P1823/UPAMD Optical Connection Study Group Statement of Work

18 September 2012

P1823/UPAMD Background:

This draft standard focuses on a generic, reusable, durable, power adapter designed for reuse across brands, models, and years. A compliant adapter will supply a nominal 21 V at up to 130 W and may negotiate voltages up to 60 V at power levels up to, but less than, 240 W. Each power adapter will have one or more power ports to service load devices with control of each port via a serial communications link, CAN bus. Input power to the adapter may be AC or DC depending on the market being served.

A group of laptop, netbook, and notebook computers, entertainment and gaming system manufacturers approached the Microprocessor Standards Committee, a Standards Committee of the IEEE Computer Society, in January 2010, to define a common connector configuration, a power specification and a communications protocol for a reusable durable power adapter system. This draft standard is the result of that foresight.

The UPAMD defines a power delivery and communication connection between a power adapter and a power using device using greater than 10 Watt up to, but less than, 240 Watt range. The communications are used to coordinate the power delivery and provide identification between the power adapter and the power using device. While primarily intended for portable computing and entertainment devices, this standard applies to adapters serving other mobile, and portable, devices in use around the office, home or vehicle.

The current plan of the working group is to have the project completed by the end of calendar year 2012. Following IEEE approval, the standard will be submitted through the established path for fast tracking into ISO/IEC.

Expected usage of the IEEE P1823/UPAMD should reach 100 million in 2 years with a total available market based on power levels of greater than 2 billion devices worldwide in 5 years.

Current Overview and Status presentation is available at
http://grouper.ieee.org/groups/msc/upamd/pub_docs/TBD.pdf

The current draft has provisions for communications at CAN bus speeds at 1 MHz. This communication, although capable of IPv6 traffic among connected nodes, is primarily designed for power control functions. To be more useful, a higher speed data link connection is desired.

Objective: To add high speed communications to the UPAMD system through current connectors system. Target is 10Gb/s and above.

Characteristics:

1. Maximum Cable length now 10 meters, will consider reducing to 5 meters if needed.
2. Connection established by current CAN signal. No power above 100uw is exposed without connection to load detected.
3. Two links required to support both cable connector orientations.

4. Low cost cable might suggest PCF cable 200/230um? Drawing shows 500um buffer outline. Other option are welcome.
5. Cable must be passive.
6. Emitter and detector to be in devices.
7. 650 or 850 nm possible
8. Hopefully future growth potential available
9. Make use of current established technology and existing components as much as possible.
10. Low cost is a goal
11. The CAN bus and probe provide mated connector detection to enable laser, no exposed laser hazard.
12. There is a spare CAN header bit to indicate optical capabilities in device.

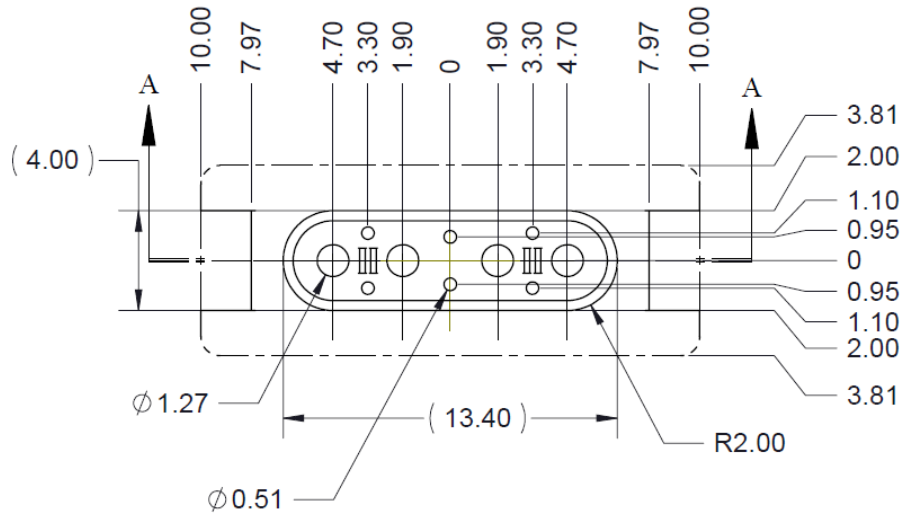
Restrictions:

