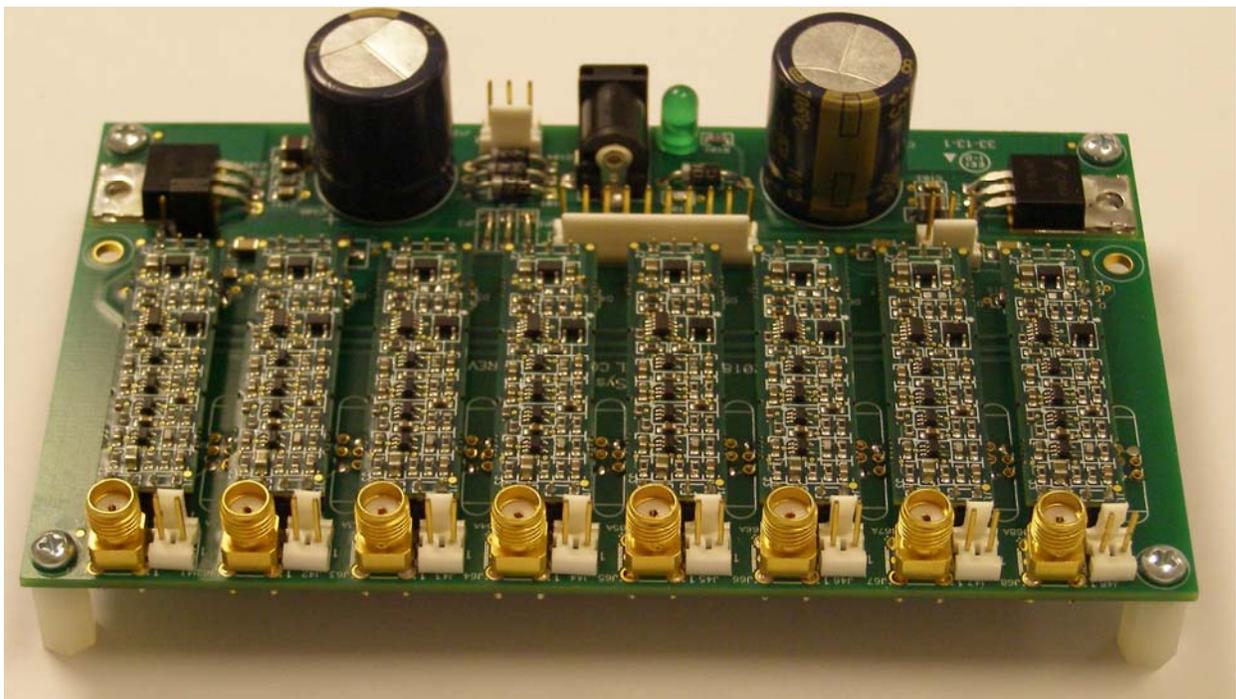




**PSI-2018
8 CHANNEL MODULATOR BIAS CONTROLLER
MOTHERBOARD**

USER GUIDE
REV A



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DOCUMENT SCOPE:

This document describes basic set-up and operation of the Photonic Systems, Inc. PSI-2018 eight channel modulator bias controller motherboard assembly. This manual is intended to give the user enough information to place the controller into service using common electronic laboratory tools.

PRODUCT DESCRIPTION

The PSI-2018 assembly provides bias control for up to eight Mach-Zender optical modulators using PSI-2011-XX mini plug-in MBC) circuits. The PSI-2011-44 plug-in MBC assembly provides MIN bias control while the PSI-2011-11 MBC provides QUAD+ bias control. Any combination of up to eight PSI-2011-XX MBC circuits can be installed on the PSI-2018 assembly which also includes optional optical tap monitors for each optical modulator being controlled and a detachable AC to DC power supply section.

