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SINCE 1975

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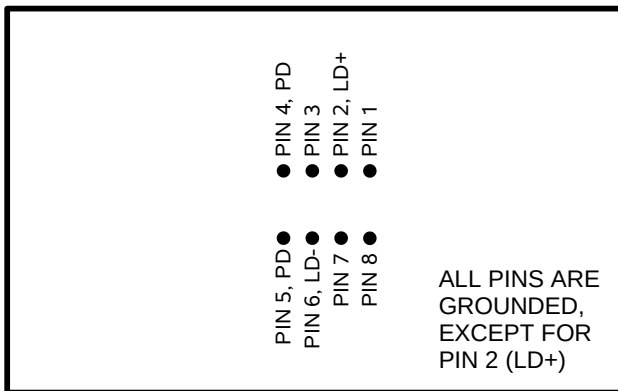
☒ BOX 5120, LCD MERIVALE
OTTAWA, ONTARIO
CANADA K2C 3H4

INSTRUCTIONS

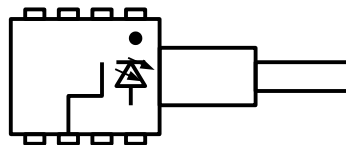
MODEL AVX-S1-SLAA

PLUG-IN SOCKET OUTPUT MODULE

SERIAL NUMBER: _____



AVX-S1-SLAA OUTPUT MODULE, SOCKET VIEW



MATCHING USER-SUPPLIED
DIODE PACKAGE
(TOP VIEW).
DIP PACKAGE.

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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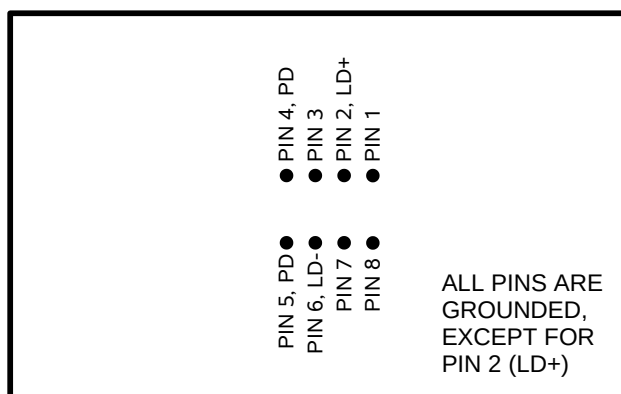
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Manual Reference: /files/server1/officefiles/instructword/avx-s/AVX-S1-SLAA,ed1.odt.
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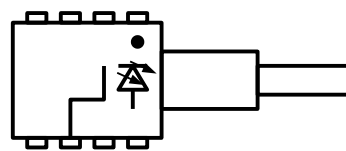
INTRODUCTION

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-SLAA is designed to accept the QPhotonics QFLD-840-2SM laser diode, with the pinout shown below:



