TELEDYNE TEST TOOLS
Everywhereyoulook™

Quick Start Guide

T3PS36006 DC Power Supply

The information in this manual was correct at the time of printing. However, Teledyne LeCroy continues to improve products and reserves the rights to change specification, equipment, and maintenance procedures at any time without notice.

Table of Contents

SAFETY INSTRUCTION

This chapter contains important safety instructions that you must follow when operating T3PS36006 and when keeping it in storage. Read the following before any operation to insure your safety and to keep the best condition for T3PS36006.

Safety Symbols

These safety symbols may appear in this manual or on T3PS36006.

 WARNING	Warning: Identifies conditions or practices that could result in injury or loss of life.
 CAUTION	Caution: Identifies conditions or practices that could result in damage to T3PS36006 or to other properties.
	DANGER High Voltage
	Attention Refer to the Manual
	Protective Conductor Terminal
	Earth (ground) Terminal

Safety Guidelines

General Guideline

CAUTION

- Do not place any heavy object on T3PS36006.
- Avoid severe impacts or rough handling that leads to damaging T3PS36006.
- Do not discharge static electricity to T3PS36006.
- Do not block or obstruct the cooling fan vent opening.
- Leave a space around T3PS36006, at least 3cm to the left and right.
- Do not perform measurement at circuits directly connected to Mains (Note below).
- Do not disassemble T3PS36006 unless you are qualified as service personnel.

(Measurement categories) EN 61010-1:2010 specifies the measurement categories and their requirements as follows. T3PS36006 falls under category I.

- Measurement category IV is for measurement performed at the source of low-voltage installation.
- Measurement category III is for measurement performed in the building installation.
- Measurement category II is for measurement performed on the circuits directly connected to the low voltage installation.

Power Supply

WARNING

- AC Input voltage: 115V/230V ±15%, 50/60Hz
- Connect the protective grounding conductor of the AC power cord to an earth ground, to avoid electrical shock.

Fuse

WARNING

- Fuse type: T10A/250V
- Make sure the correct type of fuse is installed before power up.

	• To ensure fire protection, replace the fuse only with the specified type and rating. • Disconnect the power cord before fuse replacement. • Make sure the cause of fuse blowout is fixed before fuse replacement.
Cleaning T3PS36006	• Disconnect the power cord before cleaning. • Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid. • Do not use chemical or cleaner containing harsh material such as benzene, toluene, xylene, and acetone.
Operation Environment	• Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (Note below) • Relative Humidity: < 80% • Altitude: < 2000m • Temperature: 0°C to 40°C (Pollution Degree) EN 61010-1:2010 specifies the pollution degrees and their requirements as follows. T3PS36006 falls under degree 2. Pollution refers to "addition of foreign matter, solid, liquid, or gaseous (ionized gases), that may produce a reduction of dielectric strength or surface resistivity". • Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence. • Pollution degree 2: Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected. • Pollution degree 3: Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected. In such conditions, equipment is normally protected against exposure to direct sunlight, precipitation, and full wind pressure, but neither temperature nor humidity is controlled.
Storage environment	• Location: Indoor • Relative Humidity: < 70% • Temperature: −10°C to 70°C

Power cord for the United Kingdom

When using T3PS36006 in the United Kingdom, make sure the power cord meets the following safety instructions.

NOTE: This lead/appliance must only be wired by competent persons

⚠WARNING: THIS APPLIANCE MUST BE EARTHED

IMPORTANT: The wires in this lead are coloured in accordance with the following code:

Green/ Yellow:	Earth
Blue:	Neutral
Brown:	Live (Phase)

As the colours of the wires in main leads may not correspond with the colours marking identified in your plug/appliance, proceed as follows:

The wire which is coloured Green & Yellow must be connected to the Earth terminal marked with the letter E or by the earth symbol ⏚ or coloured Green or Green & Yellow.

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Blue or Black.

The wire which is coloured Brown must be connected to the terminal marked with the letter L or P or coloured Brown or Red.

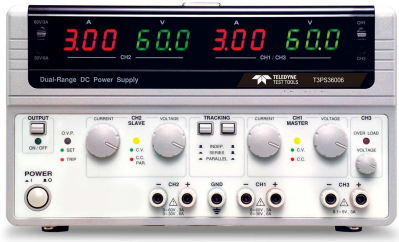
If in doubt, consult the instructions provided with the equipment or contact the supplier.

This cable/appliance should be protected by a suitably rated and approved HBC mains fuse: refer to the rating information on the equipment and/or user instructions for details. As a guide, cable of 0.75mm^2 should be protected by a 3A or 5A fuse. Larger conductors would normally require 13A types, depending on the connection method used.

