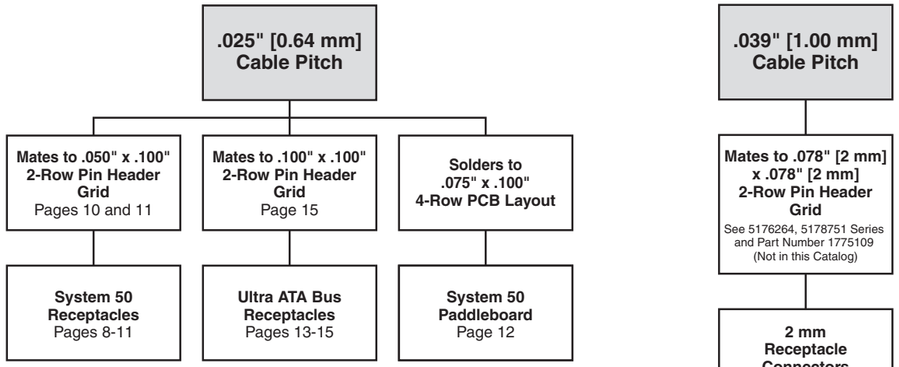
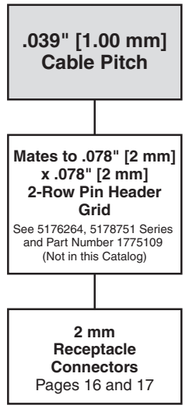
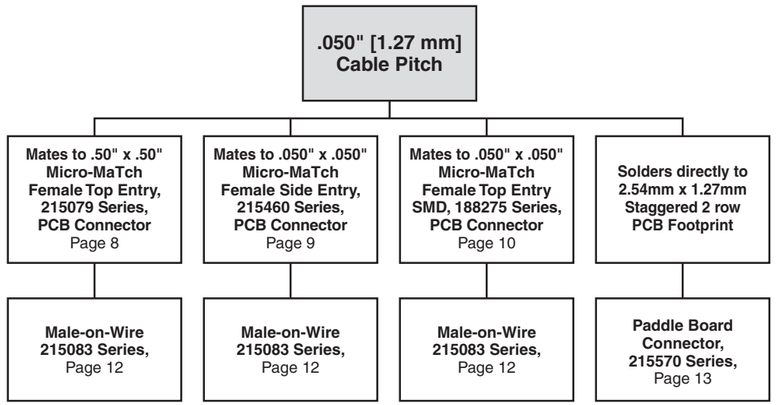
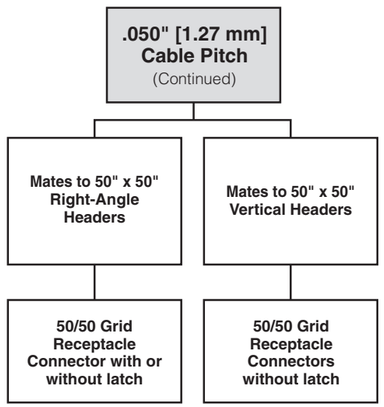
## Ribbon Cable Connector Selection Guide



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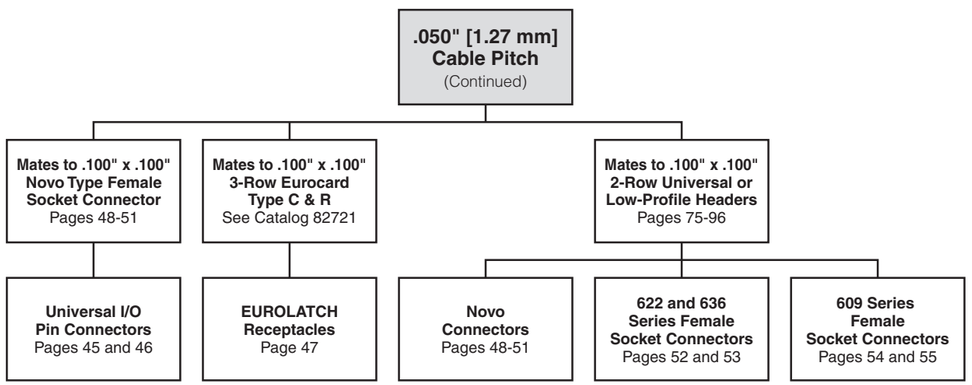
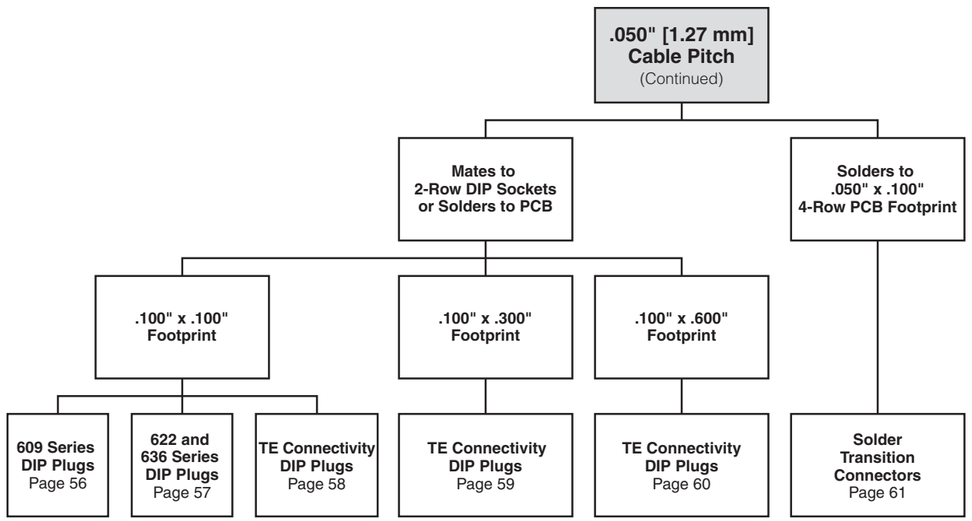
## Ribbon Cable Connector Selection Guide (Continued)





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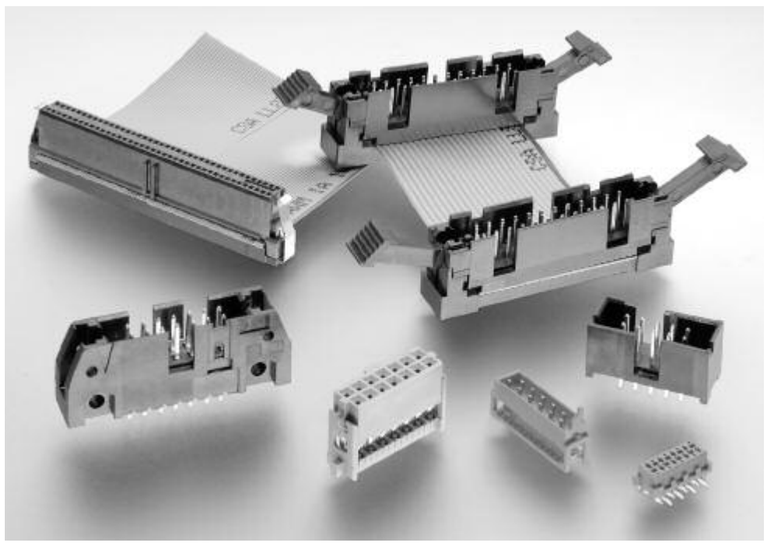
## Introduction



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NOTE: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

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## Introduction (Continued)

**Mass termination capabilities of the ribbon cable connectors** have helped make ribbon cable, and particularly .050 [0.127] centerline cable, popular within the Electronics Industry. The ability to terminate up to 64 conductors simultaneously, without stripping or otherwise preparing the cable, presents obvious labor savings.

**Ribbon Cable Connectors** are wire-to-board devices used to make the transition between cable and pc board circuitry. They find heavy use within equipment to connect one board to another or one subsystem to another. The connectors are also used in input/output applications, connecting different pieces of equipment.

**Ribbon Cable Solutions** are available on three separate cable centerline spacings. They include:

**.025 [0.64] Centerlines**
- System 50 receptacles
- System 50 paddleboards
- Pin headers

**.039 [1.00] Centerlines**
- 2.0 mm receptacles
- Breakaway pin headers

**.050 [1.27] Centerlines**
- 50/50 Grid connectors
- Micro-MaTch connectors
- Novo Receptacle connectors
- DIP plugs
- EUROLATCH receptacle connectors per DIN 41612 and IEC 603-2
- Pin Headers

**System 50 ribbon cable receptacles** will terminate cable on .025 [0.64] centerlines. They are available in select sizes from 20 thru 100-positions, and accept wire size range 30 AWG [0.05 $mm^2$] solid or stranded wire and 32 AWG [0.03 $mm^2$] stranded pvc insulated wire. Housing and cover are made of high temperature tolerant thermoplastic material, black, UL 94V-0 rated. A single mating beam, phosphor bronze contact provides the interconnect between the conductor and the .015$^2$ [0.38$^2$] posts on .050 x .100 [1.27 x 2.54] grid. Also available in paddleboard configurations.

**2.0 mm [.079] ribbon cable receptacles** feature contacts on a true 2.0 mm [.079 in.] mating grid for 1.0 mm [.039 in.] pitch ribbon cable. Select configurations are available between 8 and 50-positions. Receptacles feature insulation displacement contacts (IDC).

**50/50 Grid connectors** Although AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed for parallel board-to-board stacking in high density applications, Right-angle board-to-board and cable-to-board applications are also possible since the vertical receptacles also mate with non-latching right-angle headers and the vertical headers also mate with non-latching cable connectors.

**Micro-Match connectors** Miniaturization and the trend towards higher density of electronic functions on a substrate led to the introduction of Micro-MaTch. The system offers a range of board and wire connectors, enabling a variety of wire-to-board and board-to-board interconnections. Its design prevents the traditional failure mode in tin-plated connections, fretting corrosion. An additional positioning spring in the female part absorbs relative movements caused by vibrations and thermal expansion between male and female contacts. By preventing movements on the contact spot, a gas tight connection can be guaranteed under all circumstances.

**Novo receptacles** feature two rows of contacts on .100 x .100 [2.54 x 2.54] centers on selected sizes of 10 thru 64-positions and mate with .025 [0.64] square or round posts. The Novo tuning-fork contact offers a military-approved design, at an affordable cost. Polarization options include military, center and military, or dual bar.

**DIP (Dual In-Line Package) plugs** provide a permanent connection of ribbon cable to a pc board or mating to DIP sockets. Using the same centerline dimensions as DIP integrated circuits, DIP plugs offer space efficiency and a low profile of .253 [6.43].

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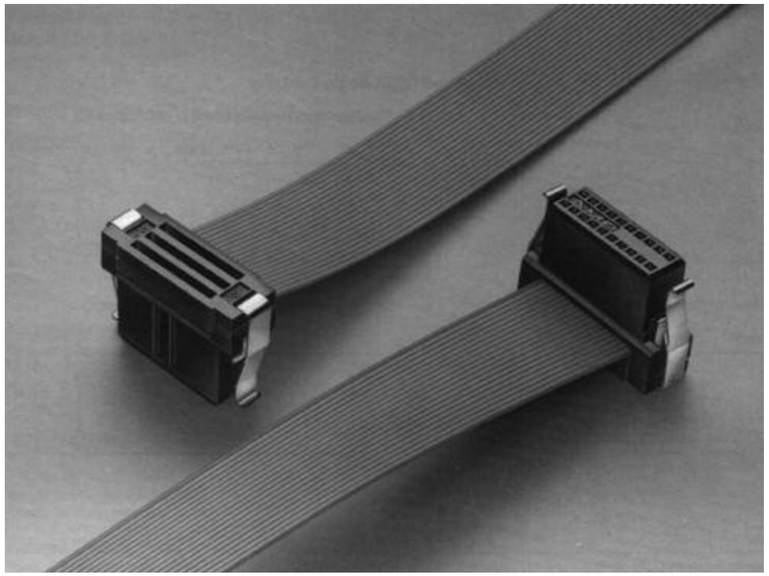
## System 50 Cable-to-Board Connectors, .025 [0.64] Centerline Ribbon Cable

### Product Facts

- Preassembled housing and cover
- One-step termination
- End and daisy chain termination
- Positive end latching of connector to universal header
- Terminates 30 AWG [0.05 mm²] solid or stranded and 32 AWG [0.03 mm²] stranded .025 [0.64] centerline ribbon cable with PVC insulation
- Connectors are RoHS compliant
- Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476
- Certified by the Canadian Standards Association, File No. LR 7189



The System 50 Ribbon Cable connector is a receptacle connector that will terminate ribbon cable on .025 [0.64] centerlines. It is available in select sizes from 10 to 100 positions and will accommodate 30 AWG [0.05 mm²] solid or stranded and 32 AWG [0.03 mm²] stranded conductors with PVC cable insulation.

The housing and cover are of a high temperature tolerant thermoplastic (black) with a UL 94V-0 rating. A phosphor bronze single mating beam contact provides the interconnect between the conductor and the .015 [0.38] square posts on the .050 x .100 [1.27 x 2.54] grid. The contacts are plated with 30 gold duplex plating. The latching feature is located on the receptacle, not the header, and saves board space and eliminates future problems of “latch height compatibility.”



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# System 50 Cable-to-Board Connectors, .025 [0.64] Centerline Ribbon Cable (Continued)



## Double Row Receptacle

### Material and Finish

**Housing** — Black thermoplastic, UL 94V-0 rated

**Latches** — Stainless steel

**Contacts** — Phosphor bronze, plated 30 microinch gold over nickel with tin in termination area

### Related Product Data

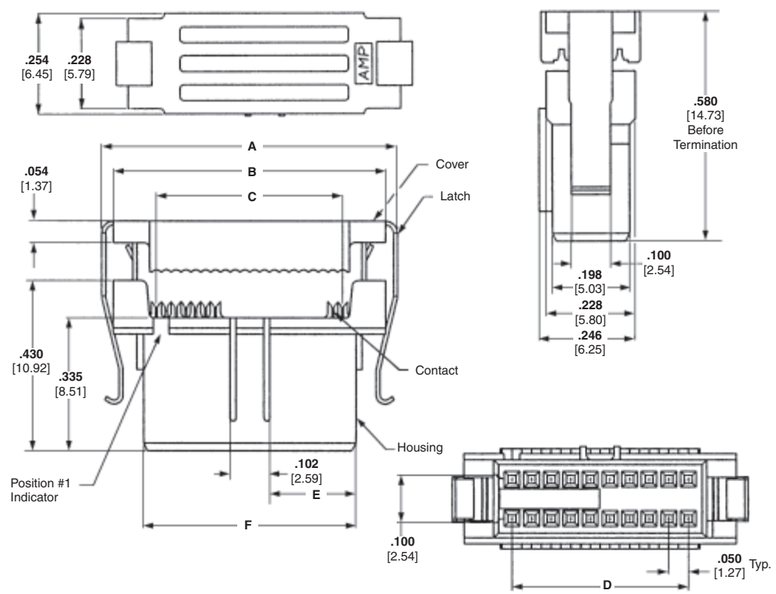
**Mateable Connectors** — See AMP Catalog 82178 Series on pages 10 and 11

**Mates with Posts** — .015 [0.38] square, .125 [3.18] long, on .050 x .100 [1.27 x 2.54] grid

### Technical Documents

**Product Specification**
108-1109

**Application Specification**
114-25029




| No. of Pos. | Dimensions | | | | | | Part Number |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| 10 | **.510** 12.95 | **.445** 11.30 | **.225** 5.72 | **.200** 5.08 | **.096** 2.44 | **.294** 7.47 | 2-111196-5 |
| 14 | **.610** 15.49 | **.545** 13.84 | **.325** 8.26 | **.300** 7.62 | **.146** 3.71 | **.394** 10.01 | 2-111196-6 |
| 16 | **.660** 16.76 | **.595** 15.11 | **.375** 9.52 | **.350** 8.89 | **.171** 4.34 | **.444** 11.28 | 2-111196-7 |
| 20 | **.760** 19.30 | **.695** 17.65 | **.475** 12.07 | **.450** 11.43 | **.221** 5.61 | **.544** 13.82 | 1-111196-8 |
| 24 | **.860** 20.32 | **.795** 20.19 | **.575** 14.61 | **.550** 13.97 | **.271** 6.88 | **.644** 16.36 | 2-111196-8 |
| 26 | **.910** 23.11 | **.845** 21.46 | **.625** 15.88 | **.600** 15.24 | **.296** 7.52 | **.694** 17.63 | 2-111196-9 |
| 30 | **1.010** 25.65 | **.945** 24.00 | **.725** 18.42 | **.700** 17.78 | **.346** 8.79 | **.794** 20.17 | 1-111196-9 |
| 34 | **1.110** 28.19 | **1.045** 26.54 | **.825** 20.96 | **.800** 20.32 | **.396** 10.06 | **.894** 22.71 | 3-111196-0 |
| 40 | **1.260** 32.00 | **1.195** 30.35 | **.975** 34.54 | **.950** 24.13 | **.471** 11.96 | **1.044** 26.52 | 2-111196-0 |
| 44 | **1.360** 34.54 | **1.295** 32.89 | **1.075** 27.31 | **1.050** 26.67 | **.521** 13.23 | **1.144** 29.06 | 3-111196-1 |
| 50 | **1.510** 38.35 | **1.445** 36.70 | **1.225** 31.12 | **1.200** 30.48 | **.596** 15.14 | **1.294** 32.87 | 2-111196-1 |
| 60 | **1.760** 44.70 | **1.695** 43.05 | **1.475** 37.47 | **1.450** 36.83 | **.721** 18.31 | **1.544** 39.22 | 2-111196-2 |
| 64 | **1.860** 47.24 | **1.795** 45.59 | **1.575** 40.00 | **1.550** 39.37 | **.771** 19.58 | **1.644** 41.76 | 3-111196-2 |
| 68 | **1.960** 49.78 | **1.895** 48.13 | **1.675** 42.55 | **1.650** 41.91 | **.821** 20.85 | **1.744** 44.30 | 3-111196-4 |
| 72 | **2.060** 52.32 | **1.995** 50.67 | **1.775** 45.08 | **1.750** 44.45 | **.871** 22.12 | **1.844** 46.84 | 2-111196-3 |
| 80 | **2.260** 57.40 | **2.195** 55.75 | **1.975** 50.17 | **1.950** 49.53 | **.971** 24.66 | **2.044** 51.92 | 3-111196-3 |
| 100 | **2.760** 70.10 | **2.695** 68.45 | **2.475** 62.87 | **2.450** 62.23 | **1.221** 31.01 | **2.544** 64.62 | 2-111196-4 |

See Application Specification for termination tooling.
**Note:** All part numbers are RoHS compliant.



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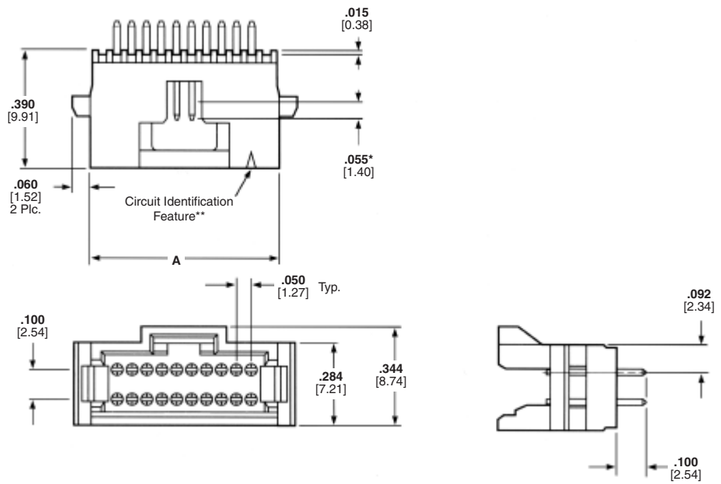
## System 50 Board-to-Board Connectors, Through-Hole Headers

### Shrouded, Double Row Vertical




### Material and Finish

**Housing** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Copper alloy, plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder posts, with entire contact underplated .000050 [0.00127] nickel

### Related Product Data

**Mateable Receptacles** — page 9

### Technical Documents

**Product Specification**
108-1093

**Application Specification**
114-25031

| No. of Positions | Dim. A | Part Number |
|---|---|---|
| 10 | **.380** 9.65 | 5-104068-2 |
| 12 | **.430** 10.92 | 5-104068-8 |
| 14 | **.480** 12.19 | 5-104068-9 |
| 16 | **.530** 13.46 | 6-104068-0 |
| 20 | **.630** 16.00 | 5-104068-1 |
| 24 | **.730** 18.54 | 6-104068-1 |
| 26 | **.780** 19.81 | 6-104068-2 |
| 30 | **.880** 22.35 | 5-104068-3 |

| No. of Positions | Dim. A | Part Number |
|---|---|---|
| 34 | **.980** 24.89 | 6-104068-3 |
| 40 | **1.130** 28.70 | 5-104068-4 |
| 44 | **1.230** 31.24 | 6-104068-4 |
| 50 | **1.380** 35.05 | 5-104068-5 |
| 60 | **1.630** 41.40 | 5-104068-6 |
| 68 | **1.830** 46.48 | 6-104068-8 |
| 72 | **1.930** 49.02 | 6-104068-5 |
| 80 | **2.130** 54.10 | 6-104068-6 |
| 100 | **2.630** 66.80 | 6-104068-7 |

*Point of measurement for gold thickness.
**Circuit identification feature omitted on 8, 10, 12 and 14 position headers.

**Note:** All part numbers are RoHS compliant.



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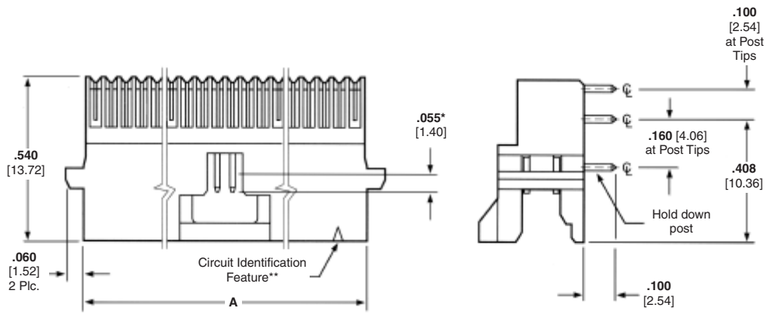
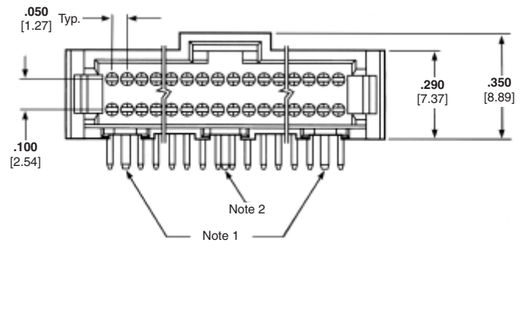
## System 50 Board-to-Board Connectors, Through-Hole Headers (Continued)



### Shrouded, Double Row Right-Angle




### Material and Finish

**Housing** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Copper alloy, plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder posts, with entire contact underplated .000050 [0.00127] nickel

### Related Product Data

**Mateable Receptacles** — page 9

### Technical Documents

**Product Specification**
108-1093

**Application Specification**
114-25031

| No. of Positions | Dim. A | Part Number |
|---|---|---|
| 8 | **.330** 8.38 | 5-104069-8 |
| 10 | **.380** 9.65 | 5-104069-4 |
| 20 | **.630** 16.00 | 5-104069-1 |
| 24 | **.730** 18.54 | 6-104069-2 |
| 26 | **.780** 19.81 | 6-104069-3 |
| 30 | **.880** 22.35 | 5-104069-5 |
| 34 | **.980** 24.89 | 6-104069-4 |

| No. of Positions | Dim. A | Part Number |
|---|---|---|
| 40 | **1.130** 28.70 | 5-104069-6 |
| 50 | **1.380** 35.05 | 5-104069-2 |
| 60 | **1.630** 41.40 | 5-104069-7 |
| 68 | **1.830** 46.80 | 6-104069-8 |
| 72 | **1.930** 49.02 | 6-104069-6 |
| 80 | **2.130** 54.10 | 5-104069-3 |
| 100 | **2.630** 66.80 | 6-104069-7 |

*Point of measurement for gold thickness.
**Circuit identification feature omitted on 8, 10, 12 and 14 position headers.

**Notes:** 1. Hold down posts located as shown for 16 through 100 position headers.
2. Hold down posts located as shown for 8 through 14 and 60 through 100 position headers.
3. All part numbers are RoHS compliant.



