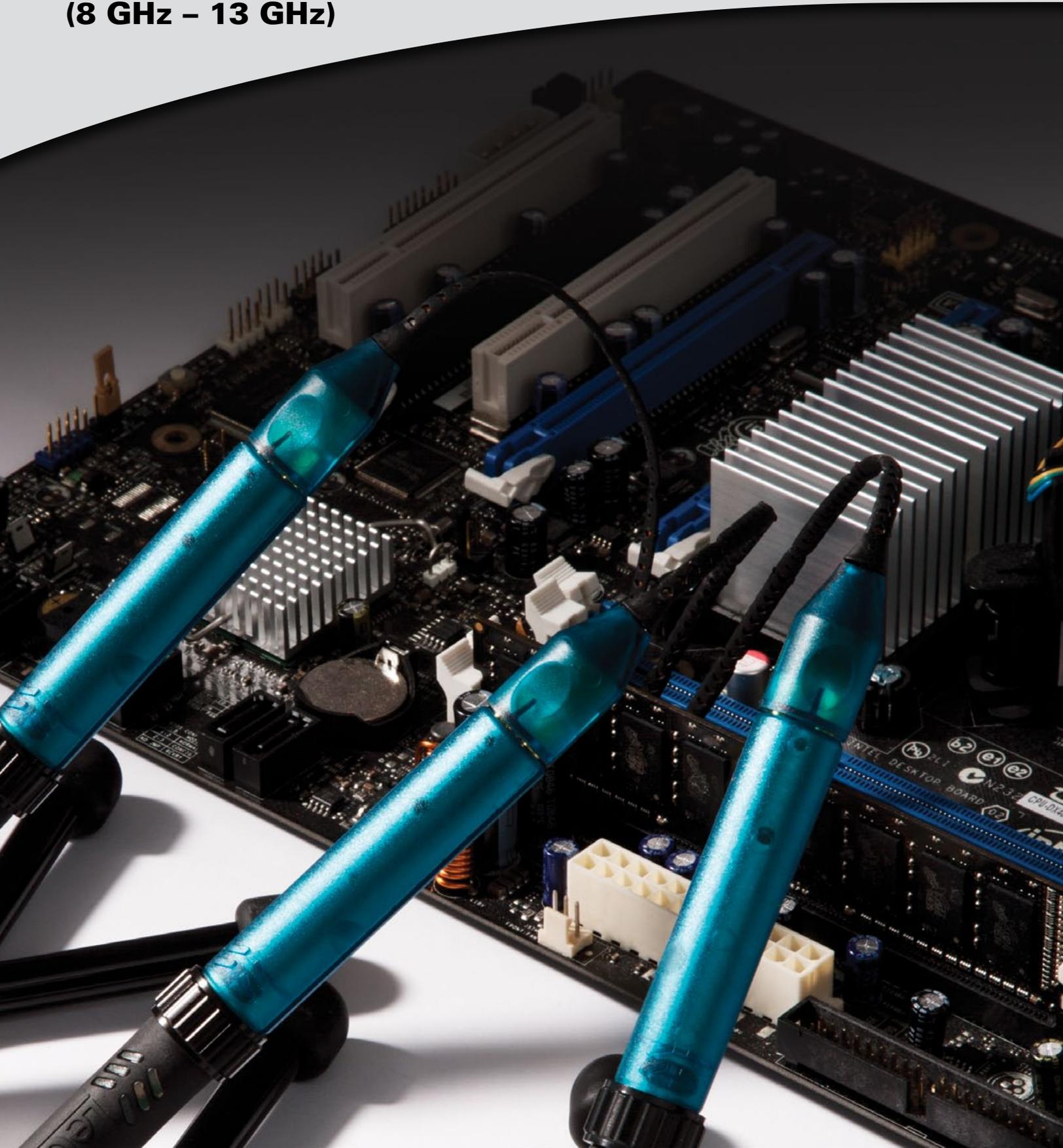


WaveLink® Medium Bandwidth Differential Probing System (8 GHz – 13 GHz)



EXCEPTIONAL WAVEFORM FIDELITY

Key Features

- Choice of 8, 10, or 13 GHz bandwidth models
- 3.5 V_{pk-pk} dynamic range
- ±4 V offset range
- Ideal for DDR3, DDR4, LPDDR3
- Deluxe soft carrying case
- Wide variety of tips and leads
 - Solder-In Lead
 - Positioner (Browser) Tip
 - SMA/SMP Lead
 - Square Pin Lead
- SMA/SMP lead set accessory does not require purchase of a different amplifier



The WaveLink Differential Probe Series is a medium (8-13 GHz) bandwidth active differential probe series with high input dynamic range, a large offset capability, and a wide variety of tips and leads available for different applications.

