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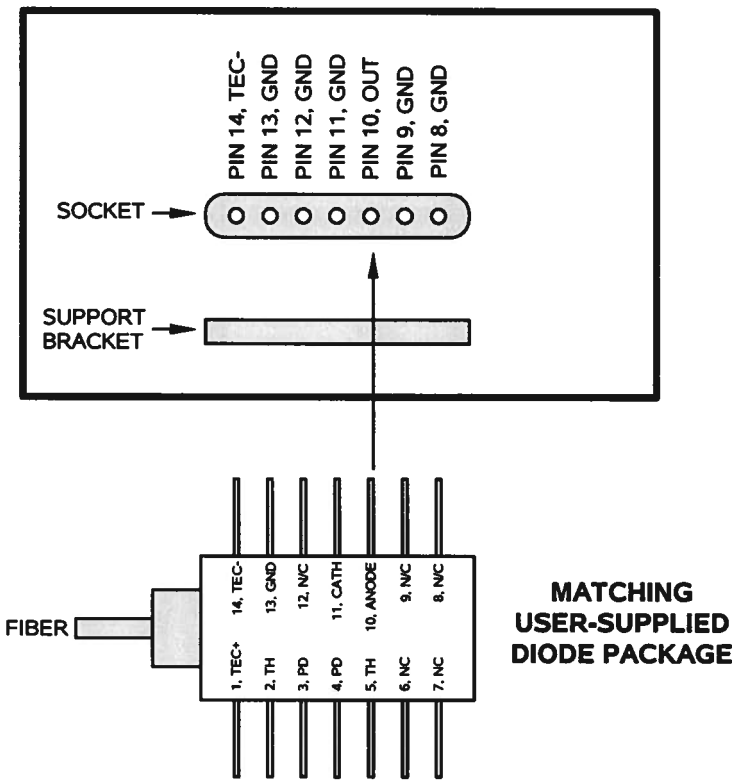
## INSTRUCTIONS

MODEL AVX-S1-HC-P1-COC

PLUG-IN SOCKET OUTPUT MODULE

SERIAL NUMBER: 11208

### AVX-S1-HC-P1-COC SOCKET VIEW



### WARRANTY

Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech shall at its option repair or replace said defective item. This warranty does not apply to units which have been disassembled, modified or subjected to conditions exceeding the applicable specifications or ratings. This warranty is the extent of the obligation assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

### TECHNICAL SUPPORT

Phone: 613-226-5772 or 1-800-265-6681

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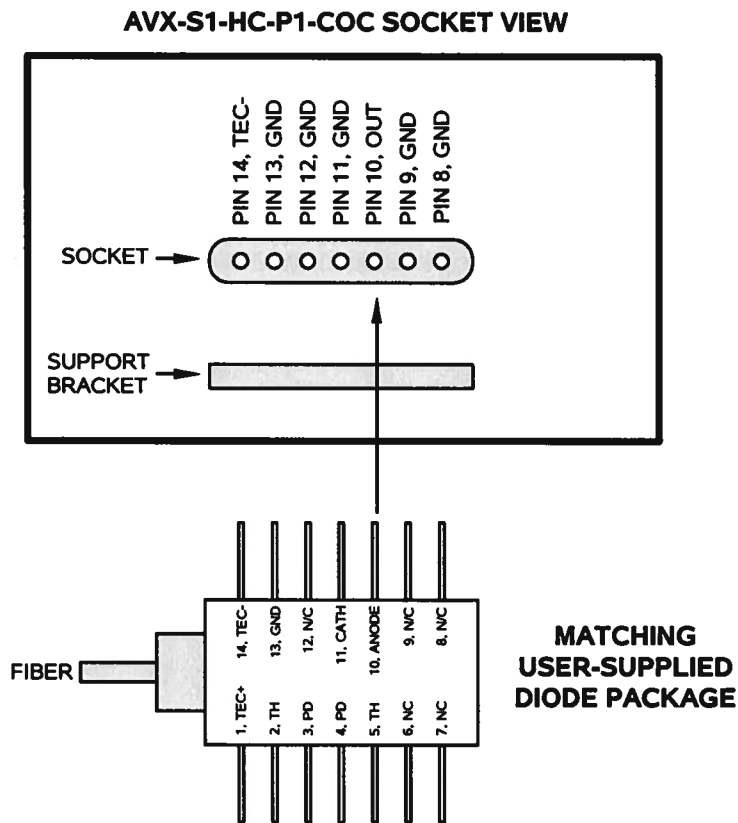
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Manual Reference: T:\instructword\avx-s\AVX-S1-HC-P1-COC,sn11208.sxw.  
Last modified June 7, 2005.  
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## INTRODUCTION

