TELEDYNE TEST TOOLS
Everywhereyoulook™

Power Supplies Data Sheet

Dual, Triple and Quad Output

Broad Product Range

Current: Up to 6 Amps
Voltage: Up to 64 Volts
Power: Up to 217 Watts

CE RS-232 USB LAN Ext I/O

Tools for Improved Debugging

• Models with from 2 to 4 outputs.	✓ Flexible choice of outputs to meet your DUT needs.
• Fully programmable via USB, RS-232, LAN and Ext I/O.	✓ Full remote control extends the usability from the bench to automated systems.
• Cutting edge DC Power Supply Design. Ripple & Noise ≤ 350 µV, transient recovery time ≤ 50 µs.	✓ Improved power supply specifications meets your low noise power needs.
• Ch1 and Ch2 support Constant Voltage and Constant Current Operation.	✓ Flexible voltage and current output configurations for a broader application coverage.
• Ch1 and Ch2 support Electronic Load functionality as CV, CC or CR.	✓ Use for charge/discharge testing (e.g. batteries) without the need for an Electronic Load.
• Only 213 mm Wide x 145 mm High x 312 mm Deep. Weight Approx. 7.5 kg.	✓ High power/high performance whilst take up the minimum of bench space.

Models and Characteristics

T3PS23203P	Ch1 / Ch2	0–32 V / 0–3 A	Support for C.V. and C.C. Modes
T3PS33203P	Ch1 / Ch2	0–32 V / 0–3 A	Ch1 / Ch2 support for C.V. and C.C. Modes
	Ch3	1.8 V / 2.5 V / 3.3 V / 5 V / 0–5 A	
T3PS43203P	Ch1 / Ch2	0–32 V / 0–3 A	Ch1 / Ch2 support for C.V. and C.C. Modes
	Ch3	0–5 V / 0–1 A	
	Ch4	0–15 V / 0–1 A	

Front Panel

Rear Panel

T3X3200P Series

- 4.3" TFT LCD Display
- Supports Setting Value, Measurement Value and Output Waveform Display
- Load Function (CC, CV, CR Mode)
- Setting Resolution: 1 mV/ 0.1 mA; Read Back Resolution: 0.1 mV/ 0.1 mA
- Low Ripple Noise: ≤ 350 μVrms / ≤ 2 mArms
- Transient Response Time: ≤ 50 ms
- Utilizing Hardware to Realize Over Voltage Protection/ Over Current Protection/ Over Temperature Protection
- Delay Function/ Output Monitoring Function/ Output Recorder Function
- Intelligent Temperature Control Fan Effectively Reduces Noise
- Sequential Output Function and Built-in 8 Template Waveforms
- The Output Recorder Function Records The Output Voltage & Current Parameters with A Minimum Recording Interval of 1 Second
- Provides 10 Sets of Memory for Each Sequence/Delay/Recorder/ Panel Setting Condition
- T3PS33203P Supports A USB (Type A) Output Terminal
- Standard: RS-232, USB, Ext I/O; LAN

With the maximum output power of 217 W, the T3X3200P Series, the multi-channel programmable DC power supply, includes three models: T3PS23203P for dual-channel output (CH1: 0~32 V/0~3 A, CH2: 0~32 V/ 0~3 A), T3PS33203P for three-channel output (Ch1: 0~32 V/0~3 A, CH2: 0~32 V/0~3 A, CH3: 1.8 V, 2.5 V, 3.3 V, 5.0 V/ 5 A) and T3PS43203P for four- channel output (CH1: 0~32 V/0~3 A, CH2: 0~32 V/ 0~3 A, CH3: 0~5 V/ 0 ~1 A, CH4: 0~15 V/ 0~1 A).

This series not only provides high program resolution (1 mV / 0.1 mA) and read back resolution (0.1 mV / 0.1 mA), but also features optimal low-ripple noise characteristics ≤ 350 μVrms / ≤ 2 mArms and output transient recovery capability ≤ 50 μS. Independent output on-off switch is provided for each channel.

