Application Note for Micro-ITLA Plug-on board PPEB600

Contents

Product description

The PPEB600 is a small plug-on board that fits on top of a Pure Photonics micro-ITLA. It provides a convenient means to communicate with the ITLA as it converts the standard low-voltage RS-232 interface to a micro-USB input that can be directly connected to any PC or laptop. It also provides inputs for the +3.3V and -5.2V power supplies. Along with a mechanical interface (heatsink) this allows convenient integration in a user system, without expensive evaluation boards and or a custom integration effort.

The standard low-voltage RS-232/LVTTL interface is designed for interaction with a micro-processor and for interaction with a laptop or PC, the standard RS-232 signal (±15V) would need to be down-converted to the LVTTL levels (0.4V and 3 V). In addition, most laptops and PCs do not have a RS-232 physical connector anymore and require an expensive RS-232/USB dongle anyway.

The product also comes with a standard connector (female, Samtec, 14-pin, same as ITLA) that allows an easy interface to an ITLA evaluation board. This connector does not have to be attached for operation, but may provide access to the digital lines.

The PPEB600 comes with screws for permanent installation on a mechanical interface and which make connector alignment more convenient.

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![Pure Photonics logo] Application Note for Micro-ITLA Plug-on board PPEB600

Installation instructions

The micro-ITLA is an ESD sensitive opto-electronic component. Please apply the proper ESD pre-cautions before touching the micro-ITLA and the plug-on board.

1. The Micro-ITLA plug-on board has two sides (see below) the top-side has all the electronics, while the bottom side has the AIC female 14-pin connector. The plug-on board comes with two M1.6 screws.
   On the top-side, the white plastic connector is the interface for the power supplies. From top to bottom, the inputs are +3.3V, GND and -5.2V. This is also indicated on the board.
   The metal connector is the receptacle for the micro-USB connector.
   The 14-pin female Samtec connector on top is a direct pass-through from the AIC connector at the bottom and allows access to the digital lines as well as a convenient interface to an evaluation board.
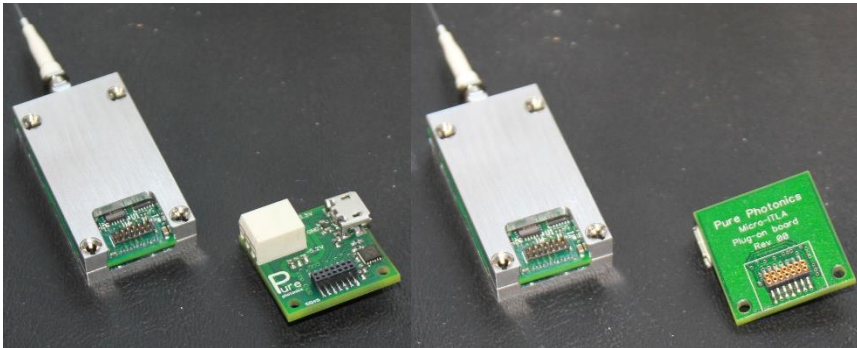
   a.

2. It is recommended to first loosely install the micro-ITLA on a heat-sink and to put the two M1.6 screws in place. Thanks to the tolerances, there will be fairly good alignment between the connector on the micro-ITLA and the bottom connector of the plug-on board. **Do not tighten the srews until you have ensured proper alignment, otherwise you may damage the micro-ITLA.**
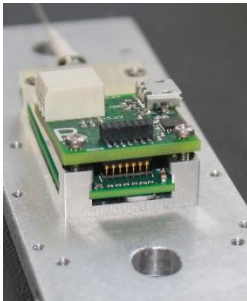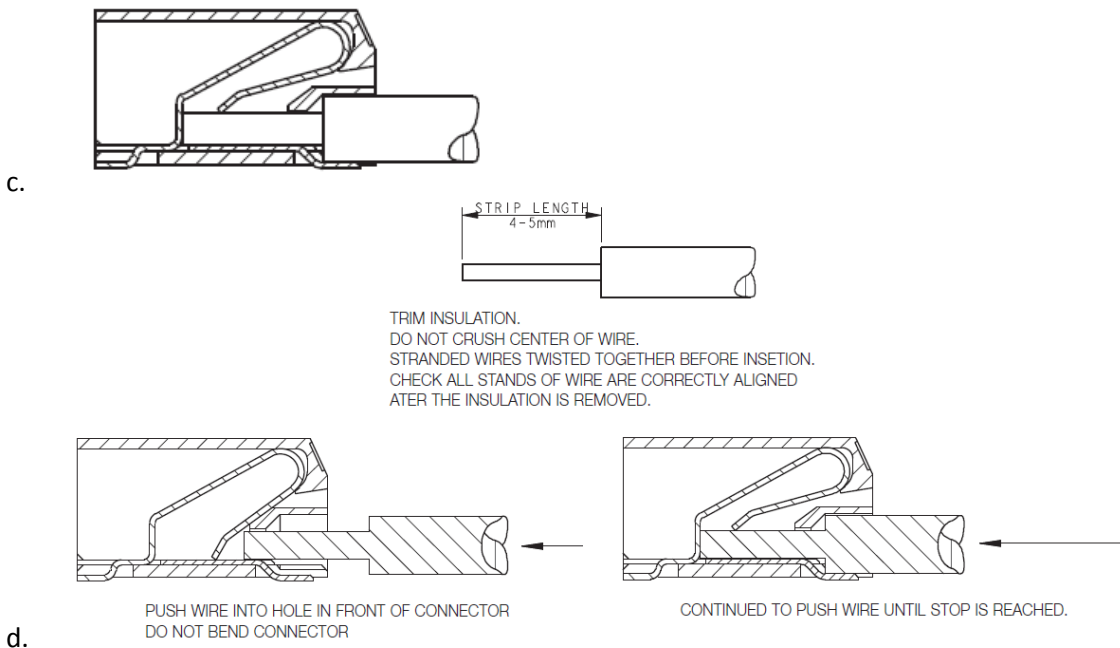

   a.