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# System 50 Cable-to-Board Connectors, .025 [0.64] Centerline Ribbon Cable

## Paddleboard

### Material and Finish

**Housing** — LCP thermoplastic, UL 94V-0 rated, black

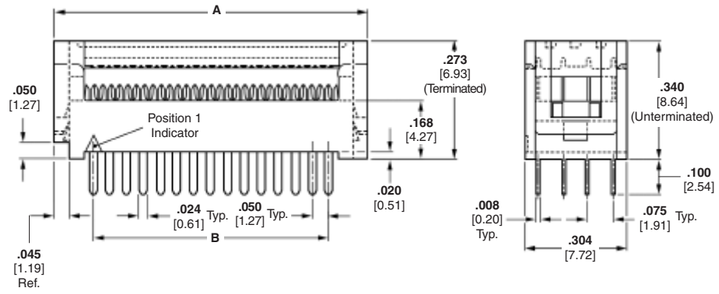
**Cover** — Polyester, UL 94V-0 rated, black

**Contacts** — Phosphor bronze, plated .000100 [0.00245] min. tin over .000050 [0.00127] min. nickel underplating

### Technical Documents

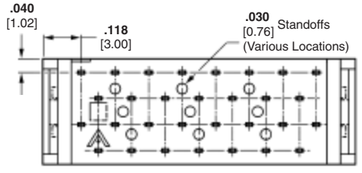
**Product Specification**
108-1109

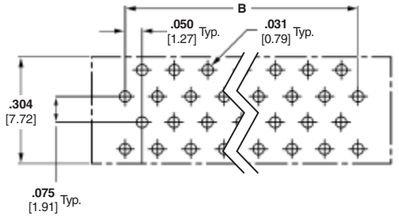
**Application Specification**
114-25040



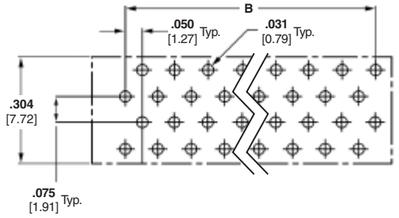







**Printed Circuit Board Hole Layout #1**




**Printed Circuit Board Hole Layout #2**

| No. of Pos. | PCB Layout | Dimensions A | Dimensions B | Kinked Legs |
|---|---|---|---|---|
| 10 | 1 | **.436** 11.07 | **.200** 5.08 | 5111595-1 |
| 14 | 1 | **.536** 13.61 | **.300** 7.62 | 5111595-2 |
| 16 | 2 | **.586** 14.88 | **.350** 8.89 | 5111595-3 |
| 20 | 2 | **.686** 17.42 | **.450** 11.43 | 5111595-4 |
| 24 | 2 | **.786** 19.96 | **.550** 13.97 | 5111595-5 |
| 26 | 1 | **.836** 21.23 | **.600** 15.24 | 5111595-6 |
| 28 | 2 | **.886** 22.50 | **.650** 16.51 | 2-5111595-0 |
| 30 | 1 | **.936** 23.77 | **.700** 17.78 | 5111595-7 |
| 34 | 1 | **1.036** 26.31 | **.800** 20.32 | 5111595-8 |
| 40 | 2 | **1.186** 30.12 | **.950** 24.13 | 5111595-9 |

| No. of Pos. | PCB Layout | Dimensions A | Dimensions B | Kinked Legs |
|---|---|---|---|---|
| 44 | 2 | **1.286** 32.66 | **1.050** 26.67 | 1-5111595-0 |
| 46 | 1 | **1.336** 33.93 | **1.100** 27.94 | 1-5111595-7 |
| 50 | 1 | **1.436** 36.47 | **1.200** 30.48 | 1-5111595-1 |
| 60 | 2 | **1.686** 42.82 | **1.450** 36.83 | 1-5111595-2 |
| 64 | 2 | **1.786** 45.36 | **1.550** 39.37 | 1-5111595-3 |
| 68 | 2 | **1.886** 47.90 | **1.650** 41.91 | 1-5111595-9 |
| 72 | 2 | **1.986** 50.44 | **1.750** 44.45 | 1-5111595-4 |
| 80 | 2 | **2.186** 55.52 | **1.950** 40.53 | 1-5111595-5 |
| 100 | 2 | **2.686** 68.22 | **2.450** 62.23 | 1-5111595-6 |

See Application Specification for termination tooling.
**Note:** All part numbers are RoHS compliant.



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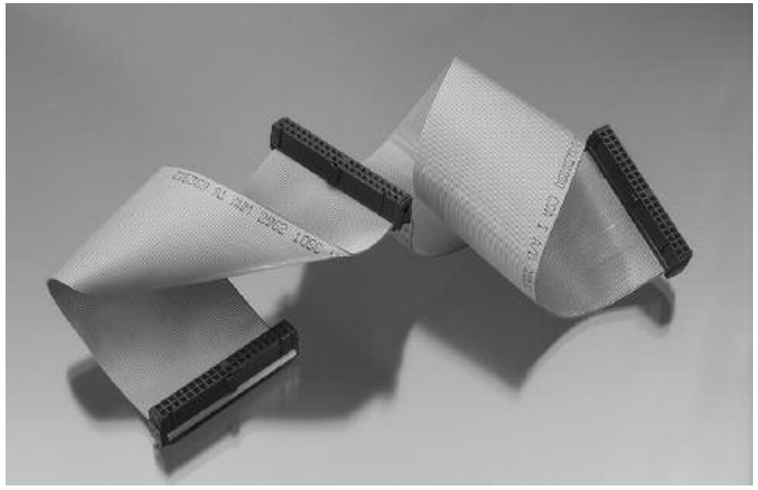
## Ultra ATA Bus Connectors, .025 [0.64] Centerline Ribbon Cable

### Product Facts

- **IDC termination**
- **Backward compatible with current IDE Interfaces**
- **Improved signal integrity: 1 to 1 signal to ground ratio**
- **Improved crosstalk when compared to existing IDE Cable Assembly**
- **Color coded connectors for "System board," and "Master HDD" and "Slave HDD"**
- **Cable impedance 80 ohms**
- **Up to 3 connectors per cable assembly**
- **15 microinches gold plating**
- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476**
- **Certified by the Canadian Standards Association, File No. LR 7189**
- **Terminates 30 AWG solid or stranded PVC insulated 80 conductor ribbon cable**



Ultra ATA is the next generation IDE (Integrated Drive Electronics) bus. The current IDE bus has a maximum data transfer rate of about 16.5 MB/second. As the bus speeds and disk drive performances increase, the cable assembly between the motherboard and hard drive becomes a limiting factor in data transfer from the drive.

The Ultra ATA connector and cable assembly from TE provide the customer with improved electrical performance by creating a 1:1 signal-to-ground ratio. The connector design incorporates an IDC bus bar to common the 40 additional ground signals. The cable is .025" centerline PVC ribbon cable. The connector is fully backward compatible with existing 40-position headers with pin 20 removed on motherboards and disk drives.

The new connectors are color coded to identify:

1. system board connector
2. primary or master hard drive connector
3. slave drive connector

**Standard Issues**

The Ultra ATA cable performance specification is part of the Small Form Factor Committee No. 8049. Compaq Computer and Western Digital are the major sponsors of the standard.

**Contacts Available:**

- 80 position IDC contact terminations
- 40 signal contacts
- 40 ground terminations to special IDC bus bar



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## Ultra ATA Bus Connectors, .025 [0.64] Centerline Ribbon Cable (Continued)

### Related Product Data

**Strain Relief** — Part Number 499252-1

**Mateable Headers** — page 15

### Material & Finish

**Housing and Cover** — Thermoplastic, UL 94 V-0 rated, color per table

**Contacts** — Phosphor bronze, plated gold per table on mating end, .000050 [0.00127]min. tin in wire termination area, over .000050 [0.00127] min nickel on entire contact.

### Technical Documents

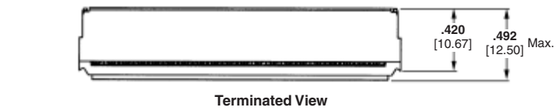
**Product Specification**
108-1740

**Application Specification**
114-40056

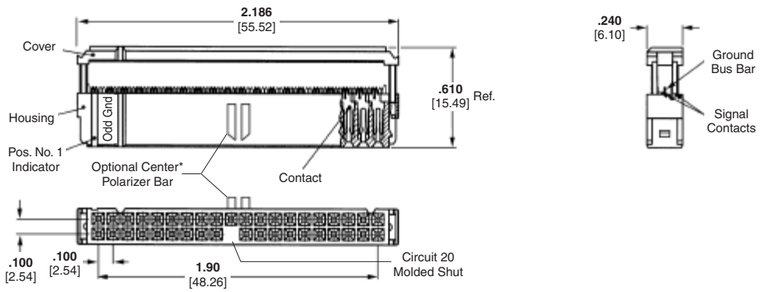
See Application Specification for termination tooling.

### Accessories

**Strain Relief** — page 68
**Keying Plug** — page 64
**Pull Loops** — page 66
**Pull Tabs** — page 63

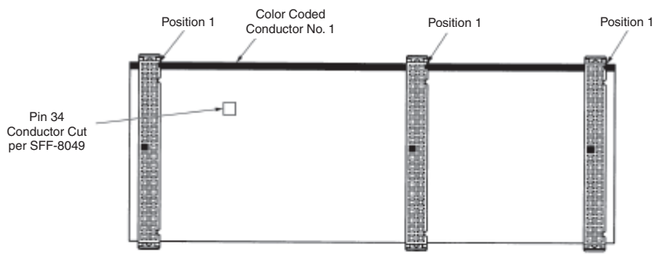


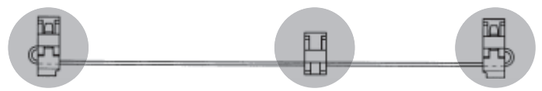

Terminated View










| Connector Type | *Center & Military Polarized | | | Military Polarized | | |
|---|---|---|---|---|---|---|
| | 15µ" Gold | Housing Color | Cover Color | 15µ" Gold | Housing Color | Cover Color |
| "System" Board | 1658619-2 | Blue | Black | 1658618-2 | Blue | Black |
| "Primary" or "Master" | 1658619-1 | Black | Black | 1658618-1 | Black | Black |
| "Slave" | 1658619-3 | Gray | Black | 1658618-3 | Gray | Black |

**Notes:** 1. All connectors are "ODD GROUND" configuration, ie. all odd cable conductors are grounded. "EVEN GROUND" connectors are not available. See Customer Drawings for detailed electrical connection descriptions.
2. All part numbers are RoHS compliant.



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## Ultra ATA Bus Connectors, .025 [0.64] Centerline Ribbon Cable (Continued)

### Ultra ATA Compatible Headers

#### Universal Headers — Pin 20 Omitted

| Post Type | Housing Material | Latch Type | Part Number | Contact Finish (Plating Code) | Solder Tail Length | Comments |
|---|---|---|---|---|---|---|
| Vertical | Nylon or PBT | Long | 5111824-9 | D | **.110** 2.79 | |
| Vertical | Nylon or PBT | Short | 6489700-1 | B | **.123** 3.12 | PP |

**Legend:** PP — Polarization Peg

#### Low Profile Headers — Pin 20 Omitted

| Post Type | Housing Material | Latch Type | Part Number | Contact Finish (Plating Code) | Solder Tail Length | Housing Color |
|---|---|---|---|---|---|---|
| Vertical | Nylon | None | 1888188-1 | A | **.120** 3.05 | Black |
| Vertical | Nylon | None | 1888188-2 | B | **.120** 3.05 | Black |
| Vertical | Nylon 6T | None | 2-1734161-4 | C | **.122** 3.10 | Black |
| Vertical | Nylon 6T | None | 2-1734161-5 | C | **.122** 3.10 | Blue |
| Vertical | Nylon | None | 1734162-2 | C | **.110** 2.79 | Black |
| Vertical | Nylon | None | 1734162-4 | C | **.110** 2.79 | Blue |

**Plating Code A** — Duplex plated, gold flash on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel.
**Plating Code B** — Duplex plated, gold flash over palladium-nickel, .000015 [0.00038] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel **or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel.
**Plating Code C** — Gold flash over nickel underplate on entire post.
**Plating Code D** — Duplex plated, gold flash over palladium-nickel, .000030 [0.00076] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel **or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel.

**Note:** All part numbers are RoHS compliant.





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# 2.0 mm [.079] Receptacle Connectors

## Product Facts

- True hard metric 2.0 x 2.0 [.079 x .079] mating grid for 1.0 [.039] pitch ribbon cable
- Wide selection of configurations, 8-50 positions
- Insulation displacement (IDC), beryllium copper contacts, duplex plated gold-over-nickel
- Top/bottom single beam contact orientation
- UL 94V-0 rated thermo-plastic components
- Assemblies are furnished preassembled with termination covers
- Optional polarization
- Optional strain relief available
- Connector assemblies packaged for ease of handling and protection
- Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476
- Certified by the Canadian Standards Association, File No. LR 7189

## Performance Data

**Durability** — 150 cycles

**Termination Resistance** — 25 milliohms max.

**Mating Force** — 1.67 N max. per contact

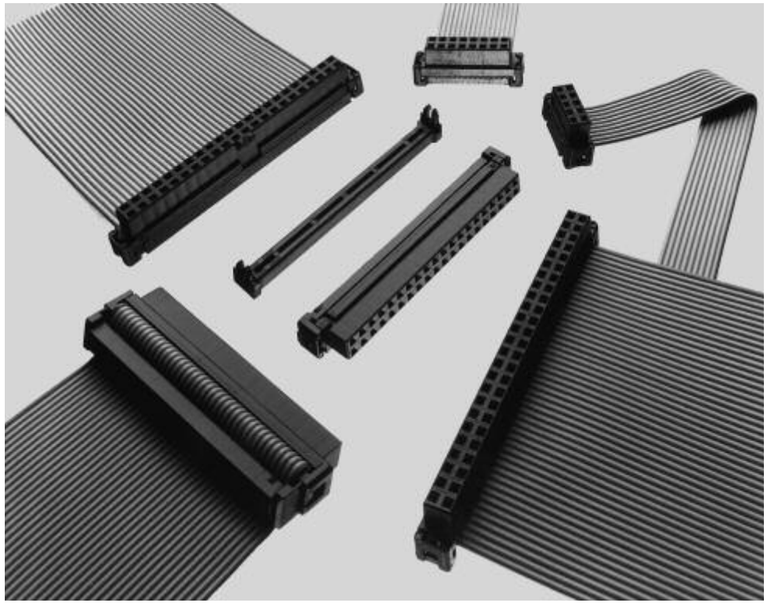
**Unmating Force** — 0.14 N min. per contact

**Operating Temperature** — -65°C to +105°C

## Technical Documents

**Product Specification**
108-1372

**Application Specification**
114-40038



The 2.0 [.079] receptacle connector family features contacts on a true 2.0 x 2.0 [.079 x .079] mating grid for 1.0 [.039] pitch 28 AWG ribbon cable. A variety of configurations are available from 8 through 50 positions. This small, compact connector is finding wide acceptance throughout the electronic industry, particularly in the smaller laptop and notebook type computers with 63.5 [2.5] drives. Other areas of application include point-of-sale terminals, fax machines, photocopiers, printers, consumer electronics, and other computer peripheral equipment.

These receptacles feature insulation displacement contacts (IDC) with a top/bottom single-beam contact orientation. Contacts are beryllium copper, duplex plated 0.00076 [.000030] gold in the mating area and 0.00254 [.000100] min. tin on termination end, all over 0.00127 [.000050] nickel underplating. Contact mating area is 1.54 [.061] from the face of the housing and they accept 0.50mm [.0197] round or square posts.

Housings are made of UL 94V-0 rated polyester with optional center bar polarization. Complete assemblies are furnished preassembled with termination covers. The complete assembly presents a compact design only 5.2 [.203] wide over the termination cover by 4 [.157] deep by 4 [.157] wide mating end. Terminated height is 8.48 [.334]. Optional strain relief available. Assemblies are packaged for ease of handling and protection.



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# 2.0 mm [.079] Receptacle Connectors, Non-Polarized and Center Polarized Bar

## Material and Finish

**Housing and Termination Cover** — UL 94V-0 rated polyester, black

**Contacts** — Beryllium copper, duplex plated 0.00076 [.000030] min. gold on mating end, 0.00013 [.000005] min. gold on termination end, all underplated 0.00127 [.000050] min. nickel

**Note:** Accepts 0.08-0.09mm² [28 AWG] ribbon cable, PVC insulated 1.00 [.039] pitch. See Application Specification for details.

## Technical Documents

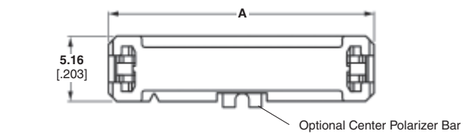
**Product Specification**
108-1372

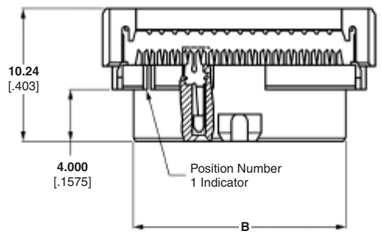
**Application Specification**
114-40038

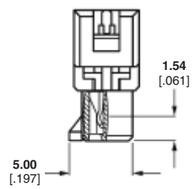
**Mateable Connectors** — pages 9 and 12, or see Application Specification for header requirements

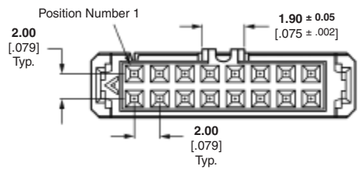
## Accessories

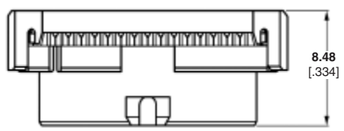
**Pull Loops** — page 66
**Keying Plugs** — page 64
**Strain Relief** — page 68




**Terminated View, Typical**

| No. of Positions | Dimensions A | Dimensions B | Center Polarized | Non-Polarized |
|---|---|---|---|---|
| 8 | **13.18** .519 | **8.41** .331 | 3-111623-0 | 2-111626-4 |
| 10 | **15.16** .597 | **10.41** .410 | 1-111623-8 | 1-111626-7 |
| 12 | **17.15** .675 | **12.40** .488 | 3-111623-1 | — |
| 14 | **19.18** .755 | **14.40** .567 | 1-111623-9 | 1-111626-8 |
| 16 | **21.18** .834 | **16.41** .646 | 2-111623-0 | 2-111626-5 |
| 20 | **25.17** .991 | **20.40** 803 | 2-111623-1 | 1-111626-9 |
| 22 | **27.18** 1.070 | **22.40** .882 | 2-111623-9 | — |
| 24 | **29.18** 1.149 | **24.41** .961 | 2-111623-7 | 2-111626-6 |
| 26 | **31.17** 1.227 | **26.42** 1.040 | 2-111623-2 | 2-111626-7 |
| 30 | **35.18** 1.385 | **30.40** 1.197 | 2-111623-3 | — |
| 34 | **39.17** 1.542 | **34.42** 1.355 | 2-111623-8 | 2-111626-0 |
| 40 | **45.19** 1.779 | **40.41** 1.591 | 2-111623-4 | 2-111626-1 |
| 44 | **49.17** 1.936 | **44.40** 1.748 | 2-111623-5 | 2-111626-2 |
| 50 | **55.17** 2.172 | **50.39** 1.984 | 2-111623-6 | 2-111626-3 |

**Note:** All part numbers are RoHS compliant.





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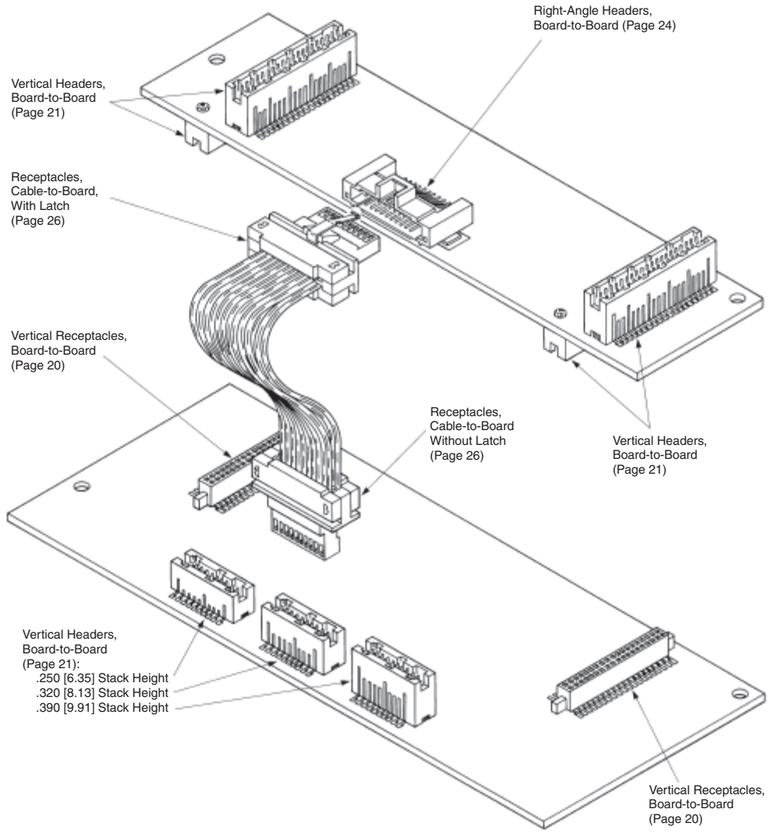
## AMPMODU 50/50 Grid Connector System




**Produced under a Quality Management System certified to ISO 9001**

A copy of the certificate is available upon request.

ISO 9001 Certified





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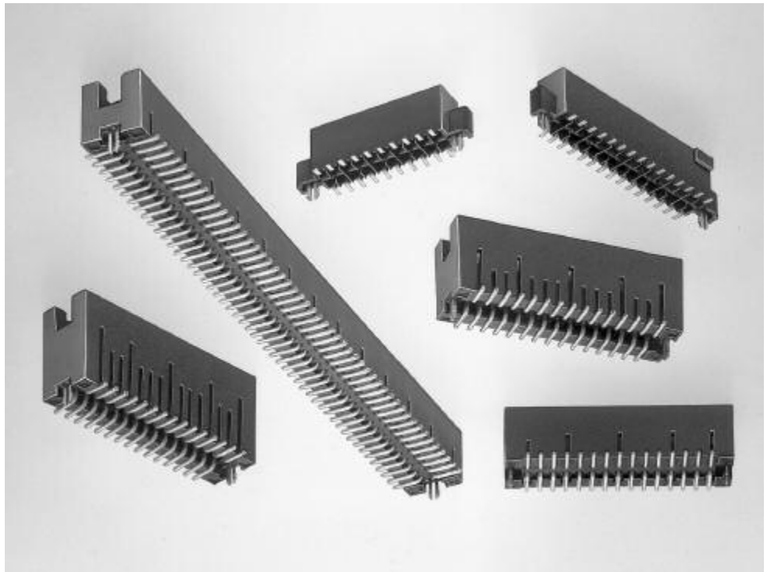
# Board-to-Board Vertical Receptacles and Headers

## Product Facts

- Surface-mount products for parallel board-to-board applications, as well as right-angle board-to-board and cable-to-board applications
- High density .050 x .050 [1.27x1.27] centerline grid
- Three board-to-board stack heights: .250 [6.35], .320 [8.13] and .390 [9.91]
- Non-protrusive metallic holddowns
- Reliable dual beam receptacle contacts for redundant contact
- Duplex plated receptacle and post contacts; gold plated on mating areas, tin plated on tails
- Compatible with standard surface-mount processing (VPR and IR)
- Receptacle and header allow for drainage of processing fluids
- Tape and reel packaging available. Contact TE for details
- Polarized header and receptacle assemblies
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189



AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed for parallel board-to-board stacking in high density applications.

Right-angle board-to-board and cable-to-board applications are also possible, since the vertical receptacles also mate with non-latching right-angle headers (page 24) and the vertical headers also mate with non-latching cable connectors.

Available are double row, vertical shrouded headers and receptacles in sizes ranging from 10 through 100 positions (in 10 position increments).

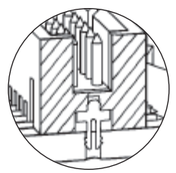
Parallel board-to-board stack heights of .250 [6.35], .320 [8.13] and .390 [9.91] are achievable by selection of the appropriate header. The receptacle is the same for all three stack height headers.

Non-protrusive metallic holddowns are designed for use in .062 [1.57] or thicker PC boards and allow surface mounting to both sides of the board. In addition to providing retention during processing, the holddowns are soldered during reflow and therefore provide long-term strain relief for the solder joints.

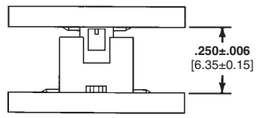
AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed to be compatible with standard surface-mount processes; IR (infrared) and VPR (vapor phase reflow). The surface-mount connectors have been designed so that dimensioning, tolerances, referenced datums, holddown characteristics and packaging methods result in a system that is compatible with robotic assembly.

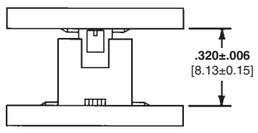
The headers and receptacles feature polarization to prevent misalignment.

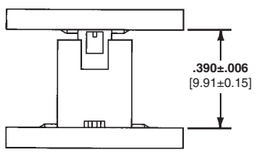
### Non-Protrusive Metallic Holddowns



### Three Board Stack Heights





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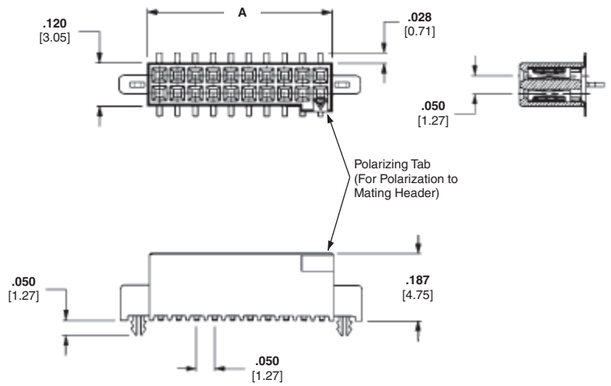
# Board-to-Board Vertical Receptacles, Double Row, .050 x .050 [1.27 x 1.27] Centerline




## Material and Finish

**Housing**—Glass-filled thermoplastic, black, 94V-0 rated

**Contacts**—Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown**—Copper alloy; plated .000150 [0.00381] tin over .000050 [0.00127] nickel

## Related Product Data

**Mating Headers** — pages 21 and 24
**PC Board Layouts** — page 22
**Performance Specifications** — page 29
**Technical Documents** — page 29

**Product Specification** 108-1332
**Application Specification** 114-7010
**Packaging** — Tube or Tape and Reel

| No. of Pos. | Dimension A | Receptacle Part Numbers | | |
|---|---|---|---|---|
| | | Tube | Tape and Reel* | No Hold Down w/Vacuum Cover |
| 10 | **.266** [6.75] | 5-104652-1 | 5-147384-1 | 5-147413-1 |
| 20 | **.516** [13.11] | 5-104652-2 | 5-147384-2 | 5-147413-3 |
| 30 | **.766** [19.46] | 5-104652-3 | 5-147384-3 | 5-147413-4 |
| 40 | **1.016** [25.81] | 5-104652-4 | 5-147384-4 | — |
| 50 | **1.266** [32.16] | 5-104652-5 | 5-147384-5 | 5-147413-2 |
| 60 | **1.516** [38.51] | 5-104652-6 | 5-147384-6 | — |
| 70 | **1.766** [44.86] | 5-104652-7 | 5-147384-7 | — |
| 80 | **2.016** [51.21] | 5-104652-8 | 5-147384-8 | — |
| 100 | **2.516** [63.91] | 6-104652-0 | 5-147384-9 | — |

* Parts packaged in tape and reel have vacuum pick and place cover.
See PC Board Layout on page 22.

