

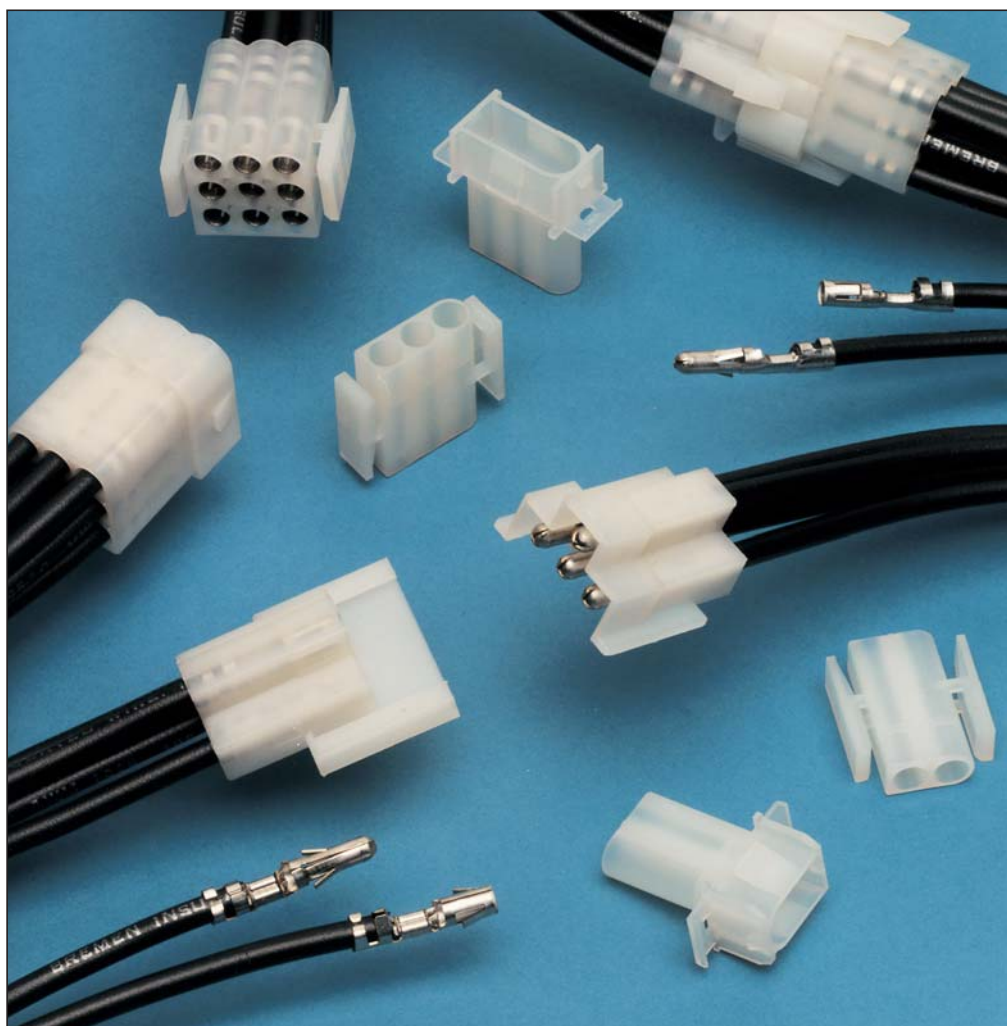


## Introduction



### Product Facts

- Available in 2, 3 and 9 circuit configurations for panel mounting; 4, 9 and 18 circuit configurations for free-hanging applications.
- Standard natural colored polyamide housings.
- Housings fully polarized.
- Contacts fully protected in housings.
- Contacts accept wire size range 0.5–5.0 mm<sup>2</sup> (20–10 AWG) with insulation diameters from 2.5 to 4.6 mm.
- Dual locking lances assure optimum contact stability.
- Extraction tool removes both pins and sockets.
- Contacts are on 6.09 mm centerline spacing.
- Not for interrupting current.
- Recognized under the Component Program of Underwriters Laboratories, Inc., ®  File No. E28476.
- Certified by Canadian Standards Association,  File No. LR 7189 A.



The UL recognized .140 MATE-N-LOK connectors with 3.5 mm diameter pins and sockets, have a 25 A current carrying capacity and are capable of accepting wire with insulation diameters up to 4.5 mm. Both pins and sockets are equipped with dual locking lances, which assure positive contact retention when installed in the housings.

The seam of the socket is S-shaped, which allows an easy mating and unmating of the contacts. Special contacts of copper-laminated steel and high temperature-resistant housing (up to 105 °C) are used in applications with high temperatures and high currents for example ovens.

This versatile family of Tyco Electronics connectors offers a wide selection of sizes and configurations.

A few of the many available versions include connectors for free-hanging applications, special versions including those for mixed loading, which have been used in the automotive industry for years.

