



# **1394-Beta Connector Proposal Part 2**

1999 June 07

Max Bassler

Dave Brunker

John Lopata



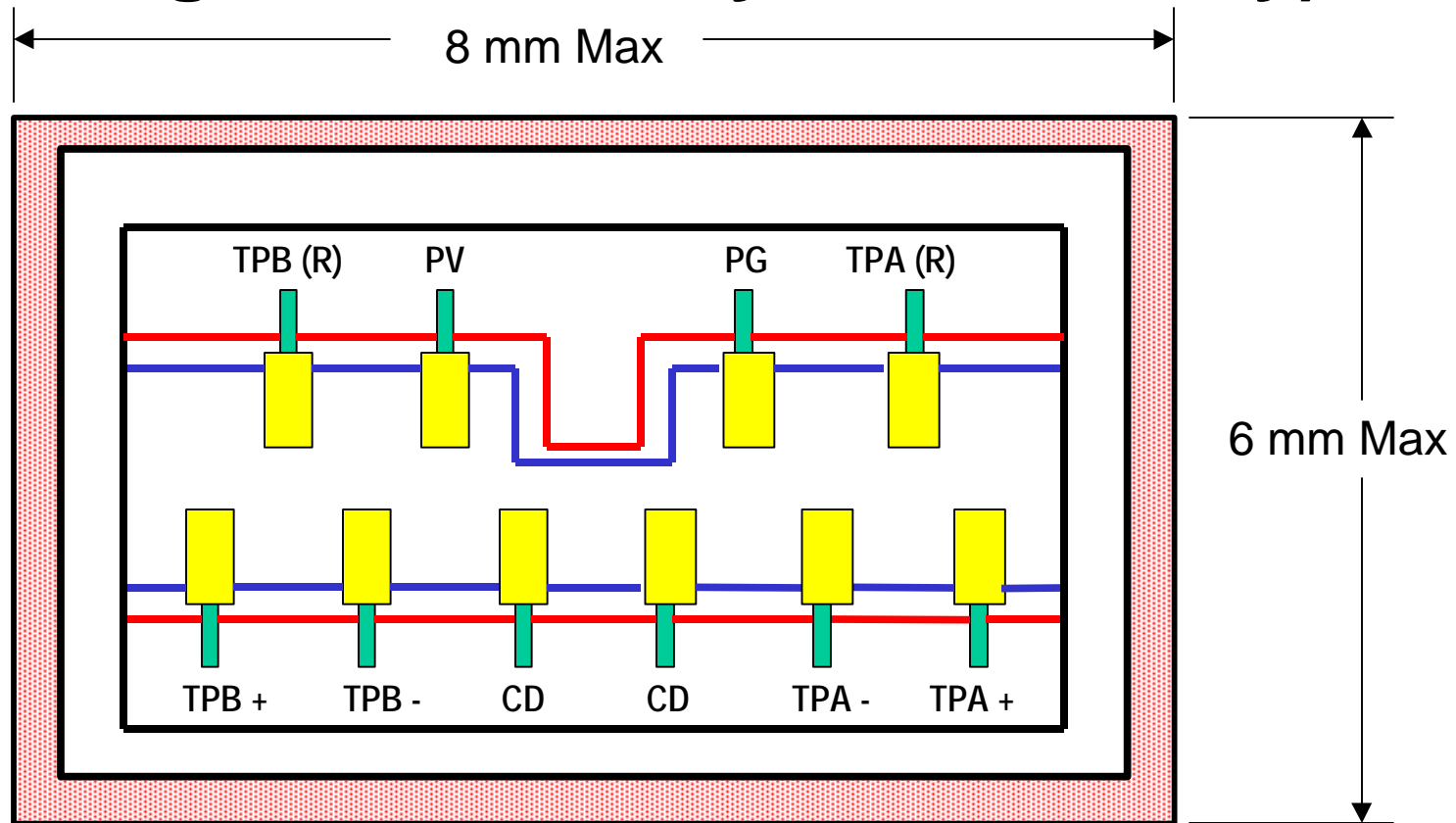
# 1394-Beta Connector Proposal

- **Electrical**
  - Voltage: **30** VDC maximum
  - Current: 1.5 A per contact
  - Data Rate: up to **S400-S3200**
  - Impedance: 110 +/- 25 Ohms through a 100 ps exception window
  - Cross Talk: less than 5%
  - Skew:
    - Intrapair < 10 ps
    - Interpair < 15 ps
- **Target Cost**
  - Connector: Equivalent to current high performance sockets
  - Cable Assembly: Equivalent to current high performance cable assemblies at given speeds (**S800, S1600, S3200**)



# 1394-Beta Connector Proposal

(Bilingual will be keyed differently)



 Cable Plug Movable Contact Position

 Fixed Contact Position PCB Socket

Molex - 1394-Beta Connector Proposal - 1999 June 07



# 1394-Beta Connector Proposal Pin Out

Note: Final determination of TPA (+/-) and TPB (+/-) pin position will be determined by the silicon pin out and routing.

- TPA + Twisted Pair A (Plus)
- TPA - Twisted Pair A (Minus)
- TPA (R) Twisted Pair A (Return)
- TPB + Twisted Pair B (Plus)
- TPB - Twisted Pair B (Minus)
- TPB (R) Twisted Pair B (Return)
- PV Power (Voltage)
- PG Power (Ground)
- CD Cable Detect
- CD Cable Detect



