

# Optical-to-Electrical Converters

► P6701B • P6703B



► P6701B, P6703B.

The Tektronix P6700 Series optical-to-electrical (O/E) converters change optical signals into electrical signals for convenient analysis on Tektronix TDS7000/5000/3000/500/600/700 Series oscilloscopes equipped with the TEKPROBE interface, or any other oscilloscope when used with the 1103 TEKPROBE power supply. The P6700 Series O/E converters are ideal for optical source characterization in the development, manufacture or service of optical communication systems and devices.

Small, conveniently packaged P6701B and P6703B optical-to-electrical analog converters provide an accurate interface for optical pulse shape measurements. The high gain, large dynamic range and stable

output offset of these O/E converters make them ideal for performing eye-pattern analysis and extinction measurements.

The P6701B/P6703B optical input is a one meter, 62.5µ multimode fiber with an FC/PC connector. Using the standard assortment of hybrid fiber optic mating sleeves, these O/Es can accommodate the various industry connector standards.

The TEKPROBE interface provides power, auto-scaling, auto-termination and correct units (microwatts) when used with Tektronix TDS500/600/700 Series oscilloscopes.

## ► Features & Benefits

Broad Wavelength Response  
500 to 950 nm or 1100 to 1700 nm

High Bandwidth DC up to 1.2 GHz

High Gain 1 V/mW

Low Noise <11 pW/square root Hz

Probe Connects Directly to TDS7000/5000/3000/500/600/700 Series Scope (TEKPROBE™) or Other 50 Ω Instruments with 1103 TEKPROBE® Power Supply

SONET/SDH and Fibre Channel Reference Receiver Performance: TDS500C/700C (Opt. 3C or 4C) P6701B: Fibre Channel up to 1063 Mb/s, P6703B: SONET/SDH up to 622 Mb/s

## ► Applications

Eye-pattern Testing of Optical Communication Signals (SONET/SDH and Fibre Channel)

