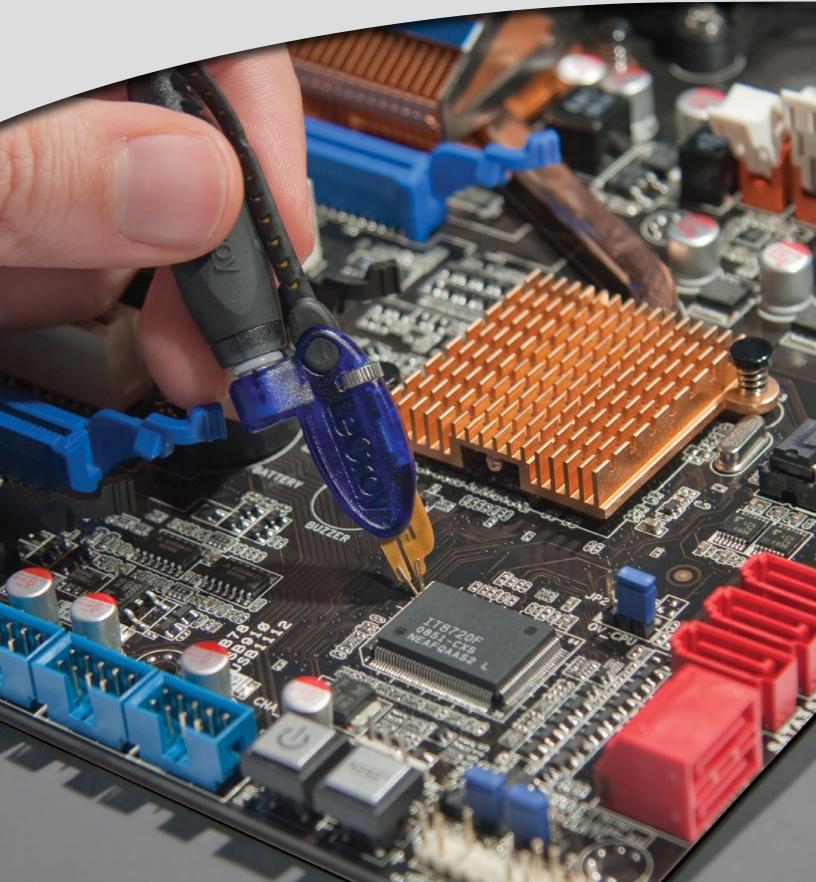


### WaveLink<sup>®</sup> Differential Probe System (4 GHz – 6 GHz)



### **EXCEPTIONAL WAVEFORM FIDELITY**

### **Key Features**

- 4 GHz or 6 GHz models
- Up to 5 Vpk-pk dynamic range with low noise
- ±3 V offset range
- Deluxe soft carrying case
- Wide variety of tips and leads
  - Solder-In Lead
  - Positioner (Browser) Tip
  - Adjustable (Browser) Tip
  - Quick Connect Lead
  - Square Pin Lead
  - HiTemp Solder-In Lead
- Ideal for DDR2, DDR3, LPDDR2



The WaveLink 4-6 GHz differential probe series provides the widest range of tips with the highest input dynamic range and a large offset capability.

#### **WaveLink®**

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 WaveRunner,® WavePro,® WaveMaster,® DDA and SDA oscilloscopes up to 6 GHz. WaveLink probes:

- Maintain good loading characteristics across the frequency span
- Optimize for gain, noise and bandwidth for optimal performance
- Offer broad range of dynamic range and noise over gain settings by incorporating automatic probe attenuation changes

WaveLink is the first differential probe to use a unique calibration process to achieve superb waveform fidelity for routine voltage measurements.

Calibration coefficients "fine tune" the frequency response of each WaveLink probe and are individually determined during factory calibration and programmed into the probe. The SDA, DDA, WaveMaster, WaveRunner, or WavePro Series oscilloscopes read this data and use it to digitally compensate the entire system response for superior fidelity.

### **Signal Fidelity**

WaveLink probes virtually eliminate distortion when measuring signals. This benefit is particularly useful in eye pattern measurements, now routine for systems using fast serial parallel data bus architecture.

All WaveLink probes offer:

- Superior loading characteristics
- Precise frequency response with outstanding fidelity for high-speed signals

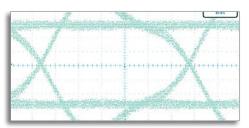
Both low loading and frequency response flatness are needed to ensure the signal fidelity required to measure performance accurately.

### **Tip Flexibility**

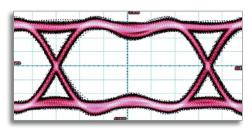
WaveLink test leads make connecting to test points very simple. The wide variety of tips offered provide confidence that the most challenging test points can be probed.

The Solder-In, PT Browser, Quick Connect, and Square Pin lead sets are rated for multiple insertions and offer field replacement tips for user value, while giving the best signal fidelity as a system to the test points.

An assortment of hands-free probe holders ease the challenge of connecting multiple leads to a board.



3.125 Gb/s XAUI signal measured with system using a probe with good frequency flatness, but excessive loading.



Same signal measured with WaveLink D610-PT. Low loading and flat frequency response combine to maintain the fidelity in the eye pattern.

### **Serial Data**

Serial data signals all vary in signal characteristics and connection type. WaveLink features a wide dynamic range and offset to accommodate a wide input voltage range. WaveLink's automatic probe attenuation network allows an input voltage up to ±5 Vp-p with the lowest system noise for measuring small signals.