# 1394-Beta Connector Proposal

## Possible Cable Detect Pin States

1- No Connection- **Cable Presence detect for “Upstarts”**

2- Legacy Cable Systems- **Protocol**

1394-1995 6 Circuit Connector

1394a 4 Circuit Connector

3- High Speed Serial Data Cable Systems

S 800 maximum cable data speed

S1600 maximum cable data speed

S3200 maximum cable data speed

4- Future Designations

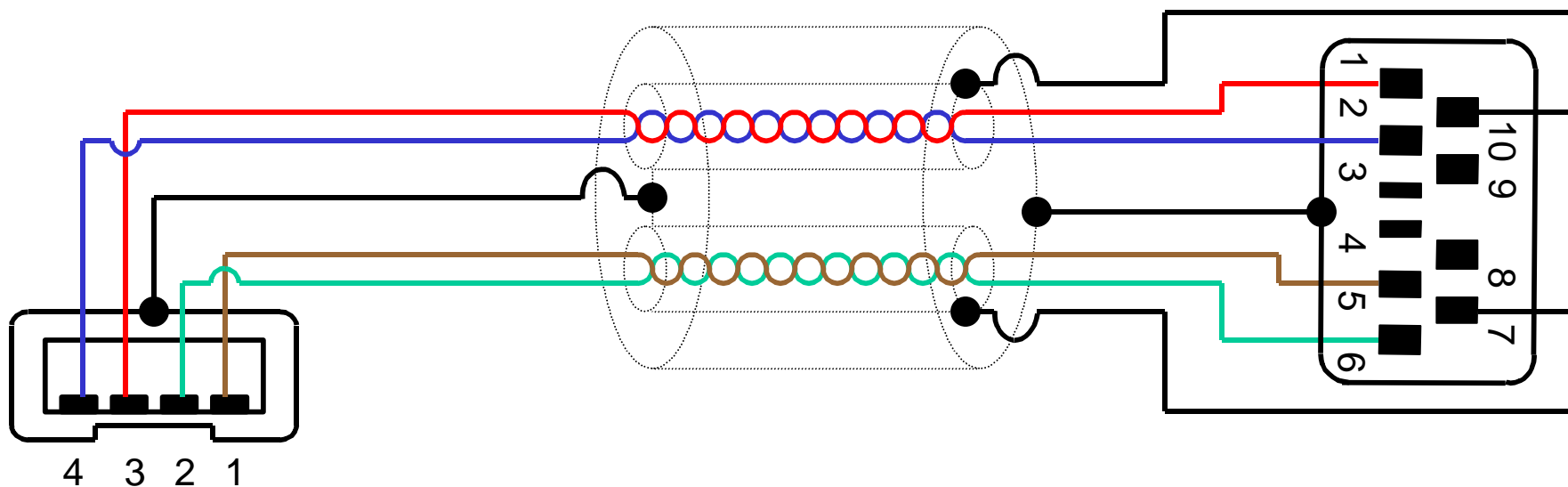
~~Security~~

Manufacturers proprietary coding

