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Service Manual

Tektronix

P6701B, P6703B & P6723 O/E Converters

070-9892-03

Warning
The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

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Tektronix warrants that the products that it manufactures and sells will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If a product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-Tektronix supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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If you have not already purchased Service Assurance for this product, you may do so at any time during the product's warranty period. Service Assurance provides Repair Protection and Calibration Services to meet your needs.

Repair Protection extends priority repair services beyond the product's warranty period; you may purchase up to three years of Repair Protection.

Calibration Services provide annual calibration of your product, standards compliance and required audit documentation, recall assurance, and reminder notification of scheduled calibration. Coverage begins upon registration; you may purchase up to five years of Calibration Services.

Service Assurance Advantages

- Priced well below the cost of a single repair or calibration
- Avoid delays for service by eliminating the need for separate purchase authorizations from your company
- Eliminates unexpected service expenses

For Information and Ordering

For more information or to order Service Assurance, contact your Tektronix representative and provide the information below. Service Assurance may not be available in locations outside the United States of America.

Name	VISA or Master Card number and expiration
Company	date or purchase order number
Address	Repair Protection (1,2, or 3 years)
City, State, Postal code	Calibration Services (1,2,3,4, or 5 years)
Country	Instrument model and serial number
Phone	Instrument purchase date

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

To Avoid Fire or Personal Injury

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Wear Eye Protection. Wear eye protection if exposure to high-intensity rays or laser radiation exists.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Symbols and Terms

Terms in this Manual. These terms may appear in this manual:



WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*



CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:



WARNING
High Voltage



Protective Ground
(Earth) Terminal



CAUTION
Refer to Manual



Double
Insulated

Preface

This manual contains specifications and procedures for servicing the P6701B, P6703B, and P6723 O/E Converters.

Related Manuals

For operating instructions, refer to the *P6701B, P6703B, and P6723 Instructions* (070-9890-XX).

Contacting Tektronix

Phone	1-800-833-9200*
Address	Tektronix, Inc. Department or name (if known) 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Web site	www.tektronix.com
Sales support	1-800-833-9200, select option 1*
Service support	1-800-833-9200, select option 2*
Technical support	Email: techsupport@tektronix.com 1-800-833-9200, select option 3* 6:00 a.m. – 5:00 p.m. Pacific time

* **This phone number is toll free in North America. After office hours, please leave a voice mail message.**
Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.

P6701B and P6703B Specifications

The specifications in Tables 1 through 3 apply to a P6701B or P6703B O/E converter. The converter must have a warm-up period of at least 20 minutes and be in an environment that does not exceed the limits described in Table 1.

Specifications for the P6701B and P6703B O/E converters fall into three categories: warranted, typical, and nominal characteristics.

Warranted Characteristics

Warranted characteristics (Table 1) describes guaranteed performance within tolerance limits or certain type-tested requirements. Warranted characteristics that have checks in the *Performance Verification* section of the service manual (070-9892-XX) are marked with the ✓ symbol.

Table 1: P6701B and P6703B warranted electrical characteristics

DC optical input dynamic range	DC electrical out will meet conversion gain specifications up to 11 mW (0 dBm) peak optical power input
Absolute maximum non-destructive optical input	10 mW average power; 20 mW peak power
✓ DC conversion gain	P6701B: 1 V/mW ± 8% at DC, 780 nm P6703B: 1 V/mW ± 8% at DC, 1310 nm
✓ AC conversion gain	P6701B: 1 V/mW ± 8%, with ≤ 100 μW_{P-P} optical modulation, 780 nm P6703B: 1 V/mW ± 8%, with ≤ 100 μW_{P-P} optical modulation, 1310 nm
✓ Output zero	≤ ± 1 mV into 50 Ω, 20 to 25° C
✓ Noise equivalent power (with 1 GHz low-pass filter)	P6701B: ≤ 0.87 μW_{RMS} ($\leq$ 28 pW/$\sqrt{Hz}$) P6703B: ≤ 0.59 μW_{RMS} ($\leq$ 19 pW/$\sqrt{Hz}$)
Output impedance	50 Ω ± 10%
Temperature	Operating: 0 to +50° C Nonoperating: -40 to +71° C

Table 1: P6701B and P6703B warranted electrical characteristics (cont.)

