

Z-PACK Slim UHD Power Connector System

1. SCOPE

This specification covers the requirements for application of the Tyco Electronics Z-PACK Slim UHD Power Connector System. This connector system interconnects two printed circuit boards. A connector is typically formed by one or more end-to-end stacked modules as shown in figure 1. Both plug and receptacle connectors are connected to the printed circuit board via compliant press-fit contacts (eye of the needle). Neither the male- nor the female connector shall be used in any other combination, than covered by this Application Specification. Other Application Specifications for similar type connectors exist. The customer drawings should be consulted to determine the correct Application Specification.

2. REFERENCE DOCUMENTATION

For applicable performance requirements see the relevant Product Specification, mentioned on the customer print.

For configuration details see the customer drawings.

3. NOMENCLATURE

Figure 1 identifies typical features of Z-PACK Slim UHD Power Connector System.

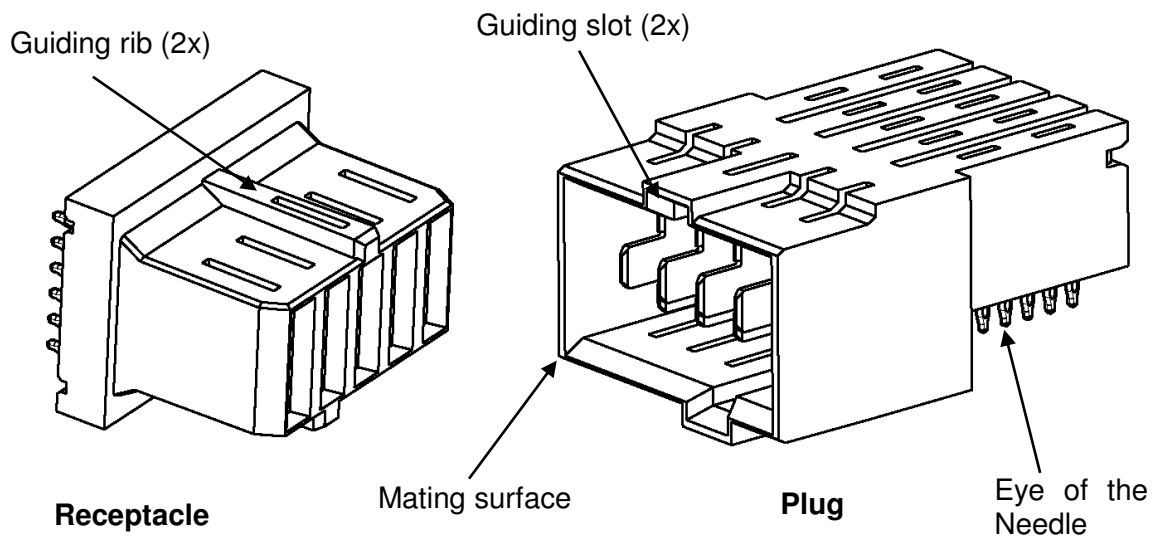


Figure 1 Nomenclature

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DATE 31/Oct/16

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DATE 31/Oct/16

4. REQUIREMENTS

4.1 Connector Packaging, Storage and Handling

The connector modules should remain in the shipping containers until ready for use, to prevent damage and contamination. They should be used on a first-in/first-out basis to avoid storage contamination that could adversely affect connector performance.

4.2 Connector Interface

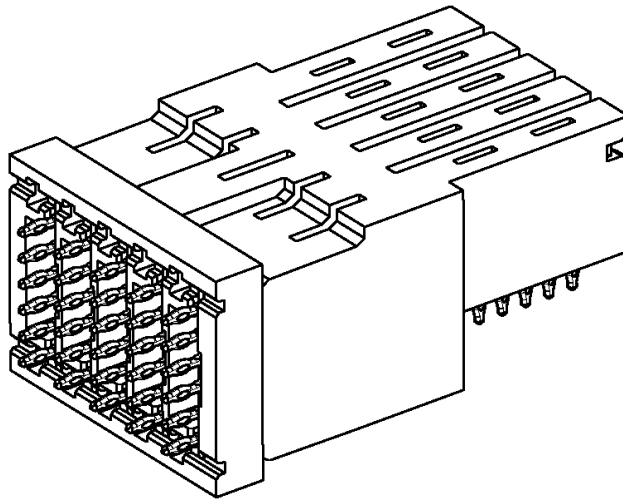


Figure 2 Fully mated connector pair

4.2.1 Mating part

Plug and Receptacle Connectors are designed as a connector pair. Neither the plug nor the receptacle connector shall be used in any other combination, than covered by this application specification and product specification.