## Technical Data

### Technical Features

The .140 (3.5 mm) MATE-N-LOK Connector performance characteristics are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

#### Dielectric Withstanding Voltage:

3.0 kV AC between adjacent circuits

#### Insulation Resistance:

1000 megohms minimum initial between adjacent circuits

#### Voltage Rating:

250 V AC or DC

#### Connector Mating:

20 N max. per circuit

#### Connector Unmating:

3.6 N min. per circuit

#### Contact Retention:

133.5 N min.

#### Durability:

25 cycles max., mating and unmating

#### Temperature Range:

–55 °C to +105 °C

#### Thermal Shock:

–55 °C to +85 °C

#### Temperature-Humidity Cycling:

+25 °C to +65 °C at 95 %  
Relative Humidity

### Technical Documents

#### Product Specification:

108-1032 for Connectors

#### Application Specification:

114-1007 for Contacts

### Performance Characteristics

#### Maximum Current

Maximum current rating of .140 MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is +105 °C and the temperature rise of the contacts which is +30 °C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application.

These variables are:

#### Wire Size

Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths enhance current carrying capabilities since the wire conducts heat away from the connector.

#### Connector Size

In general, the more circuits in a connector, the less current can be carried.

#### Ambient Temperature

The higher the ambient temperature, the less current can be carried in any given connector.

## Technical Data (continued)

Current Rating Verification for  
30 °C max. Temperature Rise,  
100% Energized

Wire-to-Wire

### .140 MATE-N-LOK – Calculated Current Table (A)

| No. of<br>Circuits | Wire Size |      |      |      |      |      |      |
|--------------------|-----------|------|------|------|------|------|------|
|                    | (AWG)     | 10   | 12   | 14   | 16   | 18   | 20   |
|                    | (mm²)     | 5,0  | 3,0  | 2,0  | 1,2  | 0,8  | 0,5  |
| 2                  |           | 28,0 | 23,0 | 18,5 | 15,0 | 13,5 | 10,5 |
| 3                  |           | 25,0 | 21,0 | 17,0 | 13,5 | 12,0 | 9,5  |
| 9                  |           | 18,5 | 15,0 | 12,0 | 10,0 | 9,0  | 7,0  |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100 % energized.

**Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for Temperature Rise vs. Current Testing

| Wire Size |                    | Wire Length |
|-----------|--------------------|-------------|
| (AWG)     | (mm <sup>2</sup> ) | (mm)        |
| 20        | 0.5                | 200         |
| 18        | 0.8                | 240         |
| 16        | 1.2                | 290         |
| 14        | 2.0                | 350         |
| 12        | 3.0                | 420         |
| 10        | 5.0                | 490         |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size Range |                    | Termination Resistance |                              | Contact Crimp Tensile Force (N) min. |
|-----------------|--------------------|------------------------|------------------------------|--------------------------------------|
| (AWG)           | (mm <sup>2</sup> ) | Test Current (A)       | Resistance* (mΩ) (max. Init) |                                      |
| 20              | 0.5                | 4.5                    | 3.0                          | 89                                   |
| 18              | 0.8                | 6.0                    | 2.5                          | 133                                  |
| 16              | 1.2                | 8.0                    | 2.5                          | 200                                  |
| 14              | 2.0                | 10.00                  | 2.0                          | 222                                  |
| 12              | 3.0                | 12.00                  | 1.5                          | 267                                  |
| 10              | 5.0                | 14.00                  | 1.5                          | 289                                  |

**\*) Note:** This is the total resistance between wire crimps of a mated pin and socket.

## Socket Contacts, 3.5 mm Diameter

### Technical Features

#### Wire Size Range:

0.5 up to 5.3 mm<sup>2</sup>

#### Insulation Diameter:

4.5 mm max.

#### Contact Material:

CuZn or CuSn

#### Contact Finish:

Pre-tin plated

#### Current Carrying Capacity:

Up to 25 A per contact, depending on number of positions, wire size and ambient temperature

