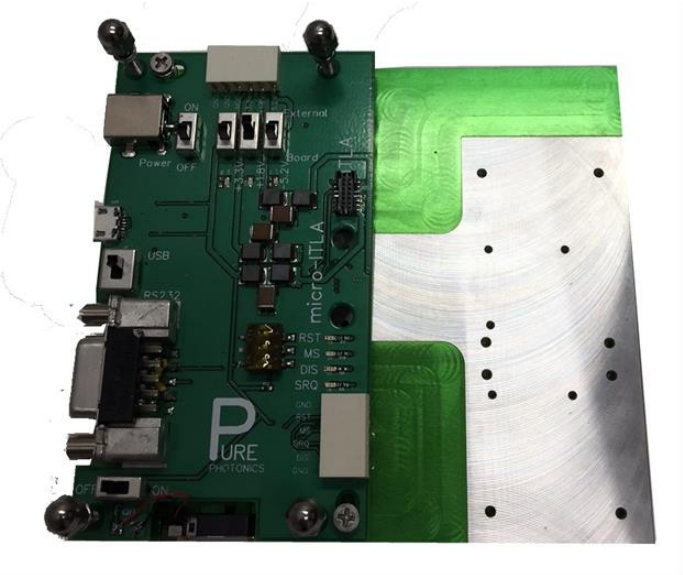
ITLA/micro-ITLA eval board

Product Manual – PPEB700

The PPEB700 evaluation board is a convenient tool to control tunable lasers in the ITLA and micro-ITLA form-factor. It provides the following functionality:

- Mechanical base for mounting an ITLA (1 position) or micro-ITLA (2 positions)
- Fan with on/off switch to cool the mechanical base
- +3.3V, -5.2V and +1.8V internally generated voltages
- Switches to select between internal and external voltage supply
- Wire terminal input for external power supplies and TxTrace
- Selectable Micro-USB and RS-232 communications interface
- LED indicators to monitor power supplies
- LED indicators to monitor hardware lines (SRQ, DIS, RST, MS)
- Switch to control hardware lines (MS, DIS, RST)
- Wire terminal output for hardware lines



1. Unpacking

The device is delivered in a box along with a micro-USB cable, several flex cables for connecting to the devices and 4 M1.6x8 screws for mounting a micro-ITLA. A wall plug power supply is included separately.

Remove the device and its accessories from the box. Two of the screws on the post will be lowered to keep the board in place. In case the product is used for an ITLA, we recommend to keep the screws in place. In case the product is used for a micro-ITLA, the screws need to be loosened so that the board can be moved vertically. After installation of a micro-ITLA, we recommend to lower the screws again.

The board can be powered from the wall-plug power supply. Before plugging it in, please make sure that the ON/OFF switch is in the OFF position. Select which power supplies are needed for your operation (+3.3V is minimum requirement). If the switch for a voltage is set to the external supply and no supply is present, the output is floating.

Attach either the micro-USB or RS-232 connector (DB-9), or both. Before turning on the power, select the interface you wish to use with the switch.

Install the ITLA or micro-ITLA before turning the board ON.

DO NOT MAKE MODIFICATIONS TO THE POWER SUPPLY SETTINGS, COMMUNICATION SETTINGS OR CONNECTIONS WHEN THE BOARD IS POWERED.

Settings for fan and hardware lines can be changed while operating the laser.

2. System Description

The system is an Aluminum mounting plate with mounting holes for an ITLA and micro-ITLA (2 different locations). It has an adjustable-height electronics board. Stand-offs are present to temporarily hold the board in an elevated position while a micro-ITLA is being installed.