### **Single-ended Measurements**

WaveLink differential probes offer enhanced capabilities to make single-ended measurements with low loading and improved CMRR. Singleended measurements on DDR signals with D6x0/D4x0 probes utilize ±3 V offset range to return a more accurate and repeatable measurement.

### **Probe Positioners**

Multiple probe connections are often necessary to properly debug board level problems. WaveLink probes afford 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.



FreeHand with PT Tip and Wand.



XYZ Positioner with PT Tip.

## FLEXIBLE INTERCONNECTION OPTIONS



WaveLink Differential Amplifer Small Tip Modules

The D610/D410 and D620/D420 probes provide superior electrical characteristics to provide the best signal fidelity.

- Lowest noise performance for accurate measurements
- High DC impedance
- Low loading for minimum signal disturbance
- High sensitivity for probing low voltage signals

The D6x0/D4x0 probes 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
- Five 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 D610/D620 and D410/D420 probe tip module.

### **Five 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 providing a reliable, intermittence-free electrical connection. The resistors have highly flexible leads allowing connection to input points with a wide range of input spacing.

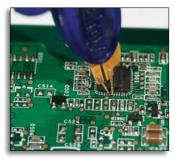


**B. Quick Connect (QC)** 

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 leaded 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.



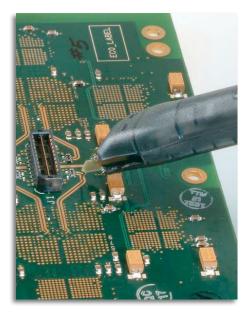
**C. Square Pin (SP)** Many applications, such as IC characterization boards, use standard 0.025" square pins for interconnect. The Square Pin interconnect lead directly mates with a pair of 0.025" (0.635 mm) square pins that are mounted on standard 0.100" (2.54 mm) centers.



#### D. 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.

### **BROWSER OPTIONS**



# WaveLink Differential Amplifier Modules with Adjustable Tip

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



### E. 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.

### PT Browser Tip Leads

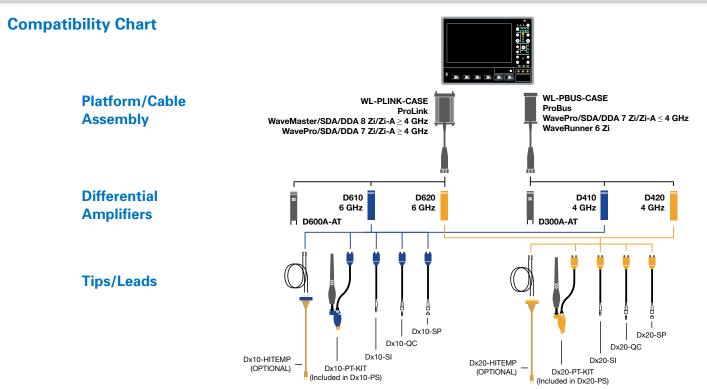
The PT browser tip offers two options to pair with the appropriate probe body, providing the best scope/probe combination. The Dx10-PT and Dx20-PT browser tips are used with the D610/D620 for 6 GHz bandwidth probing needs, while a pairing with the D410/D420 amplifiers are rated to 4 GHz bandwidth. The



PT positioner tip offers the most flexibility in a browser probe to provide the best signal fidelity in an easy to use form factor. The PT browser tip offers superior noise and loading characteristics. The PT can be used with a variety of holders and accessories to allow for ease in hand browsing, or flexibility to use a positioner for hands free probing.

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 spring tip (with a flex of 0.6 mm) to allow robust contact with DUT contacts.