Humidity	Operating: 0-90% RH, tested at + 30 to + 50° C Nonoperating: 0-90% RH, tested at + 30 to + 60° C
Altitude	Operating: 4,572 m (15,000 ft) Nonoperating: 15,240 m (50,000 ft)

Typical Characteristics

Typical characteristics (Table 2) describe typical but not guaranteed performance.

Table 2: P6701B and P6703B typical electrical characteristics

Effective wavelength range	P6701B: 500 to 950 nm P6703B: 1100 to 1650 nm
Wavelength dependent gain	See Figure 1
Optical bandwidth	P6701B: ≥ 1.0 GHz P6703B: ≥ 1.2 GHz
Rise time	P6701B: ≤ 475 ps P6703B: ≤ 390 ps (peak optical signal input < 100 μW_{P-P})
Aberrations	≤ ± 15% peak optical signal input < 200 μW_{P-P}

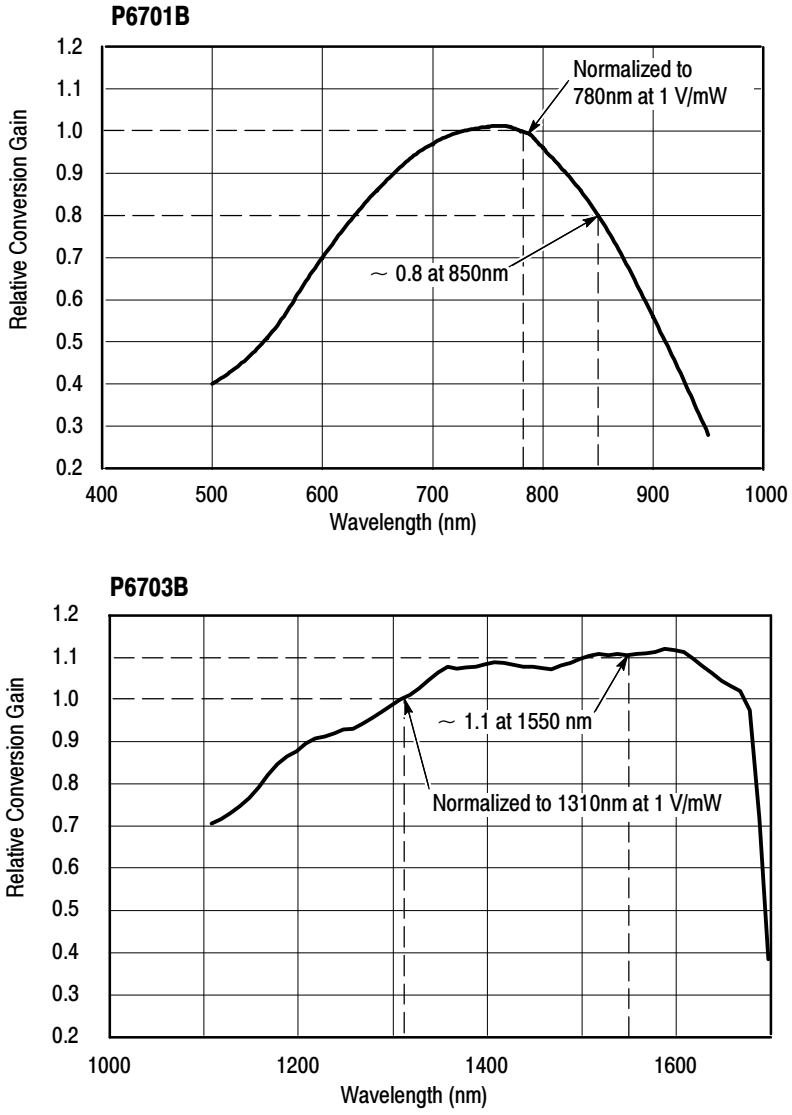


Figure 1: Typical wavelength dependent gain (25° C ambient)

Nominal Characteristics

Nominal characteristics (Table 3) describe guaranteed traits, but the traits do not have tolerance limits.

