

# WaveLink Differential Probing System (8 GHz – 13 GHz)

## Key Features

**Choice of 8, 10, or 13 GHz bandwidth models**

**3.5 Vpk-pk dynamic range**

**±4 V offset range**

**Ideal for DDR3, DDR4, LPDDR3**

**Innovative QuickLink architecture**

**Wide variety of tips and leads**

- Solder-In Lead
- QuickLink Solder-In Lead
- Positioner (Browser) Tip
- SMA/SMP Lead
- Square Pin Lead
- Hi-Temp Solder-In Lead

**Low loading and high impedance for minimal signal disturbance**

**Deluxe soft carrying case**

**SMA/SMP lead set accessory does not require purchase of a different amplifier**



**The WaveLink Differential Probe Series is a 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 general purpose probing solution with high input dynamic range and offset range capability. 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, Hi-Temp solder-in, QuickLink solder-in and the SMA/SMP lead sets provide great flexibility when probing, while maintaining signal integrity. An assortment of hands-free probe holders eases the challenge of connecting multiple leads to a board.

## Exceptional Waveform Fidelity

WaveLink probes provide superior loading characteristics and are calibrated with a custom "fine-tuned" frequency response. The ultra low loading coupled with a flat frequency response ensure accurate measurements.

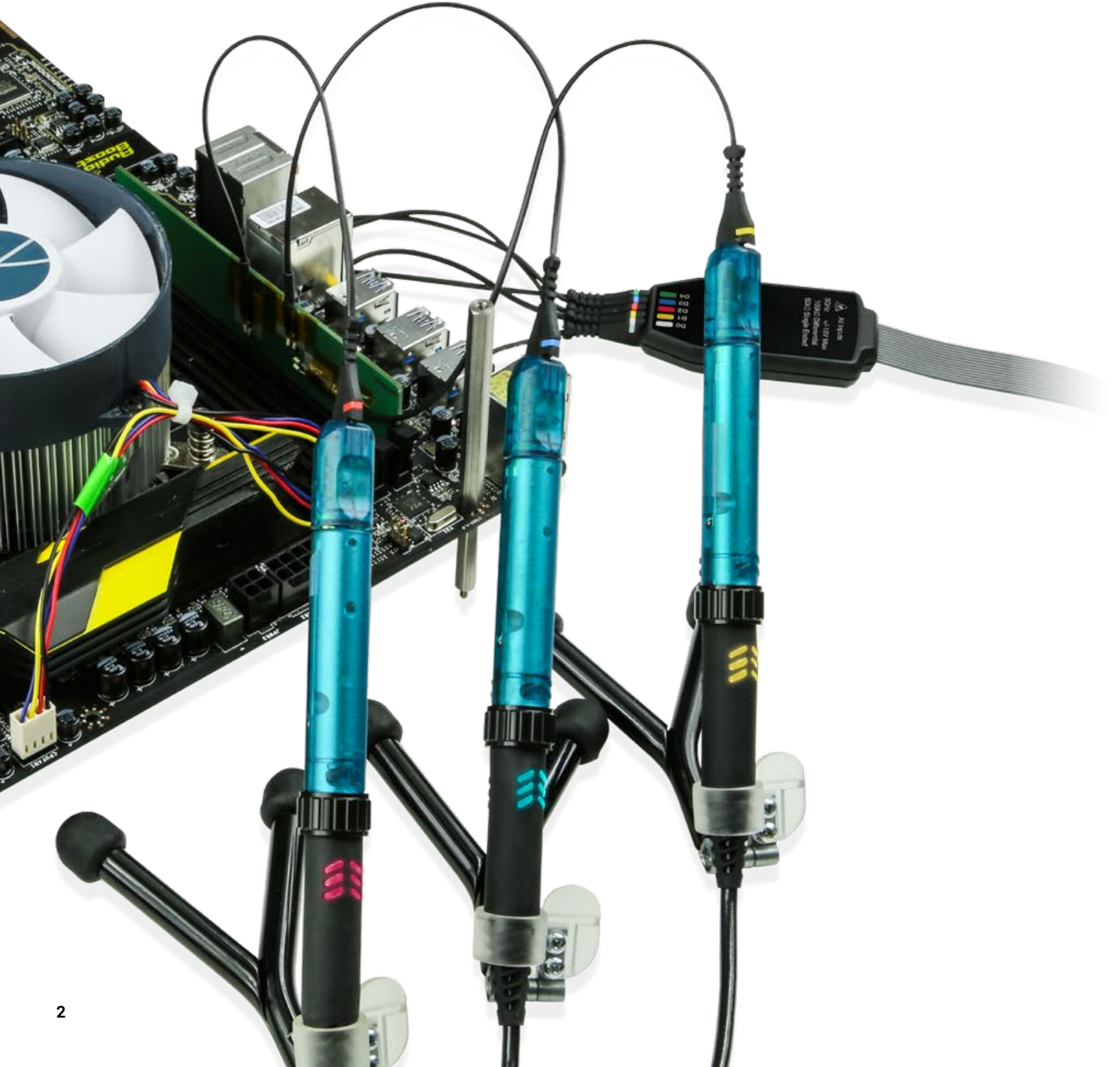
## Unique QuickLink Architecture

The unique QuickLink architecture allows for probe tips to be quickly attached or removed to a WaveLink differential amplifier. Unlike other "consumable" probe tip solutions which rely on tiny, delicate tips located very close to the Device Under Test (DUT), the QuickLink Solder-In tip has an integral 9-inch lead. QuickLink Solder-In tips are low-cost, making it easy to equip multiple test points and DUTs and eliminating time-consuming re-soldering of connectors.

# EXCEPTIONAL WAVEFORM FIDELITY

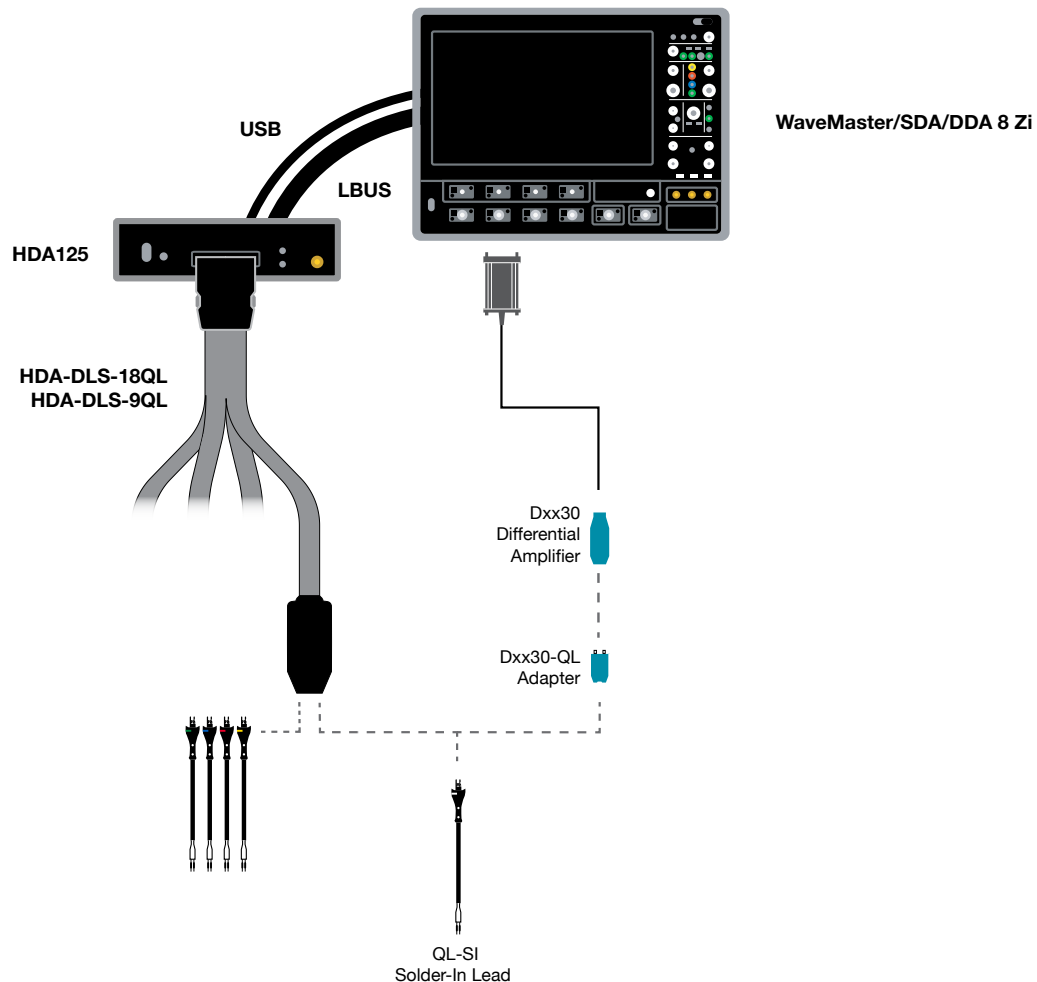
The Dxx30 probe series has superior electrical characteristics, providing excellent signal fidelity. These probes were designed with low loading and high impedance for minimal signal disturbance and circuit loading. WaveLink probes use a unique calibration process where each probe is programmed with a custom “fine-tuned” frequency response which is read by the oscilloscope in order to digitally compensate for the entire system response.