### **COMPATIBILITY AND STANDARD ACCESSORIES CHART**



### **Accessories and Replacement Parts**

Standard Accessories	WL-PLINK-CASE WL-PBUS-CASE	D610/ D620	Dx10/ Dx20-PS	Dx10/ Dx20-PT-KIT	Dx10-SI-HiTemp Dx20-SI-HiTemp	Dx00A-AT	Replacement Part
Amplifier System		1 each	1 each				D410, D420, D610 or D620
(includes items below with*)							
*Amplifier		1 each	1 each				
*Solder-In Lead Set		1 each	1 each				Dx10-SI, Dx20-SI
(includes items below with**)		reach	reach				
**Spare Damping Resistors for SI Tip		1 set of 5	1 set of 5				PKxx0-SI
**Tip Retaining Clip for SI & QC Leads		1 each	1 each				PK600ST-3
**Adhesive Tape		1 set	1 set				Dxx0-PT-TAPE
*Quick Connect Lead Set		1 each	1 each				Dx10-QC, Dx20-QC
*Damping Resistors for QC Tip (Included with QC Tip)		2 sets of 10	2 sets of 10				PKxx0-QC
*Ground Lead		1 each	1 each				PACC-LD005
*Ground Clip		1 each	1 each				PK006-4
*Square Pin Lead Set		1 each	1 each				Dx10-SP, Dx20-SP
*Instruction Manual		1 each	1 each			1 each	WL6G-OM-E
*Accessory Info Sheet & Quick Start Guide		1 each	1 each				921489-00 (Dx10), 921488-00(Dx20)
Positioner Tip with Accessories (kit includes items below with <sup>†</sup> )			1 each	1 each			RK-Dx10-PT-KIT, RK-Dx20-PT-KIT
<sup>†</sup> Positioner Tip Browser			1 each	1 each			Dx10-PT, Dx20-PT
<sup>†</sup> Replacement Pogo-pins for Dx10-PT/Dx20-	PT		1 set	1 set			Dxx0-PT-TIPS
<sup>†</sup> Positioner Tip Probe Guides			1 set	1 set			Dxx0-PT-GUIDES
<sup>†</sup> XYZ Positioner			1 each	1 each			Dxx0-PT-XYZ-POSITIONER
<sup>†</sup> Adhesive Tape for XYZ Positioner			1 each	1 each			Dxx0-PT-TAPE
<sup>†</sup> Browser Wand for PT Tip			1 each	1 each			Dxx0-PT-WAND
<sup>†</sup> Interlock Pieces for PT Tip			1 each	1 each			Dxx0-PT-INTERLOCK
							Dxx0-PT-SWIVEL
<sup>†</sup> Swivel for PT Tip	4		1 each	1 each			
Platform/Cable Assembly Kit (includes items below with‡)	1 each		1 each				WL-PLINK-CASE or WL-BUS-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	1 each	PK600ST-4 includes clips and clamps
‡Probe Cable Clamp	2 each		2 each		1 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 (WL-PLINK-CASE) or 921079-00 (WL-PBUS-CASE)
Protective Storage Case	1 each		1 each				921083-00
‡Plastic Tray for Storage Case	1 each		1 each				921078-00
HiTemp Solder-In Lead					1 each		Dx10-SI-HiTemp, Dx20-SI-HiTemp
HiTemp Cable				-	1 matched set		Dxx0-Cable-HiTemp
Calibration Certificate							See Ordering Information

