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SINCE 1975

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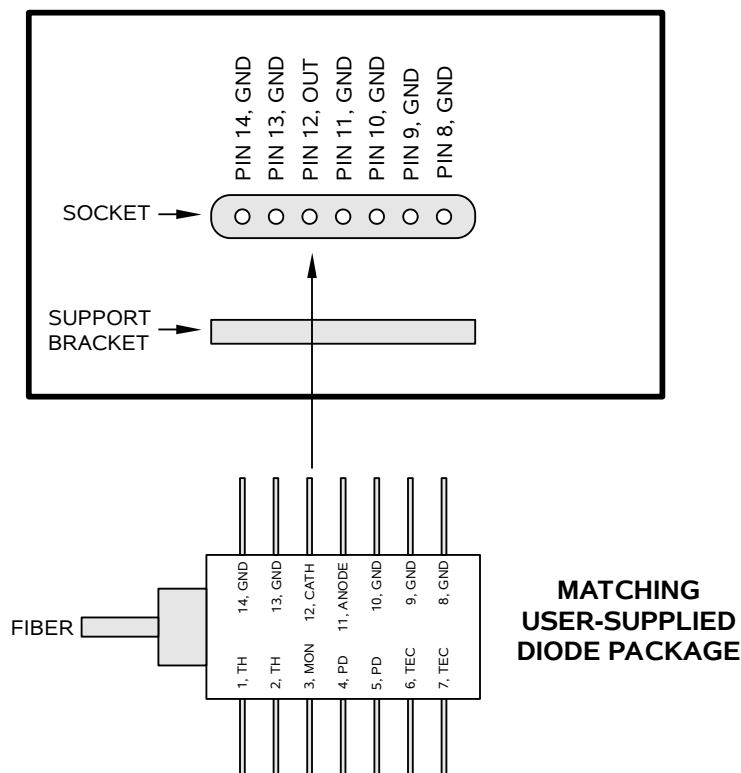
## INSTRUCTIONS

MODEL AVX-S1-P1-MEGD

PLUG-IN SOCKET OUTPUT MODULE

SERIAL NUMBER: 11185

### AVX-S1-P1-MEGD 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.

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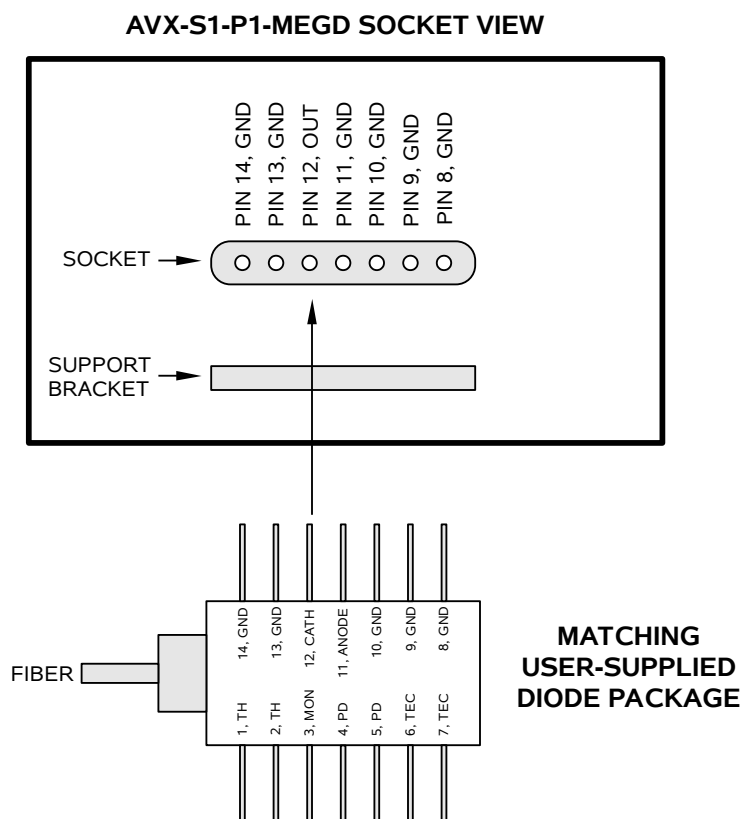
Manual Reference: /filesserver1/officefiles/instructword/avx-s/AVX-S1-P1-MEGD,sn11185.sxw.  
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## INTRODUCTION

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.

This bias insertion unit is intended for use with the existing AVO-9A-C-P-TO3-MEGA mainframe (S/N 11094) or a new AVO-9A-C-P-MEGE mainframe. The socket accepts pins 8-14 of the Mitsubishi FU-68SDF-x8xxMxxB or Fitel FOL15DDBB-A\*1 butterfly-packaged laser diodes. This module contains a polarity-inverting transformer, so that the positive pulse from the mainframe is inverted into a negative pulse and is applied to the diode resistor/cathode (pin 12). Pins 8-11 and 13-14 are grounded. The internal resistance in the module is approximately 27 Ohms, to accommodate 20-25 Ohm diodes.