In addition to their electrical performance, WaveLink probes have the best-in-class mechanical design for optimum utility. The Dxx30 probes series includes six different interconnect configurations allowing for flexibility when making measurements. Additionally, WaveLink probes offer a variety of hands free positioners to offer stable and accurate probe tip placement to make perfect contact without the worry of hand probing errors.



# INNOVATIVE QUICKLINK ARCHITECTURE

The QuickLink probe tip system was designed from the ground up to be compatible with both the HDA125 High-speed Digital Analyzer system, and with Teledyne LeCroy's WaveLink series of differential analog probes. This cross-connection ability allows you to equip your system under test with QuickLink tips at all desired test points, and swap connections between digital and analog acquisition systems as needed.



## High Signal Fidelity

When connected to a WaveLink analog probe, QuickLink tips provide 6 GHz of bandwidth and a flat, well-controlled frequency response. When used for digital acquisitions with the HDA125, they support 3 GHz bandwidth with industry-leading sensitivity. In both cases, high input impedance ensures minimal loading of the system under test.

## Easy to connect

Unlike other "consumable" probe tip solutions which rely on tiny, delicate tips located very close to the device under test, the QuickLink solder-in tip has an integral 9-inch lead. This effectively relocates your test point to a more convenient location, making testing more reliable by eliminating torque and other forces on the solder joints.

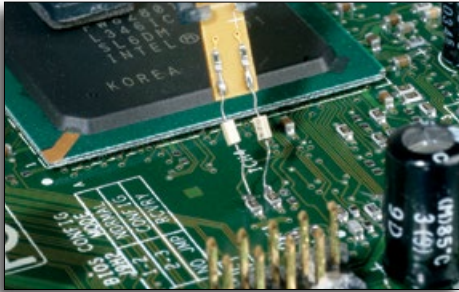
## Cost-effective

QuickLink solder-in tips are low-cost, making it easy to equip multiple test points and DUTs, and eliminating time-consuming re-soldering of connectors.



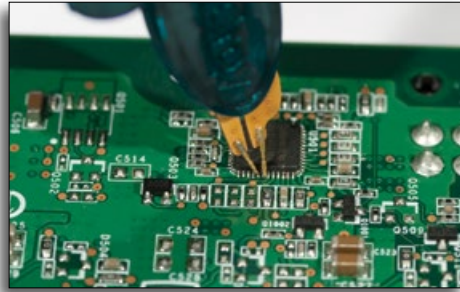
# WIDE VARIETY OF TIPS AND LEADS

Offering six different tips and leads, the Dxx30 probe series provides confidence that the most challenging test points can be probed. In addition to the various tips, an assortment of hands-free probe holders are provided to ease the challenge of connecting multiple leads to a board.



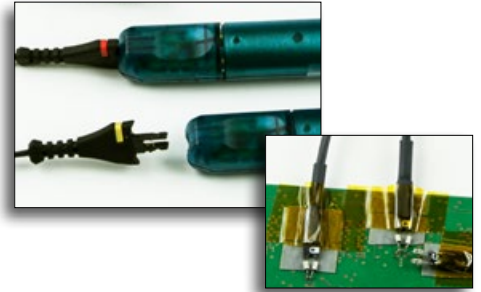
## Solder-In Lead (SI)

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.