Recommended Accessories

Deskew Test Fixture

6 Cascade Microtech EZ-Probe Positioner

## **SPECIFICATIONS**

Institution         If 2 mVmal (typical) Referred to mycut, 6 GHz bandwidth         If 2 mVmal (typical) Referred to mycut, 6 GHz bandwidth         If 3 mVmal (typical) Referred to mycut, 7 mUmal (typical)         If 3 mVmal (typical) Referred to mycut, 7 mUmal (typical) <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>							
Drobe conjugatemented (priverse bandworden, types)         Droff T Type (priverse bandworden, types)         Droff T							
B - G-05**         D - G-05***         D - G-05***         D - G-05****         D - G-05****         D - G-05*****         D - G-05******         D - G-05*********         D - G-05***********         D - G-05**************************	(Probe only, guaranteed)	Dx10-PT Tips	Dx20-PT Tips	Dx10-QC and Dx10-PT Tips	Dx20-QC and Dx20-PT Tips	6 GHz	3 GHz
A Girs     4 Girs     4 Girs     A Girs <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Sign:         3.042         0.042         0.0424         Disclet DriveHamp, Disclet Prime, Ten Intra-F (10-90%)         0.0524 Ten Intra-Disclet Prime, Ten Intra-F (10-90%)         0.0524 Ten Intra-Disclet Prime, Disclet Prim, Disclet Prim, Disclet Prime, Disclet Prime, Disclet Prim, Disc							
Size Time* (10-995)         Du16 Si and Du16 View Pings         Du20 Si Du20 View Pings         Du20 Si Du20 View Pings         State (typical)         state (typical)           No.16 A UTTORY         Du20 View Pings         View Pings         View Pings         Du20 View Pings         View Pings         Du20 View Pings         View Pings <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
Bits Stypendi     90 pts Stypendi     912 Stypendi     122 Stypendi     122 Stypendi     122 Stypendi     122 Stypendi       Bits Time* (20-80%)     Dot 165 PT Tip     Dot 200 SP Tip     120 Stypendi     150 pt Stypendi     112 pt Stypendi       Bits Time* (20-80%)     Dot 165 PT Tip     Dot 200 SP Tip     Dot 100 Tip     Dot 200 SP	Rise Time* (10–90%)	Dx10-SI and Dx10-PT Tips	Dx20-SI and Dx20-PT Tips	and Dx10-PT Tips	and Dx20-PT Tips	<75 ps (typical)	<149 ps (typical)
In 22.5 ps thybical IN 22.5 p							
tie Dime* (20-80%) bits thme* (20-80%) bits thme							
Bits in Problem         Dx10+PT Tipe Bits in Problem         Dx20+DT Tipe Bits in Problem         Dx10+DC Tip Bits in Problem         Dx20+DC Tip Bits in Problem         Dx20+DC Tip Bits in Problem         Dx20+DC Tip Bits in Problem         Dx10+DC Tip Bits in Problem         Dx10+DC Tip Bits in Problem         Dx10+DC Tip Bits in Problem         Dx10+DC Tip Bits in Problem         Dx20+DC Tip Bits in Problem <thdx20+dc tip<br="">Bits in Problem         Dx20+DC T</thdx20+dc>							
B7.5 ps stynoid)           Dide         D240-CTp S7 ps stynoid)         D240-SP Tp S7 ps stynoid)         S5 stynoid) <ths5 stynoid)<="" th=""></ths5>	Rise Time* (20–80%)	Dx10-PT Tips	Dx20-PT Tips	and Dx10-PT Tips	and Dx20-PT Tips	56 ps (typical)	112 ps (typical)
B9 ps hyticiki         B9 ps hyticiki         113 ps hyticiki         113 ps hyticiki         113 ps hyticiki           Noise (System)         C.58 n/VHz (2.8 m/Vmal hyticiki B CH Landwood)         C.58 n/VHz (2.8 m/Vmal hyticiki B CH Landwood)         C.58 n/VHz (2.8 m/Vmal hyticiki B CH Landwood)         C.57 n/VHz (2.8 m							
Instruction         113 ps function         113 ps function         c SI anV/htr c SI anV/htr B SI mV/mat htpichin 6 GH2 bandwidth         c SI anV/htr B SI mV/mat htpichin 8 GH2 bandwidth         c SI anV/htr B SI mV/mat htpichin 8 GH2 bandwidth         c SI anV/mat htpichin 8 GH2 banV/mat htpichin 8 GH2 bandwidth         c SI a							
Noise (System)         C - 30 m/VHz Med (spc.0) (14 m/Ver) (14 m/V							
Input Dynamic Range (Nominal)         2.5VpLpL, ±1.25V         5VpLpL, ±2.5V         2.5VpLpL, ±1.25V         5VpLpL, ±2.5V         4.8VpLpL, ±2.4V           Input Offset Votage Range (Nominal)         ±4.V         ±2.4 Vmax         ±2.4 Vmax         ±2.4 Vmax           Input Offset Votage Range (Nominal)         ±3.V Differential (nominal)         ±3.V Differential (nominal)         ±3.V I.5V (nominal)         ±2.4 Vmax           Non-destructive Input Resistance (Nominal)         ±3.V Differential         ±3.V I.5V (nominal)         ±2.4 Vmax         ±1.8 V           Non-destructive Input Resistance (Nominal)         ±3.V (1.0X (nominal)         ±2.8 V/1.5X (nominal)         ±2.6 V         ±1.8 V           Nominal)         ±2.0 V         ±1.8 V         ±1.8 V         ±1.8 V         ±1.8 V           Nominal)         ±2.6 V (attriange Nominal)         ±2	Noise (System)	<36 nV/√Hz (2.8 mV <sub>rms</sub> ) (typical) Referred to input,	<61 nV/√Hz (4.8 mV <sub>rms</sub> ) (typical) Referred to input,	(2.3 mV <sub>rms</sub> ) (typical) Referred to input,	(4.3 mV <sub>rms</sub> ) (typical) Referred to input,	(5.8 mV <sub>rms</sub> ) (typical) Referred to input,	(4.1 mV <sub>rms</sub> ) (typical) Referred to input,