COMPUTING

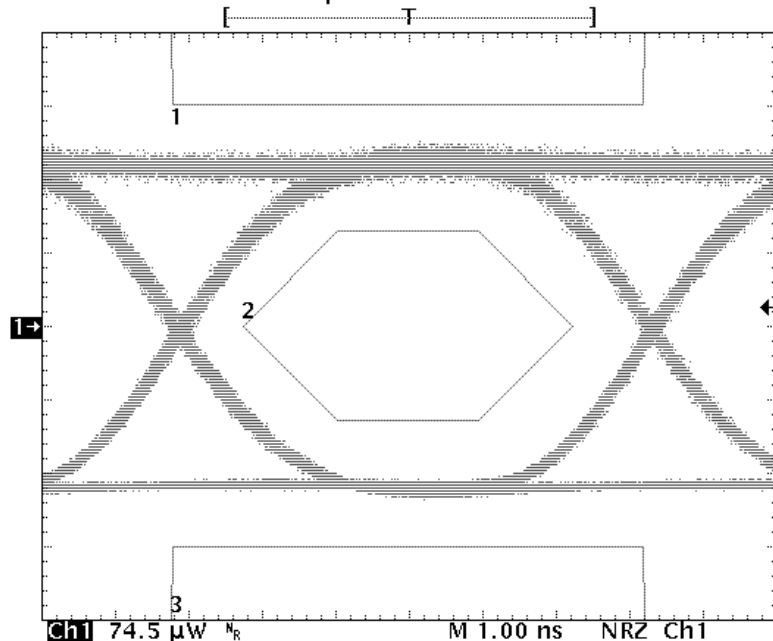
COMMUNICATIONS

VIDEO

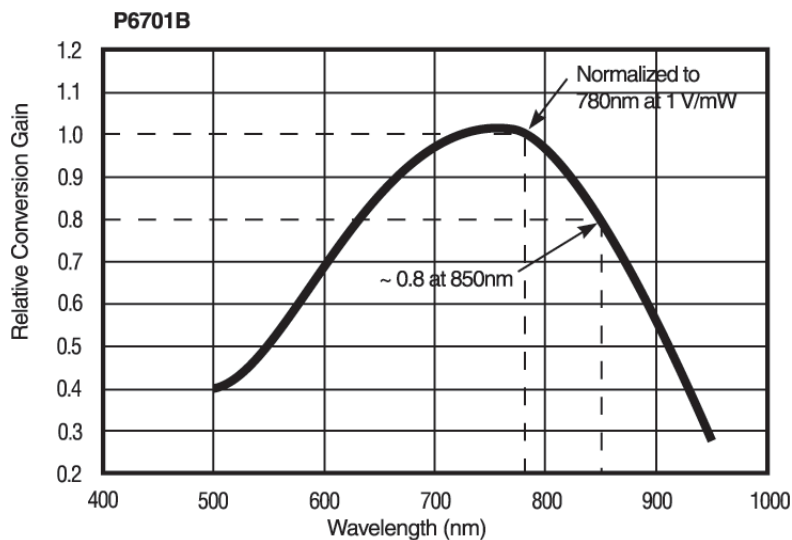
## Optical-to-Electrical Converters

► P6701B • P6703B

Tek Run: 50.0 GS/s ET Sample



► OC-3/STM-1 SONET/SDH transmitter eye pattern test.



► P6701B: Typical wavelength dependent gain (at 25 °C).

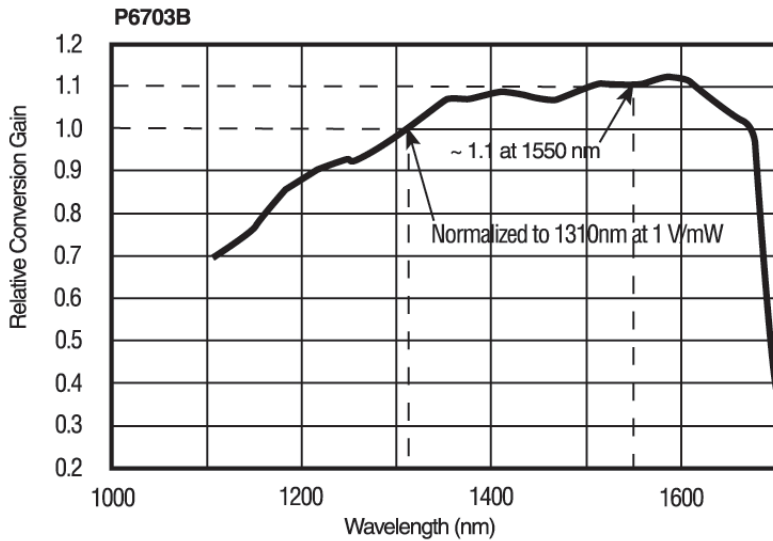
### SONET/SDH and Fibre Channel Reference Receiver Performance

The P6701B and P6703B can be transformed into ITU G.957 or ANSI FC-PH reference receivers when they are either ordered as an option (3C - P6701B, 4C - P6703B) to the latest Tektronix TDS500C/700 Series digitizing oscilloscopes or as a stand-alone hardware solution (nominal).

The TDS Option 3C provides a calibrated P6701B reference receiver for Fibre Channel data rates from 133 Mb/s up to 1063 Mb/s. Option 4C provides a calibrated P6703B reference receiver for SONET/SDH data rates from 52 Mb/s up to 622 Mb/s. The optical-to-electrical converters are matched and calibrated to a specific scope channel which ensures complete system compliance with the fourth-order Bessel-Thompson frequency response.

The P6703B, when used in conjunction with the FS52, FS156 or FS622 SONET/SDH hardware filters, provide customers with a nominal reference receiver performance for 51.84 Mb/s, 155.52 Mb/s, and 622 Mb/s.

The standard P6701B has a nominal frequency response which follows the fourth-order Bessel-Thompson for Fibre Channel 1063 Mb/s. The 1103 TEKPROBE power supply can be used to connect these products to the 11800 Series or CSA803 Series sampling oscilloscopes.



► P6703B: Typical wavelength dependent gain (at 25 °C).

## ► Characteristics

	P6701B	P6703B
Wavelength Response	500 to 950 nm	1100 to 1650 nm
Bandwidth*1 (Typical)	DC to 1.0 GHz	DC to 1.2 GHz
Rise Time (Typical)	≤500 ps	≤395 ps
Conversion Gain	1 V/mW	1 V/mW
Max. Input Optical Power	1 mW (0 dBm)*2	1 mW (0 dBm)*2
	10 mW (10 dBm)*3	10 mW (10 dBm)*3
	20 mW (13 dBm)*4	20 mW (13 dBm)*4
Max. Output Modulation Depth for Reference Receiver Performance	≤200 mV <sub>p-p</sub>	≤200 mV <sub>p-p</sub>
Noise Equivalent Power	≤0.87 μW (RMS)*5	≤0.59 μW (RMS)*5
	≤28 pW per square root Hz	≤19 pW per square root Hz
Max. Input Fiber Core Diameter	62.5 μm	62.5 μm

\*1 Optical Bandwidth (-6 dB electrical).