#### Temperature Range:

–55 °C to +105 °C

#### Product Specification:

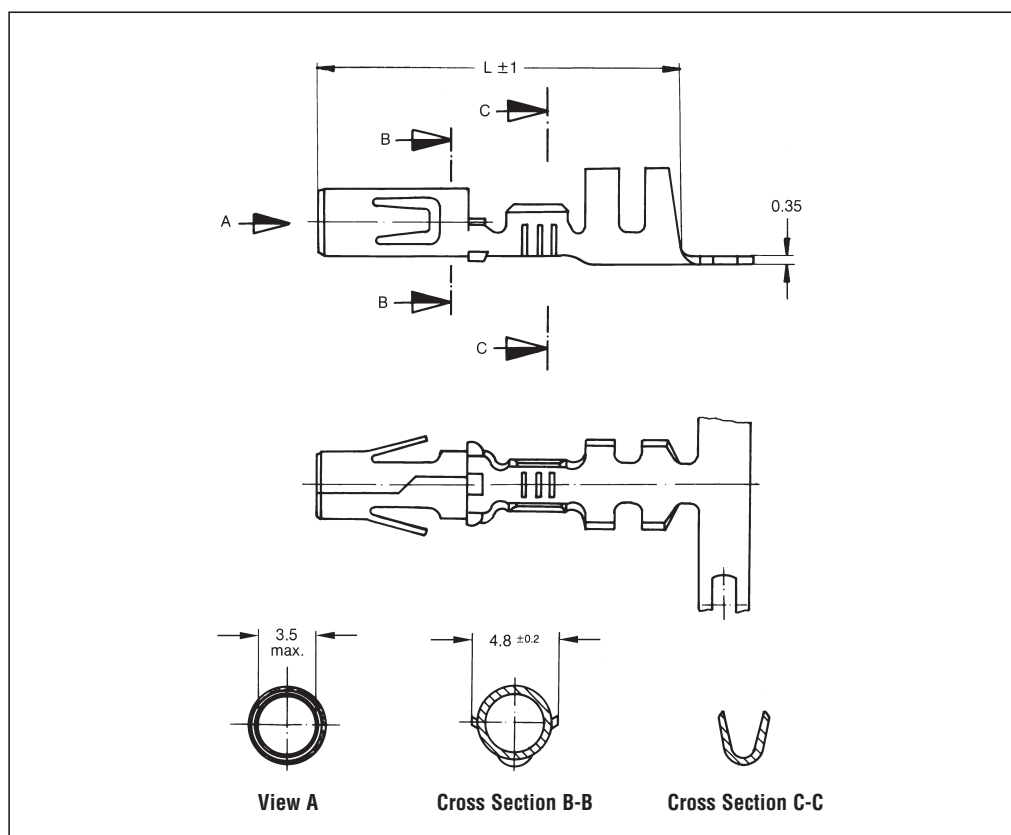
108-1032

#### Application Specification:

114-1007

#### Extraction Tool:

Part No. **539764-1**



### Socket Contacts

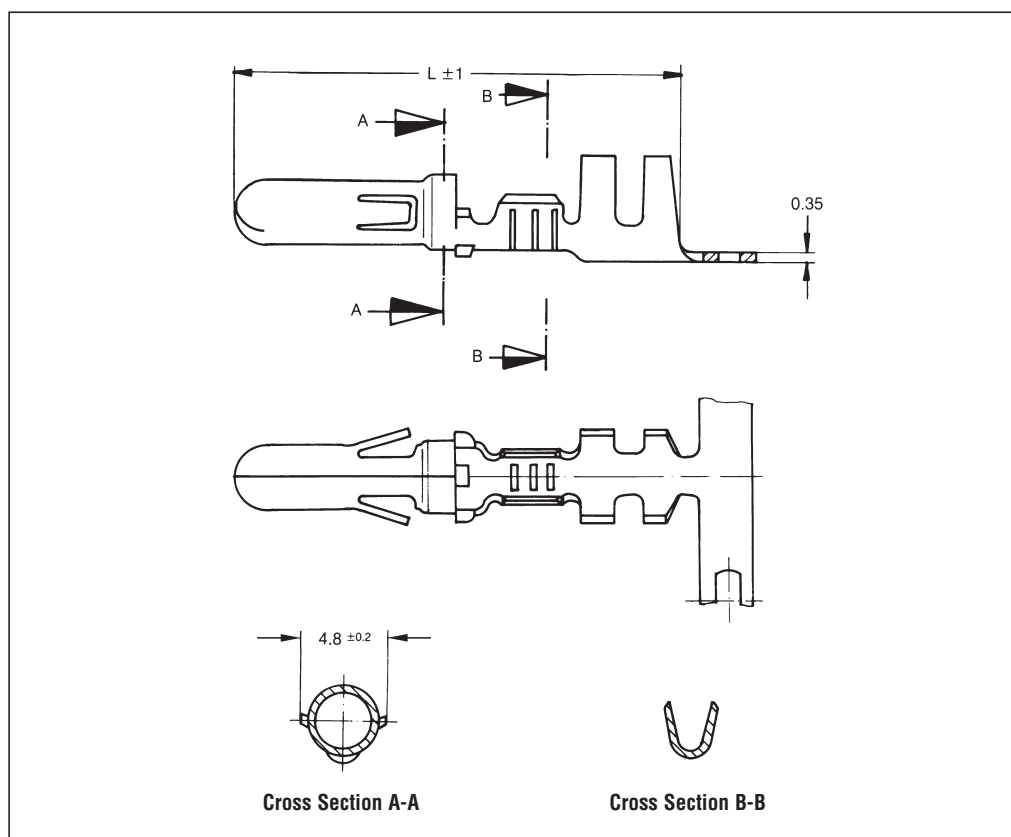
| Wire Size Range (mm <sup>2</sup> ) | Insulation Diameter (mm) | Socket L (mm) | Material and Finish  | Part Numbers |                  |             |                  |            |           |
|------------------------------------|--------------------------|---------------|----------------------|--------------|------------------|-------------|------------------|------------|-----------|
|                                    |                          |               |                      | Strip Form   | Package Quantity | Loose-Piece | Package Quantity | Applicator | Hand Tool |
| 0.5–1.0                            | 1.4–2.3                  | 20.0          | CuSn, pre-tin plated | 927843-2     | 7,500            | 927844-2    | 2,500            | 1855490-x  | 2063577-1 |
|                                    | 2.0–2.7                  | 20.0          | CuSn, pre-tin plated | 927818-2     | 7,500            | 927819-2    | 500              | 680708-x   | –         |
| 0.5–1.5                            | 1.2–2.4                  | 20.0          | CuZn, pre-tin plated | 926986-1     | 7,500            | –           | –                | 680331-x   | 2063535-1 |
|                                    |                          |               | CuSn, pre-tin plated | 926986-2     | 7,500            | –           | –                |            |           |
| 0.5–2.1                            | 2.5–4.5                  | 20.0          | CuZn, pre-tin plated | 925714-1     | 7,500            | 925661-1    | 500              | 1385797-x  | 2063535-1 |
|                                    |                          |               | CuSn, pre-tin plated | 925714-2     | 7,500            | 925661-2    | 900              |            |           |
|                                    |                          | 22.0          | St4 K 50, CuSn       | 925932-5*    | 7,500            | 925933-5*   | 500              | on request | –         |
|                                    |                          | 20.0          | CuSn, silver plated  | 925851-2**   | 7,500            | 925866-2**  | 500              | on request | –         |
| >1.0–2.5                           | 2.1–3.1                  | 20.0          | CuSn, pre-tin plated | 927860-2     | 7,500            | 927861-2    | 1,000            | 677829-x   | –         |
|                                    | 2.7–4.0                  | 20.0          | CuSn, pre-tin plated | 927875-2     | 7,500            | –           | –                | 680709-x   | –         |
| 2.1–5.3                            | 2.5–4.5                  | 20.0          | CuZn, pre-tin plated | 925712-1     | 7,500            | 925663-1    | 500              | 680112-x   | –         |
|                                    |                          |               | CuSn, pre-tin plated | 925712-2     | 7,500            | 925663-2    | 500              |            |           |