Table 3: P6701B and P6703B nominal electrical characteristics

Optical input coupling	Accepts up to 62.5 μm core diameter, Numerical Aperture ≤ 0.29
Optical fiber dressing	> 1 inch bend radius, not to exceed a bend radius of < 1 inch to maintain performance.
Absolute non-destructive fiber bend	0.5 inch bend radius
DC conversion gain linearity	< 3% deviation in DC conversion gain from 50 μW to 1000 μW average optical input relative to conversion gain with 500 μW average optical power input.
Output zero drift	≤ ± 1.5 mV with output load requirement met for ideally stable optical input, 0-25° C
Output load requirement	50 Ω ± 1%

P6723 Specifications

The specifications in Tables 4 through 6 apply to a P6723 O/E converter. The converter must have a warm-up period of at least 20 minutes and be in an environment that does not exceed the limits described in Table 4.

Specifications for the P6723 O/E converter fall into three categories: warranted, typical, and nominal characteristics.

Warranted Characteristics

Warranted characteristics (Table 4) describes guaranteed performance within tolerance limits or certain type-tested requirements. Warranted characteristics that have checks in the *Performance Verification* section of the service manual (070-9892-XX) are marked with the ✓ symbol.

Table 4: P6723 warranted electrical characteristics

Optical sensitivity	- 8.0 dBm maximum average optical power, - 28 dBm minimum average optical power[1]
Output rise time and fall time	≤ 455 ps
✓ Output amplitude	Minimum: ≥ 690 mV_{P-P} Maximum: ≤ 1.1 V_{P-P}
Output impedance	50 ± 10%
Output VSWR	< 1.5:1 from 10 MHz to 1 GHz < 2.0:1 from 1 GHz to 2 GHz
Temperature	Operating: 0 to +50° C Nonoperating: -40 to +71° C
Humidity	Operating: 0-90% RH, tested at + 30 to + 50° C Nonoperating: 0-90% RH, tested at + 30 to + 60° C
Altitude	Operating: 4,572 m (15,000 ft) Nonoperating: 15,240 m (50,000 ft)

[1] **Measured with an optical input using 2^{23} - 1 pseudorandom word having a 50% duty cycle.**

Typical Characteristics

Typical characteristics (Table 5) describe typical but not guaranteed performance.

Table 5: P6723 typical electrical characteristics

Effective wavelength range	1100 to 1570 nm
Aberrations	≤ ± 15%, 20% $_{P-P}$ total

Nominal Characteristics

Nominal characteristics (Table 6) describe guaranteed traits, but the traits do not have tolerance limits.

Table 6: P6723 nominal electrical characteristics

Optical input coupling	Accepts up to 62.5 μm core diameter, Numerical Aperture ≤ 0.29
Optical data rate	20 MB/s minimum[1] 650 Mb/s maximum[1]
Optical fiber dressing	> 1.5-inch bend radius
Absolute non-destructive fiber bend	0.5-inch bend radius
Output load requirement	50 Ω ± 1%, AC or DC coupled

[1] **Measured with an optical input using 2^{23} - 1 pseudorandom word having a 50% duty cycle.**

P6701B and P6703B Performance Verification

Use the following procedures to verify the warranted specifications of the P6701B and P6703B O/E converters. Before beginning these procedures, refer to page 12 and photocopy the test record and use it to record the performance test results. The recommended calibration interval is one year.

These procedures test the following specifications:

- Noise equivalent power
- Output zero
- DC conversion gain
- AC conversion gain

Equipment Required

Table 7 lists the equipment required to perform the performance verification procedure. The types and quantities of connectors may vary depending on the specific equipment you use.

The instrument should be given a 20 minute warm up period and ambient temperature must be between 20 and 30 degrees C.

Table 7: Test equipment

Description	Minimum requirements	Example product
Optical power meter with head and adapters	Accuracy > 2.5%, resolution > 5 pW, Max power > 1 mW, calibrated from 700 nm - 1600 nm	HP 8153A with power sensor HP 81532A and HP 81531A
P6701B only: 780 nm cal source	output > 200uW (CW)[1], stability > 0.1 dB over 5 minutes, modulated square wave @ 10 kHz with off modulation at zero-light level	
P6701B only: 850 nm cal source	output > 200uW[1], stability > 0.1 dB over 5 minutes, modulated square wave @ 10 kHz with off modulation at zero-light level	

Table 7: Test equipment (cont.)