**Note:** All part numbers are RoHS compliant.



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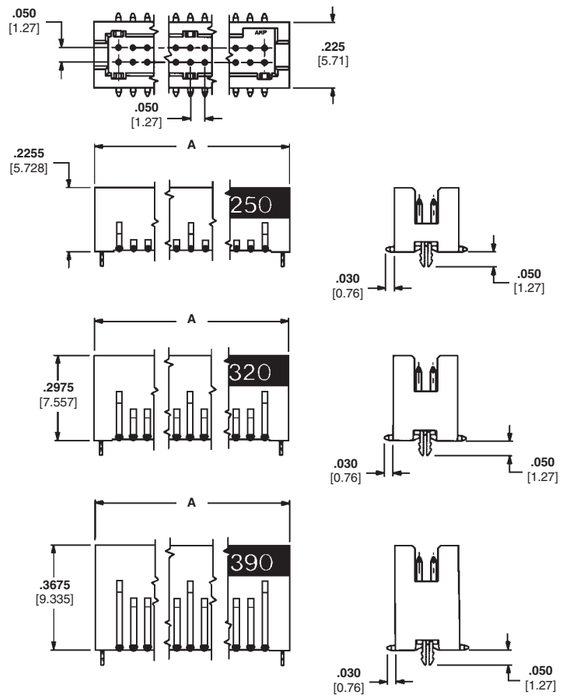
# Board-to-Board Vertical Headers, Double Row, .050 x .050 [1.27 x 1.27] Centerline

For .250 [6.35] Mated Height

For .320 [8.13] Mated Height

For .390 [9.91] Mated Height




## Material and Finish

**Housing**—Glass-filled thermoplastic, black, 94V-0 rated

**Contacts**—Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown**—Copper alloy; plated .000150 [0.00381] tin over .000050 [0.00127] nickel

## Related Product Data

**Mating Receptacles** — pages 20 and 26 (without latch only)

**PC Board Layouts** — page 22

**Performance Specifications** — page 29

## Technical Documents — page 29

**Product Specification** 108-1332

**Application Specification** 114-7010

**Packaging** — Tube or Tape and Reel

| No. of Pos. | Dimension A | Header Part Numbers | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | .250 [6.35] Mated Height | | | .320 [8.13] Mated Height | | .390 [9.91] Mated Height | | |
| | | Tubes | Tape & Reel* | | Tubes | Tape & Reel* | Tubes | | Tape & Reel* |
| | | | Hold Down | No Hold Down | | | Hold Down | No Hold Down | |
| 10 | **.372** [9.44] | 5-104655-1 | 5-147381-1 | 5-147121-1 | 5-104656-1 | 5-147382-1 | 5-104693-1 | — | 5-147383-1 |
| 20 | **.622** [15.79] | 5-104655-3 | 5-147381-2 | 5-147121-2 | 5-104656-2 | 5-147382-2 | 5-104693-2 | — | 5-147383-2 |
| 30 | **.872** [22.14] | 5-104655-4 | 5-147381-3 | — | 5-104656-3 | 5-147382-3 | 5-104693-3 | — | 5-147383-3 |
| 40 | **1.122** [28.49] | 5-104655-5 | 5-147381-4 | — | 5-104656-4 | 5-147382-4 | 5-104693-4 | — | 5-147383-4 |
| 50 | **1.372** [34.84] | 5-104655-6 | 5-147381-5 | — | 5-104656-5 | 5-147382-5 | 5-104693-5 | — | 5-147383-5 |
| 60 | **1.622** [41.19] | 5-104655-7 | 5-147381-6 | — | 5-104656-6 | 5-147382-6 | 5-104693-6 | — | 5-147383-6 |
| 70 | **1.872** [47.54] | 5-104655-8 | 5-147381-7 | — | 5-104656-7 | 5-147382-7 | 5-104693-7 | — | 5-147383-7 |
| 80 | **2.122** [53.89] | 5-104655-9 | 5-147381-8 | — | 5-104656-8 | 5-147382-8 | 5-104693-8 | — | 5-147383-8 |
| 90 | **2.372** [60.24] | — | — | — | 5-104656-9 | — | 5-104693-9 | — | — |
| 100 | **2.622** [66.59] | 6-104655-1 | 5-147381-9 | — | 6-104656-0 | 5-147382-9 | 6-104693-0 | 5-147503-1 | 5-147383-9 |

*Parts packaged in tape and reel have vacuum pick and place cover.
See PC Board Layout on page 22.

**Note:** All part numbers are RoHS compliant.





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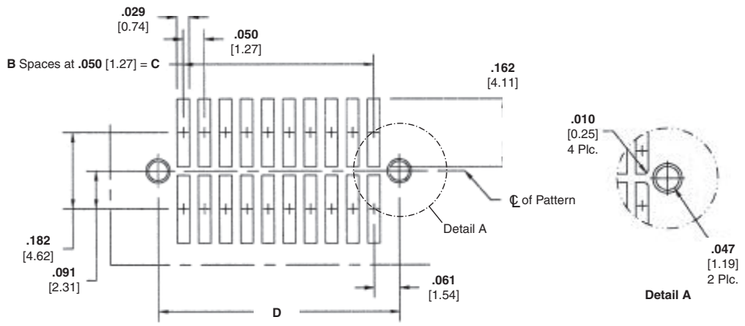
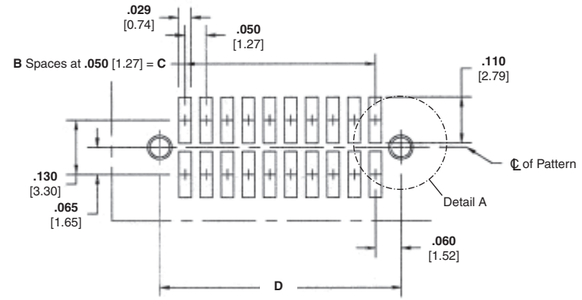
## Recommended PC Board Layouts for Vertical Connectors

### Headers




### Receptacles




| No. of Pos. | Receptacle Dimensions | | | Header Dimensions | | |
|---|---|---|---|---|---|---|
| | B | C | D | B | C | D |
| 10 | 4 | **.200** [5.08] | **.320** [8.12] | 4 | **.200** [5.08] | **.322** [8.17] |
| 20 | 9 | **.450** [11.43] | **.570** [14.48] | 9 | **.450** [11.43] | **.572** [14.52] |
| 30 | 14 | **.700** [17.78] | **.820** [20.83] | 14 | **.700** [17.78] | **.822** [20.87] |
| 40 | 19 | **.950** [24.13] | **1.070** [27.19] | 19 | **.950** [24.13] | **1.072** [27.22] |
| 50 | 24 | **1.200** [30.48] | **1.320** [33.53] | 24 | **1.200** [30.48] | **1.322** [33.57] |
| 60 | 29 | **1.450** [36.83] | **1.570** [39.88] | 29 | **1.450** [36.83] | **1.572** [39.92] |
| 70 | 34 | **1.700** [43.18] | **1.820** [46.23] | 34 | **1.700** [43.18] | **1.822** [46.27] |
| 80 | 39 | **1.950** [49.53] | **2.070** [52.58] | 39 | **1.950** [49.53] | **2.072** [52.62] |
| 90 | 44 | **2.200** [55.88] | **2.320** [58.93] | 44 | **2.200** [55.88] | **2.322** [58.97] |
| 100 | 49 | **2.450** [62.23] | **2.570** [65.28] | 49 | **2.450** [62.23] | **2.572** [65.32] |

**Note:** Refer to TE Customer Drawings for additional PC board layout information and dimensional tolerances.



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## Board-to-Board Right-Angle Headers

### Product Facts

- Surface-mount products for right-angle board-to-board and cable-to-board applications
- Double-row, right-angle shrouded headers
- High density .050 x .050 [1.27 x 1.27] centerline grid
- Latching and non-latching versions available
- Non-protrusive metallic holddowns
- Metallic tabs, when soldered to PC board pad, provide added mechanical support
- Duplex plated post contacts; gold plated on mating area, tin plated on tails
- Compatible with standard surface-mount processing (VPR and IR)
- Standoffs on header housings allow for drainage of processing fluids
- All headers are polarized
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189

AMPMODU 50/50 Grid Right-Angle Headers will accommodate a variety of high density packaging applications; right-angle board-to-board applications when mated with vertical receptacles (page 20) and right-angle cable-to-board applications when mated with cable connectors (page 26). The small .050 x .050 [1.27 x 1.27] centerline contact spacing allows efficient use of the PC board area.

Mechanical support of the headers to the PC board is provided by non-protrusive metallic holddowns designed for .062 [1.57] or thicker PC boards. These holddowns are of the same design as those used in the vertical headers (page 21) and receptacles (page 20). There are also metallic tabs that are soldered to the surfaces of the PC board pads for added support.

AMPMODU 50/50 Grid Right-Angle Headers are available in double-row, in either latching or non-latching versions, and in sizes ranging from 10 through 100 positions (in 10 position increments). The latching version provides positive retention when mated with the latching cable connector (page 26). All headers feature polarization to help prevent misalignment during mating.





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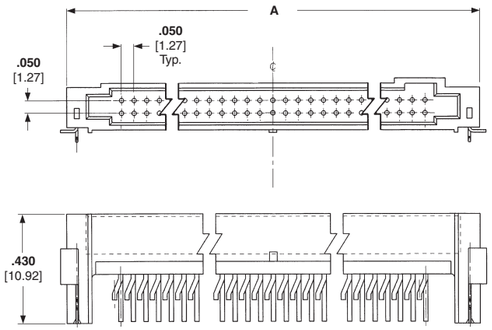
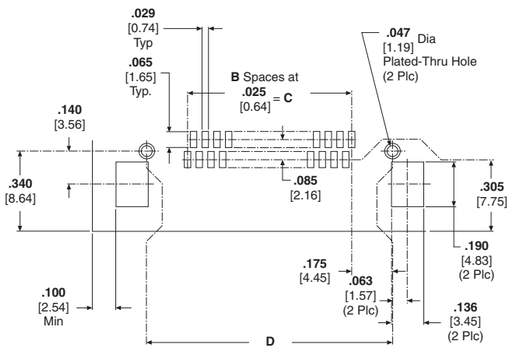
# Board-to-Board Right-Angle Headers, Double Row, .050 x .050 [1.27 x 1.27] Centerline



## Non-Latching Header

## Latching Header




**Recommended PC Board Layout**

**Note:** Refer to TE Customer Drawings for additional PC board layout information and dimensional tolerances.

### Material and Finish

**Housing** — Liquid crystal polymer, black, 94V-0 rated

**Contacts** — Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.000381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown** — Copper alloy; plated .0000150 [0.00381] tin over .000050 [0.00127] nickel

### Related Product Data

**Mating Receptacles** — pages 20 and 26

**Performance Specifications** — page 29

### Technical Documents — page 29

**Product Specification** 108-1443

**Application Specification** 114-7010

**Packaging** — Tube

| No. of Pos. | Dimensions | | | | Header Part Numbers | |
|---|---|---|---|---|---|---|
| | A | B | C | D | Latching | Non-Latching |
| 10 | **.630** [16.00] | 9 | **.225** [5.72] | **.550** [13.97] | 5-104895-1 | 5-104894-1 |
| 20 | **.880** [22.35] | 19 | **.475** [12.07] | **.800** [20.32] | 5-104895-2 | 5-104894-2 |
| 30 | **1.130** [28.70] | 29 | **.725** [18.42] | **1.050** [26.67] | 5-104895-3 | 5-104894-3 |
| 40 | **1.380** [35.05] | 39 | **.975** [24.77] | **1.300** [33.02] | 5-104895-4 | 5-104894-4 |
| 50 | **1.630** [41.40] | 49 | **1.225** [31.12] | **1.550** [39.37] | 5-104895-5 | 5-104894-5 |
| 60 | **1.880** [47.75] | 59 | **1.475** [37.47] | **1.800** [45.72] | 5-104895-6 | 5-104894-6 |
| 70 | **2.130** [54.10] | 69 | **1.725** [43.82] | **2.050** [52.07] | 5-104895-7 | 5-104894-7 |
| 80 | **2.380** [60.45] | 79 | **1.975** [50.17] | **2.300** [58.42] | 5-104895-8 | 5-104894-8 |
| 100 | **2.880** [73.15] | 99 | **2.475** [62.87] | **2.800** [71.12] | 6-104895-0 | 6-104894-0 |

**Note:** All part numbers are RoHS compliant.



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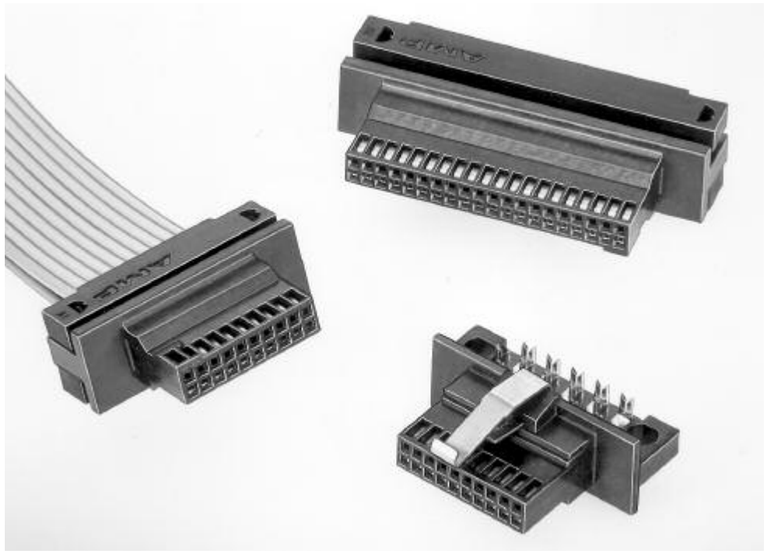
## Cable-to-Board Connectors

### Product Facts

- **Double-row receptacle connectors provide cable-to-board connection capabilities for vertical headers (non-latching) and right-angle headers (latching and non-latching)**
- **IDC (Insulation Displacement Crimp) mass termination of solid or stranded round conductor .050 [1.27] centerline ribbon cable with PVC or polyethylene insulation**
- **Accommodates ribbon cable conductor sizes of 28 AWG [0.08-0.09 mm²] and 30 AWG [0.05 mm²] and insulation diameters up to .036 [0.91] maximum**
- **Reliable single beam receptacle contact design**
- **Duplex plated receptacle contacts; gold plated in mating area, tin in termination area**
- **Terminating covers (sold separately) provide both strain relief and protection to the termination area**
- **Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions**
- **Connectors available with or without metal latch**
- **Connectors without latches are polarized to help prevent mismating**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association File No. LR7189**



These double-row cable connectors, with a .050 x .050 [1.27 x 1.27] centerline contact spacing, provide cable-to-board connection capabilities for the AMPMODU 50/50 Grid Connector System. Cable connectors without a latch will mate with the vertical headers (page 21), while cable connectors with or without a latch can be used to mate with the right-angle headers (page 24).

The cable connectors feature reliable single-beam IDC (insulation displacement crimp) contacts which are duplex plated with .000030 [0.00076] gold. These contacts can be mass terminated to either solid or stranded round conductor sizes of 28 AWG [0.08-0.09 mm²] and 30 AWG [0.05 mm²] and a maximum insulation diameter of .036 [0.91]. During termination, the terminating covers, which must be purchased separately, assist in guiding the wire into the IDC contacts, then provide strain relief when fully seated. Actual termination is accomplished with the TE manual tooling shown on page 28.

The latching version of the cable connector is equipped with a metal latch which provides positive retention of the receptacle cable connector when mated with a surface-mounted right-angle header. The cable connector without a metal latch features polarization to help prevent mismating. All connectors are available in sizes ranging from 10 through 100 positions (in 10 position increments).





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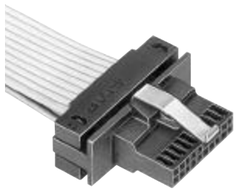
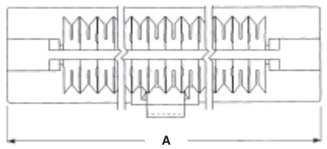
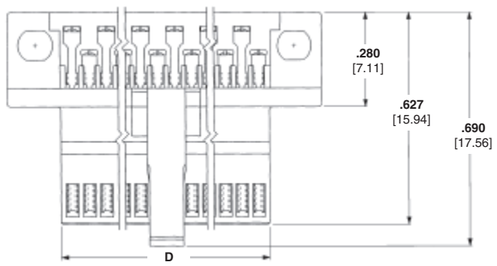
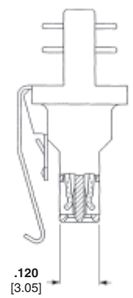
# Cable-to-Board Receptacle Connectors, Double Row, .050 x .050 [1.27 x 1.27] Centerline








## Material and Finish

**Housing** — Thermoplastic, black, 94V-0 rated

**Latch** — Stainless steel

**Contacts** — Phosphor bronze; duplex plated .000030 [0.00076] minimum gold in mating area, .000150 [0.00381] minimum tin on solder tail, with entire contact underplated .000050 [0.00127] minimum nickel

## Related Product Data

**Mating Headers** — pages 21 and 24 (latching)

**Terminating Covers (Must be Purchased Separately, 2 Required per Connector)** — page 27

**Termination Tooling** — page 28

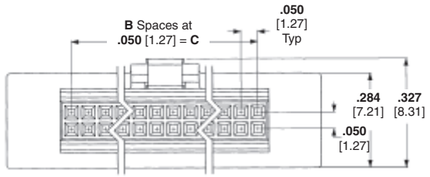
**Performance Specifications** — page 29

## Technical Documents — page 29

**Product Specification** 108-1443

**Application Specification** 408-9817, 408-9909

**Packaging** — Tube




| No. of Pos. | Dimensions | | | | Receptacle Part Numbers | |
|---|---|---|---|---|---|---|
| | A | B | C | D | With Latch | Without Latch |
| 10 | **.578** [14.68] | 4 | **.200** [5.08] | **.266** [6.76] | 5-104892-1 | 5-104893-1 |
| 20 | **.828** [21.03] | 9 | **.450** [11.43] | **.516** [13.11] | 5-104892-2 | 5-104893-2 |
| 30 | **1.078** [27.38] | 14 | **.700** [17.78] | **.766** [19.46] | 5-104892-3 | 5-104893-3 |
| 40 | **1.328** [33.73] | 19 | **.950** [24.13] | **1.016** [25.81] | 5-104892-4 | 5-104893-4 |
| 50 | **1.578** [40.08] | 24 | **1.200** [30.48] | **1.266** [32.16] | 5-104892-5 | 5-104893-5 |
| 60 | **1.828** [46.43] | 29 | **1.450** [36.83] | **1.516** [38.51] | 5-104892-6 | 5-104893-6 |
| 70 | **2.078** [52.78] | 34 | **1.700** [43.18] | **1.766** [44.86] | 5-104892-7 | 5-104893-7 |
| 80 | **2.328** [59.13] | 39 | **1.950** [49.53] | **2.016** [51.21] | 5-104892-8 | 5-104893-8 |
| 100 | **2.828** [71.83] | 49 | **2.450** [62.23] | **2.516** [63.91] | 6-104892-0 | 6-104893-0 |

**Note:** All part numbers are RoHS compliant.



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# Terminating Covers for Cable Connectors

## Material

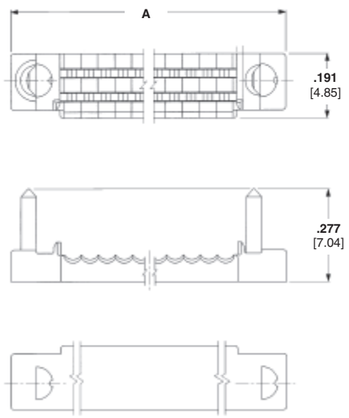
Glass-filled thermoplastic,
black, 94V-0 rated

## Related Product Data

**Connectors used with Covers** — page 26
**Termination Tooling** — page 28

## Technical Documents — page 29

**Product Specification** 108-1443
**Application Specification**
408-9817, 408-9909
**Packaging** — Plastic bag




| No. of Pos. | Dimension A | Terminator Cover Part Numbers |
|---|---|---|
| 10 | **.565** [14.35] | 104891-1 |
| 20 | **.815** [20.70] | 104891-2 |
| 30 | **1.065** [27.05] | 104891-3 |
| 40 | **1.315** [33.82] | 104891-4 |
| 50 | **1.565** [39.75] | 104891-5 |
| 60 | **1.815** [46.10] | 104891-6 |
| 70 | **2.065** [52.45] | 104891-7 |
| 80 | **2.315** [58.80] | 104891-8 |
| 100 | **2.815** [71.50] | 1-104891-0 |

**Note:** Terminating covers must be purchased separately, two are required for each cable connector.

**Note:** All part numbers are RoHS compliant.





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## Application Tooling for Cable Connectors

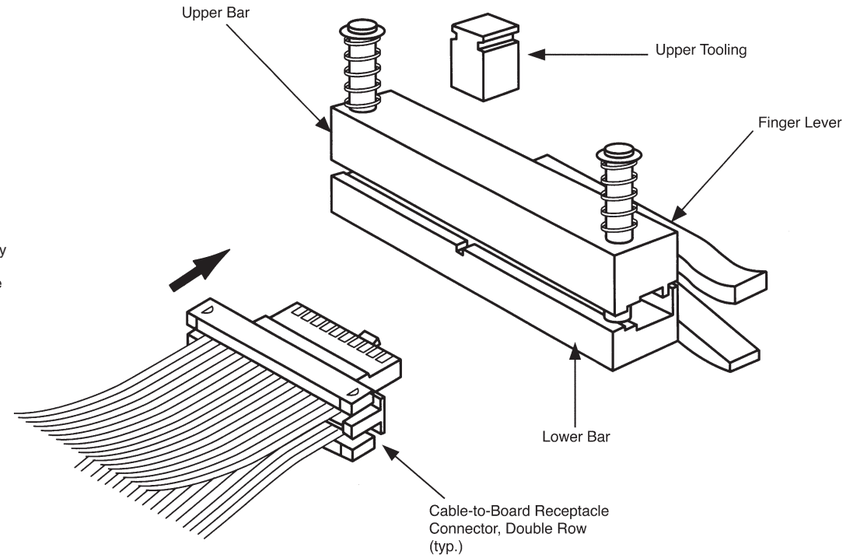
The Manual Miniature Application Frame Assembly 91295-1, equipped with a Cover Closing Kit 543518-1, is used for the IDC termination of ribbon cable to the cable connectors shown on page 26.

Prior to termination, the covers must be partially assembled onto a connector housing, the cable inserted between the covers and contacts and the covers preclosed by hand, clamping the cable in place.

In the Manual Miniature Application Frame Assembly, the covers are fully seated to complete the mass termination and provide strain relief for the completed connection.

For tooling information, call Technical Support Center **1-800-522-6752.**

**Manual Miniature Application Frame Assembly 91295-1 with Cover Closing Kit 543518-1**




**Note:** Refer to TE Instruction Sheets 408-9817 (Frame Assembly 91295-1) and 408-9909 (Cover Closing Kit 543518-1) for complete termination/tooling information.

**Note:** All part numbers are RoHS compliant.





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## Performance Specifications

### Board-to-Board Connectors, Vertical and Right-Angle

**Mating Force** — 6.4 oz (1.78 N] max. per contact
**Unmating Force** — 1.0 oz [0.28 N] min. per contact
**Durability** — Tested to 200 cycles min.
**Current Rating** — (30°C T rise): .5 ampere per contact
**Operating Temperature Range** — -65°C to +105°C
**Termination Resistance** — 16 milliohms max. (initial)
**Insulation Resistance** — 5000 megohms min. (initial)
**Dielectric Withstanding Voltage** — 300 VAC

### Cable-to-Board Connectors

**Mating Force** — 6.4 oz (1.78 N] max. per contact
**Unmating Force Without Latch** — .5 oz [0.14 N] min. per contact
**Durability** — Tested to 200 cycles min.
**Current Rating** — (10°C T rise); .5 ampere per contact
**Operating Temperature Range** — -65°C to +105°C
**Termination Resistance** — 25 milliohms max. (initial and final)
**Insulation Resistance** — 5000 megohms min. (initial)
**Dielectric Withstanding Voltage** — 300 VAC

## Technical Documents

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

| | |
|---|---|
| 108-1332 | AMPMODU 50/50 Grid Vertical Board-to-Board Connectors |
| 108-1443 | AMPMODU 50/50 Grid Right-Angle Board-to-Board and Cable Connectors |

**Application Specifications** describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

| | |
|---|---|
| 114-7010 | AMPMODU 50/50 Grid Connector System |

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

| | |
|---|---|
| 408-9817 | Manual Miniature Application Frame Assembly 91295-1 |
| 408-9909 | Cover Closing Kit 543518-1 |



**Note:** All part numbers are RoHS compliant.



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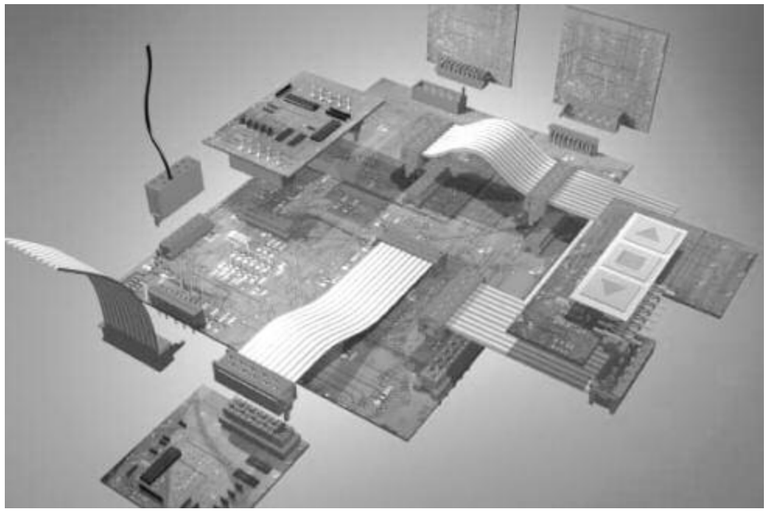
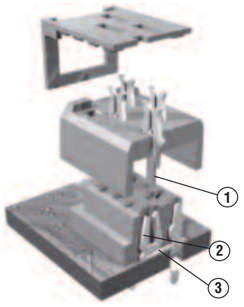
## Micro-MaTch Miniature Connector System

### Features/ Benefits

- **Available in 2 to 20 positions**
- **Applicable Wire: 20~28 AWG**
- **Wire connectors supplied on-tape and suitable for mass termination of 28 AWG [0.08 mm² to 0.09 mm²] ribbon cable**
- **Tin plated contact design**
- **Guaranteed minimum contact force of 2.0 N**
- **Fretting corrosion proof thanks to additional positioning spring member**
- **Full range of application tooling from hand tool to fully automated equipment**






**1. Contact Pin**
**2. Contact Spring**
**3. Positioning**

Miniaturization and the trend towards higher density of electronic functions on a substrate led to the introduction of smaller interconnection systems. The Micro-MaTch connector family, with it's contact spacing of 1.27 mm, fully complies with the electronic packaging requirements of today and the future. The system offers a range of board and wire connectors, enabling a variety of wire-to-board and board-to-board interconnections.
The Micro-MaTch contact concept shown on this page is essentially different from other systems available.

By its design the traditional failure mode in tin plated connections, fretting corrosion, is prevented. Due to an additional positioning spring in the female part, relative movements caused by vibrations/thermal expansion between male and female contacts are absorbed. By preventing movements on the contact spot, a gas tight connection can be guaranteed under all circumstances.