The AVX-S series of bias insertion units is designed to combine a pulse signal with a DC bias, and supply the resulting signal to a laser diode, which is inserted into a high quality socket included on the mount. The bias insertion module includes the necessary networks to match the laser diode to the pulse source, as well as networks for applying DC bias to the diode.

The AVX-S1-HC-P1-COC is specifically designed to accommodate butterfly-packaged laser diodes with the pinout illustrated below:



The diode series resistance must be  $< 1$  Ohm for proper operation.

ORIGINAL QUOTATIONSAVX-S1-HC-P1-COC

Date: Thu, 26 May 2005 14:52:40 -0400  
From: Avtech Sales

XXXXX,

Following your recent inquiry, I am pleased to quote as follows:

Quote number: 12603

Task: convert AVX-S1-HC-P1-COB into a AVX-S1-HC-P1-COC. This entails the following changes:

- 1) Reduce the resistor present on the OS input from 100 Ohms to 10 Ohms.
- 2) Increases the series resistance "Rs" from 6 Ohms to 11.3 Ohms so as to be compatible with diodes that have parasitic resistances of less than 1 Ohm.
- 3) Disconnect pin 14 from ground, and add a solder terminal that provides access to pin 14 of the diode package.

Once these changes are made, the socket will accept pins 8-14 of the butterfly package described in a previous email from Dmitri Kuksenkov. The pulse will be applied to the diode anode (pin 10). Pins 8-9 and 11-13 will be grounded. Pin 14 will be made accessible on a solder terminal. The diode series resistance must be < 1 Ohm for proper operation.

Note: The total resistance seen by the offset input will now be  $10 + 11.3 + 1 = 22.3$  Ohms, approximately.

Other: as per the standard AVX-S1-HC-P1, described at <http://www.avtechpulse.com/laser-bias/avx-s1>

Cost: \$XXXXXX US, Ex-works.

Quote valid for: 60 days

Time to complete: 2 weeks at the factory. (This is a bit longer than what I estimated when we spoke on the phone.)

To proceed with modification, please return the instrument via prepaid shipping to the following address:

Avtech Electrosystems Ltd.  
C/O Strader-Ferris International  
808 Commerce Park Drive  
Ogdensburg, NY 13669

Tel: (315)394-0051 (Strader-Ferris Intl)

Please package the instrument very carefully! Damage incurred during shipping may increase the modification cost.

The RMA number is the same as the serial number, 11208. Please enclose documentation indicating the desired return address, and your FedEx

account number. The return shipment will be sent on your FedEx account.

A purchase order, or credit card payment information, is required to process the modification. Please fax the purchase order to 800-561-1970, or provide the credit card details to Mary Budarick at 800-265-6681 (telephone).

Please call or email me if I can be of further assistance.

Thank you for your interest in our products!

Regards,  
Dr. Michael J. Chudobiak  
Chief Engineer

--- Avtech Electrosystems Ltd. ----- since 1975 ---

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## AVX-S1-HC-P1-COB

Date: Wed, 06 Apr 2005 13:26:46 -0400  
From: Avtech Sales  
To: XXXXX  
Subject: Re: RFQ

XXXXX,

Please send us a revised purchase order, using the new model number (AVX-S1-HC-P1-COB). There is no difference in the price, but we need to use the new model number to avoid confusion about the specifications if you re-order in the future. I am pleased to re-quote as follows, with the new model number and the updated series resistance specification:

Quote number: 12531

Model number: AVX-S1-HC-P1-COB

Description: Laser Diode Bias Insertion Unit with Socket.

-COB option: The socket will accept pins 8-14 of the butterfly package described in the attachment to your email. The pulse will be applied to the diode anode (pin 10). Pins 8-9 and 11-14 will be grounded. The diode series resistance must be 6 Ohms for proper operation.

