

Micro Signal Type Tester

II. TH193X Series Low Noise Precision Power Supply

NEW

Features

- 7-inch capacitive touch screen with 800 x 480 resolution
- Linux operating system, Chinese and English interface
- Four-quadrant precision power output
- Single/dual channel output and measurement
- Up to $\pm 210\text{V}$ DC voltage, $\pm 3\text{A}$ DC current/ $\pm 10.5\text{A}$ pulse
- $10\text{fA}/0.1\mu\text{V}$ minimum output resolution (6 1/2 bits)
- $1\text{pA}/10\mu\text{V}$ minimum measurement resolution (4 1/2 bits)
- Supports voltage, current, resistance, and power measurements
- Four basic modes of voltage source, current source, voltmeter, and ammeter
- Minimum sampling interval $1\mu\text{s}$
- Supports DC, pulse, scanning and list outputs
- Pulse output with a minimum pulse width of $50\mu\text{s}$
- 1mHz - 10kHz arbitrary waveform generation and list scan function (minimum $1\mu\text{s}$ interval)
- Flexible programmable output resistance function
- Math operation function, sliding average filter function, deviation deduction function
- 14-speed sorting function with Grading and Sorting modes



RS232	LAN	HANDER	USB HOST	USB DEVICE
standard	standard	standard	standard	standard

TH193X Series

Shelf volume (mm): 235x132x490

Outline volume (mm): 250x154x530

Net weight: about 8.5kg (single channel) / 10kg (dual channel)

Applications

- Analog-to-digital converters and digital-to-analog converters
- High-precision analog ICs and circuits
- RF integrated circuits and circuits
- Medical Applications
- Cable/Harness Evaluation
- Voltage Controlled Oscillator (VCO)
- Sensor devices and transducers
- Solar cells and interface circuits
- Electrochemical applications
- Research & Education
- Crystal Oscillators
- Current source for small voltage measurements
- Battery Management Simulator
- Advanced Materials Evaluation

Specifications

Product Model			TH1931		TH1932	
Display						
Monitor			7-inch capacitive touch color LCD monitor with 800 x 480 resolution			
Key Indicator						
Channels			1		2	
Max Output	Voltage		±210V			
	Current	DC	±3.03A			
		Pulse	±10.5A			
Power Supply	Max Bits	Bits	6 1/2			
	Min. Resolution	Voltage	0.1μV			
		Current	0.01pA			
Measurement	Max Bits	Bits	4 1/2			
	Min. Resolution	Voltage	10μV			
		Current	1pA			
Voltage Range			0.2V-200V			
Min. Interval Time			1μs			
Voltage Output						
Range	Programming Resolution	Accuracy± (% of reading + bias)	DC output voltage or pulse peak/base voltage	Max. Current ¹		Pulse Width ²
				DC Output	Pulse Output	

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0.2V	100nV	$\pm(0.015\%+225\mu V)$	$0\leq V \leq0.21V$	$\pm 3.03A$	$\pm 3.03A$	$50\mu s\leq t\leq t_{max}$
					$\pm 10.5A$	$50\mu s\leq t\leq 1ms$
2V	1 μV	$\pm(0.015\%+225\mu V)$	$0\leq V \leq 2.1V$		$\pm 3.03A$	$50\mu s\leq t\leq t_{max}$
					$\pm 10.5A$	$50\mu s\leq t\leq 1ms$
20V	10 μV	$\pm(0.015\%+5mV)$	$0\leq V \leq 6V$	$\pm 1.515A$	$\pm 3.03A$	$50\mu s\leq t\leq t_{max}$
			$0\leq V \leq 21V$		$\pm 10.5A$	$50\mu s\leq t\leq 1ms$
200V	100 μV	$\pm(0.015\%+50mV)$	$0\leq V \leq 6V$	$\pm 3.03A$	$\pm 3.03A$	$50\mu s\leq t\leq t_{max}$
			$0\leq V \leq 21V$	$\pm 1.515A$	$\pm 1.515A$	$50\mu s\leq t\leq t_{max}$
			$0\leq V \leq 180V$	—	$\pm 1.05A$	$50\mu s\leq t\leq 10ms$
			$0\leq V \leq 200V$	—	$\pm 1.515A$	$50\mu s\leq t\leq 2.5ms$
			$0\leq V \leq 210V$	$\pm 105mA$	$\pm 105mA$	$50\mu s\leq t\leq t_{max}$

Note:

superscript¹: Refer to the Limits table section when using channels 1 and 2 for DC outputs or pulsed outputs ($50\mu s \leq t \leq t_{max}$ (= 99.9999ks)).

superscript²: For pulses with $50\mu s \leq t \leq t_{max}$, the maximum duty cycle is 99.9999%.

For pulses with $50\mu s \leq t \leq 1ms$, $50\mu s \leq t \leq 2.5ms$ or $50\mu s \leq t \leq 10ms$, the maximum duty cycle is 2.5%.