Nominal)         Z.50% pbp: ±1.20         Stylpp: ±1.20         Stylpp: ±1.20         Stylpp: ±2.50         #4.0% pbp: ±2.50           mpat Common Mode Voltage Sange (Nominal)         ±4.V         ±2.4 Vmax           part Omerson Mode Voltage Sange (Nominal)         ±3.V Differential (nominal)         ±2.4 Vmax           Non-destructive part Mange (Nominal)         1.7X/1 0.0% (nominal)         1.7X/1 0.0% (nominal)         ±2.0 V           Steps the structive Non-destructive Nominal)         1.7X/1 0.0% (nominal)         1.7X/1 0.0% (nominal)         2.5X           Comput Resistance Nominal)         Dx10-S1 Lead, Dx10-F1 Tip >175 0. Differential         Dx10-S1 Lead, Dx20+F1 Tip >175 0. Differential         Dx20-S1 Tip >175 0. Differential         S00 0. Differential							
nput Common Mode Voltage Range (Nominal) mpot Offset Voltage Range mpot Anset Voltage Range Ministry Common Mode Dot Voltage Range Mominal)         ± 2 V Uniferential D2X / 1 9K (nominal)         ± 2 V V         ± 18 V           2 Karenuation D0 Kar Differential Pot 0-SI Lead, D2TO-SI Differential <sup>1</sup> > 400 Differential <sup>1</sup> D2DO Differential <sup>1</sup> > 400 Differential <sup>1</sup> > 400 Differential		2.5V <sub>pk-pk</sub> , ±1.25V	5V <sub>pk-pk</sub> , ±2.5V	2.5V <sub>pk-pk</sub> , ±1.25V	5V <sub>pk-pk</sub> , ±2.5V	4.8V <sub>pk-p</sub>	k, ±2.4V
Non-destructive part Range (Nominal)         ±20 V         ±18 V           Attenuation         1.7X/1.0X (nominal)         3.2X/1.9X (nominal)         3.2X/1.9X (nominal)         2.5X           Of Input Resistance Nominal)         100 KD Differential S0 KD Common Mode         3.2X/1.9X (nominal)         2.5X           Nominal)         200 Differential S0 KD Common Mode         2.4D Common Mode         2.4D Common Mode           Solid Common Mode         2.4D Common Mode         2.4D Common Mode         2.4D Common Mode           Dirt S1 Differential S1 S0 Differential         Dirt S0 Differential         S200 Di	nput Common Mode Voltage			±4 V		±2.4 Vmax	
Imput Range (Nominal)         Imput Range (Nominal)         3.2X / 1.9X (nominal)         3.2X / 1.9X (nominal)         3.2X / 1.9X (nominal)         3.2X / 1.9X (nominal)         2.2X           DO Input Resistance         100 KD Differential         17X / 1.0X (nominal)         3.2X / 1.9X (nominal)         3.2X / 1.9X (nominal)         4 KD Differential           DO Input Resistance         Dx10 + Timp         Dx20 + Timp         5.01 KD Offerential         5.01 KD Offerential         5.01 KD Offerential         5.02 O Differential         5.02 O Differential         5.02 O Differential         5.00 Differential         <			±3 V Dif	ferential (nominal)		n/a	
Attenuation         1.7X/1.0X (nominal)         3.2X/1.9X (nominal)         3.2X/1.9X (nominal)         3.2X/1.9X (nominal)         2.5X           Nominal)         000 Input Resistance         50.02 Common Mode         2.60 Common Mode         5.20				±20 V		±18 V	
Nominal) mpedance Zmin, typical)         Dx10-SI Lead, Dx10-HTTemp >175 Ω Differential         Dx20-SI Lead, Dx20-HTTemp >250 Q Differential         Dx20-SI Lead, Dx20-HTTemp >250 Q Differential         >200 Q Differential trough entire trough entire post of the post Dx20-ST Tip >175 Ω Differential         >200 Q Differential         >200 Q Differential trough entire trough entire post of the post Dx20-ST Tip >175 Q Differential         >200 Q Differential         2		1.7X / 1.0X (nominal)	3.2X / 1.9X (nominal)	1.7X / 1.0X (nominal)	3.2X / 1.9X (nominal)	2.5X	
Impedance Zmin, typical)         Dx10-SI Lead, Dx10+HTemp >175 Ω Differential <sup>1</sup> Dx20-SI Lead, Dx20+HTemp >250 Ω Differential <sup>1</sup> Dx20-SI Lead, Dx20+HTemp >280 Ω Differential <sup>1</sup> Dx20-SI Lead, Dx20+FT Tip >175 Ω Differential <sup>1</sup> Dx20-FT Tip >100 Ω Differential <sup>1</sup> Dx20-FT Tip >200 Ω at 6 GHz         Dx20-FT Tip 200 Ω at 6 GHz<							
Zmin, typical)     Dx10-HTGmp >175 0D HTGential*     Dx20-HTGmp >250 0D Differential*     Dx20-PT Tip >175 0D Inferential*     Dx20-PT Tip >100 0D Inferential*     Dx20-PT Tip P     Dx20-PT Tip     Dx20-PT Tip P     Dx20-PT Tip P <t< td=""><td></td><td>Dv10-SLLead</td><td></td><td></td><td>Dv20-SI Load</td><td></td><td></td></t<>		Dv10-SLLead			Dv20-SI Load		
