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TH269X SERIES

SCPI & MODBUS Command Reference

Covering TH2690 · TH2690A · TH2690H · TH2691 · TH2691A · TH2691H · TH2695 · TH2695A

Companion volume to the TH269X Series Operation Manual.
SCPI and MODBUS are standard communication protocols across the TH269X series.

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> **NOTE**
>
> SCPI and MODBUS are standard capabilities supported across the whole TH269X series (§4.8, Operation Manual), not model-exclusive features. All command/address tables in this volume apply to all eight models unless a row states otherwise.

SECTION 1

Remote Interfaces

1.1 RS232

Full-duplex asynchronous serial communication via the rear-panel DB9 connector, using the same pin definition as the IBM-AT-compatible 9-pin serial interface. A self-made 3-wire cable (<1.5 m, two-core shielded wire) can be used, or a standard DB9 cross-wired cable; if self-made, short pin 4 to pin 6 and pin 7 to pin 8 at the computer connector.

PARAMETER	VALUE
Transmission mode	Full-duplex asynchronous, start/stop bits
Baud rate	Configurable (Set → BusSet, §4.8.1)
Data bit	8 bit
Stop bit	1 bit
Parity	None
End character	NL (newline, ASCII 10)
Connector	DB9 (male)

1.2 LAN

Controls the instrument over a Local Area Network connection; compatible with the instrument's SCPI command set. Connect the rear-panel LAN port to the network via an Ethernet cable, then set the instrument's IP address and port number (Set → BusSet, §4.8.2).

1.3 USBTMC

Controls the instrument via USB using the USB Test and Measurement Class protocol; compatible with SCPI. Connect the rear-panel USB-B port to the host via a USB cable and set the USB mode to TMC (Set → BusSet → Mode:USB, §4.8.3).

1.4 USBCDC

Configures the rear-panel USB-B port as a virtual serial port (VCOM) over the USB Communications Device Class; compatible with SCPI. Connect via USB cable and set the USB mode to CDC (Set → BusSet → Mode:USB, §4.8.3).

Note: GPIB, fitted on earlier hardware revisions, is not available on current TH269X hardware and is not documented here.

SECTION 2

SCPI Command Syntax Rules

SCPI commands are tree-structured: the highest level is the subsystem command, and the layers beneath it are valid only once that subsystem is selected, with colons separating the hierarchy. Basic rules:

1. Commands are case-insensitive.
2. A space separates a command from its parameter — the command precedes the space, the parameter follows it.
3. No space may be placed before or after a colon.
4. Appending a question mark (`?`) to a command executes a query.
5. Two commands on the same line are separated by a semicolon.

2.1 Instrument subsystem commands

The 15 subsystems documented in Section 3: `DISP` , `FUNC` , `VOLT` , `CURR` , `RES` , `CHAR` , `SRC` , `FILT` , `MATH` , `WAVE` , `BIN` , `VSFUNC` , `SYS` , `HAND` (HANDLER), `FETCH` .

> **NOTE**
> Each table in Section 3 gives the command's query/set syntax, its valid parameters, and a worked example. Not every model supports every subsystem — e.g. `CHAR` (electrometer/charge) applies only to TH2690, TH2690H, TH2695, TH2695A (§1.3); `VOLT` and `SRC` do not apply to TH2691/TH2691A/TH2691H.

SECTION 3

SCPI Subsystem Commands

3.1 DISP — Display command set

COMMAND	PARAMETERS	DESCRIPTION
`:DISP:PAGE <PageName>` / `:DISP:PAGE?`	MEAS, SETM, SETC, SETW, BIN, VSF, SYSE, SYSB, SYSS, SYSH, FILE, TOOL	Set or query the active display page. Example: `:DISP:PAGE SETM` — enter the measurement settings page.