Other: as per the standard AVX-S1-HC-P1, described at  
<http://www.avtechpulse.com/laser-bias/avx-s1>

Price: \$XXXXX US each, FOB destination.

Quote valid for: 60 days

Estimated delivery: 30 days after receipt of order.

Please call or email me if I can be of further assistance.

Thank you for your interest in our products!

Regards,  
Dr. Michael J. Chudobiak  
Chief Engineer

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## SPECIFICATIONS

Model:	AVX-S1-HC
Peak diode current:	2 A
Max. input amplitude:	50 Volts
Pulse width (ns):	0.4 - 200
Rise time (ns):	0.2
Pulse PRF range:	DC-100 MHz
Max. bias current:	100 mA
Max. bias voltage:	50 Volts
Input impedance:	50 Ohms
N (transformer ratio <sup>1</sup> ):	2
R <sub>s</sub> :	11.3 Ohms
IN connector:	SMA
Monitor connector:	SMA
Bias connector:	Solder pin
Dimensions:	H x W x D: 41 mm x 66 mm x 76 mm (1.6" x 2.6" x 3.0")
Material:	Cast aluminum, blue enamel
Mounting:	Any

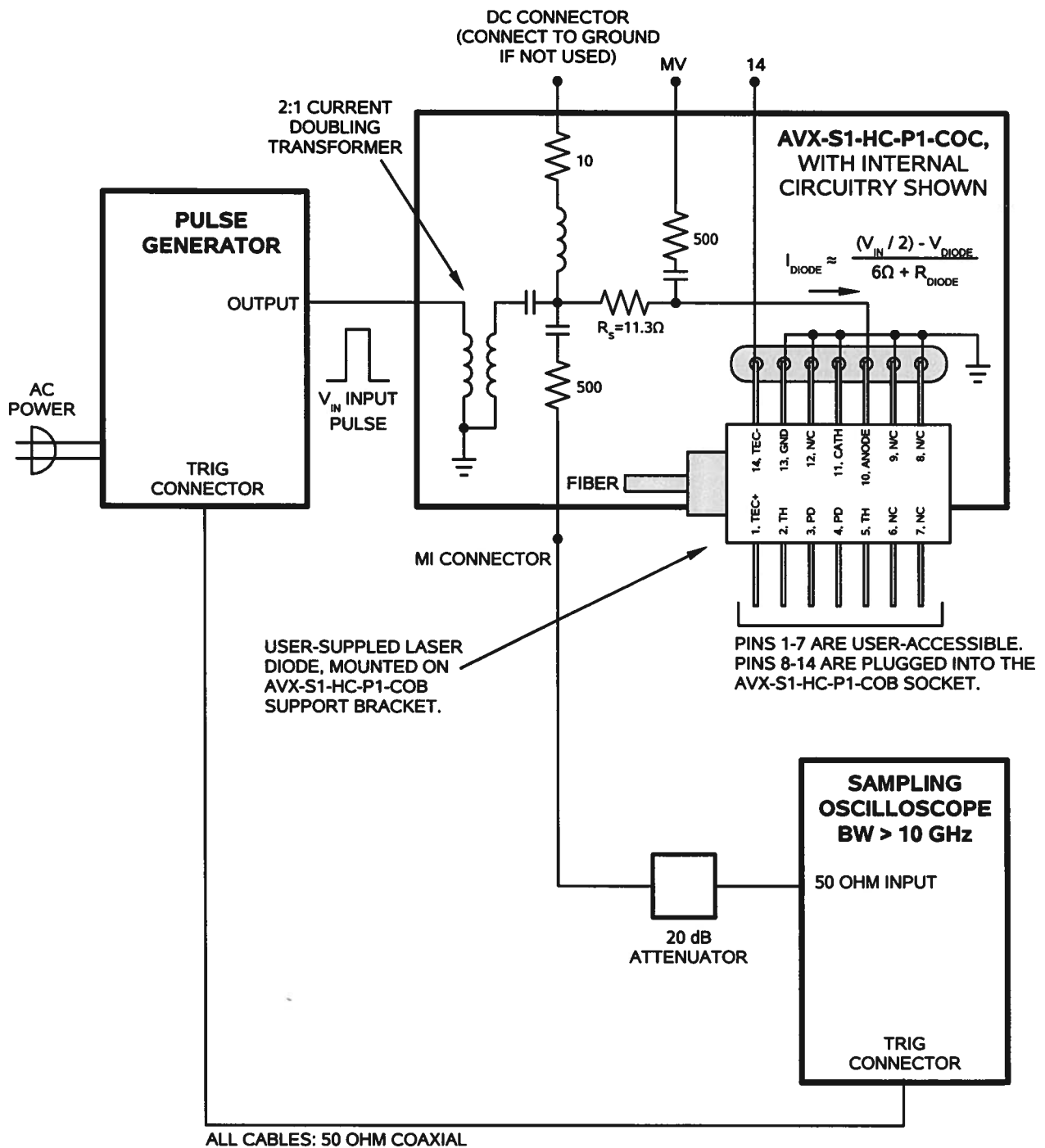
1) The transformer reduces the input voltage by a factor of N (approx) and increases the current by a factor of N (approx). The load resistance ( $R_s + R_{diode}$ ) must equal  $50\Omega / N^2$  (approx).