4.2.2 Mating directions, misalignment and insertion depth

Mating of plug and receptacle connectors shall be as shown in figure 3. A complete connector is composed by stacking one or more connector modules end to end. All modules are 17.3 mm long. One single module has all the features of a complete connector and can be used on his own.

Misalignment at mating:

Proper alignment is essential to ensure failure free engagement and disengagement of male and female connectors. For tolerance limitations, see Figure 3.

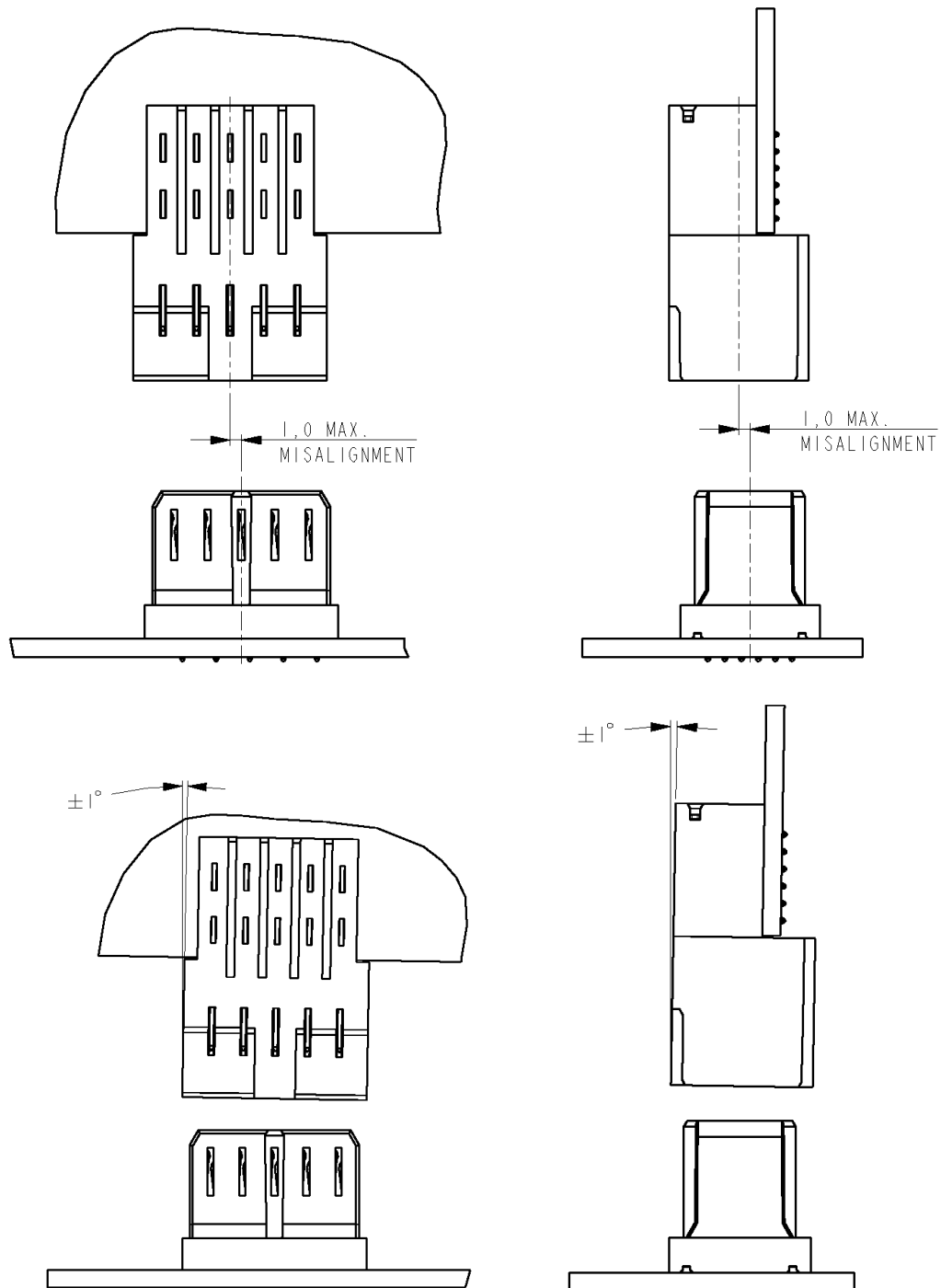


Figure 3 Tolerance limitations

Although inclination of max 1° is acceptable, it is preferred that the front faces of the connectors are parallel, when mated.

At maximum insertion depth the housing of the plug may just touch the bottom of the receptacle header. Minimum force shall result.