Description	Minimum requirements	Example product
P6703B only: 1310 nm cal source	output > 200uW[1], stability > 0.1 dB over 5 minutes, modulated square wave @ 10 kHz with off modulation at zero-light level	
P6703B only: 1550 nm cal source	output > 200uW (CW)[1], stability > 0.1 dB over 5 minutes, modulated square wave @ 10 kHz with off modulation at zero-light level	
RF power meter	noise < .1 mV, BW > 4 GHz	HP 437B with power sensor HP 8481D
P6703B only: 1300 nm impulse generator		OIG 502
P6701B only: 850 nm impulse generator		OIG 501
Sampling oscilloscope		11K (1140X, CSA40xX, or DSA60X)
Adjustable optical attenuator	4 decades, 50um core fiber, FC-style connectors	JDS 5000L with 62 μm fiber with FC connectors
Digital voltmeter	4 1/2 digit	Tektronix DMM916
50 ohm termination	± 1%	011-0049-01
Optical cable	FC-FC multimode, 62.5um, 2 meters	174-2322-00
Inline optical adapter	FC female to FC female	131-5039-00
TekProbe Power Supply		Tektronix 1103
Low-pass filter	1 GHz	Mini Circuits SLP 1000

1 **CW and modulated mode available: modulation with OFF level at or below 0.1uW, optical falltime < 1us**

Noise Equivalent Power

1. Power the P670XB under test using an 1103 Tekprobe power supply.
2. Connect the P670XB output channel from the 1103 power supply to the power meter input with the 1 GHz filter in series with this connection.
3. With the dust cover on the input to the P670XB, the power meter reading should be ≤ 15 nW for the P6701B and ≤ 7 nW for the P6703B.

Output Zero

1. Attach 1103 powered P670XB output to voltmeter with 50 ohm termination.
2. Install optical dust cover on input to P670XB under test.
3. Check that output voltage is ≤ 1 mV.

DC Conversion Gain

NOTE. *Make sure that the optical connector ends of both the fiber jumpers and the input fiber of the O/E converter under test are well cleaned before performing this step. Use isopropyl alcohol, lint-free lense paper and clean compressed air to clean the fiber ferrule ends. Refer to page 17 for the recommended cleaning procedure.*

P6701B

1. Connect 780 nm laser to attenuator.

NOTE. *The fiber bend radius of the P670XB fiber input should lay with >1-inch bend radius along the fiber's entire length. Although this precaution must be maintained throughout the entire PV procedure, it is especially important for this step in order to accurately adjust and measure DC-conversion gain of the P670XB.*

2. Connect FC connector of the optical attenuator to FC-receptacle of the optical power meter using the optical cable. Use the appropriate optical power meter sensing head with calibrated measurement for a wavelength span including 780 nm and 850 nm. Be sure the optical power meter wavelength setting is at 780 nm.
3. Adjust attenuator or the optical source source so that the power meter reads 100 μW.
4. Move the FC fiber end (the one now adjusted to 100 μW average power) from the optical power meter and connect to the P670XB input under test by using the FC-FC inline female-female optical adapter.
5. Attach voltmeter with 50 ohm termination to 1103 powered P670XB output.
6. Check for 100 mV reading on voltmeter, ± 8%. (The 780 nm conversion gain is 1.00 V/mW.)

P6703B

1. Connect 1310 nm laser to attenuator.

***NOTE**. The longer wavelengths of 1310 nm and especially 1550 nm are more sensitive to loss in fiber due to bending of the fiber than the short wavelength. The fiber bend radius of the P670XB fiber input should lay with >1-inch bend radius along the fiber's entire length. Although this precaution must be maintained throughout the entire PV procedure, it is especially important for this step in order to accurately adjust and measure DC-conversion gain of the P670XB.*

2. Connect FC connector of the optical attenuator to the FC receptacle of the optical power meter using optical cable; use the appropriate optical power meter sensing head with calibrated measurement for a wavelength span including 1310 nm and 1550 nm. Be sure the optical power meter wavelength setting is at 1310 nm.
3. Adjust the attenuator or optical source so that the power meter reads 100 μW.
4. Move the FC fiber end (the one now adjusted to 100 μW average power) from the optical power meter and connect to the P670XB input under test by using the FC-FC inline female-female optical adapter.
5. Attach voltmeter with 50 ohm termination to 1103 powered P670XB output.
6. Check for 100 mV reading on voltmeter, ± 8%. (The 1310 nm Conversion Gain is 1.00 V/mW.)

