



**NOTE**

All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of  $\pm 0.13$  mm [ $\pm .005$  in.] and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

## 1. INTRODUCTION

This specification covers the requirements for application of pivot power RJ45 modular plug connectors used in low-power applications. The modular plug consists of a housing and pivot cover (stuffer). The housing contains eight mating interface contact positions on 1.02 [.040] centerline spacing. The contact positions are reduced to two terminals—odd-numbered positions for a common negative circuit and even-numbered positions for a common positive circuit. The top of the pivot cover is marked with a plus (+) sign and minus (-) sign for circuit identification of the two discrete wire ports.



**NOTE**

These modular plug connectors are intended to be used for low voltage (60 V AC/DC maximum) and low-current (1.0 ampere maximum) distribution systems when properly terminated in accordance with the requirements given in this specification.



**NOTE**

These products are intended for indoor use only in communications circuits in an isolated closed loop circuit and not for telecommunications circuits (POTS).

The back of the pivot cover is marked with a dash number that corresponds to the acceptable cable size for the modular plug. The bottom of the housing is marked with a guide for the proper cable strip length. The pivot cover features sideways embossments designed to hold the pivot cover open for insertion of the cable into the cable opening and a pivot cover slot to indicate proper cable primary jacket insertion depth. The pivot cover is translucent to aid in visual inspection of cable insertion and termination.

When the pivot cover is closed, the modular plug is terminated to the cable using the insulation piercing technique. The modular plug contains a strain relief to protect the cable interface from damage if subjected to pulling or bending forces. These modular plugs are available in loose-piece form for terminating using a commercial hand tool.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

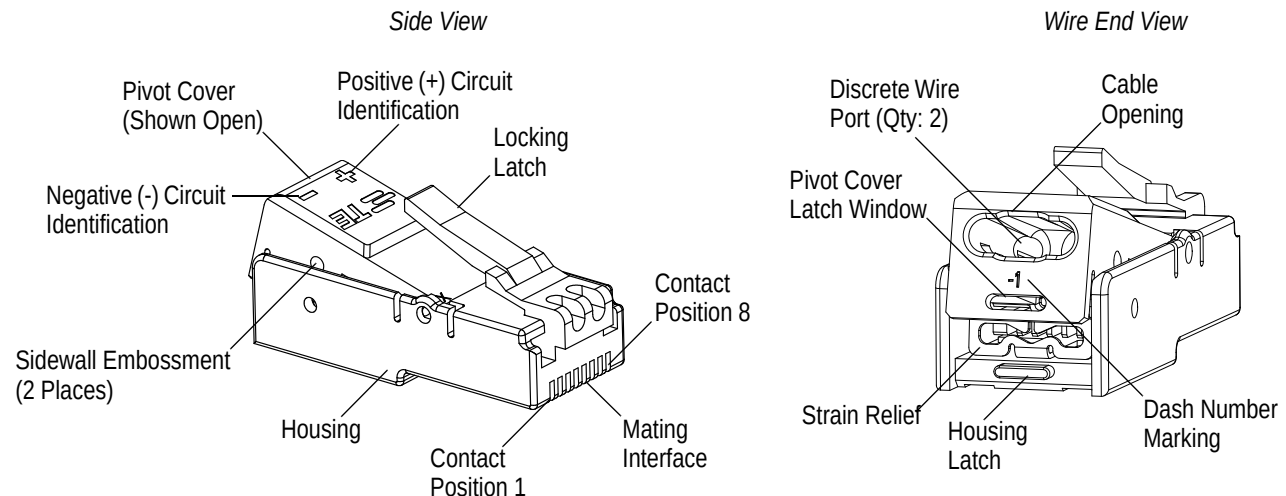


Figure 1

POTS is plain old telephone service.

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Revisions to this application specification include:

- Corrected name of product

### 2.2. Customer Assistance

Reference Product Base Part Number 2213145 and Product Code 4149 are representative of pivot power RJ45 modular plug connectors. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local TE Representative, by visiting our website at [www.te.com](http://www.te.com), or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of page 1.

### 2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, the information contained in the Customer Drawings takes priority.

### 2.4. Specifications

Product Specification 108-133010 provides expected product performance and test information.

### 2.5. Instructional Material

Instruction Sheets (408-series) provide product assembly instructions or tooling setup and operation procedures. Documents available that pertain to this product are:

408-32086 Termination of Pivot Power RJ45 Modular Plug Connectors

## 3. REQUIREMENTS

### 3.1. Material

The modular plug housing and pivot cover are made of flame-retardant rated polycarbonate (UL 94 V-0). The contacts are made of phosphor bronze underplated with nickel and the contact interface is plated with gold. The strain relief is made of phosphor bronze underplated with nickel and plated with tin.