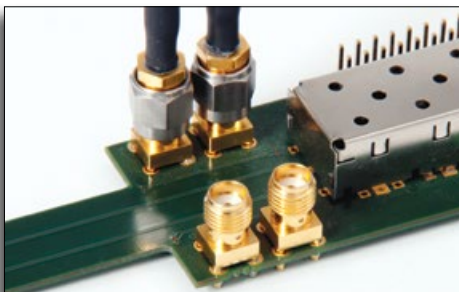
## Positioner Tip (PT)

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.



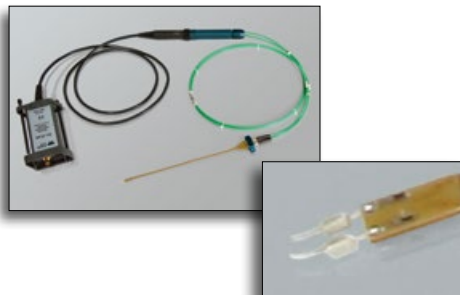
## QuickLink Solder-In Lead (QL-SI)

The unique QuickLink architecture allows for probe tips to be quickly attached or removed to a WaveLink differential amplifier. The ultra low loading design allows for unused tips to remain attached to the DUT without impacting the signal fidelity.



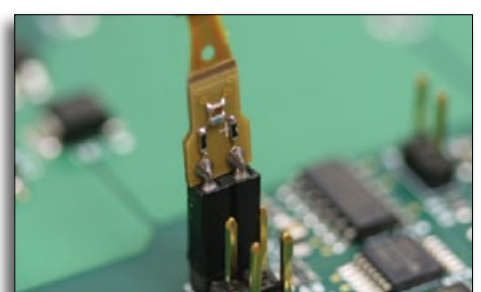
## SMA/SMP Lead Set

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.



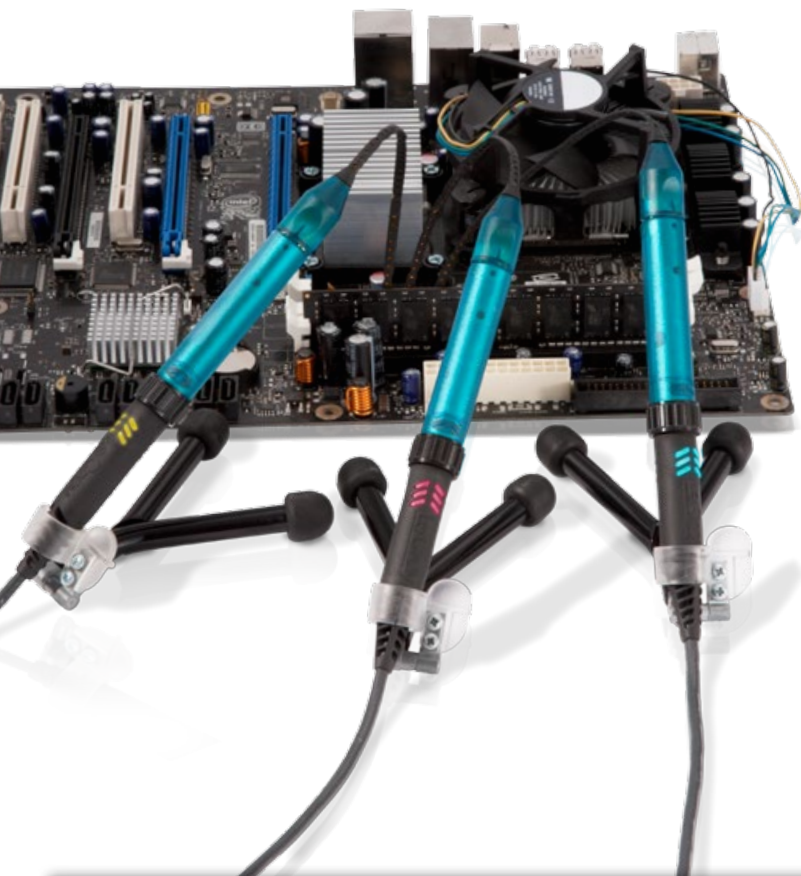
## High Temperature (HiTemp) Cables and Solder-In Lead

The 90 cm HiTemp cables and Solder-In lead can be used for controlled situations where the differential amplifier module needs to be removed from the extreme temperature environment. Ideally suited for testing scenarios where the temperature can fluctuate from -40 °C to +105 °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.