3. Ensure that the connector on the micro-ITLA and on the plug-in board are well aligned. Apply small pressure on top of the plug-on board to push the connector in place. After this, you can tighten the M1.6 screws. Make sure that you use the natural alignment of the board with the micro-ITLA when tightening the screws, to minimize pressure on the electrical interface.


   a.

4. On the right side, plug in the micro-USB connector with the 2 tabs aligned to the top.
   On the left side, plug in the lines to the voltage supply. The sequence of lines is indicated on the PCB (+3.3V, GND, -5.2V). Make sure that the power-supplies are off when making the connection.
     a. The white terminal can take wires with 18-24 AWG size
     b. The connector housing latches on to the wire. **Do not pull the wire back with force.**

     c.

     TRIM INSULATION.
     DO NOT CRUSH CENTER OF WIRE.
     STRANDED WIRES TWISTED TOGETHER BEFORE INSETION.
     CHECK ALL STANDS OF WIRE ARE CORRECTLY ALIGNED
     ATER THE INSULATION IS REMOVED.

     PUSH WIRE INTO HOLE IN FRONT OF CONNECTOR   CONTINUED TO PUSH WIRE UNTIL STOP IS REACHED.
   DO NOT BEND CONNECTOR
     d.

5. Now apply the power supplies and the USB interface should be recognized by the PC (if the USB is plugged in). Note that the USB interface is powered by the board itself, so without applied power on the 3.3V line, the micro-ITLA plug-on board is not recognized.

6. Note that due to differences between the USB and RS-232 protocol, the default latency time in the driver is probably set too high. For most applications (slow communication) this is OK, however for firmware upgrade we have seen failures. We recommend to perform the following steps to resolve this issue (Windows 8, should be similar in other operating systems):
     a. Open the 'Windows Control Manager'
     b. Open 'Hardware and Sound'
     c. Open 'Device Manager'
     d. Find the COM ports
     e. Right-click the USB serial port and select 'Properties'
     f. Select the tab 'Port Settings' and click the 'Advanced' button
     g. Set the latency timer value to 1msec. You can also select the COM-port designation here.
     h. Close the windows and enjoy the plug-on board.

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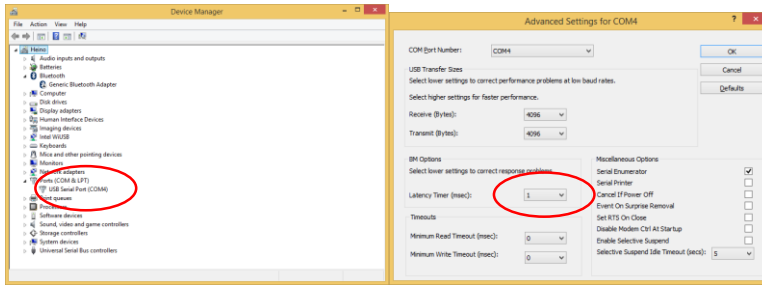
i.

7. For un-install of the hardware:
   a. Pull the micro-USB cable out of the receptacle
   b. For removal of the power supply wires, use a thin bladed tool and insert it above the wire. This should loosen the wire and allow you to pull the wire out.

WIRE EXTRACTION

THIN BLADED TOOL
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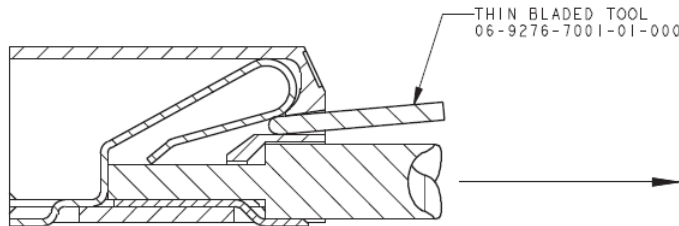
PUSH BLADE (NOT SHARP) INTO SLOT ABOVE WIRE.
WHEN WIRE IS FREE, PULL TO EXTRACT.

   c.
   d. Remove the M1.6 screws
   e. Gently wiggle the 14-pin connector loose.

14-pin Samtec connector

The 14-pin Samtec connector is not needed to operate the device (power supplies and USB interface suffices). However, it needed, it can provide access to some of the device controls, such as the digital lines. The connector configuration is shown below.

PIN Name	PIN #		PIN #	PIN Name
+3.3V Supply	1		2	DIS*
+3.3V Supply	3		4	SRQ*
Gnd	5		6	MS*
Gnd	7		8	TxD
-5.2 Supply	9		10	RxD
-5.2 Supply	11		12	RST*
OIF Reserved	13		14	DitherAA[11]

Please note that the Tx and Rx lines of the connector are both ported to the outside and to the on-board micro-USB connector. So in case of both interfaces being connected, a conflict may occur. In instances we have observed, when connected to the ITLA-evaluation board, the external communication chip overrules the on-board one.