### 3.2. Storage

#### A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the modular plug material.

#### B. Shelf Life

The modular plugs should remain in the shipping containers until ready for use to prevent deformation to the contacts. The modular plugs should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

#### C. Chemical Exposure

Do not store modular plugs near any chemical listed below as they may cause stress corrosion cracking in the contacts.

|          |            |          |            |          |                  |
|----------|------------|----------|------------|----------|------------------|
| Alkalies | Ammonia    | Citrates | Phosphates | Citrates | Sulfur Compounds |
| Amines   | Carbonates | Nitrites | Sulfur     | Nitrites | Tartrates        |

### 3.3. Cable

#### A. Selection

The modular plug accepts oval-shaped unshielded cable having two stranded insulated conductors. Cable specifics and recommended cable type are given in Figure 2.


**NOTE**

Other cable meeting the construction requirements given in Figure 2 may be used; however, other cable might not have the same performance results as stated in Design Objective 108-133010.

| MODULAR PLUG<br>DASH NUMBER<br>MARKING | CABLE    |                            |                                           |                           |                         |                          | RECOMMENDED<br>CABLE TYPE |
|----------------------------------------|----------|----------------------------|-------------------------------------------|---------------------------|-------------------------|--------------------------|---------------------------|
|                                        | SIZE     | OUTSIDE<br>DIAMETER        | PRIMARY JACKET<br>INSULATION<br>THICKNESS | DISCRETE WIRE CONDUCTORS  |                         |                          |                           |
|                                        |          |                            |                                           | Strands<br>and Size       | Insulation<br>Thickness | Insulation<br>Diameter   |                           |
| -1                                     | 18 AWG   | 2.4 x 4.0<br>[.094 x .157] | 0.381 [.015]                              | 7<br>26 AWG               | 0.203<br>[.0080]        | 1.52-1.63<br>[.060-.064] | BELDEN 6300UE             |
| -2                                     | 0.75 mm² | 3.4 x 5.6<br>[.134 x .220] | 0.610 [.024]                              | 23<br>0.21 mm<br>Diameter | 0.50<br>[.0197]         | 2.05-2.15<br>[.081-.085] | LEONI H03VVH2-F           |

Figure 2

### B. Preparation

Proper strip length is necessary to insert the cable conductors into the modular plug. Strip length is given in Figure 3.


**CAUTION**

During the stripping operation, proper care must be taken not to cut into or through the conductor insulation.

To ensure proper alignment with the discrete wire ports of the modular plug, the discrete wires must be splayed to the dimension given in Figure 3.

Cable Strip Length

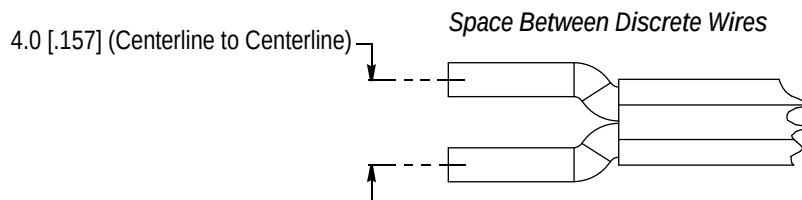
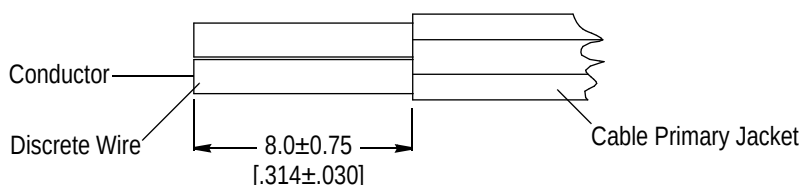


Figure 3

### 3.4. Termination

After inserting the cable into the cable opening of the modular plug, the modular plug must meet the following requirements. See Figure 4.

— The discrete wires are positioned in the appropriate discrete wire port of the modular plug: negative in the negative port indicated by minus (-) sign (common circuit for contact positions 1, 3, 5, and 7); and positive in the positive port indicated by positive (+) sign (common circuit for contact positions 2, 4, 6, and 8).

— The cable primary jacket is beyond the strain relief slot of the pivot cover. The strain relief slot is approximately 2.5 [.01] from the back edge of the pivot cover.

— The splayed transition point of each discrete wire is bottomed on the inside surface between the discrete wire ports.

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**NOTE**

The translucent housing of the modular plug enables a visual inspection of the cable insertion depth.