AVX-S1-SLAA OUTPUT MODULE, SOCKET VIEW



**MATCHING USER-SUPPLIED
DIODE PACKAGE
(TOP VIEW).
DIP PACKAGE.**

SPECIFICATIONS

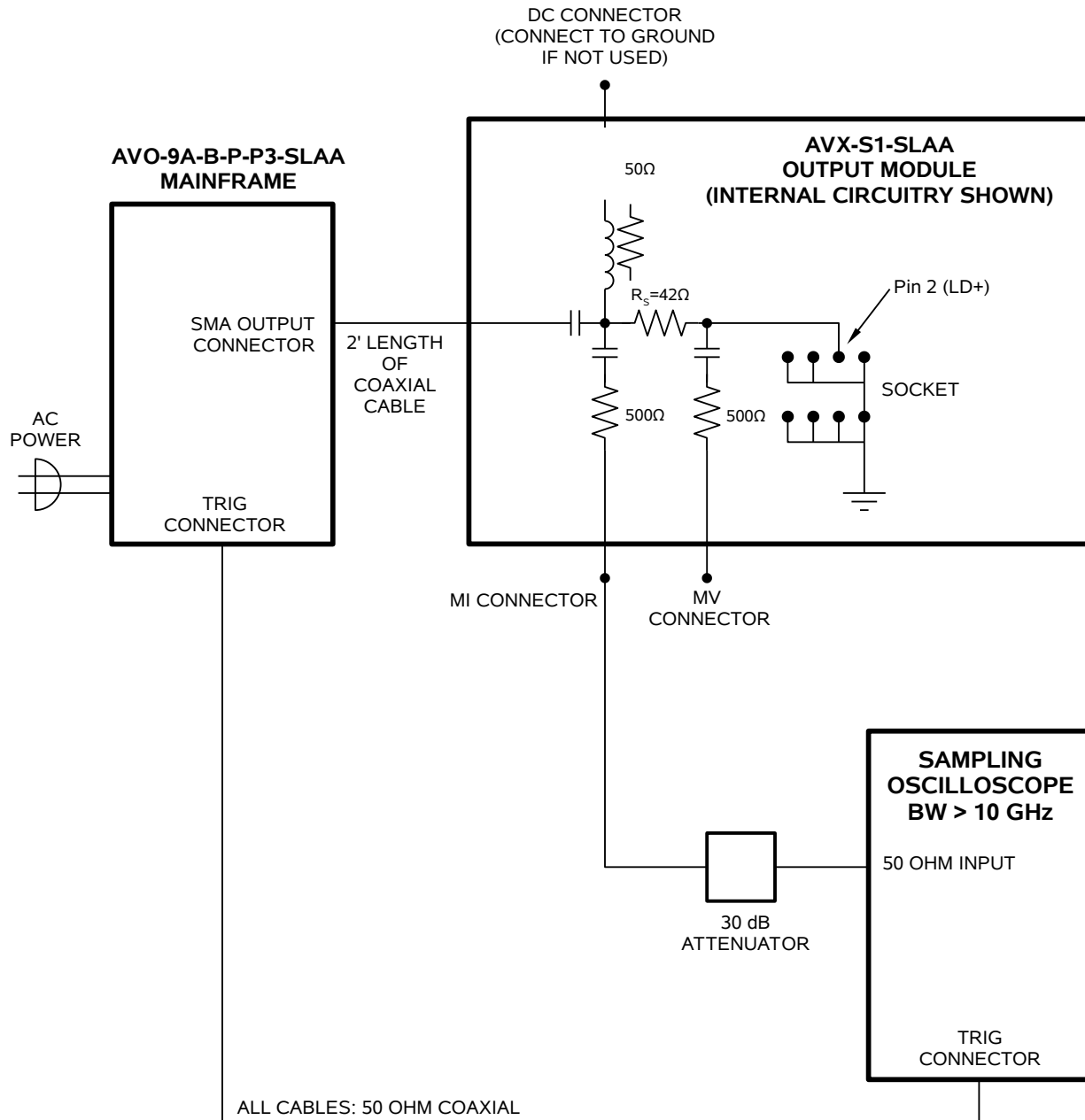
Model:	AVX-S1-SLAA
Peak diode current:	400 mA
Max. input amplitude:	20 Volts
Pulse width:	0.4 ¹ - 200 ns
Rise time:	0.2 ns ¹
Pulse PRF range:	DC - 25 MHz
Max. bias current:	100 mA
Max. bias voltage:	50 Volts
Input impedance:	50 Ohms
N (transformer ratio ^{2,3}):	+1
$R_S + R_{DIODE}$:	50 Ohms
IN connector:	SMA female (one)
Other connectors:	MV, MI, MD: SMA (female), DC bias: solder terminal
Diode socket:	Provides a socket pinout suitable for use with the QPhotonics QFLD-840-2SM laser diode
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

- 1) Lower pulse widths (to 0.2 ns) and faster rise times (0.1 ns) may be possible for laser diode packages with very low parasitic inductance. The -P0 and -P2 packages generally have very low inductance. The -P1, -P3, and -TO3 packages normally have somewhat higher parasitic inductance.
- 2) 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).
- 3) A polarity inverting option is available. Add the suffix -INV to the model number to specify this option. "N" is a negative number when this option is installed.

GENERAL INFORMATION

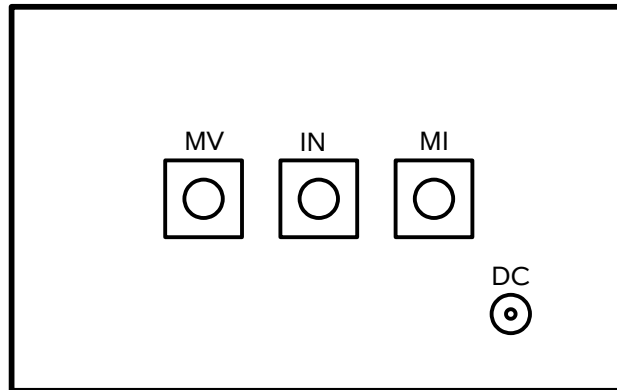
NORMAL TEST ARRANGEMENT

To fully test the instrument, and for normal operation, the output module must be connected as shown below. The basic functional equivalent circuit of the output module is shown.



SIGNAL CONNECTORS ON THE OUTPUT MODULE

An oscilloscope may be used to monitor the MI and MV outputs. 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). Note that the DC port must be shorted to ground if a bias is not applied.



AVX-S1-SLAA OUTPUT MODULE, CONNECTOR VIEW

AMPLITUDE CONTROL

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

$$I_{\text{DIODE}} = (V_{\text{SET}} - V_{\text{DIODE}}) / (42\Omega + R_{\text{DIODE}})$$

where V_{SET} is the amplitude setting on the mainframe (between 0 and 10V), V_{DIODE} is the forward voltage drop across the diode (typically 2 or 3V), and R_{DIODE} is the diode's parasitic resistance (dV/dI at the operating point). The 42Ω resistance is inside the AVX-S1-SLAA output module. For best results, $42\Omega + R_{\text{DIODE}} = 50\Omega$ (i.e., $R_{\text{DIODE}} = 8\Omega$).

COMPATIBLE PULSE GENERATORS

The AVX-S1-SLAA is designed for use the Avtech AVO-9A-B-P series of laser diode driver. It is an identical replacement for the output module originally supplied with the AVO-9A-B-P-P3-SLAA model.