(Note- Assumption is ALL cables will support legacy S400)



# 1394a 4 Circuit to Bilingual Cable Assembly (Legacy)



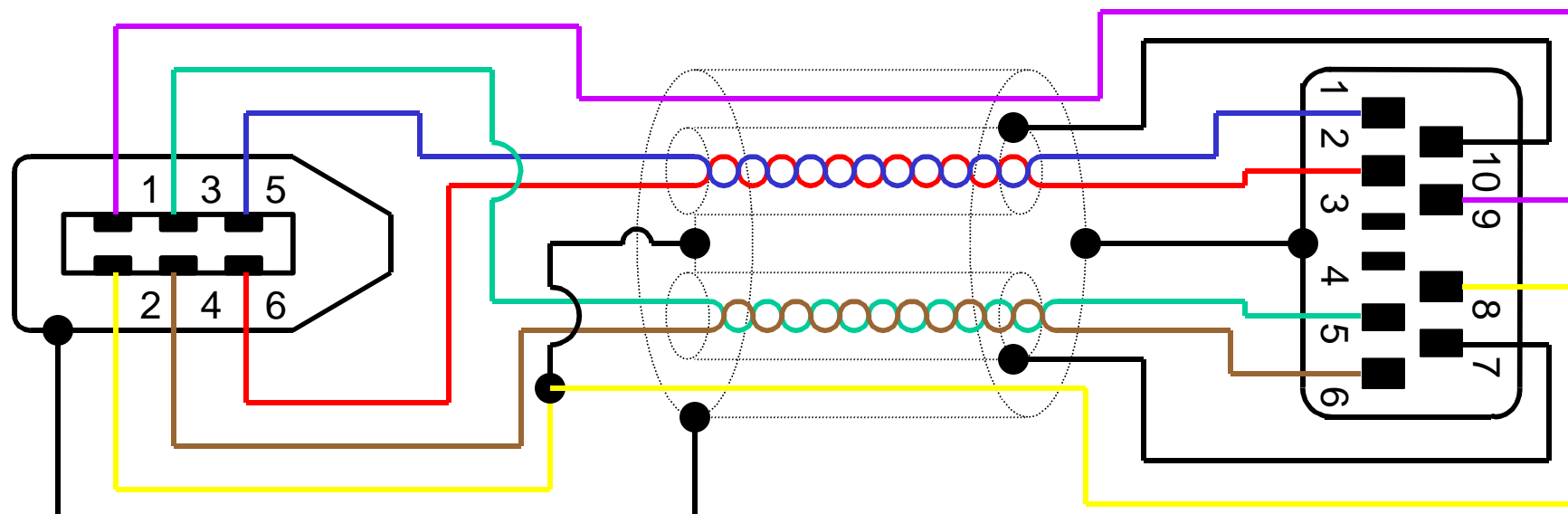
4 Circuit Pin Out (Ref)	
Pin 1	TPB*
Pin 2	TPB
Pin 3	TPA*
Pin 4	TPA

**Note:**  
Connectors are viewed as looking at the front plug face. (Bilingual plug will be keyed version of the Beta Connector)

Beta Circuit Pin Out (Ref)			
Pin 1	TPB *	Pin 6	TPA
Pin 2	TPB	Pin 7	TPA (R)
Pin 3	CD	Pin 8	PV
Pin 4	CD	Pin 9	PG
Pin 5	TPA *	Pin 10	TPB (R)