The AVX-S1-P1-MEGD is specifically designed to accommodate the Mitsubishi FU-68SDF-x8xxMxxB or Fitel FOL15DDBB-A\*1 butterfly-packaged laser diodes with the pinout illustrated below:



ORIGINAL QUOTATION

Date: Mon, 07 Mar 2005 10:43:03 -0500  
From: Avtech Sales  
To: KITSUKAWA  
Subject: [Fwd: Re: AVO-9 series] - corrected  
To: K. Kitsukawa  
Meisho Corporation  
kitsukawa@78meisho.co.jp

Mr. Kitsukawa,

Please ignore the earlier version of this email. The internal resistance of the AVX-S1-P1-MEGD was incorrect.

Please quote to this existing customer:

XXXXX

for the following three items:

Quote number: 12488.01

Model number: AVX-S1-P1-MEGC

Description: Laser Diode Bias Insertion Unit with Socket, intended for use with the AVO-9A-C-P-TO3-MEGA mainframe (S/N 11094). The socket will accept pins 8-14 of the Lumics LU1064\_fbg\_close butterfly-packaged laser diode described in the datasheet that has been supplied by Mega Opto. A positive 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 through a solder terminal. The internal resistance in the module will be approximately 50 Ohms.

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

Price: \$XXXX US each (to Meisho), Ex-works, Ottawa, Canada. Before discount.

Note: This product is NOT subject to export controls.

Quote valid for: 60 days

Estimated delivery: 30 days after receipt of order.

Quote number: 12488.02

Model number: AVX-S1-P1-MEGD

Description: Laser Diode Bias Insertion Unit with Socket, intended for use with the existing AVO-9A-C-P-TO3-MEGA mainframe (S/N 11094) or a new AVO-9A-C-P-MEGE mainframe. The socket will accept pins 8-14 of the Mitsubishi FU-68SDF-x8xxMxxB or Fitel FOL15DDBB-A\*1 butterfly-packaged laser diodes described in the datasheets that have been supplied by Mega Opto. This module will contain a polarity-inverting transformer, so that the positive pulse from the mainframe is inverted into a negative pulse and is applied to the diode resistor/cathode (pin 12). Pins 8-11 and 13-14 will be grounded. The internal resistance in the module will be approximately 27 Ohms, to accommodate 20-25 Ohm diodes.

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

Price: \$XXXX US each (to Meisho), Ex-works, Ottawa, Canada. Before discount.

Note: This product is NOT subject to export controls.

Quote valid for: 60 days

Estimated delivery: 30 days after receipt of order.

Quote number: 12488.03

Model number: AVO-9A-C-P-MEGE

Description: Laser Diode Driver (Pulsed Voltage) with No Output Module

-MEGE option: This changes the maximum PRF from the standard value of 1 MHz to 2 MHz. The pulse width range is reduced to 0.6 ns to 1.6 ns (instead of the standard 0.4 to 4 ns).

Output module: Not included. Order the AVX-S1-P1-MEGD output module separately.

Datasheet: <http://www.avtechpulse.com/laser/avo-9a>

Price: \$XXXX US each (to Meisho), Ex-works, Ottawa, Canada. Before discount.

Estimated delivery: 60-75 days after receipt of order (excluding export permit\* delays).

Note: This product IS subject to export controls.

\*Export Permit: These instruments are very high performance pulse generators, which are considered to be "Nuclear-Related Dual-Use Goods" under government regulations. As such, an "End Use Statement" must be completed when ordering. The necessary form is attached (in Microsoft Word format). We will use the information in the completed form to apply for an export license from the Canadian government, which will take 1 to 6 weeks to obtain. We cannot ship your order without the license. Please return the completed form to us by fax.

The output module(s) would be shipped before the completion of the new driver, as requested by the client.

Regards,  
Dr. Michael J. Chudobiak  
Chief Engineer

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

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Nanosecond Waveform Generators  
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Pulse Generators - Laser Diode Drivers - Pulse Amplifiers  
Impulse Generators - Current Pulsers - Delay Generators - Splitters  
Function Generators - Monocycle Generators - Frequency Dividers + more!