Any moulded mains connector that requires removal /replacement must be destroyed by removal of any fuse & fuse carrier and disposed of immediately, as a plug with bared wires is hazardous if a engaged in live socket. Any re-wiring must be carried out in accordance with the information detailed on this label.

Overview

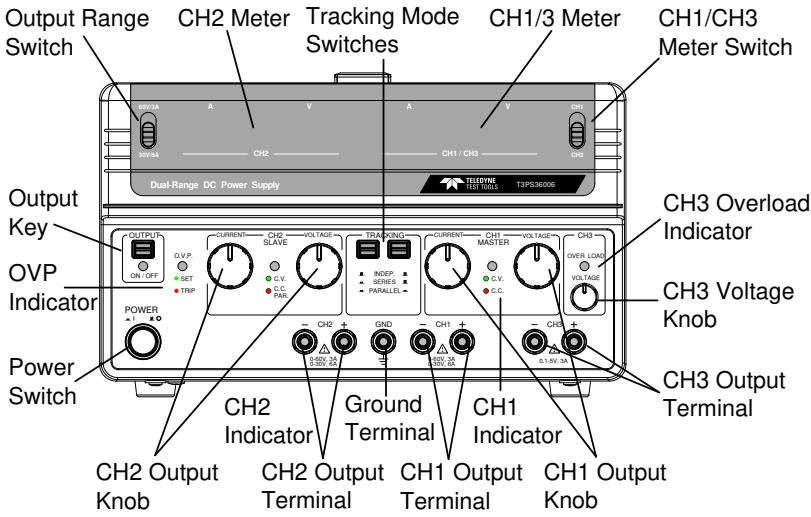
This chapter describes T3PS36006 in a nutshell, including its main features and front / rear panel introduction. After going through the overview, follow the Setup chapter (page 14) to properly power up and set operation environment.

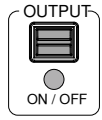
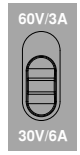


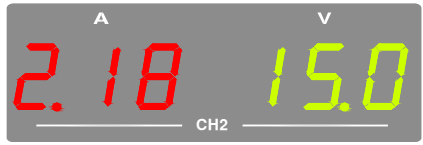
T3PS36006 Main Features

Performance	• Low noise (≤ 50dB, Cooling fan controlled by Heatsink temperature) • High efficiency power conversion, minimum 70% with full load • Fast Output On/Off response (≤100ms) • Low temperature coefficient (≤100ppm/°C+3mV, ≤150ppm/°C+3mA) • Compact size, light weight (6kg)
Operation	• Constant voltage operation • Constant current operation • Tracking Series operation • Tracking Parallel operation • Output On/Off control • 3 outputs with full Voltage control • Output range selection for CH1 and CH2, 60V/3A or 30V/6A • LED display
Protection	• Over voltage protection (OVP) • Overload protection • Reverse polarity protection
Interface	• Remote control output On/Off terminal

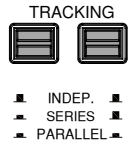
Front Panel Overview



Power switch		Turns On ▬ or Off ■ the main power.
OVP indicator		Turns green during the OVP setup. Turns red (tripped) when the output Voltage exceeds the setting.
Output Key		Turns the output On (green) or Off (gray), all three channels at once.
Output range switch		Selects the output range, 60V/3A or 30V/6A.
CH2 meter	Displays Channel 2 current (A) and voltage (V).	

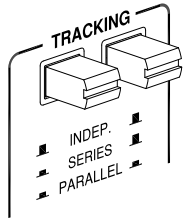


Tracking mode switches

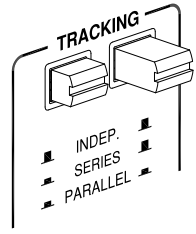


Activates and selects the tracking mode.

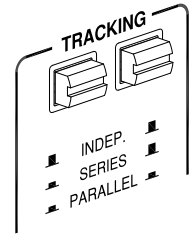
Independent



Tracking Series



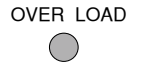
Tracking Parallel



CH1/3 meter + switch

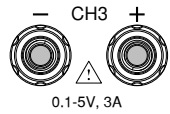
Displays Channel 1 or Channel 3 current (A) and voltage (V). The switch on the right selects the channel 1 (up) or 3 (down).