The construction in the application shall provide proper guiding to comply with above requirements. Additional board mounted guiding is available from Tyco Electronics.

4.2.3 Insertion depth

Full mating of connectors is preferred to ensure a good connection. The dimension 17.45 mm for fully mated condition from the surface of the back-plane and the first row of contacts in the daughter card connector, is recommended.

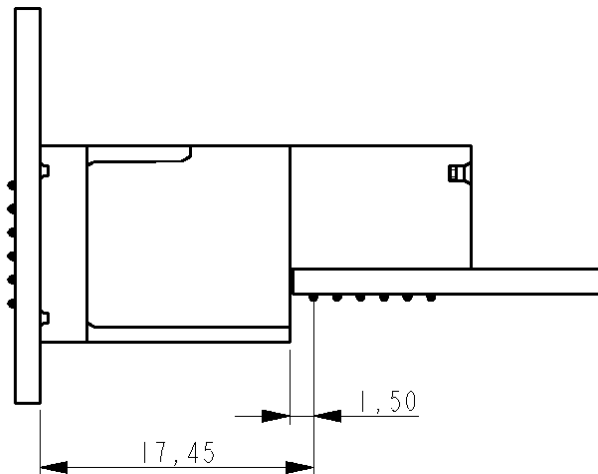


Figure 4 Fully mated connector pair

4.3 Sequencing and wipe length

4.3.1 Sequencing

In order to have an earlier engagement of specific contacts, two levels of sequencing are defined. The different lengths of the plug tabs are measured from the mating surface of the connector module.