Current Output

Range	Setting Resolution	Accuracy± (% of reading + bias)	DC output current or pulse peak/base current ^{1 2}	Max. Voltage		Pulse Width ³
				DC Output	Pulse Output	
10nA	10fA	±(0.10%+50pA)	0≤ I ≤10.5nA	±210V	±210V	50μs≤t≤t _{max}
100nA	100fA	±(0.06%+100pA)	0≤ I ≤105nA			
1μA	1pA	±(0.025%+500pA)	0≤ I ≤1.05μA			
10μA	10pA	±(0.025%+1.5nA)	0≤ I ≤10.5μA			
100μA	100pA	±(0.02%+25nA)	0≤ I ≤105μA			
1mA	1nA	±(0.02%+200nA)	0≤ I ≤1.05mA			
10mA	10nA	±(0.02%+2.5μA)	0≤ I ≤10.5mA			
100mA	100nA	±(0.02%+20μA)	0≤ I ≤105mA			
1A	1μA	±(0.03%+1.5mA)	0≤ I ≤105mA	±21V	±21V	50μs≤t≤2.5ms 50μs≤t≤10ms
			105mA≤ I ≤1.05A	—	±200V	
			0≤ I ≤1.05A	—	±180V	
1.5A		±(0.05%+3.5mA)	0≤ I ≤105mA	±210V	±210V	50μs≤t≤t _{max} 50μs≤t≤2.5ms 50μs≤t≤10ms
			105mA≤ I ≤1.515A	±21V	±21V	
			0≤ I ≤1.515A	—	±200V	
			0≤ I ≤1.05A	—	±180V	
3A	10μA	±(0.4%+7mA)	0≤ I ≤105mA	±210V	±210V	50μs≤t≤t _{max}
			105mA≤ I ≤1.515A	±21V	±21V	
			1.515A≤ I ≤3.03A	±6V	±6V	
10A ⁴		±(0.4%+25mA) ⁵	0≤ I ≤10.5A	—	±6V	50μs≤t≤1ms
			0≤ I ≤1.515A	—	±200V	50μs≤t≤2.5ms
			0≤ I ≤1.05A	—	±180V	50μs≤t≤10ms

※Note:

superscript¹: Refer to the Limits table section when using channels 1 and 2 for DC outputs or pulsed outputs ($50\mu s \leq t \leq t_{max}$ (= 99.9999ks)).

superscript²: The maximum base current is 500mA for pulses with $50\mu s \leq t \leq 1ms$, and the maximum base current is 50mA for pulses with $50\mu s \leq t \leq 2.5ms$ or $50\mu s \leq t \leq 10ms$.

superscript³: The maximum duty cycle is 99.9999% for pulses with $50\mu s \leq t \leq t_{max}$ and the maximum duty cycle is 2.5% for pulses with $50\mu s \leq t \leq 1ms$, $50\mu s \leq t \leq 2.5ms$ or $50\mu s \leq t \leq 10ms$.

superscript⁴: 10A range for pulse mode only, not for DC mode.

superscript⁵: Measurement speed is 0.01 PLC.

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Voltage Measurement			
Range	Voltage Measurement	Resolution	Accuracy
0.2V	0≤ V ≤0.212V	10μV	±(0.015% + 225μV)
2V	0≤ V ≤2.12V	100μV	±(0.02% + 350μV)
20V	0≤ V ≤21.2V	1mV	±(0.015% + 5mV)
200V	0≤ V ≤212V	10mV	±(0.015% + 50mV)
Current Measurement			
Range	Current Measurement	Resolution	Accuracy
10nA	0≤ ≤10.6nA	1pA	±(0.10 % + 50pA)
100nA	0≤ ≤106nA	10pA	±(0.06% + 100pA)
1μA	0≤ ≤1.06μA	100pA	±(0.025% + 500pA)
10μA	0≤ ≤10.6μA	1nA	±(0.025% + 1.5nA)
100μA	0≤ ≤106μA	10nA	±(0.02% + 25nA)
1mA	0≤ ≤1.06mA	100nA	±(0.02% + 200nA)
10mA	0≤ ≤10.6mA	1μA	±(0.02% + 2.5μA)
100mA	0≤ ≤106mA	10μA	±(0.02% + 20μA)
1A	0≤ ≤1.06A	100μA	±(0.03% + 1.5mA)
1.5A	0≤ ≤1.53A		±(0.05% + 3.5mA)
3A	0≤ ≤3.06A	1mA	±(0.4% + 7mA)
10A ¹	0≤ ≤10.6A		±(0.4% + 25mA)
*Note: superscript1 For pulse mode, not for DC mode.			
Pulse source (pulse width is the time from 10% rising edge to 90% falling edge, base level: pulse low level, peak level: pulse high level)			
Minimum programmable pulse width		50μs	
Pulse width programming resolution		1μs	
Interface		RS232C、MSB HOST、MSB DEVICE、LAN、HANDLER	
Environment & Temperature			
Environment		Suitable for indoor equipment	
Temperature of operating condition		0°C - 55°C	
Humidity of operating condition		30% - 80% RH（non-condensing）	
Elevation of operating condition		0 - 2000米（6561ft）	
Temperature of storage condition		30°C - +70°C	
Humidity of storage condition		10% - 90% RH（non-condensing）	
Elevation of storage condition		0 - 4600米（15092ft）	
Warm-up time after power on		≥60minutes	
General Indicator			
Power supply		90 V to 264V,47 Hz to 63Hz, maximum	
Power consumption		< 250VA	
Rack mount		215mmx132mmx490mm	
Dimension		235mmx154mmx530mm	
Weight		Approx. 8.5kg (single)/10kg (dual)	
Safety		Class I Safety	
EMC standards		IEC61326-1/EN61326-1	
AS/NZS		CISPR 11	
Insulation resistance		Under the reference working conditions, the insulation resistance between the power terminals and the shell is not less than 50MΩ; Under humid and hot transportation conditions, the insulation resistance between the power terminals and the shell is not less than 2MΩ.	
Dielectric strength		Under the reference working conditions, the power terminals and the shell can withstand the rated voltage of 1.5kV, frequency of 50Hz AC voltage for 1 minute, without breakdown and flying arc phenomenon.	
Leakage current		≤3.5mA	
Safety certification		CE、cCSA _{μs} 、C-Tick	

Standard Accessories

Three-core power cord	
TH26050B	Test cable at both ends
TH1931-003	Low Noise Filter
TH26017	USB interface cable
TH26050S	Four-terminal test cable