3.2 FUNC — Function selection command set

COMMAND	PARAMETERS	DESCRIPTION
`FUNC:FUNC <...>` / `FUNC:FUNC?`	RES, VOLT, CURR, COUL, SRC	Choose the active measurement function (resistance, voltmeter, ammeter, electrometer/coulomb, or voltage-source settings).
`FUNC:SRC <ON|OFF>` / `FUNC:SRC?`	ON, OFF	Turn the voltage-source switch on/off.
`FUNC:AMMET <ON|OFF>` / `FUNC:AMMET?`	ON, OFF	Turn the ammeter on/off.
`FUNC:ZERO <ON|OFF>` / `FUNC:ZERO?`	ON, OFF	Turn Null (offset cancel) on/off.
`FUNC:RUN`	—	Start the measurement.
`FUNC:STOP`	—	Stop the measurement.

3.3 VOLT — Voltmeter command set 2690/A/H · 2695/A

COMMAND	PARAMETERS	DESCRIPTION
`VOLT:RANGE <1|2|3>` / `?`	1=Auto, 2=2V, 3=20V	Set/query the voltmeter measurement range. These codes apply to TH2690, TH2690A and TH2690H.
`VOLT:SPEED <FAST|MID|SLOW>` / `?`	FAST, MID, SLOW	Set/query voltmeter measurement speed.
`VOLT:SORT <ON|OFF>` / `?`	ON, OFF	Voltmeter sorting switch.
`VOLT:UPPER <float>` / `?`	float	Voltmeter sorting upper limit.
`VOLT:LOWER <float>` / `?`	float	Voltmeter sorting lower limit.
`VOLT:PROT <GUARD|CCOM>` / `?`	GUARD, CCOM	Voltmeter guarded-mode setting (§5.2.4).

3.4 CURR — Ammeter command set

COMMAND	PARAMETERS	DESCRIPTION
`CURR:RANGE <1…11> / ?`	1=Auto, 2=20mA, 3=2mA, 4=200µA, 5=20µA, 6=2µA, 7=200nA, 8=20nA, 9=2nA, 10=200pA, 11=20pA, 12=2pA	Set/query ammeter measurement range. Valid codes by model: TH2690A, TH2691A: 1–9 (lowest range 2 nA); TH2690, TH2691: 1–11 (lowest range 20 pA); TH2695, TH2695A: 1–12 (lowest range 2 pA).
`CURR:SPEED <FAST|MID|SLOW> / ?`	FAST, MID, SLOW	Ammeter measurement speed.
`CURR:SORT <ON|OFF> / ?`	ON, OFF	Ammeter sorting switch.
`CURR:UPPER <float> / ?`	float	Ammeter sorting upper limit.
`CURR:LOWER <float> / ?`	float	Ammeter sorting lower limit.

3.5 RES — Resistance meter command set 2690/A/H · 2695/A

COMMAND	PARAMETERS	DESCRIPTION
`RES:RANGE <1…11> / ?`	1=Auto, 2=100TΩ, 3=10TΩ, 4=1TΩ, 5=100GΩ, 6=10GΩ, 7=1GΩ, 8=100MΩ, 9=10MΩ, 10=1MΩ, 11=Manual	Set/query resistance-meter measurement range.
`RES:SPEED <FAST|MID|SLOW> / ?`	FAST, MID, SLOW	Resistance-meter measurement speed.
`RES:SORT <ON|OFF> / ?`	ON, OFF	Resistance-meter sorting switch.
`RES:UPPER <float> / ?`	float	Sorting upper limit.
`RES:LOWER <float> / ?`	float	Sorting lower limit.
`RES:COMP <VM|VS> / ?`	VM (measured), VS (source)	Resistance calculation mode (§5.3.3).