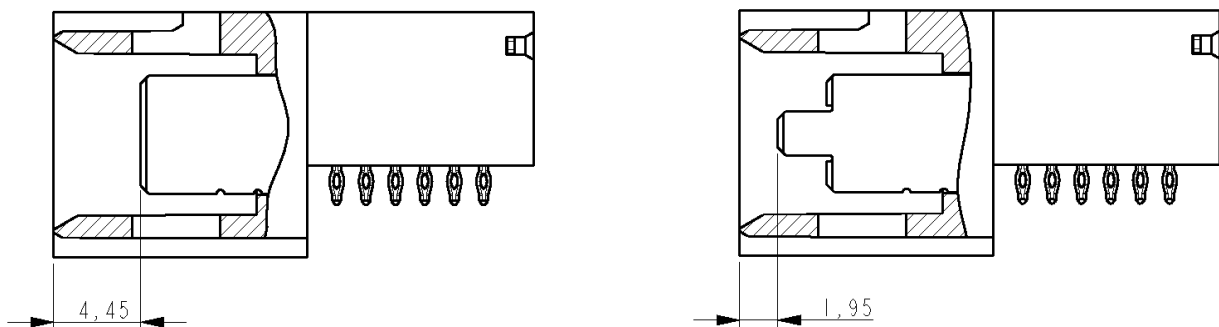


Figure 5 Tab length

4.3.2 Wipe length

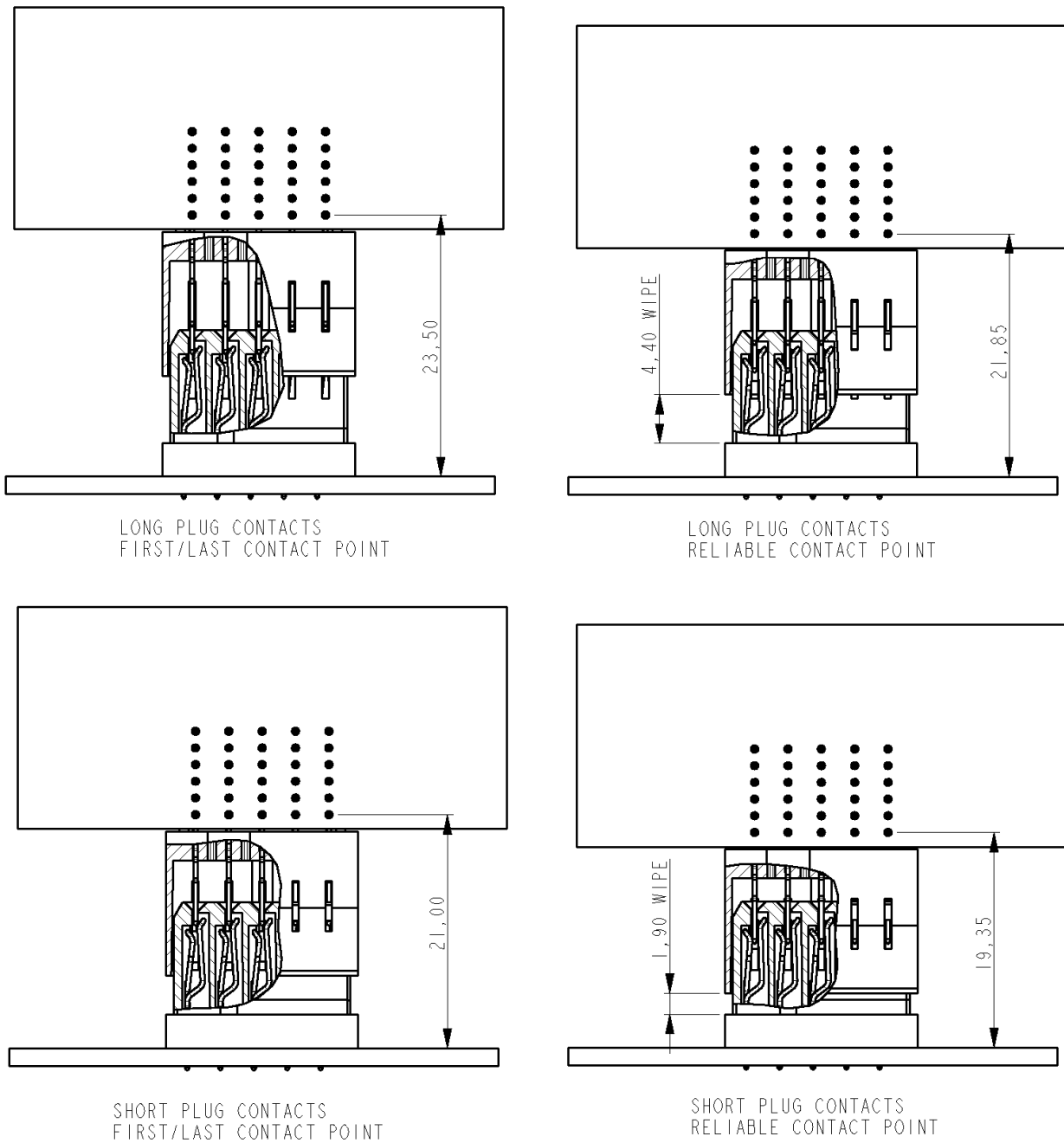


Figure 6 Mating dimensions and wipe length

Connector wipe dimensions are shown in Figure 6. Wipe lengths are calculated by subtracting the fully mated connector condition from the reliable mating point data as shown in Figure 6.

