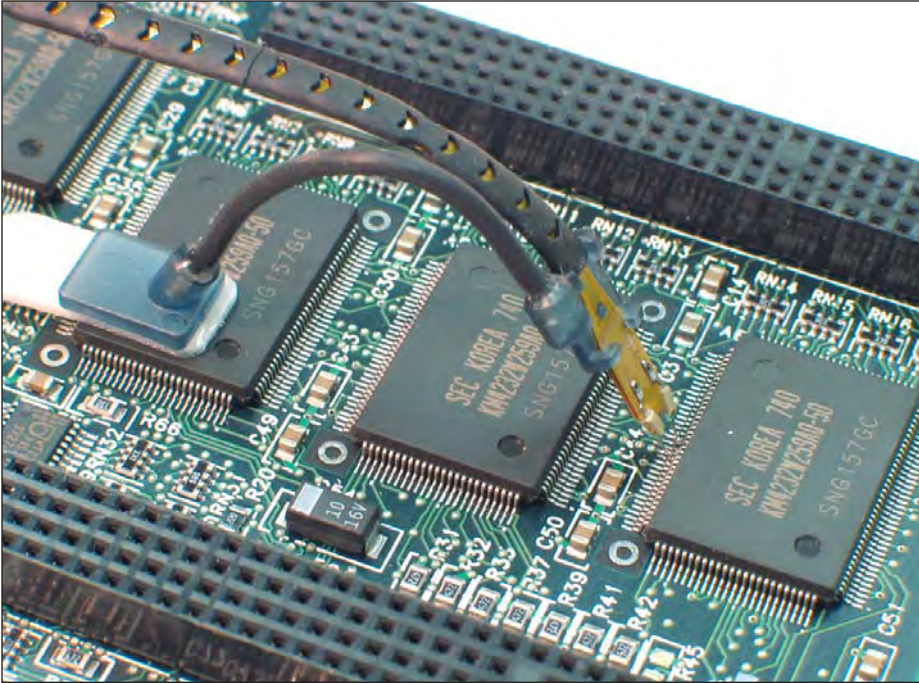


LeCroy

Probes & Accessories Catalog



D11000PS DIFFERENTIAL PROBE SYSTEM



The D11000PS extends the full signal acquisition performance of the SDA 11000 and SDA 9000 to the probe tips. With 11 GHz system bandwidth, the probe enables direct measurement of high-speed serial data streams up to 6.25 Gb/s. The D11000PS also provides 11 GHz system bandwidth when used with the SDA 18000.

Choice of Interconnect Styles Without Compromising Performance

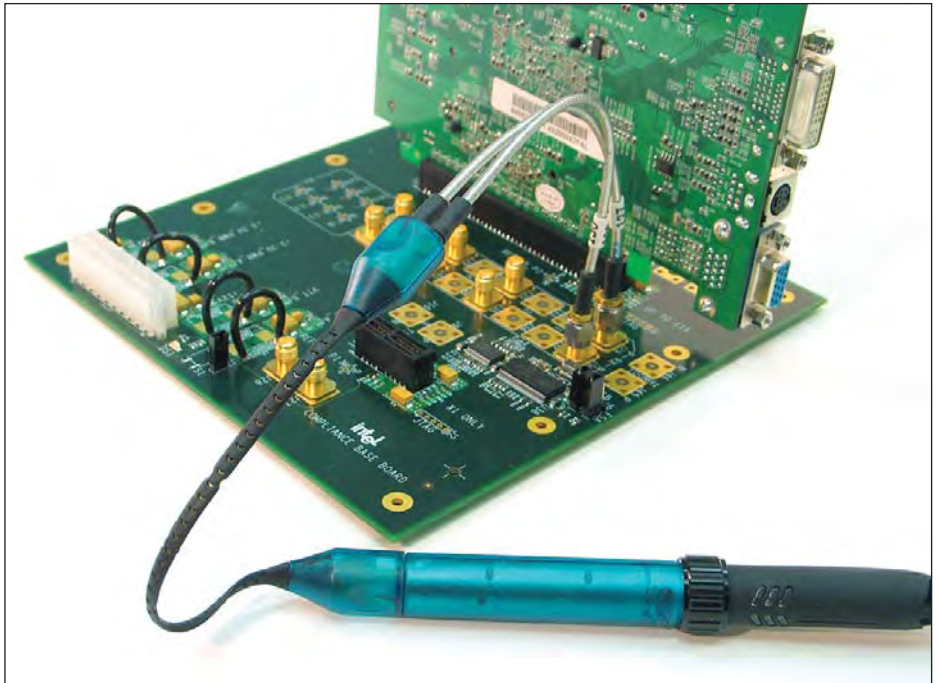
The D11000PS provides both direct Solder-In and cabled SMA interconnect lead assemblies. Each interconnect lead comes with a dedicated probe amplifier module that has calibration data optimized for the respective lead. This eliminates the performance compromise of using a single calibration for multiple lead types. The Solder-In lead provides the highest possible signal integrity with a high loading impedance. The dual SMA interconnect leads provide a true differential 50 Ω input. This is a convenient alternative to direct cabling into the oscilloscope inputs, freeing up the second channel for other signal input, and eliminating the need to set up waveform math and match cable delays.

Unsurpassed Waveform Accuracy

When used to acquire input signals for the SDA 11000, SDA 9000, or SDA 18000, the D11000PS provides unprecedented waveform fidelity, even with signals at higher serial data rates. The D11000PS utilizes third generation compensation calibration, the most advanced in use today, to provide optimal system response.

Each individual probe is characterized with this system. Information on the probe's frequency and time domain responses are stored in non-volatile memory within the probe amplifier module. This information is uploaded to the higher bandwidth SDA's when the probe is connected. The probe calibration data and the SDA oscilloscope's calibration data combine to generate new equalization filters for the composite system. The resulting compensation system corrects for frequency response deviations, as well as group delay correction and reflection cancellation.

D11000PS DIFFERENTIAL PROBE SYSTEM



Reproducing accurate serial data eye patterns requires maintaining precise magnitude and phase relationships between the fundamental and the odd harmonics. The advanced calibration system used in the D11000PS assures the best eye pattern fidelity.

Superior Probe Loading Characteristics

Accurate frequency response is not enough to assure good waveform fidelity. Excessive probe loading can cause waveform distortion. The D11000PS continues the legacy of LeCroy high-performance probe design, placing special emphasis on minimizing loading of the circuit under test.

The Solder-In lead and dedicated probe amplifier module have a high input resistance at DC and low frequencies, allowing the probe to be used in circuits which cannot drive the low resistance of a pure transmission line probe. The direct cabled SMA inputs have 50 Ω input impedance with low VSWR.

Ease of Use

Attention to fine details during the D11000PS design process has resulted in several "ease of use" features. A common mode measure feature allows the user to measure the average common mode component with a single click in the probe control menu. AutoColor ID lights an indicator in the probe body, matching the color of the waveform trace. When multiple channels are used, this feature instantly identifies which waveform corresponds to which probe.

Several connection accessories designed specifically for the D11000PS provide convenient and secure mounting of the probe body and Solder-In tip to the test circuit. DC blocking adapters extend the common mode range of the SMA cabled input for use with higher common mode voltages such as Digital Video Interface (DVI). A finger wrench allows tightening of SMA connectors on dense test fixtures.

D11000PS DIFFERENTIAL PROBE SYSTEM

Compatibility

The D11000PS is designed specifically for use with the SDA 11000, SDA 9000, or SDA 18000. However, it does contain additional calibration data for use with all of the lower bandwidth WaveMaster, SDA, and DDA 5005A Series oscilloscopes and analyzers.

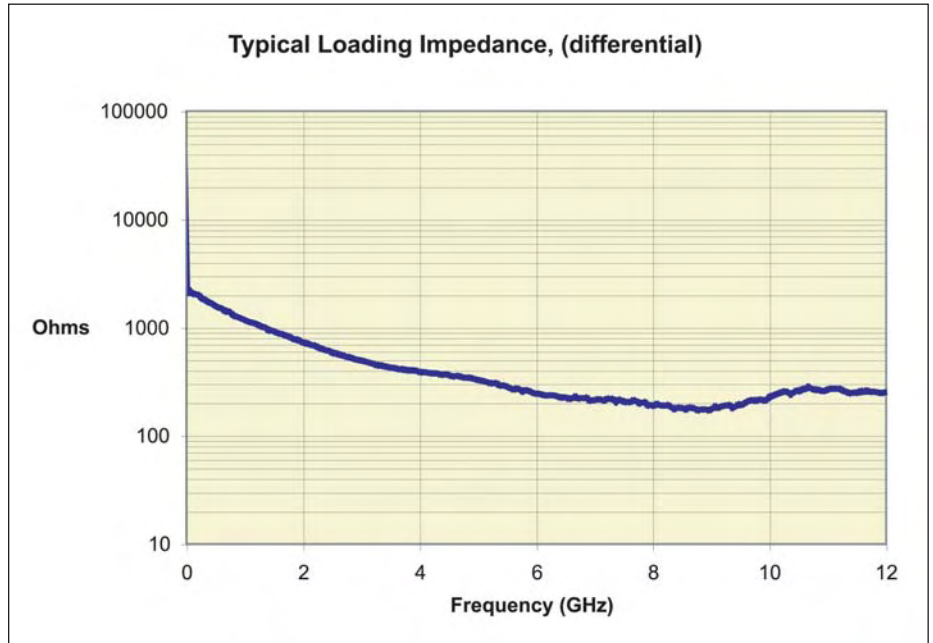
SPECIFICATIONS

| | |
|---|---|
| Bandwidth, System, -3 dB | 11 GHz (Typical)* |
| Rise Time, System | < 50 ps (Typical)* |
| Rise Time, Probe only | < 40 ps |
| Attenuation, Nominal | ÷3 |
| LF Attenuation Accuracy | 2% (20–30 °C) |
| Output Zero | < 15 mV referred to input |
| Noise, System | 5 mV rms (Typical) ¹ |
| Differential Mode Range | ±1 V |
| Common Mode Range | ±4 V, Solder-In tip ±2 V, SMA cable input [†] |
| Input Resistance at DC, (Solder-In lead) | 40 kΩ differential 20 kΩ each side to ground |
| Minimum Input Impedance, (Solder-In lead, to 11 GHz) | > 175 Ω (Refer to graph) |
| Input Impedance, (SMA cable input) | 50 Ω |
| Input VSWR, (Typical, each lead to ground) | < 1.5:1 DC–6 GHz < 2.0:1 6 GHz–11 GHz |
| CMRR, (Typical) | > 40 dB DC–1 GHz > 30 dB 1 GHz–4 GHz > 20 dB 4 GHz–11 GHz |

* Measured as a system with SDA 11000, SDA 9000 and SDA 18000.

† Can be extended by using DC Blocking Adapters.

D11000PS DIFFERENTIAL PROBE SYSTEM



D11000PS Includes:

Probe amplifier modules (2–1 each for SMA input and Solder-In lead), Solder-In lead assembly (2), SMA interconnect lead, SMA input cables (matched pair), Probe body, SMA DC blocking adapters (2), ground lead and clip, SMA finger wrench (2), tip retaining clip kit for Solder-In lead, probe body mounting clamp set, FreeHand probe stand, ESD dissipating wrist strap, SAC-01 soft accessory case with insert, small accessory case, D11000PS Instruction Manual, certificate of traceable calibration.

| ORDERING INFORMATION | PRODUCT CODE |
|---|-----------------|
| Differential Probe System | D11000PS |
| Replacement Solder-In Tip Assembly | D11000SI |
| NIST Traceable Calibration with Test Data (one module) | D11000PS-CCNIST |

WAVELINK DIFFERENTIAL PROBES

WaveLink high bandwidth differential probes are designed to provide an optimum mechanical connection for signal measurement. They virtually eliminate distortion when measuring signals, which is particularly useful in eye pattern measurements—now routine for systems using fast serial data bus architecture. WaveLink probes provide industry-leading technology for wideband signal connection to test instruments. The first differential probes to employ SiGe technology, they deliver full system bandwidth when used with LeCroy 6 GHz, 5 GHz, and 3 GHz instruments. They are also the first differential probes to use a unique calibration process to achieve superb waveform fidelity for routine voltage measurements.