\*) For Ambient Temperatures up to +120 °C and 17 Ampere

\*\*) Without Locking Lance

## Pin Contacts, 3.5 mm Diameter

Pin Contacts,  
 Mates with  
 3.5 mm Diameter  
 Socket Contacts



### Pin Contacts

| Wire Size Range (mm <sup>2</sup> ) | Insulation Diameter (mm) | Socket L (mm) | Material and Finish      | Part Numbers |                  |             |                  |            |           |
|------------------------------------|--------------------------|---------------|--------------------------|--------------|------------------|-------------|------------------|------------|-----------|
|                                    |                          |               |                          | Strip Form   | Package Quantity | Loose-Piece | Package Quantity | Applicator | Hand Tool |
| 0.5–1.0                            | 1.4–2.3                  | 25.0          | CuSn, pre-tin plated     | 927841-2     | 7,500            | 927842-2    | 2,000            | 1855490-x  | 2063577-1 |
| 0.5–1.5                            | 1.2–2.4                  | 25.0          | CuZn, pre-tin plated     | 926988-1     | 7,500            | 926989-1    | 2,000            | 680331-x   | 2063535-1 |
|                                    |                          |               | CuSn, pre-tin plated     | 926988-2     | 7,500            | 926989-2    | 2,000            |            |           |
| 0.5–2.1                            | 2.5–4.5                  | 25.0          | CuZn, pre-tin plated     | 925715-1     | 7,500            | 925660-1    | 500              | 1385797-x  | 2063535-1 |
|                                    |                          |               | CuSn, pre-tin plated     | 925715-2     | 7,500            | 925660-2    | 500              |            |           |
|                                    |                          | 25.0          | St4 K 50, pre-tin plated | 925715-5 *   | 7,500            | 925660-5 *  | 500              |            |           |
|                                    |                          | 26.6          | St4 K 50, pre-tin plated | 925960-1 **  | 7,500            | 925961-1 ** | 500              |            |           |
| >1.0–2.5                           | 2.1–3.1                  | 25.0          | CuSn, pre-tin plated     | 927858-2     | 7,500            | 927859-2    | 500              | 677829-x   | –         |
|                                    | 2.7–4.0                  | 25.0          | CuSn, pre-tin plated     | 927873-2     | 10,000           | 927874-2    | 500              | 680709-x   | –         |
| 2.1–5.3                            | 2.5–4.5                  | 25.0          | CuZn, pre-tin plated     | 925713-1     | 7,500            | 925662-1    | 500              | 680112-x   | –         |
|                                    |                          |               | CuSn, pre-tin plated     | 925713-2     | 7,500            | 925662-2    | 500              |            |           |