General Purpose Probe with Range of Capabilities

Teledyne LeCroy's WaveLink 8-13 GHz Differential Probes are a medium bandwidth, general purpose probing solution with high input dynamic range and offset range capability. These probes support solder-in, positioner (browser), square pin and SMA/SMP cabled tip/lead connections. The range of capabilities is ideal for a variety of high speed DDR signals where high dynamic range and large offset requirements are common.

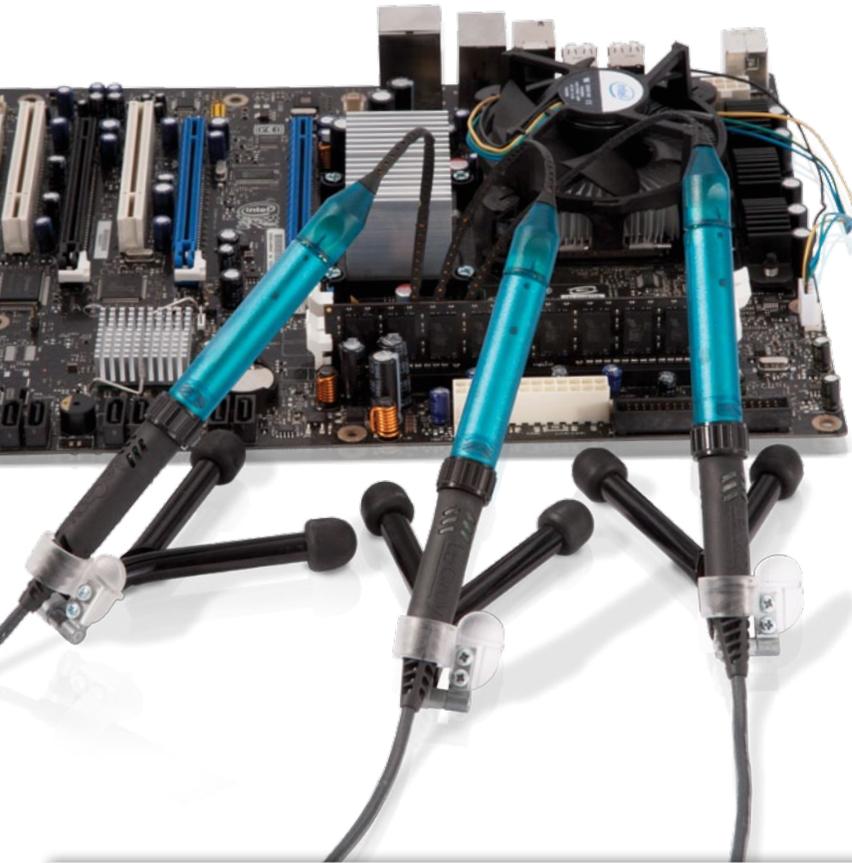
Wide Variety of Tip and Leads

The wide variety of tips offered with the Dxx30 provides confidence that the most challenging test points can be probed. The solder-in, positioner

(browser) tip, square pin, and the SMA/SMP lead set provide great flexibility when probing, while maintaining signal integrity. Furthermore, an assortment of hands-free probe holders eases the challenge of connecting multiple leads to a board. With four different tips and leads available the Dxx30 makes connections to test points very simple.

Modular SMA/SMP Lead Set

The SMA/SMP lead connects to the standard Dxx30 probe amplifier and does not require the purchase of an expensive, additional dedicated SMA/SMP probe. The SMA/SMP lead set provides a pair of leads for SMA cabled termination as well as a pair of leads for SMP cabled termination.