Power Requirements

The PSI-2018 eight channel board provides two supply power options as described below:

1. Utilize the wall plug-in 120 VAC to 16 V_{AC} at .125A power supply module provided. The power supply plugs into the PSI-2016 detachable printed circuit board section that provides the necessary voltages (+/- 12V_{DC}) required by the MBC circuits.
2. If the AC power supply module is not used, DC power can be supplied to the PSI-2018 through connector J20 a 3 pin MTA-100 connector as follows:

Pin #	Description
J20-1	+12 V _{DC} @ 100mA Max
J20-2	Ground
J20-3	-12 V _{DC} @ 100mA Max

The detachable AC power supply section of the printed circuit board can be separated at the score line on the top side.

Bias Control Output

The output bias control signal connections from the MBC to the Mach-Zender modulators are made through the eight SMA connectors J61 thru J68 in the standard configuration. As an option, the PSI-2018 eight channel printed circuit has been laid out so that MTA-100 connectors can also be used for the MBC output signal instead of the SMA connectors.

Photodiode Input to MBCs

Tap Monitors

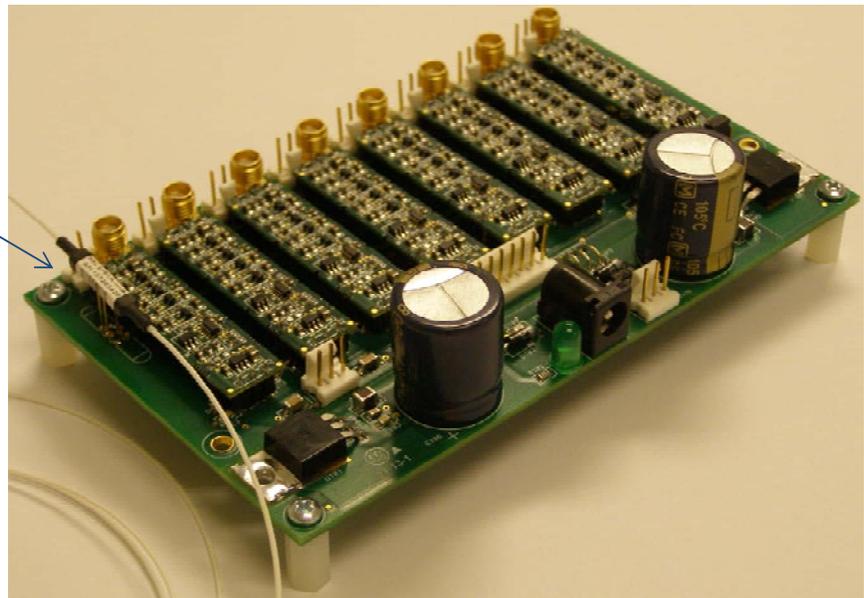
If the optional tap monitor photodiodes are used in the control loop of the Mach-Zender modulator, the devices are installed in the socket pins of J51 thru J58. PSI can assist the user in selection of the optional tap monitor photodiodes if requested based on the optical input power into and out of the modulator in the system provide by the customer.

The PSI-2018 eight channel board has been laid out to allow the installation of the tap monitor photodiode to be installed on either the top side or bottom side of the printed circuit board to assist in fiber management. The optical tap connector is designed with a 4 pin connector on the PCB which allows for the tap monitor to be rotated 180 degrees for best fiber management.

External Photodiode

If the user chooses to use an external photodiode or if the photodiode included in some Mach-Zender modulators is used in the control loop of the Mach-Zender modulator, this input signal to the MBC chip is made through MTA-100 connectors labeled J41 thru J48.