# 1394-1995 6 Circuit to Bilingual Cable Assembly (Legacy)



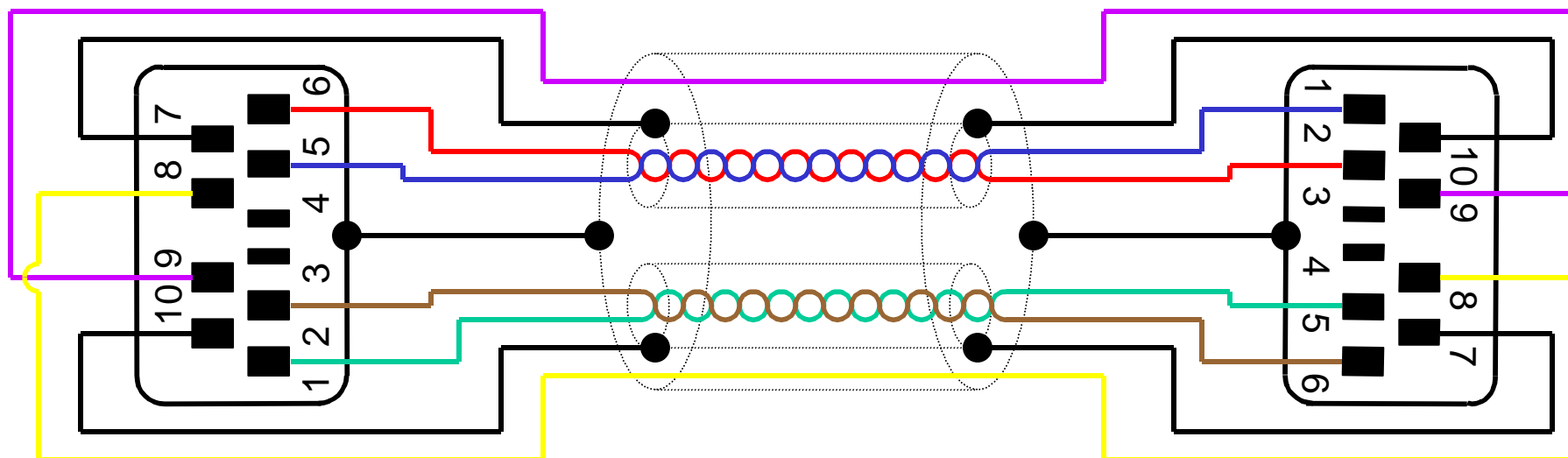
6 Circuit Pin Out (Ref)	
Pin 1	VP
Pin 2	VG
Pin 3	TPB*
Pin 4	TPB
Pin 5	TPA*
Pin 6	TPA

Note:  
Connectors are viewed as looking at the front plug face. (Bilingual plug will be keyed version of the Beta Connector)  
**Power is mandated in this cable**

Beta Circuit Pin Out (Ref)			
Pin 1	TPB *	Pin 6	TPA
Pin 2	TPB	Pin 7	TPA (R)
Pin 3	CD	Pin 8	PG
Pin 4	CD	Pin 9	PV
Pin 5	TPA *	Pin 10	TPB (R)



# Beta to Beta Cable Assembly



## Note:

Connectors are viewed as looking at the front plug face.