Great for DDR Probing

Existing and emerging high speed DDR standards require measurements on a wide variety of differential and single-ended signals. These signals have widely varying signal swings and often large amounts of overshoot. Additionally, some of the signals have high amounts of offset. DDR3 and LPDDR3 can sometimes operate at speeds approaching 2 GT/s with very fast rise times, and DDR4 is faster yet.

The Dxx30 probe series provide bandwidths starting at 8 GHz and reaching as high as 13 GHz with high input dynamic range ($3.5 V_{pk-pk}$) combined with a large offset range capability ($\pm 4 V$). This makes the Dxx30 probe series ideal for high-speed DDR applications where >6 GHz of bandwidth is required. For slower speed DDR3 and LPDDR3, the WaveLink D610 and D620 6 GHz differential probes are more suitable alternatives.

Deluxe Soft Carrying Case

The Dxx30 probe series introduces a completely new deluxe soft carrying case which stores all components of the complete probe system in one convenient location. The case includes a custom foam insert to securely house the platform/cable assembly and the differential probe amplifier. Additionally, a removable protective storage tray has been designed to neatly arrange the complete selection of tips/accessories for ease of accessibility. The deluxe soft carrying case can easily fit in a standard-sized file drawer or shelf for storage. The new case is provided standard with the WL-PLINK-CASE platform/cable assembly or Dxx30-PS complete probe system.



VARIETY OF TIPS AND LEADS



WaveLink Differential Amplifier Small Tip Modules

The Dxx30 probe series provides superior electrical characteristics to provide the best signal fidelity.

- High DC impedance
- Low loading solder-in lead for minimum signal disturbance
- High sensitivity for probing low voltage signals

The Dxx30 probe series are superior to single-ended probes for measuring ground referenced signals. Placing the probe will not alter local ground variation, and the measured signal won't be distorted by this variation.

Best-in-class mechanical design for optimum utility:

- Small tip, high bandwidth differential probe
- Four interconnect configurations for flexibility
- Very small form factor for accessing tight spaces
 - Positioner tip with pogo pin contacts for optimum test point connection

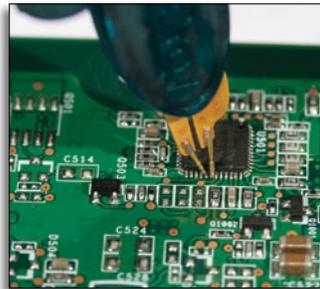
Each of the interchangeable leads is a thin, highly flexible 145 mm (5.7") long lead connecting the tip and the Dxx30 probe tip module.

Four Different Tips for Interconnect Flexibility



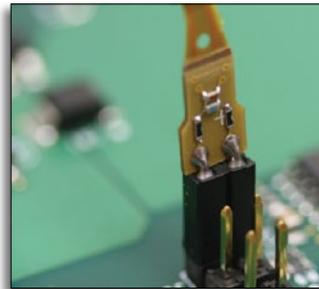
A. Solder-In Lead (SI)

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 for the highest impedance and lowest tip inductance. The resistors have highly flexible leads allowing connection to input points with a wide range of input spacing.



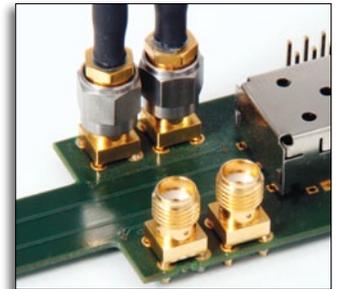
B. Positioner Tip (PT)

The PT positioner tips provides spring loaded leads to allow for easy probing. The adjustable wheel allows for precise probing, allowing a spread up to 0.14". The small form factor provides a convenient grip for hand probing, or use the wand or XYZ positioner for more precise placement.



