINGLE IN/SINGLE OUT master/slave link ports, and a foot-switch (FOOT.C) input.

The instrument can be directly connected to, and controlled by, a compatible Techmize L meter or digital LCR meter, and can be controlled by any host computer with a serial interface, provided the host uses the SCPI command set given in this manual.

Compatible LCR bridges include TH2838, TH2839, TH2840 and TH2848. **TH2840BL is recommended** — this model offers the most stable link performance with the TH1779A.

1.3 Main functions

- Forward current output only — for reverse-direction current, swap the connection direction between the device under test and the output terminals
- Real-time display of the working status of the master unit and every connected slave unit
- Two foot-switch control modes, for broad application flexibility
- Full SCPI remote command set
- User-friendly graphical interface with fast, clear status indication for efficient, convenient control

1.4 Other conditions of use

1.4.1 Warm-up

A brief warm-up period after power-on is sufficient before operation.

1.4.2 Duty cycle

Current rate of change: approx. 0.1–100 A/s. For an output current above 30 A, limit continuous output to ≤30 minutes, followed by a rest period of approximately the same length as the preceding continuous-output period.

1.4.3 Power supply

Item	Specification
Supply voltage	AC 220 V / 110 V (1±10%)
Supply frequency	50/60 Hz (1±5%)
Power consumption	≤1600 VA

1.4.4 Environment

Condition	Temperature	Humidity
Normal operating	0–55 °C	<90% RH
Reference operating	23(±5) °C	<80% RH
Transport	0–55 °C	≤93% RH

1.4.5 Notes

- Do not use the instrument in a dusty, vibrating, direct-sunlight or corrosive-gas environment.
- If the instrument will not be used for an extended period, store it in its original packaging or a similar box, in a well-ventilated room at 5–40 °C and ≤85% RH, away from corrosive gases and direct sunlight.
- The instrument is designed to minimize noise picked up from the AC supply, but should still be used in as low-noise an environment as practical; fit a power-line filter ahead of the instrument if this cannot be avoided.

1.4.6 Dimensions and weight

Item	Specification
Dimensions (W×H×D, single unit, excl. cabinet)	430 mm × 185 mm × 600 mm
Weight (single unit, excl. cabinet)	26.5 kg

1.4.7 Safety requirements

The instrument is a Class I safety-class instrument, complying with the Low Voltage Directive (LVD) 2014/35/EU and EN 61010-1:2010+A1:2019, *Safety requirements for electrical equipment for measurement, control, and laboratory use*.

Item	Requirement
Insulation resistance	Under reference operating conditions, ≥50 MΩ between the power-supply terminals and the enclosure; under humid transport conditions, ≥2 MΩ
Dielectric strength	Under reference operating conditions, the power-supply terminals and the enclosure withstand a rated AC voltage of 1.5 kV at 50 Hz for 1 minute, with no breakdown or flashover
Leakage current	≤3.5 mA (AC RMS)

1.4.8 Electromagnetic compatibility

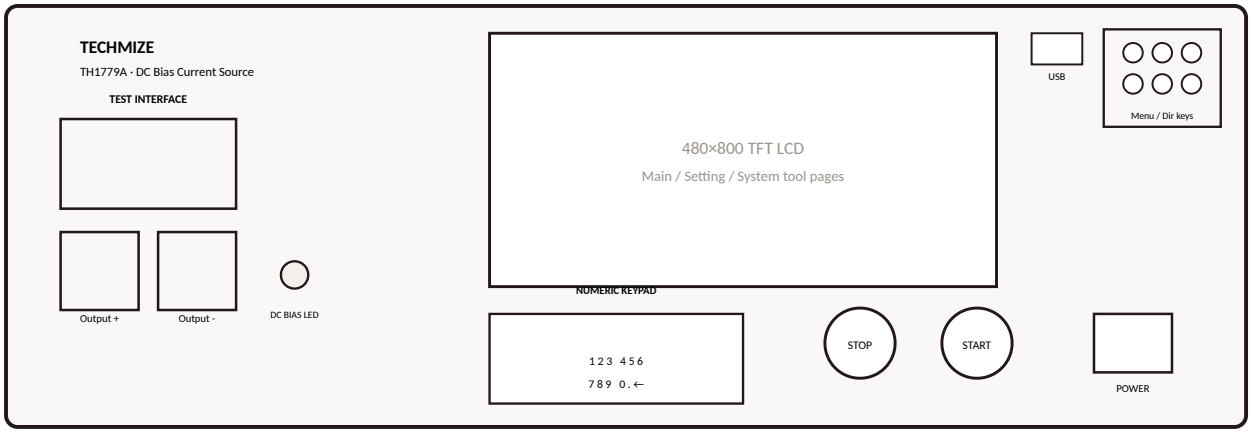
The instrument complies with the EMC Directive 2014/30/EU, EN IEC 61326-1:2021 (*Electrical equipment for measurement, control and laboratory use — EMC requirements*), and with CISPR 11:2015+A1:2016+A2:2019 (radiated and conducted emissions, Group 1, Class A), supported by the following immunity standards: EN 61000-4-2:2009 (electrostatic discharge), EN 61000-4-3:2020 (radiated RF field), EN 61000-4-4:2012 (electrical fast transient/burst), EN 61000-4-5:2014+A1:2017 (surge), EN 61000-4-6:2014 (conducted RF), EN 61000-4-11:2020 (voltage dips and interruptions), EN 61000-3-2:2019+A1:2021 (harmonic current emissions) and EN 61000-3-3:2013+A1:2019+A2:2021 (voltage fluctuations and flicker).