Features:

- Unique adjustable tips for reliable contact
- Wide assortment of small tips ideal for restricted spaces
- Best-in-class probe loading for accurate signal measurement
- Superior loading characteristics and precise frequency response
- Outstanding fidelity for high-speed signals

D600A-AT and D300A-AT Features:

- Built-in thumbwheel for precise positioning of tip; stays put after adjustment
- Maintains sharp points for good contact
- Tips made of “NiTiNOL,” a super-elastic nickel-titanium alloy
- Probe flexes as you apply pressure and consistently returns to original form

D600ST and D350ST Features:

- Best-in-class mechanical design for optimum utility
- Small tip high bandwidth differential probe
- Three interconnect configurations for flexibility
- Very small form factor for accessing tight spaces
- Highly flexible long lead
- Inexpensive and easily replaceable

D500PT Positioner Mounted Tip Features:

- Positioned tip assembly
- Very small tip geometry for accessing physically constrained locations
- Ideal for applications requiring multiple probes on adjacent pads
- Telescoping tips for reliable tip contact—even when probe is tilted
- Mounts in probe positioner or can be hand held
- EZ-Probe positioner available as an accessory

WaveLink D600ST and D350ST

Best-in-class mechanical design for optimum utility:

- Small tip, high bandwidth differential probe
- Three interconnect configurations for flexibility
- Very small form factor for accessing tight spaces

Each of the interchangeable leads is a thin, highly flexible 145 mm (5.7”) long lead connecting the tip and the D600ST/D350ST probe tip module.



D600A-AT

D300A-AT

D600ST

D350ST

D500PT

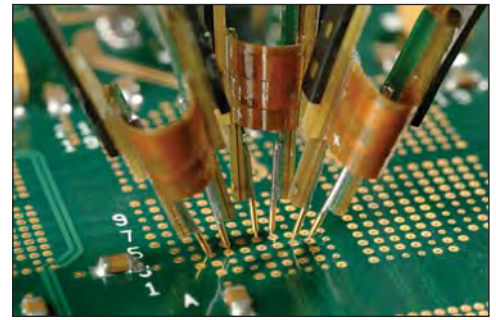


WAVELINK DIFFERENTIAL PROBES

FLEXIBLE INTERCONNECTION OPTIONS —WITHOUT SACRIFICING PERFORMANCE

D500PT Positioner Mounted Probe Tip Module

The probe has a very thin form factor, allowing multiple probes to be used when several channels are required to monitor signals from the same small IC. It has 2 mm of Z-axis compliance through spring-loaded telescoping tips, allowing considerable angular freedom relative to the circuit board while still maintaining reliable contact with both inputs. A ball joint between the tip and mounting arm makes it even easier to adjust for placement when already mounted in a positioner. A small thumbscrew allows precise and secure adjustment of the tip spacing.



The Probe Tip Modules contain the active amplifier circuitry. Different modules have different electrical and physical interconnect characteristics, allowing the user to select the module appropriate for the application.

D600A-AT and D300A-AT Adjustable Tips

WaveLink adjustable tip probes are designed to provide an optimum mechanical connection for signal measurement.

- Built-in thumbwheel for precise positioning of tip—stays put after adjustment
- Maintains sharp points for good contact
- Tips made of “NiTiNOL,” a super-elastic nickel-titanium alloy
- Flexes as you apply pressure
- Consistently returns to original form



EZ-Probe Positioner

The EZ-Probe positioner provides stable, accurate positioning in the x-y-z axis. Ideal for use with the D500PT and D600A-AT/D300A-AT probe tips. The unique, 3:1 motion reduction joystick allows simple, precise positioning of the attached probe in both the horizontal and vertical measuring plane. The probe has a fully articulating arm, providing 30 cm (12") reach in virtually any direction.



WAVELINK DIFFERENTIAL PROBES

THREE DIFFERENT TIPS FOR INTERCONNECT FLEXIBILITY

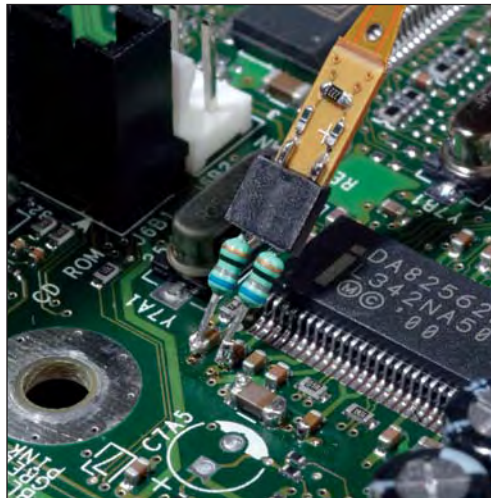
Solder-In Lead

The Solder-In interconnect lead features the smallest physical tip size of any high bandwidth differential probe and the highest level of electrical performance. Two very small damping resistors are directly soldered into the connect points providing a reliable, intermittent free electrical connection. The resistors have highly flexible leads allowing connection to input points with a wide range of input spacing.



Quick Connect (D600ST only)

The Quick Connect interconnect lead enables you to quickly move the probe between multiple test points on the test circuit. Just solder a pair of damping resistors at each location where interconnection is required. A small connector mounted on the probe tip, plugs into the damping resistors, letting you quickly move between sets of test points.



Square Pin

Many applications, such as IC characterization boards, use standard 0.025" square pins for interconnect. The Square Pin interconnect lead directly mates with a pair of 0.025" (0.635 mm) square pins which are mounted on standard 0.100" (2.54 mm) centers.



WAVELINK DIFFERENTIAL PROBES

SPECIFICATIONS

Rise Time, probe only

| | |
|-----------|-----------|
| D600A-AT | < 70 ps* |
| D600ST-SI | < 65 ps* |
| D500PT | < 100 ps† |
| D300A-AT | < 95 ps‡ |
| D350ST-SP | < 90 ps‡ |

LF Attenuation Accuracy (with 0 V common mode)

| | |
|---|---------------------------------|
| D600A-AT, D300A-AT, D600ST, and D500PT | 2% 0 ±1.2 V 5% ±1.2 V ±2.4 V |
| D350ST | 2% 0 ±2.5 V 5% ±2.5 V ±5 V |

Output Zero

(within 15 minutes after Autozero)

| | |
|---|-------------|
| D600A-AT, D300A-AT, D600ST, and D500PT | < 10 mV RTI |
| D350ST | < 20 mV RTI |

Bandwidth, System DC to -3 dB (Typical)

| | |
|-----------|---------|
| D600ST-SI | 6 GHz** |
| D600ST-QC | 4 GHz** |
| D600ST-SP | 3 GHz** |
| D600A-AT | 6 GHz** |
| D300A-AT | 3 GHz†† |
| D350ST-SP | 3 GHz†† |
| D350ST-SI | 3 GHz†† |
| D500PT | 5 GHz† |

Input Dynamic Range

| | |
|---|--------|
| D600A-AT, D300A-AT, D600ST, and D500PT | ±2.4 V |
| D350ST | ±5 V |

Common Mode Range

(Max. peak voltage either input to ground)

| | |
|---|--------|
| D600A-AT, D300A-AT, D600ST, and D500PT | ±2.4 V |
| D350ST | ±5 V |

DC Input Resistance

| | |
|---|--|
| D600A-AT, D300A-AT, D600ST, and D500PT | 4 kΩ differential 2 kΩ either input to ground |
| D350ST | 8 kΩ differential 4 kΩ either input to ground |

*Measured with 6 GHz or greater oscilloscope

†Measured with 5 GHz oscilloscope

‡Measured with 3 or 4 GHz oscilloscope

**Typical, with 6 GHz or greater oscilloscope

††Typical, with 3 or 4 GHz oscilloscope

WAVELINK DIFFERENTIAL PROBES

SPECIFICATIONS (CONTINUED)

CMRR

| | | |
|----------------|---------|--|
| D600A-AT | | |
| DC to 1 GHz | > 40 dB | |
| 1 GHz to 3 GHz | > 30 dB | |
| 3 GHz to 7 GHz | > 20 dB | |
| D600ST | | |
| DC to 1 GHz | > 30 dB | |
| 1 GHz to 3 GHz | > 25 dB | |
| 3 GHz to 7 GHz | > 20 dB | |
| D500PT | | |
| DC to 1 GHz | > 25 dB | |
| 1 GHz to 3 GHz | > 19 dB | |
| 3 GHz to 5 GHz | > 16 dB | |
| D350ST | | |
| DC to 1 GHz | > 30 dB | |
| 1 GHz to 3 GHz | > 25 dB | |
| D300A-AT | | |
| DC to 1 GHz | > 40 dB | |
| 1 GHz to 3 GHz | > 30 dB | |

Noise

| | |
|--------------------------|---|
| D600A-AT, D600ST, D500PT | 5.8 mV _{rms} with 6 GHz oscilloscope |
| D300A-AT | 5.0 mV _{rms} with 3 GHz oscilloscope |
| D350ST | 9.5 mV _{rms} with 3 GHz oscilloscope |

ORDERING INFORMATION

PRODUCT CODE

PROBE TIP MODULES

| | |
|--|-----------|
| WaveLink 7.5 GHz, Differential Probe Adjustable Tip Module | D600A-AT* |
| WaveLink 4 GHz, Differential Probe Adjustable Tip Module | D300A-AT* |
| WaveLink 7 GHz, Differential Probe Small Tip Module | D600ST* |
| WaveLink 4 GHz, 5 V Differential Probe Small Tip Module | D350ST* |
| WaveLink 6 GHz, Differential Positioner Mounted Tip Module | D500PT* |

PROBE BODIES

| | |
|-----------------------------|-------|
| WaveLink ProLink Probe Body | WL600 |
| WaveLink ProBus Probe Body | WL300 |

POSITIONER

| | |
|---------------------------------------|----------|
| Cascade Microtech EZ-Probe Positioner | EZ PROBE |
|---------------------------------------|----------|

SERVICE OPTIONS

| | |
|--|---|
| NIST Traceable Calibration with Test Data [†] (one module) | D600A-AT-CCNIST D300A-AT-CCNIST D600ST-CCNIST D350ST-CCNIST D500PT-CCNIST |
|--|---|

* For a complete probe, order a WL300 or WL600 Probe Body with Probe Tip Module.

[†]-CCNIST NIST traceable calibration with test data is an available option for D600ST, D350ST, D500PT, D600A-AT, or D300A-AT probe tip module only when ordered with either a WL600 or WL300 probe body.

WAVELINK DIFFERENTIAL PROBES

ORDERING INFORMATION (CONTINUED)

PRODUCT CODE

CONSUMABLES AND REPLACEMENT PARTS

| | |
|---|------------|
| Replacement Quick Connect Lead Set for D600ST | D600ST-QC |
| Replacement Solder-In Lead Set for D600ST | D600ST-SI |
| Replacement Square Pin Lead Set for D600ST | D600ST-SP |
| Extra Solder-In Lead for D350ST | D350ST-SI |
| Extra Square Pin Lead for D350ST | D350ST-SP |
| Replacement Tip Assembly for D500PT | D500PT-TIP |
| Replacement Resistor Kit for D600ST-SI (10) | PK600ST-1 |
| Replacement Resistor Kit for D600ST-QC (20) | PK600ST-2 |
| Replacement Probe Tip Holder Kit | PK600ST-3 |
| Replacement Probe Body Mounting Kit | PK600ST-4 |
| Replacement Probe Tips for D500PT (pkg. of 4) | PK500PT-1 |
| Replacement Resistor Kit for D350ST-SI (10) | PK350ST-1 |
| Probe Characterization Fixture | PCF-200 |
| WaveLink Probe Series Instruction Manual | WL-OM-E |

D600A-AT, D300A-AT Adjustable Tip Modules Include:

Protective storage case, ground wire and clip, WaveLink Series instruction manual, Quick Start guide, calibration certificate.

D600ST Small Tip Module Includes:

Solder-In interconnect lead set with replacement damping resistors (10), Quick Connect interconnect lead set with additional damping resistors (20), Square Pin interconnect lead set, ground wire and clip, probe tip mounting kit, WaveLink Series instruction manual, Quick Start guide, calibration certificate.

D350ST Small Tip Module Includes:

Solder-In interconnect lead set with replacement damping resistors (10), Square Pin interconnect lead set, ground wire and clip, probe tip mounting kit, WaveLink Series instruction manual, Quick Start guide, calibration certificate.

D500PT Positioner Mounted Tip Includes:

Positioned tip assembly, Probe tip module, Module mounting clamp, Ground lead and clip, WaveLink Series instruction manual, Quick Start guide, Calibration certificate, FreeHand probe stand, Tip repair tool, Replacement tips (2)

WL600, WL300 Probe Bodies Include:

SAC-01 Soft accessory case with WaveLink Series insert, probe characterization fixture, probe body mounting clip, probe cable clamp (2), and small probe accessory case.

WaveLink Probe Calibration

When ordered with WL600 or WL300 also substitute: Certificate of NIST traceable calibration in place of calibration certificate.



PASSIVE PROBES

Passive probes are the standard probe provided with most oscilloscopes. Typical passive probes provide a 10:1 attenuation and feature a high input resistance of 10 M Ω . This high input resistance means that passive probes are the ideal tool for low frequency signals since circuit loading at these frequencies is minimized. Passive probes are designed to handle voltages of at least 400 V, some as high as 600 V. LeCroy passive probes feature an attenuation sense pin which tells the oscilloscope to scale the waveforms automatically requiring no user input.