The contact spring is located in the board connector and not in the cable connector, which is usually the case. The counter part, incorporated in the cable connector, is a simple pin, either with an insulation displacement section, suitable for the mass-termination of cable or with a kinked solder leg to be soldered onto a PC Board. The separation of these two basic functions of the contact system — contact force generation and wire termination — enables the independent optimization of both functions and also leads to relatively simple contact shapes.

Because of their shapes contacts can be post-plated, leaving no bare edges in the contact and wire slot area. The contact spring system features an additional spring member — the positioning spring — which compensates positional tolerances. In this way the contact spring can be fully optimized for its basic function, so that the relatively high contact force, required for tin plated contact systems, can be guaranteed under all circumstances.

The Micro-MaTch contact spring system is absolutely fretting corrosion proof by its design.



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## Micro-MaTch Miniature Connector System Overview Technical Data

### Technical Data

| | |
|---|---|
| **Centerline:** | 1.27 mm (staggered) |
| **Number of Positions:** | 4, 6, 8, 10, 12, 14, 16, 18, 20, and some 24 positions |
| **Contact Material:** | Phosphor bronze |
| **Contact Finish:** | Tin over Nickel |
| **Housing Material:** | Thermoplastic polyester, red, glass-filled<br>For surface mount versions polyamide 4.6 |
| **Flammability rating:** | per UL 94 V-0 |
| **UL-recognized:** | File E28476 Vol. 23 Section 4 |
| **Contact Resistance:** | 10 MΩ max. |
| **Insulation Resistance:** | 1.000 MΩ min. |
| **Nominal Voltage:** | 230 V |
| **Current Rating:** | 1.5 A max. |
| **Temperature Range:** | -40° C to +105° C (operating) |
| **Mating Force:** | 5N max. per contact |
| **Unmating Force:** | 1N min. per contact |
| **Minimum Contact Force:** | 2N min. |
| **Product Specification:** | 108-19052 |
| **Application Specification:** | 114-19016, 114-19051 |
| **RoHS Compliance Code:** | Always RoHS compliant (directive 2002/95/EC) for all types |
| **Lead-free Process Capable:** | Wave solder capable to 265° C for through hole versions<br>reflow solder capable to 260° C for SMD versions |

### PC Board Connectors

| | |
|---|---|
| **PC Board Thickness:** | 1.6 mm nominal |
| **PC Board Hole Diameter:** | 0.8 mm for solder connectors |

### Ribbon Connectors

| | |
|---|---|
| **Cable Type:** | Ribbon cable, UL Style 2651 |
| **Conductor Spacing:** | 1.27 mm (.050") |
| **Conductor Diameter:** | Solid 0.30 mm diameter Stranded 0.08 $mm^2$<br>7 x 0.12 - 0.13 mm (other diameters and/or configurations on request) |
| **Insulation Type:** | semi-rigid PVC |
| **Insulation Diameter:** | 0.9 ± 0.1 mm |

### Discrete Wire (COSI) Connectors

| | |
|---|---|
| **Cable Type :** | AWG 28-24 and 24-20 |



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## Micro-MaTch Miniature Connector System Applications (3 Dimensions)

| Male Connectors / Female Connectors | Male-on-Wire Part Number 215083 | Male-on-Board Part Number 215464 | COSI Part Number 338095 Part Number 338096 Part Number 338097 | Paddle Board Part Number 215570 |
|---|---|---|---|---|
| Female Top Entry Part Number 215079 | 1 | 2 | 3 | |
| Female Side Entry Part Number 215460 | 4 | 5/6 | 7 | |
| SMD Top Entry Part Number 188275 | 8 | 9 | 10 | |

| Image | Description (see also page 33) |
|---|---|
| 1 | Wire-to-Board through hole |
| 2 | Board-to-Board through hole |
| 3 | Wire-to-Board (discrete wire), through hole |
| 4 | Wire-to-Board right angle, through hole |
| 5 | Board-to-Board right angle, through hole |
| 6 | Board-to-Board right angle, through hole |
| 7 | Wire-to-Board right angle (discrete wire), through hole |
| 8 | Wire-to-Board surface mount |
| 9 | Board-to-Board surface mount, through hole |
| 10 | Wire-to-Board (discrete wire), surface mount |



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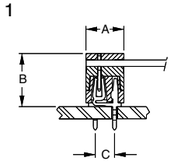
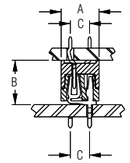
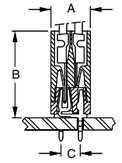
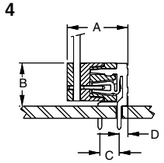
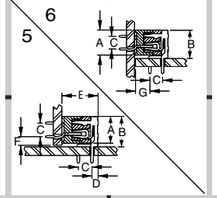
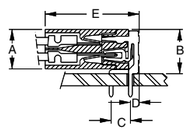
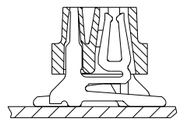
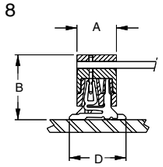
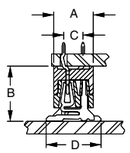
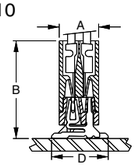
## Micro-MaTch Miniature Connector System Applications (2 Dimensions)

| Female Connectors \ Male Connectors | Male-on-Wire Part Number 215083 | Male-on-Board Part Number 215464 | COSI Part Number 338095 Part Number 338096 Part Number 338097 | Paddle Board Part Number 215570 |
|---|---|---|---|---|
| Female Top Entry Part Number 215079 | 1  | 2  | 3  | |
| Female Side Entry Part Number 215460 | 4  | 5 6  | 7  | |
| SMD Top Entry Part Number 188275  | 8  | 9  | 10  | |

| Image | Dimensions (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A (max) | B (max) | C | D (max) | E (max) | F(max) | G (max) |
| 1 | 5.2 | 7.5 | 2.54 | — | — | — | — |
| 2 | 5.2 | 6.2 | 2.54 | — | — | — | — |
| 3 | 5.2 | 9.7 | 2.54 | — | — | — | — |
| 4 | 8.4 | 5.9 | 2.54 | 1.5 | — | — | — |
| 5 | 5.2 | 5.9 | 2.54 | 1.5 | 7.0 | 1.6 | — |
| 6 | 5.2 | 5.9 | 2.54 | 1.5 | — | — | 2.8 |
| 7 | 5.2 | 5.9 | 2.54 | 1.5 | 10.6 | — | — |
| 8 | 5.2 | 8.5 | — | 7.1 | — | — | — |
| 9 | 5.2 | 7.1 | 2.54 | 7.1 | — | — | — |
| 10 | 5.2 | 10.7 | — | 7.1 | — | — | — |





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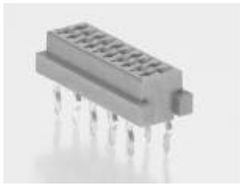
# Micro-MaTch Miniature Connector System — Female-on-Board Connector, Top Entry

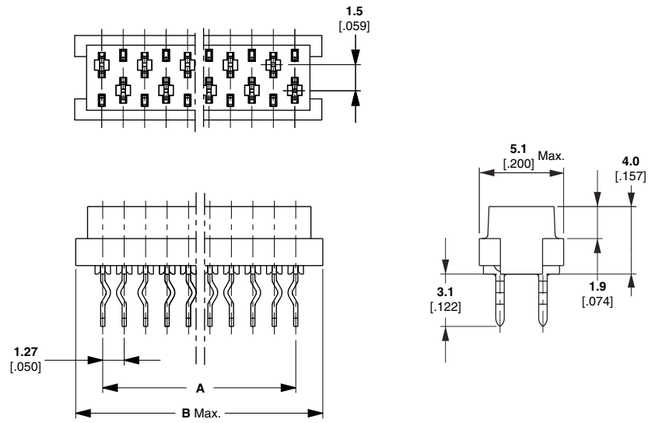


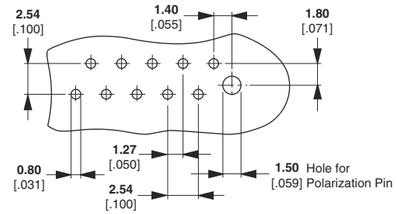


This connector version incorporates the patented Micro-MaTch contact spring system and is designed to be soldered onto PC Boards with a nominal thickness of 1.6 mm.

The solder legs are indented, providing firm retention of the connector before and during the soldering operations.

As polarization is accomplished directly between the Micro-MaTch male connectors and the PC Board, this top entry female connector does not have any polarizing features. Therefore, the orientation of the connector on the PC Board is irrelevant.




**Typical Hole Pattern**
**Not Solder Side Shown**

**Notes:**
1. Connectors are always sideways mounted onto an adhesive tape.
2. Standard packaging quantity is 2500 connectors on a reel with a diameter of 600 mm.
3. At additional charge a special packaging option is available: 250 connectors on a reel with a diameter of 250 mm, packed in a dedicated dispenser box.

**Mates with:**
**X-338095-X**
**X-215083-X**
**X-215464-X**
**X-338728-X**

| No. of Positions | Dimensions (mm) | | Part Numbers | |
|---|---|---|---|---|
| | A | B | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 3.81 | 7.1 | 215079-4 | 7-215079-4 |
| 6 | 6.35 | 9.7 | 215079-6 | 7-215079-6 |
| 8 | 8.89 | 12.2 | 215079-8 | 7-215079-8 |
| 10 | 11.43 | 14.7 | 1-215079-0 | 8-215079-0 |
| 12 | 13.97 | 17.3 | 1-215079-2 | 8-215079-2 |
| 14 | 16.51 | 19.8 | 1-215079-4 | 8-215079-4 |
| 16 | 19.05 | 22.4 | 1-215079-6 | 8-215079-6 |
| 18 | 21.59 | 24.9 | 1-215079-8 | 8-215079-8 |
| 20 | 24.13 | 27.4 | 2-215079-0 | 9-215079-0 |



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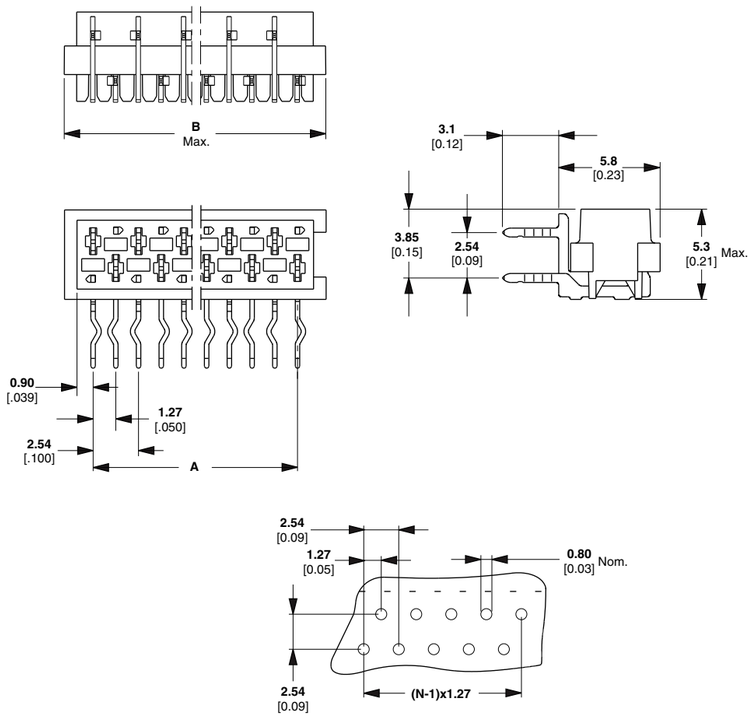
**METRIC**
Dimensions are millimeters over inches

# Micro-MaTch Miniature Connector System — Female-on-Board Connector, Side Entry

This connector version is identical to the top entry version with two exceptions:

- The solder legs are parallel to the mating face of the connector instead of perpendicular.
- It's housing is polarized, so that polarization is accomplished directly between the two mating connectors. Proper orientation of the connectors on the PC Board is relevant here.




**Recommended PCB Hole Layout**
**Not Solder Side Shown**

**Notes:**

1. Connectors are always sideways mounted onto an adhesive tape.
2. Standard packaging quantity is 2500 connectors on a reel with a diameter of 600 mm.
3. At additional charge a special packaging option is available: 250 connectors on a reel with a diameter of 250 mm, packed in a dedicated dispenser box.

**Mates with:**
**X-338095-X**
**X-215083-X**
**X-215464-X**
**X-338728-X**

| No. of Positions | Dimensions (mm) | | Part Numbers | |
|---|---|---|---|---|
| | A | B | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 3.81 | 7.1 | (1500) 215460-4 | 7-215460-4 |
| 6 | 6.35 | 9.7 | 215460-6 | 7-215460-6 |
| 8 | 8.89 | 12.2 | 215460-8 | 7-215460-8 |
| 10 | 11.43 | 14.7 | 1-215460-0 | 8-215460-0 |
| 12 | 13.97 | 17.3 | 1-215460-2 | 8-215460-2 |
| 14 | 16.51 | 19.8 | 1-215460-4 | 8-215460-4 |
| 16 | 19.05 | 22.4 | 1-215460-6 | 8-215460-6 |
| 18 | 21.59 | 24.9 | 1-215460-8 | 8-215460-8 |
| 20 | 24.13 | 27.4 | 2-215460-0 | 9-215460-0 |





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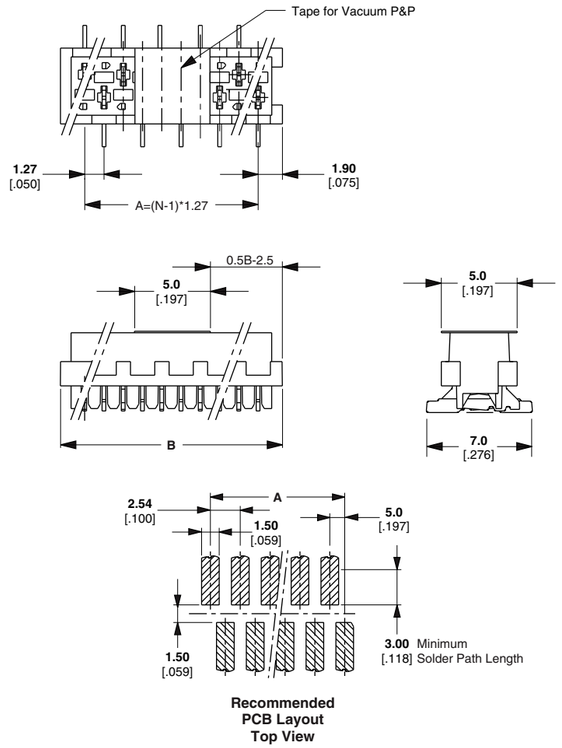
**METRIC**
Dimensions are millimeters over inches

# Micro-MaTch Miniature Connector System — Female-on-Board Connector Surface Mount Device (SMD)

This SMD connector version is designed for standard reflow and infrared solder processes (“FULL SMD”). Polarization is accomplished by the housing, therefor no polarization holes in the PC Board are required.

The contact is designed with an additional spring to compensate for differences in thermal expansion between housing and PCB. Due to this feature, tension on solder joints is prevented.




**Recommended PCB Layout Top View**

**Notes:**

1. To enable automatic Pick & Placement, connectors are always packed in embossed tape according EIA481 specification.
2. Standard packaging quantity is 900 pcs on a reel with a diameter of 330 mm.
3. Connectors are supplied with or without a feature for vacuum Pick & Placement.
4. For this connector no additional solder hold down is required.

**Mates with:**
**X-338095-X**
**X-215083-X**
**X-215464-X**
**X-338728-X**

| No. of Positions | Dimensions (mm) | | Part Numbers | |
|---|---|---|---|---|
| | A | B | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 3.81 | 7.1 | 188275-4 | 7-188275-4 |
| 6 | 6.35 | 9.7 | 188275-6 | 7-188275-6 |
| 8 | 8.89 | 12.2 | 188275-8 | 7-188275-8 |
| 10 | 11.43 | 14.7 | 1-188275-0 | 8-188275-0 |
| 12 | 13.97 | 17.3 | 1-188275-2 | 8-188275-2 |
| 14 | 16.51 | 19.8 | 1-188275-4 | 8-188275-4 |
| 16 | 19.05 | 22.4 | 1-188275-6 | 8-188275-6 |
| 18 | 21.59 | 24.9 | 1-188275-8 | 8-188275-8 |
| 20 | 24.13 | 27.4 | 2-188275-0 | 9-188275-0 |





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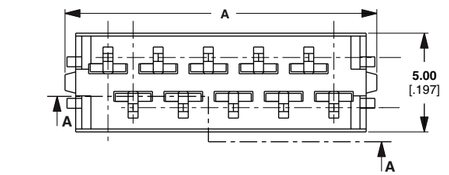
**METRIC**
Dimensions are millimeters over inches

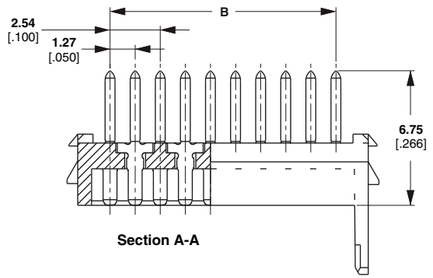
# Micro-MaTch Miniature Connector System — Male-on-Board Connector

This male connector version is designed to be soldered onto PC Boards with a nominal thickness of 1.6 mm.

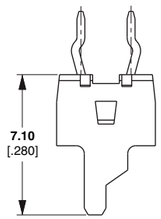
The solder legs are indented for firm retention of the connector in the PC Board.

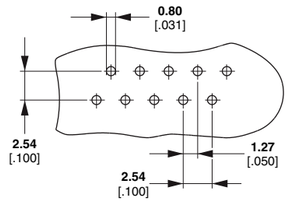
The connector housing features a polarizing pin on one end for proper orientation of this connector version.




Section A-A




Typical Hole Pattern
Not Solder Side Shown

**Notes:**
1. To enable automatic Pick & Placement, connectors are always packed in embossed tape according EIA481 specification.
2. Standard packaging quantity is 900 pcs on a reel with a diameter of 330 mm.
3. Connectors are supplied with or without a feature for vacuum Pick & Placement.
4. For this connector no additional solder hold down is required.

**Mates with:**
**X-338095-X**
**X-215083-X**
**X-215464-X**
**X-338728-X**

| No. of Positions | Dimensions (mm) | | Part Numbers | |
|---|---|---|---|---|
| | A | B | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 3.81 | 8.2 | 215464-4 | 7-215464-4 |
| 6 | 6.35 | 10.7 | 215464-6 | 7-215464-6 |
| 8 | 8.89 | 13.3 | 215464-8 | 7-215464-8 |
| 10 | 11.43 | 15.8 | 1-215464-0 | 8-215464-0 |
| 12 | 13.97 | 18.3 | 1-215464-2 | 8-215464-2 |
| 14 | 16.51 | 20.8 | 1-215464-4 | 8-215464-4 |
| 16 | 19.05 | 23.4 | 1-215464-6 | 8-215464-6 |
| 18 | 21.59 | 25.9 | 1-215464-8 | 8-215464-8 |
| 20 | 24.13 | 28.4 | 2-215464-0 | 9-215464-0 |





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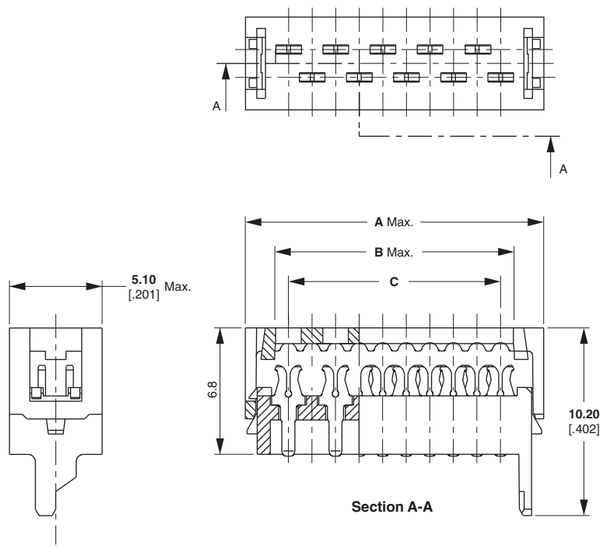
# Micro-MaTch Miniature Connector System — Male-on-Wire Connector

For the wire connection, a well-known type blade with a single slot is used. The insides of the slots are tin plated for stable and reliable connections.

The connector is supplied with a pre-assembled cover, providing excellent positioning of the ribbon cable before and during the insulation displacement process.

After termination the cover is held in place by each individual contact in addition to two plastic latches at both ends of the connector.




**Remark:**
The Micro-MaTch Male-on-Wire connector is specifically designed to be disengaged from its counterpart by pulling the cable in the appropriate direction.

**Notes:**
1. Connectors are always sideways mounted onto an adhesive tape.
2. Standard packaging quantity is 2500 connectors on a reel with a diameter of 600 mm.
3. At additional charge a special packaging option is available: 250 diameter of 250 mm, packed in a dedicated dispenser box.

**Mates with:**
**X-215079-X**
**X-215460-X**
**X-188275-X**
**X-215079-X**
**X-338068-X**
**X-338069-X**
**X-338070-X**
**X-100411-X**
**X-188431-X**

| No. of Positions | Dimensions (mm) | | | Part Numbers | |
|---|---|---|---|---|---|
| | A | B | C | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 8.6 | 5.4 | 3.81 | 215083-4 | 7-215083-4 |
| 6 | 11.1 | 8.0 | 6.35 | 215083-6 | 7-215083-6 |
| 8 | 3.6 | 10.5 | 8.89 | 215083-8 | 7-215083-8 |
| 10 | 16.2 | 13.0 | 11.43 | 1-215083-0 | 8-215083-0 |
| 12 | 18.7 | 15.6 | 13.97 | 1-215083-2 | 8-215083-2 |
| 14 | 21.3 | 18.1 | 16.51 | 1-215083-4 | 8-215083-4 |
| 16 | 23.8 | 20.7 | 19.05 | 1-215083-6 | 8-215083-6 |
| 18 | 26.3 | 23.2 | 21.59 | 1-215083-8 | 8-215083-8 |
| 20 | 28.9 | 25.7 | 24.13 | 2-215083-0 | 9-215083-0 |
| 24 | 34.0 | 30.8 | 29.21 | 2-215083-4 | 9-215083-4 |





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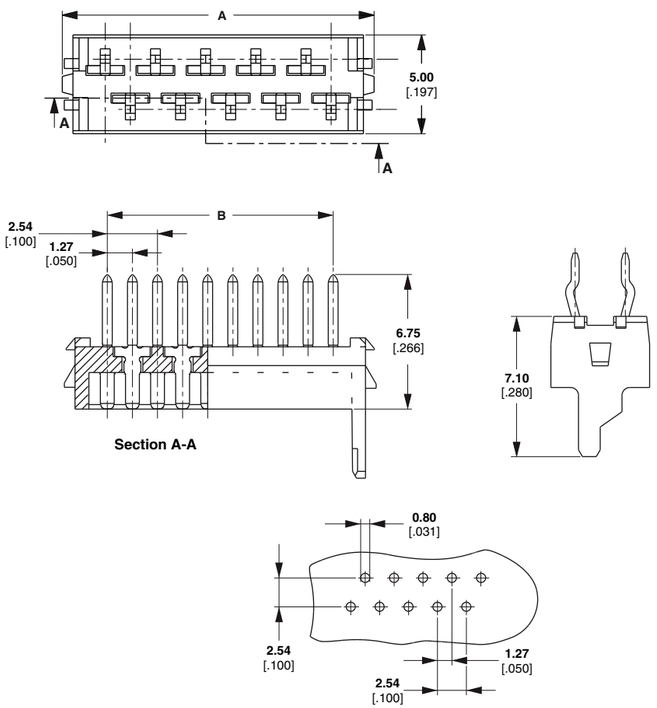
# Micro-MaTch Miniature Connector System — Paddle Board Connector

Direct soldering of a ribbon cable onto a PC Board is a very difficult job with the smaller sizes of ribbon cable. If such a permanent cable connection is required, the application can be facilitated by using this connector type.

The Paddle Board connector is applied to the ribbon cable with the same application tooling, available for the termination of the Male-on-Wire connector.

The solder legs are indented and provide mechanical retention of the connector/cable assembly in the PC Board before and during soldering.

This Paddle Board connector version is designed to be soldered onto PC Boards with a nominal thickness of 1.6 mm.




**Typical Hole Pattern**
**Not Solder Side Shown**

**Notes:**

1. To enable automatic Pick & Placement, connectors are always packed in embossed tape according EIA481 specification.
2. Standard packaging quantity is 900 pcs on a reel with a diameter of 330 mm.
3. Connectors are supplied with or without a feature for vacuum Pick & Placement.
4. For this connector no additional solder hold down is required.

**No mate — direct soldering of ribbon cable onto the PC Board**

| No. of Positions | Dimensions (mm) | | | Part Numbers | |
|---|---|---|---|---|---|
| | A | B | C | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 8.6 | 5.4 | 3.81 | 215570-4 | 7-215570-4 |
| 6 | 11.1 | 8.0 | 6.35 | 215570-6 | 7-215570-6 |
| 8 | 3.6 | 10.5 | 8.89 | 215570-8 | 7-215570-8 |
| 10 | 16.2 | 13.0 | 11.43 | 1-215570-0 | 8-215570-0 |
| 12 | 18.7 | 15.6 | 13.97 | 1-215570-2 | 8-215570-2 |
| 14 | 21.3 | 18.1 | 16.51 | 1-215570-4 | 8-215570-4 |
| 16 | 23.8 | 20.7 | 19.05 | 1-215570-6 | 8-215570-6 |
| 18 | 26.3 | 23.2 | 21.59 | 1-215570-8 | 8-215570-8 |
| 20 | 28.9 | 25.7 | 24.13 | 2-215570-0 | 9-215570-0 |
| 24 | 34.0 | 30.8 | 29.21 | 2-215570-4 | — |





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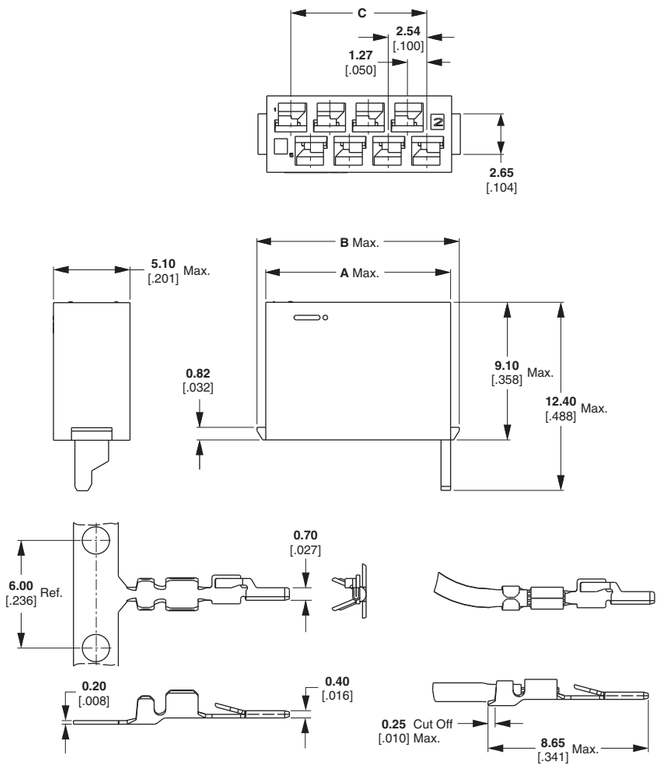
# Micro-MaTch Miniature Connector System — Crimp On Snap In (COSI) Connector

## Basic Part Number 338095 and Contacts Part Numbers 338096 and 338097

This crimp version for discrete Wire-to-Board applications is fully compatible with all female connectors of the Micro-MaTch family.

