AC/DC Current Probes

TCP0020 • TCP2020 • TCP202A Datasheet

TCP0020 AC/DC Current Probe.

Features & Benefits

- Easy-to-Use and Accurate AC/DC Current Measurements
- DC to >50 MHz Bandwidth
- Core Jaw Diameter of 5 mm (0.2 in.)
- Accurately Measures Current Levels as Low as 10 mA per Division
- High Accuracy with Typically Less than 1% DC Gain Error
- Split-core Construction allows Easy Circuit Connection
- Low Noise and DC Drift

- TCP0020
  - 20 A_{RMS} Maximum Current Capability
  - 100 A Peak Pulse Current Capability
  - Connects Directly to Oscilloscopes with the TekVPI™ Probe Interface
  - Provides Automatic Units Scaling and Readout on the Oscilloscope Display
  - One-button Degauss and AutoZero Control for Ease of Use
  - Easy Access to Scope-displayed Probe Menu for Probe Setup Control and Operating Status Information
  - Remote Control Capability through TekVPI Oscilloscope
- TCP2020
  - 20 A_{RMS} Maximum Current Capability
  - 100 A Peak Pulse Current Capability
  - 10 mA/mV Sensitivity
  - BNC Output Connects to Most Oscilloscopes and Other Measurement Equipment (>100 kΩ Termination Required)
  - Degauss Button and Thumbwheel for DC Offset Adjustment
  - Powered by an AC Adapter
- TCP202A
  - 15 $A_{DC + Peak AC}$ Maximum Current Capability
  - 50 A Peak Pulse Current Capability
  - Connects Directly to Oscilloscopes with the TekProbe™ Interface
  - Provides Automatic Units Scaling and Readout on the Oscilloscope Display
  - Degauss Button and Thumbwheel for DC Offset Adjustment
- Safety Certified

Applications

- Power Supplies
- Semiconductor Devices
- Power Inverter/Converters
- Electronic Ballasts
- Industrial/Consumer Electronics
- Mobile Communications
- Motor Drives
- Transportation Systems

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TCP0020, TCP2020, TCP202A

The TCP0020, TCP2020, and TCP202A are a family of high-performance, easy-to-use AC/DC current probes designed for use with a variety of oscilloscopes. The TCP0020 is designed for direct connection to oscilloscopes with the TekVPI™ probe interface and the TCP202A is designed for direct connection to oscilloscopes with the TekProbe™ probe interface. The TCP2020 is designed for use with any instrument with BNC inputs and >100 kΩ input termination.

These AC/DC current probes provide sufficient performance to support 50 MHz measurement system bandwidth. The TCP0020 and TCP2020 provide a maximum 20 A_{RMS} measurement range, while the TCP202A provides a maximum 15 $A_{DC + Peak\ AC}$ measurement range. These probes also provide excellent accuracy to current levels as low as 10 mA, important for meeting today's challenging current measurement needs.

Characteristics

General

Characteristic	Description
Bandwidth	DC to ≥50 MHz
Rise Time	≤7 ns
Max Current	20 A_{RMS} (TCP0020 and TCP2020) 15 $A_{DC + Peak\ AC}$ (TCP202A)
Max Peak Pulse Current	100 A (TCP0020 and TCP2020) 50 A (TCP202A)
Maximum Sensitivity	10 mA (on oscilloscopes that support 1 mV/div setting)
Coupling	DC coupling only
Max Bare-wire Voltage	150 V CAT II (300 V CAT II Insulated Wire)

Typical

Characteristic	Description
DC Accuracy	±1% typical, ±3% warranted
Max Amp-second Product	1000 A*µs (TCP0020 and TCP2020) 500 A*µs (TCP202A)
Insertion Impedance	0.036 Ω at 1 MHz 0.117 Ω at 10 MHz 0.54 Ω at 50 MHz
Signal Delay	17 ns

Environmental

Characteristic	Description
Temperature	
Operating	0 °C to +50 °C
Nonoperating	–40 °C to +75 °C
Humidity	
Operating	5% to 95% RH, tested up to +30 °C (+86 °F) 5% to 85% RH, tested at +30 °C to +50 °C (+86 °F to +122 °F)
Nonoperating	5% to 95% RH, tested up to +30 °C (+86 °F) 5% to 85% RH, tested at +30 °C to +75 °C (+86 °F to +167 °F)
Regulatory	
Safety	CSA1010.1:1997, CSA1010.2.032-96, IEC61010-1:2001, IEC61010-2-032

Physical Characteristics

Probe Head Size	mm	in.
Height	30.5	1.2
Width	15.2	0.6
Length	148	5.8
Other Dimensions	**m**	**in.**
Cable Length	2	79
Weight	**kg**	**lb.**
Probe Only	0.227	0.5
Shipping	1.22	2 lb. 11 oz.

Power Requirements

TCP0020 is powered directly by oscilloscopes with the TekVPI™ probe interface. TCP2020 is powered by AC adapter. (Specify power plug option when ordering.) TCP202A is powered directly by oscilloscopes with the TekProbe™ probe interface or through the TekVPI™ probe interface when used with the TPA-BNC adapter.

Standard Warranty

One-year parts and labor.

Ordering Information

TCP0020
AC/DC Current Probe.
Includes: Instruction Manual (English) (071-3002-xx), Probe Ground Lead – 6 in. length (196-3120-xx), Nylon Carrying Case (016-1952-xx).

TCP2020
AC/DC Current Probe.
Includes: Instruction Manual (English) (071-3002-xx), Probe Ground Lead – 6 in. length (196-3120-xx), Nylon Carrying Case (016-1952-xx), AC Adapter (specify power plug option when ordering).

TCP202A
AC/DC Current Probe.
Includes: Instruction Manual (English) (071-3002-xx), Probe Ground Lead – 6 in. length (196-3120-xx), Nylon Carrying Case (016-1952-xx).

Power Plug Options (TCP2020 Only)

Option	Description
Opt. A0	North America Power, 115 V, 60 Hz
Opt. A1	Universal Euro Power, 220 V, 50 Hz
Opt. A2	United Kingdom Power, 240 V, 50 Hz
Opt. A3	Australia Power, 240 V, 50 Hz
Opt. A5	Switzerland Power, 220 V, 50 Hz
Opt. A6	Japan Power, 100 V, 110/120 V, 60 Hz
Opt. A10	China Power, 50 Hz
Opt. A11	India Power, 50 Hz
Opt. A12	Brazil Power, 60 Hz
Opt. A99	No Power Cord

Service Options

Option	Description
Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. D1	Calibration Data Report
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

Recommended Accessories

Accessory	Description
067-2396-xx	Current Loop, 1 Turn, 50 Ω with BNC connector used for performance verification
067-1686-xx	Deskew/Calibration Fixture

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Updated 10 February 2011

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**

11 Jul 2012 51W-28098-0

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