AC Conversion Gain

1. Connect the probe under test to the 11K series oscilloscope and to the cal source.
   - If the unit under test is a P6701B, connect the 850 nm modulated laser source to the optical attenuator input. Connect the output of the optical attenuator to the P6701B input via an inline adapter.
   - If the unit under test is a P6703B, connect the 1310 nm modulated laser source to the optical attenuator input. Connect the output of the optical attenuator to the P6703B input via an inline adapter.
2. Adjust the laser cal source to provide a 10KHz to 20KHz optical square wave on the scope. Adjust the optical attenuator so that the total peak-to-peak signal from the P670XB is about 200 mV (or 200 μW if the vertical units displayed are "W").

3. Set the oscilloscope for 5 us/div on the horizontal scale and 5 mV/div (or 5 uW/div) for the vertical scale. Trigger the scope on the negative edge of the trace and set ground to the middle of the screen. This is equivalent to 1%/div.

4. Check that the OFF level of the square wave at approximately 5 us after the 90% fall time point is within 16 mV (8%) of the ground level (center line).

Test record

Probe Model/Serial Number: _____ Certificate Number: _____

Temperature: _____ RH %: _____

Date of Calibration: _____ Technician: _____

Performance test	Minimum	Incoming	Outgoing	Maximum
Noise Equivalent Power	N/A			15 nW (P6701B) 7 nW (P6703B)
Output zero	N/A			1 mV
DC conversion gain	92 mV			108 mV
AC conversion gain	-16 mV			16 mV

P6723 Performance Verification

Use the following procedure to verify the warranted specification (output amplitude) of the P6723 O/E converter. Before beginning these procedures, refer to page 15 and photocopy the test record and use it to record the performance test results. The recommended calibration interval is one year.

Equipment Required

Table 8 lists the equipment required to perform the performance verification procedure. The types and quantities of connectors may vary depending on the specific equipment you use.

The instrument should be tested at an ambient temperature between 20 and 30 degrees C.

Table 8: Test equipment

Description	Minimum requirements	Example product
Optical power meter with head and adapters	Accuracy > 2.5%, resolution > 5 pW, Max power > 1 mW, calibrated from 700 nm - 1600 nm	HP 8153A with power sensor HP 81530A and HP 81531A
1310 nm digital optical signal source	52 MHz - 622 MHz	Tektronix CTS710/CTS750
Sampling oscilloscope	oscilloscope with Tekprobe II interface	Tektronix TDS784x
Adjustable optical attenuator	4 decades, 50 μm core fiber, FC-style connectors	JDS 5000L with 62 μm fiber with FC connectors
Optical cable	FC-FC multimode, 62.5 μm, 2 meters	174-2322-00

Output Amplitude

***NOTE**. Make sure that the optical connector ends of both the fiber jumpers and the input fiber of the O/E converter under test are well cleaned before performing this step. Use isopropyl alcohol, lint-free lense paper and clean compressed air to clean the fiber ferrule ends. Refer to page 17 for the recommended cleaning procedure.*

1. Using the fiber jumpers, connect the 1310 nm digital optical source to the optical attenuator input. Connect the output of the optical attenuator to the power meter.
2. With the 1310 nm digital optical source transmitting at 155 Mbits/sec (OC3), adjust the optical attenuator so that the power meter indicates –20 dBm.
3. Disconnect the jumper end from the output of the attenuator and connect the optical input connector of the P6723 to the output of the attenuator.
4. Connect the output of the P6723 to the input of the TDS784.
5. Set the TDS784 to 5 ns/div, 200 mV/div, triggered on the signal and use the horizontal cursors to measure the peak-to-peak amplitude.
6. Check that the peak-to-peak output (steady state on to steady state off) is ≤ 1.1 V and ≥ 0.69 V.

Test record

Probe Model/Serial Number: _____ Certificate Number: _____

Temperature: _____ RH %: _____

Date of Calibration: _____ Technician: _____

Performance test	Minimum	Incoming	Outgoing	Maximum
Output Amplitude	0.69 V			1.1 V

Maintenance

To keep the P6701B, P6703B, and P6723 O/E Converters in good operating condition, observe proper cleaning and handling techniques.

Cleaning the Optical Connectors

Small dust particles and oils can easily contaminate fiber-optic connectors and reduce or block the signal. Take care to preserve the integrity your connectors by keeping them free of contamination.



CAUTION. *To prevent loss of optical power or damage to the fiber-optic connectors, keep the connectors clean at all times.*

When cleaning the connectors with a swab, use gentle circular motions. Use only high quality cleaning supplies that are non-abrasive and leave no residue.