3.6 CHAR — Electrometer (charge) command set

2690 · 2690H · 2695 · 2695A

COMMAND	PARAMETERS	DESCRIPTION
`CHAR:RANGE <1…6> / ?`	1=2~20nC, 2=200~2000nC, 3=2nC, 4=20nC, 5=200nC, 6=2000nC	Electrometer measurement range.
`CHAR:SPEED <FAST|MID|SLOW> / ?`	FAST, MID, SLOW	Electrometer measurement speed.
`CHAR:SORT <ON|OFF> / ?`	ON, OFF	Electrometer sorting switch.
`CHAR:UPPER <float> / ?`	float	Sorting upper limit.
`CHAR:LOWER <float> / ?`	float	Sorting lower limit.
`CHAR:DISC <ON|OFF> / ?`	ON, OFF	Automatic discharge switch (§5.4.4).
`CHAR:LEVEL <1|2|3|4> / ?`	1=2nC, 2=20nC, 3=200nC, 4=2000nC	Discharge level (§5.4.5).

3.7 SRC — Voltage source command set

2690/A/H · 2695/A

COMMAND	PARAMETERS	DESCRIPTION
`SRC:RANGE <1|2|3> / ?`	1=−20~20V, 2=0~1000V, 3=−1000~0V	Voltage source range. These codes apply to TH2690, TH2690A and TH2690H.
`SRC:VALUE <float> / ?`	float	Voltage source output value.
`SRC:OFFS <HIGHZ|NORMAL|ZERO> / ?`	HIGHZ, NORMAL, ZERO	Voltage-source off-state.
`SRC:GND <CCOM|FLOAT> / ?`	CCOM, FLOAT	Power-supply grounding mode (§5.3.5).
`SRC:RES <HIGH|ZERO> / ?`	HIGH=20MΩ, ZERO=0Ω	Current-limiting resistance.
`SRC:TRIG`	—	Trigger voltage-source waveform output (non-DC mode).

3.8 FILT — Filter command set

COMMAND	PARAMETERS	DESCRIPTION
`FILT:MODE <OFF|AVER|MED|SLIDE> / ?`	OFF, AVER, MED, SLIDE	Filter mode (§4.3.1).
`FILT:NUMB <int> / ?`	integer	Filter sample number.

3.9 MATH — Mathematical function command set

COMMAND	PARAMETERS	DESCRIPTION
`MATH:ITEMS <...> / ?`	NONE, MXPL (scale/offset), MREC (reciprocal scale/offset), RATI (ratio), PERC (% ratio), DEVI (deviation), PERD (% deviation), LOG, POLI (polynomial), SRES (surface resistivity), VRES (volume resistivity)	Select the MATH function (§4.3.2).
`MATH:FACT1/2/3 <float> / ?`	float	MATH function coefficients 1, 2, 3.

3.10 WAVE — Waveform settings command set

COMMAND	PARAMETERS	DESCRIPTION
`WAVE:DISP <ON|OFF> / ?`	ON, OFF	Waveform display on/off.
`WAVE:TYPE <GRAPH|HIST> / ?`	GRAPH, HIST	Waveform type (line graph / histogram).
`WAVE:GRAPH:XPARA <...> / ?`	CURR, COUL, VOLT, RES, MATH, TIME, SRC	Line-graph X-axis parameter.
`WAVE:GRAPH:XMAX/XMIN <float> / ?`	float	Line-graph X-axis max/min.
`WAVE:GRAPH:YPARA <...> / ?`	CURR, COUL, VOLT, RES, MATH	Line-graph Y-axis parameter.
`WAVE:GRAPH:YMAX/YMIN <float> / ?`	float	Line-graph Y-axis max/min.
`WAVE:GRAPH:AUTOR <ON|OFF> / ?`	ON, OFF	Auto-ratio (auto-scale) switch.
`WAVE:HIST:XPARA <...> / ?`	CURR, COUL, VOLT, RES, MATH	Histogram X-axis parameter.