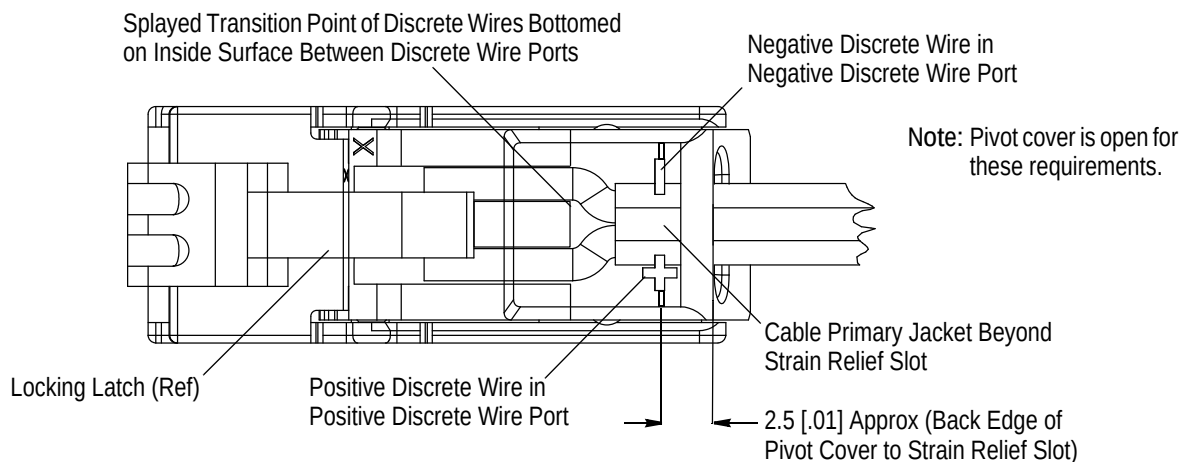


Figure 4

The modular plug must be terminated using the tool specified in Section 5 according to the instructions included with the modular plug. After termination (pivot cover is closed), the modular plug must meet the following requirements. See Figure 5.

**A. Discrete Wire**

The insulation piercing teeth of each terminal must penetrate the discrete wire insulation and engage the conductor.

**B. Pivot Cover**

The pivot cover latch window must fully engage the housing latch. The pivot cover must be flush with the housing on both sides.

**C. Strain Relief**

The cable primary jacket must contact the strain relief. It is acceptable for the strain relief to cut into the cable primary jacket as long as the discrete wire insulation and conductor insulation are not compromised.


**CAUTION**

The strain relief must be in contact with the cable primary jacket in order to isolate the terminated area of the discrete wire from external forces applied to the cable.

**D. Locking Latch**

There must be no damage to the locking latch of the modular plug.

### Termination Requirements

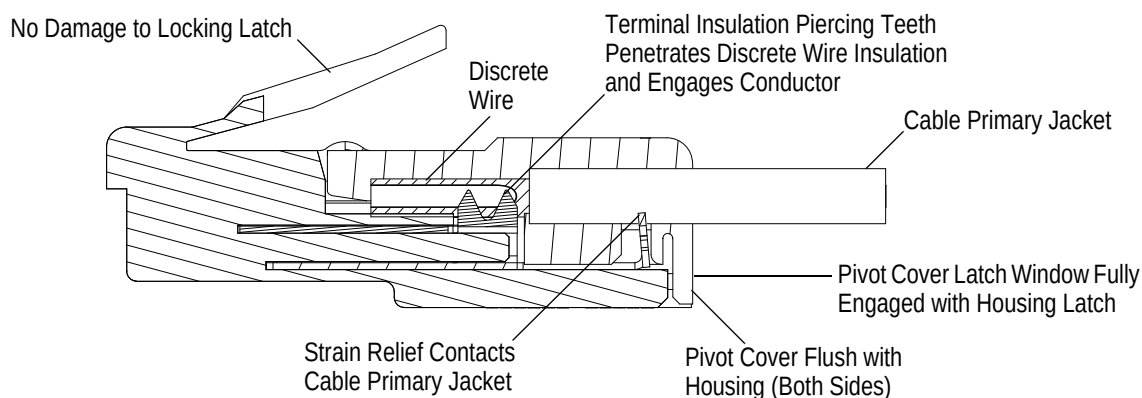


Figure 5

### 3.5. Mating and Unmating

The modular plug must be inserted into the mating modular jack until it bottoms. When fully inserted, the modular plug locking latch will engage the modular jack housing and prevent the connectors from separating. After mating, there will be a small amount of axial movement (travel) between the mated connectors, and with some combinations, depending on tolerance variations between original equipment manufacturers (OEM), could be up to 0.76 [0.030].

To unmate the connectors, the modular plug locking latch must be fully depressed while pulling the connectors straight apart.

### 3.6. Replacement and Repair

Defective or damaged modular plugs must not be used. The modular plug is not repairable.