To reduce the need for cleaning, immediately replace protective caps on the fiber-optic connectors when not in use.

Equipment Required

Use the following items to clean the fiber-optic connectors:

- clean compressed air
- fiber-optic cleaning swabs
- isopropyl alcohol

Procedure

Clean the fiber-optic connectors as follows:

1. Hold the can of compressed air upright and spray the can into the air to purge any propellant.
2. Spray the clean compressed air on the connectors to remove any loose particles or moisture.
3. Moisten a clean fiber-optic swab with isopropyl alcohol then lightly swab the surfaces of the connectors.
4. Spray the clean compressed air on the connectors again to remove any loose particles or isopropyl alcohol.

***NOTE**. Cleaning kits for fiber-optic connectors are available from a number of suppliers.*

Cleaning the External Parts

Remove dirt with a soft cloth dampened in a mild detergent and water solution or isopropyl alcohol.



***CAUTION.** To avoid damaging the probe, use only a mild detergent and water solution or isopropyl alcohol; do not use any other solvents or abrasive cleaners. Do not immerse the probe.*

Handling

Even though the fiber-optic cable of the P6701B, P6703B, or P6723 O/E Converter is protected by a jacket and strain relief, the fiber-optic cable should be handled carefully at all times.



***CAUTION.** To avoid damaging the P6701B, P6703B, and P6723 O/E Converters, take the following precautions:*

Do not crush, crimp, or sharply bend the fiber optic cable.

Do not pull or yank the fiber-optic cable.

Do not drop the converter assembly since damage and misalignment of the photodiode optical assembly can result. Store the converter in a secure location when not in use.

Replace the protective cap on the connector when the converter is not in use.

The P6701B, P6703B, and P6723 O/E Converters can connect to optical fibers with a core diameter of up to 62.5 μm through one of the FC, ST, SC, or DIN adapters. Adapter cables that aid in connecting many other popular optical connectors are also available. (Refer to *Optional accessories* on page 24.)

CAUTION. *To maintain the high performance (low return loss) of the O/E converter, connect an adapter and cable between the input of the O/E converter and the device under test. When you make connections to other devices, leave the adapter and cable in place to protect the optical connector of the O/E converter from wear.*

If you connect fiber cores larger than 62.5 μm, the O/E converters may still couple light, but the mismatch in core diameter will cause lower conversion gain and high insertion loss.

Replacing TekProbe Interface Pins

1. To remove the interface pin, grasp the pin with a pair of needle-nose pliers and gently pull the pin out. See Figure 2.
2. To replace the pin, insert the new pin into the socket and press it in against a hard surface.

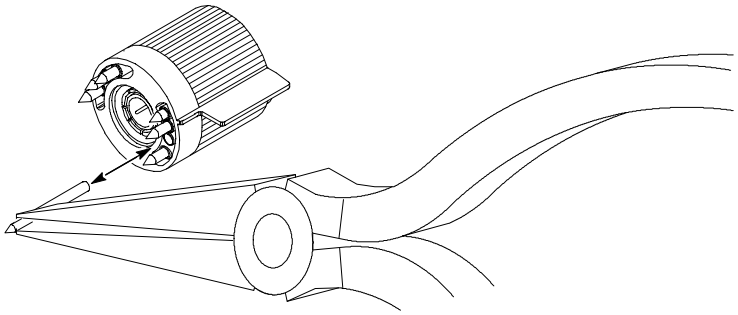


Figure 2: Replacing TekProbe interface pins

3. The pin installed in the position shown in Figure 3 is 0.020 inch shorter than the other pins. Be sure to install the correct pin in this position; instruments with the TekProbe interface may report errors if a longer pin is in this position. See the *Replaceable Parts List* that begins on page 23 for ordering information

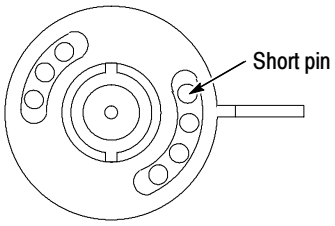


Figure 3: Location of short interface pin

Removing and Replacing the TekProbe Interface Collar

1. To remove the collar, firmly pull the collar off by hand.
2. To replace the collar, align the smaller group of pins with the smaller of the two holes in the interface collar and align the tabs with the slots. Gently press the two pieces together. See Figure 4.