Eigenlight Tap Monitor

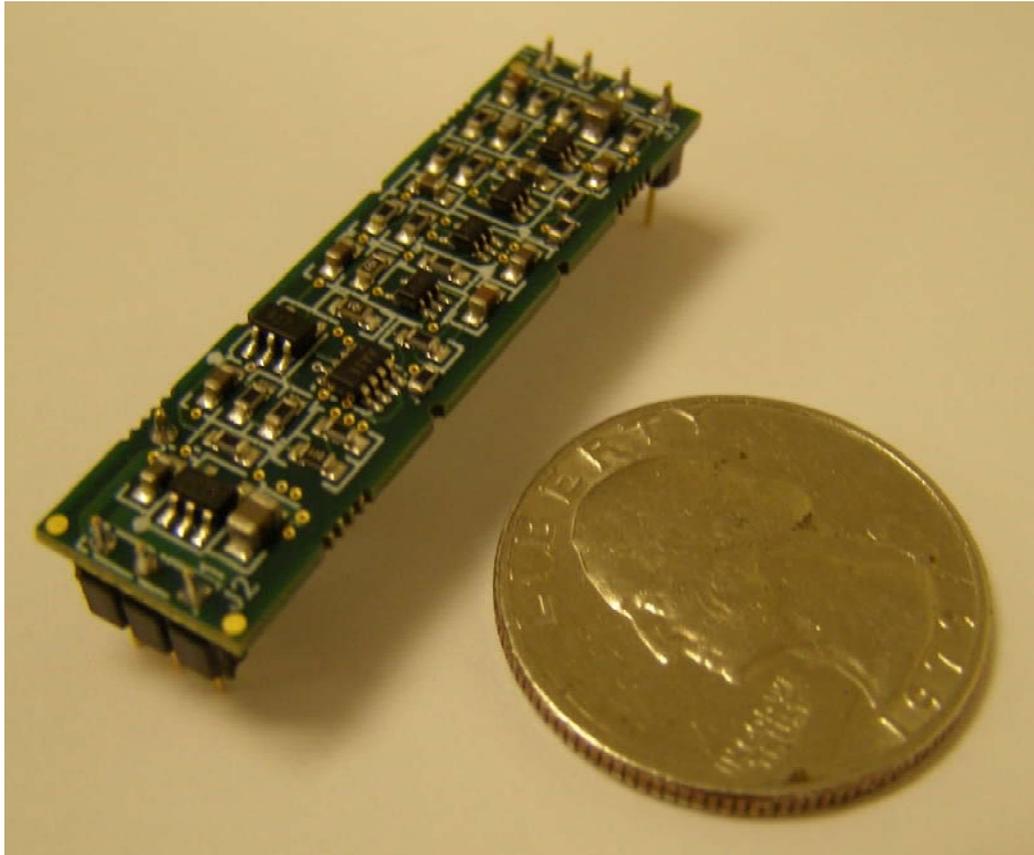


MBC Chips

The eight channel board PSI-2018 is can be supplied with any combination of PSI-2011- xx MBC plug-in devices. The PSI-2011-44 plug-in MBC assembly provides MIN bias control while the PSI-2011-11 MBC provides QUAD+ bias control.

Note: The PSI-2011-44 installed are set to 120mVolts p/p dither signals and set to control to minimum. PSI requests users specify DC Vpi of the optical modulator to be controlled at time of purchase so the dither amplitude can be set accordingly at the factory.

The PSI-2018 can have any mixture of PSI-2011-44 MIN only or PSI-2011-11 QUAD+ controllers installed in any of the MBC locations. The dither amplitude of the MBC can be factory adjusted by PSI for various modulator DC Vpi voltages.



MBC Reset

The PSI-2011-XX MBC plug-in chips feature an automatic rest feature. The PSI-2018 eight channel board also enables the user to force a reset on one individual MBC plug-in or on all eight MBC plug-ins through connector J10 as indicated in the table below.