For series and parallel applications of CH1 and CH2, the tracking function of the T3X3200P Series utilizes the internal circuit to automatically switch the output to serial or parallel output without additional external wiring, providing users with convenience not only in operating procedures but also a more stable output. The tracking function design of other brands requires additional external wiring connections for the output in series or parallel. However, excessively long, thin or inconsistent external wiring may cause inaccurate voltage or current output.

The T3X3200P Series offers a variety of display modes, including single or multi-channel setting values, measurement values, and waveform displays. The Monitor function of the T3X3200P Series allows users to set monitoring conditions according to requirements, sound alarms or stop output during the measurement process, and stop measurement and protect the customer's DUT. The T3X3200P Series provides output recorder function, which records the voltage/current of the output process to the internal memory, and the result can be stored as a (*.REC) or (*.CSV) file, which can then be transferred to the USB flash drive and be exported to the PC for PC software or Excel to conduct future analysis.

The CH1/CH2 of the T3X3200P Series are designed with the load function. A single power supply can set one channel as the power output, and one channel for the load function to consume the power of the DUT to meet the basic charging and discharging test requirements for battery. Channel 1 and channel 2 not only provide 32 V/ 3 A power output, but also feature built-in maximum 32 V constant voltage load (CV), maximum 3.2 A constant current load (CC) and maximum 1 kΩ constant resistance load (CR) function.

The T3X3200P Series provides the sequential output function on Channel 1 and Channel 2. This function not only allows users to edit the power output waveform, but also allows users to set the sequential constant voltage (CV) or constant current (CC) load waveform, i.e. a serial power output or a simulation test of a dynamic load. In order to simplify the setting of waveform editing, the T3X3200P Series has 8 built-in template waveforms in the sequence output function for users to directly apply for output, including Sine, Pulse, Ramp, Stair Up, Stair Dn, Stair UpDn, Exp Rise, Exp Fall waveforms.

The internal protection functions include OVP/OCP/OPP/OTP, in which the protection mechanism for OVP/OCP/OTP is implemented by hardware circuit that has the advantage of faster response time compared with competitors who adopt software to achieve protections.

The OVP/OCP functions allow users to set the protection action point (except CH3 of T3PS33203P) according to the conditions of the DUT. The OPP is only activated during the operation of the load function. The Delay Function sets the length of time during channel 1 or channel 2 power output on or during power output off.

In addition, the Trigger In/Trigger Out functions synchronize external devices. The T3PS33203P channel 3 adds a 3 A USB (Type A) output terminal for USB charging test. The intelligent temperature controlled fan can adjust the speed according to the temperature of the power transistor so as to reduce unnecessary noise. The output value setting and the Sequence/Delay/Recorder functions provide 10 sets of internal memory for use, and can be loaded/stored using a USB flash drive. In addition to the standard RS-232 and USB remote interfaces, the T3X3200P Series also has LAN interface to facilitate different requirements. The commands of the T3X3200P Series conform to SCPI requirements.

APPLICATIONS

- **School and Research Institute**
- **Energy Storage Device Industry**
- **Semiconductor Industry**
- **Consumer Electronics Industry**

Ordering Information

Model	**T3PS23203P**	(32 V/3 A*2) Dual-Output Programmable DC Power Supply
	T3PS33203P	(32 V/3 A*2; 1.8 V or 2.5 V or 3.3 V or 5 V/5 A*1) Three-Output Programmable DC Power Supply
	T3PS43203P	(32 V/3 A*2; 5 V/1 A; 15 V/1 A) Four-Output Programmable DC Power Supply
Accessories	Quick Start Guide x 1, Power cord x 3	
	T3PS23203P	Test Lead GTL-104 A x 2
	T3PS33203P	Test Lead GTL-104 A x 3
	T3PS43203P	Test Lead GTL-104 A x 2, GTL-105 A x 2

Warranty: 3 Years return to Teledyne LeCroy.