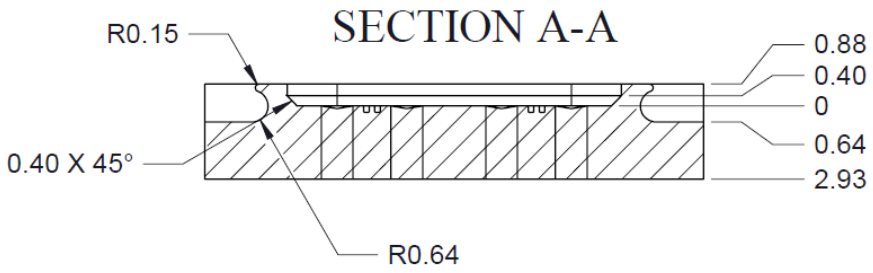
1. Fiber must be on center line between the Vpos and Vneg power pins
2. Fibers in pairs and must work with a reversed connectors (180 degree rotation)
3. Transmit and Receive components may be on back side of Target surface
4. Target interface may be optical to optical or optical to/from diode/laser
5. Fiber must be flush with mating surface
6. Optical cable system must inter-mate with non-optical enabled devices and deliver power.
7. Other suggestion requested.

INITIAL Problem Statement:

Can the link be made to work in the current connector footprint? Below is the updated TARGET footprint. If the footprint needs to be changed now is the time to do it.

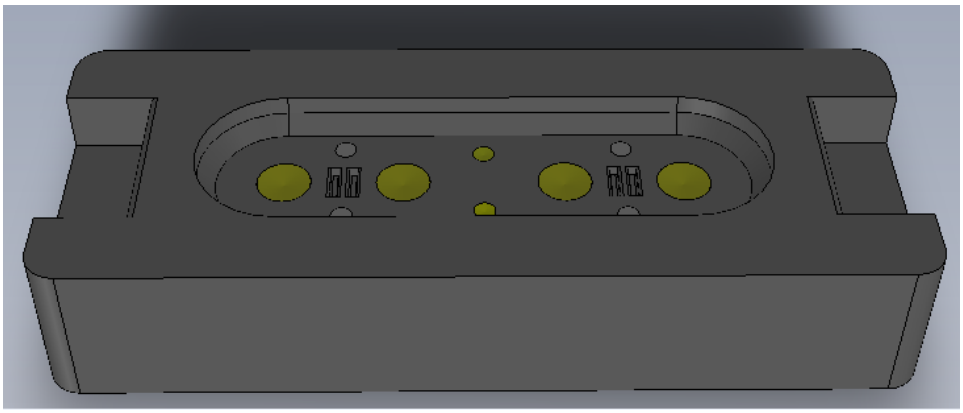
A suggested optical fiber positions are located 3.3mm left and right from the CAN BUS pins and 1.1mm above and below the power pin centerline. They are shown here as 500um diameter to represent a 200/230um PCF fiber in a buffer. Example was Leoni K200/230 or GK200/230 that can be cleaved and not polished.

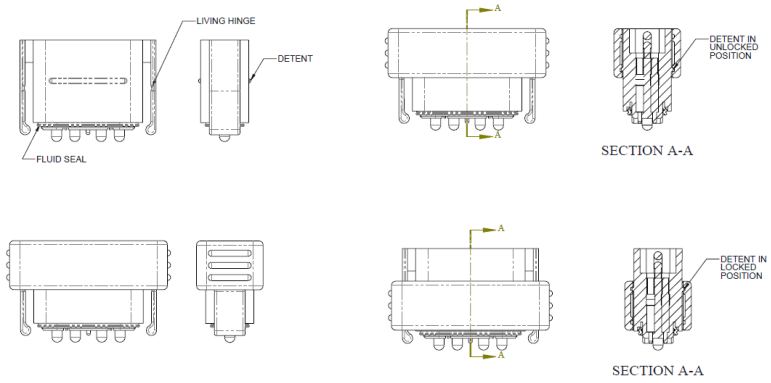




PCB surface will be at the 0 reference line. Bottom line in Section A-A is arbitrary for SolidWorks modeling.

A view of the connector from the SolidWorks model





Above is shown a representation of a mating plug. Only the bottom, mating, surface of the plug is specified. A current SolidWorks viewer model of the connector and target is available at:

http://grouper.ieee.org/groups/msc/upamd/connect/conn_8-14-12.EASM