Insulation and wire crimp barrel are copies of the well proven AMPLIMITE contacts. After mating with a Micro-MaTch female connector the contacts are fully protected by isolating plastics. Contacts are made of a pre-tinned phosphor bronze.

Contacts are supplied in a range for 24-20 AWG and 28-24 AWG. For repair operations an extraction tool is available; Part Number 734873-1.




**Notes:**

1. Contacts can be crimped using a G-terminator or mini stripper crimper based applicator.
2. For the contacts on strip the standard packaging quantity is 15.000 pcs on a reel with a diameter of 600 mm.
3. For repair/service contacts are packaged 750 pcs. Per reel, to be used with handtools.
4. The housings are bulk packed in a box with a packaging quantity varying from 200 to 900 pcs per box.

**Mates with:**
**X-338095-X**

| Wire Size Range | | Insulation Diameter (mm) | Part Number | |
|---|---|---|---|---|
| ($mm^2$) | (AWG) | | Large reel, 15.000 | Small reel, 750 |
| 0.08-0.20 | 28-24 | 0.76-1.00 | 338096-1 | 1-338096-1 |
| 0.20-0.50 | 24-20 | 1.27-1.52 | 338097-1 | 1-338097-1 |

**Mates with:**
**X-215079-X**
**X-215460-X**
**X-188275-X**
**X-215079-X**
**X-338068-X**
**X-338069-X**
**X-338670-X**
**X-100411-X**
**X-188431-X**

| No. of Positions | Dimensions (mm) | | | Part Numbers | |
|---|---|---|---|---|---|
| | A | B | C | 2500 Connectors/Reel | 250 Connectors/Box |
| 4 | 7.2 | 8.4 | 3.81 | 338095-4 | 900 |
| 6 | 9.8 | 10.9 | 6.35 | 338095-6 | 700 |
| 8 | 12.3 | 13.5 | 8.89 | 338095-8 | 500 |
| 10 | 14.9 | 16.0 | 11.43 | 1-338095-0 | 450 |
| 12 | 17.4 | 18.5 | 13.97 | 1-338095-2 | 400 |
| 14 | 19.9 | 21.1 | 16.51 | 1-338095-4 | 350 |
| 16 | 22.5 | 23.6 | 19.05 | 1-338095-6 | 300 |
| 18 | 25.0 | 26.2 | 21.59 | 1-338095-8 | 250 |
| 20 | 27.6 | 28.7 | 24.13 | 2-338095-0 | 200 |





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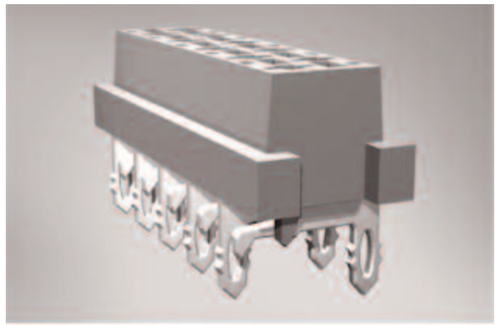
## Micro-MaTch Miniature Connector System — Specials

### SMC Connector Part Number 100411

This connector type enables a solderless application to the printed circuit board. Contact is made on the surface of the PCB, enabling the use of paperphenol and epoxy boards with both drilled and punched holes. This connector is suitable for both Wire-to-Board as Board-to-Board connections. Because this connector is mounted on the solder side, the components of both PCB's in a parallel Board-to-Board application, will be in the same direction. By this, the stacking of two or more PCB's is possible. Application tooling available on request.

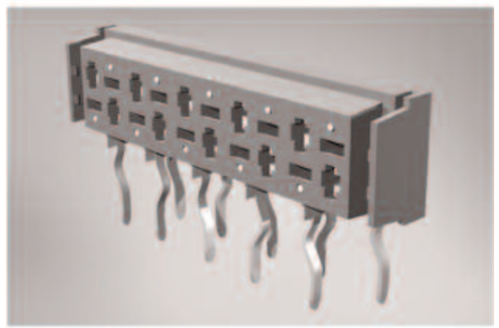
**Mates with:** **X-215464-X** **X-215083-X**
**X-338095-X**



### Locking Latch Part Numbers 338068/338069/338070

For Wire-to-Board applications this feature provides an audible click during mating. This feature is available for the standard Micro-MaTch female connectors. Cross reference is made by base part number x-338068-x instead of x-215079-x, x-338069-x instead of x-188275-x and x-338070-x instead of x-215460-x (standard large reel packaging only).

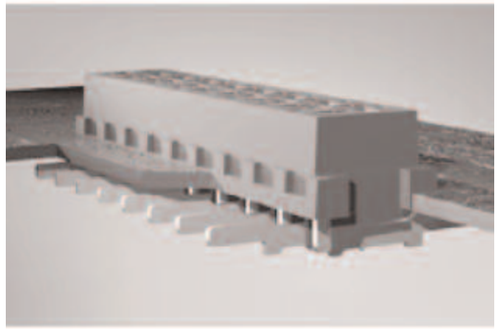
**Mates with:** **X-338095-X** **X-338728-X**
**X-215464-X** **X-215083-X**



### In-board SMD Part Number 188431

This connector is only tooled in 20 position (9-188431-0) and packaged in embossed tape according to EIA481 standards. The connectors are equipped with a feature for vacuum Pick & Placement. It enables the mounting of a PCB with the solder side direct behind e.g. a display. It is also possible to obtain a parallel BTB application with an extreme low PCB distance of 4.2 mm.

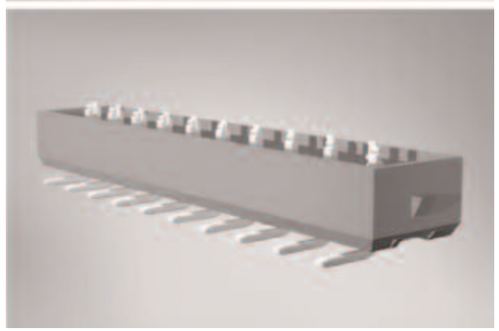
**Mates with:** **X-338095-X** **X-338728-X**
**X-215464-X** **X-215083-X**



### Male SMD Part Number 338728

This connector enables the possibility to have a full SMD to SMD Board-to-Board application. It mates with all Micro-MaTch female connectors, and will be packaged according EIA 481 standard. Consult TE for more information.

**Mates with:** **X-215079-X** **X-338070-X**
**X-215460-X** **X-188431-X**
**X-188275-X** **X-338068-X**
**X-338069-X**







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## Micro-MaTch Miniature Connector System Application Tooling

**Pistol Handgrip Tooling.** This is a handtool for terminating Micro-MaTch Male-on-Wire and Paddle Board connectors. Meant for small quantities or repair services. Pistol handgrip and adapter must be ordered separately.

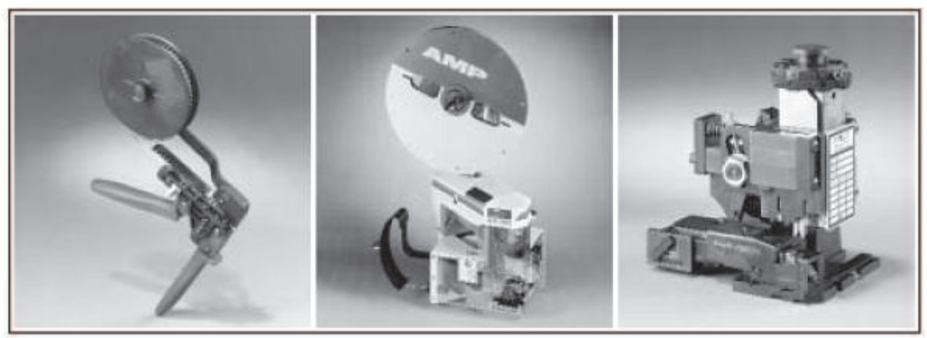
**Standard Pistol Handgrip Part Number 734155-1.** This basic tool can be used for Micro-MaTch and other applications.

**Pistol Handgrip Adapter Set Part Number 734024-1.** This adapter can be used for Micro-MaTch terminations, together with the pistol handgrip.

**Bench Press Tooling Part Number 733280-3.** This complete tool includes a Micro-MaTch dedicated tool set mounted on the bench press 654173-2.

**Bench Press Part Number 91085-2.** This basic press is a hand operated version. This press can also be obtained in a pneumatically operated version; Part Number 91112-3.

**Bench Press Tool Set Part Number 733278-2.** This tool set is designed especially for Micro-MaTch. It fits both pneumatically and hand operated press.




**COSI Hand Tooling Part Number 734870-1** for 24-20 AWG, and **Part Number 734870-2** for 28-24 AWG. These dedicated tools can be obtained for services/repair applications.

**G-terminator Part Number 677-499-1.**

**Applicators for G-terminator. Part Number 677894-1** for AWG 28-24 (Part Number 338096-1) and **Part Number 677895-1** for AWG 24-20 (Part Number 338097-1).





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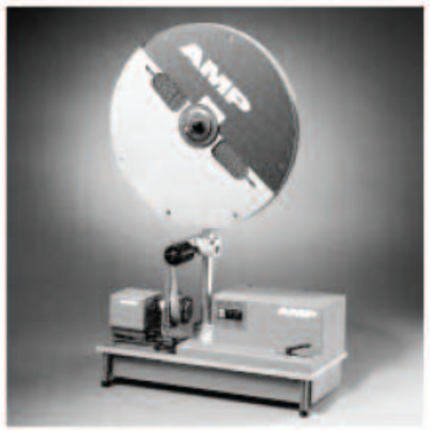
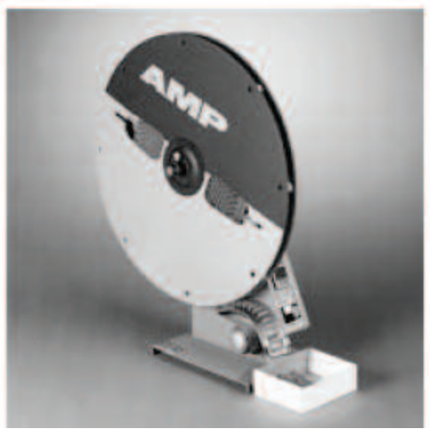
## Micro-MaTch Miniature Connector System Application Tooling (Continued)

**Semiautomatic Tooling Part Number 677410-1.**
This tool can be used for Micro-MaTch lead end and for daisy chain assembly applications.

**Semiautomatic Tooling Part Number 677412-5** for Micro-MaTch only and **Part Number 1-677412-0** for both Micro-MaTch and other ribbon cables. This machine can be used for lead end assemblies.




**Connector Dispenser Part Number 677463-1.**
The dispenser accepts the Micro-MaTch standard reels (2500 pcs/reel). It automatically removes the pre-set connector quantity from the reel and drops it in a separate box. Quantity can easily be programmed by the user.





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## Micro-MaTch Miniature Connector System Lead Assembly

It is possible to deliver custom made Micro-MaTch lead assemblies, both cable end assemblies and daisy-chain assemblies, in all positions between 4 and 20 in all required cable lengths. All leads are 100% electrically tested on shortcut and connection before shipment. A flexible 7 stranded cable is used for easy assembly. Special cable on request. For order information contact TE.

## Micro-MaTch Miniature Connector System Sample Box

**Sample Box**
**Part Number 1377074-1**

This box includes samples of all connector types within the Micro-MaTch family, examples of leads, printed circuit boards and a CD-ROM. The CD-ROM includes an electronic version of this catalogue, an animation of the contact principle and CAD files of all connector types.

This sample box is an aid in visualizing the variety of applications where Micro-MaTch can be implemented.

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# Universal I/O Pin Connectors without Mounting Ears

### Material and Finish

**Housing and Cover** — Flame retardant UL 94V-0 rated thermoplastic, black

**Contacts** — Phosphor bronze, .000100 [0.00254] min. tin on termination end, .000030 [0.00762] min. gold on mating end, both over .000050 [0.00127] min. nickel

### Technical Documents

**Product Specification**
108-1336

**Application Specification**
114-7011

**Instruction Sheets**
408-9720
408-6939

- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476**
- **Certified by the Canadian Standards Association, File No. LR 7189**

### Accessories

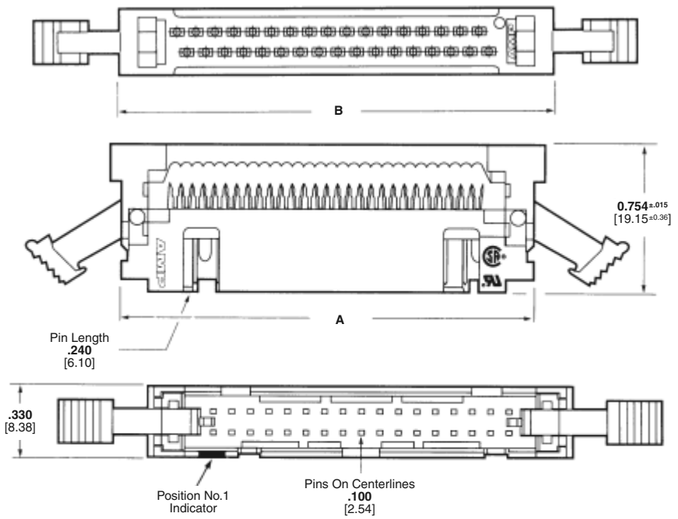
**Strain Relief** — page 67
**Ejector Latch** — page 63
**Military Polarizer** — page 63
Terminates 26 and 28 AWG solid or stranded ribbon cable. See Application Specification for cable requirements.

### Related Product Data

**Mateable Receptacles Novo** — pages 48-51
**Female Socket Connectors** — pages 52-55

Without Latches

With Latches




| No. of Positions | Dimensions | | Part Numbers of Connectors with: | | |
|---|---|---|---|---|---|
| | A | B | No Latches | Short Latches[1] | Long Latches[2] |
| 10[3,4] | **.992** 25.20 | **1.072** 27.23 | 1-111446-4 | 1-111492-5 | 1-111504-4 |
| 14[3,4] | **1.192** 30.28 | **1.272** 32.31 | 1-111446-5 | 1-111492-6 | 1-111504-5 |
| 16 | **1.292** 32.82 | **1.372** 34.85 | 1-111446-6 | 1-111492-7 | 1-111504-6 |
| 20 | **1.492** 37.90 | **1.572** 39.93 | 1-111446-8 | — | 1-111504-7 |
| 24 | **1.692** 42.98 | **1.772** 45.01 | 1-111446-9 | 1-111492-9 | 1-111504-8 |
| 26 | **1.792** 45.52 | **1.872** 47.55 | 2-111446-0 | 2-111492-0 | — |
| 30 | **1.992** 50.60 | **2.072** 52.63 | 2-111446-1 | 2-111492-1 | 2-111504-0 |
| 34 | **2.192** 55.68 | **2.272** 57.71 | 2-111446-2 | 2-111492-2 | — |
| 40 | **2.492** 63.30 | **2.572** 65.33 | 2-111446-3 | 2-111492-3 | — |
| 44 | **2.692** 68.38 | **2.772** 70.41 | 2-111446-4 | 2-111492-4 | 2-111504-3 |
| 50 | **2.992** 76.00 | **3.072** 78.03 | 1-111446-7 | 2-111492-5 | — |
| 60 | **3.492** 88.70 | **3.572** 90.73 | 2-111446-5 | 2-111492-6 | — |
| 64 | **3.692** 93.78 | **3.772** 95.81 | 2-111446-6 | — | 2-111504-6 |

[1] Use short latch versions when mating connectors without strain reliefs are used.
[2] Use long latch versions when mating connectors with strain reliefs are used.
[3] No slot on end with position No. 1 indicator for 10 and 14-position connectors.
[4] No slot for snap-in polarizer on end with position No. 1 indicator for 10 and 14-position connectors.

**Note:** All part numbers are RoHS compliant.





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# Universal I/O Pin Connectors with Slotted Mounting Ears

### Material and Finish

**Housing and Cover** — Flame retardant UL 94V-0 rated thermoplastic, black

**Contacts** — Phosphor bronze, .000100 [0.00254] min. tin on termination end, .000030 [0.00762] min. gold on mating end, both over .000050 [0.00127] min. nickel

### Technical Documents

**Product Specification**
108-1336

**Application Specification**
114-7011

**Instruction Sheets**
408-9720
408-6939

- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476**
- **Certified by the Canadian Standards Association, File No. LR 7189**

### Accessories

**Ejector Latch** — page 63

**Military Polarizer** — page 63

Terminates 26 and 28 AWG solid or stranded ribbon cable. See Application Specification for cable requirements.

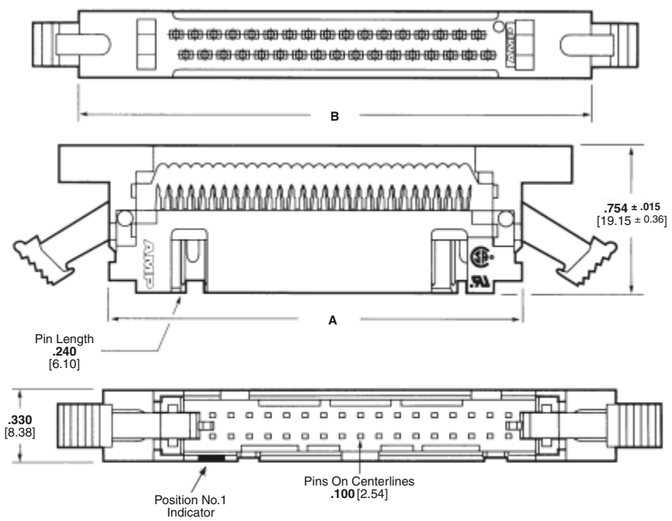
### Related Product Data

**Mateable Receptacles Novo** — pages 48-51

**Female Socket Connectors** — pages 52-55

Without Latches

With Latches




| No. of Positions | Dimensions | | Part Numbers of Connectors with: | | |
|---|---|---|---|---|---|
| | A | B | No Latches | Short Latches[1] | Long Latches[2] |
| 10[3,4] | .992<br>25.20 | 1.476<br>37.49 | 5111448-1 | 1-111494-5 | 1-111506-6 |
| 14[3,4] | 1.192<br>30.28 | 1.676<br>42.57 | — | — | — |
| 16 | 1.292<br>32.82 | 1.776<br>45.11 | 5111448-3 | — | 1-111506-8 |
| 20 | 1.492<br>37.90 | 1.976<br>50.19 | 5111448-4 | 1-111494-8 | — |
| 24 | 1.692<br>42.98 | 2.176<br>55.27 | 5111448-5 | 1-111494-9 | 2-111506-0 |
| 26 | 1.792<br>45.52 | 2.276<br>57.81 | — | — | 2-111506-1 |
| 30 | 1.992<br>50.60 | 2.476<br>62.89 | 5111448-7 | 2-111494-0 | — |
| 34 | 2.192<br>55.68 | 2.676<br>67.97 | 5111448-8 | 2-111494-1 | — |
| 40 | 2.492<br>63.30 | 2.976<br>75.59 | 5111448-9 | 2-111494-2 | 2-111506-4 |
| 44 | 2.692<br>68.38 | 3.176<br>80.67 | — | 2-111494-3 | 2-111506-5 |
| 50 | 2.992<br>76.00 | 3.476<br>88.29 | — | 2-111494-4 | 1-111506-4 |
| 60 | 3.492<br>88.70 | 3.976<br>100.99 | — | 2-111494-5 | — |
| 64 | 3.692<br>93.78 | 4.176<br>106.07 | 1-5111448-3 | 2-111494-6 | — |

[1] Use short latch versions when mating connectors without strain reliefs are used.
[2] Use long latch versions when mating connectors with strain reliefs are used.
[3] No slot on end with position No. 1 indicator for 10 and 14-position connectors.
[4] No slot for snap-in polarizer on end with position No. 1 indicator for 10 and 14-position connectors.

**Note:** All part numbers are RoHS compliant.





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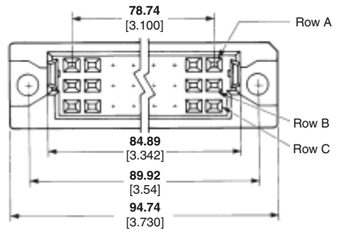
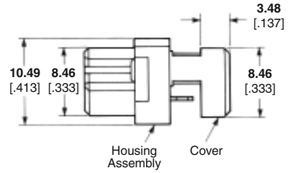
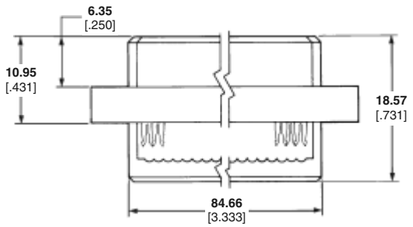
**METRIC**
Dimensions are millimeters over inches

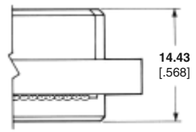
# EUROLATCH Receptacles, 64-Position (Three-Row Housings, Two Rows Loaded)

## Housing Assembly with Cover (Preassembled)




**Terminated**

## Material and Finish

**Housing and Cover** — UL 94V-0 rated thermoplastic, black

**Contacts** — Phosphor bronze, duplex plated 0.00076 [.000030] gold on post/pin mating end, 0.00254-0.00508 [.000100-.000200] tin on termination end, with entire contact underplated 0.00127 [.000050] nickel.

## Related Product Data

**Mateable Pin Connectors — Eurocard Type C and Type R**— Selection Guide 82650, See Catalog 82721

**Ribbon Cable** — Part Number 2-57040-2 or Part Number 2-57034-5 (64 conductor)

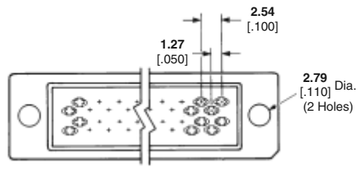
**Application Tooling** — pages 70-74

## Technical Documents

**Product Specifications**
108-46003 EUROLATCH Receptacles
DIN 41612
IEC 603-2

**Instruction Sheet**
408-9156

- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476**
- **Certified by the Canadian Standards Association, File No. LR 7189**




| Contact Rows Loaded | Receptacle Kit No. (Preassembled) |
|---|---|
| A and C | 746603-4 |

**Note:** All part numbers are RoHS compliant.





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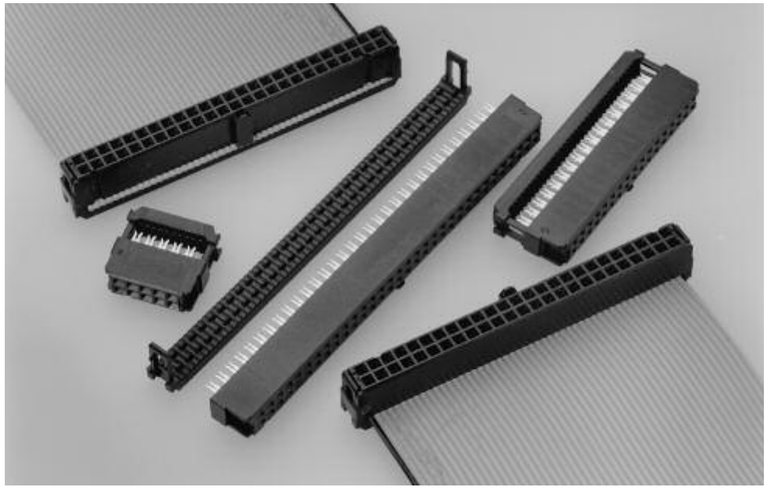
## Novo Connectors

### Product Facts

- **.100 x .100 [2.54 x 2.54] mating grid for .050 [1.27] pitch ribbon cable**
- **Tuning fork contact offers a military approved design, at an economical cost**
- **Polarization options include military, center and military, and dual bar**
- **Choice of duplex gold plating on contact mating area**
- **Insulation displacement contacts for fast, economical mass terminations**
- **Contact design provides uniform latching of contacts and housing with connector cover**
- **Housing, cover and strain relief made of UL 94V-0 rated thermoplastic material**
- **Selected 10 thru 64-position configurations available**
- **Accepts wire size range 28-26 AWG [0.08-0.15 mm²], solid or stranded**
- **Snap-on strain relief and choice of pull loops available**
- **One-step termination with Novo tooling**
- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476**
- **Certified by the Canadian Standards Association, File No. LR 7189**



Novo receptacles offer a dual contact interface with all normal force created by metal-to-metal contact. This provides a higher degree of contact reliability.

Novo receptacles feature two rows of contacts on .100 x .100 [2.54 x 2.54] centerlines in select sizes from 10 to 64 positions. Contacts mate with .025² [0.64²] or round posts with .245 [6.22] max. and .175 [4.45] min. lengths. The Novo tuning fork contact offers a military-approved design, and at a lower cost.

Contacts are made of phosphor bronze and are available in a choice of duplex .000015 [0.00038] or .000030 [0.00076] gold in the mating area, and .000100 [0.00254] tin in the termination area, with the entire contact underplated with .000050 [0.00127] nickel.

Housings are made of UL 94V-0 thermoplastic material and feature military, military and center, and dual bar polarization.

Optional accessories include a snap-on strain relief and pull loops.

Novo receptacles can be terminated to .050 [1.27] pitch ribbon cable by a wide variety of one-step application tooling.

Assemblies are packaged in tubes for ease of handling, protection and termination.