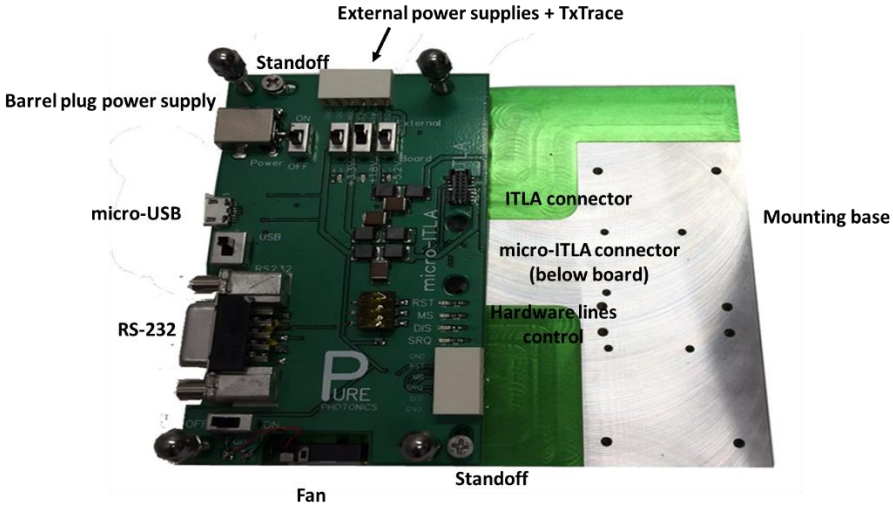
On the left side of the product (with the Pure Photonics logo facing you) the communications interface connectors are located. The board has a micro-USB and an RS-232 input, selectable by a switch.

On the upper left and upper side, the voltage supplies are located. On the left, there is a barrel plug for a wall-plug transformer. On the top is a wire-terminal input where the user can input individual power supplies (+3.3V, -5.2V, +1.8V) as well as the Tx-Trace input. Switches on the board allow for selecting between board generated voltage supplies or for external voltage supplies.

On the right side the interfaces to the tunable laser are located. A standard Samtec ITLA connector is located on the top, whereas an AIC connector is located below the board to directly plug onto the micro-ITLA (self-aligned).

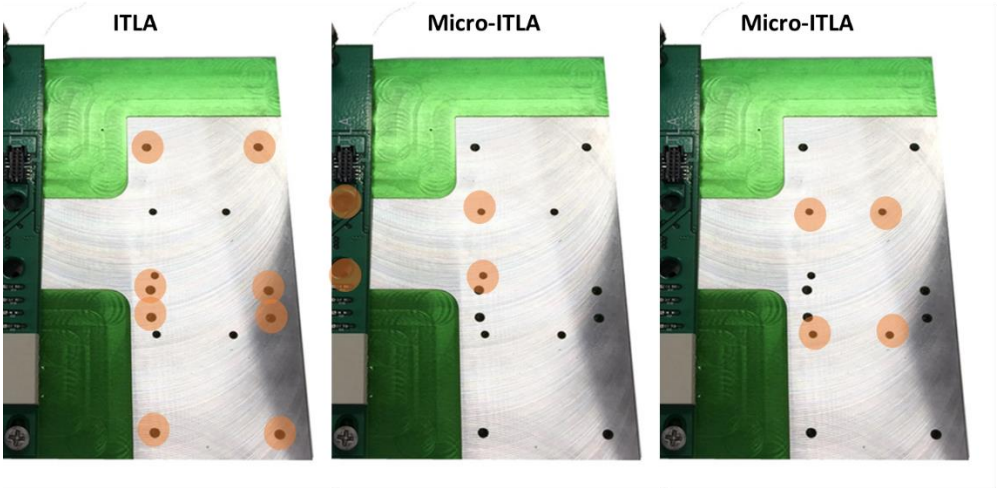
At the bottom-right are LED indicators for the hardware lines. A dipswitch controls the hardware lines and the hardware lines are available on the output wire connector.

On the bottom is a fan which can be turned on and off with a switch.



3. Mechanical Interface

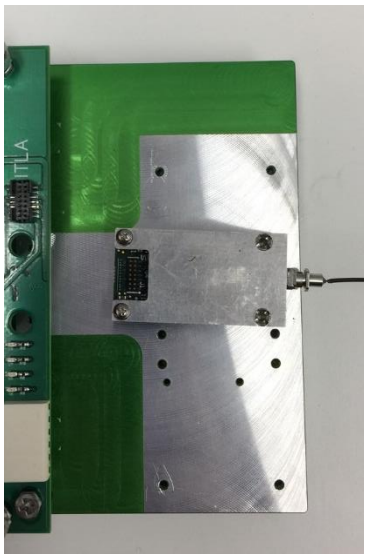
The mounting plate comes with mounting holes for ITLA (8x M2) and 2 positions for micro-ITLA (4x M1.6), following MSA definitions. The ITLA can be positioned in one location. The micro-ITLA in two positioned. As per the below picture (lighted spots indicate the mounting hole locations).