3.11 BIN — Limit-test settings command set

COMMAND	PARAMETERS	DESCRIPTION
`BIN:LTEST <ON|OFF> / ?`	ON, OFF	Limit-test enable switch.
`BIN:LMODE <GRADING|SORTING> / ?`	GRADING, SORTING	Limit-test mode (§5.8).
`BIN:FDATA <CURR|COUL|VOLT|RES> / ?`	CURR, COUL, VOLT, RES	Limit-test feed data type.
`BIN:INDEX <1…7> / ?`	1–7	Active BIN index for subsequent per-index commands.
`BIN:BTEST <n>,<ON|OFF> / ?`	n=1–7; ON, OFF	BIN n test switch.
`BIN:FAILON <n>,<IN|OUT> / ?`	n=1–7; IN, OUT	BIN n fail judgement range (inside/outside limits).
`BIN:PASSPT <n>,<m> / ?`	n=1–7; m=1–14 (pattern)	BIN n pass-pattern output.
`BIN:FAILPT <n>,<m> / ?`	n=1–7; m=1–14	BIN n fail-pattern output.
`BIN:UPPER <n>,<float> / ?`	n=1–7; float	BIN n sorting upper limit.
`BIN:LOWER <n>,<float> / ?`	n=1–7; float	BIN n sorting lower limit.
`BIN:SETBIN <n,m,a,b,c,d,e>`	n=index; m=ON/OFF; a=IN/OUT; b,c=pass/fail pattern; d,e=upper/lower float	Configure all settings for one BIN in a single command.
`BIN:ASKBIN <n>`	n=1–7	Query all settings for one BIN.

3.12 VSFUNC — Voltage-source waveform output command set 2690/A/H · 2695/A

COMMAND	PARAMETERS	DESCRIPTION
`VSFUNC:MODE <…> / ?`	OFF, LINEARS, LINEARD, ARBSQU, LIST	Waveform output mode (off / single staircase / double staircase / square wave / list sweep).
`VSFUNC:SSTART/SSTOP/SSTEP <float> / ?`	float	Single staircase sweep: start, stop, step voltage.
`VSFUNC:STRIG <TRIG|TIMER> / ?`	TRIG, TIMER	Single staircase sweep trigger mode.
`VSFUNC:STIMER <float> / ?`	float (s)	Single staircase sweep timer.
`VSFUNC:DSTART/DSTOP/DSTEP <float> / ?`	float	Double staircase sweep: start, stop, step voltage.
`VSFUNC:DTRIG <TRIG|TIMER> / ?`	TRIG, TIMER	Double staircase sweep trigger mode.
`VSFUNC:DTIMER <float> / ?`	float (s)	Double staircase sweep timer.
`VSFUNC:ASTART <float> / ?`	float	Square-wave starting voltage.
`VSFUNC:ADELAY <float> / ?`	float (s)	Square-wave starting delay.
`VSFUNC:APEAK <float> / ?`	float	Square-wave peak voltage.
`VSFUNC:APDELAY <float> / ?`	float (s)	Square-wave peak delay.
`VSFUNC:AEDELAY <float> / ?`	float (s)	Square-wave stop delay.
`VSFUNC:ACOUNT <int> / ?`	integer	Square-wave loop count.
`VSFUNC:LSTART/LEND <int> / ?`	1–100	List sweep start/end step number.
`VSFUNC:LCOUNT <int> / ?`	integer	List sweep loop count.
`VSFUNC:LSET <int,m,n>`	int=step 1–100; m=voltage; n=time	Set voltage and time for one list sweep step.
`VSFUNC:LASK <int>`	int=step 1–100	Query voltage/time for one list sweep step.