\*) For Ambient Temperatures up to +120 °C and 17 Ampere

\*\*) Without Locking Lance

## Socket (Plug) Housings

### Technical Features

**No. of Positions:**

4 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

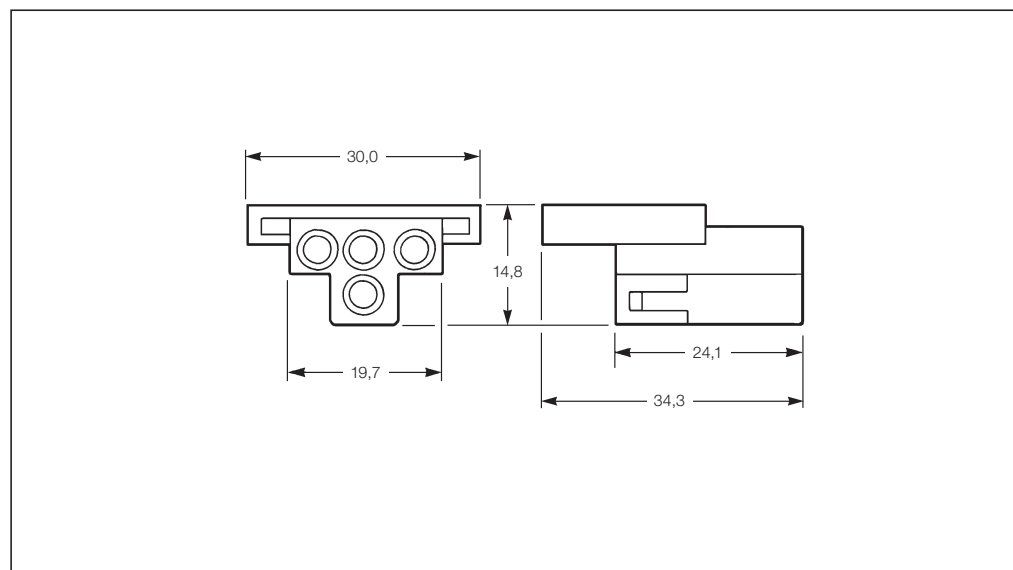
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



### 4 Position Socket (Plug) Housing

| No. of Positions | Keying Options | Housing Color | Part Numbers          |                  |                          |
|------------------|----------------|---------------|-----------------------|------------------|--------------------------|
|                  |                |               | Socket (Plug) Housing | Package Quantity | Mating Pin (Cap) Housing |
| 4                | –              | Natural       | 1-480510-0            | 1,000            | 1-480512-0               |

### Technical Features

**No. of Positions:**

9 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

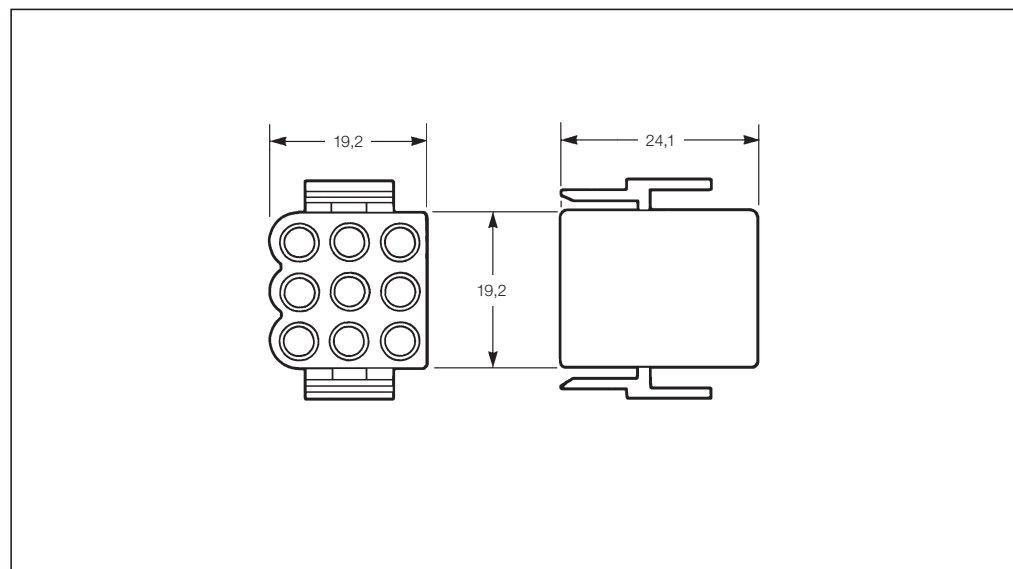
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



### 9 Position Socket (Plug) Housing, Matrix

| No. of Positions | Keying Options | Housing Color | Part Numbers          |                  |                          |
|------------------|----------------|---------------|-----------------------|------------------|--------------------------|
|                  |                |               | Socket (Plug) Housing | Package Quantity | Mating Pin (Cap) Housing |
| 9                | –              | Natural       | 1-480585-0            | 100              | 1-480586-0               |

## Socket (Plug) Housings, In-Line

### Technical Features

**No. of Positions:**

2 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

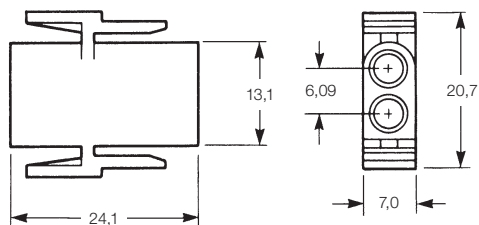
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



### 2 Position Socket (Plug) Housing, In-Line

| No. of Positions | Keying Options | Housing Color | Part Numbers          |                  |                          |
|------------------|----------------|---------------|-----------------------|------------------|--------------------------|
|                  |                |               | Socket (Plug) Housing | Package Quantity | Mating Pin (Cap) Housing |
| 2                | –              | Natural       | 1-350344-0            | 100              | 1-350345-0               |