All dimensions are calculated using nominal connector conditions. Connectors are assumed to be seated flush with the pc board.

4.4 Mechanical Stability

The construction in the application shall provide mechanical stability in order to comply with the requirements specified in paragraph 4.2.2 and 4.2.3. This must avoid unacceptable force load on the connectors as well as on the pc board connection.

4.5 Abuse and misuse

The construction in the application shall assure that abuse and misuse will not lead to damage on the connectors.

4.6 Printed Circuit Board

4.6.1 Lay-out

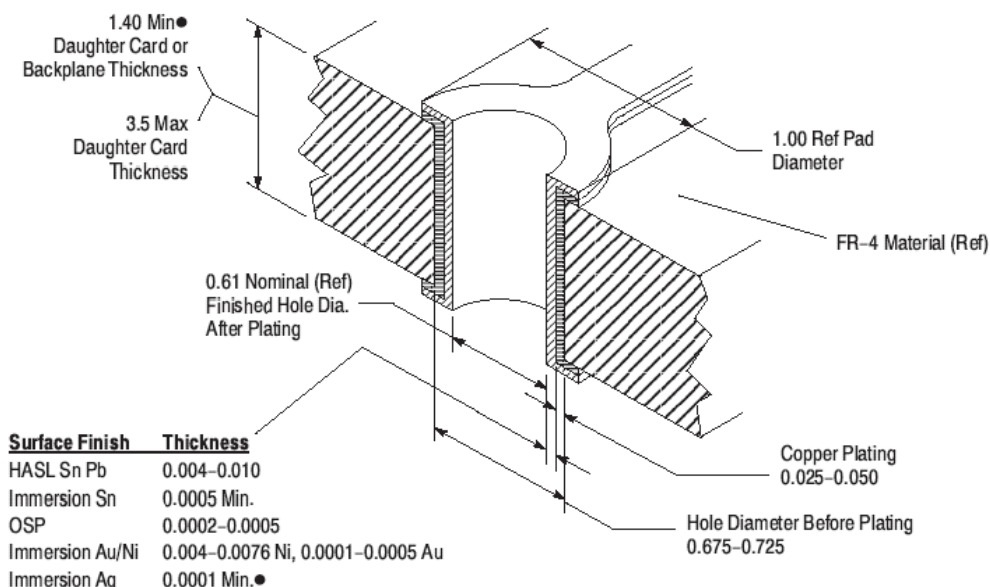
The PCB layout shall be as specified on customer drawings.

4.6.2 Board Thickness

Fixed boards (back plane) as well as free boards (daughter card boards) shall have a thickness of 1.4 mm minimum.

4.6.3 Printed Circuit Board hole configuration

The holes in the pc board for all contacts must be drilled and plated through to the dimensions shown in Figure 7.



Dimensions in mm

Figure 7 Plated through hole

4.7 End-to-end placement

Connectors can be mounted end-to-end within the specified dimensions shown on customer drawings.

4.8 Visual examination

The final product shall not be deformed and the plating shall not be scratched.

4.9 Repair

Both the plug and receptacle module construction does not allow for replacement of individual contacts. Damaged modules must be completely replaced.

Repair is possible and insertion of a new connector into the previously used hole is permissible.

4.10 Special applications

For special applications e.g. if the connector assembly is submerged in a non-conductive medium, or used in vacuum, consult Tyco Electronics.

5. CONNECTOR INSTALLATION

5.1 Initial positioning

Z-PACK Slim UHD modules typically are pre-applied to a pc board by hand. Connectors should be gripped by the housing only and not by the contacts. When placing a module or complete connector into a pc board, all contact leads should be aligned and inserted into the pc board simultaneously to prevent twisting or bending of the contacts.

When placing a male module on a pc board, align the row of contact leads closest to the pc board edge first, and continue aligning the remainder of the rows by rolling the plug connector from front to back.

The receptacle modules are not symmetrical and must be oriented properly on the pc board with regard for pin a1 orientation (see customer drawing).