>175 Ω Differential <sup>1</sup> >100 Ω Differential <sup>1</sup> Dx20-QC Tip >100 Ω Differential <sup>1</sup> Dx20-QC Tip >100 Ω Differential <sup>1</sup> Dx20-QC Tip >100 Ω Differential <sup>1</sup> Dx20-SP Tip >40 Ω Differential <sup>1</sup> Dx10-SP Tip >40 Ω Differential <sup>1</sup> Dx20-SP Tip Dx20-PT Tip Dx20-PT Tip 200 Ω at 3 GHz, 200 Ω at 3 GHz, 175 Ω at 4 GHz       Dx10-PT Tip Dx20-PT Tip 200 Ω at 3 GHz, 200 Ω at 6 GHz       Dx10-SP Tip 75 Ω at 2 GHz, 15 Ω at 4 GHz       Dx20-SP Tip 75 Ω at 2 GHz, 15 Ω at 4 GHz       Dx20-SP Tip 75 Ω at 2 GHz, 15 Ω at 4 GHz       Dx20-SP Tip 75 Ω at 2 GHz, 15 Ω at 4 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz       >40 dB DC to 1 GHz >30 dB DC GHz       >40 dB DC to 1 GHz >30 dB DC GHz		Dx10-HiTemp	Dx20-HiTemp	Dx10-HiTemp	Dx20-HiTemp	200 22 Diriciciliar	through entire
>125 Ω Differential <sup>1</sup> >125 Ω Differential <sup>1</sup> >100 Ω Differential <sup>1</sup> >40 Ω Differential <sup>1</sup>		>175 $\Omega$ Differential <sup>†</sup>	>175 $\Omega$ Differential <sup>†</sup>	>175 $\Omega$ Differential <sup>†</sup>	>175 $\Omega$ Differential <sup>†</sup>		
s-40 Ω Differential <sup>1</sup> >40 Ω Differential <sup>1</sup> >40 Ω Differential <sup>1</sup> >40 Ω Differential <sup>1</sup> >40 Ω Differential <sup>1</sup> Impedance Mid-band, typical)     Dx10-HTemp 276 Ω at 3 GHz, 175 Ω at 3 GHz, 226 Ω at 3 GHz, 2200 Ω at 3 GHz, 200 Ω at 6 GHz     Dx20-HTemp 475 Ω at 3 GHz, 200 Ω at 3 GHz, 200 Ω at 6 GHz     Dx20-HTemp 475 Ω at 2 GHz, 200 Ω at 3 GHz, 200 Ω at 6 GHz     Dx20-PT Tip 200 Ω at 3 GHz, 200 Ω at 6 GHz     Dx20-PT Tip 200 Ω at 6 GHz     Dx20-QC Tip 125 Ω at 2 GHz, 125 Ω at 4 GHz     Dx20-QC Tip 125 Ω at 3 GHz, 125 Ω at 6 GHz     Dx20-SP Tip 40 Ω at 3 GHz, 125 Ω at 6 GHz     Dx10-SP Tip 40 Ω at 3 GHz, 125 Ω at 6 GHz     Dx10-SP Tip 40 Ω at 3 GHz, 125 Ω at 4 GHz     S00 dB DC to 1 GHz 30 dB DC to 1 GHz 20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB DC to 1 GHz 20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3 GHz >20 dB to 6 GHz     >40 dB DC to 1 GHz >30 dB 1 to 3		>125 $\Omega$ Differential <sup>†</sup>	>125 $\Omega$ Differential <sup>†</sup>	>100 $\Omega$ Differential <sup>†</sup>	>100 $\Omega$ Differential <sup>†</sup>		
Mid-band, typical)         Dx10-HTTemp 275 Q at 3 GHz, 175 Q at 6 GHz         Dx20-HTTemp 250 Q at 3 GHz, 250 Q at 6 GHz         Dx10-HTTemp 250 Q at 2 GHz, 250 Q at 4 GHz         Dx20-HTTemp 200 Q at 6 GHz         Dx20-PT Tip 200 Q at 6 GHz         Dx20-QT Tip 150 Q at 2 GHz, 125 Q at 3 GHz, 125 Q at 3 GHz, 125 Q at 3 GHz, 200 Q at 6 GHz         Dx10-QT Tip 200 Q at 6 GHz         Dx20-QT Tip 200 Q at 6 GHz         Dx20-QT Tip 150 Q at 2 GHz, 150 Q at 2 GHz         Dx20-SP Tip 20 Q B to 6 GHz         Dx20-SP Tip 20 Q B to 6 GHz         Dx20-SP Tip 20 Q B to 6 GHz         >40 dB DC to 1 GHz >30 dB to 3 GHz         >40 dB DC to 1 GHz >30 dB to 3 GHz         >40 dB DC to 1 GHz >30 dB to 3 GHz         >40 dB DC to 1 GHz >20 dB to 6 GHz         >40 dB DC to 1 GHz >20 dB to 6 GHz         >40 dB DC to 1 GHz >20 dB to 6 GHz         >30 dB to 3		>40 Ω Differential <sup>†</sup>	>40 Ω Differential <sup>†</sup>	>40 Ω Differential <sup>†</sup>	>40 Ω Differential <sup>†</sup>		
200 Ω at 3 GHz, 200 Ω at 6 GHz       200 Ω at 3 GHz, 200 Ω at 6 GHz       200 Ω at 6 GHz       275 Ω at 2 GHz, 175 Ω at 4 GHz       275 Ω at 2 GHz, 175 Ω at 4 GHz       175 Ω at 4 GHz         Dx10-QC Tip 125 Ω at 3 GHz, 125 Ω at 6 GHz       Dx20-QC Tip 125 Ω at 3 GHz, 125 Ω at 6 GHz       Dx20-QC Tip 125 Ω at 3 GHz, 125 Ω at 6 GHz       Dx20-QC Tip 125 Ω at 3 GHz, 125 Ω at 6 GHz       Dx20-SP Tip 40 Ω at 3 GHz, 175 Ω at 2 GHz, 100 Ω at 6 GHz       Dx20-SP Tip 40 Ω at 3 GHz, 175 Ω at 3 GHz, 175 Ω at 3 GHz       Dx20-SP Tip 40 Ω at 3 GHz, 175 Ω at 3 GHz, 175 Ω at 3 GHz       Dx20-SP Tip 40 Ω at 3 GHz, 175 Ω at 3 GHz       Dx20-SP Tip 40 Ω at 3 GHz, 175 Ω at 3 GHz       Dx20-SP Tip 40 Ω at 3 GHz, 175 Ω at 4 GHz       Dx20-SP Tip 30 dB DC to 1 GHz 26 dB to 6 GHz       >40 dB DC to 1 GHz 30 dB DC to 1 0 MHz       >40 dB DC to 1 GHz 30 dB DC to 1 0 GHz       >40 dB DC to 1 GHz 30 dB 1 to 3 GHz       >40 dB DC to 1 GHz 30 dB 1 to 3 GHz       >30 dB DC to 1 0 MHz 26 dB to 6 GHz       >30 dB DC to 10 MHz 26 dB to 6 GHz       >30 dB DC to 10 MHz 20 dB to 6 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >40 dB DC to 1 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       >30 dB 1 to 3 GHz 30 dB 1 to 3 GHz       To 3 0 mm (0 to 0.12"), 75 µm diameter 2 mm Z-axis compliance       To 3 0 mm (0 to 0.12"), 75 µm	Impedance (Mid-band, typical)	Dx10-HiTemp 275 Ω at 3 GHz,	<b>Dx20-HiTemp</b> 475 Ω at 3 GHz,	<b>Dx10-HiTemp</b> 400 Ω at 2 GHz,	<b>Dx20-HiTemp</b> 700 Ω at 2 GHz,	200 Ω at 6 GHz	650 Ω at 3 GHz