3.13 SYS — System command set

COMMAND	PARAMETERS	DESCRIPTION
`SYS:ENVI:BEEP <ON|OFF> / ?`	ON, OFF	System beeper switch.
`SYS:ENVI:TMODE <CE|FA> / ?`	CE (°C), FA (°F)	Temperature display unit.
`SYS:ENVI:DATETIME <y,m,d,h,mi,s> / ?`	year, month, day, hour, minute, second	System date/time.
`SYS:MEAS:MODE <CONT|SING> / ?`	CONT, SING	Continuous/single measurement mode.
`SYS:TRIG:DELAY <float> / ?`	float (s)	Trigger delay.
`SYS:TRIG:SPACE <float> / ?`	float (s)	Trigger space (interval).
`SYS:SOUR:DELAY <float> / ?`	float (s)	Voltage-source start delay.
`SYS:RANGE:SPEED <STAND|QUICK> / ?`	STAND, QUICK	Measurement-range switching speed.
`SYS:ANALOG <IM|VM> / ?`	IM (current/charge), VM (voltage)	Analog-output source selection.
`SYS:SAVE <ON|OFF> / ?`	ON, OFF	Save measurement data as CSV to USB flash drive.
`SYS:INTERLOCK <ON|OFF> / ?`	ON, OFF	Interlock function enable (§5.7).
`SYS:DISP <3|4|5|6> / ?`	3=3½, 4=4½, 5=5½, 6=6½ digit	Display resolution (digits).
`SYS:HANDERROR <ON|OFF> / ?`	ON, OFF	Manual error-acknowledgement requirement.

3.14 HAND — HANDLER settings command set

COMMAND	PARAMETERS	DESCRIPTION
`HAND:PIN1/2/3:SIG <...> / ?`	START, STOP, RESET, SRCON, SRCOFF, SRCTRG	Define the function of HANDLER input pin 1/2/3.
`HAND:PIN4:LEV <LEVEL|PULSE> / ?`	LEVEL, PULSE	Output signal type for HANDLER output pins 4–7.
`HAND:ERROR`	—	Clear error code (when `FETCH:ALL_S?` last value is non-zero).

3.15 FETCH — Measurement-value inquiry command set

COMMAND	DESCRIPTION
`FETCH:VOLT? / CURR? / CHAR? / RES? / TIME? / SOUR? / MATH? / TEMP? / HUM?`	Query the current voltage, current, charge, resistance, time, voltage-source, MATH, temperature, or humidity value respectively.
`FETCH:ALL?`	Query all applicable values for the active model in one call (field order differs by model — see §3.15.1 below).
`FETCH:ALL_S?`	As `FETCH:ALL?`, with an appended error code as the final field.

3.15.1 FETCH:ALL? / FETCH:ALL_S? field order by model

MODEL(S)	FETCH:ALL? FIELD ORDER
TH2690, TH2690H, TH2695, TH2695A	1 voltage, 2 current, 3 charge, 4 resistance, 5 time/date, 6 voltage source, 7 MATH, 8 temperature, 9 humidity
TH2690A	1 voltage, 2 current, 3 resistance, 4 time/date, 5 voltage source, 6 MATH, 7 temperature, 8 humidity
TH2691, TH2691A, TH2691H	1 current, 2 time/date, 3 MATH

SECTION 4

MODBUS Protocol — Frame Format

4.1 Write command

Send: Instrument Address · Function Code · Address High · Address Low · Register High · Register Low · Byte Length · Data Bit 1…n · CRC Low · CRC High

Return: Instrument Address · Function Code · Address High · Address Low · Register High · Register Low · CRC Low · CRC High

4.2 Read command

Send: Instrument Address · Function Code · Address High · Address Low · Register High · Register Low · CRC Low · CRC High

Return: Instrument Address · Function Code · Byte Length · Data Bit 1…n · CRC Low · CRC High

4.3 Field definitions

FIELD	DEFINITION
Instrument Address	Local instrument address, configurable at Set → BusSet; range 1–32.
Function Code	`0x10` — write one or more registers.
Address High / Low	The register's storage address in the instrument (a real or mapped address — see the per-subsystem register maps in Section 5).
Register High / Low	The number of registers written in this operation; each register is 2 bytes.
Byte Length	Total number of bytes written/read in this operation.
Data Bit 1…n	The data written to, or read from, the instrument.
CRC High / Low	16-bit CRC checksum, computed by table lookup.