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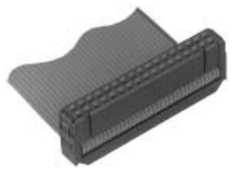
# Novo Receptacles, Military Polarized* .100 x .100 [2.54 x 2.54] Centers

## Housing Assembly with Cover (Preassembled) and Strain Relief (Optional)



**Contacts mate with .025 [0.64] sq. or round pins with .245 [6.22] max. and .175 [4.45] min. lengths.**

## Material and Finish

**Housing, Cover & Strain Relief** — UL 94V-0 rated thermoplastic, black

**Contacts** — Phosphor bronze, duplex plated (See chart below)

## Related Product Data

**Mateable Pin Headers — Universal** — pages 84-95
**Low Profile** — pages 76-83
**Mateable Universal I/O Pin Connectors** — pages 45 and 46

## Accessories

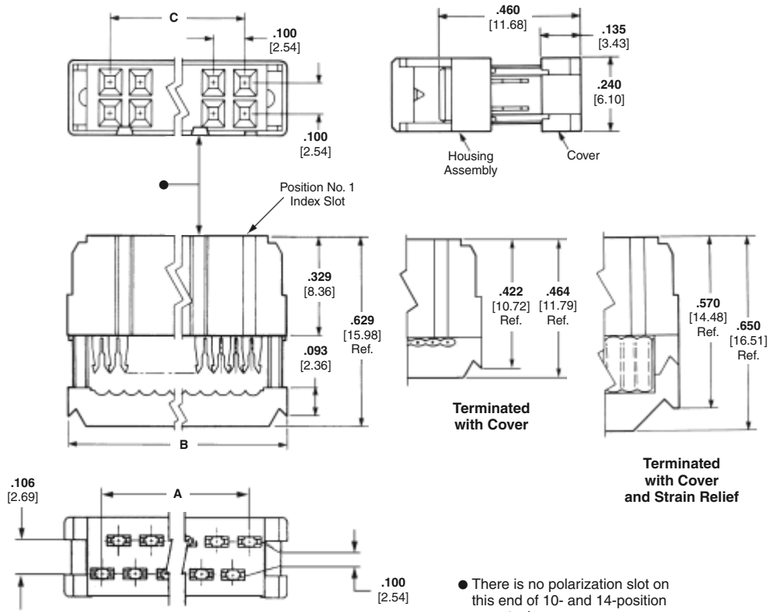
**Pull Tabs** — page 63
**Keying Plug** — page 64
**Pull Loops** — page 66
**Strain Relief Dimensional Information** — page 68
**Application Tooling** — pages 70-74

## Technical Documents

**Product Specifications**
108-40000 Novo and Novo Stackable Receptacles; 108-40004 Ribbon Cable, PVC Insulated

**Application Specification**
114-40005 Ribbon Cable Connectors

**Instruction Sheets**
Instructional material covering operation, setup, maintenance, repair, etc. is included with each machine, tool or die set. If this material is required prior to receiving your tooling, call TE at the numbers listed below for the applicable documents.




● There is no polarization slot on this end of 10- and 14-position receptacles.

| No. of Pos. | Dimensions A | Dimensions B | Dimensions C | Contact Plating | Strain Relief Part No. | Receptacle (Preassembled) |
|---|---|---|---|---|---|---|
| 10 | **.450** 11.43 | **.680** 17.27 | **.400** 10.16 | Duplex[1] | 499252-5 | 1658620-1 |
| | | | | Duplex[2] | 499252-5 | 1658623-1 |
| 14 | **.650** 16.51 | **.880** 22.35 | **.600** 15.24 | Duplex[1] | 499252-9 | 1658620-2 |
| | | | | Duplex[2] | 499252-9 | 1658623-2 |
| 16 | **.750** 19.05 | **.980** 24.89 | **.700** 17.78 | Duplex[1] | 499252-8 | 1658620-3 |
| | | | | Duplex[2] | 499252-8 | 1658623-3 |
| 20 | **.950** 24.13 | **1.180** 29.97 | **.900** 22.86 | Duplex[1] | 499252-2 | 1658620-4 |
| | | | | Duplex[2] | 499252-2 | 1658623-4 |
| 24 | **1.150** 29.21 | **1.380** 35.05 | **1.100** 27.94 | Duplex[1] | 1-499252-0 | 1658620-5 |
| | | | | Duplex[2] | 1-499252-0 | 1658623-5 |
| 26 | **1.250** 31.75 | **1.480** 37.59 | **1.200** 30.48 | Duplex[1] | 499252-3 | 1658620-6 |
| | | | | Duplex[2] | 499252-3 | 1658623-6 |
| 30 | **1.450** 36.83 | **1.680** 42.67 | **1.400** 35.56 | Duplex[1] | 1-499252-2 | 1658620-7 |
| | | | | Duplex[2] | 1-499252-2 | 1658623-7 |
| 34 | **1.650** 41.91 | **1.880** 47.75 | **1.600** 40.64 | Duplex[1] | 499252-6 | 1658620-8 |
| | | | | Duplex[2] | 499252-6 | 1658623-8 |
| 40 | **1.950** 49.53 | **2.180** 55.37 | **1.900** 48.26 | Duplex[1] | 499252-1 | 1658620-9 |
| | | | | Duplex[2] | 499252-1 | 1658623-9 |
| 50 | **2.450** 62.23 | **2.680** 68.07 | **2.400** 60.96 | Duplex[1] | 499252-4 | 1-1658620-0 |
| | | | | Duplex[2] | 499252-4 | 1-1658623-0 |
| 60 | **2.950** 74.93 | **3.180** 80.77 | **2.900** 73.66 | Duplex[1] | 499252-7 | — |
| | | | | Duplex[2] | 499252-7 | — |
| 64 | **3.150** 80.01 | **3.380** 85.85 | **3.100** 78.74 | Duplex[1] | 1-499252-3 | 1-1658620-2 |
| | | | | Duplex[2] | 1-499252-3 | — |

[1].000015 [0.00038] gold or gold flash over palladium-nickel .000015 [0.00038] min. total on post/pin mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, with entire contact underplated .000050 [0.00127] nickel.
[2].000030 [0.00076] gold or gold flash over palladium-nickel .000030 [0.00076] min. total on post/pin mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, with entire contact underplated .000050 [0.00127] nickel.

**Note:** These receptacles include a housing assembly and cover (preassembled). Strain reliefs may be purchased separately using the component part nos. listed above.
All part numbers are RoHS compliant.

*These receptacles can be used in applications requiring non-polarization, as well as military polarization.



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# Novo Receptacles, Center and Military Polarized*
# .100 x .100 [2.54 x 2.54] Centers

## Housing Assembly with Cover (Preassembled) and Strain Relief (Optional)

**Contacts mate with .025 [0.64] sq. or round pins with .245 [6.22] max. and .175 [4.45] min. lengths.**

## Material and Finish

**Housing, Cover & Strain Relief** — UL 94V-0 rated thermoplastic, black

**Contacts** — Phosphor bronze, duplex plated (See chart below)

## Related Product Data

**Mateable Pin Headers** —
**Universal** — pages 84-95
**Low Profile** — pages 76-83

**Mateable Universal I/O Pin Connectors** — pages 45 and 46

## Accessories

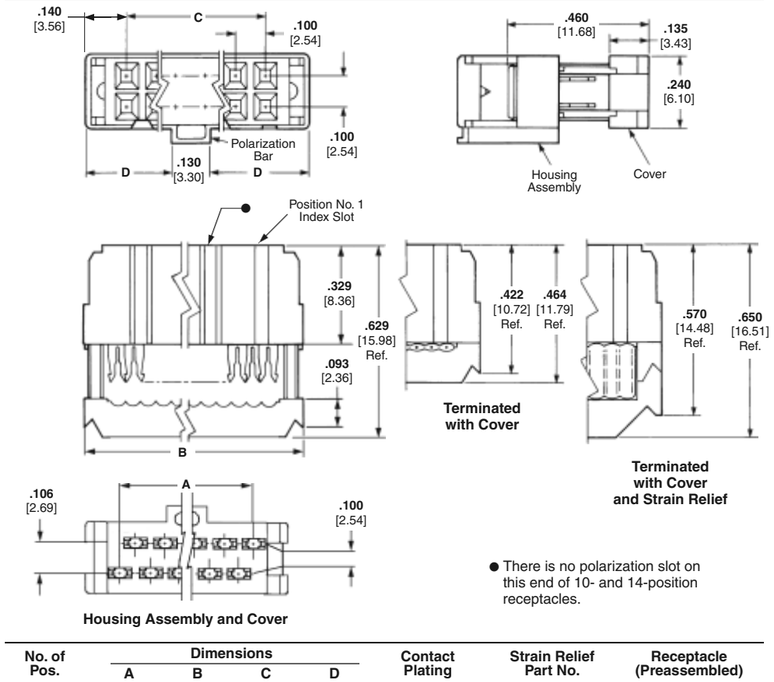
**Pull Tabs** — page 63
**Keying Plug** — page 64
**Pull Loops** — page 66
**Strain Relief** — page 68
**Application Tooling** — pages 70-74

## Technical Documents

**Product Specifications**
108-40000 Novo and Novo Stackable Receptacles; 108-40004 Ribbon Cable, PVC Insulated

**Application Specification**
114-40005 Novo Receptacles

**Instruction Sheets**
Instructional material covering operation, setup, maintenance, repair, etc. is included with each machine, tool or die set. If this material is required prior to receiving your tooling, call TE at the numbers listed below for the applicable documents.




Housing Assembly and Cover

● There is no polarization slot on this end of 10- and 14-position receptacles.

| No. of Pos. | Dimensions A | B | C | D | Contact Plating | Strain Relief Part No. | Receptacle (Preassembled) |
|---|---|---|---|---|---|---|---|
| 10 | **.450** 11.43 | **.680** 17.27 | **.400** 10.16 | **.275** 6.99 | Duplex[1] | 499252-5 | 1658621-1 |
| | | | | | Duplex[2] | 499252-5 | 1658622-1 |
| 14 | **.650** 16.51 | **.880** 22.35 | **.600** 15.24 | **.375** 9.53 | Duplex[1] | 499252-9 | 1658621-2 |
| | | | | | Duplex[2] | 499252-9 | 1658622-2 |
| 16 | **.750** 19.05 | **.980** 24.89 | **.700** 17.78 | **.425** 10.80 | Duplex[1] | 499252-8 | 1658621-3 |
| | | | | | Duplex[2] | 499252-8 | 1658622-3 |
| 20 | **.950** 24.13 | **1.180** 29.97 | **.900** 22.86 | **.525** 13.34 | Duplex[1] | 499252-2 | 1658621-4 |
| | | | | | Duplex[2] | 499252-2 | 1658622-4 |
| 24 | **1.150** 29.21 | **1.380** 35.05 | **1.100** 27.94 | **.625** 15.88 | Duplex[1] | 1-499252-0 | 1658621-5 |
| | | | | | Duplex[2] | 1-499252-0 | 1658622-5 |
| 26 | **1.250** 31.75 | **1.480** 37.59 | **1.200** 30.48 | **.675** 17.15 | Duplex[1] | 499252-3 | 1658621-6 |
| | | | | | Duplex[2] | 499252-3 | 1658622-6 |
| 30 | **1.450** 36.83 | **1.680** 42.67 | **1.400** 35.56 | **.775** 19.69 | Duplex[1] | 1-499252-2 | 1658621-7 |
| | | | | | Duplex[2] | 1-499252-2 | 1658622-7 |
| 34 | **1.650** 41.91 | **1.880** 47.75 | **1.600** 40.64 | **.875** 22.23 | Duplex[1] | 499252-6 | 1658621-8 |
| | | | | | Duplex[2] | 499252-6 | 1658622-8 |
| 40 | **1.950** 49.53 | **2.180** 55.37 | **1.900** 48.26 | **1.025** 26.04 | Duplex[1] | 499252-1 | 1658621-9 |
| | | | | | Duplex[2] | 499252-1 | 1658622-9 |
| 50 | **2.450** 62.23 | **2.680** 68.07 | **2.400** 60.96 | **1.275** 32.39 | Duplex[1] | 499252-4 | 1-1658621-0 |
| | | | | | Duplex[2] | 499252-4 | 1-1658622-0 |
| 60 | **2.950** 74.93 | **3.180** 80.77 | **2.900** 73.66 | **1.525** 38.74 | Duplex[1] | 499252-7 | 1-1658621-1 |
| | | | | | Duplex[2] | 499252-7 | 1-1658622-1 |
| 64 | **3.150** 80.01 | **3.380** 85.85 | **3.100** 78.74 | **1.625** 41.28 | Duplex[1] | 1-499252-3 | 1-1658621-2 |
| | | | | | Duplex[2] | 1-499252-3 | 1-1658622-2 |

[1].000015 [0.00038] gold or gold flash over palladium-nickel .000015 [0.00038] min. total on post/pin mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, with entire contact underplated .000050 [0.00127] nickel.
[2].000030 [0.00076] gold or gold flash over palladium-nickel .000030 [0.00076] min. total on post/pin mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, with entire contact underplated .000050 [0.00127] nickel.

**Note:** These receptacles include a housing assembly and cover (preassembled). Strain reliefs may be purchased separately using the component part nos. listed above.
All part numbers are RoHS compliant.

*These receptacles can be used in applications requiring center polarization.



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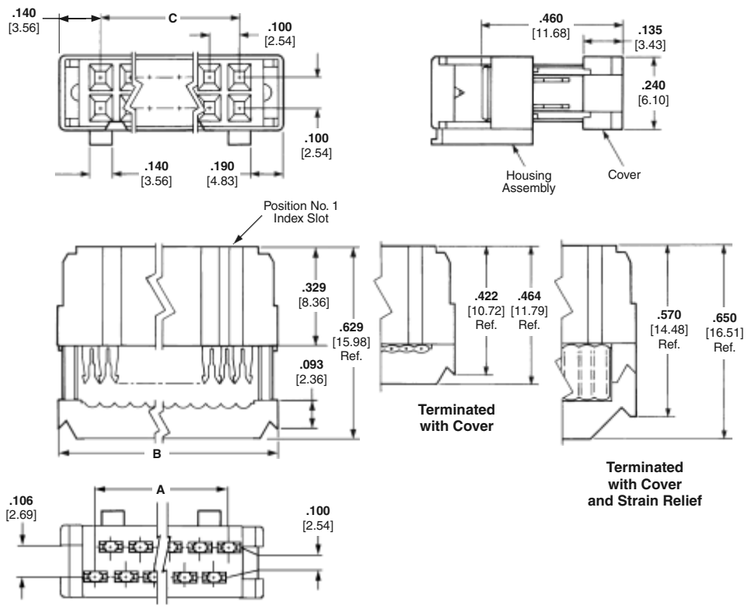
# Novo Receptacles, Dual Polarized, .100 x .100 [2.54 x 2.54] Centers

## Housing Assembly with Recessed Cover (Preassembled) and Strain Relief (Optional)




Housing Assembly and Cover







Terminated with Cover




Terminated with Cover and Strain Relief

### Material and Finish

**Housing, Cover & Strain Relief** — UL 94V-0 rated thermoplastic, black

**Contacts** — Phosphor bronze, duplex plated .000030 [0.00076] gold or gold flash over palladium-nickel .000030 [0.00076] min. total on post/pin mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, with entire contact underplated .000050 [0.00127] nickel.

### Related Product Data

**Mateable Pin Headers** — **Universal** — pages 84-95
**Low Profile** — pages 76-83
**Mateable Universal I/O Pin Connectors** — pages 45 and 46

### Accessories

**Pull Tabs** — page 63
**Keying Plug** — page 64
**Pull Loops** — page 66
**Strain Relief** — page 68
**Application Tooling** — pages 70-74

### Technical Documents

**Product Specifications**
108-40000 Novo and Novo Stackable Receptacles; 108-40004 Ribbon Cable, PVC Insulated

**Application Specification**
114-40005 Novo Receptacles

**Instruction Sheets**
Instructional material covering operation, setup, maintenance, repair, etc. is included with each machine, tool or die set. If this material is required prior to receiving your tooling, call TE at the numbers listed below for the applicable documents.

| No. of Pos. | Dimensions A | Dimensions B | Dimensions C | Strain Relief Part No. | Receptacle (Preassembled) |
|---|---|---|---|---|---|
| 10 | **.450** 11.43 | **.680** 17.27 | **.400** 10.16 | 499252-5 | 1658624-1 |
| 14 | **.650** 16.51 | **.880** 22.35 | **.600** 15.24 | 499252-9 | 1658624-2 |
| 16 | **.750** 19.05 | **.980** 24.89 | **.700** 17.78 | 499252-8 | 1658624-3 |
| 20 | **.950** 24.13 | **1.180** 29.97 | **.900** 22.86 | 499252-2 | 1658624-4 |
| 24 | **1.150** 29.21 | **1.380** 35.05 | **1.100** 27.94 | 1-499252-0 | 1658624-5 |
| 26 | **1.250** 31.75 | **1.480** 37.59 | **1.200** 30.48 | 499252-3 | 1658624-6 |
| 30 | **1.450** 36.83 | **1.680** 42.67 | **1.400** 35.56 | 1-499252-2 | 1658624-7 |
| 34 | **1.650** 41.91 | **1.880** 47.75 | **1.600** 40.64 | 499252-6 | 1658624-8 |
| 40 | **1.950** 49.53 | **2.180** 55.37 | **1.900** 48.26 | 499252-1 | 1658624-9 |
| 50 | **2.450** 62.23 | **2.680** 68.07 | **2.400** 60.96 | 499252-4 | 1-1658624-0 |
| 64 | **3.150** 80.01 | **3.380** 85.85 | **3.100** 78.74 | 1-499252-3 | 1-1658624-2 |

**Note:** All part numbers are RoHS compliant.



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# Female Socket Connectors, .100 x .100 [2.54 x 2.54] Centers, 622 and 636 Series



## Technical Data

**Color** — 622 Series, Blue; 636 Series, Black

**Contact Material** — 622 Series, Beryllium copper; 636 Series, Phosphor bronze

**Contact Plating** — 622 Series, .000030 [0.00076] min. gold on mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, both over .000050 [0.00127] nickel underplate; 636 Series, .000015 [0.00038] min. gold on mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, both over .000050 [0.00127] nickel underplate.

**Housing Material** — Glass-filled thermoplastic, UL 94V-0 rated

**Cable** — 26-28 AWG solid or stranded, PVC insulated ribbon cable

**Mateable Connectors** — **Universal and Low Profile Pin Headers** — pages 76-95

**Universal I/O Ribbon Cable Connectors** — pages 45 and 46

**Polarization** — Military and center polarized only

- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E60980**
- **Certified by the Canadian Standards Association, File No. LR 92984**

## Application Tooling

**Die** — 1437000-9 [T&B# 779-2151 ref.]

**Handtool** — 1437000-6 [T&B# 779-2100 ref.]

**Bench Press (Manual)** — 1437001-4 [T&B# 779-3200 ref.]

**Bench Press Platen** — 5-1437000-6 [T&B# 779-3130 ref.]

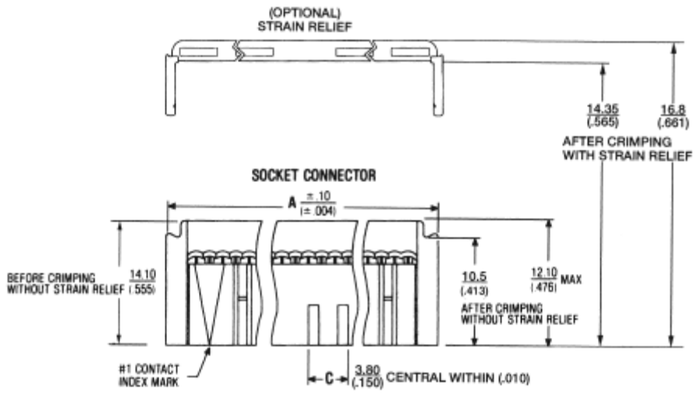
**Bench Press Base Plate** — 6-1437000-4 [T&B# 779-3151 ref.]

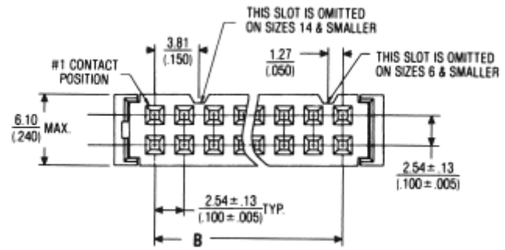
## Accessories

**Strain Relief** — page 69

**Pull Loops** — page 66

**Keying Plug** — page 64



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## Female Socket Connectors, .100 x .100 [2.54 x 2.54] Centers, 622 and 636 Series (Continued)



### 622 Series

| No.of Pos. | Dimensions | | | Part Numbers | | | |
|---|---|---|---|---|---|---|---|
| | | | | Connector Only | | Connector w/ Strain Relief | |
| | A | B | C | TE Connectivity | T&B (Reference Only) | TE Connectivity | T&B (Reference Only) |
| 6 | **.477** 12.12 | **.200** 5.08 | **.075** 1.91 | 1658527-2 | 622-0630LF | 1-1658527-9 | 622-0641LF |
| 10 | **.677** 17.20 | **.400** 10.16 | **.126** 3.20 | 1658527-3 | 622-1030LF | 1658527-4 | 622-1041LF |
| 12 | **.777** 19.74 | **.500** 12.70 | **.150** 3.81 | 2-1658527-0 | 622-1230LF | — | — |
| 14 | **.877** 22.28 | **.600** 15.24 | **.150** 3.81 | 1658527-5 | 622-1430LF | 2-1658527-2 | 622-1441LF |
| 16 | **.977** 24.82 | **.700** 17.78 | **.150** 3.81 | 1658527-6 | 622-1630LF | 1658527-7 | 622-1641LF |
| 20 | **1.177** 29.90 | **.900** 22.86 | **.150** 3.81 | 2-1658527-3 | 622-2030LF | 1658527-8 | 622-2041LF |
| 24 | **1.377** 34.98 | **1.100** 27.94 | **.150** 3.81 | — | — | 2-1658527-5 | 622-2441LF |
| 26 | **1.477** 37.52 | **1.200** 30.48 | **.150** 3.81 | 1658527-9 | 622-2630LF | 1-1658527-0 | 622-2641LF |
| 30 | **1.677** 42.60 | **1.400** 35.56 | **.150** 3.81 | — | — | 2-1658527-7 | 622-3041LF |
| 34 | **1.877** 47.68 | **1.600** 40.64 | **.150** 3.81 | — | — | 2-1658527-8 | 622-3441LF |
| 40 | **2.177** 55.30 | **1.900** 48.26 | **.150** 3.81 | 1-1658527-2 | 622-4030LF | 1-1658527-3 | 622-4041LF |
| 50 | **2.677** 68.00 | **2.400** 60.96 | **.150** 3.81 | 1-1658527-4 | 622-5030LF | 1-1658527-5 | 622-5041LF |
| 64 | **3.377** 85.78 | **3.100** 78.74 | **.150** 3.81 | — | — | 3-1658527-2 | 622-6441LF |

**Note:** Order by TE Part Number only. Original non-RoHS compliant T&B number may be determined by dropping the "LF" suffix.

### 636 Series

| No.of Pos. | Dimensions | | | Part Numbers | | | |
|---|---|---|---|---|---|---|---|
| | | | | Connector Only | | Connector w/ Strain Relief | |
| | A | B | C | TE Connectivity | T&B (Reference Only) | TE Connectivity | T&B (Reference Only) |
| 6 | **.477** 12.12 | **.200** 5.08 | **.075** 1.91 | 1-1658528-0 | 636-0630LF | — | — |
| 10 | **.677** 17.20 | **.400** 10.16 | **.126** 3.20 | 1-1658528-1 | 636-1030LF | 1658528-2 | 636-1041LF |
| 14 | **.877** 22.28 | **.600** 15.24 | **.150** 3.81 | 1-1658528-2 | 636-1430LF | — | — |
| 16 | **.977** 24.82 | **.700** 17.78 | **.150** 3.81 | 1-1658528-4 | 636-1630LF | 1658528-5 | 636-1641LF |
| 20 | **1.177** 29.90 | **.900** 22.86 | **.150** 3.81 | 1-1658528-5 | 636-2030LF | 1658528-4 | 636-2041LF |
| 24 | **1.377** 34.98 | **1.100** 27.94 | **.150** 3.81 | 1-1658528-6 | 636-2430LF | — | — |
| 26 | **1.477** 37.52 | **1.200** 30.48 | **.150** 3.81 | 1-1658528-7 | 636-2630LF | — | — |
| 34 | **1.877** 47.68 | **1.600** 40.64 | **.150** 3.81 | — | — | 1658528-6 | 636-3441LF |
| 40 | **2.177** 55.30 | **1.900** 48.26 | **.150** 3.81 | — | — | 1-1658528-9 | 636-4041LF |
| 50 | **2.677** 68.00 | **2.400** 60.96 | **.150** 3.81 | 2-1658528-0 | 636-5030LF | 1658528-8 | 636-5041LF |
| 64 | **3.377** 85.78 | **3.100** 78.74 | **.150** 3.81 | — | — | 2-1658528-3 | 636-6441LF |

**Note:** All part numbers are RoHS compliant.

**Note:** Order by TE Part Number only. Original non-RoHS compliant T&B number may be determined by dropping the "LF" suffix.



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**METRIC**
Dimensions are millimeters over inches

# Female Socket Connectors, .100 x .100 [2.54 x 2.54] Centers, 609 Series



## Technical Data

**Color** — Blue

**Contact Material** — Beryllium copper

**Contact Plating** — .000030 [0.00076] min. gold on mating end, .000100-.000200 [0.00254-0.00508] tin on termination end, both over .000050 [0.00127] nickel underplate.

**Housing Material** — Glass-filled thermoplastic, UL 94V-0 rated

**Cable** — 28-30 AWG solid or stranded, PVC insulated ribbon cable

**Mateable Connectors** — **Universal and Low Profile Pin Headers** — pages 76-95
**Universal I/O Ribbon Cable Connectors** — pages 45 and 46

**Polarization** — Military only or military and center polarized

- **Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E60980**
- **Certified by the Canadian Standards Association, File No. LR 92984**

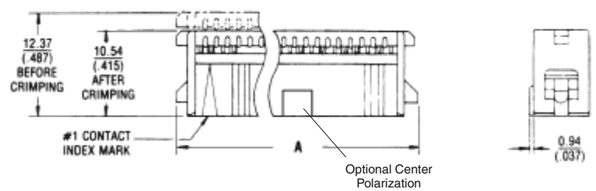
## Application Tooling

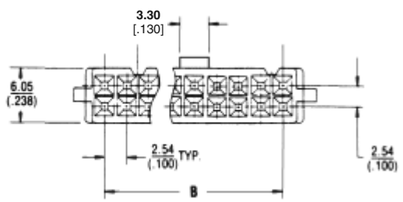
**Die** — 1437000-9 [T&B# 779-2151 ref.]
**Handtool** — 1437000-6 [T&B# 779-2100 ref.]
**Bench Press (Manual)** — 1437001-4 [T&B# 779-3200 ref.]
**Bench Press Platen** — 5-1437000-6 [T&B# 779-3130 ref.]
**Bench Press Base Plate** — 6-1437000-4 [T&B# 779-3151 ref.]

