

# AC/DC Current Probe

## TCP0150 Data Sheet



TCP0150

### Features & Benefits

- Easy-to-Use and Accurate AC/DC Current Measurements
  - Connects Directly to DPO4000, MSO4000, and DPO7000 Series Oscilloscopes Using the TekVPI Probe Interface
  - DC to 20 MHz Bandwidth
  - 150 A<sub>RMS</sub> Maximum Current Capability
  - 500 A Peak Pulse Current Capability
  - High Accuracy with Typically Less Than 1% DC Gain Error
  - Accurately Measures Current levels as Low as 5 mA
  - Low Noise and DC Drift
- Provides Automatic Units Scaling and Readout on the Oscilloscope's Display
  - Remote Programmable GPIB Control for ATE systems
  - Split-core Probe Head Construction Allows Easy Connection to Conductors
  - Easy to Degauss and Autozero
  - Setup Controls and Probe Status and Diagnostic Indicators are Provided on Both the Probe Hardware and through an Easy-to-Access Scope UI Display Menu

### Applications

- Power Supplies
- Semiconductor Devices
- Power Inverters/Converters
- Electronic Ballasts
- Industrial/Consumer Electronics
- Motor Drives
- Transportation Systems
- **Note:** Requires DPO7000 Series Firmware Version 3.0.2 or greater. Requires MSO/DPO4000 Firmware Version 2.06 or greater.

TCP0150 is a high performance and easy-to-use 150 A AC/DC current probe designed for use and direct connection (without the need of an additional power supply) to the TekVPI™ probe interface used on Tektronix DPO4000, MSO4000, and DPO7000 Series oscilloscopes. This AC/DC current measurement probe provides 20 MHz of frequency bandwidth with selectable range control for 25 A and 150 A measurement ranges. It also provides low-current measurement capability and accuracy to current levels as low as 5 mA per division – important for achieving broad dynamic current range of high-level and low-level measurement signals.

## Characteristics

### Warranted

Characteristic	Description
Bandwidth	DC to $\geq 20$ MHz (-3 dB). Derate with Frequency. See Figure 1. (Calculated from Rise Time $BW = .35/\text{Rise Time}$ )
Rise Time	$\leq 17.5$ ns
Max RMS Current	150 A
Max Peak Pulse Current	500 A
Minimum Sensitivity	5 mA (on oscilloscope's 1 mV/div setting) AC Coupling (on oscilloscopes that support AC/DC coupling)
Current Ranges	25 A and 150 A
Max Bare-wire Voltage	600 V <sub>RMS</sub> CAT I and II 300 V <sub>RMS</sub> CAT III

### Typical

Characteristic	Description
DC Accuracy	$\pm 1\%$ Typical $3\%$ Warranted
Max Amp-second Product	
25 A Range	3,000 A $\mu$ s
150 A Range	15,000 A $\mu$ s
Insertion Impedance	0.03 $\Omega$ at 1 MHz 0.075 $\Omega$ at 5 MHz .125 at 10 MHz .3 at 20 MHz
Signal Delay	$\approx 21$ ns
Displayed RMS Noise	$\leq 500$ $\mu$ A <sub>RMS</sub> (probe only)

## Environmental

Characteristic	Description
Temperature	
Operating	0 °C to +50 °C
Nonoperating	-40 °C to +75 °C
Humidity	
Operating	5% to 95% RH (Relative Humidity) at up to +30 °C 5% to 85% RH above 30 °C up to +50 °C, noncondensing
Nonoperating	5% to 95% RH (Relative Humidity) at up to +30 °C 5% to 85% RH above 30 °C up to +75 °C, noncondensing
Altitude	
Operating	Up to 2,000 meters (6,560 feet)
Nonoperating	Up to 12,000 meters (40,000 feet)

## Physical Characteristics

Dimension	Meters	Inches
Cable Length	2 meters	79 in.
Probe head size		
Length	26.8 cm	10.55 in.
Width	4.1 cm	1.6 in.
Height	15.6 cm	6.13 in.
Max Conductor Diameter	21 mm x 25 mm	0.83 in. x 1.0 in.
<b>Weight</b>		
	<b>kg</b>	<b>lb.</b>
Shipping	.7865	1.734
Power Requirements	TCP0150 is powered directly by the DPO4000, MSO4000 and DPO7000 Series oscilloscopes using TekVPI interface	

## Recommended Oscilloscopes

DPO4000, MSO4000, and DPO7000 Series oscilloscopes with TekVPI probe interface.