Each passive probe is recommended for a certain oscilloscope, using the right passive probe with the right oscilloscope means that the probe can be properly compensated across the entire bandwidth. Using probes with a different oscilloscope will only let you compensate for low frequencies.

Features:

- Bandwidth from 200 MHz to 500 MHz
- Probe encoding ring for automatic scale factor readout on LeCroy oscilloscopes

| Model | Bandwidth | Input R | Input C | Attenuation | Maximum Voltage | Diameter | Recommended Oscilloscope |
|----------|-----------|---------------|---------|-------------|-----------------|----------|--------------------------|
| PP005A | 500 MHz | 10 M Ω | 11 pF | 10:1 | 500 V | 5 mm | 1, 2, 12, 13 |
| PP006A | 500 MHz | 10 M Ω | 12 pF | 10:1 | 600 V | 5 mm | 3, 11 |
| PP007-WS | 500 MHz | 10 M Ω | 9.5 pF | 10:1 | 400 V | 2.5 mm | 4 |
| PP007-WR | 500 MHz | 10 M Ω | 9.5 pF | 10:1 | 400 V | 2.5 mm | 5, 7, 9 |
| PP008 | 500 MHz | 10 M Ω | 9.5 pF | 10:1 | 400 V | 2.5 mm | 4, 6, 8 |
| PP009 | 500 MHz | 10 M Ω | 9.5 pF | 10:1 | 400 V | 5 mm | 4, 6, 8 |
| PP010 | 200 MHz | 10 M Ω | 12.5 pF | 10:1 | 600 V | 5 mm | 10 |
| PP011 | 500 MHz | 10 M Ω | 9.5 pF | 10:1 | 400 V | 5 mm | 5, 7, 9 |

Recommended Oscilloscope

- | | |
|--|--|
| 1 9300 Series | 8 WaveSurfer Xs Series (\leq 600 MHz) |
| 2 LC Series | 9 WaveSurfer Xs Series (1 GHz) |
| 3 LT Series | 10 WaveJet Series (\leq 200 MHz) |
| 4 WaveSurfer 400 Series | 11 WaveJet Series (\geq 350 MHz) |
| 5 WaveRunner 6000 Series | 12 WavePro 900 Series |
| 6 WaveRunner Xi Series (\leq 600 MHz) | 13 WavePro 7000 Series |
| 7 WaveRunner Xi (1 GHz–2 GHz) | |

ORDERING INFORMATION

- ±10, 500 MHz 10 M Ω Passive Probe
- ±10, 500 MHz 10 M Ω Passive Probe
- ±10, 500 MHz 10 M Ω Passive Probe
- ±10, 500 MHz 10 M Ω Passive Probe
- ±10, 500 MHz 10 M Ω Passive Probe
- ±10, 500 MHz 10 M Ω Passive Probe
- ±10, 200 MHz 10 M Ω Passive Probe
- ±10, 500 MHz 10 M Ω Passive Probe

PRODUCT CODE

- PP005A
- PP006A
- PP007-WS-1
- PP007-WR-1
- PP008
- PP009
- PP010
- PP011

WAVELINK DIFFERENTIAL PROBES

WAVELINK PROBE COMPATIBILITY CHART

| | | | | | | | | |
|----------|-----------------|-----------------|-----------------|----------|---------|----------|-------|-------|
| | SDA 18000* | | | | | WR 204Xi | | |
| | SDA 11000* | | | | | WR 104Xi | | |
| | SDA 9000* | | | | WP7300A | WR 64Xi | | |
| | SDA 6020 | WM8620A | | | WP7200A | WR 44Xi | | |
| | SDA 4020 | WM8420A | DDA 5005A | DDA 3000 | WP7100A | WR 6KA | WL300 | WL600 |
| D600A-AT | • | • | • | | | | RP | FP |
| D300A-AT | | | | • | • | • | FP | FP |
| D600ST | • | • | • | | | | RP | FP |
| D350ST | • | • | • | • | • | • | FP | FP |
| D500 PT | • | • | • | • | • | • | RP | FP |
| WL600 | • | • | • | NC | NC | NC | | |
| WL300 | RP ¹ | RP ¹ | RP ¹ | • | • | • | | |

| | |
|-----------------|--|
| • | Recommended |
| NC | Not Compatible |
| FP | Operates at Full Performance |
| RP | Operates with Reduced Performance with LPA adapters. Frequency response > 3 GHz may be altered |
| RP ¹ | Operates with Reduced Performance with LPA adapters. Frequency response > 3 GHz may be altered |

*Operates on channels in 6 GHz mode only

PASSIVE PROBES ACCESSORIES

ORDERING INFORMATION

PRODUCT CODE

PK001 – Standard Probe Accessory for PP002

| | |
|--------------------------|-------------|
| Ground Lead PP002 | PP001/002-1 |
| Probe Tip to BNC adapter | PP001/002-2 |
| Sprung Hook PP002 | PP001/002-3 |
| M/F Lead – Long (4") | |
| M/F Lead – Short (2") | |

PK102 – Standard Probe Accessory Kit for PP005/PP005

| | |
|--------------------------|------------|
| Sprung Hook (Black) | PP005-HOOK |
| Spring Tip (0.38 mm) | PP005-ST38 |
| Spring Tip (0.8 mm) | PP005-ST8 |
| Rigid Tip (0.8 mm) | PP005-RT |
| Probe Tip to BNC Adapter | PP005-BNC |
| Ground Lead (11 cm) | PP005-GL11 |
| Ground Lead (22 cm) | PP005-GL22 |
| Ground Lead (Spring) | PP005-GLPT |
| IC Insulating Tip | |
| Probe Tip to BNC Adapter | |
| Adjustment Screw Driver | |

PK106 – SMT Accessories for PP005/PP005A, PPEXkV

| | |
|--------------------------|---------|
| Dual Lead Adapter | PK106-1 |
| Single Lead Adapter | PK106-2 |
| 0.5 mm Clip (Orange) | PK106-3 |
| Probe Tip to PCB Adapter | PK106-4 |
| M/F Lead – Long (4") | PK106-5 |
| M/F Lead – Short (2") | PK106-6 |
| 0.5 mm Clip (Yellow) | PK106-8 |

PK101 – Microclip Accessory Kit for PP005/PP005A

| | |
|---------------------------|------------|
| Single Lead Adapter | PK106-2 |
| QFPIC Clip (0.5 mm Pitch) | PACC-CL001 |

PK116 – Standard Probe Accessory Kit for PP006/PP006A

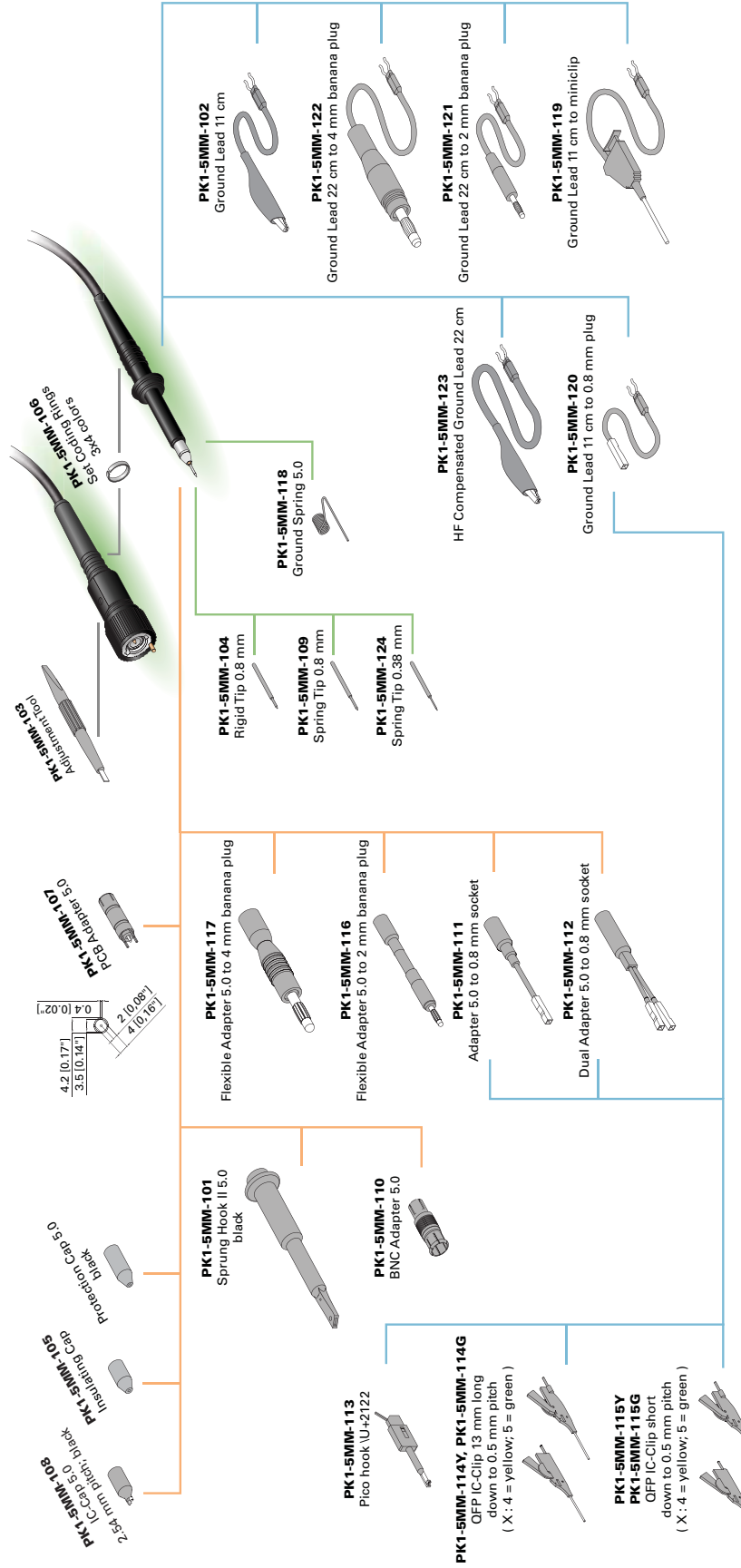
| | |
|----------------|---------|
| Sprung Hook | PK116-1 |
| Ground Lead | PK116-2 |
| Ground Pin | PK116-3 |
| Insulating Tip | |
| Screw Driver | |

PK006 – SMT Accessories for PP006/PP006A

| | |
|-----------------------------|---------|
| Dual Lead Adapter PK006 | PK006-1 |
| Single Lead Adapter PK006 | PK006-2 |
| 0.5 mm Clip (Black and Red) | PK006-3 |
| 0.8 mm Clip (Black and Red) | PK006-4 |
| M/F Lead – Long (4") | |
| M/F Lead – Short (2") | |

PASSIVE PROBES ACCESSORIES

| ORDERING INFORMATION | PRODUCT CODE |
|---|---------------------|
| PKIT1-5MM-102 – Basic Adapter Kit for PP009 | |
| Sprung Hook | PK1-5MM-101 |
| Standard Ground Lead | PK1-5MM-102 |
| Adjustment Tool | PK1-5MM-103 |
| Rigid Tip, 0.8 mm | PK1-5MM-104 |
| IC Cap, 2.54 mm pitch | PK1-5MM-108 |
| Spring Tip 0.8 mm (Qty. 6) | PK1-5MM-109 |
| BNC Adapter | PK1-5MM-110 |
| Adapter, 4 mm plug | PK1-5MM-117 |
| Ground Spring | PK1-5MM-118 |
| High Frequency Compensated Ground Lead | PK1-5MM-123 |
| Spring Tip 0.38 mm (Qty. 5) | PK1-5MM-124 |
| PKIT1-5MM-101 – Micro Clip Kit for PP009 | |
| Single Lead Adapter | PK1-5MM-111 |
| Microclip Long, Green | PK1-5MM-114G |
| Microclip Long, Yellow | PK1-5MM-114Y |
| Microclip Short, Green | PK1-5MM-115G |
| Microclip Short, Yellow | PK1-5MM-115Y |
| PKIT2-5MM-101 – Standard Accessory Kit for PP010 | |
| Sprung Hook | PK2-5MM-101 |
| Standard Ground Lead | PK2-5MM-102 |
| Adjustment Tool | |
| Ground Attachment | |
| IC Test Tip | |
| Color Coding Rings (set) | |



Passive Probe Accessories PP005, PP009, and PP011 Series



PP007-WR-1

PP007-WS-1

PP008-1

PASSIVE PROBES

The PP007 and PP008 embody leading edge technology in passive probe design. A rugged, general-purpose probe, its small size is optimized for maximum waveform fidelity. The small 2.5 mm ground sleeve provides superior visibility, as well as a greater ability to probe dense circuits than traditional 3.5 mm and 5 mm probes. Its sharp probe tip* is spring loaded, allowing it to retract into the narrow probe head. Low input capacitance and low inductance optimize functionality in high frequency applications. For best performance, the PP007-WR-1 version is designed to be used with the WaveRunner 6000A Series, while the PP007-WS-1 version is designed for the WaveSurfer 400 Series. The PP008-1 is designed for use with the WaveRunner Xi Series.