125 Ω at 3 GHz, 125 Ω at 6 GHz       125 Ω at 3 GHz, 200 Ω at 6 GHz       125 Ω at 4 GHz, 125 Ω at 4 GHz       150 Ω at 2 GHz, 150 Ω at 4 GHz       150 Ω at 2 GHz, 150 Ω at 4 GHz       150 Ω at 2 GHz, 150 Ω at 4 GHz       160 Ω at 2 GHz, 150 Ω at 2 GHz, 15 Ω at 2 GHz, 15 Ω at 4 GHz       0x20-SP Tip AVQ OB DC to 10 MHz 26 dB to 6 GHz       0x20-SP Tip 40 Ω at 6 GHz       0x20-SP Tip 75 Ω at 2 GHz, 15 Ω at 4 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz >30 dB DC to 10 MHz 26 dB to 6 GHz       >40 dB DC to 1 GHz >30 dB DC to 1 GHz >30 dB DC to 1 GHz 20 dB to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz >30 dB 1 to 3 GHz       >40 dB DC to 1 GHz       >40 dB DC to 1 GHz       >30 dB 1 to 3 GHz       >20 dB to 6 GHz       >10 to 3.0 mm (0 to 0.12"), 75 m		200 Ω at 3 GHz,	200 Ω at 3 GHz,	275 Ω at 2 GHz,	275 Ω at 2 GHz,		
40 Ω at 3 GHz, 100 Ω at 6 GHz       40 Ω at 3 GHz, 175 Ω at 6 GHz       75 Ω at 2 GHz, 15 Ω at 4 GHz       75 Ω at 2 GHz, 15 Ω at 4 GHz       40 dB DC to 1 GHz, 30 dB DC to 1 GHz, 26 dB to 6 GHz       >40 dB DC to 1 GHz, 30 dB to 3 GHz, 26 dB to 4 GHz       >40 dB DC to 1 GHz, 30 dB to 3 GHz, 20 dB to 3 GHz, 30		125 Ω at 3 GHz,	125 Ω at 3 GHz,	150 Ω at 2 GHz,	150 Ω at 2 GHz,		
26 dB to 6 GHz     26 dB to 4 GHz     >30 dB to 3 GHz >20 to 70 °C       Emperature Humidity     Operating: 0 °C to 40 °C; Non-operating: -40 °C to 70 °C       Mumidity     Operating: 5% to 95% RH (non-condensing), 50% RH above 30 °C and 45% RH above 40 °C       ESD Tolerance     2 kV (typical), 100 pF, 300 Ω HBM       Dimensions     0 to 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter 0.55 mm (0.022") Z-axis compliance     0 to 3.0 mm (0 to 0.12"), 75 µm diameter 2 mm Z-axis compliance       Dx10-S/(Dx20-SI Dx10-QC/Dx20-QC Tips     0 to 11 mm (0 to 0.43") tip spread at circuit connection     NA		40 Ω at 3 GHz,	40 Ω at 3 GHz,	75 Ω at 2 GHz,	75 Ω at 2 GHz,		
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         SED Tolerance       2 kV (typical), 100 pF, 300 Ω HBM         Dimensions       0 to 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter       0 to 3.0 mm (0 to 0.12"), 75 µm diameter         Dy10-PT/Dx20-PT Positioner       0 to 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter       0 to 3.0 mm (0 to 0.12"), 75 µm diameter         Dx10-SI/Dx20-SI       0 to 11 mm (0 to 0.43") tip spread at circuit connection       NA	CMRR (Typical)					>30 dB to 3 GHz	>40 dB DC to 1 GHz >30 dB 1 to 3 GHz
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         2 kV (typical), 100 pF, 300 Ω HBM           Dimensions         0 to 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter 0.55 mm (0.022") Z-axis compliance         0 to 3.0 mm (0 to 0.12"), 75 µm diameter 2 mm Z-axis compliance           Dx10-DY/Dx20-PT Positioner Tip and Dx00A-AT Browser         0 to 11 mm (0 to 0.43") tip spread at circuit connection         NA							
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       0 to 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter         Dx10-PT/Dx20-PT Positioner       0 to 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter         Dimensions       0 to 3.0 mm (0 to 0.12"), 75 µm diameter         Dx10-SI/Dx20-SI       0 to 11 mm (0 to 0.43") tip spread at circuit connection         NA       NA							
Dimensions         Ot o 3.5 mm (0 to 0.14"), 305 µm (0.012") diameter         O to 3.0 mm (0 to 0.12"), 75 µm diameter           Tip and Dx00A-AT Browser         0.55 mm (0.022") Z-axis compliance         2 mm Z-axis compliance           Dx10-SI/Dx20-SI         0 to 11 mm (0 to 0.43") tip spread at circuit connection         NA	-		Non-operating: 5% to	95% RH (non-condensing), 75	% RH above 30 °C and 45% F	H above 40 °C	
Tip and Dx00A-AT Browser         0.55 mm (0.022") Z-axis compliance         2 mm Z-axis compliance           Dx10-SI/Dx20-SI         0 to 11 mm (0 to 0.43") tip spread at circuit connection         NA	Dimensions						
Dx10-QC/Dx20-QC Tips U to 11 mm (0 to 0.43°) tip spread at circuit connection NA	Dx10-PT/Dx20-PT Positioner Tip and Dx00A-AT Browser		0 to 3.5 mm (0 to 0.1 0.55 mm (0.0	4"), 305 μm (0.012") diameter 22") Z-axis compliance			
	Dx10-SI/Dx20-SI Dx10-QC/Dx20-QC Tips Cable Length					N	A