Channel 3 overload indicator

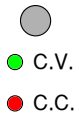
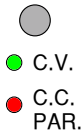


Turns red when Channel 3 output exceeds the current rating, 3A. Channel 3 switches from Constant Voltage (CV) mode to Constant Current (CC) mode.

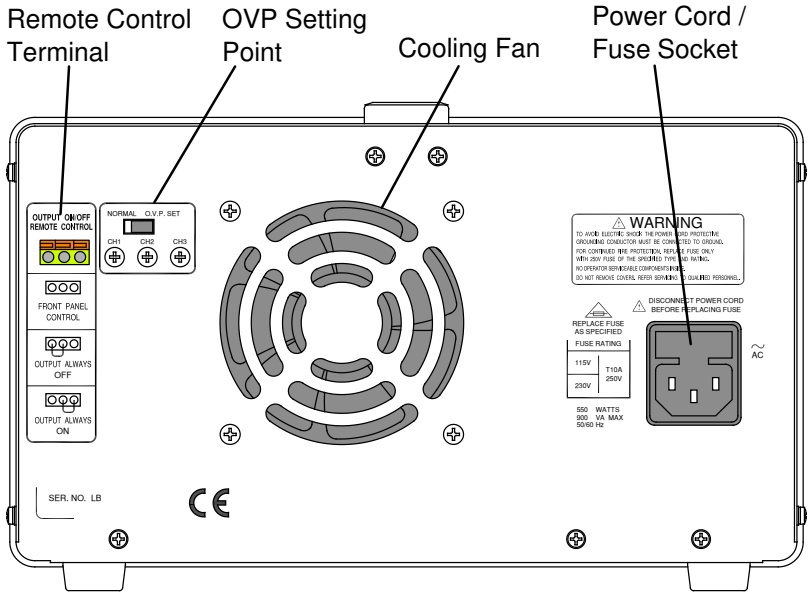
Channel 1/2/3 output terminal



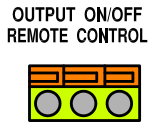
Accepts the load cables.

Channel 1 CV/CC indicator		Turns green when operating in Constant Voltage (CV) mode, red in Constant Current (CC) mode.
Channel 2 CV/CC/PAR indicator		Independent mode: Turns green in Constant Voltage (CV) mode, red in Constant Current (CC) mode. When operating in the Tracking Parallel mode, the Channel 2 indicator always stays red (PAR). Channel 1 indicator shows the CV/CC status.

Rear Panel Overview

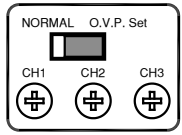


Remote control terminal



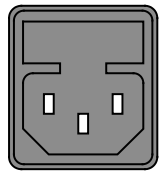
Accepts remote output On/Off control connection.

OVP setting point



Activates Over Voltage Protection (OVP) and sets the protection threshold for channel 1/2/3.

Power cord / fuse socket



The power cord socket accepts the AC mains: 115V/230V, 50/60Hz.

The fuse holder contains the AC main fuse.

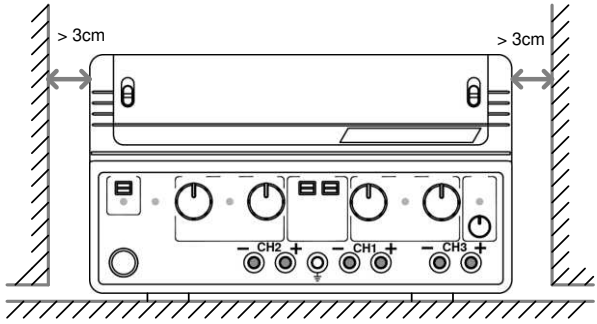
SETUP

This chapter describes how to properly power up and configure T3PS36006 before the operation.

Installation Location

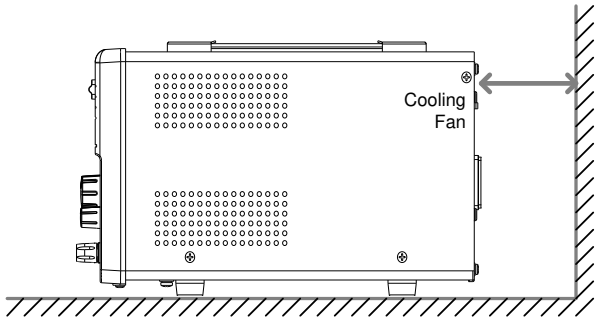
Ventillation space

Leave at least 3cm around T3PS36006, to the left and right.