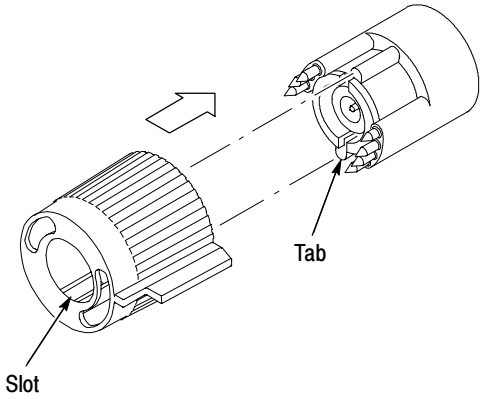


Figure 4: Replacing the TekProbe collar

Options

Option 95 documents the measurements taken during calibration.

Option FR documents the frequency response of the O/E converter.

Replaceable Parts

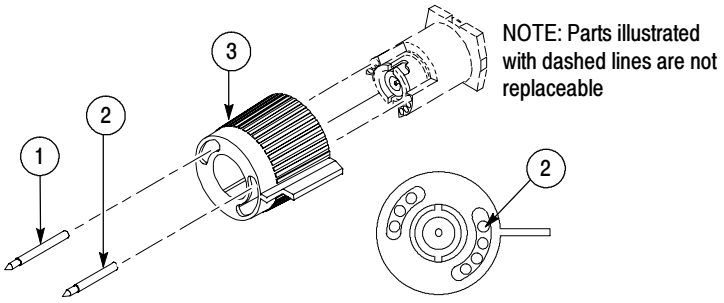


Figure 5: Replaceable parts

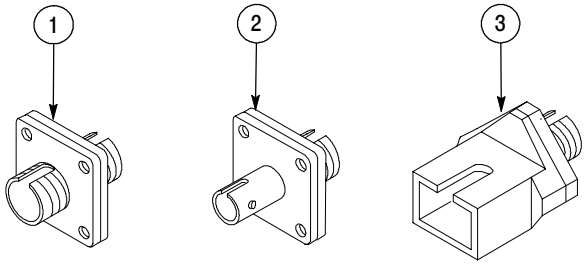


Figure 6: Standard accessories

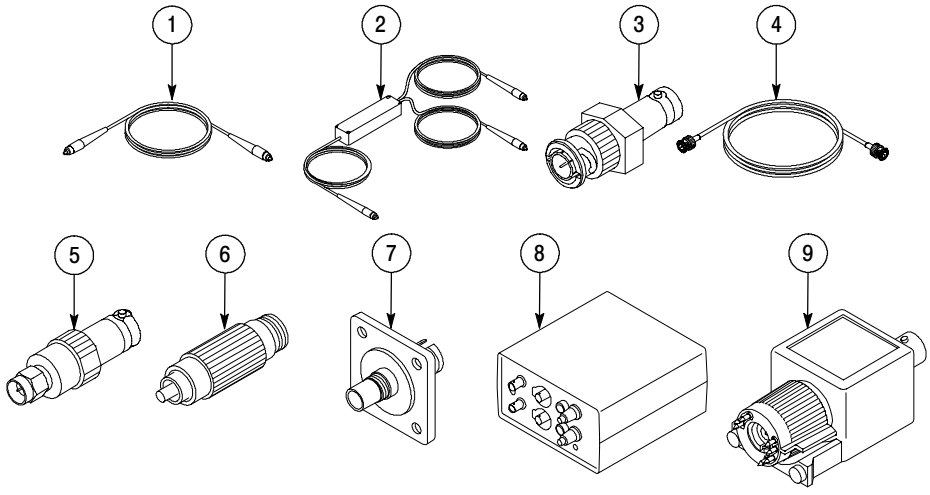


Figure 7: Optional accessories

Replaceable parts list

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
5-1	131-3627-01			1	CONTACT,ELEC:GOLD PLATED TIP	18359	P-6158-1
-2	131-6353-00			1	CONTACT,ELEC:GOLD PLATED TIP	18359	P-6158-2
-3	205-0191-00			1	SHELL,ELEC CONN:BNC,ABS,DOVE GRAY	80009	205-0191-00
					Standard accessories		
6-1	131-6252-00			1	CONN:FC TO FC SQUARE MOUNT ADAPTER,W/ZIRCONIA CERAMIC SLEEVE	0C5R7	CO92290
-2	131-6250-00			1	CONN:FC TO ST ADAPTER W/ZIRCONIA CERAMIC SLEEVE	0C5R7	C032980
-3	131-6251-00			1	CONN:SC TO FC SQUARE FLANGE ADAPTER W/ZIRCONIA CERAMIC SLEEVE	0C5R7	C002453
	070-9890-XX			1	MANUAL,TECH:INSTRUCTIONS,4 LANGUAGES	80009	070-9890-XX
	070-9892-XX			1	MANUAL, TECH:SERVICE,ENGLISH	80009	070-9892-XX
					Optional accessories		
7-1	174-1497-00			1	CA ASSY,FBR OPT:SINGLE MODE,2M L FC/PC TO DIAMOND 2.5	80009	174-1497-00
	174-1385-00			1	CA ASSY,FBR OPT:SGL MODE,2M L,FC/PC DIAMOND3.5	80009	174-1385-00
	174-1386-00			1	CA ASSY,FBR OPT:SINGLE MODE,2M L,FC/PC-ST	80009	174-1386-00
	174-1387-00			1	CA ASSY,FBR OPT:SGL MODE,2M L,FC/PC-FC/PC	80009	174-1387-00
	174-1388-00			1	CA ASSY,FBR OPT:SGL MODE,2M L,FC/PC-BICONIC	80009	174-1388-00
	174-2322-00			1	CABLE,FIBER OPT:JUMPER,2 METER,62.5 MICRON,FC/PC TO FC/PC	62712	174-2322-00