4.4 Addressing and data rules

- Each register is 2 bytes. A U16 parameter occupies one register, so *Byte Length* = 2 × (number of registers).
- Address High/Low is the parameter address from the register maps in Section 5 (for example `0x1000` = High `10`, Low `00`).
- The CRC is a 16-bit CRC, sent Low byte first, then High byte.

4.5 Example — write frame (U16 parameter)

Set the instrument function to ammeter (address `0x1000`, value 3) on the instrument with address 1:

	INST. ADDR	FUNC. CODE	ADDR HIGH	ADDR LOW	REG. HIGH	REG. LOW	BYTE LENGTH	DATA	CRC LOW	CRC HIGH
Send	01	10	10	00	00	01	02	00 03	F7	90
Return	01	10	10	00	00	01	—	—	05	09

> **NOTE**
> Each register-map entry in Section 5 is labelled U16 (unsigned 16-bit integer) or Float, and marked Write, Read, or both. Where a parameter address accepts several discrete write values (e.g. a range or mode selector), the write-value table is reproduced in full; a plain read-only inquiry is marked "Read" with no write value.

SECTION 5

MODBUS Register Map

5.1 DISP

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0xB000	0=MEAS, 1=SETM, 2=SYSE, 3=FILE, 4=TOOL, 5=SETC, 6=SYSB, 7=SYSS, 8=SETW, 9=SYSH, 10=BIN, 11=VSF	U16	Set/query the active display page (Write/Read).

5.2 FUNC

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x1000	1=resistance meter, 2=voltmeter, 3=ammeter, 4=electrometer, 5=voltage source (measurement-settings page)	U16	Instrument function select (Write/Read).
0x1001	0=off, 1=on	U16	Voltage source switch (Write/Read).
0x1002	0=off, 1=on	U16	Ammeter switch (Write/Read).
0x1003	0=off, 1=on	U16	Offset Cancel (Null) switch (Write/Read).
0x1004	0=stop, 1=start	U16	Start/stop measurement (Write).

5.3 VOLT 2690/A/H · 2695/A

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x2000	1=Auto, 2=2V, 3=20V	U16	Voltmeter range (Write/Read). These codes apply to TH2690, TH2690A and TH2690H.
0x2001	1=FAST, 2=MID, 3=SLOW	U16	Voltmeter measurement speed (Write/Read).
0x2002	1=off, 2=on	U16	Voltmeter sorting switch (Write/Read).
0x2003	—	Float	Voltmeter sorting upper limit (Write/Read).
0x2004	—	Float	Voltmeter sorting lower limit (Write/Read).
0x2005	1=GUARD, 2=CCOM	U16	Voltmeter guarded mode (Write/Read).

5.4 CURR

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x3000	1=Auto, 2=20mA, 3=2mA, 4=200µA, 5=20µA, 6=2µA, 7=200nA, 8=20nA, 9=2nA, 10=200pA, 11=20pA, 12=2pA	U16	Ammeter range (Write/Read). Valid codes by model: TH2690A, TH2691A: 1–9; TH2690, TH2691: 1–11; TH2695, TH2695A: 1–12.
0x3001	1=FAST, 2=MID, 3=SLOW	U16	Ammeter measurement speed (Write/Read).
0x3002	1=off, 2=on	U16	Ammeter sorting switch (Write/Read).
0x3003	—	Float	Ammeter sorting upper limit (Write/Read).
0x3004	—	Float	Ammeter sorting lower limit (Write/Read).