5.2 Seating connectors

It is preferred to seat individual modules over completed connectors. Seating force must be applied evenly on the connectors to prevent deformation or other damage to the contacts and housings. When installing female modules or connectors, the insertion force must be evenly applied to the assembly using the appropriate seating tool. When installing male modules or connectors, the insertion force must be evenly applied to the assembly (as shown in Figure 8). Refer to paragraph 5.3 for seating force information. Seating force will vary according to pc board variations. Tooling recommendations are covered in Section 6.

CAUTION

Correct seating is essential to interconnection performance. This includes correct seating height (see Figure 8) and force applied. Over-seating of product will deform parts critical to the quality of the connector. Maximum force occurs prior to bottoming on the pc board.

5.3 Connector seating height

Z-PACK Slim UHD Power Connectors with Eye of the Needle pin contacts are seated using a seating tool insert. See Figure 8. The insert may be used together with the application machines listed in Section 6, TOOLING, or with a suitable machine capable of supplying a minimum controllable downward force of 50N per press-in pin contact. Male modules must be seated to the dimension shown in the figure.

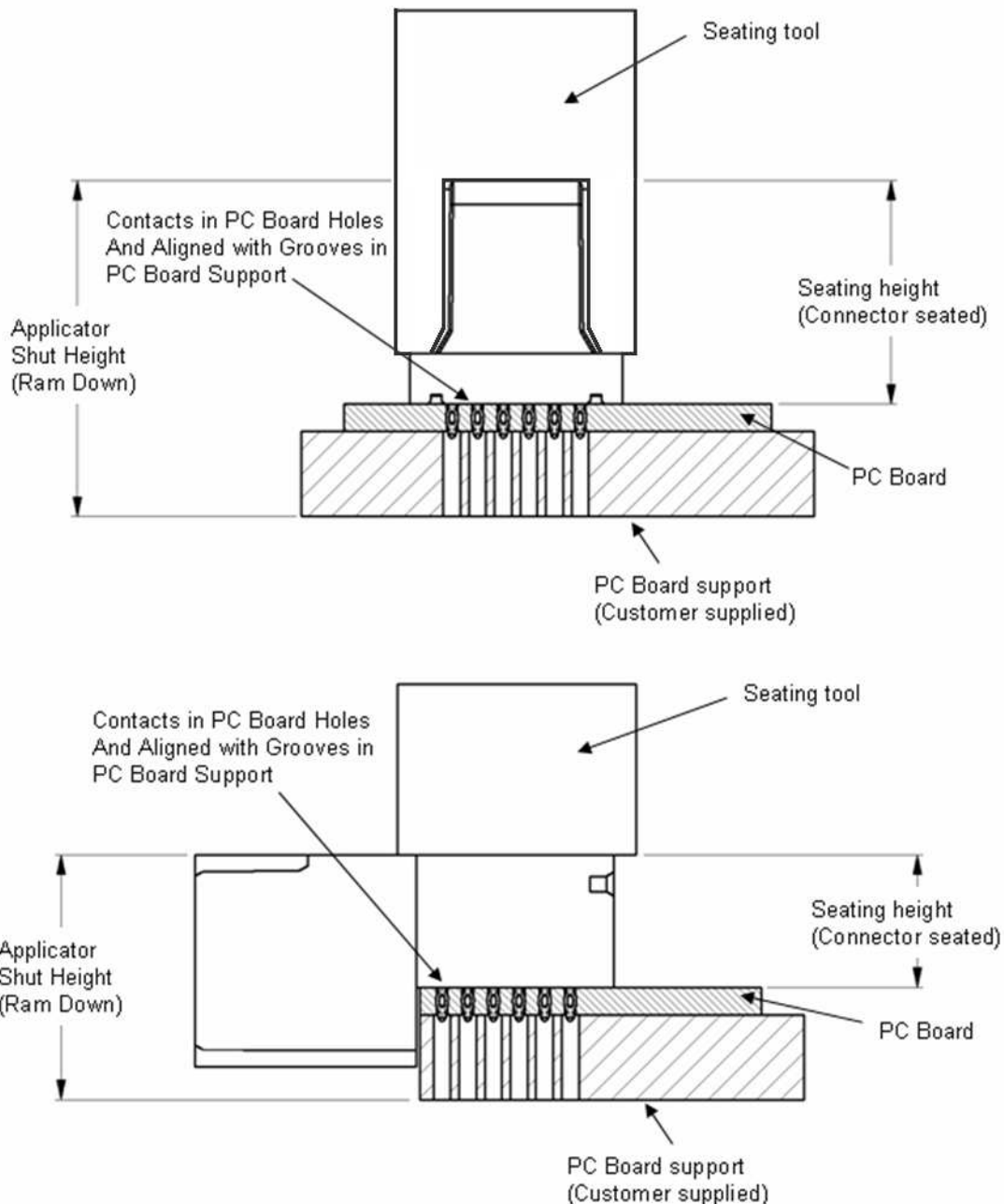


Figure 8 Seating height

6. ACCESSORIES

