

AC/DC Current Probe

TCP0150 Datasheet



The TCP0150 is a high performance and easy-to-use 150 A AC/DC current probe designed for use and direct connection to the TekVPI™ probe interface.

Key performance specifications

- DC to 20 MHz bandwidth
- 150 A_{RMS} 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

Key features

- Easy-to-Use and accurate AC/DC current measurements
- Connects directly to oscilloscopes with the TekVPI™ probe interface

- Low noise and DC drift
- Provides automatic units scaling and readout on the oscilloscope's display
- Remote GPIB/USB probe control through the oscilloscope
- 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

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.

Specifications

Warranted characteristics

| | |
|-------------------------------|--|
| Bandwidth | DC to ≥ 20 MHz (-3 dB). Derate with frequency. See Figure 1. (Calculated from Rise Time $BW = .35/\text{Rise Time}$) |
| Rise time | ≤ 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 _{RMS} CAT I and II 300 V _{RMS} CAT III |

Typical characteristics

| | |
|-------------------------------|---|
| DC accuracy | $\pm 1\%$ typical (3% warranted) |
| Max amp-second product | |
| 25 A range | 3,000 a μ s |
| 150 A range | 15,000 a μ s |
| Insertion impedance | 0.03 Ω at 1 MHz 0.075 Ω at 5 MHz .125 at 10 MHz .3 at 20 MHz |
| Signal delay | ≈ 21 ns |
| Displayed RMS noise | ≤ 500 μ A _{RMS} (probe only) |

Physical characteristics

| | |
|-------------------------------|--|
| 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.) |
| Shipping weight | .7865 kg (1.734 lb.) |
| Power requirements | TCP0150 is powered directly by oscilloscopes with the TekVPI interface |

Environmental

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 |

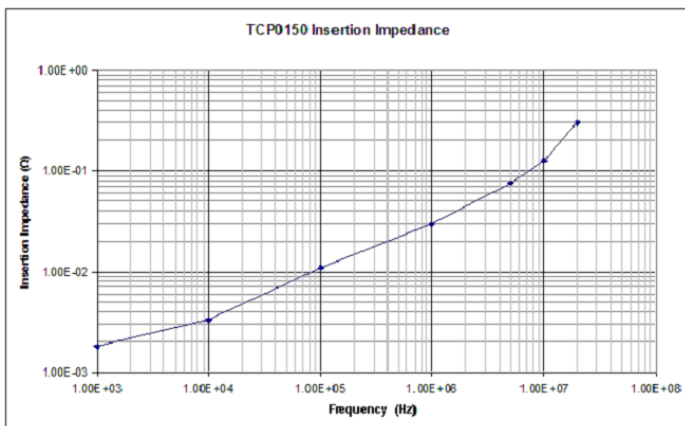
Altitude

| | |
|---------------------|-----------------------------------|
| Operating | Up to 2,000 meters (6,560 feet) |
| Nonoperating | Up to 12,000 meters (40,000 feet) |

Recommended oscilloscopes

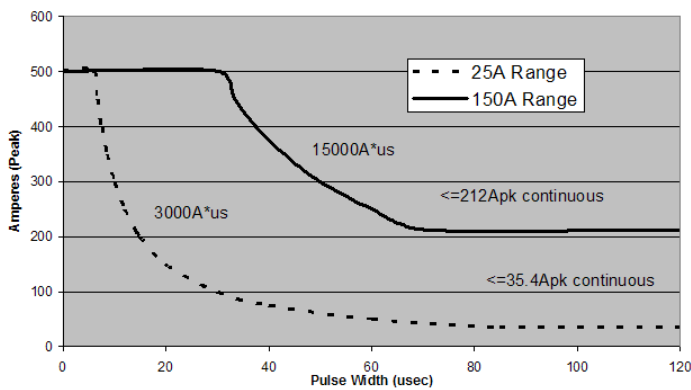
Oscilloscopes with the TekVPI probe interface.

Note: For best probe support, download and install the latest version of the oscilloscope software from www.tektronix.com



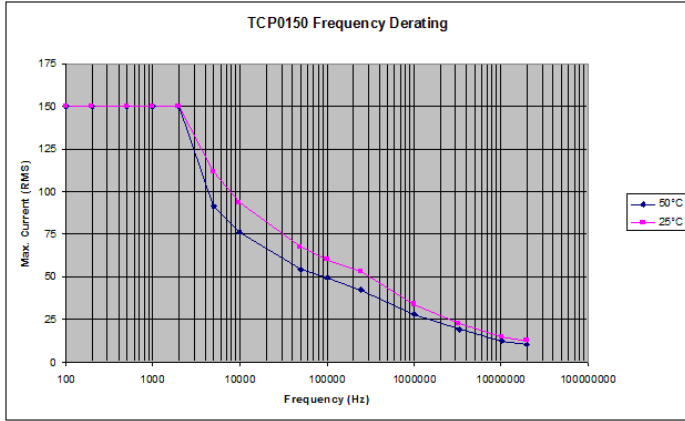
TCP0150 insertion impedance

TCP0150 Max Peak Pulse vs PW



TCP0150 Max Peak Pulse versus PW

Recommended oscilloscopes



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

Ordering information

Models

TCP0150 AC/DC current probe with TekVPI interface.

Includes: protective cover (016-1924-xx), and certificate of traceable calibration and data standard.

Options

Language options

| | |
|---------|---------------------------|
| Opt. L0 | English manual |
| Opt. L5 | Japanese manual |
| Opt. L7 | Simplified Chinese manual |
| Opt. L9 | Korean manual |

Service options

| | |
|--------------|--|
| Opt. CA1 | Single Calibration or Functional Verification |
| 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 (including warranty) |
| Opt. R5 | Repair Service 5 Years (including warranty) |
| Opt. SILV600 | Standard warranty extended to 5 years |

Recommended accessories

| | |
|--------------------|--|
| 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 |



Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.



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

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Updated 10 April 2013

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26 Sep 2013

51W-20815-4

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