SPECIFICATIONS

Model	T3PS43203P				T3PS33203P			T3PS23203P	
Output Mode									
Number of Channel	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH1	CH2
Voltage	0 ~ 32 V	0 ~ 32 V	0 ~ 5 V	0 ~ 15 V	0 ~ 32 V	0 ~ 32 V	1.8/2.5/ 3.3/5.0 V	0 ~ 32 V	0 ~ 32 V
Current	0 ~ 3 A	0 ~ 3 A	0 ~ 1 A	0 ~ 1 A	0 ~ 3 A	0 ~ 3 A	5 A	0 ~ 3 A	0 ~ 3 A
Tracking Series Voltage	0 ~ 64 V		–		0 ~ 64 V		–	0 ~ 64 V	
Tracking Parallel Current	0 ~ 6 A		–		0 ~ 6 A		–	0 ~ 6 A	
Constant Voltage Operation									
Line Regulation	≤ 0.01 % + 3 mV								
Load Regulation	≤ 0.01 % + 3 mV (rating current ≤ 3 A); ≤ 0.02 % + 5 mV (rating current > 3 A)								
Ripple & Noise (5 Hz ~ 1 MHz)	≤ 350 µVrms		≤ 1 mVrms		≤ 350 µVrms		≤ 2 mVrms	≤ 350 µVrms	
Recovery Time	≤ 50 µs		≤ 50 µs		≤ 50 µs		≤ 100 µs	≤ 50 µs	
Constant Current Operation									
Line Regulation	≤ 0.2 % + 3 mA								
Load Regulation	≤ 0.2 % + 3 mA								
Ripple & Noise	≤ 2 mArms				≤ 2 mArms			≤ 2 mArms	
Programming Resolution									
Voltage	1 mV				1 mV		–	1 mV	
Current	0.1 mA				0.1 mA		–	0.1 mA	
Tracking Operation (CH1, CH2)									
Tracking Error	≤ 0.1 % +10 mV of Master (0 ~ 32 V, No Load, with Load add Load regulation ≤ 100 mV)								
Parallel Regulation	Line: ≤ 0.01 % + 3 mV Load: ≤ 0.01 % + 3 mV (rating current ≤ 3 A); ≤ 0.02 % + 5 mV (rating current > 3 A)								
Series Regulation	Line: ≤ 0.01 % + 5 mV Load: ≤ 100 mV								
Ripple & Noise	≤ 1 mVrms, 5 Hz ~ 1 MHz								
CH3 Operation For (T3PS33203P)									
Output Voltage	1.8 V/ 2.5 V/ 3.3 V/ 5.0 V, ± 5 %								
Output Current	5 A								
Line Regulation	≤ 3 mV								
Load Regulation	≤ 5 mV								
Ripple & Noise	2 mVrms (5 Hz ~ 1 MHz)								
Transient Recovery Time	100 µs								
USB Port Output	1.8 V/ 2.5 V/ 3.3 V/ 5.0 V, ± 0.35 V, 3 A								
Meter									
Voltage Resolution	0.1 mV				0.1 mV		–	0.1 mV	
Current Resolution	0.1 mA				0.1 mA		–	0.1 mA	
Setting Accuracy	≤ ±(0.03 % + 10 mV) ≤ ±(0.30 % + 10 mA)				≤ ±(0.03 % + 10 mV) ≤ ±(0.30 % + 10 mA)		–	≤ ±(0.03 % + 10 mV) ≤ ±(0.30 % + 10 mA)	
Readback Accuracy	≤ ±(0.03 %+10 mV) ≤ ±(0.30 %+10 mA)				≤ ±(0.03 % + 10 mV) ≤ ±(0.30 % + 10 mA)		–	≤ ±(0.03 % + 10 mV) ≤ ±(0.30 % + 10 mA)	