 Cable Length
 1.3 m (4 ft. 3 in) for both WL-PLink and WL-P

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

 \* Through entire frequency range

## **ORDERING INFORMATION**

Product Description	Product Code	
Complete Probe Systems		
4 GHz Complete Probe System with Dx10-SI Solder-In Tip (Qty. 1) Dx10-SP Square Pin (Qty. 1), Dx10-QC Quick Connect (Qty. 1), and Dx10-PT-KIT Positioner Tip Browser (Qty. 1)		
4 GHz Complete Probe System with Dx20-SI Solder-In Tip (Qty. 1) Dx20-SP Square Pin (Qty. 1), Dx20-QC Quick Connect (Qty. 1), and Dx20-PT-KIT Positioner Tip Browser (Qty. 1)		
6 GHz Complete Probe System with Dx10-SI Solder-In Tip (Qty. 1) Dx10-SP Square Pin (Qty. 1), Dx10-QC Quick Connect (Qty. 1), and Dx10-PT-KIT Positioner Tip Browser (Qty. 1)		
6 GHz Complete Probe System with Dx20-SI Solder-In Tip (Qty. 1) Dx20-SP Square Pin (Qty. 1), Dx20-QC Quick Connect (Qty. 1), and Dx20-PT-KIT Positioner Tip Browser (Qty. 1)		
Amplifier and Probe Tip Modules		
WaveLink D410 4 GHz/2.5Vp-p Differential Probe Amplifier with Dx10-SI Solder-In Tip (Qty. 1), Dx10-SP Square Pin (Qty. 1), and Dx10-QC Quick Connect (Qty. 1)	D410	
WaveLink D420 4 GHz/5Vp-p Differential Probe Amplifier with Dx20-SI Solder-In Tip (Qty. 1), Dx20-SP Square Pin (Qty. 1), and Dx20-QC Quick Connect (Qty. 1)	D420	
WaveLink D610 6 GHz/2.5Vp-p Differential Probe Amplifier with Dx10-SI Solder-In Tip (Qty. 1), Dx10-SP Square Pin (Qty. 1), and Dx10-QC Quick Connect (Qty. 1)	D610	
WaveLink D620 6 GHz/5Vp-p Differential Probe Amplifier with Dx20-SI Solder-In Tip (Qty. 1), Dx20-SP Square Pin (Qty. 1), Dx20-QC Quick Connect (Qty. 1)	D620	
WaveLink D300A-AT 3 GHz/4.8Vp-p Differential Amplifier Module with Adjustable Tip	D300A-AT	
WaveLink D600A-AT 6 GHz/4.8Vp-p Differential Amplifier Module with Adjustable Tip	D600A-AT	
Positioner Tip (Browser) Kits		
WaveLink Dx10-PT Adjustable Positioner Tip Kit.	Dx10-PT-KIT	

WaveLink Dx10-PT Adjustable Positioner Tip Kit.	Dx10-P1-KII
For use with Dx10 amplifiers.	
WaveLink Dx20-PT Adjustable Positioner Tip Kit.	Dx20-PT-KIT
For use with Dx20 amplifiers.	

#### Probe Platform/Cable Assemblies and Adapters

WaveLink ProLink Platform/Cable Assembly Kit with	WL-PLINK-CASE
complete soft carrying case for all probe items.	
WaveLink ProBus Platform/Cable Assembly Kit with complete soft carrying case for all probe items.	WL-PBUS-CASE

#### **Hi-Temp Leads**

WaveLink Temperature Extension Cables for Dx10. Includes set of Matched 30" High Temperature Cables (Qty. 1) and solder-in lead set (Qty. 1)	Dx10-HiTemp
WaveLink Temperature Extension Cables for Dx20.	Dx20-HiTemp

Includes set of Matched 30" High Temperature Cables (Qty. 1)	
and solder-in lead set (Qty. 1)	

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 D410. Includes test data.	D410-CCNIST
NIST Calibration for D420. Includes test data.	D420-CCNIST
NIST Calibration for D610. Includes test data.	D610-CCNIST
NIST Calibration for D620. Includes test data.	D620-CCNIST
NIST Calibration for D300A-AT. Includes test data.	D300A-AT-CCNIST
NIST Calibration for D600A-AT. Includes test data.	D600A-AT-CCNIST
Replacement Parts	
Replacement Dx10-SI 4 & 6 GHz Solder-In Lead with Qty. 5 Spare Resistors.	Dx10-SI
Replacement Dx20-SI 4 & 6 GHz Solder-In Lead with Oty. 5 Spare Resistors.	Dx20-SI
Replacement Dx10-QC 4 & 6 GHz Quick Connect Lead	Dx10-QC
Replacement Dx20-QC 4 & 6 GHz Quick Connect Lead	Dx20-QC
Replacement Dx10-SP 4 & 6 GHz Square Pin Lead	Dx10-SP
Replacement Dx20-SP 4 & 6 GHz Square Pin Lead	Dx20-SP
Replacement SI Resistor Kit for Dx10/Dx20 - Kit of 5	PKxx0-SI
Replacement QC Resistor Kit for Dx10/Dx20 - Kit of 5	PKxx0-QC
Oty. 4 Replacement Pogo Pin Tips and Oty. 2 Replacement Sockets for Dx10-PT and Dx20-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	Dxx0-PT-GUIDES

Guides (200 individual guides/package)

#### **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.

© 2012 by Teledyne LeCroy, Inc. All rights reserved. Specifications, prices, availability, and delivery subject to change without notice. Product or brand names are trademarks or requested trademarks of their respective holders.