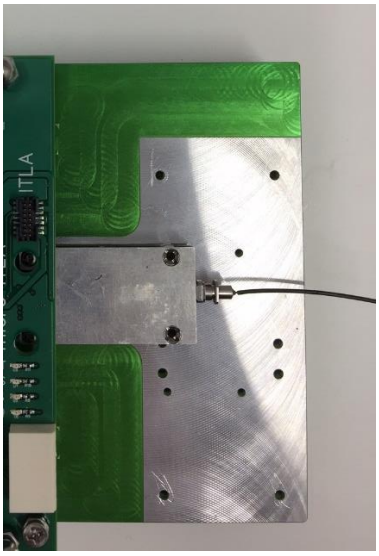


The ITLA is installed as shown below:

For the installation of the micro-ITLA, the board needs to be raised with the stand-offs extended (illustrated below). For lowering the board, the stand-offs need to be slided to one side to be aligned with the hole in the plate.

With the board raised the micro-ITLA can be positioned in place below the board. It is recommended to put the front screws already in place and then slide the micro-ITLA in place (the screws will help finding the mounting holes). The holes in the board allow for access to the screws below the board. After installation, the board can be lowered gently onto the micro-ITLA. The system is self-aligned and the micro-ITLA connector will connect properly, though care is recommended). A gentle push on the board may be needed to ensure full contact.





It is recommended to always fixate the position of the board with the nuts on the posts. In case the ITLA installation is used, the board can rest on the stand-offs. In case the micro-ITLA is used, the board can rest on the micro-ITLA.

The assembly is equipped with rubber feet. In case a better thermal behavior is requested, the feet can be removed and he plate can be installed on a larger heat sink surface directly.

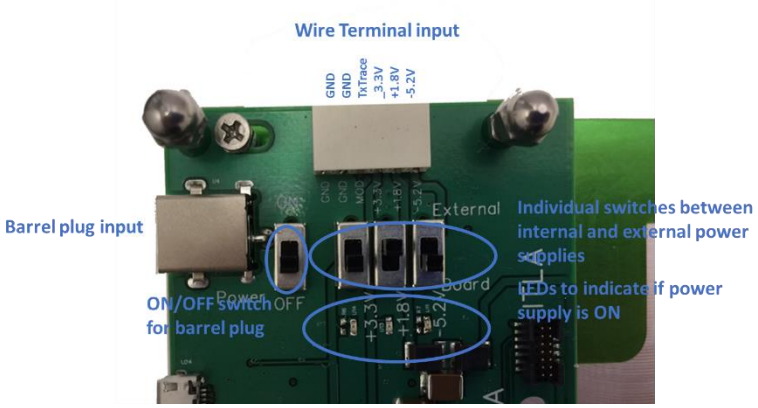
4. Electrical interface

The electrical power is supplied by either a wall plug power supply (barrel plug output) or through individual power supplies on a wire terminal. The single voltage wall plug power supply voltage is on-board converted to the 3 voltages +3.3V, +1.8V and -5.2V. For each power supply, it can be individually selected if the on-board supply is used or the external supply.

A single switch is used to connect the barrel plug input to the board circuit (ON/OFF).

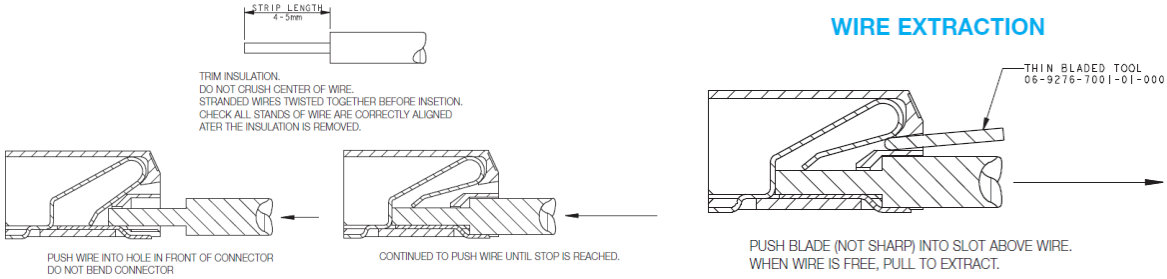
LEDs are indicating if the power supply is operational.

NOTE: the on-board communication chips, as well as the fan are sourced from the +3.3V supply. At minimum the 3.3V LED needs to be lit.



One input to the wire terminal is the TxTrace input.