Model	T3PS43203P				T3PS33203P			T3PS23203P		
DC Load Characteristic										
Number of Channel	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH1	CH2	
Channel	2		–		2		–	2		
Display Power	0 ~ 50.00 W		–		0 ~ 50.00 W		–	0 ~ 50.00 W		
Display Voltage	1 ~ 33.00 V		–		1 ~ 33.00 V		–	1 ~ 33.00 V		
Display Current	0 ~ 3.200 A		–		0 ~ 3.200 A		–	0 ~ 3.200 A		
CV Mode Setting Range	1.500 V ~ 33.00 V		–		1.500 V ~ 33.00 V		–	1.500 V ~ 33.00 V		
Resolution	10 mV		–		10 mV		–	10 mV		
Set Accuracy	≤ 0.1 % + 30 mV		–		≤ 0.1 % + 30 mV		–	≤ 0.1 % + 30 mV		
Read Accuracy	≤ 0.1 % + 30 mV		–		≤ 0.1 % + 30 mV		–	≤ 0.1 % + 30 mV		
CC Mode Setting Range	0 ~ 3.200 A		–		0 ~ 3.200 A		–	0 ~ 3.200 A		
Resolution	1 mA		–		1 mA		–	1 mA		
Set Accuracy	≤ 0.3 % + 10 mA		–		≤ 0.3 % + 10 mA		–	≤ 0.3 % + 10 mA		
Read Accuracy	≤ 0.3 % + 10 mA		–		≤ 0.3 % + 10 mA		–	≤ 0.3 % + 10 mA		
CR Mode Setting Range	1 ~ 1 kΩ		–		1 ~ 1 kΩ		–	1 ~ 1 kΩ		
Resolution	1 Ω		–		1 Ω		–	1 Ω		
Set Accuracy	≤ 0.3 % + 1 Ω (Voltage ≥ 0.1 V, and current ≥ 0.1 A)		–		≤ 0.3 % + 1 Ω (Voltage ≥ 0.1 V, and current ≥ 0.1 A)		–	≤ 0.3 % + 1 Ω (Voltage ≥ 0.1 V, and current ≥ 0.1 A)		
Read Accuracy										

Insulation

Chassis and Terminal	20 MΩ or above (DC 500 V)
Chassis and AC Cord	30 MΩ or above (DC 500 V)

Environment Condition

Operation Temp	0 ~ 40 °C
Storage Temp	-10 ~ 70 °C
Operating Humidity	≤ 80 % RH
Storage Humidity	≤ 70 % RH

Other

Power Source	AC100 V/120 V/220 V/230 V ± 10 %, 50/60 Hz
Dimensions & Weight	213 (W) x 145 (H) x 312 (D) mm; Approx. 7.5 kg

Specifications subject to change without notice.

ABOUT TELEDYNE TEST TOOLS

TELEDYNE TEST TOOLS
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Company Profile

Teledyne LeCroy is a leading provider of oscilloscopes, protocol analyzers and related test and measurement solutions that enable companies across a wide range of industries to design and test electronic devices of all types. Since our founding in 1964, we have focused on creating products that improve productivity by helping engineers resolve design issues faster and more effectively. Oscilloscopes are tools used by designers and engineers to measure and analyze complex electronic signals in order to develop high-performance systems and to validate electronic designs in order to improve time to market.

The Teledyne Test Tools brand extends the Teledyne LeCroy product portfolio with a comprehensive range of test equipment solutions. This new range of products delivers a broad range of quality test solutions that enable engineers to rapidly validate product and design and reduce time-to-market. Designers, engineers and educators rely on Teledyne Test Tools solutions to meet their most challenging needs for testing, education and electronics validation.

Location and Facilities

Headquartered in Chestnut Ridge, New York, Teledyne Test Tools and Teledyne LeCroy has sales, service and development subsidiaries in the US and throughout Europe and Asia. Teledyne Test Tools and Teledyne LeCroy products are employed across a wide variety of industries, including semiconductor, computer, consumer electronics, education, military/aerospace, automotive/industrial, and telecommunications.

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T3 stands for Teledyne Test Tools.

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