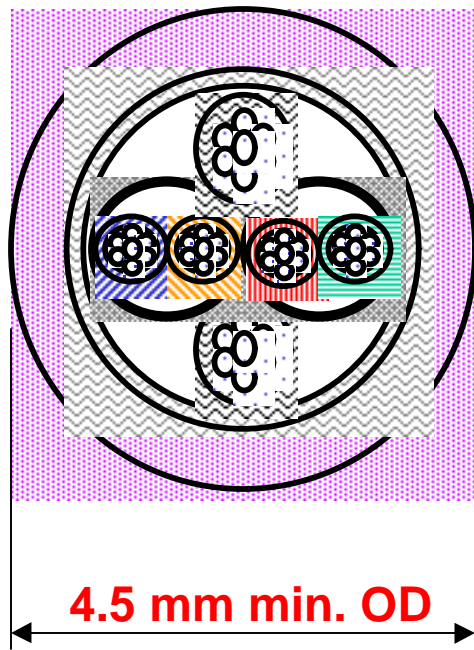
Power is mandated in this cable

## Beta Circuit Pin Out (Ref)

Pin 1	TPB *	Pin 6	TPA
Pin 2	TPB	Pin 7	TPA (R)
Pin 3	CD	Pin 8	PG
Pin 4	CD	Pin 9	PV
Pin 5	TPA *	Pin 10	TPB (R)



# Beta 2.0 Meter Cable Construction (Reference)



**(Absolute best possible condition)**

**Likely to be 5 mm Plus OD**

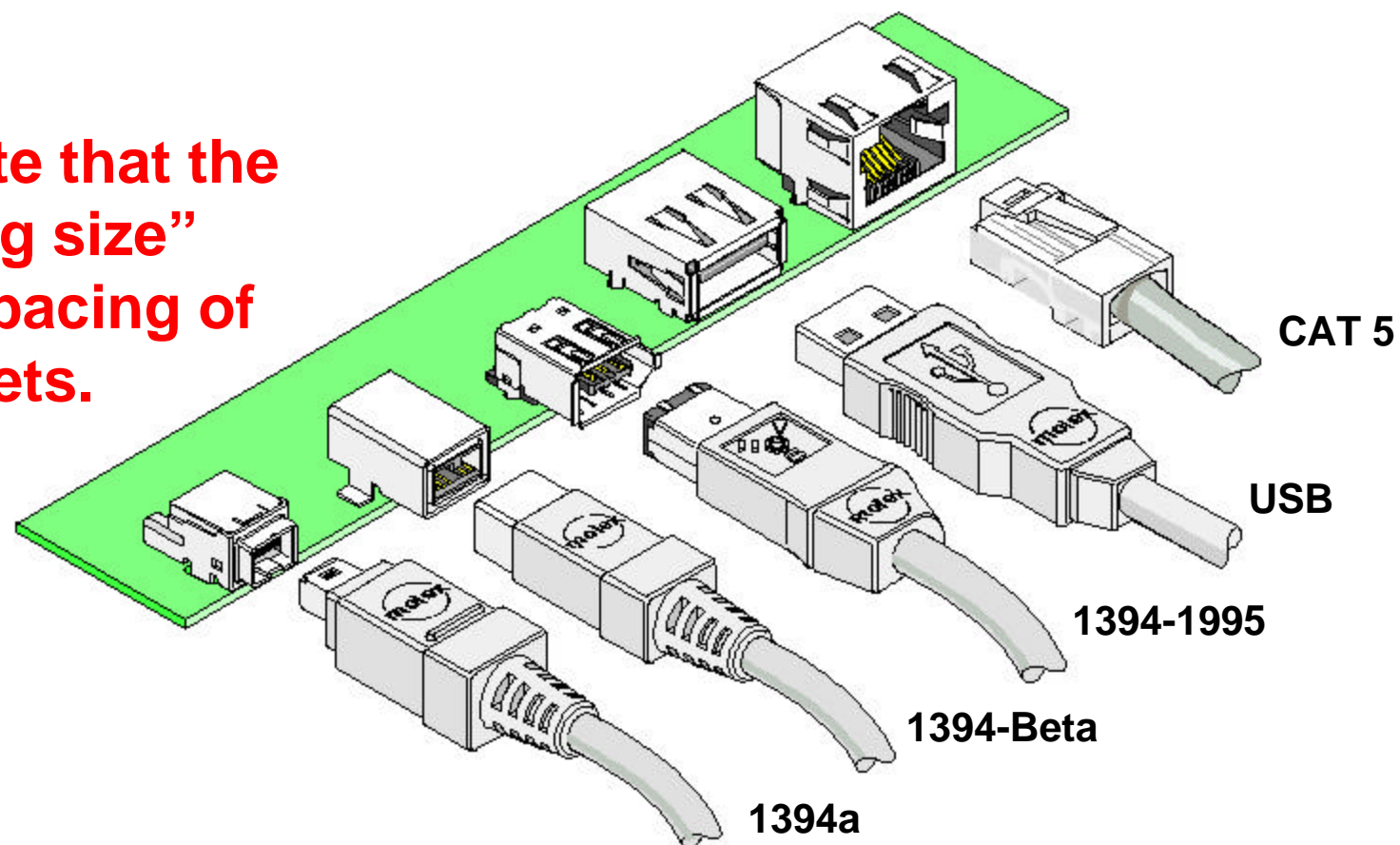
- Power Wires
  - Voltage [26 AWG]
  - Ground [26 AWG]
- Two High Speed Data Pairs
  - Twisted Pair [30 AWG]
  - Braided copper shield with polyester tape isolation
- Outer Shield
  - Braided copper shield with polyester tape isolation from the internal conductors