C. Square Pin (SP)

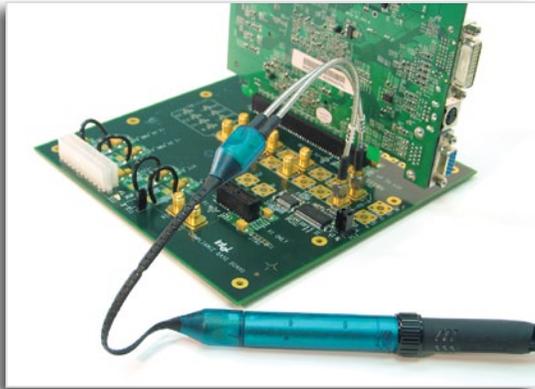
Many applications, such as IC characterization boards, use standard 0.025" square pins for interconnect. The Square Pin interconnect lead directly mates with a pair of 0.025" (0.635 mm) square pins that are mounted on standard 0.100" (2.54 mm) centers.



D. SMA/SMP Lead Set

The Dxx30 SMA/SMP lead set provides a convenient alternative to direct cabling into the oscilloscope inputs, freeing up a second channel for other signal inputs, and eliminating the need to set up waveform math and match cable delays. A pair of SMA DC blocking adapters and SMA finger wrenches are provided with the lead set.

SMA/SMP Lead Set



The SMA/SMP lead set provides an economical means to leverage the Dxx30 probe amplifier for SMA/SMP cabled connections without requiring the purchase of an expensive, additional dedicated SMA/SMP probe. This significantly reduces the up-front investment to add this additional connection lead, and provides an economical means to connect to SMA and SMP connectors on the device under test (DUT).

The SMA/SMP lead set provides a pair of DC blocking adapters which can be used to extend the common mode range of the SMA/SMP cabled input when using higher common mode voltages. Finger wrenches are also provided to assist in tightening the SMA connectors.

Positioner Tip (Browser) Flexibility

The Dx30-PT positioner (browser) tip is used with the Dxx30 probe series. The positioner tip offers the most flexibility in a browser probe with an easy to use form factor. The small form factor makes probing small pitch ICs easy, with a tip spread of 0.14", adjustable with a thumb wheel. The probe tips offer a field replaceable pogo pin/spring tip (with a flex of 0.6 mm) to allow robust contact with DUT contacts.



The wide variety of short, long, swivel, and right angle interconnect parts can be connected to the positioner tip to allow for a variety of different probing positions. Using these interconnects the positioner tip is easily attached to a wide variety of probe positioners for precise circuit placement. When used with the XYZ positioner, the positioner has freedom to move up and down along the Z-Axis to increase or release pressure on the probe points. Additionally, a browsing wand can be attached for hand-held browsing to facilitate quick acquisition of signals for debug and analysis.

Optimized Probe + Oscilloscope Performance

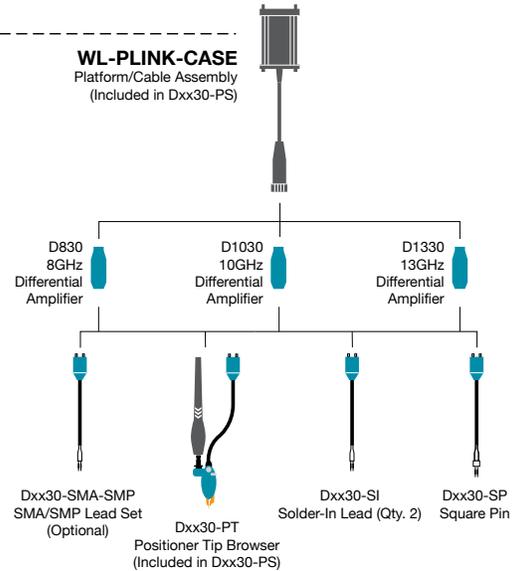
The WaveLink Series of Medium Bandwidth Differential Probes utilize digital filtering to optimize the system frequency response. The design of the WaveLink probe amplifier is such that there is a very wide bandwidth response that exceeds the oscilloscope bandwidth. At time of initial shipment, each probe undergoes a rigorous calibration and performance verification process that results in a stored response file on-board the probe. When the probe is connected to a Teledyne LeCroy oscilloscope, the probe and oscilloscope responses are optimized to each other to provide a probe + oscilloscope response identical to that of the raw oscilloscope channel. Teledyne LeCroy has provided this capability since the introduction of the first WaveLink probes in 2003. All that is left for the operator is to de-embed the probe loading from the circuit using Teledyne LeCroy's Virtual Probe software option, if desired.