CHAPTER 2

Panel Description & System Connection

This chapter gives a brief overview of the front and rear panels, the standard/optional accessories, and typical system-connection procedures. Detailed operation of each setting is covered in Chapter 3, and the communication interfaces and remote command set in Chapter 4.

2.1 Front panel



Simplified front-panel layout (schematic, not to scale)

1 **Trademark & model** plate.

2 **LCD display** — shows the operation interface.

3 **USB port** — for firmware upgrade (§3.3.2.1).

4 **Menu keys** — select items within a menu bar.

5 **Module & direction keys** — switch between displayed menus and move the page cursor.

6 **Test interface** — connects to a compatible LCR meter or L meter, forming an AC-coupled measurement path to the device under test.

7 **Output port** — current output.

8 **Numeric keypad** — for entering setting values.

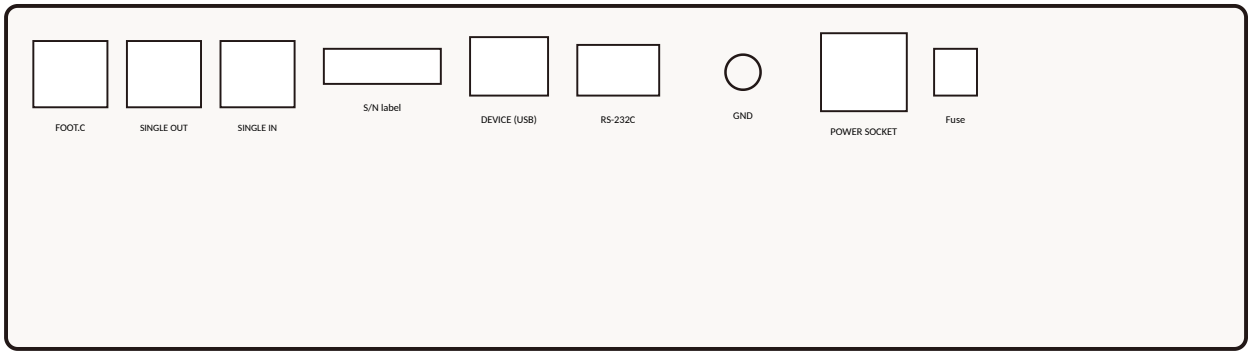
9 **Output indicator (DC BIAS LED)** — lit while the instrument is outputting current.

10 **STOP** — stops the current output.

11 **START** — starts the current output.

12 **POWER switch** — press in to switch on, release (pop out) to switch off.

2.2 Rear panel



Simplified rear-panel layout (schematic, not to scale) — port names as marked on the instrument

1 **FOOT.C** — foot-switch input.

2 **SINGLE OUT** — dedicated master/slave link output.

3 **SINGLE IN** — dedicated master/slave link input.

4 **S/N label** — instrument serial number.

5 **DEVICE (USB)** — USB device interface; remote control of the output and its parameters via the SCPI command subset in this manual.