# 1394-Beta Connector Proposal

(Connector size reference)

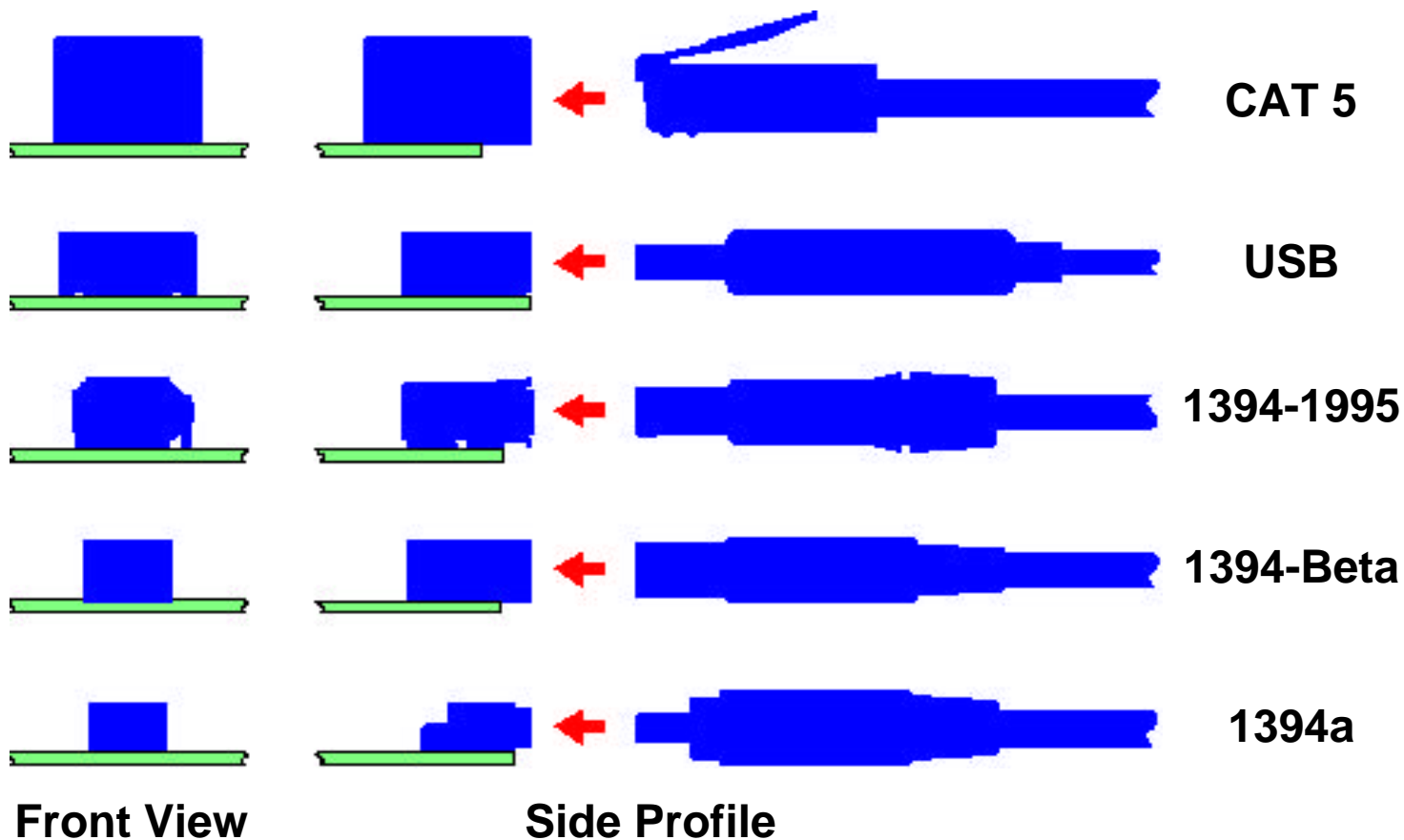
Please note that the “cable plug size” dictates spacing of PCB sockets.