COMPATIBILITY AND ACCESSORIES

Compatibility Chart



LabMaster 9 Zi-A/10 Zi
WaveMaster/SDA/DDA 8 Zi/Zi-A
WavePro/SDA/DDA 7 Zi/Zi-A



Accessories and Replacement Parts

Standard Accessories	WL-PLINK-CASE	Dxx30	Dxx30-PS	Dxx30-PT-KIT	Replacement Part
Amplifier System (includes items below with*)		1 each	1 each		D830, D1030, or D1330
*Amplifier		1 each	1 each		
*Solder-In Lead Set (includes items below with**)		2 each	2 each		Dxx30-SI
**Spare Damping Resistors for SI Tip		2 sets of 5	2 sets of 5		Dxx05-SI-RESISTORS
**Tip Retaining Clip for SI Leads		2 each	2 each		PK600ST-3
**Adhesive Tape		1 set	1 set		Dxx0-PT-TAPE
*Ground Lead		1 each	1 each		PACC-LD005
*Ground Clip		1 each	1 each		PK006-4
*Square Pin Lead Set		1 each	1 each		Dxx30-SP
*Instruction Manual		1 each	1 each		WL-MBW-OM-E
*Accessory Info Sheet & Quick Start Guide		1 each	1 each		921558-00
Positioner Tip with Accessories (kit includes items below with†)			1 each	1 each	RK-Dxx30-PT-KIT
†Positioner Tip Browser			1 each	1 each	Dxx30-PT
†Replacement Pogo-pins for Dxx30-PT			1 set	1 set	Dxx0-PT-TIPS
†Positioner Tip Probe Guides			1 each	1 each	Dxx0-PT-GUIDES
†XYZ Positioner			1 each	1 each	Dxx0-PT-XYZ-POSITIONER
†Adhesive Tape for XYZ Positioner			1 each	1 each	Dxx0-PT-TAPE
†Browser Wand for PT Tip			1 each	1 each	Dxx0-PT-WAND
†Interlock Pieces for PT Tip			1 each	1 each	Dxx0-PT-INTERLOCK
†Swivel for PT Tip			1 each	1 each	Dxx0-PT-SWIVEL
Platform/Cable Assembly Kit (includes items below with‡)	1 each		1 each		WL-PLINK-CASE
‡Platform/Cable Assembly	1 each		1 each		
‡Freehand Probe Holder	1 each		1 each		PACC-MS001
‡Probe Deskew Fixture	1 each		1 each		PCF200
‡Platform/Cable Assembly Mounting Clip	1 each		1 each		PK600ST-4 includes clips and clamps
‡Probe Cable Clamp	2 each		2 each		PK600ST-4 includes clips and clamps
‡Deluxe Soft Carrying Case	1 each		1 each		SAC-03
‡Foam Insert for Deluxe Case	1 each		1 each		921081-00
‡Protective Storage Case	1 each		1 each		921083-00
‡Plastic Tray for Storage Case	1 each		1 each		921078-00
SMA/SMP Lead Set					RK-Dxx30-SMA-SMP-LEADS
Calibration Certificate					See Ordering Information
Recommended Accessories					
Deskew Test Fixture					TF-DSQ
Cascade Microtech EZ-Probe Positioner					EZ PROBE