Features:

- Compact probe head
- Fine pitch SMD probing support
- Rugged, sharp tip
- HF optimized connection accessories
- Over 30 accessories
- Low input capacitance

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

| | |
|--------------------|--|
| Attenuation | ÷ 10 |
| Bandwidth | > 500 MHz |
| Input R | 10 MΩ |
| Input C | 9.5 pF |
| Max. Input Voltage | 400 V CAT I (1250 V surge) 300 V CAT II |

GENERAL CHARACTERISTICS

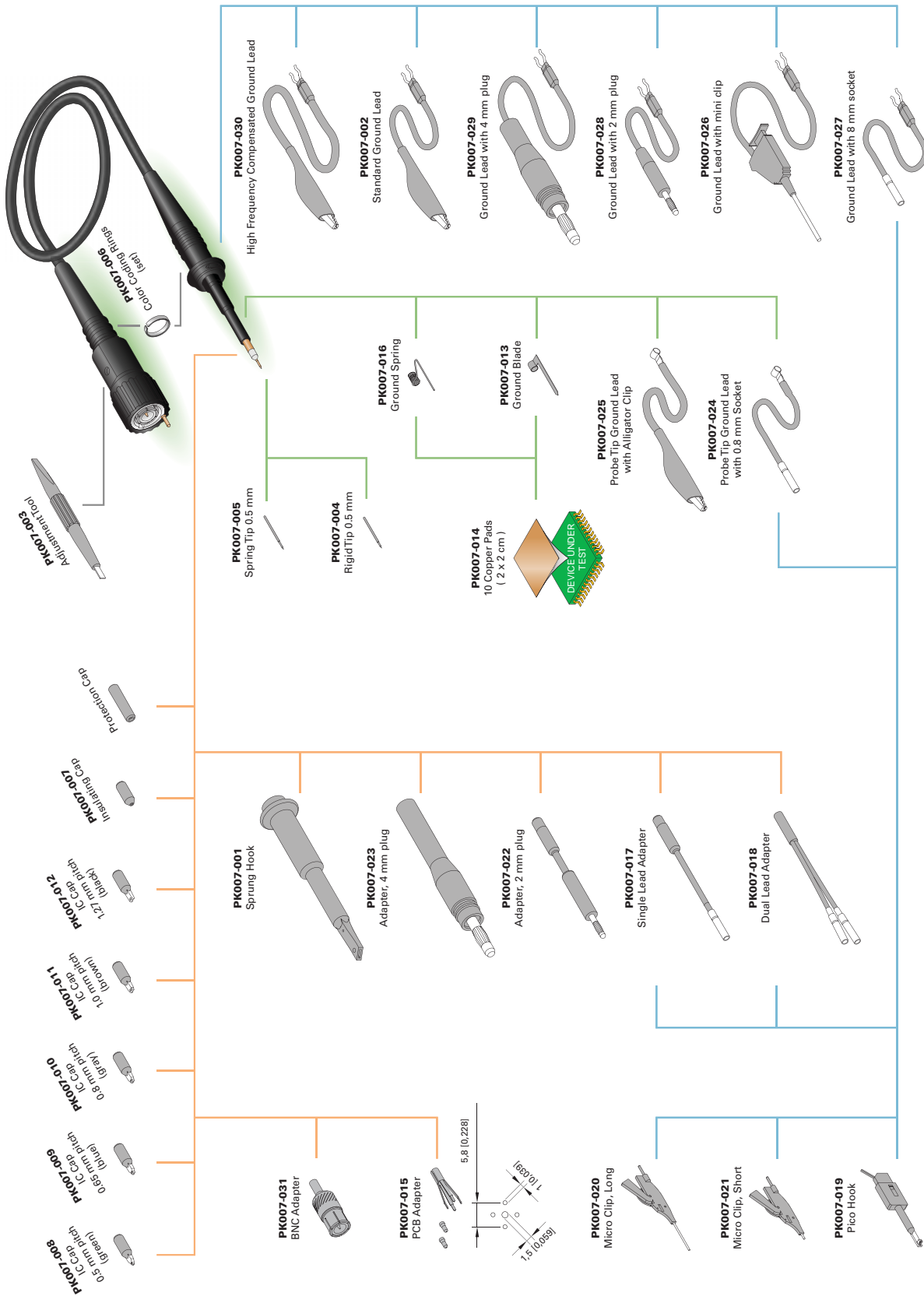
| | |
|------------------------|--------|
| Ground Sleeve Diameter | 2.5 mm |
| Input Pin Diameter | 0.5 mm |
| Cable Length | 1.3 m |

ORDERING INFORMATION

PRODUCT CODE

| | |
|--|------------|
| Basic Adapter Kit | PK701 |
| Advanced Adapter Kit | PK702 |
| SMD Adapter Kit | PK703 |
| Microclip Kit | PK704 |
| ÷10 HiZ 500 MHz Passive Probe for WaveRunner Xi Series Oscilloscopes | PP008-1 |
| ÷10 HiZ 500 MHz Passive Probe for WaveRunner 6000A Series Oscilloscopes | PP007-WR-1 |
| ÷10 HiZ 500 MHz Passive Probe for WaveSurfer 400 Series Oscilloscopes | PP007-WS-1 |
| Instruction Manual | PP007-OM-E |

* A rigid tip is included



Passive Probe Accessories for PP007 and PP008 Series

PASSIVE PROBE ACCESSORIES

| ORDERING INFORMATION PP007 AND PP008 | | | | | PRODUCT CODE |
|--|-------|-------|-------|-------|--------------|
| PROBE ACCESSORIES | PK701 | PK702 | PK703 | PK704 | |
| Sprung Hook | 2 | 1 | | | PK007-001 |
| Standard Ground Lead | 2 | 1 | | | PK007-002 |
| Adjustment Tool | 1 | 1 | | | PK007-003 |
| Rigid Tip | 2 | 2 | | | PK007-004 |
| Spring Tip | 2 | 1 | 2 | | PK007-005 |
| Color Coding Rings (3 Red, 3 Yellow, 3 Blue, 3 Green) | | 2 | | | PK007-006 |
| Insulating Cap | | 2 | 2 | | PK007-007 |
| IC-cap for 0.5 mm Pitch | | 1 | 2 | | PK007-008 |
| IC-cap for 0.65 mm Pitch | | 1 | 2 | | PK007-009 |
| IC-cap for 0.8 mm Pitch | | 1 | 2 | | PK007-010 |
| IC-cap for 1.0 mm Pitch | | 1 | 2 | | PK007-011 |
| IC-cap for 1.27 mm Pitch | | 1 | 2 | | PK007-012 |
| Ground Blade | | 1 | 2 | | PK007-013 |
| Copper Pad | | 1 | 2 | | PK007-014 |
| PCB-adapter | | 5 | | 1 | PK007-015 |
| Ground Spring | 2 | 1 | 1 | | PK007-016 |
| Single Adapter Lead | | | 1 | 1 | PK007-017 |
| Dual Adapter Lead | | 1 | 1 | 1 | PK007-018 |
| Pico Hook | | 2 | | | PK007-019 |
| Microclip Long 0.5 mm | | 2 | 1 | 2 | PK007-020 |
| Microclip Short 0.5 mm | | 2 | 1 | 2 | PK007-021 |
| Adapter 2 mm Plug | | | | | PK007-022 |
| Adapter 4 mm Plug | | | | | PK007-023 |
| Probe Tip Ground Lead w/0.8 mm Socket | | 1 | 1 | | PK007-024 |
| Probe Tip Ground Lead w/Alligator-clip | | | | | PK007-025 |
| Ground Lead with Miniclip | | 1 | | | PK007-026 |
| Ground Lead with 0.8 mm Socket | | 1 | 1 | | PK007-027 |
| Ground Lead with 2 mm Plug | | | | | PK007-028 |
| Ground Lead with 4 mm Plug | | | | | PK007-029 |
| HF-compensated Ground Lead | | 1 | 1 | | PK007-030 |
| BNC-adapter | | 2 | | | PK007-031 |
| Product Description Brochure | 1 | 1 | 1 | 1 | PK007-032 |

ACTIVE VOLTAGE PROBES

ZS SERIES HIGH IMPEDANCE ACTIVE PROBES

The ZS Series probes provide high impedance and an extensive set of probe tips and ground accessories to handle a wide range of probing scenarios. The high 1 M Ω input resistance and low 0.9 pF input capacitance mean this probe is ideal for all frequencies. The ZS Series probes provide full system bandwidth for all LeCroy oscilloscopes having bandwidths of 1 GHz and lower.

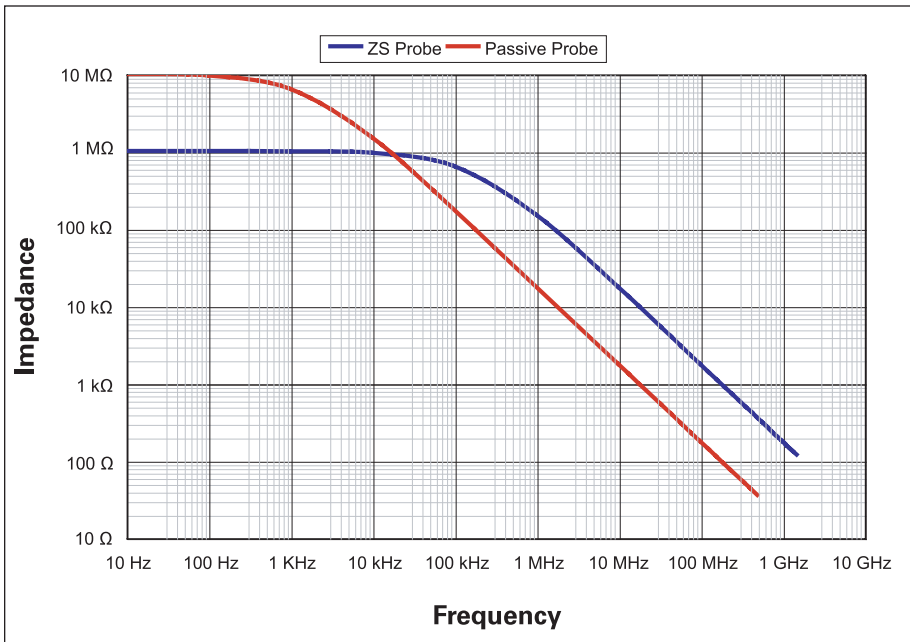
HIGH IMPEDANCE REDUCES CIRCUIT LOADING ACROSS FULL OSCILLOSCOPE BANDWIDTH

Engineers must commonly probe high frequency signals with high signal fidelity. Typical passive probes with high input R and C provide good response at lower frequencies, but inappropriately load the circuit, and distort signals, at higher frequencies. The ZS Series features both high input R (1 M Ω) and low input C (0.9 pF) to reduce circuit loading across the entire probe/oscilloscope bandwidth. With low circuit loading, and a form factor that allows probing in confined areas, the ZS Series becomes the everyday probe for all different types of signals and connection points. The ZS1000 is ideal for 200–600 MHz oscilloscopes. The ZS1500 is ideal for 1 GHz oscilloscopes.



ZS1500

ZS1000



Passive probes are great for low frequency measurements; however, the input capacitance reduces impedance above 1 kHz. The 1 M Ω input resistance and 0.9 pF capacitance of the ZS probe provide high impedance across the entire probe bandwidth making it the ideal tool for all your probing needs.

ACTIVE VOLTAGE PROBES

A VARIETY OF PROBE TIPS FOR VARIED TASKS

Engineers often need to probe a variety of different test points in confined spaces. The extensive range of standard and optional tip accessories for the ZS Series of probes ensures that this probe can meet any difficult probing challenge. Various flexible leads and clips, such as right-angle leads, Y-adapters, and pico hooks, are also available for probing test points that are spaced farther apart.