### 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 operate at speeds exceeding 2 GT/s with very fast rise times, and DDR4 can operate at speeds beyond 3 GT/s.

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.

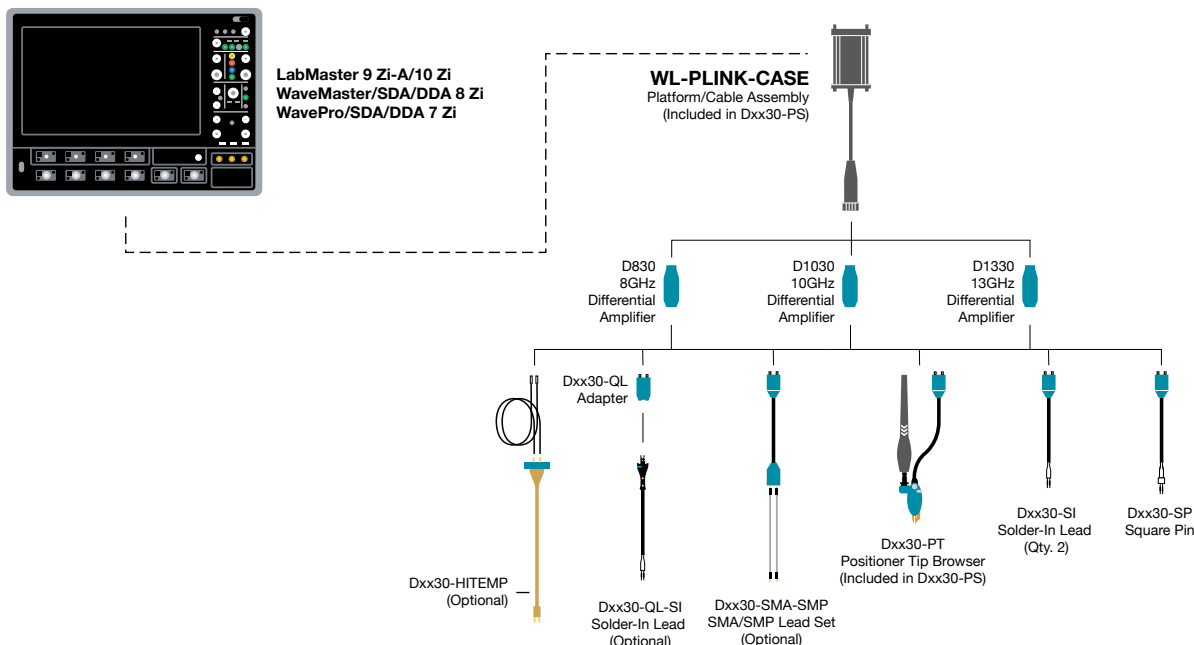
### Deluxe Soft Carrying Case

The Dxx30 probe series includes a 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 and is provided with the WL-PLINK-CASE platform/cable assembly or Dxx30-PS complete probe system.



# COMPATIBILITY AND STANDARD ACCESSORIES

## Compatibility Chart



## Accessories and Replacement Parts

Standard Accessories	Dxx30	Dxx30-PT-KIT	WL-PLINK-CASE	Dxx30-PS	Dxx30-QL-3SI	Dxx30-HiTemp	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		1 each	PK600ST-4 includes clips and clamps
‡Probe Cable Clamp			2 each	2 each		1 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	1 each			921083-00
‡Plastic Tray for Storage Case		1 each	1 each	1 each			921078-00
QuickLink Adapter					1 each		Dxx30-QL
QuickLink Solder-In Lead					3 each		QL-SI-1Pack
HiTemp Solder-In Lead						1 each	Dxx30-SI-HiTemp
HiTemp Cable						1 matched set	Dxx30-Cable-HiTemp
SMA/SMP Lead Set							RK-Dxx30-SMA-SMP-LEADS
Calibration Certificate							See Ordering Information