SPECIFICATIONS

	D830, D830-PS	D1030, D1030-PS	D1330, D1330-PS
Bandwidth	Dxx30-SI, Dxx30-SMA-SMP, and Dxx30-PT Tips 8 GHz (probe only, guaranteed) 8 GHz (system bandwidth, when used with 808Zi/Zi-A, typical) Dxx30-SP Tip 3 GHz (probe only, guaranteed) 3 GHz (system bandwidth, when used with 808Zi/Zi-A, typical)	Dxx30-SI, Dxx30-SMA-SMP, and Dxx30-PT Tips 10 GHz (probe only, guaranteed) 10 GHz (system bandwidth, when used with 813Zi/Zi-A, typical) Dxx30-SP Tip 3 GHz (probe only, guaranteed) 3 GHz (system bandwidth, when used with 813Zi/Zi-A, typical)	Dxx30-SI and Dxx30-SMA-SMP Tips 13 GHz (probe only, guaranteed) 13 GHz (system bandwidth, when used with 813Zi/Zi-A, typical) Dxx30-PT Tip 10 GHz (probe only, guaranteed) 10 GHz (system bandwidth, when used with 813Zi/Zi-A, typical) Dxx30-SP Tip 3 GHz (probe only, guaranteed) 3 GHz (system bandwidth, when used with 813Zi/Zi-A, typical)
Rise Time (10–90%)	Dxx30-SI, Dxx30-SMA-SMP, and Dxx30-PT Tips 50 ps (typical) System rise time measured with ≥ 8 GHz oscilloscope Dxx30-SP Tip 132 ps (typical) System rise time measured with ≥ 8 GHz oscilloscope	Dxx30-SI, Dxx30-SMA-SMP, and Dxx30-PT Tips 40 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope Dxx30-SP Tip 132 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope	Dxx30-SI and Dxx30-SMA-SMP Tips 35 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope Dxx30-PT Tip 40 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope Dxx30-SP Tip 132 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope
Rise Time (20–80%)	Dxx30-SI, Dxx30-SMA-SMP, and Dxx30-PT Tips 37.5 ps (typical) System rise time measured with ≥ 8 GHz oscilloscope Dxx30-SP Tip 100 ps (typical) System rise time measured with ≥ 8 GHz oscilloscope	Dxx30-SI, Dxx30-SMA-SMP, and Dxx30-PT Tips 30 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope Dxx30-SP Tip 100 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope	Dxx30-SI and Dxx30-SMA-SMP Tips 26 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope Dxx30-PT Tip 30 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope Dxx30-SP Tip 100 ps (typical) System rise time measured with ≥ 13 GHz oscilloscope
Noise (Probe)	<48 nV/√Hz (4.3 mVrms) (typical) Referred to input, 8 GHz bandwidth.	<48 nV/√Hz (4.8 mVrms) (typical) Referred to input, 10 GHz bandwidth.	<48 nV/√Hz (5.5 mVrms) (typical) Referred to input, 13 GHz bandwidth.
Noise (System)	<52 nV/√Hz (4.6 mVrms) (typical) Referred to input, 8 GHz bandwidth.	<52 nV/√Hz (5.2 mVrms) (typical) Referred to input, 10 GHz bandwidth.	<52 nV/√Hz (5.9 mVrms) (typical) Referred to input, 13 GHz bandwidth.
Input			
Input Dynamic Range	3.5Vpk-pk, ± 1.75 V (nominal)		
Input Common Mode Voltage Range	± 5 V (nominal)		
Input Offset Voltage Range	± 4 V Differential (nominal)		
Non-destructive Input Range	± 15 V (nominal)		
Attenuation	3.75x (nominal)		
DC Input Resistance (nominal)	200 k Ω Differential 50 k Ω Common mode		
Impedance (Zmin, typical)	>250 Ω Differential through entire frequency range using SI tip		
Impedance (mid-band, typical)	Dxx30-SI Lead 470 Ω at 4 GHz, 320 Ω at 6 GHz, 260 Ω at 8 GHz, 250 Ω at 9 GHz, 260 Ω at 10 GHz, 350 Ω at 13 GHz Dxx30-PT Tip 155 Ω at 4 GHz, 210 Ω at 6 GHz, 140 Ω at 8 GHz, 80 Ω at 9 GHz, 40 Ω at 10 GHz		
CMRR	58 dB DC / 100 Hz 38 dB to 10 MHz 30 dB to 3 GHz 20 dB to 8 GHz (typical)		
Differential Input Return Loss (with SMA/SMP Lead Set, typical)	> 14 dB @ 8, 10, or 13 GHz (VSWR <1.5:1)		
Environmental			
Temperature	Operating: 0 °C to 40 °C; Non-operating: -40 °C to 70 °C		
Humidity	Operating: 5% to 80% RH (non-condensing), 50% RH above 30 °C Non-operating: 5% to 95% RH (non-condensing), 75% RH above 30 °C and 45% RH above 40 °C		
ESD Tolerance	2 kV (typical) 100 pF, 300 Ω HBM		
Dimensions			
Dxx30-PT Postioner Tip	0 to 3.5 mm (0 to 0.14") 305 μ m (0.012") diameter 0.55 mm (0.022") Z-axis compliance		
Dxx30-SI Tip	0 to 9 mm (0 to 0.35") tip spread at circuit connection		
Cable Length	1.3 m (4 ft. 3 in) for WL-Plink (sold separately)		