## 4. QUALIFICATIONS

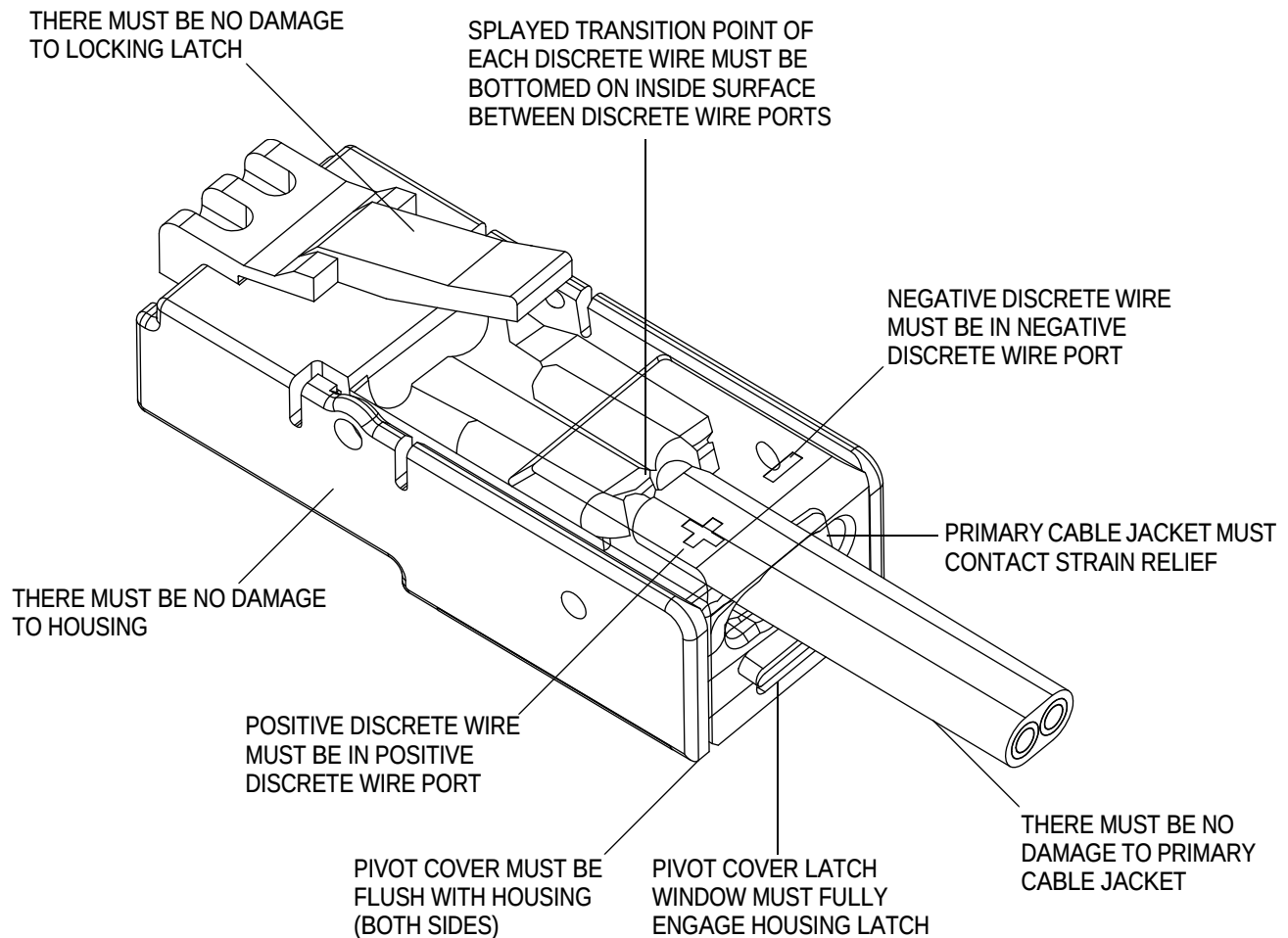
Pivot power RJ45 modular plug connectors are UL Listed to both US and Canadian Standards (USL and CSL) in File E81956, Volume 35. These connectors are approved for field installation and have also been tested to portions of UL2043, and therefore are deemed appropriate for installation in air-handling spaces per NEC, Article 300.22.

## 5. TOOLING

A medium-sized pliers having parallel jaws with a closed opening height of 7.0 [2.8] or less is recommended for termination of the modular plug. Refer to Instruction Sheet 408-32086 for detailed instructions.

## 6. VISUAL AID

The illustration below shows a typical application of pivot power RJ45 plug connectors. 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 or tooling.



**FIGURE 6. VISUAL AID**