5.5 RES 2690/A/H · 2695/A

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x4000	1=Auto, 2=100TΩ, 3=10TΩ, 4=1TΩ, 5=100GΩ, 6=10GΩ, 7=1GΩ, 8=100MΩ, 9=10MΩ, 10=1MΩ, 11=Manual	U16	Resistance-meter range (Write/Read).
0x4001	1=FAST, 2=MID, 3=SLOW	U16	Resistance-meter measurement speed (Write/Read).
0x4002	1=off, 2=on	U16	Resistance-meter sorting switch (Write/Read).
0x4003	—	Float	Sorting upper limit (Write/Read).
0x4004	—	Float	Sorting lower limit (Write/Read).
0x4005	1=Vm/Im, 2=Vs/Im	U16	Resistance calculation mode (Write/Read).

5.6 CHAR 2690 · 2690H · 2695 · 2695A

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x5000	1=2~20nC, 2=0.2~2μC, 3=2nC, 4=20nC, 5=200nC, 6=2000nC	U16	Electrometer range (Write/Read).
0x5001	1=FAST, 2=MID, 3=SLOW	U16	Electrometer measurement speed (Write/Read).
0x5002	1=off, 2=on	U16	Charge sorting switch (Write/Read).
0x5003	—	Float	Charge sorting upper limit (Write/Read).
0x5004	—	Float	Charge sorting lower limit (Write/Read).
0x5005	1=on, 2=off	U16	Auto discharge switch (Write/Read).
0x5006	1=2nC, 2=20nC, 3=200nC, 4=2000nC	U16	Discharge level (Write/Read).

5.7 SRC 2690/A/H · 2695/A

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x6000	—	Float	Voltage source output value (Write/Read).
0x6001	1=HIGHZ, 2=NORMAL, 3=ZERO	U16	Output off-state (Write/Read).
0x6002	1=CCOM, 2=FLOAT	U16	Voltage source ground mode (Write/Read).
0x6003	1=0Ω, 2=20MΩ	U16	Current-limiting resistance (Write/Read).
0x6004	1=−20~20V, 2=0~1000V, 3=−1000~0V	U16	Source range (Write/Read). These codes apply to TH2690, TH2690A and TH2690H.

5.8 FILT

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x7000	1=off, 2=average, 3=median, 4=slide	U16	Filter mode (Write/Read).
0x7001	—	U16	Filter sample number (Write/Read).

5.9 MATH

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x8000	1=off, 2=scale/offset, 3=reciprocal scale/offset, 4=ratio, 5=% ratio, 6=deviation, 7=% deviation, 8=log, 9=polynomial	U16	MATH function select (Write/Read).
0x8001 / 0x8002 / 0x8003	—	Float	MATH coefficients 1, 2, 3 (Write/Read).

5.10 WAVE

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0x9000	1=on, 2=off	U16	Waveform display switch (Write/Read).
0x9001	1=line graph, 2=histogram	U16	Waveform type (Write/Read).
0x9002	1=time, 2=MATH, 3=current, 4=voltage, 5=resistance, 6=voltage source, 7=charge	U16	Line-graph X-axis parameter (Write/Read).
0x9003 / 0x9004	—	Float	Line-graph X-axis maximum / minimum (Write/Read).
0x9005	1=MATH, 2=current, 3=voltage, 4=resistance, 5=charge	U16	Line-graph Y-axis parameter (Write/Read).
0x9006 / 0x9007	—	Float	Line-graph Y-axis maximum / minimum (Write/Read).
0x9008	1=on, 2=off	U16	Auto-ratio switch (Write/Read).
0x9009	1=MATH, 2=current, 3=voltage, 4=resistance, 5=charge	U16	Histogram X-axis parameter (Write/Read).

5.11 BIN

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0xE000	1=on, 2=off	U16	Limit test enable (Write/Read).
0xE001	1=GRADING, 2=SORTING	U16	Limit test mode (Write/Read).
0xE002	1=current, 2=voltage, 3=resistance, 4=charge	U16	Limit test feed-data type (Write/Read).
0xE003	1–7	U16	Active BIN index (Write/Read).
0xE004	1=off, 2=on	U16	Active-index BIN switch (Write/Read).
0xE005	1=IN, 2=OUT	U16	Active-index fail-on range (Write/Read).
0xE006	1–14	U16	Active-index pass pattern (Write/Read).
0xE007	1–14	U16	Active-index fail pattern (Write/Read).
0xE008 / 0xE009	—	Float	Active-index upper / lower limit (Write/Read).