INNOVATIVE GROUNDING SOLUTIONS PROVIDE THE HIGHEST SIGNAL FIDELITY AND EASIEST CONNECTIONS

Making a good ground connection is just as important as keeping the ground loop short is critical to eliminating the effect of high inductance on the signal. The ZS Series of probes provides several grounding capabilities to offer the highest signal fidelity by shortening the ground loop and eliminating the effect of that loop on the signal. The standard Offset ground lead is a "twisted-Z" shape for probing signal and ground points that are extremely close together. The standard ground blade and copper pad provide the shortest ground loop possible, and provide a pulse response that cannot be achieved with traditional long ground leads. A variety of other ground connections are available for nearly any type of probing requirement.

| SPECIFICATIONS | ZS1000 | ZS1500 |
|-----------------------------------|--|--|
| ELECTRICAL CHARACTERISTICS | | |
| Bandwidth (probe only) | 1 GHz | 1.5 GHz |
| Bandwidth (system) | 600 MHz at probe tip with 600 MHz oscilloscope | 1 GHz at probe tip with 1 GHz oscilloscope |
| Input Capacitance | 0.9 pF | 0.9 pF |
| DC Input Resistance | 1 M Ω | 1 M Ω |
| Probe Offset Range | NA | ± 12 V |
| Attenuation | $\div 10$ | $\div 10$ |
| Input Dynamic Range | ± 8 V | ± 8 V |
| Non-Destruct Voltage | 20 V | 20 V |

GENERAL CHARACTERISTICS

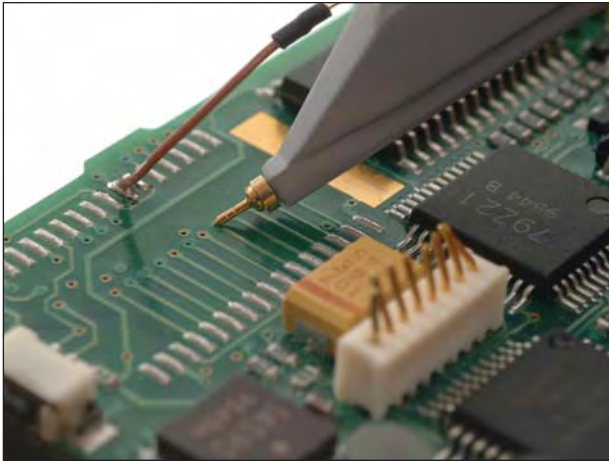
| | | |
|--------------|-------|-------|
| Cable Length | 1.3 m | 1.3 m |
|--------------|-------|-------|

INCLUDED WITH STANDARD CONFIGURATION

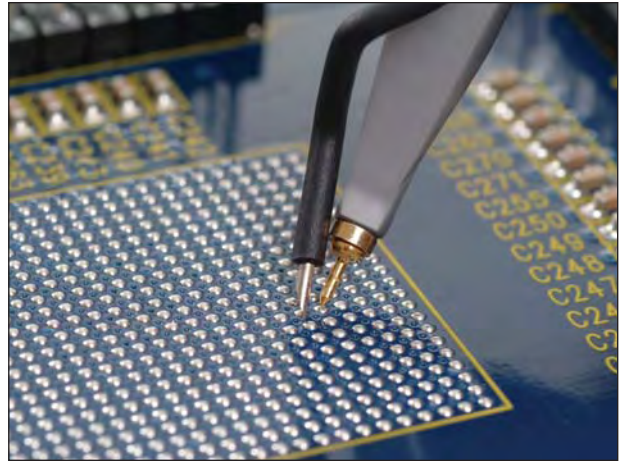
| | | |
|--------------------------------------|----------|----------|
| Instruction Manual, English | | |
| Color Coding Clips (set of 4 colors) | | |
| Certificate of Calibration | | |
| 1-Year Warranty | | |
| Straight Probe Tip (PK-ZS-001) | 4 | 4 |
| Offset Ground (PK-ZS-002) | 2 | 2 |
| Short Lead (PK-ZS-003) | 1 | 1 |
| Long Lead (PK-ZS-004) | 1 | 1 |
| Y Lead Adapter (PK-ZS-005) | 1 | 1 |
| Right Angle Connector (PK-ZS-006) | 1 | 1 |
| Sprung Hook Red (PK-ZS-007R) | 1 | 1 |
| Sprung Hook Black (PK-ZS-007B) | 1 | 1 |
| Ground Blade (PK-ZS-008) | 1 | 1 |
| Copper Pad (PK-ZS-009) | 2 | 2 |
| Color Coding Rings (PK-ZS-010) | 4 (sets) | 4 (sets) |

ACTIVE VOLTAGE PROBES

EXTENSIVE SET OF PROBE TIPS AND GROUND LEADS FOR A WIDE RANGE OF PROBING SCENARIOS



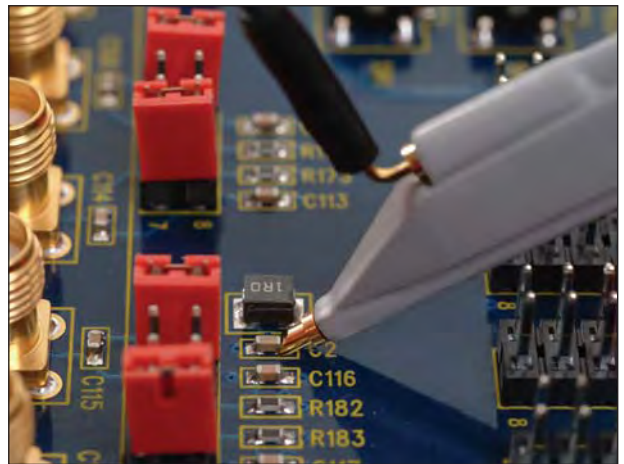
Use the Solder-In Ground with Straight Tip for general purpose browsing.



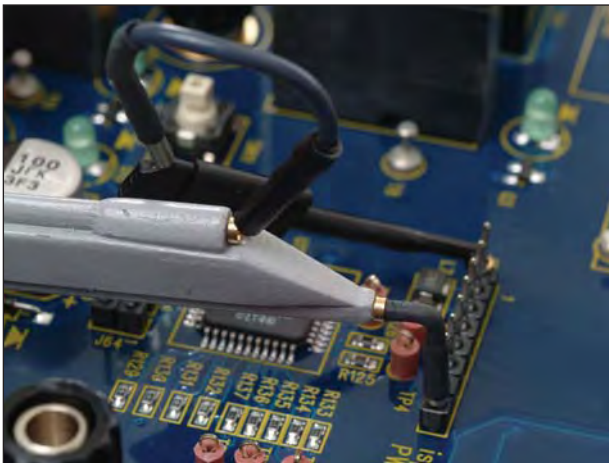
The Straight Tip and Offset Ground Lead can be used together for probing signal and ground points extremely close together.



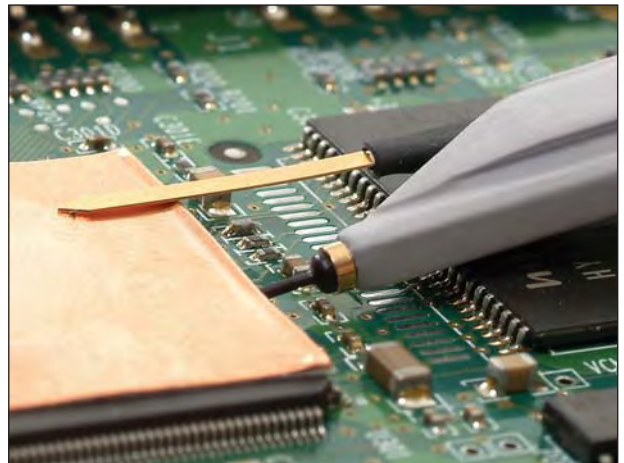
Hard-to-reach spaces can be probed with the Bent Sharp Tip and can be used with a range of ground leads like the flexible Short Right-angle Lead shown here.



Probe directly on surface mount components, like resistors or capacitors, with the Discrete SMD Tip. Use this tip with any of the ground leads, like the flexible Long Right-angle Lead shown here.



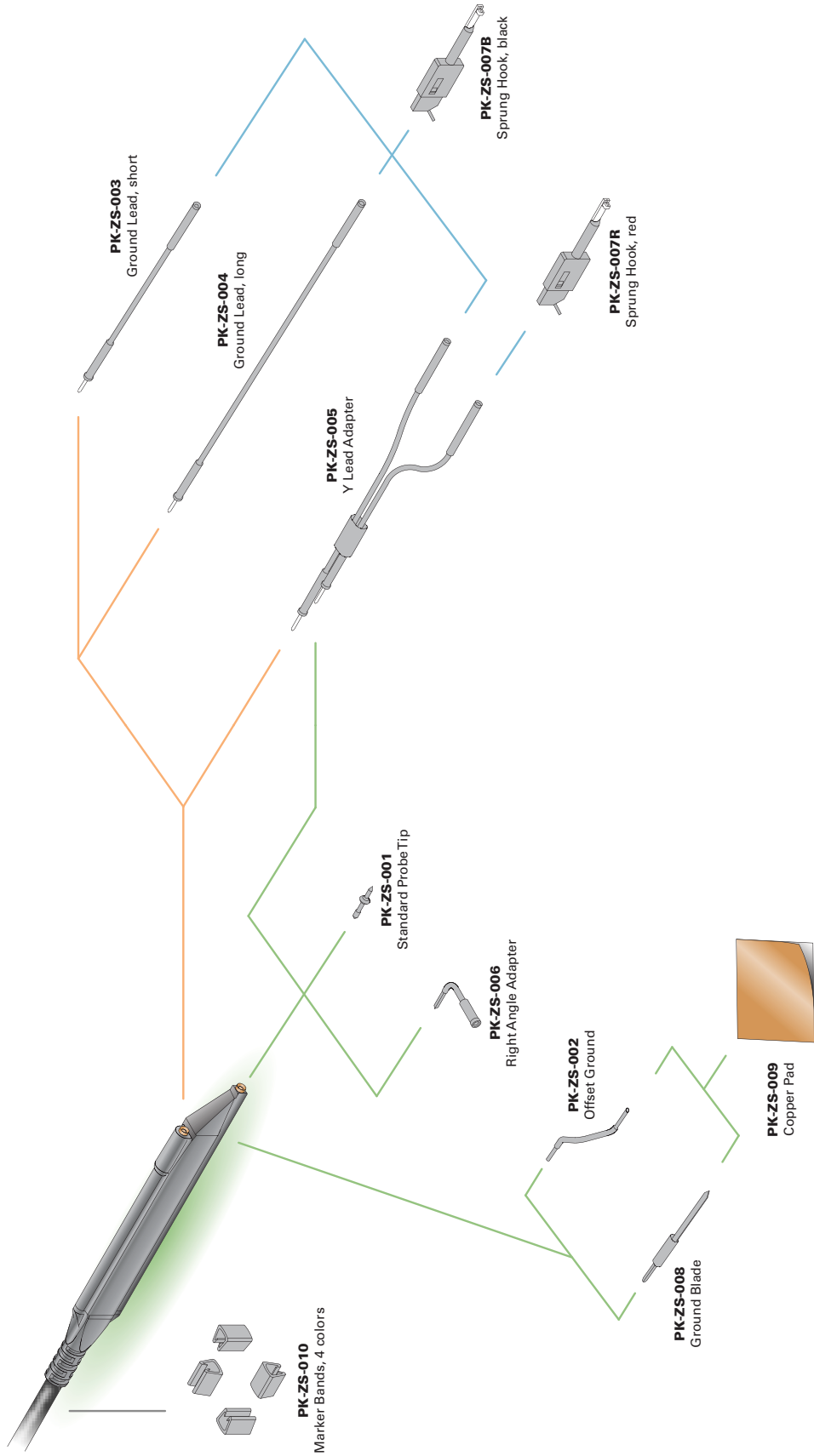
Use the Right-angle Connector and the Sprung Hook to probe square pins spaced far apart from each other.



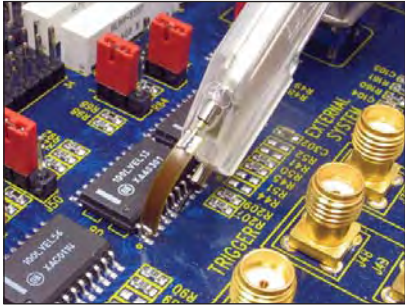
The Ground Blade and Copper Pad provide the shortest ground loop for excellent signal fidelity when probing an IC. Use them with the insulated IC Lead Tip to prevent shorting between test points.

