5. Alternative connectors

The continued growth of Serial Bus has caused some connector manufacturers to consider alternative 6-pin designs. The alternative connector specified by this supplement enables backwards compatibility with the standard cable assemblies specified by IEEE Std 1394-1995, and has been found to meet the performance requirements of that specification and its supplement IEEE std 1394A.

Except as superseded by material in this supplement, all clauses in section 4 of IEEE Std 1394-1995, “Cable physical layer specification,” including supplement IEEE std 1394A apply to alternative connectors.

5.1 Connector Plug

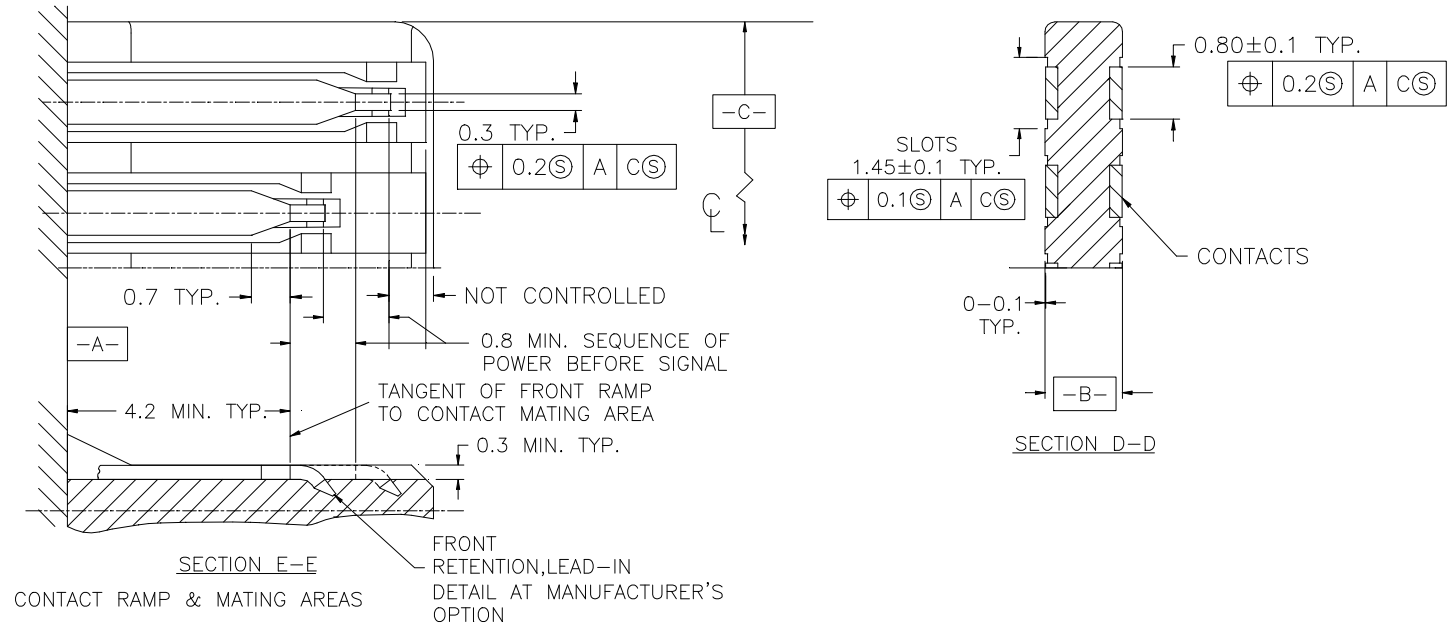
The mating features of the connector plug are specified in section 4.2 of IEEE std 1394-1995. They will assure intermateability of the plug with standardized sockets. No physical changes to the plug connector are specified in this supplement.

It is suggested that the plug contacts have a cylindrical section in the contact area that makes contact at a right angle to the cylindrical section of the socket contacts, thus creating a “crossed cylinders” configuration. The contacts should be designed to create a theoretical Hertzian stress (combination of cylindrical radius, normal force, and base and surface material hardnesses) of 1,550,000 – 1,900,000 kPa in the mating area. This is to assure that the low-energy signals used in this physical layer are transmitted through the nonconductive films that are typically absorbed on connector contacts.

5.2 Connector Socket

Figure 5-1 describes the “socket insertion wafer,” a dielectric structure that positions and retains the contacts within the outer shell. It also defines the “first make, last break” power contact (#1) and ground contact (#2). The leading edge of contacts #1 and #2 are intended to confine any erosion during “hot plugging” to a nonfunctional area of the contact surface. This will minimize contamination of the final resting area of the contact. Figure 5-1 represents an alternative and acceptable geometry to that shown in IEEE std 1394-1995, Figure 4-7. Referring to Figure 4-7 of IEEE std 1394-1995 and the similarly configured Figure 5-1 as shown herein, both the Hertzian and Non-Hertzian variations shown in Section D-D and Section E-E of either figure provide alternative and acceptable constructions of “plug compatible” designs. Regardless of the contact variation, the connectors must adhere to the performance criteria defined in 4.2.1.3 of IEEE std 1394-1995 and its supplement IEEE std 1394A.

It should be noted that as a result of the alternative configuration described herein, Figure 4-6 of IEEE std 1394-1995 should be noted that it shows the Hertzian contact profile for reference only.



NOTE – REFER TO FIGURE 4–6 FOR DATUM AND SECTION DEFINITIONS

Figure 5-1 – Alternative socket insertion wafer details