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## SPECIFICATIONS

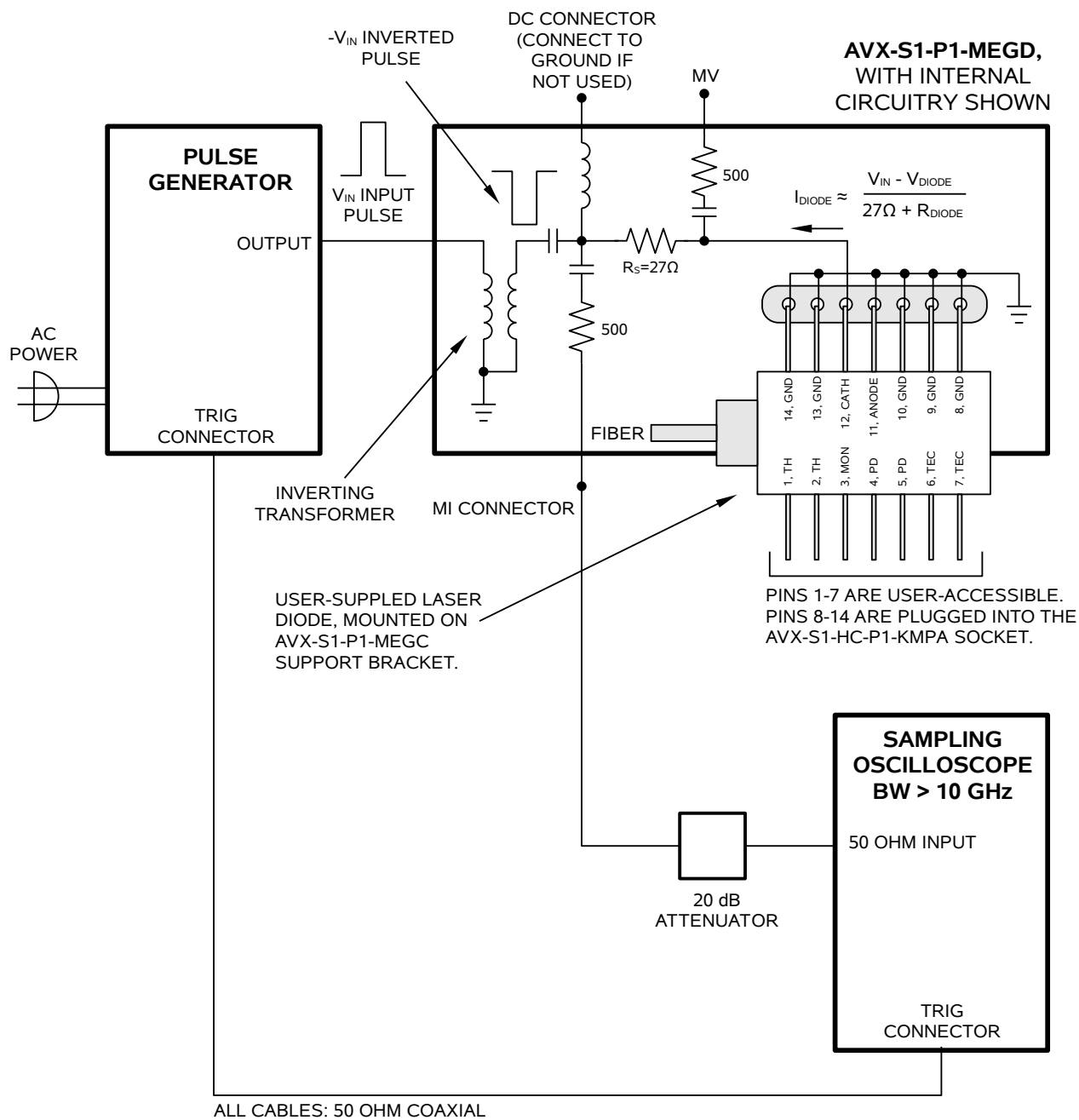
Model:	AVX-S1
Peak diode current:	400 mA
Max. input amplitude:	20 Volts
Pulse width (ns):	0.4 - 200
Rise time (ns):	0.2
Pulse PRF range:	DC-100 MHz
Max. bias current:	100 mA
Max. bias voltage:	50 Volts
Input impedance:	50 Ohms
R <sub>s</sub> :	50 Ohms
IN connector:	SMA
Monitor connector:	SMA
Bias connector:	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



## GENERAL INFORMATION

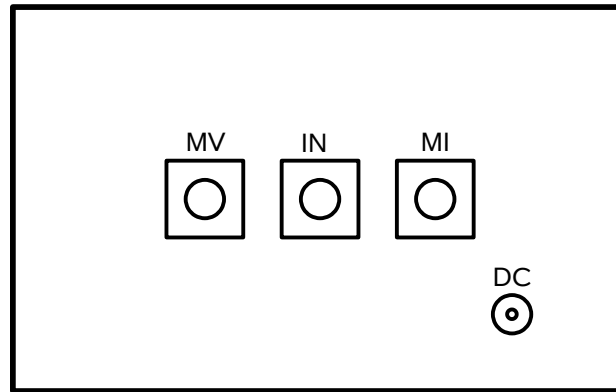
### BASIC TEST ARRANGEMENT

To fully test the AVX-S1-P1-MEGD, 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 5 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.



**AVX-S1-P1-MEGD 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-P1-MEGD, 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:

$$I_{\text{DIODE}} \approx (V_{\text{IN}} - V_{\text{DIODE}}) / (27\Omega + R_{\text{DIODE}})$$

where  $V_{\text{IN}}$  is the amplitude of the input pulse,  $V_{\text{DIODE}}$  is the forward voltage drop across the diode (typically 2 or 3V), and  $R_{\text{DIODE}}$  is the series resistance of the diode.

This module contains a polarity-inverting transformer, so that the positive pulse from the mainframe is inverted into a negative pulse and is applied to the diode resistor/cathode

(pin 12). Pins 8-11 and 13-14 are grounded. The internal resistance in the module is approximately 27 Ohms, to accommodate 20-25 Ohm diodes.