ACTIVE VOLTAGE PROBES

| ORDERING INFORMATION | PRODUCT CODE |
|--|----------------|
| (Set of 4) ZS1500 Active Probes | ZS1500-QUADPAK |
| (Set of 4) ZS1000 Active Probes | ZS1000-QUADPAK |
| 1.5 GHz, 1 M Ω , 0.9 pF Active Probe | ZS1500 |
| 1 GHz, 1 M Ω , 0.9 pF Active Probe | ZS1000 |
| REPLACEMENT ACCESSORIES | |
| Replacement Accessory Kit for ZS Series Probes | PK-ZS |
| Straight Probe Tip | PK-ZS-001 |
| Offset Ground | PK-ZS-002 |
| Short Lead | PK-ZS-003 |
| Long Lead | PK-ZS-004 |
| Y Lead Adapter | PK-ZS-005 |
| Right-Angle Connector | PK-ZS-006 |
| Sprung Hook – Red | PK-ZS-007R |
| Sprung Hook – Black | PK-ZS-007B |
| Ground Blade | PK-ZS-008 |
| Copper Pad | PK-ZS-009 |
| Color Coding Rings | PK-ZS-010 |
| AVAILABLE ACCESSORIES | |
| IC Lead Tip | PACC-PT003 |
| Discrete SMD Tip | PACC-PT004 |
| Bent Sharp Tip | PACC-PT005 |
| Solder-In Ground | PACC-CD007 |
| Bendable Pogo Ground | PACC-CD008 |
| Ground Spring Hook | PACC-LD001 |
| Square Pin Ground Spring | PACC-LD002 |
| Short Right-angle Lead | PACC-LD003 |
| Long Right-angle Lead | PACC-LD004 |



Accessories for ZS Series High Impedance Active Probes



HFP2500

HFP1500

HFP1000

ACTIVE VOLTAGE PROBES

HFP ACTIVE PROBES

LeCroy's series of HFP active probes are versatile, small and lightweight, yet still maintain the high bandwidth needed for accurate measurement. Five interchangeable tips facilitate access regardless of tight fits and difficult locations. The FreeHand probe holder brings added versatility, allowing several probes to be used at the same time on a variety of test points while maintaining the short paths needed to preserve signal fidelity. The HFP probes also offer AutoColor ID, which automatically illuminates the probe head in a connected oscilloscope's trace color. This unique capability eliminates the need to manually apply plastic rings or colored tape to determine which channel the probe is connected to.

Features:

- 1 GHz to 3.5 GHz bandwidth
- 0.7 pF input capacitance
- ± 8 V dynamic range
- ± 12 V offset range (except HFP1000)
- 5 interchangeable tips for probing a variety of test points
- Replaceable probe tip socket
- Hands-free probing with FreeHand probe holder
- AutoColor ID feature matches the channel trace color

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

BANDWIDTH (PROBE ONLY)

| | |
|-----------------------------------|--|
| HFP1000 | 1 GHz |
| HFP1500 | 1.5 GHz |
| HFP2500 | 2.5 GHz |
| Input Capacitance | 0.7 pF at 1 GHz |
| DC Input Resistance | 100 k Ω |
| Input Dynamic Range | ± 8 V |
| Probe Offset Range | N/A (HFP1000) ± 12 V (HFP1500, HFP2500) |
| Attenuation | $\div 10$ |
| Attenuation Accuracy | $\pm 1\%$ |
| Output Zero | < 4 mV, referred to input |
| Offset Accuracy (n/a for HFP1000) | $\pm (1\% \text{ of offset value} + 4 \text{ mV})$ |

GENERAL CHARACTERISTICS

| | |
|-----------------------|---|
| Cable Length | 1.3 m |
| Probe Head Size (LWH) | 61 mm x 7.3 mm x 13.1 mm |
| Input Sockets | Signal and ground sockets compatible with 0.635 mm (0.025") square pins, 0.91 mm (0.036") maximum diameter (for round pins) |

INCLUDED WITH STANDARD CONFIGURATION

Instruction Manual, English
Certificate of Calibration
1-year Warranty

ACTIVE VOLTAGE PROBES ACCESS.

INCLUDED WITH STANDARD CONFIGURATION

| | HFP1000 | HFP1500 | HFP25000 |
|-------------------------------|---------|---------|----------|
| Straight Tip | 4 | 4 | 4 |
| Sharp Tip | 4 | 4 | 4 |
| Bent Tip | | 4 | 4 |
| Discrete SMD Tip | | 4 | 4 |
| IC Lead Tip | | 4 | 4 |
| Square Pin Ground Spring | 1 | 1 | 1 |
| Flexible IC Ground | 1 | 1 | 1 |
| Bendable Pogo Ground | 1 | 1 | 2 |
| Solder-In Ground | 1 | 1 | 2 |
| Short Single Lead | | 1 | 1 |
| Long Single Lead | | 1 | |
| Right-angle Short Single Lead | 1 | 2 | 1 |
| Right-angle Long Single Lead | 1 | 2 | 1 |
| Clips (0.8 mm) | 2 | 2 | 2 |
| FreeHand Probe Holder | | 1 | 1 |
| Replaceable Cartridge | 1 | 1 | 1 |
| Microclips (0.5 mm) | | | 2 |
| Low C Tip Cartridge | | | 1 |
| Soft Accessory Case | | 1 | 1 |

ORDERING INFORMATION

PRODUCT CODE

| | |
|--|--------------|
| 1 GHz, 0.7 pF Active Probe (± 10), Small Form Factor | HFP1000 |
| 1.5 GHz, 0.7 pF Active Probe (± 10), Small Form Factor | HFP1500 |
| 2.5 GHz, 0.7 pF Active Probe (± 10), Small Form Factor | HFP2500 |
| Standard Accessory Kit for HFP2500 | PK108 |
| Standard Accessory Kit for HFP1500 | PK109 |
| Standard Accessory Kit for HFP1000 | PK110 |
| Soft Accessory Case | SAC-01 |
| Straight Tip | PACC-PT001 |
| Sharp Tip | PACC-PT002 |
| IC Lead Tip | PACC-PT003 |
| SMD Discrete Tip | PACC-PT004 |
| Bent Sharp Tip | PACC-PT005 |
| Freehand Probe Holder | PACC-MS001 |
| Replaceable Cartridge | PACC-MS002 |
| Low C Cartridge | PACC-MS003 |
| Solder-In Ground | PACC-CD007 |
| Bendable Pogo Ground | PACC-CD008 |
| Flexible IC Ground | PACC-CD009 |
| Ground Spring Hook | PACC-LD001 |
| Square Pin Ground Spring | PACC-LD002 |
| Short Right-angle Lead | PACC-LD003 |
| Long Right-angle Lead | PACC-LD004 |
| Short Single Lead | PACC-LD005 |
| Long Single Lead | PACC-LD006 |
| 0.8 mm Clips | PK006-4 |
| Microclip | PACC-CL001 |
| HFP1000 Instruction Manual, English | HFP1000-OM-E |
| HFP1500 Instruction Manual, English | HFP1500-OM-E |
| HFP2500 Instruction Manual, English | HFP2500-OM-E |



PPO66

HIGH-BANDWIDTH TRANSMISSION LINE

The PP066 is a high-bandwidth passive probe designed for use with the WaveMaster and other high-bandwidth oscilloscopes with 50 Ω input termination. This very low capacitance probe provides an excellent solution for higher frequency applications, especially the probing of transmission lines with 20–100 Ω impedance. The PP066 accommodates a wide range of applications, including probing of analog and digital ICs commonly found in computer, communications, data storage, and other high-speed designs.

Features:

- Interchangeable attenuator tips
- Signal integrity at high bandwidth
- Standard SMA cable connection
- Ultra low capacitance

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

| | |
|-----------------|---|
| Bandwidth | DC to 7.5 GHz |
| Risetime | < 47 ps |
| Input C | < 0.20 pF |
| Input R | 500 Ω (\div 10 cartridge) 1000 Ω (\div 20 cartridge) |
| Maximum Voltage | 15 V rms |
| Cable Length | 1 m |



PPO65

The PP065 is a transmission line probe designed for use at very high frequencies. The probe's input impedance remains nearly constant over its entire frequency range. Robust to over voltage and ESD exposure, it is particularly useful in applications producing fast rising, narrow pulses with amplitudes, which exceed the dynamic range of active probes.

Features:

- 1 GHz
- Low capacitance
- \div 100 1 GHz 5 k Ω passive probe

SPECIFICATIONS

| | |
|-------------------|--|
| Input R Ohm | 500 Ω |
| Maximum Voltage | 22 V |
| Compatibility | LCXXX, 93XX, LA314, LA354, WaveRunner, and WavePro Scopes |
| Bandwidth | 1 GHz |
| Attenuation | 100:1 |
| Input Capacitance | 1.5 pF |

ORDERING INFORMATION

PRODUCT CODE

| | |
|---|-------|
| 7.5 GHz Low Capacitance Passive Probe (\div 10, 1 k Ω ; \div 20, 500 Ω) | PP066 |
| 1 GHz Low Capacitance Passive Probe (\div 10, 5 k Ω) | PP065 |

INCLUDED WITH PP066 PROBE

| | |
|------------|--------------------|
| PACC-AD001 | SMA to BNC Adapter |
|------------|--------------------|

DIFFERENTIAL PROBES

High bandwidth, excellent common-mode rejection ratio (CMRR) and low noise make these active differential probes ideal for applications such as disk drive design and failure analysis, as well as wireless and data communication design. With the ProBus interface, the AP034 and AP033 become an integral part of the oscilloscope, allowing sensitivity, offset and common-mode range to be displayed on the scope screen. Common mode sensing and input protection capabilities of the AP033 add additional functionality.



AP034

AP033

Features for both probes:

- 500 MHz (**AP033**) and 1 GHz (**AP034**) bandwidths
- x10 gain to ÷ 10 attenuation range (**AP033**)
- 10,000:1 DC CMRR
- Low 9 nV/√Hz noise (**AP033**)
- 1.5 pF/side input C (**AP034**)
- 200 μV/div (**AP033**)
- Input ESD protection
- Autozero feature

SPECIFICATIONS

| | AP034 | AP033 |
|-------------------------|--|---|
| Bandwidth | 1 GHz | 500 MHz |
| Gain | x1 (÷10 and ÷20 with plug-on attenuators) | x10, x1, ÷10 (÷100 with plug-on ÷10 attenuator) |
| DC Accuracy | 2% typical (probe only) | 1% in x1 without external attenuator |
| Input Resistance | 1 MΩ 1.5 pF each input to ground 2 MΩ 0.85 pF between inputs | 1 MΩ each input to ground 2 MΩ differential between inputs |
| Differential Mode Range | ±400 mV (x1) ±4 V (÷10) ±8 V (÷20) | ±400 mV (x1) ±40 mV (x10) ±4 V (÷10) ±40 V (÷100) |
| Offset Range | ±1.6 V (x1) ±16 V (±10) ±32 V (±20) | ±400 mV (x1, x10) ±4 V (±10) ±40 V (±100) |
| Common-Mode Range | ±16 V (x1) ±42 V (±10) +42 V (±20) | ±42 V peak (±10) +4.2 V peak (±100) |
| CMRR | 70 Hz 10,000:1 (80 dB) 1 MHz 100:1 (40 dB) 100 MHz 18.1 (25 dB) 500 MHz 9:1 (19 dB) | 70 Hz 10,000:1 (80 dB) 100 kHz 10,000:1 (80 dB) 1 MHz 1000:1 (60 dB) 10 MHz 100:1 (40 dB) 250 MHz 5:1 (14 dB) |

DIFFERENTIAL PROBES

SPECIFICATIONS (CONTINUED)

| | AP034/AP033 |
|---|---|
| Max. Nondestruct Voltage | ±200 VDC continuous |
| Cable Length | 1.2 m |
| Operating Temperature | 0 °C to 50 °C |
| Standard Accessories | ÷10 Plug-on Attenuator ÷20 Plug-on Attenuator (AP034 only) Plug-on AC Coupler |
| Probe Connection Accessory Kit | Flex Lead Set (1) Input 'Y' Lead (1) Mini Clip, 0.8 mm (3) Mini Clip, 0.5 mm (2) Ground Lead (1) Offset Pins, Round (4) Square Pin Header Strip (1) |
| Warranty | 1 year |
| PK033 – Standard Probe Accessory Kit for AP033/AP034 | |
| Dual Lead | AP03X-FLEX-LEAD |
| Single Lead | NA |
| Offset Pin (package of 10) | AP03X-OFFSET-PIN |
| 0.5 mm Clip (red and black) | PK006-3 |
| 0.8 mm Clip (red and black) | PK006-4 |
| 1x6 Square Pin Header | NA |
| Other Accessories for AP033/AP034 | |
| AC Coupler | AP03X-AC-COUPLER |
| ÷10 Attenuator for AP033 | AP033-ATTN |
| ÷10 Attenuator for AP034 | AP034-DA10 |
| ÷20 Attenuator for AP034 | AP034-DA20 |

ORDERING INFORMATION

PRODUCT CODE

| | |
|--|-------|
| 1 GHz Active Differential Probe (÷1, ÷10, ÷20) | AP034 |
| 500 MHz Active Differential Probe (x10, ÷1, ÷10 or ÷100) | AP033 |

HIGH VOLTAGE PASSIVE PROBES

The PPE series includes five fixed-attenuation probes covering a range from 2 kV to 20 kV, and one switchable probe providing $\div 10/\div 100$ attenuation for voltage inputs up to 1.2 kV. All fixed-attenuation, standard probes automatically rescale compatible LeCroy oscilloscopes for the appropriate attenuation of the probe.

Features:

- Safe, accurate high-voltage measurement
- 1.2 kV to 20 kV

HIGH-VOLTAGE PROBES SELECTION GUIDE SPECIFICATIONS

| Types | Bandwidth (MHz) | Input R (Ω) | Input C (pF) | Attenuation | Maximum Voltage | Probe Encoding | Cable |
|-----------|--------------------|-------------------------|-----------------|----------------------|-----------------------|-------------------|-------|
| PPE1.2kV* | 400 | 50 M | < 6 | $\div 10 / \div 100$ | 600 V/1.2 kV | No | 2 m |
| PPE2kV* | 400 | 50 M | < 6 | $\div 100$ | 2 kV | Yes | 2 m |
| PPE4kV* | 400 | 50 M | < 6 | $\div 100$ | 4 kV | Yes | 2 m |
| PPE5kV* | 400 | 50 M | < 6 | $\div 100$ | 5 kV | Yes | 2 m |
| PPE6kV* | 400 | 50 M | < 6 | $\div 1000$ | 6 kV | Yes | 2 m |
| PPE20kV† | 100 | 50 M | < 2 | $\div 1000$ | 20 kV (40 kV peak) | Yes | 3 m |



PPE1.2KV

PPE2KV

PPE4KV

PPE5KV

PPE6KV

PPE20KV

ORDERING INFORMATION

PRODUCT CODE

| | |
|--|-----------|
| $\div 10/\div 100$; 200/300 MHz; 5 M Ω /50 M Ω High-Voltage Probe 600 V/1.2 kV max. Voltage DC | PPE1.2KV |
| $\div 1000$; 100 MHz; 50 M Ω High-Voltage Probe 20 kV (40 kV Peak) max. Voltage DC and Peak AC | PPE20KV |
| $\div 100$; 400 MHz; 50 M Ω High-Voltage Probe 2 kV max. Voltage DC and Peak AC | PPE2KV |
| $\div 100$; 400 MHz; 50 M Ω High-Voltage Probe 4 kV max. Voltage DC and Peak AC | PPE4KV |
| $\div 100$; 400 MHz; 50 M Ω High-Voltage Probe 5 kV max. Voltage DC and Peak AC | PPE5KV |
| $\div 1000$; 400 MHz; 50 M Ω High-Voltage Probe 6 kV max. Voltage DC and Peak AC | PPE6KV |
| Accessory Kit for PPE1.2kV, 2kV, 4kV, 5kV, and 6kV | PK103 |
| Standard Probe Accessory Kit for PPE20kV | PK104 |
| Ground Lead (15 cm) | PK104-1 |
| Hook | PK104-2 |
| Standard Probe Accessory Kit for PPE1.2kV, PPE2kV | PK103 |
| Sprung Hook (red) | PK103-1 |
| Ground Lead (22 cm) | PP005-G22 |
| Crocodile Clip | PK30x-2 |
| Probe Tip to BNC Adapter | PP005-BNC |
| IC Insulating Tip | |
| Screw Driver | |
| Probe Tip to Banana Plug Adapter | |
| Ground Lead with Banana Plug | |
| Spring Tip (0.8 mm) | PP005-ST8 |
| Rigid Tip V2A | PP005-RT |

STANDARD ACCESSORY KIT FOR PPE20KV

| | |
|---------------------|---------|
| Ground Lead (15 cm) | PK104-1 |
| Hook | PK104-2 |

Supplied with probe:

* Probe Kit: Trimming tool, ground lead, rigid tip, IC insulator, BNC adapter, tip insulator, sprung hook, red crocodile clip.
4mm safety ground lead, and green/yellow crocodile clip.

† Probe Kit: trimming tool, and ground lead with a crocodile clip.



APO31

HIGH VOLTAGE DIFFERENTIAL PROBES

The AP031 is a low cost, battery operated active differential probe intended for measuring higher voltages. The differential techniques employed permit measurements to be taken at two points in a circuit without reference to the ground, allowing the oscilloscope to be safely grounded without the use of opto-isolators or isolating transformers.

Features:

- Safe floating measurements
- 15 MHz bandwidth
- 700 V maximum input voltage
- Works with any 1 M Ω input oscilloscope

SPECIFICATIONS

| | |
|----------------------------------|--|
| Attenuation | $\div 10 / \div 100$ |
| Bandwidth | 15 MHz |
| Input R | 4 M Ω |
| Differential Mode Range | $\pm 70 \text{ V} / \pm 700 \text{ V DC} + \text{Peak AC}$ |
| Common Mode Range | $\pm 700 \text{ V DC} + \text{Peak AC}$ |
| CMRR | 86 dB @ 50 Hz |
| Power Source (four AA batteries) | 56 dB @ 200 kHz |



ADP305

ADP300

ORDERING INFORMATION

PRODUCT CODE

700 V, 15 MHz Differential Probe ($\div 10, \div 100$)

AP031

ADP30X high-voltage active probes are safe, easy-to-use, and ideally suited for measuring power electronics. The ADP300 is designed for troubleshooting low-frequency power devices and other circuits where the reference potential is elevated from the ground or the location of the ground is unknown. The ADP305 is designed for measuring the high-speed floating voltages found in today's power electronics.

Features:

- 20 MHz and 100 MHz bandwidth
- 1,000 V rms common mode voltage
- 1,400 V peak differential voltage
- EN 61010 CAT III
- 80 dB CMRR at 50/60 Hz
- ProBus system
- Full remote control

HIGH VOLTAGE DIFFERENTIAL PROBES

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

| | | |
|--------------------------------------|--|------------------|
| Bandwidth | 20 MHz (ADP300) | |
| | 100 MHz (ADP305) | |
| Differential Voltage | 1,400 V peak | |
| Common Mode Voltage | 1,000 V rms CAT III | |
| Low-Frequency Accuracy (probe only) | 1% of Reading | |
| CMRR | 50/60 Hz | 80 dB (10,000:1) |
| | 100 kHz | 50 dB (300:1) |
| Max. Slew Rate (referenced to input) | 60,000 V/μs (ADP300) | |
| | 300,000 V/μs (ADP305) | |
| AC Noise (referenced to input) | 50 mV rms | |
| Attenuation | ÷100/÷1000 (automatically selected by scope) | |
| Input Impedance | Between inputs | 8 MΩ, 6 pF |
| | Each input to ground | 4 MΩ, 1 pF |
| Sensitivity | 1 V/div to 350 V/div (ADP300) | |
| | 200 mV/div to 350 V/div (ADP305) | |
| Interface | ProBus, 1 MΩ* | |

GENERAL CHARACTERISTICS

| | |
|-----------------------|---------------------------|
| Overall Length | 2 m |
| Input Connectors | 4 mm Shrouded Banana Plug |
| Operating Temperature | 0 °C to 50 °C |
| Warranty | 1 year |

STANDARD ACCESSORIES

ADP305

All ADP300 Accessories

Safety Spade (1 Red, 1 Blue)
 Plunger Clamp Clip (1 Red, 1 Blue)
 Plunger Jaw Clip (1 Red, 1 Blue)
 Safe Alligator Clip (1 Red, 1 Blue)
 Soft Accessory Case

ADP300

Instruction Manual
 Certification of Calibration
 Plunger Hook Clip (1 Red, 1 Blue)
 Straps for Holding Probe

*Requires AP-1M for oscilloscopes with 50 Ω only inputs

ORDERING INFORMATION

PRODUCT CODE

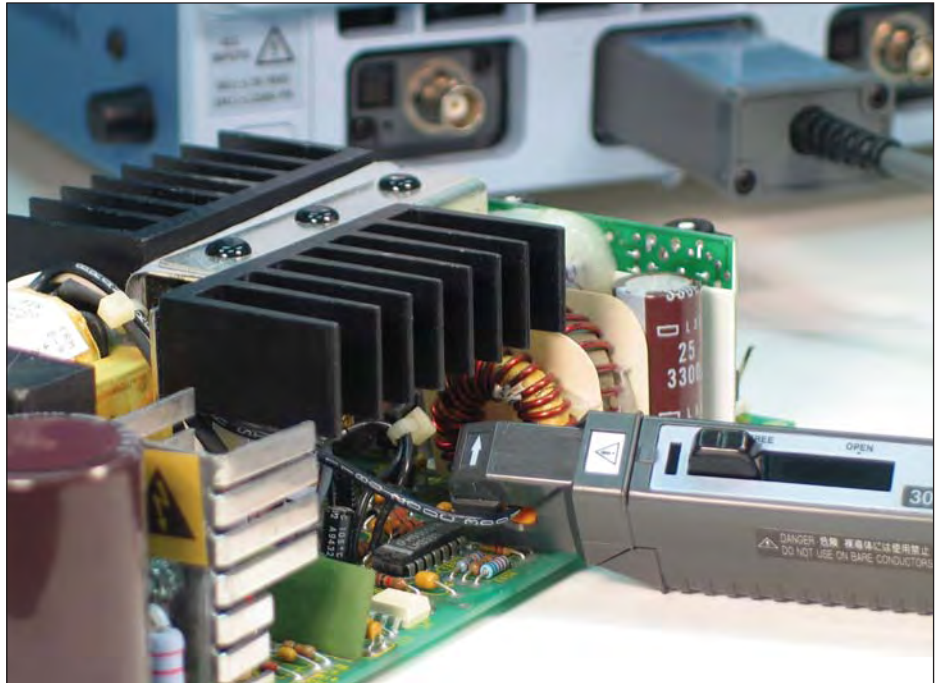
1,400 V, 100 MHz High-Voltage Differential Probe

ADP305

1,400 V, 20 MHz High-Voltage Differential Probe

ADP300

CURRENT PROBES



Accurately measure AC, DC, and impulse currents.

MEASURE CURRENTS IN A WIDE RANGE OF APPLICATIONS

Measuring AC and DC Currents

LeCroy current probes do not require the breaking of a circuit or the insertion of a shunt to make accurate and reliable current measurements. Based on a combination of Hall effect and transformer technology, LeCroy current probes are ideal for making accurate AC, DC, and impulse current measurements.

Fully Integrated with Oscilloscope

Many current probes require external power supplies or amplifiers to display a waveform on the oscilloscope screen. All LeCroy current probes are powered through the LeCroy ProBus connection and require no additional hardware. Along with providing power, the ProBus connection allows the current probe and oscilloscope to communicate, resulting in current waveforms automatically displayed on screen in Amps, and calculated power traces scaled correctly in Watts. This full integration also allows for Degauss and Autozero functions to be done directly from the oscilloscope with a single button press.

Applications

LeCroy current probes are available in a wide range of models for a wide range of applications. The full range of LeCroy current probes includes models with bandwidths up to 100 MHz, peak currents up to 700 A and sensitivities to 10 mA/div. Multiple current probes can be used together to make measurements on three-phase systems, or a single current probe can be used with a voltage probe to make accurate instantaneous power measurements. LeCroy current probes are often used in applications such as the design and test of switching power supplies, motor drives, electric vehicles, and uninterruptible power supplies.

CURRENT PROBES

CP031 – 30A, 100 MHz

The CP031 is LeCroy's highest bandwidth current probe. Along with the high 100 MHz bandwidth the CP031 can probe continuous currents of 30 A_{rms} and peak currents up to 50 A. The CP031 features a small form factor making it easier to probe on a crowded, compact board.

Features:

- 100 MHz bandwidth
- Small form factor accommodates large conductors with small jaw size
- 30 A_{rms} continuous current, 50 A_{peak} current



CP031

CP030 – 30 A, 50 MHz

The CP030 was designed with a small form factor for today's crowded boards. The small jaw can probe currents in tight spaces and still clamp onto conductors up to 5 mm in diameter. Continuous currents of 30 A_{rms} and peak currents of 50 A can be measured by the CP030, which also features a 50 MHz bandwidth.

Features:

- Small form factor accommodates large conductors with small jaw size
- 30 A_{rms} continuous current, 50 MHz bandwidth
- 50 A_{peak} current



CP030

AP015 – 30 A, 50 MHz

The AP015 current probe can measure continuous current of 30 A_{rms} and peak pulses of up to 50 A for durations up to 10 seconds. This probe also features an overheating protection circuit, which will display an on-screen warning to the user to prevent damage. A probe unlock detection feature is also built in to the AP015 to ensure accurate measurements.

