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SINCE 1975

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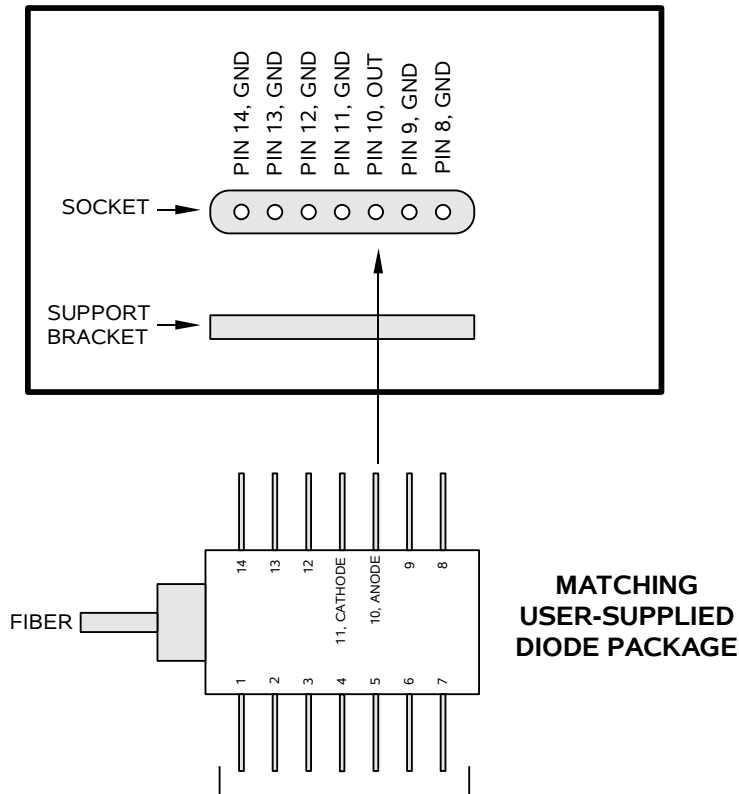
INSTRUCTIONS

MODEL AVX-S1-HC-P1-LT2

PLUG-IN SOCKET OUTPUT MODULE

SERIAL NUMBER: _____

AVX-S1-HC-P1-LT2 SOCKET VIEW



PINS 1-7 ARE USER-ACCESSIBLE.
PINS 8-14 ARE PLUGGED INTO THE
AVX-S1-HC-P1-LT2 SOCKET.

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

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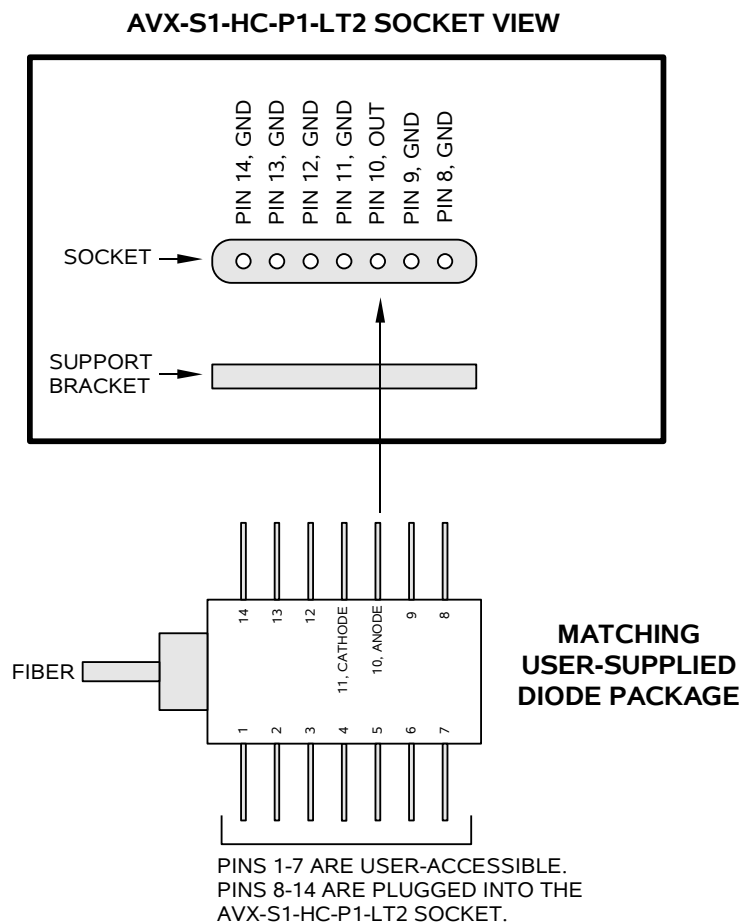
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Manual Reference: Z:\officefiles\instructword\avx-s\AVX-S1-HC-P1-LT2,ed1.odt.
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INTRODUCTION

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-LT2 is specifically designed to accommodate butterfly-packaged laser diodes with the pinout illustrated below:



Examples of diodes with appropriate pinouts are the Lumics LU1064M200, the Qphotonics QFBGLD-1064-150, and the Bookham LC96A1060-20A.