Addresses 0xE003–0xE009 operate on the BIN index last selected via 0xE003 ("Active Index"), mirroring the SCPI `BIN:INDEX` + per-index command pattern (§3.11).

5.12 VSFUNC 2690/A/H · 2695/A

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0xF000	1=off, 2=single staircase, 3=double staircase, 4=square wave, 5=list sweep	U16	Waveform output mode (Write/Read).
0xF001 / 0xF002 / 0xF003	—	Float	Single staircase sweep: start / stop / step voltage (Write/Read).
0xF004	1=trigger, 2=timer	U16	Single staircase sweep trigger mode (Write/Read).
0xF005	—	Float	Single staircase sweep timer (Write/Read).
0xF006 / 0xF007 / 0xF008	—	Float	Double staircase sweep: start / stop / step voltage (Write/Read).
0xF009	1=trigger, 2=timer	U16	Double staircase sweep trigger mode (Write/Read).
0xF00A	—	Float	Double staircase sweep timer (Write/Read).
0xF00B	—	Float	Square wave starting voltage (Write/Read).
0xF00C	—	Float	Square wave starting delay (Write/Read).
0xF00D	—	Float	Square wave peak voltage (Write/Read).
0xF00E	—	Float	Square wave peak delay (Write/Read).
0xF00F	—	Float	Square wave ending (stop) delay (Write/Read).
0xF010	≥1	U16	Square wave loop count (Write/Read).
0xF011 / 0xF012	1–100	U16	List sweep begin / end step number (Write/Read).
0xF013	≥1	U16	List sweep loop count (Write/Read).
0xF014	1–100	U16	Active list step index (Write/Read).
0xF015 / 0xF016	—	Float	Active list step: voltage / time (Write/Read).

5.13 SYS

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0xA001	1=on, 2=off	U16	System beeper (Write/Read).
0xA002	1=°C, 2=°F	U16	Temperature display unit (Write/Read).
0xA003	1=continuous, 2=single	U16	Measurement mode (Write/Read).
0xA004 / 0xA005 / 0xA006	—	Float	Trigger delay / trigger period / voltage-source delay (Write/Read).
0xA007	1=normal, 2=fast	U16	Measurement-range switching speed (Write/Read).
0xA008	1=current/charge, 2=voltage	U16	Analog output source (Write/Read).
0xA009	1=on, 2=off	U16	Data save to CSV (Write/Read).
0xA00A	1=on, 2=off	U16	Interlock function (Write/Read).
0xA00B	1=3½, 2=4½, 3=5½, 4=6½ digit	U16	Display resolution (Write/Read).
0xA00C	1=on, 2=off	U16	Manual error-handling requirement (Write/Read).

5.14 HANDLER

ADDRESS	WRITE DATA	TYPE	DESCRIPTION
0xC000 / 0xC001 / 0xC002	1=start, 2=stop, 3=reset, 4=source on, 5=source off, 6=source trigger	U16	HANDLER input PIN1 / PIN2 / PIN3 function (Write/Read).
0xC003	1=level, 2=pulse	U16	HANDLER output PIN4–7 signal type (Write/Read).

5.15 FETCH

ADDRESS	TYPE	DESCRIPTION
0xD000	Float	Voltage value (Read).
0xD001	Float	Current value (Read).
0xD002	Float	Charge value (Read).
0xD003	Float	Resistance value (Read).
0xD004	Float	Voltage source value (Read).
0xD005	Float	MATH value (Read).
0xD006	Float	Temperature value (Read).
0xD007	Float	Humidity value (Read).

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