Cooling fan opening

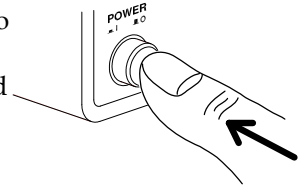
The cooling fan is located on the rear panel. Allocate extra space on the back of T3PS36006 so that the cooling fan opening would not become blocked.

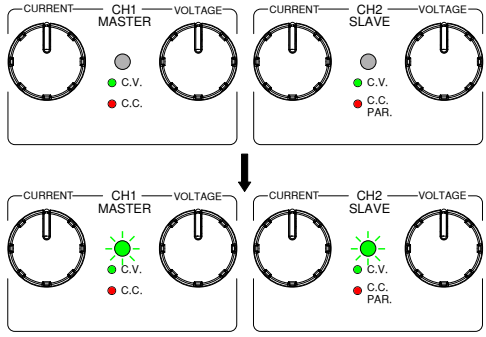


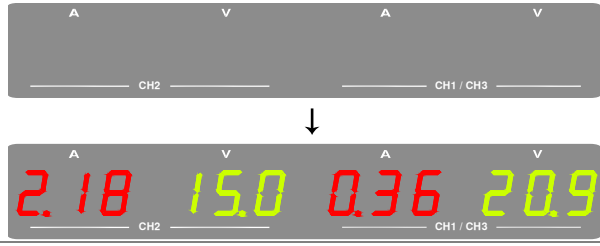
Power Up

Power On

Press the Power switch to turn On the power. The CH1/CH2 indicators and meters turn On.

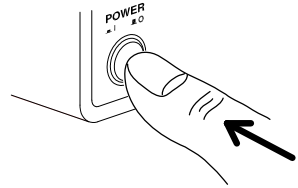






Power Off

Press the Power switch again to turn Off the power. After two seconds, the meters and indicators turn Off.



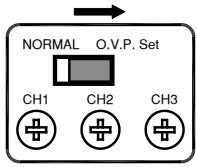
Over Voltage Protection Setup

Background

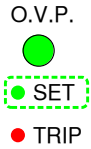
Over Voltage Protection (OVP) protects T3PS36006 and DUT from excessive output Voltage. The user sets the maximum output voltage limit before operation. When the output voltage exceeds this limit, the indicator shows the over voltage status and the output is shut off immediately.

OVP setup

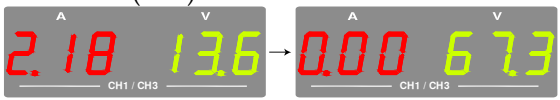
1. Slide the rear panel switch to the "O.V.P. SET" position.



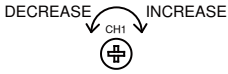
2. The OVP indicator on the front panel turns green, indicating OVP setup.



3. The Voltage meters show the OVP setting level instead of the output level. The Current meters show zero (0.00).

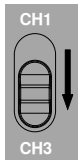


4. Adjust the OVP level using the rear panel terminal. The setting on the front panel meter changes accordingly.

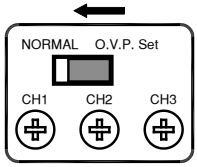


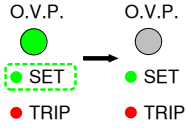
Setting range	Channel 1	1.0V ~ 67.0V
	Channel 2	1.0V ~ 67.0V
	Channel 3	0.1V ~ 6.0V

* When setting the OVP for channel 3, select CH3 meter using the CH1/CH3 meter switch.



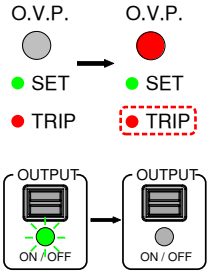
5. When finished, slide the rear panel switch to the "Normal" position. The OVP indicator on the front panel turns Off.





When OVP is activated....

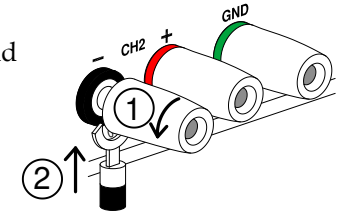
The OVP activates when one of channel 1/2/3 output voltage exceeds the OVP setting. The indicator turns red (tripped), and the output is shut Off immediately.



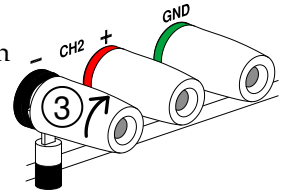
Load Cable Connection

Standard accessory (GTL-104)

1. Turn the terminal counterclockwise and loose the screw.
2. Insert the cable terminal.

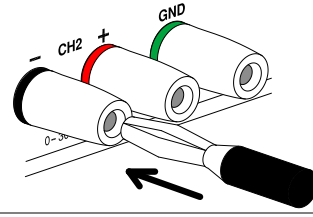


3. Turn the terminal clockwise and tighten the screw.



Banana plug

Insert the plug into the socket.