## Accessories

**Strain Relief** — page 67
**Pull Loops** — page 66
**Keying Plug** — page 64

**Dual Slot IDC Design**




**Standard Socket Connector Without Strain Relief**

**Note:** All part numbers are RoHS compliant.



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## Female Socket Connectors, .100 x .100 [2.54 x 2.54] Centers, 609 Series (Continued)

### 609 Series, Military Polarized

| No.of Pos. | Dimensions A | Dimensions B | Dimensions C | Part Numbers: Connector Only — TE Connectivity | Part Numbers: Connector Only — T&B (Reference Only) | Part Numbers: Connector w/ Strain Relief — TE Connectivity | Part Numbers: Connector w/ Strain Relief — T&B (Reference Only) |
|---|---|---|---|---|---|---|---|
| 6 | **.476** 12.09 | **.200** 5.08 | **.392** 9.96 | 2-1658526-5 | 609-0600MLF | — | — |
| 10 | **.676** 17.17 | **.400** 10.16 | **.592** 15.04 | 1658526-3 | 609-1000MLF | — | — |
| 16 | **.976** 24.79 | **.700** 17.78 | **.892** 22.66 | — | — | 1-1658526-0 | 609-1601MLF |
| 20 | **1.176** 29.87 | **.900** 22.86 | **1.092** 27.74 | 3-1658526-0 | 609-2000MLF | — | — |
| 26 | **1.476** 37.49 | **1.200** 30.48 | **1.392** 35.36 | 3-1658526-5 | 609-2600MLF | — | — |
| 40 | **2.176** 55.27 | **1.900** 48.26 | **2.092** 53.14 | 4-1658526-1 | 609-4000MLF | — | — |
| 50 | **2.676** 67.97 | **2.400** 60.96 | **2.592** 65.84 | 4-1658526-3 | 609-5000MLF | 2-1658526-2 | 609-5001MLF |

**Note:** Order by TE Part Number only. Original non-RoHS compliant T&B number may be determined by dropping the "LF" suffix.

### 609 Series, Military and Center Polarized

| No.of Pos. | Dimensions A | Dimensions B | Dimensions C | Part Numbers: Connector Only — TE Connectivity | Part Numbers: Connector Only — T&B (Reference Only) | Part Numbers: Connector w/ Strain Relief — TE Connectivity | Part Numbers: Connector w/ Strain Relief — T&B (Reference Only) |
|---|---|---|---|---|---|---|---|
| 6 | **.476** 12.09 | **.200** 5.08 | **.392** 9.96 | 1658526-1 | 609-0630LF | 1658526-2 | 609-0641LF |
| 10 | **.676** 17.17 | **.400** 10.16 | **.592** 15.04 | 1658526-4 | 609-1030LF | 1658526-5 | 609-1041LF |
| 14 | **.876** 22.25 | **.600** 15.24 | **.792** 20.12 | 1658526-8 | 609-1430LF | 1658526-9 | 609-1441LF |
| 16 | **.976** 24.79 | **.700** 17.78 | **.892** 22.66 | 2-1658526-9 | 609-1630LF | 1-1658526-1 | 609-1641LF |
| 20 | **1.176** 29.87 | **.900** 22.86 | **1.092** 27.74 | 1-1658526-2 | 609-2030LF | 1-1658526-3 | 609-2041LF |
| 24 | **1.376** 34.95 | **1.100** 27.94 | **1.292** 32.82 | 1-1658526-4 | 609-2430LF | — | — |
| 26 | **1.476** 37.49 | **1.200** 30.48 | **1.392** 35.36 | 1-1658526-5 | 609-2630LF | 1-1658526-6 | 609-2641LF |
| 34 | **1.876** 47.65 | **1.600** 40.64 | **1.792** 45.52 | 1-1658526-8 | 609-3430LF | 1-1658526-9 | 609-3441LF |
| 36 | **1.976** 50.19 | **1.700** 43.18 | **1.892** 48.06 | 3-1658526-8 | 609-3630LF | 4-1658526-0 | 609-3641LF |
| 40 | **2.176** 55.27 | **1.900** 48.26 | **2.092** 53.14 | 2-1658526-0 | 609-4030LF | 2-1658526-1 | 609-4041LF |
| 50 | **2.676** 67.97 | **2.400** 60.96 | **2.592** 65.84 | 2-1658526-3 | 609-5030LF | 2-1658526-4 | 609-5041LF |
| 64 | **3.376** 85.75 | **3.100** 78.74 | **3.292** 83.62 | 4-1658526-4 | 609-6430LF | 4-1658526-5 | 609-6441LF |

**Note:** Order by TE Part Number only. Original non-RoHS compliant T&B number may be determined by dropping the "LF" suffix.

**Note:** All part numbers are RoHS compliant.





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# DIP Plugs, .100 x .100 [2.54 x 2.54] Centers, 609 Series



## Technical Data

**Color** — Blue

**Contact Material** — Beryllium copper

**Contact Plating** — .000100-.000200 [0.00254-0.00508] tin over .000050 [0.00127] nickel underplate.

**Contact Design** — Dual slot, barrel shaped ("tulip") IDC with solder tail

**Housing Material** — Glass-filled thermoplastic, UL 94V-0 rated

**Cable** — 28-30 AWG solid or stranded, PVC insulated ribbon cable

**Mateable Connectors** — .100 x .100 DIP sockets

## Application Tooling

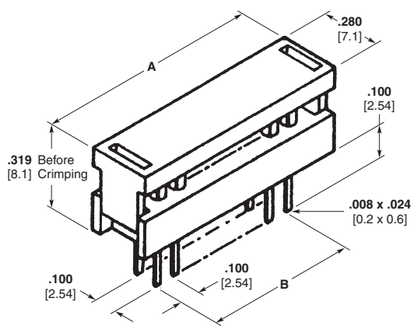
**Die** — 1-1437000-3 [T&B# 779-2153 ref.]

**Handtool** — 1437000-6 [T&B# 779-2100 ref.]

**Bench Press (Manual)** — 1437001-4 [T&B# 779-3200 ref.]

**Bench Press Platen** — 5-1437000-6 [T&B# 779-3130 ref.]

**Bench Press Base Plate** — 6-1437000-7 [T&B# 779-3153 ref.]




| No.of Pos. | Dimensions | | Part Numbers | |
|---|---|---|---|---|
| | A | B | TE Connectivity | T&B (Reference Only) |
| 6 | **.512** 13.00 | **.200** 5.08 | 1437006-4 | 609-0653 |
| 10 | **.713** 18.11 | **.400** 10.16 | 1437006-7 | 609-1053 |
| 14 | **.913** 23.19 | **.600** 15.24 | 1-1437006-0 | 609-1453 |
| 16 | **1.010** 25.65 | **.700** 17.78 | 1-1437006-3 | 609-1653 |
| 20 | **1.213** 30.81 | **.900** 22.86 | 1-1437006-6 | 609-2053 |
| 26 | **1.512** 38.40 | **1.200** 30.48 | 2-1437006-1 | 609-2653 |
| 34 | **1.913** 48.59 | **1.600** 40.64 | 2-1437006-4 | 609-3453 |

**Note:** Order by TE Part Number only. All part numbers listed above are found on TE customer drawing 1437006-4.

**Note:** All part numbers are RoHS compliant.



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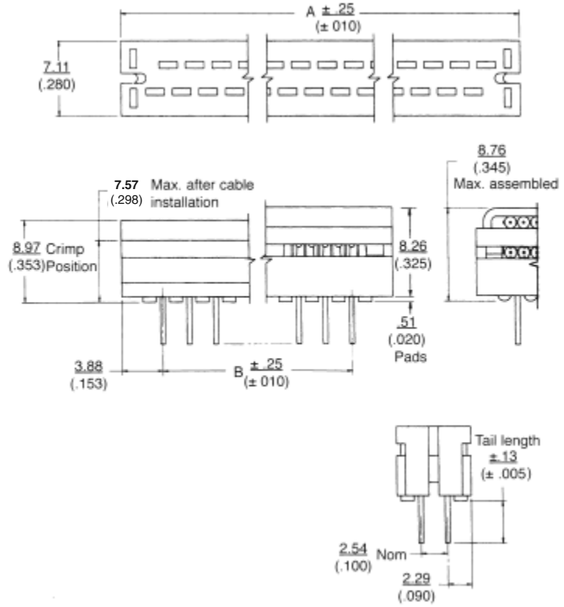
# DIP Plugs, .100 x .100 [2.54 x 2.54] Centers, 622 Series




## Technical Data

**Color** — Blue

**Contact Material** — Beryllium copper

**Contact Plating** — .000100-.000200 [0.00254-0.00508] tin over .000050 [0.00127] nickel underplate.

**Contact Design** — Single slot, flat, tuning fork style IDC with solder tail

**Housing Material** — Glass-filled thermoplastic, UL 94V-0 rated

**Cable** — 26-28 AWG solid or stranded, PVC insulated ribbon cable

**Mateable Connectors** — .100 x .100 DIP sockets

## Application Tooling

**Die** —
1-1437000-3 [T&B# 779-2153 ref.]

**Handtool** —
1437000-6 [T&B# 779-2100 ref.]

**Bench Press (Manual)** —
1437001-4 [T&B# 779-3200 ref.]

**Bench Press Platen** —
6-1437000-1 [T&B# 779-3133 ref.]

**Bench Press Base Plate** —
6-1437000-7 [T&B# 779-3153 ref.]

## Accessories

**Strain Relief** — page 65

| No.of Pos. | Dimensions | | Part Numbers | |
|---|---|---|---|---|
| | A | B | TE Connectivity | T&B (Reference Only) |
| 6 | **.506** 12.85 | **.200** 5.08 | 1658525-4 | 622-0653LF |
| 8 | **.606** 15.39 | **.300** 7.62 | 1658525-5 | 622-0853LF |
| 10 | **.706** 17.93 | **.400** 10.16 | 1658525-6 | 622-1053LF |
| 14 | **.906** 23.01 | **.600** 15.24 | 1658525-7 | 622-1453LF |
| 16 | **1.006** 25.55 | **.700** 17.78 | 1658525-8 | 622-1653LF |
| 20 | **1.206** 30.63 | **.900** 22.86 | 1658525-9 | 622-2053LF |
| 24 | **1.406** 35.71 | **1.100** 27.94 | 1-1658525-0 | 622-2453LF |
| 26 | **1.506** 38.25 | **1.200** 30.48 | 1658525-1 | 622-2653LF |
| 34 | **1.906** 48.41 | **1.600** 40.64 | 1658525-2 | 622-3453LF |
| 36 | **2.006** 50.95 | **1.700** 43.18 | 1-1658525-2 | 622-3653LF |
| 40 | **2.206** 56.03 | **1.900** 48.26 | 1-1658525-3 | 622-4053LF |
| 50 | **2.706** 68.73 | **2.400** 60.96 | 1658525-3 | 622-5053LF |
| 60 | **3.206** 81.43 | **2.900** 73.66 | 1-1658525-5 | 622-6053LF |
| 64 | **3.406** 86.51 | **3.100** 78.74 | 1-1658525-6 | 622-6453LF |

**Notes:** Order by TE Part Number only.
All part numbers are RoHS compliant.





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## DIP Plugs, .100 x .100 [2.54 x 2.54] Centers

### Housing Assembly with Cover (Preassembled)

### Material and Finish

**Housing and Cover** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Phosphor bronze, plated .000005 [0.000127] min. gold in termination area, .000100 [0.00254] min. tin on solder tails, both over .000050 [0.00127] nickel on entire contact

**Contact Design** — Flat, tuning fork style IDC

### Related Product Data

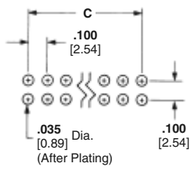
**Application Tooling** — pages 70-74

### Technical Documents

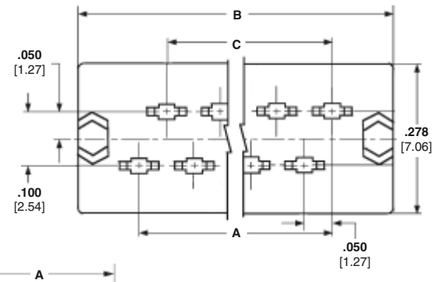
**Product Specification**
108-1538 DIP Plug

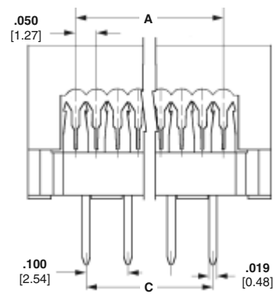
**Instruction Sheets**
Instructional material covering operation, setup, maintenance, repair, etc. is included with each machine, tool or die set. If this material is required prior to receiving your tooling, call TE at the numbers listed below for the applicable documents.

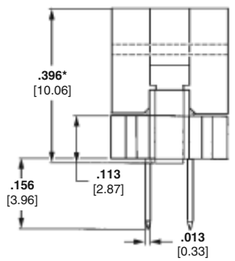
**Mateable Connectors — For Connectors without Retention Legs** — .100 x .100 DIP Sockets



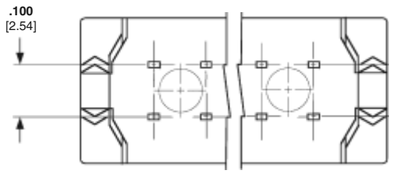

**PCB Layout**




*Height of connector after termination is .253 [6.43] ref.




| No. of Pos. | Dimensions A | Dimensions B | Dimensions C | DIP Plugs (Preassembled) | With Retention Legs |
|---|---|---|---|---|---|
| 10 | **.450** 11.43 | **.680** 17.27 | **.400** 10.16 | 2-746610-1 | 1-111382-4 |
| 14 | **.650** 16.51 | **.880** 22.35 | **.600** 15.24 | 2-746610-2 | — |
| 16 | **.750** 19.05 | **.980** 24.89 | **.700** 17.78 | 1-746610-4 | 1-111382-6 |
| 20 | **.950** 24.13 | **1.180** 29.97 | **.900** 22.86 | 1-746610-5 | 1-111382-7 |
| 24 | **1.150** 29.21 | **1.380** 35.05 | **1.100** 27.94 | 2-746610-3 | — |
| 26 | **1.250** 31.75 | **1.480** 37.59 | **1.200** 30.48 | 1-746610-6 | 1-111382-8 |
| 30 | **1.450** 36.83 | **1.680** 42.67 | **1.400** 35.56 | 1-746610-7 | — |
| 34 | **1.650** 41.91 | **1.880** 47.75 | **1.600** 40.64 | 1-746610-8 | 1-111382-9 |
| 40 | **1.950** 49.53 | **2.180** 55.37 | **1.900** 48.26 | 1-746610-9 | — |
| 44 | **2.150** 54.61 | **2.380** 60.45 | **2.100** 53.34 | 2-746610-6 | — |
| 50 | **2.450** 62.23 | **2.680** 68.07 | **2.400** 60.96 | 2-746610-0 | 2-111382-0 |
| 60 | **2.950** 74.93 | **3.180** 80.77 | **2.900** 73.66 | 2-746610-4 | — |
| 64 | **3.150** 80.01 | **3.380** 85.85 | **3.100** 78.74 | 2-746610-5 | — |

**Notes:** All plug kits include a housing assembly and cover (preassembled).
All part numbers are RoHS compliant.



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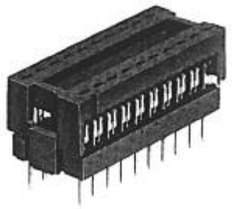
## DIP Plugs, .100 x .300 [2.54 x 7.62] Centers

### Housing Assembly with Cover (Preassembled)



### Material and Finish

**Housing and Cover** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Phosphor bronze, plated .000050 [0.00127] nickel underplate on entire contact, .000005 [0.000127] min. gold on termination (IDC) end. See table for leg finish.

**Contact Design** — Flat, tuning fork style IDC

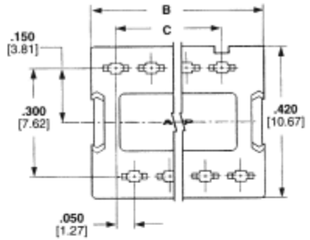
### Related Product Data

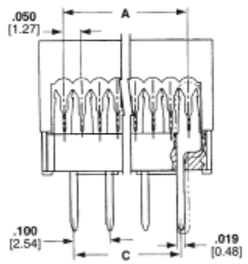
**Application Tooling** — pages 70-74

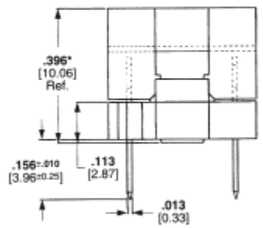
### Technical Documents

**Product Specification**
108-1538 DIP Plug

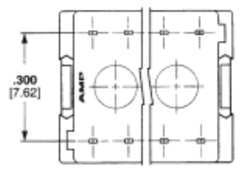
**Ribbon Cable Requirements** — 28 AWG stranded or 26, 28 and 30 AWG solid wire

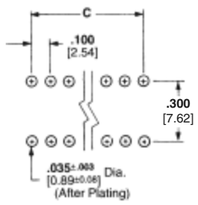



*Height of connector after termination is .253 [6.43] ref.




**Recommended Mounting Hole Pattern**
(for .094-.125 [2.39-3.18] thick pc boards)

| No. of Pos. | Dimensions A | B | C | Contact Plating | DIP Plugs (Preassembled) |
|---|---|---|---|---|---|
| 8 | **.350** 8.89 | **.488** 12.40 | **.300** 7.62 | Duplex[1] | 746611-7 |
| | | | | Duplex[2] | — |
| | | | | Duplex[3] | 5746613-1 |
| 14 | **.650** 16.51 | **.788** 20.02 | **.600** 15.24 | Duplex[1] | 746611-8 |
| | | | | Duplex[2] | 5746612-2 |
| | | | | Duplex[3] | 5746613-2 |
| 16 | **.750** 19.05 | **.888** 22.56 | **.700** 17.78 | Duplex[1] | 746611-6 |
| | | | | Duplex[2] | 5746612-3 |
| | | | | Duplex[3] | 5746613-3 |
| 18 | **.850** 21.59 | **.988** 25.10 | **.800** 20.32 | Duplex[1] | 746611-9 |
| | | | | Duplex[2] | — |
| | | | | Duplex[3] | — |
| 20 | **.950** 24.13 | **1.088** 27.64 | **.900** 22.86 | Duplex[1] | 1-746611-0 |
| | | | | Duplex[2] | — |
| | | | | Duplex[3] | — |

[1] .000030 [0.00076] gold on leg
[2] .000015 [0.00038] gold on leg
[3] .000100 [0.00254] tin on leg
**Note:** All part numbers are RoHS compliant.





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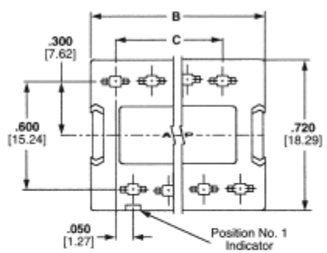
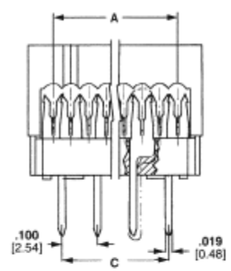
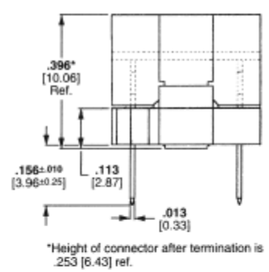
## DIP Plugs, .100 x .600 [2.54 x 15.24] Centers

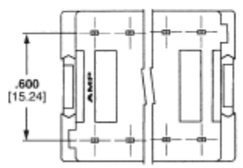
### Housing Assembly with Cover (Preassembled)




*Height of connector after termination is .253 [6.43] ref.




### Material and Finish

**Housing and Cover** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Phosphor bronze, plated .000050 [0.00127] nickel underplate on entire contact, .000005 [0.000127] min. gold on termination (IDC) end. See table for leg finish.

**Contact Design** — Flat, tuning fork style IDC

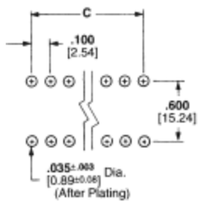
### Related Product Data

**Application Tooling** — pages 70-74

### Technical Documents

**Product Specification**
108-1538 DIP Plug

**Ribbon Cable Requirements** —
28 AWG stranded or 26, 28 and 30 AWG solid wire




**Recommended Mounting Hole Pattern**
(for .094-.125 [2.39-3.18] thick pc boards)

| No. of Pos. | Dimensions A | Dimensions B | Dimensions C | Contact Plating | DIP Plugs (Preassembled) |
|---|---|---|---|---|---|
| 24 | **1.150** 29.21 | **1.288** 32.72 | **1.100** 27.94 | Duplex[1] | 5746615-1 |
| 28 | **1.350** 34.29 | **1.488** 37.80 | **1.300** 33.02 | Duplex[1] | 5746615-2 |
| 40 | **1.950** 49.53 | **2.088** 53.04 | **1.900** 48.26 | Duplex[1] | 5746615-3 |

[1] .000015 [0.00038] gold on leg

**Note:** All part numbers are RoHS compliant.



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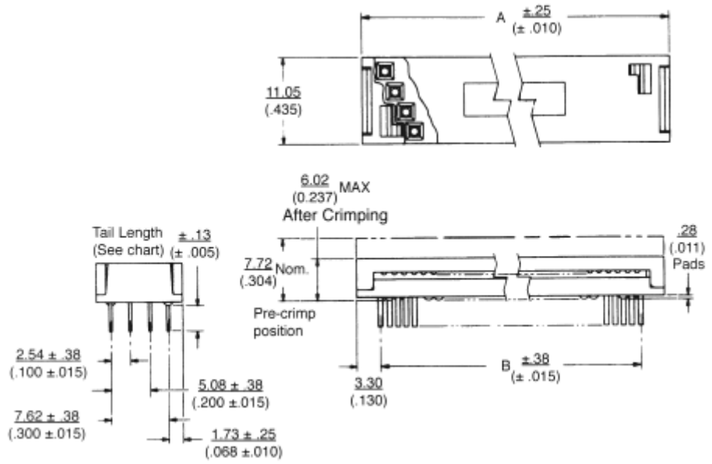
## 4-Row PCB Solder Transition Connectors




### Technical Data

**Color** — Blue
**Contact Material** — Beryllium copper
**Contact Plating** — .000100-.000200 [0.00254-0.00508] tin over .000050 [0.00127] nickel underplate.
**Contact Design** — Dual slot, barrel shaped ("tulip") IDC with solder tail
**Housing Material** — Glass-filled thermoplastic, UL 94V-0 rated
**Cable** — 28-30 AWG solid or stranded, PVC insulated ribbon cable

### Application Tooling

**Die** —
1-1437000-3 [T&B# 779-2153 ref]
**Handtool** —
1437000-6 [T&B# 779-2100 ref]
**Bench Press (Manual)** —
1437001-4 [T&B# 779-3200 ref]
**Bench Press Platen** —
5-1437000-6 [T&B# 779-3130 ref]
**Bench Press Base Plate** —
6-1437000-7 [T&B# 779-3153 ref]

### 609 Series, Military Polarized

| No.of Pos. | Dimensions | | Part Numbers | | | |
|---|---|---|---|---|---|---|
| | | | .100 Tail Length | | .156 Tail Length | |
| | A | B | TE Connectivity | T&B (Reference Only) | TE Connectivity | T&B (Reference Only) |
| 10 | **.710** 18.03 | **.450** 11.43 | 6437006-5 | 609-1003LF | — | — |
| 14 | **.910** 23.11 | **.650** 16.51 | 6437006-8 | 609-1403LF | 6437006-9 | 609-1443LF |
| 16 | **1.010** 25.65 | **.750** 19.05 | 1-6437006-1 | 609-1603LF | — | — |
| 20 | **1.210** 30.73 | **.950** 24.13 | — | — | 1-6437006-5 | 609-2043LF |
| 26 | **1.510** 38.35 | **1.250** 31.75 | 1-6437006-8 | 609-2603LF | 2-6437006-0 | 609-2643LF |
| 34 | **1.910** 48.51 | **1.650** 41.91 | 2-6437006-2 | 609-3403LF | 2-6437006-3 | 609-3443LF |
| 44 | **2.410** 61.21 | **2.150** 54.61 | 2-6437006-9 | 609-4403LF | — | — |
| 50 | **2.710** 68.83 | **2.450** 62.23 | — | — | 3-6437006-2 | 609-5043LF |

**Notes:** Order by TE Part Number only.
All part numbers listed above are found on TE Customer Drawing 6437006-5.

**Note:** All part numbers are RoHS compliant.





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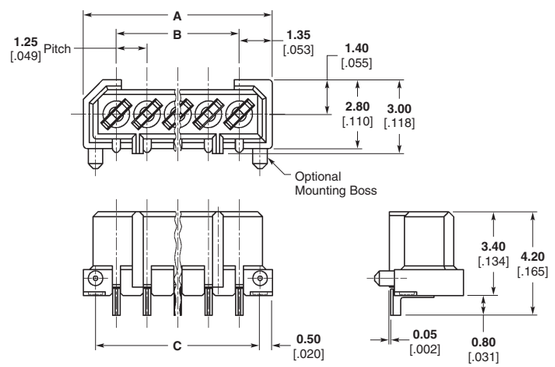
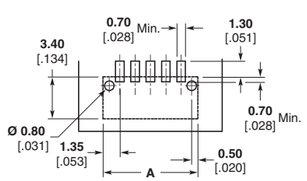
## 1-Row Horizontal Receptacles

**Material and Finish**
**Housing** — Black PPS, UL 94V-0 rated
**Contacts** — Phosphor bronze, post tin plated over nickel underplate




PCB Mounting Layout

### 1.25 Fine Pitch (FP) - 1-Row Horizontal Receptacles

| | No. of Pos. | Dimensions | | | Part Numbers | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | With Mounting Bosses | | Without Mounting Bosses | |
| | | A | B | C | Tape | Bag | Tape | Bag |
| 2.35 Slot Key | 4 | **6.45** .254 | **3.75** .148 | **5.45** .215 | 3-175637-4 | 3-174638-4 | 3-175629-4 | 3-174903-4 |
| | 5 | **7.70** .303 | **5.00** .197 | **6.70** .264 | 3-175637-5 | 3-174638-5 | 3-175629-5 | 3-174903-5 |
| | 6 | **8.95** .352 | **6.25** .246 | **7.95** .313 | 3-175637-6 | 3-174638-6 | 3-175629-6 | 3-174903-6 |
| | 7 | **10.20** .402 | **7.50** .295 | **9.20** .362 | 3-175637-7 | 3-174638-7 | 3-175629-7 | 3-174903-7 |
| | 8 | **11.45** .451 | **8.75** .345 | **10.45** .411 | 3-175637-8 | 3-174638-8 | 3-175629-8 | 3-174903-8 |
| | 10 | **13.95** .549 | **11.25** .443 | **12.95** .510 | 4-175637-0 | 4-174638-0 | 4-175629-0 | 4-174903-0 |
| | 17 | **22.70** .894 | **20.00** .787 | **21.70** .854 | — | 4-174638-7 | 4-175629-7 | 4-174903-7 |
| | 20 | **26.45** 1.041 | **23.75** .935 | **25.45** 1.002 | — | 5-174638-0 | — | 5-174903-0 |

**Note:** All part numbers are RoHS compliant.



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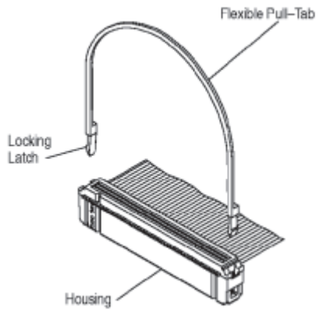
## Accessories

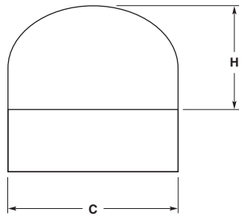
### Flexible Pull Tabs

**Material and Finish**
Nylon, black

**Part Number 120623-1**

**Related Product Data**
**Novo Connectors** — pages 48-51
**Ultra ATA Bus Connectors** — pages 13-15




**Approximate Installed Height of Part Number 120623-1 Above Connector**

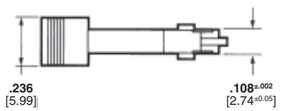
| No. of Positions | Dimensions | |
|---|---|---|
| | C | H |
| 10 | **.680** 17.27 | **1.806** 45.87 |
| 14 | **.880** 22.35 | **1.749** 44.42 |
| 16 | **.980** 24.89 | **1.721** 43.71 |
| 20 | **1.180** 29.97 | **1.664** 42.27 |
| 24 | **1.380** 35.05 | **1.607** 40.82 |
| 26 | **1.480** 37.59 | **1.578** 40.08 |
| 30 | **1.680** 42.67 | **1.521** 38.63 |
| 34 | **1.880** 47.75 | **1.464** 37.19 |
| 36 | **1.980** 50.29 | **1.436** 36.47 |
| 40 | **2.180** 55.37 | **1.379** 35.03 |
| 44 | **2.380** 60.45 | **1.322** 33.58 |
| 50 | **2.680** 68.07 | **1.236** 31.39 |
| 60 | **3.180** 80.77 | **1.094** 27.79 |
| 64 | **3.380** 85.85 | **1.037** 26.34 |

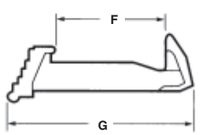
**Note:** Cannot be used together with a strain relief.