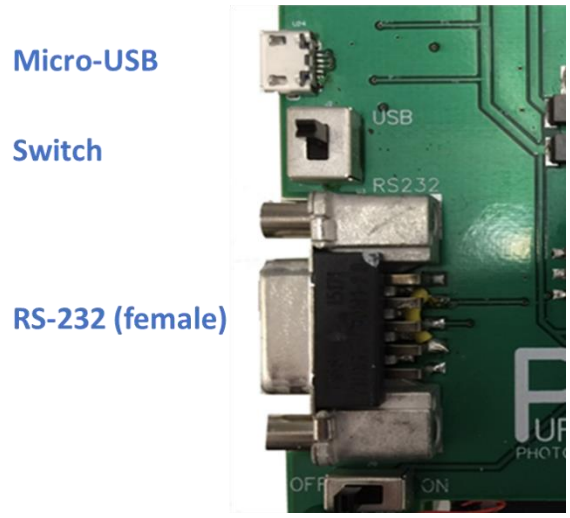
The terminal blocks takes wire of AWG 18-24. The below illustration shows how to enter the wires:



The wire can be removed by pushing a sharp pin (e.g. a tweezer) into the top hole and then by gently pulling back the wire (see below).

5. Communications interface

The communication with the module goes either through an RS-232 interface or a micro-USB interface. The interface used is selected with a switch. The RS-232 interface typically is connected through a hardware interface on a PC. The micro-USB interface installed through a USB port. Sometimes an RS-232 to USB dongle can be used to connect an RS-232 interface to a USB port.

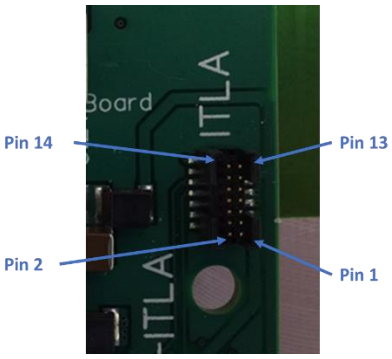


In any case where a USB port is being used, it is recommended to set the interface parameters to be suitable for serial communications. The latency time should be set to 1ms and packet size needs to be reduced to 64 (both inbound and outbound). This setting can be accessed through the device manager, properties, advance properties.

The USB interface installs as a serial port. Typically, this happens automatically. In case the correct driver is missing: http://www.ftdichip.com/Drivers/CDM/CDM21224_Setup.zip at http://www.ftdichip.com/Drivers/VCP.htm.

6. Connection to the tunable laser

The board is connected to an ITLA through the connector on top of the board. **Note that this connector does not provide the +1.8V supply.** The pin-out of the connector is as shown below:



The supplied flex cables can be used to make a connection. Note that the green cable always needs to show the company logo upwards. The cable with the AIC connector (lower cable) is intended for use with the micro-ITLA if installed on the secondary position (note that the eval board does not provide +1.8V on this position).

For installation of the micro-ITLA, an AIC connector is installed on the bottom side of the board. As explained in the electrical section, the board can be lowered onto the micro-ITLA. No flex cable is needed.

7. Hardware lines

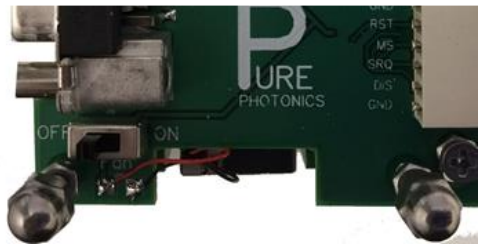
The tunable laser hardware lines (SRQ, MS, DIS, RST) are used to read the status of the laser. **The LEDs are ON when the voltage on the hardware line is low.**

Dipswitches are used to change the status of the hardware lines. In normal operation the dipswitches are set to the right (towards the edge of the board). The RST and the DIS line are pulled down when the dip is set to the left. When set to the right, typically the device pulls the lines up. The MS line is both pulled up (dip set right) and down (dip set left) by the dip switch (the MS line acts on the edge of the signal, not the level).

The state of the different lines can also be monitored through the wire-terminal. The operation on the wire terminal is explained in the power supply section.

8. Fan

A micro-fan is installed to provide a bit extra cooling if needed. It can be activated with the switch next to it.



9. Software support

Graphical User Interface

Pure Photonics makes a GUI available on its website. Note that operation may be limited to the basic GUI for non Pure Photonics products.

Command Line Interface

Pure photonics makes a CLI available for communication with the device. The interface is established by typing it.connect(x,9600) where x is the COM port number.