	174-2323-00			1	CABLE,FIBER OPT:JUMPER,2 METER,62.5 MICRON,FC/PC TO BICONIC	62712	174-2322-00
	174-2324-00			1	CABLE,FIBER OPT:JUMPER,2 METER,62.5 MICRON,FC/PC TO SMA 906	62712	PC/SK-20-002A
-2	174-3737-00			1	FIBER OPTIC:COUPLER, 1 X 2 SPLITTER, WAVELENGTH INDEPENDENT, 90/10 RATIO, ATT. 0.1 DB, REFLE	0C5R7	3-0102-10-B-UFC-0 1-UFC-01
-3	011-0049-01			1	TERMN,COAXIAL:50 OHM,2W,BNC	24931	28A123-1
-4	012-0482-00			1	CA ASSY,RF:COAXIAL,RFD,50 OHM,(175-1455-00),36 L,BNC,MALE,STR,BOTH ENDS,W/STRAIN RELIEF BO	TK2469	012-0482-00
-5	015-0554-00			1	ADPTR,SMA,ELEC:FEMALE BNC TO MALE SMA	24931	29JP170-1
-6	119-5118-00			1	ATTEN,OPTICAL:30MM,L10DBFOR 1310/1550NM,FC CONN.FA100-35-10-HP,CTS710	0LK97	FA100-35-10-HP
-7	020-2209-00			1	ACCESSORY KIT:CONNECTOR,OPTICAL,DIN TO FC SQUARE MOUNT ADAPTER,	80009	020-2209-00
-8	----------			1	1103 TekProbe Power Supply	80009	Order by Description
-9	----------			1	FS156 or FS622 SDH/SONET filters	80009	Order by Description

Manufacturers cross index

Mfr. code	Manufacturer	Address	City, state, zip code
0C5R7	ALCOA FUJIKURA LTD	150 RIDGEVIEW CIRCLE	DUNCAN, SC 29334
0LK97	JDS FITEL INC	570 WEST HUNT CLUB RD	NEPEAN, ONTARIO CA ONTARIO K2G 5W8
18359	PYLON CO. INC.	51 NEWCOMB ST	ATTLEBORO, MA 02703-1403
24931	BERG ELECTRONICS INC	BERG ELECTRONICS RF/COAXIAL DIV 2100 EARLYWOOD DR PO BOX 547	FRANKLIN, IN 46131
62712	SEIKO INSTRUMENTS USA INC	ELECTRONIC COMPONENTS DIV 2990 W LOMITA BLVD	TORRANCE, CA 90505
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077-0001
TK2469	UNITREK CORPORATION	3000 LEWIS & CLARK HWY SUITE 2	VANCOUVER, WA 98661

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