# 1394-Beta Connector Proposal

(Connector size reference)

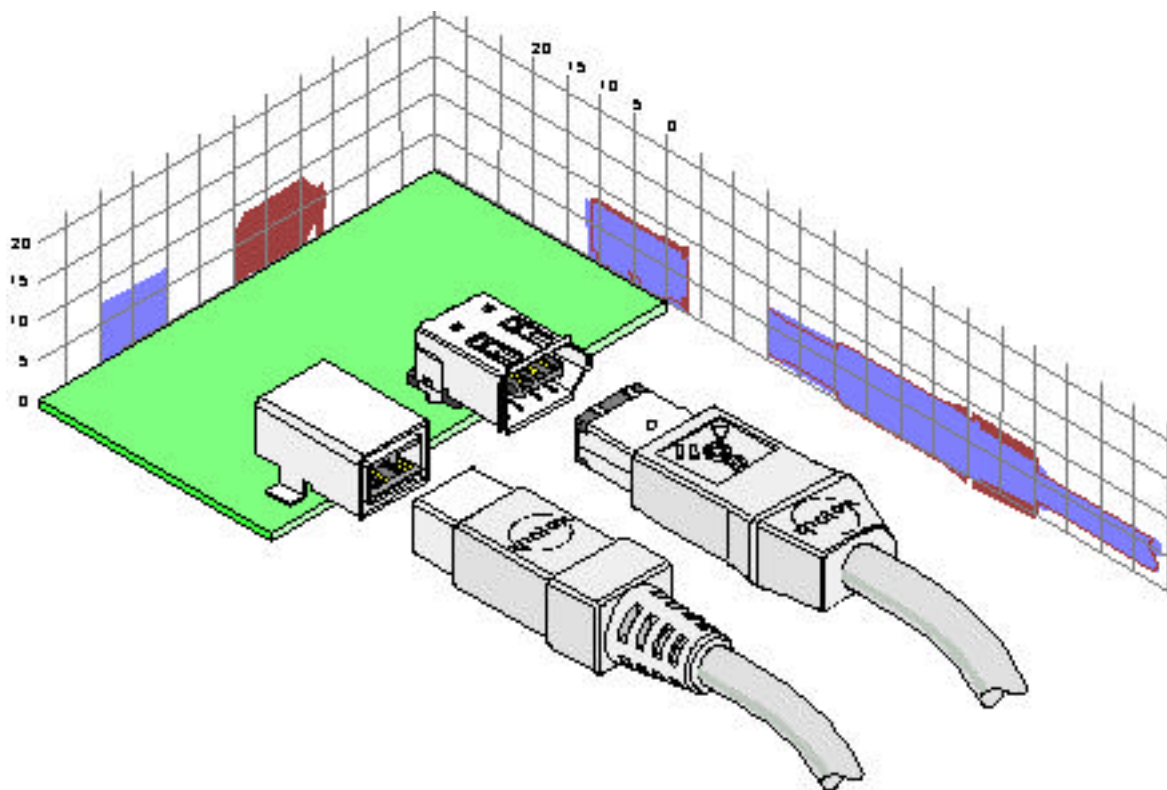




# 1394-Beta Connector Proposal

## 1394-Beta and 1394-1995

(Connector size reference)