### Technical Features

**No. of Positions:**

3 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

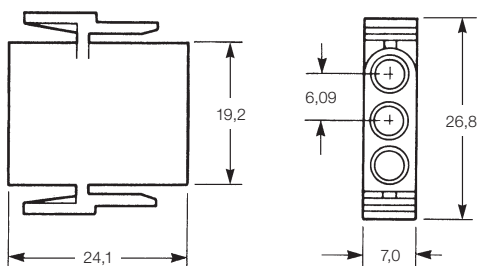
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



### 3 Position Socket (Plug) Housing, In-Line

| No. of Positions | Keying Options | Housing Color | Part Numbers          |                  |                          |
|------------------|----------------|---------------|-----------------------|------------------|--------------------------|
|                  |                |               | Socket (Plug) Housing | Package Quantity | Mating Pin (Cap) Housing |
| 3                | –              | Natural       | 1-350346-0            | 6,400            | 1-350347-0               |

Socket (Plug) Housings, Matrix

**Technical Features**

**No. of Positions:**

9 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

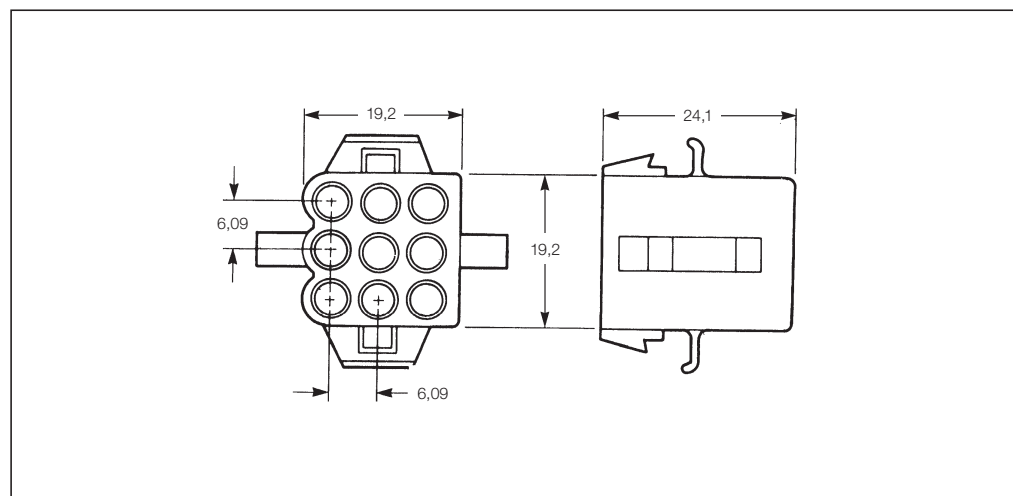
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



**9 Position Socket (Plug) Housing, Matrix**

| No. of Positions | Keying Options | Housing Color | Part Numbers          |                  |                          |
|------------------|----------------|---------------|-----------------------|------------------|--------------------------|
|                  |                |               | Socket (Plug) Housing | Package Quantity | Mating Pin (Cap) Housing |
| 2                | –              | Natural       | 1-480672-0*           | 1,200            | 1-480673-0               |

\*) Other colors on request

**Technical Features**

**No. of Positions:**

18 Positions

**Housing Material:**

PA66

**Flammability Rating:**

UL 94 V-2 rated

**Wire Size Range:**

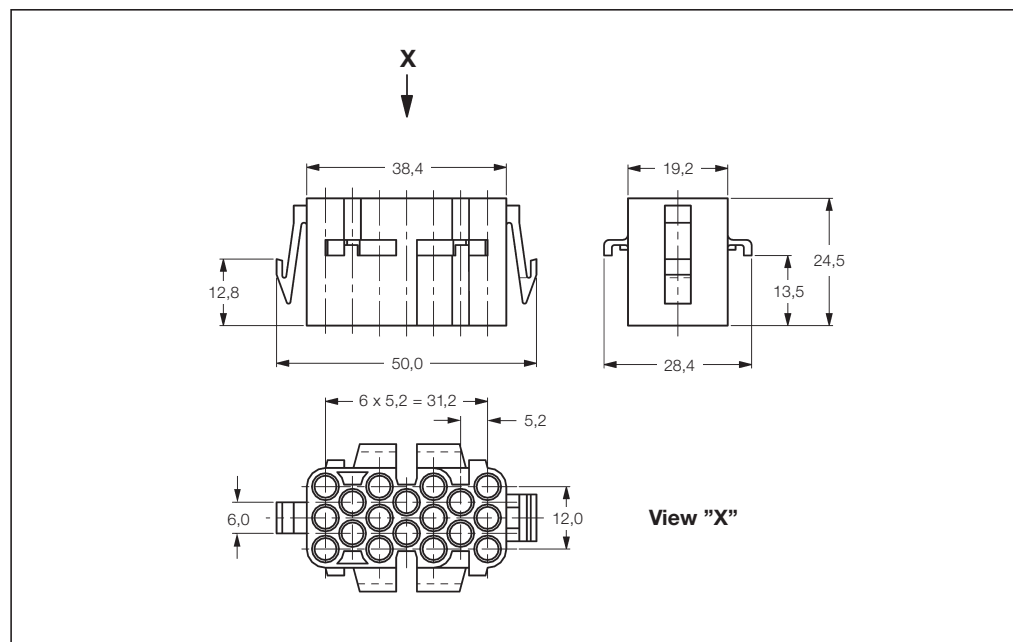
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