ORDERING INFORMATION

Product Description Product Code

Complete Probe Systems

8 GHz Complete Probe System with Dxx30-SI Solder-In Tip (Qty. 2), Dxx30-SP Square Pin (Qty. 1), and Dxx30-PT-KIT Positioner Tip Browser (Qty. 1)	D830-PS
10 GHz Complete Probe System with Dxx30-SI Solder-In Tip (Qty. 2), Dxx30-SP Square Pin (Qty. 1), and Dxx30-PT-KIT Positioner Tip Browser (Qty. 1)	D1030-PS
13 GHz Complete Probe System with Dxx30-SI Solder-In Tip (Qty. 2), Dxx30-SP Square Pin (Qty. 1), and Dxx30-PT-KIT Positioner Tip Browser (Qty. 1)	D1330-PS

Amplifier and Probe Tip Modules

WaveLink D830 8 GHz/3.5V _{p-p} Differential Probe Amplifier with Dxx30-SI Solder-In Tip (Qty. 2) and Dxx30-SP Square Pin (Qty. 1)	D830
WaveLink D1030 10 GHz/3.5V _{p-p} Differential Probe Amplifier with Dxx30-SI Solder-In Tip (Qty. 2) and Dxx30-SP Square Pin (Qty. 1)	D1030
WaveLink D1330 13 GHz/3.5V _{p-p} Differential Probe Amplifier with Dxx30-SI Solder-In Tip (Qty. 2) and Dxx30-SP Square Pin (Qty. 1)	D1330

Positioner Tip (Browser) Kits

WaveLink Dxx30-PT (up to 10 GHz rating) Adjustable Positioner Tip Kit. For use with Dxx30 amplifiers.	Dxx30-PT-KIT
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Probe Platform/Cable Assemblies and Adapters

WaveLink ProLink Platform/Cable Assembly Kit with complete soft carrying case for all probe items.	WL-PLINK-CASE
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SMA/SMP Lead Set

Lead set consisting of WaveLink Dxx30-SMA-SMP-LEADS for use with Dxx30 amplifiers.	Dxx30-SMA-SMP-LEADS
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Product Description Product Code

Accessories

Cascade Microtech EZ-Probe Positioner	EZ PROBE
Probe Deskew and Calibration Test Fixture	TF-DSQ

Calibration Options

NIST Calibration for D830. Includes test data.	D830-CCNIST
NIST Calibration for D1030. Includes test data.	D1030-CCNIST
NIST Calibration for D1330. Includes test data.	D1330-CCNIST

Replacement Parts

Replacement Dxx30-SP 8-13 GHz Square Pin Lead	Dxx30-SP
Replacement Dxx30-SI 8-13 GHz Solder-In Lead with Qty. 5 Spare Resistors.	Dxx30-SI
Replacement SI Resistor Kit for Dxx05-SI and Dxx30-SI Solder-In Tip - Kit of 5	Dxx05-SI-RESISTORS
Qty. 4 Replacement Pogo Pin Tips and Qty. 2 Replacement Sockets for Dx10-PT, Dx20-PT, and Dxx30-PT Adjustable Positioner Tips.	Dxx0-PT-TIPS
Replacement Probe Tip Holder Kit	PK600ST-3
Replacement Platform/Cable Assembly Mounting Kit	PK600ST-4
Quantity 1 Package of Black Adhesive Pads (10/pkg) and Quantity 1 Package of White Adhesive Pads (10/pkg)	Dxx0-PT-TAPE
Quantity 1 Package of Adhesive Probe Connection Guides (200 individual guides/package)	Dxx05-PT-GUIDES

Customer Service

Teledyne LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years and our probes are warranted for one year.

This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to latest software at no charge



1-800-5-LeCroy
teledynelecroy.com

Local sales offices are located throughout the world.
Visit our website to find the most convenient location.