**Note:** Requires DPO7000 Series Firmware Version 3.0.2 or greater. Requires MSO/DPO4000 Firmware Version 2.06 or greater.

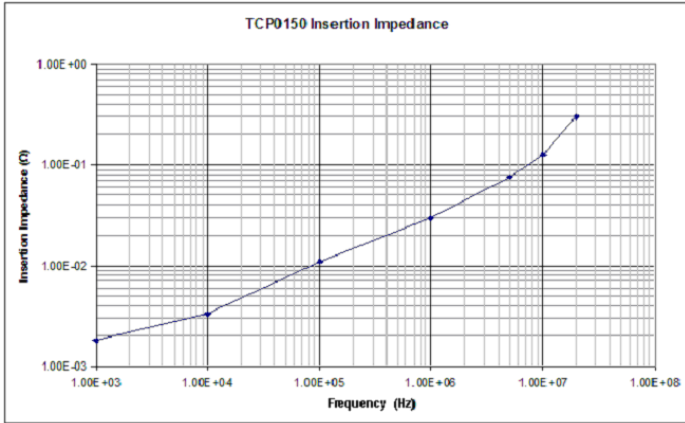


Figure 1.

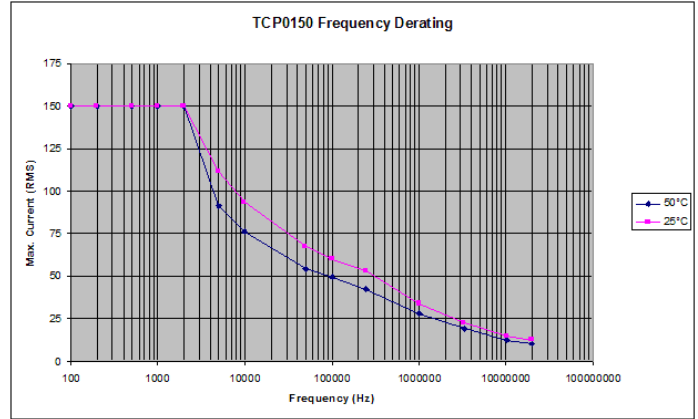


Figure 3: Do not apply currents greater than the max continuous current for more than 10 seconds to minimize heating effects.

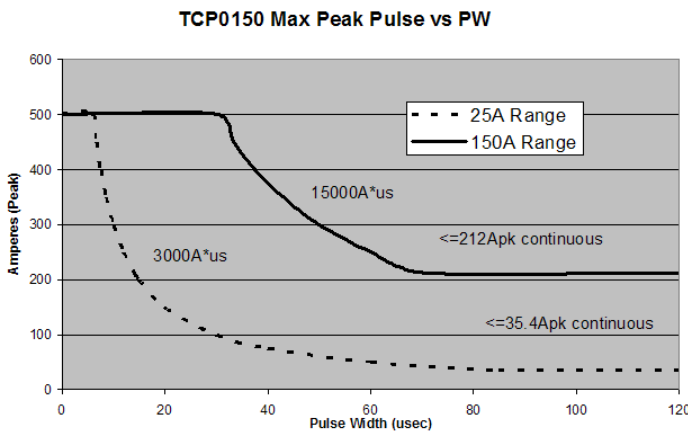


Figure 2.

## Ordering Information

### TCP0150

AC/DC Current Probe with TekVPI Interface.

Includes: Protective Cover (016-1924-xx), and Certificate of Traceable Calibration and Data Standard.

### Options

Option	Order
Opt. L0	Standard English Language Instruction Manual (071-xxxx-xx)
Opt. L5	Substitutes Japanese Language Instruction Manual
Opt. L7	Substitutes Simplified Chinese Language Instruction Manual

## Recommended Accessories

Order	Accessory
015-0601-50	Current Loop, 1 Turn, 50 Ω with BNC connector used for Performance Verification
067-1701-xx	TekVPI Calibration Fixture
067-1686-xx	Cal/Deskew Fixture for DPO7000/70000 Series

## Service Options

Option	Description
Opt. CA1	Provides coverage for a single Calibration Event
Opt. C3	Calibration Service 3 years
Opt. C5	Calibration Service 5 years
Opt. D3	Calibration Data Report 3 Years (with Opt. C3)
Opt. D5	Calibration Data Report 5 Years (with Opt. C5)
Opt. R3	Repair Service 3 Years
Opt. R5	Repair Service 5 Years



Product(s) are manufactured in ISO registered facilities.



Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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Updated 30 October 2008

**For Further Information.** Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit [www.tektronix.com](http://www.tektronix.com)



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26 Jun 2009

51W-20815-0

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