6 **RS-232C** — serial interface; remote control of the output and its parameters via the SCPI command subset in this manual.

7 **GND** — grounding terminal; connect here if the power cable has no reliable ground connection.

8 **Power socket** — AC mains input. Always use a grounded 3-wire power cable.

9 **Fuse**.

WARNING — GROUNDING

The TH1779A is a Class I safety-class instrument. Always connect it to a grounded power outlet. Without a reliable ground connection, the chassis can carry a static or induced electrical charge, creating a risk of personal injury, and master/slave operation of multiple units may become unstable or cause instrument damage.

2.3 Accessories

Check the contents against the packing list when unpacking. Every TH1779A unit ships with the standard accessories below; if anything is damaged or missing, contact Techmize or your authorized distributor promptly.

2.3.1 Standard accessories

Item	Description	Qty
TH1779A	DC bias current source, main unit	1
TH26023B	LCR shielded connecting cable	1
TH1779-01	50 A bias test cable	1
TH26034B	DB9 female-female, 2-3 crossover serial cable	1
—	EU power cable (Schuko, CEE 7/7)	1
—	10 A slow-blow fuse	2
—	Operation manual	1
—	Warranty card	1

2.3.2 Optional accessories — master/slave (parallel) operation

Item	Description	Use
TH26023B	LCR shielded connecting cable (additional)	Current-parallel operation
—	Busbar parallel-connection kit	Current-parallel operation
TH26034A	1:1 male-female serial cable	Signal port
TH1779-02	150 A bias test cable	Parallel testing
TH1779-03	300 A bias test fixture	Parallel testing

Optional accessories are supplied as required for the number of units being paralleled. Contact your Techmize distributor for current availability.

2.4 Typical system connection

This section outlines the typical steps for connecting a single TH1779A to a host PC and/or an LCR bridge, and for chaining multiple units for master/slave (parallel) operation.

2.4.1 Single unit connected to a host PC

1. Connect the instrument's RS-232C port to the host PC's RS-232C port, using a DB9 female-female, 2-3 crossover serial cable.
2. Connect the front-panel test interface to the corresponding test port of the LCR meter.
3. Connect the front-panel test interface to the TH1779-01 LCR test fixture.
4. Connect the front-panel output port to the TH1779-01 current end, observing current polarity.
5. Power on the TH1779A, set the system address to master (address 0) in the system interface (§3.3.1.1), and save the setting.
6. Power off until ready to run the full test.

2.4.2 Connecting slave units

1. Connect the master unit's SINGLE OUT port to the next unit's SINGLE IN port. Continue chaining output-to-input until all units are connected in sequence. Use a DB9 male-female, one-to-one serial cable for each link.
2. Connect the current output of the master unit and each subsequent unit directly in parallel using the busbar parallel-connection kit.
3. Connect the GND terminal of the master unit to the GND terminal of each subsequent unit, in sequence.
4. Power on each TH1779A, set its system address to the appropriate slave number (1–7) in the system interface, and save the setting.
5. Power off until ready to run the full test.

2.4.3 Running the full system

1. Power on all connected TH1779A units.
2. On the master unit's interface, use the F3 scan function to confirm that all slave units are correctly connected.
3. Start the current output and confirm the correct output current with a clamp meter.
4. Configure the LCR bridge's RS-232C control function for TH1779A operation.
5. Set the required bias current and start DC BIAS.
6. Confirm that the TH1779A current output is correct.

> **CAUTION**
>
> The TH1779A current output has a rise/fall rate of 0.1–100 A/s, so there is a noticeable delay when current is started or changed. Confirm all connections are secure before starting the current output, and do not touch the test leads or test components while the current output is active, to avoid the risk of burns.

CHAPTER 3

Operating Instructions

The graphical interface is organized into a main (run) interface, a setting interface, and a system-tools interface, navigated with the front-panel menu and direction keys. This chapter covers each in turn, followed by the current-output control procedures.

3.1 Main interface

3.1.1 Total current display

Shows the total output current currently set. This value can be set directly from the main interface, or from the setting interface (§3.2.1.1). Use the numeric keypad to enter the value; the default unit is A.