Wire type

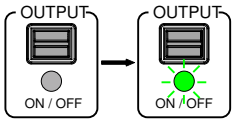
When using load cables other than the attached, make sure they have enough current capacity for minimizing cable loss and load line impedance. Voltage drop across a wire should not excess 0.5V. The following list is the wire current rating at 450A/cm².

Wire size (AWG)	Maximum current (A)
20	2.5
18	4
16	6
14	10
12	16

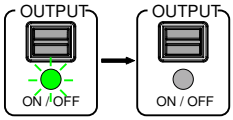
Output On/Off

Panel operation

Pressing the Output key once Turns On the output, all channels 1/2/3 at once.



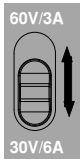
Pressing again turns Off the output.



Automatic Output Off

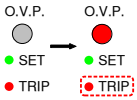
Any of the following actions during output On automatically turns it Off. They might involve sudden and harmful change in the output level.

Change the range.

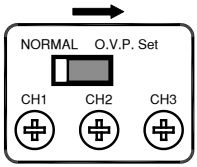


Change the tracking SW between independent/ series/ parallel.

OVP tripped.

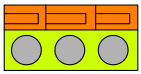


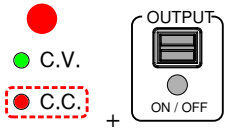
OVP SET mode.



Remote control

When in remote control mode, front panel output control is disabled.



⚠ CV/CC red without output	Red CV/CC indicator when output Off indicates internal error. Contact the service center.	

APPENDIX

Specification

Output Ratings	CH1/CH2 Independent	0 ~ 30V / 0 ~ 6A 0 ~ 60V / 0 ~ 3A
	CH1/CH2 Series	0 ~ 60V / 0 ~ 6A 0 ~ 120V / 0 ~ 3A
	CH1/CH2 Parallel	0 ~ 30V / 0 ~ 12A 0 ~ 60V / 0 ~ 6A
	CH3	0.1 ~ 5V / 3A
Voltage Regulation	Line	≤ 0.01% + 3mV
	Load	≤ 0.01%+ 5mV(rating current ≤ 6A) ≤ 0.01%+ 8mV(rating current ≤ 12A)
	Ripple & Noise	≤ 5mVrms (5Hz ~ 1MHz) ≤ 50mV$_{P-P}$ (20Hz ~ 20MHz)
	Recovery Time	≤ 100μs (50% load change, minimum load 0.5A)
Current Regulation	Line	≤ 0.2% + 3mA
	Load	≤ 0.2% + 3mA
	Ripple & Noise	≤ 3mArms
Tracking Operation	Tracking Error	≤ 0.5% + 10mV of Master
	Series Regulation	≤ 300mV
	Ripple & Noise	≤ 10mVrms (5Hz ~ 1MHz) ≤ 100mVpp (20Hz ~ 20MHz)

Output On/Off Response Time	Voltage Up (10% ~ 90%)	≤ 100ms (≤95% rating load)
	Voltage Down (90% ~ 10%)	≤ 100ms (≥10% rating load)
OVP	Accuracy	± (0.5% of reading + 0.5V)
Meter	Type	3 ½ digits 0.5" LED display
	Accuracy	± (0.5% of reading + 2 digits)
	Resolution	100mV/10mA
Insulation	Chassis and Terminal	100MΩ or above (DC 1000V)
	Chassis and AC cord	100MΩ or above (DC 1000V)
Temperature Coefficient	Voltage	≤ 100ppm/°C+3mV
	Current	≤ 150ppm/°C+3mA
Remote Control	Output On/Off	
Fan Noise	≤ 50dB	
Operation Environment	Ambient temperature 0 ~ 40°C Relative humidity ≤ 80%	
Storage Environment	Ambient temperature –10 ~ 70°C Relative humidity ≤ 70%	
Power Source	AC 115V/230V±15%, 50/60Hz	
Accessories	Quick Start Guide x 1, Power cord x 3 Test lead GTL-104A x 2, GTL-105A x 1	
Dimensions	255 (W) x 145 (H) x 265 (D) mm	
Weight	Approx. 6kg	

ABOUT TELEDYNE TEST TOOLS

TELEDYNE TEST TOOLS
Everywhereyoulook™

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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