**18 Position Socket (Plug) Housing**

| No. of Positions | Keying Options | Housing Color | Part Numbers          |                  |                          |
|------------------|----------------|---------------|-----------------------|------------------|--------------------------|
|                  |                |               | Socket (Plug) Housing | Package Quantity | Mating Pin (Cap) Housing |
| 18               | –              | Natural       | 925451-1              | 200              | 925450-1                 |



## Pin (Cap) Housings

### Technical Features

**No. of Positions:**

4 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

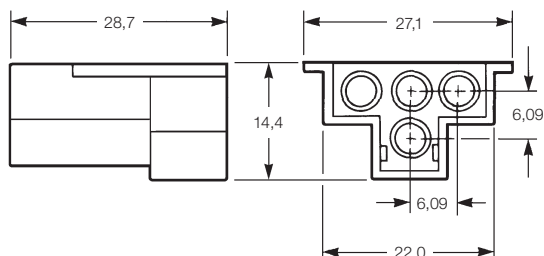
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



### 4 Position Pin (Cap) Housing

| No. of Positions | Keying Options | Housing Color | Part Numbers      |                  |                              |
|------------------|----------------|---------------|-------------------|------------------|------------------------------|
|                  |                |               | Pin (Cap) Housing | Package Quantity | Mating Socket (Plug) Housing |
| 4                | –              | Natural       | 1-480512-0        | 1,000            | 1-480510-0                   |

### Technical Features

**No. of Positions:**

9 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

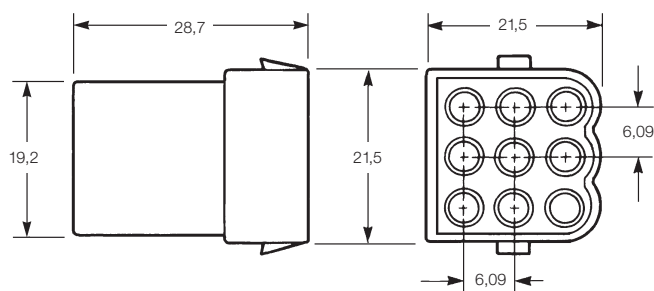
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



### 9 Position Pin (Cap) Housing, Matrix

| No. of Positions | Keying Options | Housing Color | Part Numbers      |                  |                              |
|------------------|----------------|---------------|-------------------|------------------|------------------------------|
|                  |                |               | Pin (Cap) Housing | Package Quantity | Mating Socket (Plug) Housing |
| 9                | –              | Natural       | 1-480586-0        | 100              | 1-480585-0                   |

Pin (Cap) Housings, In-Line

**Technical Features**

**No. of Positions:**

2 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

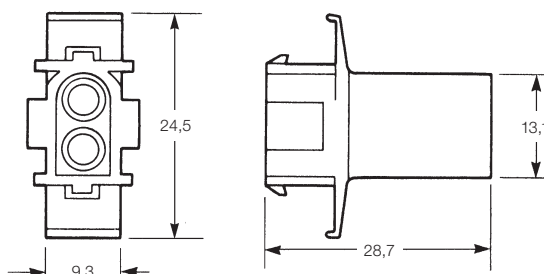
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



**2 Position Pin (Cap) Housing, In-Line**

| No. of Positions | Keying Options | Housing Color | Part Numbers      |                  |                              |
|------------------|----------------|---------------|-------------------|------------------|------------------------------|
|                  |                |               | Pin (Cap) Housing | Package Quantity | Mating Socket (Plug) Housing |
| 2                | –              | Natural       | 1-350345-0        | 100              | 1-350344-0                   |

**Technical Features**

**No. of Positions:**

3 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

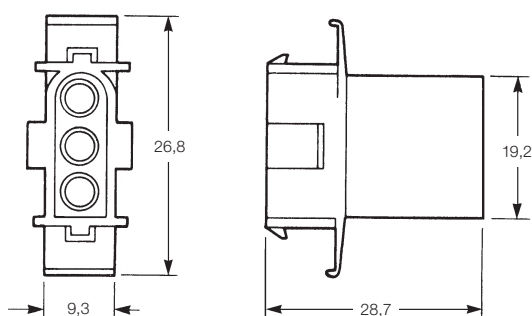
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



**3 Position Pin (Cap) Housing, In-Line**

| No. of Positions | Keying Options | Housing Color | Part Numbers      |                  |                              |
|------------------|----------------|---------------|-------------------|------------------|------------------------------|
|                  |                |               | Pin (Cap) Housing | Package Quantity | Mating Socket (Plug) Housing |
| 3                | –              | Natural       | 1-350347-0        | 100              | 1-350346-0                   |