Universal Guide Pins and Modules, are available for your production and assembly needs. See Figure 9. The guide pin and female guide module are designed to help in connector alignment. Interaction of these two pieces of hardware provide error-free mating and prevents mating damage to the connector housings and contacts. They are also recommended for multi-connector and large and heavy daughter card applications.

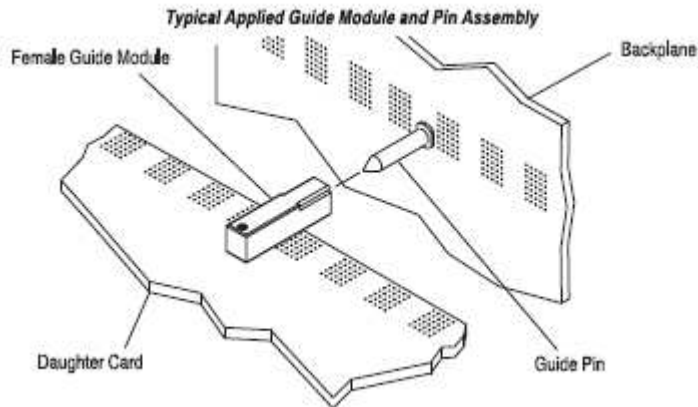


Figure 9

7. TOOLING

Figure 10 provides typical tools related to the Z-PACK Slim UHD Connector System.

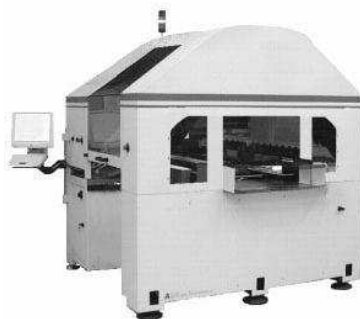
1 Power Units

Power units are automatic or semi-automatic machines used to assist in the application of a product. A power unit supplies the force to seat the connector onto the pc board using seating tools. Power for the insertion tool must be provided by application tools (with a ram) capable of supplying a downward force of 50 N per contact.

Typical power units from Tyco Electronics Automation Group include, but are not limited to the following:



Model MEP 6T
1585699-1



Model AP3
1585280-1

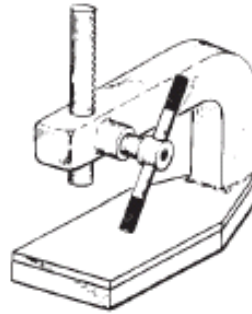


Model BMEP 5T
1585696-1

Figure 10 Power Units

2 Arbor Frame Assembly

Manual arbor frame assemblies are used to exert a downward force used to apply modules to a pc board using seating tools. Commercially made arbor frame assemblies are available.



Manual Arbor frame assembly
(Commercially Available)

Figure 11

3 PC Board Support

A pc board support must be used to prevent bowing of the pc board during the insertion of a module into the board. It should have flat surfaces with holes or a channel wide and deep enough to receive any contacts that may protrude below the pc board surface during seating of the connector.