\*2 Maximum average operating power.

\*3 Max average nondestruct.

\*4 Max peak nondestruct.

\*5 1 GHz low pass filter in series with output.

## ► Ordering Information

### P6701B

Optical-to-electrical Converter with FC/PC Connector.

**Includes:** Hard Case, User Manual (English, French, German, and Japanese), Assorted Fiber Optic Hybrid Connectors (FC/FC, FC/ST and FC/SC), Certificate of Traceable Calibration. Please specify power plug when ordering.

### P6703B

Optical-to-electrical Converter with FC/PC Connector.

**Includes:** Hard Case, User Manual (English, French, German, and Japanese), Assorted Fiber Optic Hybrid Connectors (FC/FC, FC/ST and FC/SC), Certificate of Traceable Calibration. Please specify power plug when ordering.

## Service

**Opt. C3** – Calibration Service 3 Years.

**Opt. C5** – Calibration Service 5 Years.

**Opt. D1** – Calibration Data Report.

**Opt. D3** – Calibration Data Report 3 Years (with Option C3).

**Opt. D5** – Calibration Data Report 5 Years (with Option C5).

**Opt. R3** – Repair Service 3 Years.

**Opt. R5** – Repair Service 5 Years.

## Power Plug Options

**Opt. A0** – US Plug, 115 V, 60 Hz.

**Opt. A1** – Euro Plug, 220 V, 50 Hz.

**Opt. A2** – UK Plug, 240 V, 50 Hz.

**Opt. A3** – Australian Plug, 240 V, 50 Hz.

**Opt. A5** – Swiss Plug, 220 V, 50 Hz.

## Accessories

**Single-mode Fiber Optic Cables** – (9 μm)

FC/PC to FC/PC. Order 174-1387-00.

FC/PC to ST. Order 174-1386-00.

FC/PC to SC/PC. Order 174-3921-00.

FC/PC to Diamond (2.5). Order 174-1497-00.

FC/PC to Diamond (3.5). Order 174-1385-00.

**Multimode Fiber Optic Cables** – (62.5 μm)

FC/PC to FC/PC. Order 174-2322-00.

FC/PC to SC/PC. Order 174-4093-00.

FC/PC to SMA. Order 174-2324-00.

**90/10, 3 Port Single-mode Optical Splitter**

**FC/PC Connectors** – Order 174-3737-00.

**10 dB, In-line Single-mode Optical Attenuator**

**FC/PC Connectors** – Order 119-5118-00.

**DIN/FC Fiber Optic Hybrid Connector** –

Order 020-2209-00.

## Optical-to-Electrical Converters

► P6701B • P6703B

### Contact Tektronix:

ASEAN / Australasia (65) 6356 3900

Austria +41 52 675 3777

Balkan, Israel, South Africa and other ISE Countries +41 52 675 3777

Belgium 07 81 60166

Brazil & South America (11) 40669400

Canada 1 (800) 661-5625

Central East Europe, Ukraine and the Baltics +41 52 675 3777

Central Europe & Greece +41 52 675 3777

Denmark +45 80 88 1401

Finland +41 52 675 3777

France +33 (0) 1 69 86 81 81

Germany +49 (221) 94 77 400

Hong Kong (852) 2585-6688

India (91) 80-22275577

Italy +39 (02) 25086 1

Japan 81 (3) 6714-3010

Luxembourg +44 (0) 1344 392400

Mexico, Central America & Caribbean 52 (55) 5424700

Middle East, Asia and North Africa +41 52 675 3777

The Netherlands 090 02 021797

Norway 800 16098

People's Republic of China 86 (10) 6235 1230

Poland +41 52 675 3777

Portugal 80 08 12370

Republic of Korea 82 (2) 528-5299

Russia & CIS +7 (495) 7484900

South Africa +27 11 254 8360

Spain (+34) 901 988 054

Sweden 020 08 80371

Switzerland +41 52 675 3777

Taiwan 886 (2) 2722-9622

United Kingdom & Eire +44 (0) 1344 392400

USA 1 (800) 426-2200

For other areas contact Tektronix, Inc. at: 1 (503) 627-7111

Updated 15 September 2006

Our most up-to-date product information is available at:  
**[www.tektronix.com](http://www.tektronix.com)**

Product(s) are manufactured  
in ISO registered facilities.



Copyright © 2006, Tektronix. All rights reserved. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX and TEK are registered trademarks of Tektronix, Inc. All other trade names referenced are the service marks, trademarks or registered trademarks of their respective companies.

10/06 DV/WOW

60W-11304-2