

# 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<sub>RMS</sub> 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<sub>RMS</sub> 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<sub>DC</sub> + 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

## 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<sub>RMS</sub> measurement range, while the TCP202A provides a maximum 15 A<sub>DC + Peak AC</sub> 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 <sub>RMS</sub> (TCP0020 and TCP2020)<br>15 A <sub>DC + Peak AC</sub> (TCP202A) |
| Max Peak Pulse Current | 100 A (TCP0020 and TCP2020)<br>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)<br>500 A*μs (TCP202A)     |
| Insertion Impedance    | 0.036 Ω at 1 MHz<br>0.117 Ω at 10 MHz<br>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)<br>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)<br>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 $\Omega$ with BNC connector used for performance verification |
| 067-1686-xx | Deskew/Calibration Fixture                                                             |