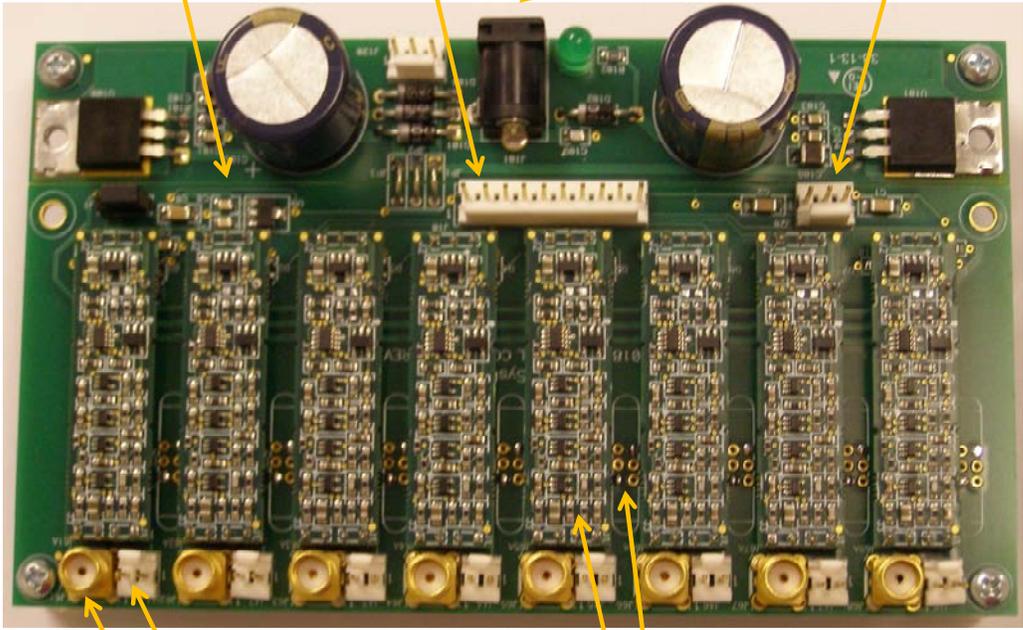
Pin #	Description	Pin #	Description
J10-1	MBC 1 Reset	J10-6	MBC 6 Reset
J10-2	MBC 2 Reset	J10-7	MBC 7 Reset
J10-3	MBC 3 Reset	J10-8	MBC 8 Reset
J10-4	MBC 4 Reset	J10-9	All MBC Reset
J10-5	MBC 5 Reset	J10-10	Ground

Detachable Power Section Score Line

J10 MBC Resets

AC Power In Plug If Used

J20 DC Power In Plug If Used



J4x Ext. Photodiode In (x8) If Used

J6x Bias Control Out (x8)

Tap Monitor Sockets (x8) If Used

PSI-2011-xx MBC Plug-in (x8)

APPENDIX 1: OPTICAL CONNECTOR CLEANING PRECAUTION

It is very important that the following three procedures be observed when inserting optical fiber ends into the optical connector(s). Please note: Damage to the Optical Connector on any supplied tap monitor photodiode caused by failure to follow these instructions is not covered by the warranty.

- 1 Before inserting a fiber into an optical connector, clean it using alcohol and a lint-free wipe or with a Connector Cleaner sold expressly for this purpose. Then spray the connector with compressed air. It is vitally important that this be done each and every time you insert a fiber into an optical connector.
- 2 After removing a fiber from either an optical connector, replace the dust cover that was provided for the connector.
- 3 By always following procedures 1 and 2, you are assuring that Optical Connector(s) remain in pristine condition. Do not insert anything into optical connectors, except for optical connectors that have been cleaned as outlined in procedure 1 above, or the dust covers as mentioned in procedure 2 above.

WARRANTY

Photonic Systems, Inc. warrants the PSI-2018 Eight Channel Modulator Bias Controller (hereafter called "the unit") to be free of defects in materials and workmanship for 1 year from the date of delivery. The unit must be returned to the manufacturer for service and/or repair at the buyer's expense.

The warranty is void if the unit has been subjected to abuse and/or attempts to alter and/or repair it without the prior written approval of Photonic Systems, Inc., or if the "Input" optical connector or the "Output" optical connector are damaged while the unit is in the buyer's possession.

Following the warranty period, charges for parts and labor will be as required to repair the unit. Prices for modifications, revisions and non-warranty parts and service, together with labor necessary, will be quoted upon request.

Except as expressly provided above, there is no warranty or guarantee of merchantability or fitness for a particular purpose or of any other kind, express or implied, with respect to the unit or parts furnished or the services performed by the manufacturer. In no event shall the manufacturer be liable for any consequential damages.