Features:

- 30 A_{rms} continuous current, 50 MHz bandwidth
- 50 A_{peak} current for up to 10 seconds
- Overheating and Probe Unlock Detection



AP015

CP150 – 150 A, 10 MHz

Features:

- 150 A_{rms} continuous current
- 500 A_{peak}
- 10 MHz bandwidth



CP150

CP500 – 500 A, 2 MHz

Features:

- 500 A_{rms} continuous current
- 700 A_{peak}
- 2 MHz bandwidth



CP500

CURRENT PROBES

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

| | CP031*† | CP030*† |
|----------------------------------|--------------|--------------|
| Max. Continuous Input Current | 30 A | 30 A |
| Bandwidth | 100 MHz | 50 MHz |
| Max. Peak Current at Pulse Width | 50 A ≤ 10 μs | 50 A ≤ 10 μs |
| Rise Time (typical) | ≤ 3.5 ns | ≤ 7 ns |
| Minimum Sensitivity | 20 mA/div | 20 mA/div |
| Max. In-Phase Current | – | – |
| Low-Frequency Accuracy | 1% | 1% |
| AC Noise | ≤ 2.5 mA | ≤ 2.5 mA |
| Coupling | AC, DC, GND | AC, DC, GND |

GENERAL CHARACTERISTICS

| | CP031*† | CP030*† |
|--------------------------------|---------------------------|--------------------|
| Cable Length | 1.5 m | 1.5 m |
| Weight | 240 g | 240 g |
| Max. Conductor Size (diameter) | 5 mm | 5 mm |
| Interface | ProBus, 1 MΩ only‡ | ProBus, 1 MΩ only‡ |
| Usage Environment | Indoor | Indoor |
| Operating Temperature | 0 °C to 40 °C | 0 °C to 40 °C |
| Max. Relative Humidity | 80% | 80% |
| Max. Altitude | 2000 m | 2000 m |
| Maximum Insulated Wire Voltage | 300 V CAT I, 150 V CAT II | 300 V CAT I |

* Guaranteed at 23 °C ±3 °C

† The CP031 and CP030 are compatible with LeCroy X-Stream oscilloscopes running firmware version 4.3.1.1 or greater.

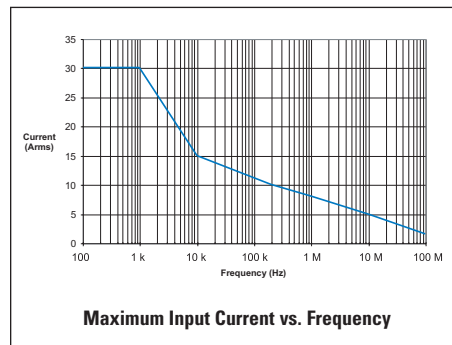
‡ Requires AP-1M for use with 50 Ω input only oscilloscopes.

ORDERING INFORMATION

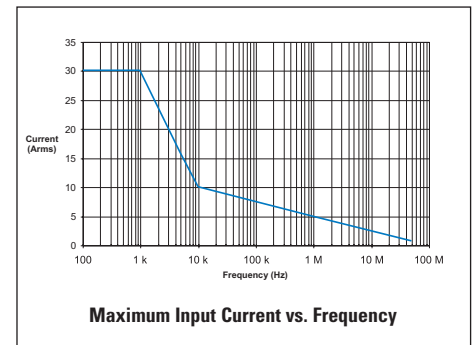
PRODUCT CODE

| | |
|---|-------|
| 30 A; 100 MHz Current Probe – AC/DC; 30 A _{rms} ; 50 A _{peak} Pulse | CP031 |
| 30 A; 50 MHz Current Probe – AC/DC; 30 A _{rms} ; 50 A _{peak} Pulse | CP030 |
| 30 A; 50 MHz Current Probe – AC/DC; 30 A _{rms} ; 50 A _{peak} Pulse | AP015 |
| 150 A; 10 MHz Current Probe – AC/DC; 150 A _{rms} ; 500 A _{peak} Pulse | CP150 |
| 500 A; 2 MHz Current Probe – AC/DC; 500 A _{rms} ; 700 A _{peak} Pulse | CP500 |

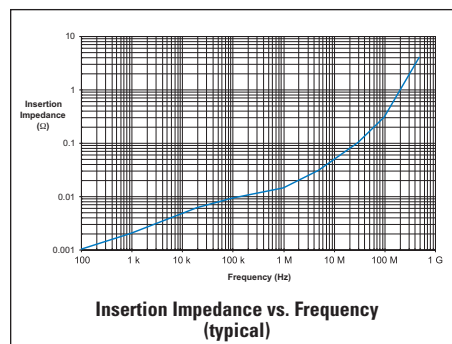
CP031 – 30 A, 100 MHz



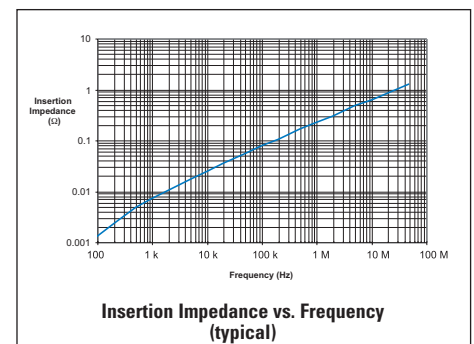
CP030 – 30 A, 50 MHz



CP031 – 30 A, 100 MHz



CP030 – 30 A, 50 MHz



CURRENT PROBES

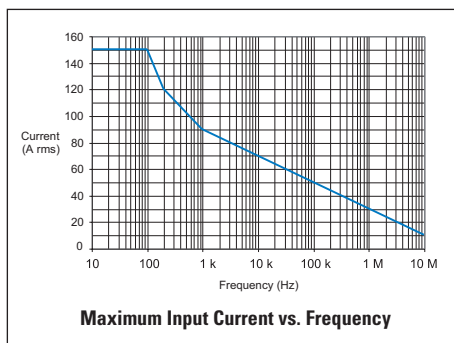
| AP015 | CP150 | CP500 |
|--------------------------------|--------------------------------|--------------------------------|
| 30 A | 150 A | 500 A |
| 50 MHz | 10 MHz | 2 MHz |
| 50 A ≤ 10 s | 500 A ≤ 30 μs | 700 A |
| ≤ 7 ns | < 35 ns | < 175 ns |
| 10 mA/div | 200 mA/div | 200 mA/div |
| – | 500 A | 1150 A |
| 1% | 1% | 1% |
| | ≤ 25 mA | 25 mA |
| AC, DC, GND | AC, DC, GND | AC, DC, GND |
| 2 m | 2 m | 6 m |
| 300 g | 500 g | 630 g |
| 5 mm | 20 mm | 20 mm |
| ProBus, 1 MΩ only [‡] | ProBus, 1 MΩ only [‡] | ProBus, 1 MΩ only [‡] |
| Indoor | Indoor | Indoor |
| 0 °C to 40 °C | 0 °C to 40 °C | 0 °C to 40 °C |
| 80% | 80% | 80% |
| 2000 m | 2000 m | 2000 m |
| 300 V CAT I | 600 V CAT II, 300 V CAT III | 600 V CAT II, 300 V CAT III |

* Guaranteed at 23 °C ±3 °C

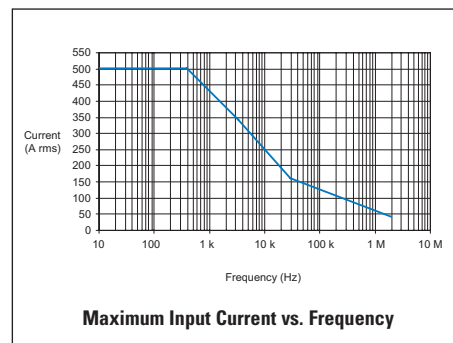
† The CP031 and CP030 are compatible with LeCroy X-Stream oscilloscopes running firmware version 4.3.1.1 or greater.

‡ Requires AP-1M for use with 50 Ω input only oscilloscopes.

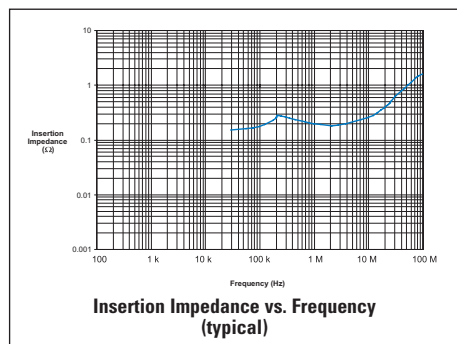
CP150 – 150 A, 10 MHz



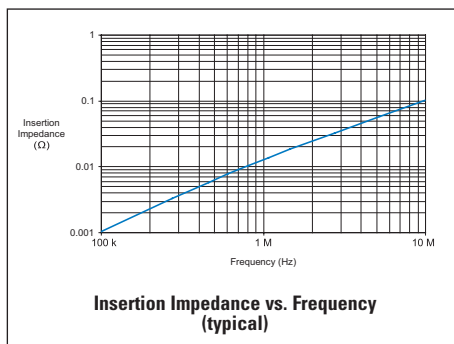
CP500 – 500 A, 2 MHz



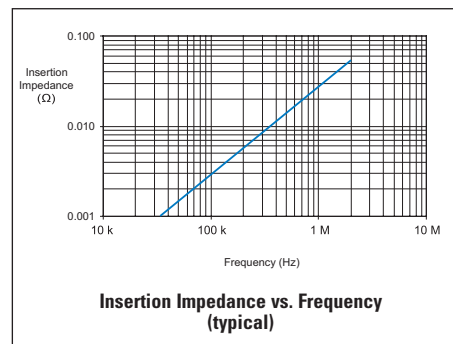
AP015 – 30 A, 50 MHz

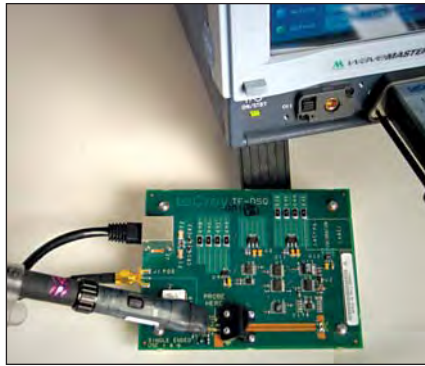


CP150 – 150 A, 10 MHz



CP500 – 500 A, 2 MHz





TF-DSQ

PROBE DESKEW AND CALIBRATION

The TF-DSQ fixture facilitates calibration of timing measurements in single-ended and differential probes—a unique concern in high-speed measurements. By requiring only one connection of a probe to the fixture and one button press, the TF-DSQ ensures probe calibration results that are valid for the duration that the probe is connected to the circuit. An extremely fast edge with 75 ps risetime combines with probe gain and offset calibration capabilities for added accuracy.

Features:

- Deskews to ± 20 ps typical accuracy
- Differential and single-ended drive
- 75 ps edge for precise deskewing
- Calibrates gain, offset and skew at the same probing point
- Accounts for risetime variations
- Accounts for common-mode voltage variations
- DC gain calibration accounts for probe loading effects
- Integrated operation with scope for fully automatic calibration

SPECIFICATIONS

SCOPE COMPATIBILITY

(requires software version 3.6.0 or later)

SCOPES

WaveMaster (**WM8420A and WM8620A including all WaveMaster XXL models**)

Serial Data Analyzers (**SDA 18000, SDA 11000, SDA 9000, SDA 4020, and SDA 6020 including all SDA XXL models**)

Disk Drive Analyzers (**DDA 5005A and 5005A XXL**)

Scope Connection

ProLink

Probes Supported

WL600 and WL300 with all Probing Accessories PP
AP033, AP034, PP066
HFP1000, HFP1500, HFP2500,
ZS1500, ZS1000, D11000PS, DA18000

DC Range

± 5 V Single-ended, ± 10 V Differential

DC Accuracy

$\pm(1\% + 600 \mu\text{V})$

Edge Risetime

75 ps (typical) < 95 ps (guaranteed)

Edge Amplitude and Rep Rate

Approximately 800 mV @ 10 MHz

Deskew Accuracy

± 20 ps (typical)

ORDERING INFORMATION

PRODUCT CODE

Probe Deskew and Calibration Fixture

TF-DSQ

Included: ProLink Extender 48" 50 ohm Cable with Male SMA Connectors Calibration Certificate Operator's Manual Soft Accessory Case

EZ PROBE POSITIONER

The EZ-Probe Positioner provides stable, accurate X, Y and Z positioning in one fluid motion. Its unique 3-D joystick, with 3:1 motion reduction and single-clutch, fully-articulating arm, allow simple, precise positioning in anything from card cages to MCMs. Any current handheld probes can be easily attached, facilitating the measurement process and ensuring more precise connectivity.

ORDERING INFORMATION

Cascade Microtech EZ-Probe Positioner

PRODUCT CODE

EZ PROBE



EZ PROBE

ADPPS

Power Adapter for AP033, AP034 and HFP1000 Active Probes; allows the probe's output to be connected to other non-ProBus test equipment, including spectrum and network analyzers.

ORDERING INFORMATION

ProBus-to-BNC and Power Adapter for AP033, AP034, and HFP Series (BW limited to 1 GHz)

PRODUCT CODE

ADPPS



ADPPS

TRANSIT CASE

Soft Accessory Case for probes—features inside flap for storing manuals, plus roomy interior for a probe and its many accessories.

ORDERING INFORMATION

Soft Accessory Case for Probes

PRODUCT CODE

SAC-01



SAC-01