### Recommended Accessories

Deskw Test Fixture	TF-DSQ
Cascade Microtech EZ-Probe Positioner	EZ PROBE

# SPECIFICATIONS

	D830, D830-PS	D1030, D1030-PS	D1330, D1330-PS
Bandwidth* (Probe only, guaranteed) (System bandwidth, typical)	Dxx30-SI, Dxx30-QL-SI, Dxx30-SMA-SMP, Dxx30-HiTemp, and Dxx30-PT Tips 8 GHz  Dxx30-SP Tip 3 GHz	Dxx30-SI, Dxx30-SMA-SMP, Dxx30-HiTemp, and Dxx30-PT Tips 10 GHz  Dxx30-QL-SI Tip 8 GHz  Dxx30-SP Tip 3 GHz	Dxx30-SI and Dxx30-SMA-SMP Tips 13 GHz  Dxx30-PT and Dxx30-HiTemp Tips 10 GHz  Dxx30-QL-SI Tip 8 GHz  Dxx30-SP Tip 3 GHz
Rise Time* (10–90%)	Dxx30-SI, Dxx30-QL-SI, Dxx30-SMA-SMP, Dxx30-HiTemp, and Dxx30-PT Tips 50 ps (typical)  Dxx30-SP Tip 132 ps (typical)	Dxx30-SI, Dxx30-SMA-SMP, Dxx30-HiTemp, and Dxx30-PT Tips 40 ps (typical)  Dxx30-QL-SI Tip 50 ps (typical)  Dxx30-SP Tip 132 ps (typical)	Dxx30-SI and Dxx30-SMA-SMP Tips 35 ps (typical)  Dxx30-PT and Dxx30-HiTemp Tips 40 ps (typical)  Dxx30-QL-SI Tip 50 ps (typical)  Dxx30-SP Tip 132 ps (typical)
Rise Time* (20–80%)	Dxx30-SI, Dxx30-QL-SI, Dxx30-SMA-SMP, Dxx30-HiTemp, and Dxx30-PT Tips 37.5 ps (typical)  Dxx30-SP Tip 100 ps (typical)	Dxx30-SI, Dxx30-SMA-SMP, Dxx30-HiTemp, and Dxx30-PT Tips 30 ps (typical)  Dxx30-QL-SI Tip 37.5 ps (typical)  Dxx30-SP Tip 100 ps (typical)	Dxx30-SI and Dxx30-SMA-SMP Tips 26 ps (typical)  Dxx30-PT and Dxx30-HiTemp Tips 30 ps (typical)  Dxx30-QL-SI Tip 37.5 ps (typical)  Dxx30-SP Tip 100 ps (typical)
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.	<52nV/√Hz (5.9 mVrms) (typical) Referred to input, 13 GHz bandwidth.
Input			
Input Dynamic Range	3.5Vpk-pk, ±1.75V (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 kΩ Differential 50 kΩ Common mode		
Impedance (Zmin, typical)	>250 Ω Differential through entire frequency range using SI tip		
Impedance (mid-band, typical)	Dxx30-SI, Dxx30-QL-SI, and Dxx30-HiTemp Tips 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; Operating of HiTemp leads: -40 °C to 105 °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 μm (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)		

\* All Bandwidth and Rise Time measurements are made with an oscilloscope bandwidth greater or equal to the probe bandwidth

# 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 <sub>p-p</sub> 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 <sub>p-p</sub> 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 <sub>p-p</sub> 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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### QuickLink Solder-In Tip Set

QuickLink Solder-In starter pack for use with Dxx30 amplifier. Includes one QuickLink adapter and three QL-SI tips.	Dxx30-QL-3SI
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### Hi-Temp Lead Set

WaveLink Temperature Extension Cables for Dxx30. Includes set of Matched 30" High Temperature Cables (Qty. 1) and solder-in lead set (Qty. 1).	Dxx30-HiTemp
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### SMA/SMP Lead Set

SMA/SMP lead set for use with Dxx30 amplifiers. Includes a set of SMA leads, SMP leads, pair of DC blocks and SMA finger wrenches.	Dxx30-SMA-SMP-LEADS
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-PS COMPONENTS

## 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

Single replacement QuickLink Solder-In Tip	QL-SI-1Pack
9-pack of replacement QuickLink Solder-In Tip	QL-SI-9Pack
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, Dxx30-QL-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.