### Universal I/O Latches

**Material and Finish**
Polyester, black

**Related Product Data**
**Universal I/O Pin Connectors** — pages 45 and 46
**Latch Removal Tool Part Number 91269-1**



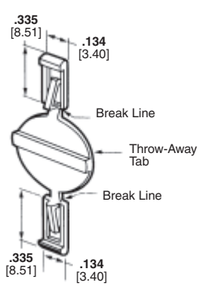




| Mates to Receptacles | Dimensions | | Part Number |
|---|---|---|---|
| | F | G | |
| Without Strain Relief | **.416** 10.57 | **.768** 19.51 | 111451-1 |
| With Strain Relief | **.576** 14.63 | **.928** 23.57 | 111451-3 |

### Military Polarizers

**Material and Finish**
Thermoplastic, black

**Related Product Data**
**Universal I/O Pin Connectors** — pages 45 and 46




**Part Numbers:**

**499991-2** (packaged, 50 per bag)
**499991-3** (packaged, 1000 per box)

The snap-in polarizer provides military polarization.

**Note:** All part numbers are RoHS compliant.





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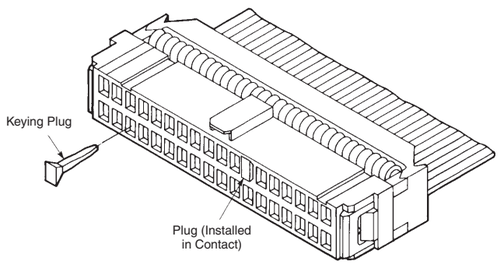
## Accessories (Continued)

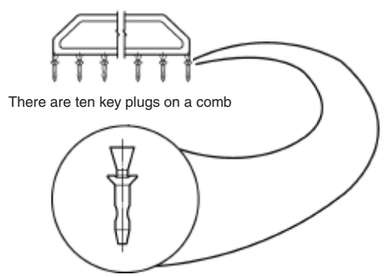
### Keying Plugs

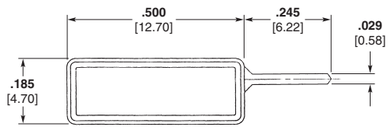
**Material and Finish**
Thermoplastic, see table for color




**Typical Application**

**Key Plug 111620-1**




**Polarizing Key 1-1437023-2**

| Receptacle Connector Series | Catalog Pages | Keying Plug Part Number | Style | Color |
|---|---|---|---|---|
| 2 mm Rcpt. Connectors | 16, 17 | 111620-1 | Comb | Black |
| 609 Series Female Socket Connectors | 54, 55 | 1-1437023-2<br>T&B 609-0000 (Ref.) | Single | Blue |
| 622 Series Female Socket Connectors | 52, 53 | 1-1437023-2<br>T&B 609-0000 (Ref.) | Single | Blue |
| 636 Series Female Socket Connectors | 52, 53 | 1-1437023-2<br>T&B 609-0000 (Ref.) | Single | Blue |

Order by TE Part Number only.

**Note:** All part numbers are RoHS compliant.





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## Accessories (Continued)

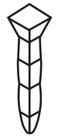
### Keying Plugs (Continued)

**Material and Finish**
Thermoplastic, see table for color

| Receptacle Connector Series | Catalog Pages | Keying Plug Part Number | Style | Color |
|---|---|---|---|---|
| Novo Connectors | 48-51 | 499712-1 | Single | Black |
| | | 104072-1 | Comb | |
| Ultra ATA Bus Connectors | 13-15 | 499712-1 | Single | Black |
| | | 104072-1 | Comb | |

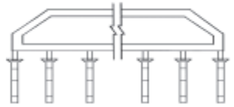
Order by TE Part Number only.

**Part Number 499712-1**



**Key Plug**
**(Plugs into Contact)**

**Alternate Configuration**
**Keying Plug Part No. 104072-1**
**(10 Keying Plugs per Comb)**



**Note:** All part numbers are RoHS compliant.





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## Accessories (Continued)

### Pull Loops, Permanent (for Receptacles and Pin Connectors)

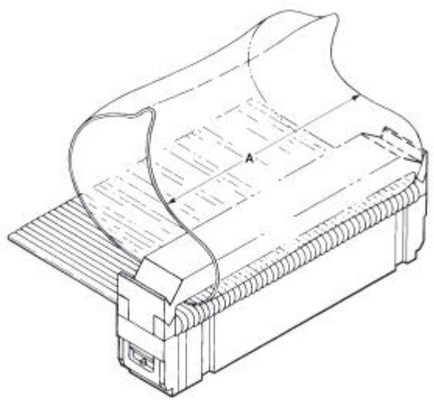
#### Material and Finish

Natural color PVC, 94-VTM-1 rating (thin material)

#### Related Product Data

**Use with:**

**Female Socket Connectors** — pages 52-55
**Ultra ATA Bus Connectors** — pages 13-15
**2 mm Receptacle Connectors** — pages 16 and 17
**Novo Connectors** — pages 48-51




**Note:** This pull loop is installed manually between the cover and strain relief, and cannot be used without strain relief.

| No. of Positions | | | | Dimension A | Pull Loop Part No. |
|---|---|---|---|---|---|
| Female Socket Conns. | Ultra ATA Bus Conns. | 2 mm Rcpt. Conns. | Novo Conns. | | |
| 10 | — | 12, 14, 16 | 10 | **.44** 11.18 | 5088450-2 |
| 14 | — | 20 | 14 | **.64** 16.26 | 5088450-3 |
| 16 | — | 22 | 16 | **.74** 18.80 | 5088450-4 |
| 20 | — | 24, 26 | 20 | **.88** 22.35 | 5088450-5 |
| 24 | — | — | 24 | **1.08** 27.43 | 5088450-6 |
| 26 | — | 30, 34, 40 | 26 | **1.18** 29.97 | 5088450-7 |
| 30 | — | — | 30 | **1.38** 35.05 | 1-5088450-2 |
| 34 | — | 44 | 34 | **1.58** 40.13 | 5088450-8 |
| 40 | 40 | 50 | 40 | **1.82** 46.23 | 5088450-9 |
| 50 | — | — | 50 | **2.32** 58.93 | 1-5088450-0 |
| 60 | — | — | 60 | **2.80** 71.12 | 1-5088450-1 |

**Note:** All part numbers are RoHS compliant.





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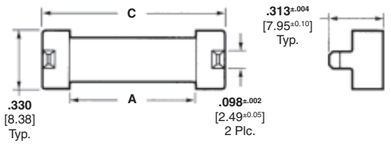
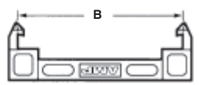
## Accessories (Continued)

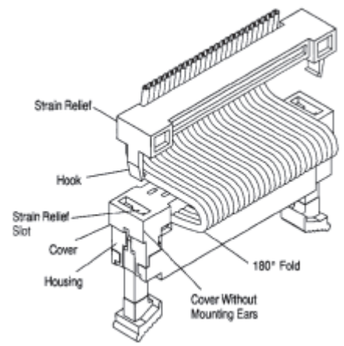
### Strain Relief for Universal I/O Pin Connectors Without Mounting Ears

**Material and Finish**
Glass-filled polyester, black

**Related Product Data**
**Universal I/O Pin Connectors** — page 45



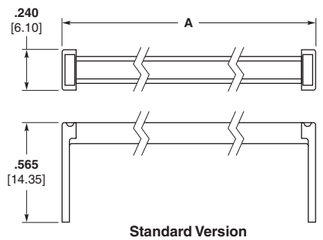




| No. of Pos. | Dimensions A | Dimensions B | Dimensions C | Part Number |
|---|---|---|---|---|
| 10 | **.520** 13.21 | **.766** 19.46 | **.940** 23.88 | 111547-1 |
| 14 | **.720** 18.29 | **.966** 24.54 | **1.140** 28.96 | 111547-2 |
| 16 | **.820** 20.83 | **1.066** 27.08 | **1.240** 31.50 | 111547-3 |
| 20 | **1.020** 25.91 | **1.266** 32.16 | **1.440** 36.58 | 111547-4 |
| 24 | **1.220** 30.99 | **1.466** 37.24 | **1.640** 41.66 | 111547-5 |
| 26 | **1.320** 33.53 | **1.566** 39.78 | **1.740** 44.20 | 111547-6 |
| 30 | **1.520** 38.61 | **1.766** 44.86 | **1.940** 49.28 | 111547-7 |
| 34 | **1.720** 43.69 | **1.966** 49.94 | **2.140** 54.36 | 111547-8 |
| 40 | **2.020** 51.31 | **2.266** 57.56 | **2.440** 61.98 | 111547-9 |
| 44 | **2.220** 56.39 | **2.466** 62.64 | **2.640** 67.06 | 1-111547-0 |
| 50 | **2.520** 64.01 | **2.766** 70.26 | **2.940** 74.68 | 1-111547-1 |
| 60 | **3.020** 76.71 | **3.266** 82.96 | **3.440** 87.38 | 1-111547-2 |
| 64 | **3.220** 81.79 | **3.466** 88.04 | **3.640** 92.56 | 1-111547-3 |

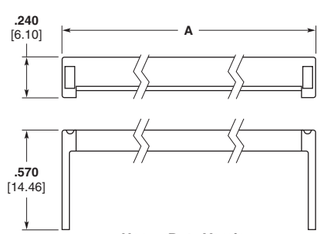
### Strain Relief for 609 Series (Tulip Contact) Female Socket Connectors

**Material and Finish**
Glass-filled polyester, blue

**Related Product Data**
**Female Socket Connectors** — page 54 and 55




**Standard Version**




**Heavy Duty Version**

| No. of Pos. | Dimension A | Type | Part Number TE Connectivity | Part Number T&B (Ref. Only) |
|---|---|---|---|---|
| 6 | **.472** 11.99 | Standard | 2-1437020-1 | 609-0631 |
| 10 | **.672** 17.07 | Heavy Duty | 3-1437020-7 | 609-1031HD |
| | | Standard | 3-1437020-5 | 609-1031 |
| 14 | **.872** 22.15 | Heavy Duty | 5-1437020-1 | 609-1431HD |
| | | Standard | 4-1437020-9 | 609-1431 |
| 16 | **.972** 24.69 | Heavy Duty | 6-1437020-6 | 609-1631HD |
| | | Standard | 6-1437020-4 | 609-1631 |
| 20 | **1.172** 29.77 | Heavy Duty | 8-1437020-6 | 609-2031HD |
| | | Standard | 8-1437020-4 | 609-2031 |
| 24 | **1.372** 34.85 | Standard | 9-1437020-4 | 609-2431 |
| 26 | **1.472** 37.39 | Heavy Duty | 1-1437021-2 | 609-2631HD |
| | | Standard | 1-1437021-0 | 609-2631 |
| 34 | **1.872** 47.55 | Heavy Duty | 3-1437021-2 | 609-3431HD |
| | | Standard | 3-1437021-0 | 609-3431 |
| 40 | **2.172** 55.17 | Heavy Duty | 5-1437021-5 | 609-4031HD |
| | | Standard | 5-1437021-3 | 609-4031 |
| 50 | **2.672** 67.87 | Heavy Duty | 8-1437021-1 | 609-5031HD |
| | | Standard | 7-1437021-9 | 609-5031 |
| 64 | **3.372** 85.65 | Heavy Duty | 1-1437022-3 | 609-6431HD |

**Note:** Heavy duty part numbers are listed on TE customer drawing 3-1437020-7. Standard part numbers are listed on TE customer drawing 2-1437020-1.
All part numbers are RoHS compliant.





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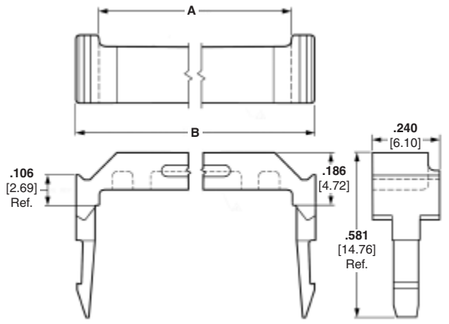
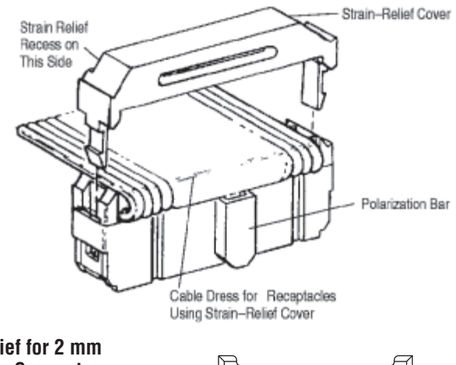
## Accessories (Continued)

### Strain Relief for Novo and Ultra ATA Bus Connectors

**Material and Finish**
Glass-filled polyester, black

**Related Product Data**
**Novo Connectors** — pages 48-51
**Ultra ATA Bus Connectors** — pages 13-15



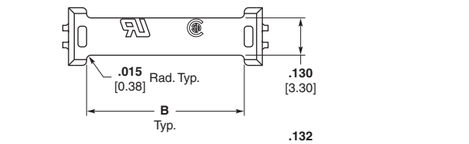

| No. of Pos. | Dimensions A | Dimensions B | Part Number |
|---|---|---|---|
| 10 | **.534** 13.56 | **.690** 17.53 | 499252-5 |
| 14 | **.734** 18.64 | **.890** 22.61 | 499252-9 |
| 16 | **.834** 21.18 | **.990** 25.15 | 499252-8 |
| 20 | **1.034** 26.26 | **1.190** 30.23 | 499252-2 |
| 24 | **1.234** 31.34 | **1.390** 35.31 | 1-499252-0 |
| 26 | **1.334** 33.88 | **1.490** 37.85 | 499252-3 |
| 30 | **1.534** 38.96 | **1.690** 42.93 | 1-499252-2 |
| 34 | **1.734** 44.04 | **1.890** 48.01 | 499252-6 |
| 40 | **2.034** 51.66 | **2.190** 55.63 | 499252-1* |
| 44 | **2.234** 56.74 | **2.390** 60.71 | 1-499252-1 |
| 50 | **2.534** 64.36 | **2.690** 68.33 | 499252-4 |
| 60 | **3.034** 77.06 | **3.190** 81.03 | 499252-7 |
| 64 | **3.234** 82.14 | **3.390** 86.11 | 1-499252-3 |

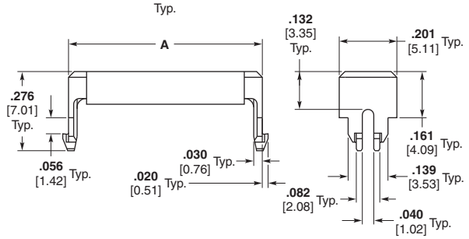
*Ultra ATA Strain Relief is 499252-1 only.

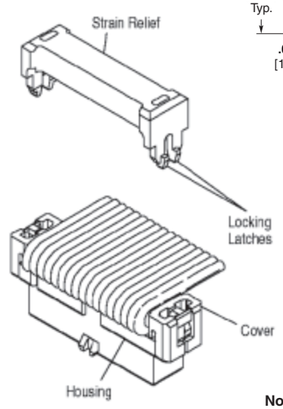
### Strain Relief for 2 mm Receptacle Connectors

**Material and Finish**
Glass-filled polyester, black

**Related Product Data**
**2 mm Receptacle Connectors** — pages 16 and 17




| No. of Pos. | Dimensions A | Dimensions B | Part Number |
|---|---|---|---|
| 8 | **.440** 11.18 | **.314** 7.98 | 1-111614-6 |
| 10 | **.518** 13.16 | **.392** 9.96 | 111614-1 |
| 12 | **.596** 15.14 | **.470** 11.94 | 1-111614-7 |
| 14 | **.676** 17.17 | **.550** 13.97 | 111614-2 |
| 16 | **.755** 19.18 | **.629** 15.98 | 111614-3 |
| 20 | **.912** 23.16 | **.786** 19.96 | 111614-4 |
| 22 | **.991** 25.17 | **.865** 21.97 | 1-111614-5 |
| 24 | **1.070** 27.18 | **.944** 23.98 | 111614-5 |
| 26 | **1.148** 29.16 | **1.022** 25.96 | 111614-6 |
| 30 | **1.306** 33.17 | **1.180** 29.97 | 111614-7 |
| 34 | **1.463** 37.16 | **1.337** 33.96 | 111614-8 |
| 40 | **1.700** 43.18 | **1.574** 39.98 | 111614-9 |
| 44 | **1.857** 47.17 | **1.731** 43.97 | 1-111614-0 |
| 50 | **2.093** 53.16 | **1.967** 49.96 | 1-111614-1 |

**Note:** All part numbers are RoHS compliant.





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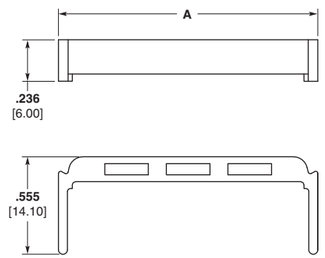
## Accessories (Continued)

### Strain Relief for 622 and 636 Series Female Socket Connectors

**Material and Finish**
Glass-filled PBT, see table for color

**Related Product Data**
**Female Socket Connectors** —
pages 52 and 53




| No. of Pos. | Dimension C | Color | Part Number | |
|---|---|---|---|---|
| | | | TE Connectivity | T&B (Ref. Only) |
| 6 | **.477** 12.12 | Blue | 2-1437023-9 | 622-0631 |
| | | Black | 1-1437026-9 | 636-0631 |
| 10 | **.677** 17.20 | Blue | 4-1437023-7 | 622-1031 |
| | | Black | 3-1437026-9 | 636-1031 |
| 14 | **.877** 22.28 | Blue | 7-1437023-1 | 622-1431 |
| | | Black | 6-1437026-6 | 636-1431 |
| 16 | **.977** 24.82 | Blue | 8-1437023-9 | 622-1631 |
| | | Black | 8-1437026-5 | 636-1631 |
| 20 | **1.177** 29.90 | Blue | 1437024-5 | 622-2031 |
| | | Black | 1437027-7 | 636-2031 |
| 24 | **1.377** 34.98 | Blue | 1-1437024-6 | 622-2431 |
| | | Black | 5-1437011-3 | 636-2431 |
| 26 | **1.477** 37.52 | Blue | 2-1437024-8 | 622-2631 |
| | | Black | 3-1437027-4 | 636-2631 |
| 30 | **1.677** 42.60 | Blue | 4-1437024-0 | 622-3031 |
| | | Black | 6-1437011-6 | 636-3031 |
| 34 | **1.877** 47.68 | Blue | 5-1437024-3 | 622-3431 |
| | | Black | 8-1437027-0 | 636-3431 |
| 40 | **2.177** 55.30 | Blue | 8-1437024-3 | 622-4031 |
| | | Black | 3-1437028-4 | 636-4031 |
| 50 | **2.677** 68.00 | Blue | 1-1437025-2 | 622-5031 |
| | | Black | 6-1437028-8 | 636-5031 |
| 60 | **3.177** 80.70 | Black | 9-1437028-5 | 636-6031 |
| 64 | **3.377** 85.78 | Blue | 4-1437025-0 | 622-6431 |
| | | Black | 1437029-2 | 636-6431 |

**Note:** These part numbers are listed on TE customer drawing 1-1437026-9.

**Note:** All part numbers are RoHS compliant.





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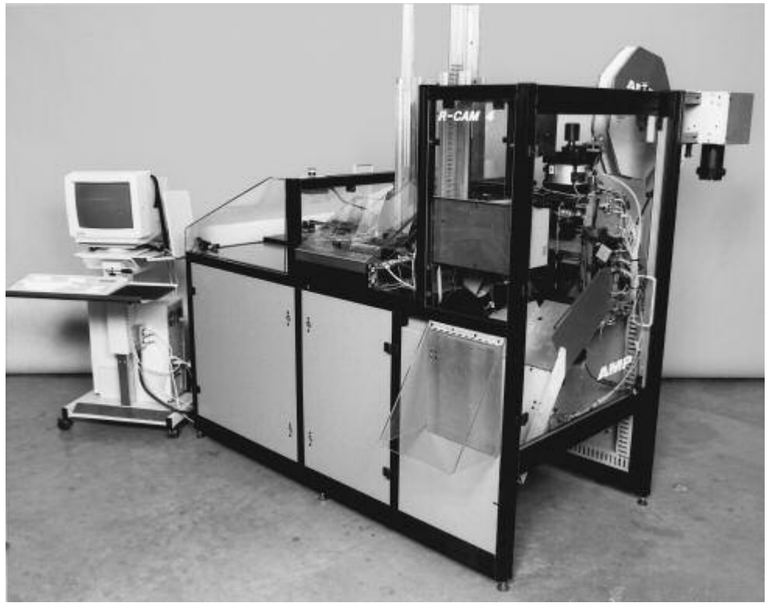
## Ribbon Cable Assembly Machines (R-CAM)

### Product Facts

- Terminates 28 AWG [0.08 mm2] .050 [1.27] centerline and 30 AWG [0.05 mm2] .025 [0.64] centerline cable to a variety of connectors
- Automatic in-process electrical testing — tests all circuits for opens, shorts and high-voltage breakdown (up to 1,000 volts for receptacles, 800 volts for card edge connectors and 300 volts for .025 [0.64] centerline connectors); rejects cable assemblies failing any of these tests
- Operated by a user-friendly, interactive touchscreen — or a keyboard on the R-CAM 4
- Self-diagnostics shut down the machine when a malfunction occurs, pinpoint the malfunction, and identify it on the screen
- **Produced under a Quality Management System certified to ISO 9001**

A copy of the certificate is available upon request.




The R-CAM 4, pictured above, is the newest fully automatic Ribbon Cable Assembly Machine for producing and testing daisy-chained ribbon cable assemblies. Enhancements of this model include the capability to process pre-manufactured slit-and-twist cable and the ability to produce assemblies with up to 10 connectors.

The R-CAM 2A, 3A, and 4 terminate 28 AWG [0.08 mm$^2$], .050 [1.27] centerline cable to a variety of connectors. The R-CAM 4 will also terminate 30 AWG [0.05 mm$^2$] .025 [0.64] centerline cable.

All of the R-CAM models automatically perform an in-process electrical test of all circuits for opens and shorts. In addition, all models automatically test the assembly for high-voltage breakdown up to 1,000 volts, depending on the machine and connector style. The purpose of this test is to detect gaps that may have been created during assembly that could eventually short out when in use. If an assembly fails any of these tests, the machine will shear the cable off at that point and automatically discard it into an alternate bin.

These machines are programmed and operated with an interactive touchscreen that allows operators to access manual, set-up, run, and edit modes through easy-to-follow menu-driven prompts.

Self-diagnostics shut down the machine if a malfunction — such as misloaded connectors or incorrectly fed cable — is detected, pinpoint the malfunction, and identify it on the touchscreen.

Models 2A and 3A are available in 120 or 220 VAC, 8 A, 50 or 60 Hz. Model 4 operates at 120 or 220 VAC, 50-60 Hz, single phase, 15A.

The R-CAM 2A and 3A require a minimum air supply of 80 psi [5.52 bar] at 8 scfm [0.0038m$^3$/s]. The R-CAM 4 requires 80 psi [5.52 bar] at 12 scfm [0.0057 m$^3$/s].

**Need more information?**
For more information, specifically about tooling, call TE at the numbers listed below.



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## