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## Test & Measurement

- sales
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- calibration
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## Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

If you click on the “Click-to-Call” logo below, you can call us for FREE!

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# TriMode™ Probe Family

## ► P7500 Series



► P7516 with optional P75PDPM.

## TriMode™ Probing, Connectivity and Performance

### Revolutionary TriMode Probing Architecture

**Tektronix P7500 Series – A New Differential Probe Architecture Leading The Way In High-speed Probing Solutions** – One probe setup makes differential, single-ended and common mode measurements accurately and definitively.

Tektronix is a known leader when it comes to signal fidelity and signal acquisition. Building on our history of market-leading

innovations in probing, we have invented a revolutionary new probing architecture called TriMode Probing that defines the next-generation industry benchmark for usability and signal fidelity. Tektronix' new differential architecture changes the rules and allows you to work more effectively and efficiently. By enabling unique functionality, the P7500 Series differential probes allow you to switch between differential, single-ended and common mode measurements without moving the probe from its connection points.

## ► Features & Benefits

**TriMode** – One Setup, Three Measurements without Adjusting Probe Tip Connections

- Differential
- Single-ended
- Common Mode (Requires Only One Probe vs. Conventional Probing Techniques)

### Signal Fidelity

- P7516
  - Bandwidth: >16 GHz (Typical)
  - Rise Time 10% to 90%: <32 ps (Typical)
  - Rise Time 20% to 80%: <24 ps (Typical)
- P7513
  - Bandwidth: >13 GHz (Typical)
  - Rise Time 10% to 90%: <40 ps (Typical)
  - Rise Time 20% to 80%: <28 ps (Typical)

### Versatile Connectivity –

#### Solderdown, Hand-held, Fixtured

- TriMode Solder Down
  - Small Form Factor Allowing Easy Access Between PCBs
  - Long Reach Accessibility with Superior Signal Fidelity
- Precision Differential Probing Module – Optional Hand-held and Fixtured Probing
  - Small Precision Tapered Tips, an Articulated Joint for Compliance and Variable Tip Spacing

### TekConnect® Interface –

TekConnect Scope/Probe Control and Usability

- Direct Control from Probe Compensation Box or From Scope Menu
- Automated Measurement Control Through the TekConnect™ Interface to Connect to Tektronix Real-Time Oscilloscopes
- View TriMode/Attenuation Settings on Probe Comp Box from Top or End Panel

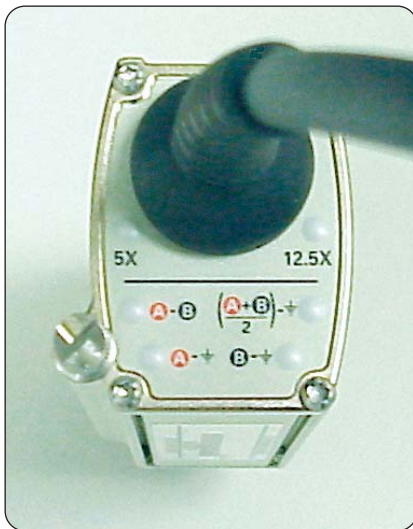
## ► Applications

Examples Include, but Are Not Limited to:

- PCI-Express II, Serial ATA III, DDRII, FB-DIMM, Rambus, XAUI, 2\*XAUI

## TriMode™ Probe Family

### ► P7500 Series

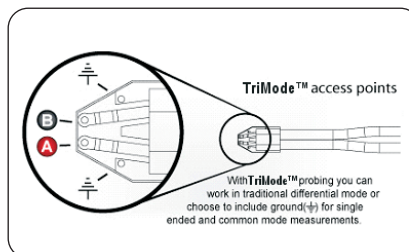


► End panel view.

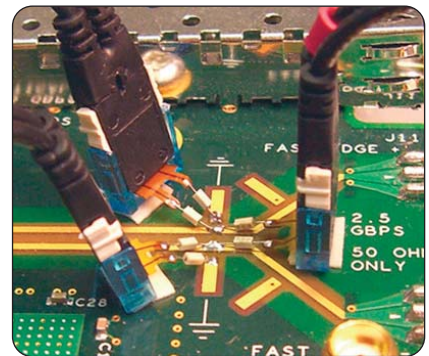
Improved productivity is achieved by reducing setup time. With this new differential probe architecture you set up once and make three different measurements by changing the probe settings. The TriMode™ probe architecture for the P7500 Series probes continues the tradition of highest bandwidth and low DUT loading while providing improved connectivity and value.



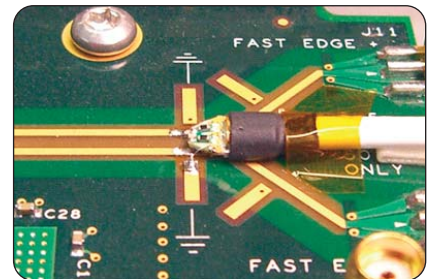
► Top panel view.



► Tip view.



► Before TriMode: 1 probe for differential; 2 probes for SE and common mode; or 1 probe soldered and re-soldered 3 times; 2 probes for common mode.



► After TriMode (P75TLRST): 1 probe for differential, single-ended and common mode, with only 1 setup required.

## Connectivity Plus – Solderdown – Handheld – Fixtured

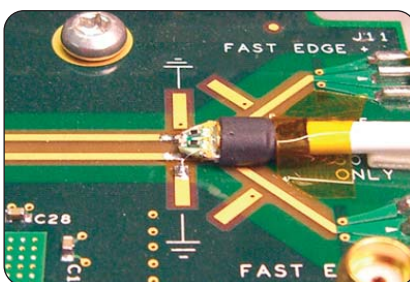
The P7500 Series differential probe architecture offers a new level of connectivity and provides the highest probe fidelity available for real-time oscilloscopes. The new improved multi-point connectivity solutions of the P7500 Series include:

- Standard **TriMode™ Long Reach Solder Tip** (P75TLRST) – with a longer reach and very small, low profile form factor
- Optional **Precision Differential Probing Module** (P75PDPM) – for handheld and fixtured applications is also available

Measurements on and between circuit boards is now easier and quicker with the Long Reach Solder Tips. These tips are easily interchanged by simply unplugging the tip (P75TLRST) and plugging in another.

Hand-held and fixtured probing needs are met using the optional P75PDPM (Precision Differential Probing Module). Its small precision tapered tips, variable articulation of the probe tip and quick adjusting-variable tip spacing provides the needed flexibility for adapting to vias and other test points of differing sizes from 30 mm to 180 mm.

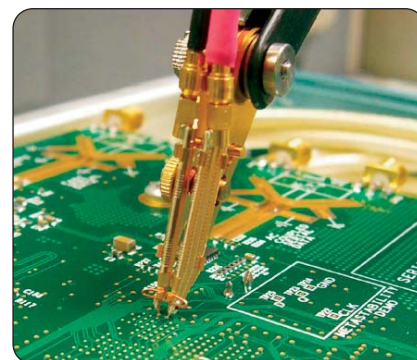
These precision connectivity tools enable you to access multiple signals on anything from convenient test pads to hard-to-reach, high-density circuitry.



► P75TLRST TriMode Long Reach Solder Tip.

## Signal Fidelity

You can be confident in the signal fidelity of your measurements. Tektronix' innovative new differential architecture coupled with the superior electrical performance of IBM SiGe technology provides the bandwidth and fidelity to meet the industry needs of today as well as tomorrow.



► P7500 with P75PDPM.

The new P7500 Series differential probe architecture provides:

- Highest bandwidth available >16 GHz
- Excellent step response
- Low DUT loading
- High CMRR
- Differential, single-ended or common mode measurements using one probe



## TriMode™ Probe Family

### ► P7500 Series

## ► Characteristics

| TriMode™ Probe Architecture        | P7516   | P7513   |
|------------------------------------|---|---|
| Bandwidth (typical)                | >16 GHz   | >13 GHz   |
| Rise Time (10% to 90%) (typical)   | <32 ps  | <40 ps  |
| Rise Time (20% to 80%) (typical)   | <24 ps  | <28 ps  |
| Attenuation (user selectable)      | 5X or 12.5X (nominal)   | 5X or 12.5X (nominal)   |
| Differential Input Range           | ±0.75 V (5X)<br>±1.75 V (12.5X)   | ±0.75 V (5X)<br>±1.75 V (12.5X)   |
| Common Mode Input Range            | +4.0 to -2.0 V  | +4.0 to -2.0 V  |
| DC Input Resistance (differential) | 100 kΩ  | 100 kΩ  |
| Noise                              | <33 nV/√Hz (5X)<br><48 nV/√Hz (12.5X)   | <33 nV/√Hz (5X)<br><48 nV/√Hz (12.5X)   |
| CMRR (differential mode)           | >60 dB @ DC<br>>40 dB to 50 MHz<br>>30 dB to 1 GHz<br>>20 dB to 8 GHz<br>>15 dB to 15 GHz | >60 dB @ DC<br>>40 dB to 50 MHz<br>>30 dB to 1 GHz<br>>20 dB to 7 GHz<br>>15 dB to 13 GHz |
| Isolation (A input, B input mode)  | >40 dB to 50 MHz<br>>30 dB to 1 GHz<br>>20 dB to 8 GHz<br>>10 dB to 16 GHz                | >40 dB to 50 MHz<br>>30 dB to 1 GHz<br>>20 dB to 7 GHz<br>>10 dB to 13 GHz                |
| DMRR (common mode)                 | >40 dB to 50 MHz<br>>30 dB to 1 GHz<br>>20 dB to 8 GHz<br>>10 dB to 16 GHz                | >40 dB to 50 MHz<br>>30 dB to 1 GHz<br>>20 dB to 7 GHz<br>>15 dB to 13 GHz                |
| Non-destructive Input Range        | ±15 V   | ±15 V   |
| Interface                          | TekConnect™   | TekConnect  |
| Cable Length                       | 1 meter   | 1 meter   |

### Minimum System Requirements/Instrument Compatibility

P7500 Series TriMode Probes are compatible with the DPO/DSA70000 series and any legacy<sup>\*1</sup> TekConnect interface oscilloscopes.

The chart below shows recommended probe/oscilloscope model combinations.

| Instrument   | BW (Scope) | Recommended Probe |
|--------------|------------|-------------------|
| DPO/DSA72004 | 20 GHz     | P7516             |
| DPO/DSA71604 | 16 GHz     | P7516             |
| DPO/DSA71254 | 12.5 GHz   | P7513, P7313      |
| 80A03        |            | P7516, P7513      |
| RTPA2A       |            | P7516, P7513      |

<sup>\*1</sup> TDS6154C and 61254C require firmware version 5.1.5 and above.

## ► Ordering Information

### P7516

TriMode™ Differential Probe, 16 GHz,  
for TekConnect™ Interface Oscilloscopes.

**Includes:** See Standard Accessories table.

### P7513

TriMode Differential Probe, 13 GHz, for  
TekConnect Interface Oscilloscopes.

**Includes:** See Standard Accessories table.

### User Manual Options

Opt. L5 – Japanese.

Opt. L7 – Simplified Chinese.

### ► Service Options

|     |   |
|-----|---|
| CA1 | A single calibration event or coverage for the designated calibration interval, whichever comes first |
| C3  | Calibration Service 3 years   |
| C5  | Calibration Service 5 years   |
| D3  | Calibration Data Report 3 years (with Option C3)  |
| D5  | Calibration Data Report 5 years (with Option C5)  |
| R3  | Repair Service 3 years  |
| R5  | Repair Service 5 years  |

### ► Additional Service Products Available During Warranty (DW) or Post Warranty (PW)

|      |  |
|------|--|
| CA1  | A single calibration event or coverage for the designated calibration interval, whichever comes first                            |
| R1PW | Repair service coverage 1 year post warranty   |
| R2PW | Repair service coverage 2 year post warranty   |
| R3PW | Repair service coverage 3 years (includes product warranty period). 3-year period starts at time of customer instrument purchase |
| R5PW | Repair service coverage 5 years (includes product warranty period). 5-year period starts at time of customer instrument purchase |