## GENERAL INFORMATION

### BASIC TEST ARRANGEMENT

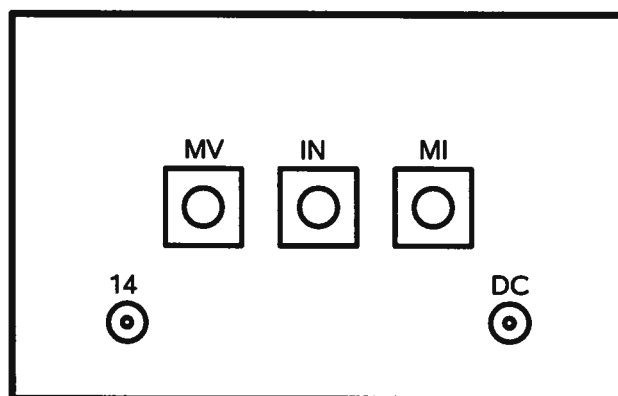
To fully test the AVX-S1-HC-P1-COC, and for normal operation, the output module should be connected as shown below:



The diode load is inserted into the socket on the output module, as shown above.

An oscilloscope may be used to monitor the MI and MV outputs, the locations of which are shown in the figure above. A forward DC bias may be applied to the laser diode by connecting a DC potential of 0 to +10 Volts to the DC solder terminal. The application of a small forward bias often yields a more ideal diode current waveform (as observed on the MI port). The DC port must be shorted to ground if a bias is not applied.

A solder terminal is provided which offers access to pin 14 of the diode under test. Typically this is a "TEC-" terminal.



AVX-S1-HC-P1-COC OUTPUT MODULE, CONNECTOR VIEW

### INSTALLING THE DIODE

To install the diode in the output module socket, align the diode so that pins 8-14 are facing the socket, and the mounting flange of the diode is underneath the main body of the diode. Gently and slowly insert the diode into the socket. Insert it far enough that the mounting holes on the diode align with the mounting holes on the support bracket. Secure the diode to the support bracket using four 2-56 screws.

It may be necessary to first loosen the two 4-40 screws that attach the support bracket to the main body of the AVX-S1-HC-P1-COC, to provide optimal alignment of the bracket. Re-tighten the screws after optimal alignment has been obtained.

It is recommended that pins 8-14 be trimmed from their normal length to a shorter length of 7 mm. This will make it easier to insert and remove the diode.

### AMPLITUDE CONTROL

When using the output module, the pulse current through the diode load is given by:

$$I_{\text{DIODE}} \approx ((V_{\text{IN}} / 2) - V_{\text{DIODE}}) / (11.3 \Omega + R_{\text{DIODE}})$$

where  $V_{IN}$  is the amplitude of the input pulse,  $V_{DIODE}$  is the forward voltage drop across the diode (typically 2 or 3V), and  $R_{DIODE}$  is the series resistance of the diode. For proper operation,  $R_{DIODE}$  should be  $< 1$  Ohm.

June 7/05