The diode series resistance must be approximately $1.2 (\pm 1.2) \Omega$ for proper operation.

The AVX-S1-HC-P1-LT2 is specially designed and customized to be used with the Avtech AVO-2W-B-M-P pulse generator (<http://www.avtechpulse.com/laser/avo-2w>).

ORIGINAL QUOTATION

Date: Fri, 21 Oct 2005 13:43:04 -0400
From: Avtech Sales
Subject: Re: pulsed laser diode drivers

XXXXX,

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

Quote number: 12978.01, 12978.02

Model number: AVO-2W-B-M-P

Description: Laser Diode Driver (Pulsed Voltage) with IEEE-488.2 GPIB and RS-232 Computer Control Ports

Polarity: positive

Pricing, manuals, datasheets: <http://www.avtechpulse.com/laser/avo-2w>

PDF datasheet:

http://www.avtechpulse.com/catalog/page053_cat11_avo-2_rev2.pdf

Price (for standard 60 day delivery): \$XXXXXX US each, FOB destination.

Price (for rush 30 day delivery): \$XXXXXX US each, FOB destination.

Optional: An Internet control (Telnet and Web) option is available for an additional \$XXXXXX. Add the suffix "-TNT" to the model number to specify this option. Additional details about this option are available at <http://www.avtechpulse.com/options/tnt>.

Quote valid for: 60 days

Quote number: 12978.03

Model number: AVX-S1-HC-P1-LT2

Description: Laser Diode Bias Insertion Unit with Socket, designed for use with the AVO-2W-B-M-P (i.e., with two SMA inputs)

-LT2 option: An output module is provided with a socket that will accept pins 8-14 of the user-supplied butterfly-packaged laser diode. A positive pulse will be applied to the diode anode (pin 10). Pins 8-9 and 11-14 will be grounded. Pins 1-7 will remain unconnected and accessible to the user. A series resistance of approximately 5 Ohms will be present in the module. For optimal matching with the AVO-2W-B-M-P, the laser diode should have a parasitic resistance (dV/dI , in the region of operation) of approximately 1.2 Ohms, so that the total resistance is 6.2 Ohms. It is important that you confirm that this is appropriate for your diodes. We do not have the I/V curve for your diodes, especially at high currents. If the parasitic resistance is expected to be significantly different, let us know and we can re-quote appropriately.