3.1.2 Sub-current display

Once the total current is set, the system automatically distributes it across the master unit and each connected slave unit, shown as a list on screen. Each unit's entry also shows its current operating status:

Status	Meaning
Off	The slave unit's power is off, is not connected to the master, or is not present
No output	White background — the unit is not currently outputting current
Output	Green background — the unit is currently outputting current
Overload	The unit is in an overload fault state
Overheat	The unit is in an overheat fault state
Open circuit	The unit is in an open-circuit fault state

3.2 Setting interface

The setting interface has two pages: **Parameter setting** and **List setting**.

3.2.1 Parameter setting

3.2.1.1 Output current

Sets the total output current. Use the numeric keypad to enter the value; the default unit is A. The valid setting range depends on the number of connected slave units:

Slave units	Lower limit (A)	Upper limit (A)
0	0.1	50
1	0.2	100
2	0.3	150
3	0.4	200
4	0.5	250
5	0.6	300
6	0.7	350
7	0.8	400

3.2.1.2 Response frequency

Sets the response frequency. Use the numeric keypad to enter the value; the default unit is Hz. Setting range: 0–2 MHz.

3.2.1.3 Rise/fall time

The instrument's starting current is ≤0.1 A. The current step is approximately 0.1 A, with a rise rate between approximately 0.1 A/s and 100 A/s; set the rise/fall time accordingly.

3.2.1.4 Zero-point connection

Sets whether the instrument remains electrically connected to the LCR bridge when the output current is 0 A, or disconnects: **Connected** or **Disconnected**.

3.2.1.5 Current range

Two current ranges are available: 0–2 A and 2–50 A.

3.2.2 List setting

3.2.2.1 Start/end current

Sets the start and end current of the output list. Use the numeric keypad to enter the value; the default unit is A. Setting range: 0–400 A.

3.2.2.2 Step current

Sets the step current of the output list. Use the numeric keypad to enter the value; the default unit is A. Setting range: 0–400 A.

3.2.2.3 Scan points

Sets the number of scan points in the list. Use the numeric keypad to enter the value. Setting range: 0–50.

3.2.2.4 Building the current list

The current list can be built in three ways:

1. From the start current (I_b), end current (I_e) and step current (I_s): the list is auto-generated as I_b, I_b+I_s, I_b+2I_s, ..., up to I_e.
2. From the start current, end current and number of scan points (n): the step current is computed as $I_s = (I_e-I_b)/(n-1)$, and the list is then auto-generated the same way.
3. Manually: move the cursor to a row in the list and use the numeric keypad to enter each current value directly.

The delay time for each list row can be set in two ways: move the cursor to the row and enter the delay time directly, or move the cursor to a row that already has a delay time set and use the copy function to apply that value to all remaining blank rows.

3.3 System tools

3.3.1 System settings

3.3.1.1 Instrument address

Setting range: 0–7, where 0 is the master unit and 1–7 are slave units.

3.3.1.2 Current allocation

Mode	Description	Advantage	Trade-off
Even distribution	All bias-current sources share the output current equally	Power is evenly shared; during a wide-range current scan, units do not switch in/out and the test's added impedance stays constant	All current-source impedances remain connected to the device under test throughout, which can affect test accuracy
Step distribution	The number of active bias-current sources is allocated according to the current output required	Fewer active units reduces their effect on the test, suiting single-point testing	A current change may trigger a change in the number of active units, which can shift the test's added impedance and affect measurement linearity

3.3.1.3 Trigger mode

Mode	Description
Manual	Starts the current output via the front-panel START key
External	Starts the current output via the rear-panel foot switch
Bus	Starts the current output via the rear-panel RS-232C interface

In any trigger mode, the front-panel STOP key always immediately cuts the current output and halts the test.

3.3.1.4 Foot-switch mode

Mode	Behavior
Trigger mode	Press and release once to start the output; press and release again to stop
Hold mode	Press and hold to start the output; releasing the switch stops it

3.3.1.5 Beeper

Turns the key/system beeper on or off.

3.3.1.6 Baud rate

Sets the RS-232C communication baud rate: 9600, 19200, 38400 or 115200.

3.3.1.7 Date/time setting

Sets the system date (year, month, day) and time (hour, minute, second).

3.3.2 Auxiliary tools

3.3.2.1 Firmware upgrade

Copy the upgrade file `TH1779A.sec` to the root directory of a USB drive, then insert the drive into the front-panel USB port. Select Upgrade to begin; a progress bar on screen shows upgrade progress. The instrument restarts automatically once the upgrade is complete.

3.3.2.2 Factory reset

Select Reset to restore all instrument settings to their factory defaults.

3.3.2.3 Instrument information

Displays the master unit's information: model name, firmware version, software copyright notice, and Techmize/Tonghui contact details (phone, fax, website).

3.3.2.4 Instrument number

Displays the master unit's assigned instrument number.

3.3.2.5 System password

Clears the currently set unlock password, or sets/changes a new one. Once a password is set, it must be entered correctly to lock or unlock the front-panel keys before any further test operation.

3.3.2.6 Calibration

Performs metrological calibration of the instrument's measurement function; can also reset all calibration data to zero (initialize). Each range typically uses two calibration points: enter the measured value at each point and select Calculate to derive the calibration coefficient (K_B), which is then applied to subsequent measurements. The current coefficient set is retained for use at the next power-on.

A calibration-data backup/restore function is also provided, allowing the factory calibration data to be restored if on-site calibration data is found to be unreliable.

3.4 Output operation

3.4.1 Starting the current output

Method	Description
START key	Press the front-panel START key once to begin the current output
Foot switch	Edge-triggered modes: press and release the foot switch once to begin the output. Hold mode: press and keep the foot switch depressed to output; the output continues only while held
Command	On receiving `WORK:START`, the instrument begins the current output

3.4.2 Stopping the current output

Method	Description
STOP key	Press the front-panel STOP key once to immediately stop the current output
Foot switch	Edge-triggered modes: while the output is active, press and release the foot switch once to immediately stop it. Hold mode: releasing the foot switch immediately stops the output
Command	On receiving `WORK:STOP`, the instrument immediately stops the current output

3.4.3 Step output and list output

From the run (main) display, step output and list output can be switched using the menu key. **Step output** outputs a single current value. **List output** outputs the sequence of current values configured in the list (§3.2.2), one after another.

CHAPTER 4

Instrument Interfaces & Remote Control

4.1 RS-232C interface

4.1.1 Standard

The TH1779A uses a minimal RS-232 subset, as shown below:

Signal	Label	Connector pin
Transmit data	TXD	3
Receive data	RXD	2
Ground	GND	5

Using only these three lines is significantly less expensive than a full five- or six-wire serial link, which is the main advantage of this minimal interface.

4.1.2 Connection

Connect the instrument to the host computer using a DB9 female-female serial cable with pins 2 and 3 crossed (RXD ↔ TXD), and pin 5 (GND) connected straight through. This is the standard serial cable supplied with the TH1779A (TH26034B). Confirm the crossover wiring before using any third-party cable.

> **WARNING**
>
> Switch off the instrument before connecting or disconnecting the serial cable, to avoid electric shock. Do not short the output terminals to each other or to the chassis, to avoid damaging the instrument.

4.2 SCPI command reference

Commands can be sent over RS-232C or the USB Device interface. Every command is sent and received as a string, terminated by a linefeed (LF, ASCII 10 / 0x0A); the instrument waits indefinitely for the terminator and will not process an unterminated command. Every response from the instrument is likewise terminated with LF.

4.2.1 Common commands

Command	Function	Example
`*IDN?`	Query instrument model and firmware version	`*IDN?` → `TH1779A, Ver 1.00`
`*STA`	Start the current output	`*STA`
`*STO`	Stop the current output	`*STO`

4.2.2 Parameter subsystem

Used to remotely set and query instrument parameters.

Command	Function	Data	Example
`:PARA:CURR`	Set/query the current output current	Float, 0–400, resolution 0.1, unit A	`:PARA:CURR 1` sets 1 A · `:PARA:CURR?` → `1`
`:PARA:CURR:RNG`	Configure the current range for a given current value (set only)	Float, 0–400, resolution 0.1, unit A	`:PARA:CURR:RNG 15` auto-selects the matching range for 15 A (§3.2.1.5)
`:PARA:FREQ`	Set/query the current response frequency	Float, 0–2000000, resolution 1, unit kHz	`:PARA:FREQ 100` sets 100 kHz · `:PARA:FREQ?` → `100000`
`:PARA:FOOT`	Set/query the foot-switch trigger mode	Enum: `TRIG` , `HOLD`	`:PARA:FOOT TRIG` sets edge-trigger mode · `:PARA:FOOT?` → `TRIG`

4.2.3 State subsystem (query only)

Used to remotely query the master/slave connection state and current working status.