4 Seating Tool (Insert) for male modules.

Seating tools have been designed to push on the preferred surface and seat the connector on the pc board. The tool will prevent contacts from backing out of the housing and prevent damage to the module.

8. VISUAL AID

Figure 12 shows a typical application of the Z-PACK Slim UHD Connector System. This illustration should be used by production personnel to ensure a correctly applied product. Applications which do not appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product.

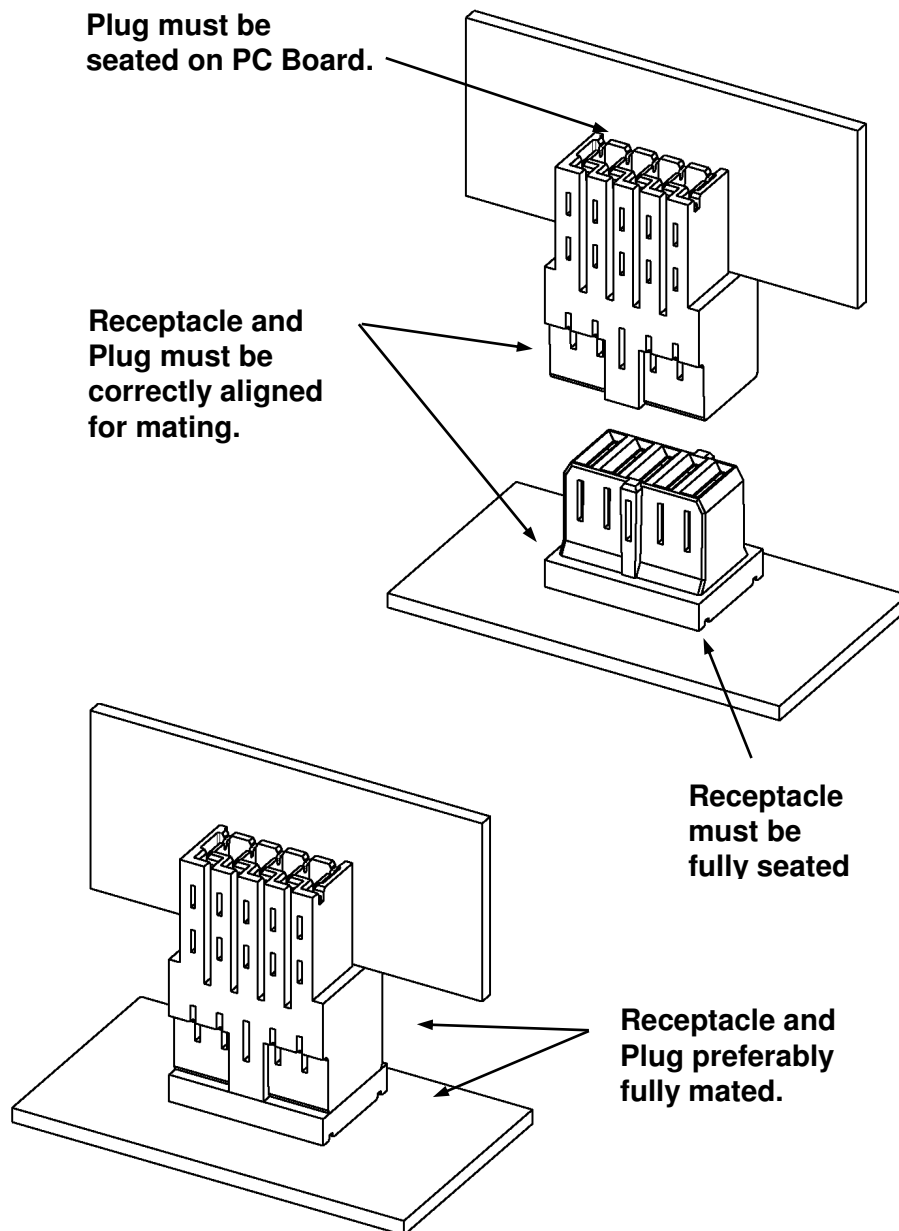


Figure 12