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

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

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

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SPECIFICATIONS

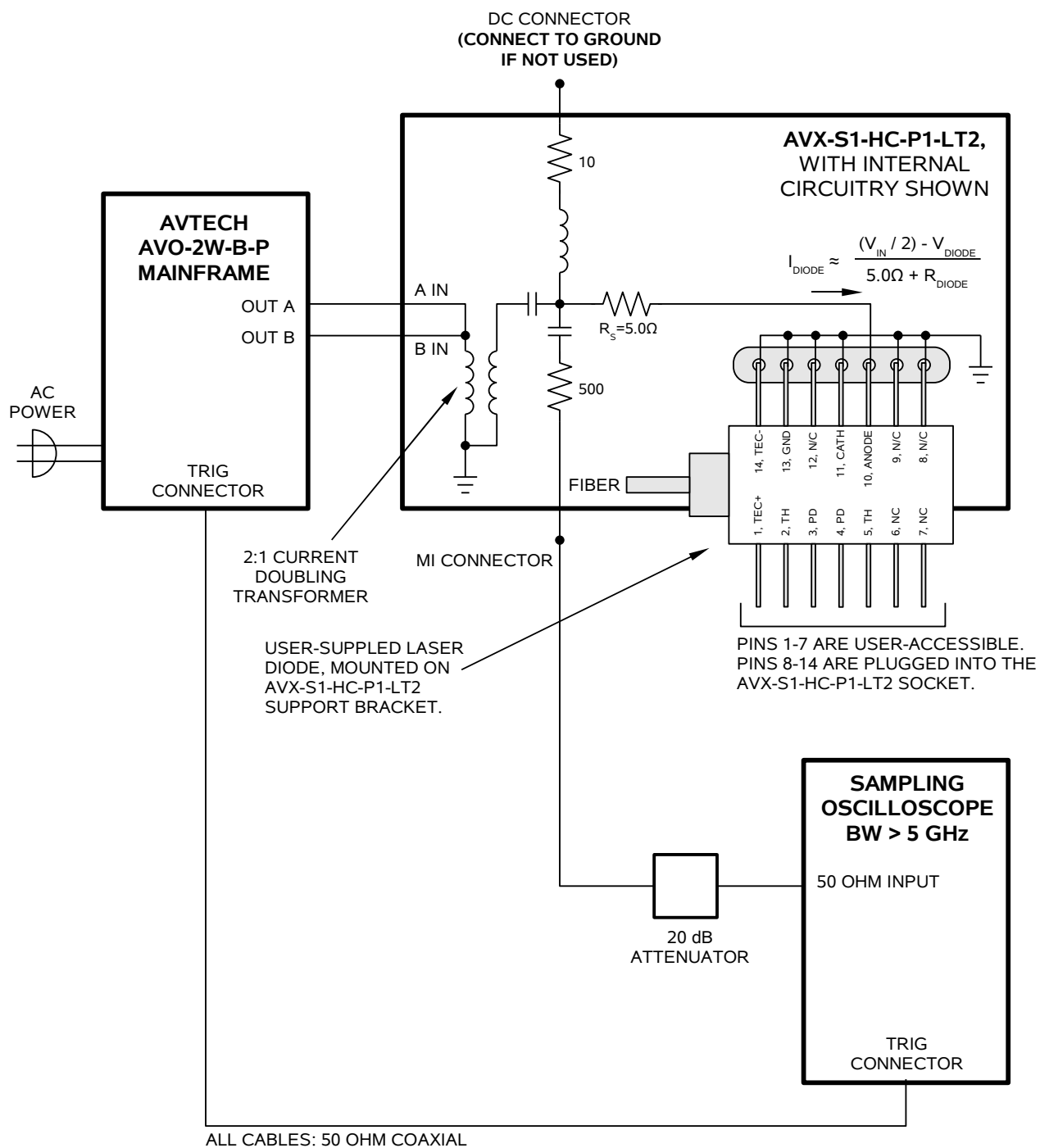
Model:	AVX-S1-HC-P1-LT2
Peak diode current:	10 A
Max. input amplitude:	125 Volts
Pulse width (ns):	0.4 - 50
Rise time (ns):	0.2
Max. bias current:	100 mA
Max. bias voltage:	50 Volts
Input impedance:	50 Ohms
N (transformer ratio ¹):	2
R _S :	5.0 Ohms
IN connector:	SMA (2)
Monitor connector:	SMA
Bias connector:	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 $25\Omega / N^2$ (approx).

GENERAL INFORMATION

BASIC TEST ARRANGEMENT

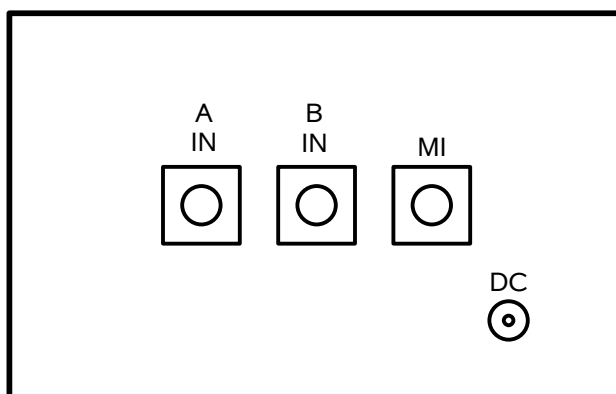
To fully test the AVX-S1-HC-P1-LT2, and for normal operation, the output module should be connected as shown below:



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

An oscilloscope may be used to monitor the MI output, the locations of which is shown in the figure below. The 50 Ohm input impedance of the attached oscilloscope and the 500 Ohm internal resistance will form an 11:1 voltage divider.

A forward DC bias may be applied to the laser diode by connecting a DC voltage 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). This current should not exceed 100 mA. **The DC port must be shorted to ground if a bias is not applied. A ground tab is provided on the DC port for this purpose.**



AVX-S1-HC-P1-LT2 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-LT2, to provide optimal alignment of the bracket. Retighten 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:

$$I_{\text{DIODE}} \approx ((V_{\text{IN}} / 2) - V_{\text{DIODE}}) / (5.0 \Omega + R_{\text{DIODE}})$$

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 approximately $1.2 (\pm 1.2) \Omega$.