Command	Function	Response
`:STAT:HOST?`	Query master-unit status	Unsigned byte, 0–31 (0x1F) bitmask: Bit0 power on, Bit1 running, Bit2 overheat, Bit3 overload, Bit4 imbalance
`:STAT:SLAV?`	Query slave-unit status	Unsigned byte, 0–31 (0x1F) bitmask: Bit0 power on, Bit1 running, Bit2 overheat, Bit3 overload, Bit4 open circuit
`:STAT:WORK?`	Query the current working state	String: `running` (outputting current) or `preparing` (standby)

4.2.4 System subsystem

Used to remotely configure instrument-wide system settings.

Command	Function	Data	Example
`:SYST:BAUD`	Set/query the serial baud rate	Enum: `9600`, `19200`, `38400`, `115200`	`:SYST:BAUD 9600` · `:SYST:BAUD?` → `9600`
`:SYST:BEEP`	Set/query the beeper on/off	Enum: `ON`, `OFF`	`:SYST:BEEP ON` · `:SYST:BEEP?` → `ON`
`:SYST:TRIG`	Set/query the trigger mode	Enum: `MAN`, `EXT`, `BUS`	`:SYST:TRIG MAN` · `:SYST:TRIG?` → `MAN`
`:SYST:FOOT`	Set/query the foot-switch working mode	Enum: `EDGD`, `EDGU`, `HOLD`, `LOCK`, `VOLT`	`:SYST:FOOT EDGU` · `:SYST:FOOT?` → `EDGU`

4.2.5 Working subsystem

Used to start or stop the current output.

Command	Function	Example
`:WORK:START`	Start the current output	`:WORK:START`
`:WORK:STOP`	Stop the current output	`:WORK:STOP`

4.2.6 Remote and device-mode commands

Command	Function	Data	Example
`:REMO:LOCK`	Lock the front-panel keys (all keys disabled except STOP)	—	`:REMO:LOCK`
`:REMO:ULOC`	Unlock the front-panel keys	—	`:REMO:ULOC`
`:DEVI:MODE`	Set the working mode	Enum: `COMM` (generic), `TH` (Tonghui/Techmize)	`:DEVI:MODE TH` → returns `1779A`

4.3 USB Device interface

The rear-panel DEVICE (USB) port provides an alternative to RS-232C for host-computer communication, using the same SCPI command set described in §4.2.

4.4 USB (front panel) port

The front-panel USB port is used for firmware upgrade only (§3.3.2.1); it does not provide host-computer communication.

4.5 Master/slave link interfaces

The SINGLE OUT and SINGLE IN ports (rear panel) are used exclusively to chain multiple TH1779A units for master/slave (parallel) operation, as described in §2.4.2. They are not general-purpose communication ports and do not accept SCPI commands.

> **NOTE — USER INTERFACE LANGUAGE**
>
> The TH1779A's on-screen interface is English only.

APPENDIX

Sets, Warranty & Related Documents

A.1 Standard accessories

See §2.3.1 for the full packing list. In summary: TH1779A main unit, TH26023B LCR shielded cable, TH1779-01 50 A bias test cable, TH26034B serial cable, EU power cable (Schuko, CEE 7/7), two 10 A slow-blow fuses, this operation manual, and the warranty card.

A.2 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, supported by the instrument's warranty card. Damage caused by improper operation during the warranty period is chargeable to the user. Repair must be carried out by qualified technical personnel; do not replace internal components without authorization, and have the instrument recalibrated after any repair to avoid affecting measurement accuracy. Store the instrument in its original packaging, in the conditions given in §1.4.4/1.4.5, when not in use for an extended period.

A.3 CE compliance summary

Directive	Harmonized standard(s)
Low Voltage Directive (LVD) 2014/35/EU	EN 61010-1:2010+A1:2019
EMC Directive 2014/30/EU	EN IEC 61326-1:2021; CISPR 11:2015+A1:2016+A2:2019 (Group 1, Class A); EN 61000-4-2/3/4/5/6/11; EN 61000-3-2/3-3

A.4 Related documents

- TH1779A Datasheet (Techmize)