## TriMode™ Probe Family

### ► P7500 Series

#### ► Standard Accessories

| Description  | P7516  | P7513  | Reorder<br>Part Number   |
|--|--------|--------|--|
| Probe Carrying Case  | 1 each | 1 each | 016-1997-XX  |
| The Documentation Kit Contains:<br>Printed Quick Start User Manual,<br>CD-ROM contains PDFs of basic probe and measurement literature, and the probe<br>manuals (the user manual and a probe specific technical reference PDF) | 1 each | 1 each | 020-2790-XX<br>(English with Standard)<br>020-2791-XX<br>(Japanese with Opt. L5)<br>020-2792-XX<br>(Simplified Chinese with Opt. L7) |
| Anti-static Wrist Strap  | 1 each | 1 each | 006-3415-XX  |
| Certificate of Traceable Calibration   | 1 each | 1 each | Standard with probe  |
| Data Calibration Report: Lists the Manufacturing Test Results of Your<br>Probe at the Time of Shipment and Is Included with Every Probe  | 1 each | 1 each | Standard with probe  |
| Probe Calibration Fixture  | 1 each | 1 each | 067-1821-XX  |
| 50 $\Omega$ Coax Cable – Male BNC to Male BNC  | 1 each | 1 each | 012-0208-XX  |
| 50 $\Omega$ Coax Cable – Male SMA to Male SMA  | 1 each | 1 each | 174-1120-XX  |
| Accessory Box with Foam Inserts (see contents listing below 1 through 7)   | 1 each | 1 each | 020-2729-XX  |
| 1) P7500 TriMode™ Long Reach Solder Tip  | 2 each | 2 each | P75TLRST   |
| 2) G3PO Bullet Kit (includes 4 bullets)  | 1 kit  | 1 kit  | 013-0359-XX  |
| 3) G3PO Bullet Removal Tool  | 1 each | 1 each | 003-1896-XX  |
| 4) Solder Kit: (solder spool, wire spool)  | 1 each | 1 each | 020-2754-XX  |
| 5) Tape, Adhesive (strips, 10 each)  | 1 kit  | 1 kit  | 006-8237-XX  |
| 6) Marker Band Set (2 each of 5 colors)  | 1 kit  | 1 kit  | 016-0633-XX  |
| 7) Accessory Performance Summary and Reorder Sheet   | 1 each | 1 each | 001-1423-XX  |

▶ Recommended Accessories

| Description   | Part Number |
|---|-------------|
| P7500 Series Precision Differential Probing Module  | P75PDPM     |
| P7500 Precision Differential Probing Module Accessory Kit<br>(see item 1 through 8 below) |             |
| 1) Accessory Performance Summary and Reorder Sheet  | 001-1423-XX |
| 2) P7500 Tip Cable Pair (matched to 1ps, 1 each)  | P75TC       |
| 3) P7500 Probing Module Tip<br>Probe Tips Replacement Kit (1-Right and 1-Left)            | P75PMT      |
| 4) Accessory Kit; Ground Spring, Large 4 each   | 016-1998-XX |
| 5) Accessory Kit; Ground Spring, Small 4 each   | 016-1999-XX |
| 6) Handle, Adapter (Probing Module)   | 367-0545-XX |
| 7) G3PO Separator Tool  | 003-1897-XX |
| 8) Ground spring tool   | 003-1900-XX |
| Deskew Fixture  | 067-1586-XX |
| Probe Positioner  | PPM100      |
| Precision, 3 Position, Probe Positioner   | PPM203B     |
| 8200 Series TekConnect® Probe Interface   | 80A03       |
| RTSA Series TekConnect Probe Interface  | RTPA2A      |



## TriMode™ Probe Family

### ► P7500 Series

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Our most up-to-date product information is available at:

**www.tektronix.com**



Product(s) are manufactured in ISO registered facilities.

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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