Pin (Cap) Housings, Matrix

**Technical Features**

**No. of Positions:**

9 Positions

**Housing Material:**

Nylon

**Wire Size Range:**

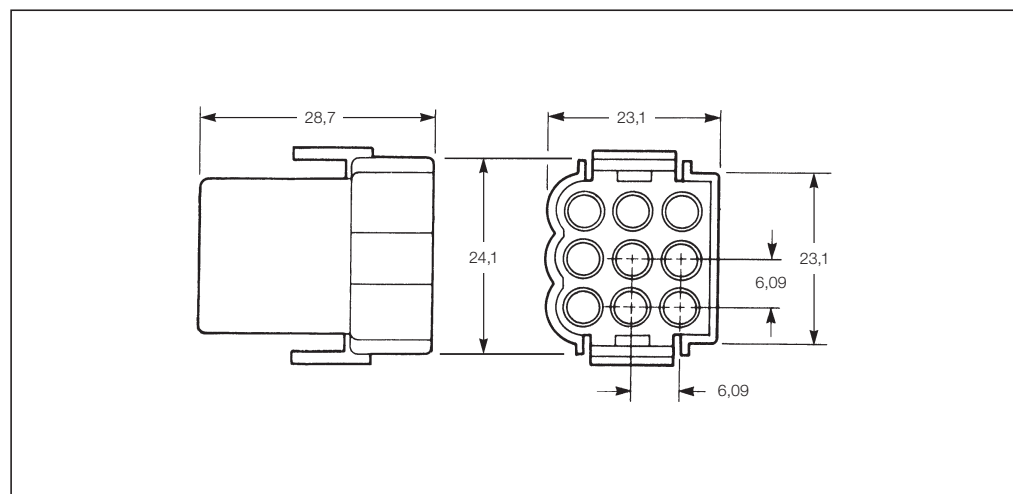
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



**9 Position Pin (Cap) Housing, Matrix**

| No. of Positions | Keying Options | Housing Color | Part Numbers      |                  |                              |
|------------------|----------------|---------------|-------------------|------------------|------------------------------|
|                  |                |               | Pin (Cap) Housing | Package Quantity | Mating Socket (Plug) Housing |
| 9                | –              | Natural       | 1-480673-0        | 1,200            | 1-480672-0                   |

**Technical Features**

**No. of Positions:**

18 Positions

**Housing Material:**

PA66

**Flammability Rating:**

UL 94 V-2 rated

**Wire Size Range:**

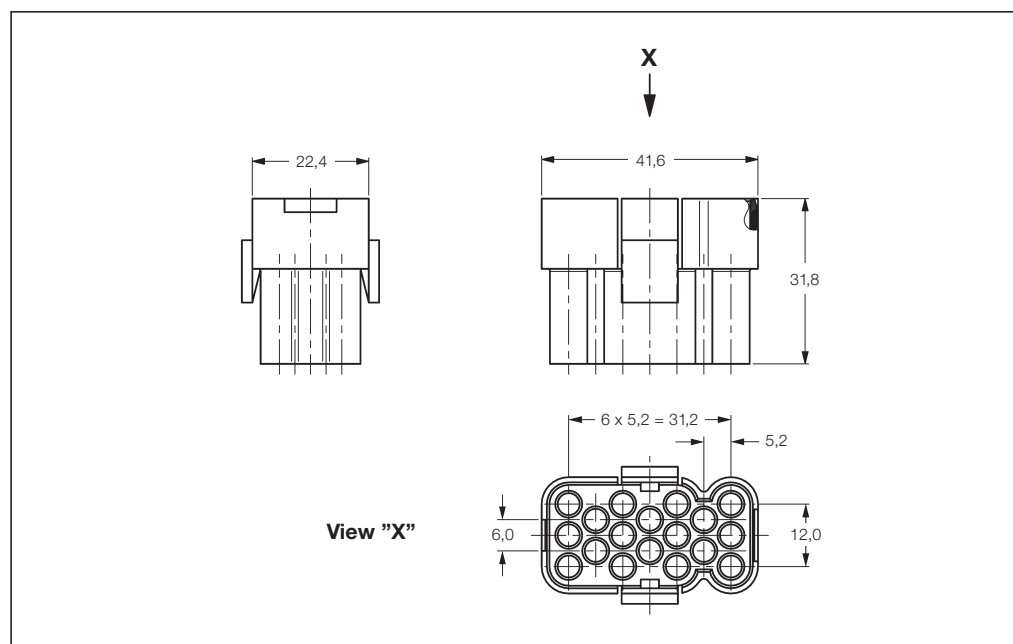
0.5–5.0 mm<sup>2</sup> (20–12 AWG)

**Product Specification:**

108-1032

**Application Specification:**

114-1007



**18 Position Pin (Cap) Housing**

| No. of Positions | Keying Options | Housing Color | Part Numbers      |                  |                              |
|------------------|----------------|---------------|-------------------|------------------|------------------------------|
|                  |                |               | Pin (Cap) Housing | Package Quantity | Mating Socket (Plug) Housing |
| 18               | –              | Natural       | 925450-1          | 200              | 925451-1                     |

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Engineering Notes

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