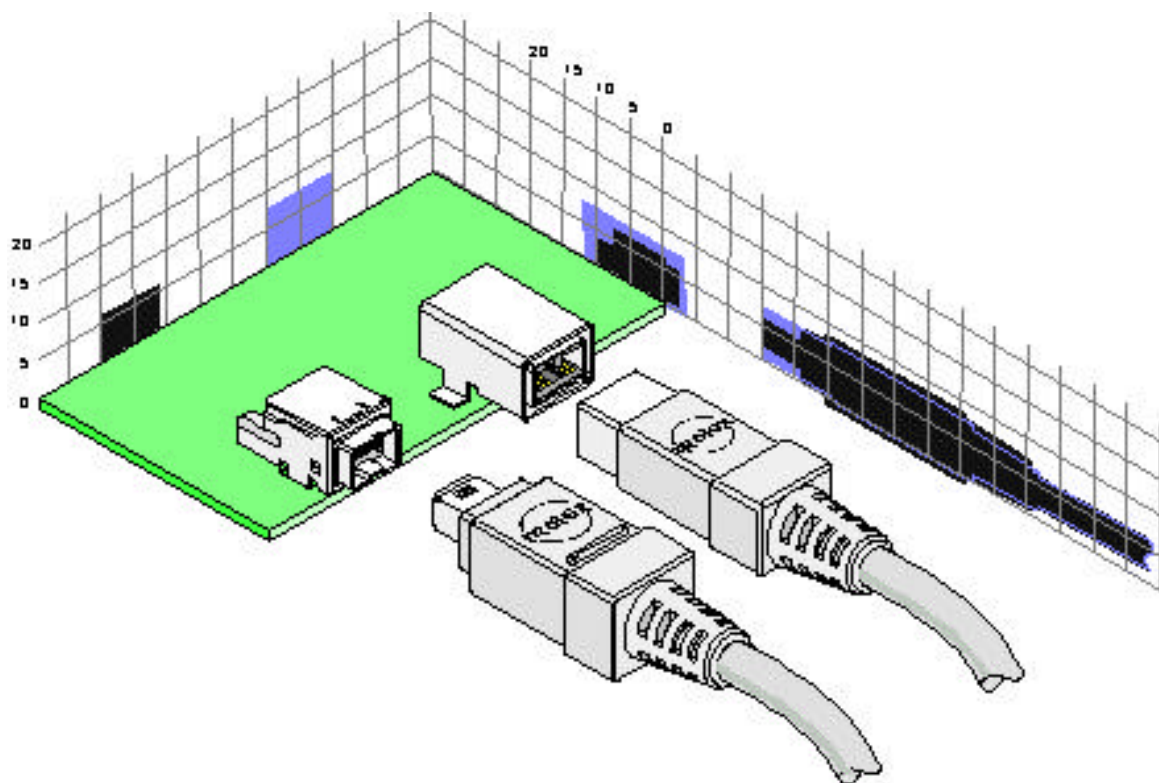
**Grid = 5 mm per division**



# 1394-Beta Connector Proposal

## 1394a and 1394-Beta

(Connector size reference)



**Grid = 5 mm per division**



# 1394-Beta Connector Proposal

- The Copperheads will be closing the requirements for the Beta/Bilingual connector after 14 days of this posting
- Please review and send any additional comments to the “Copperheads reflector”-  
copperheads@zayante.com
- All “red” text inputs are updates and feedback during the 99/June/7-8th IEEE 1394b meeting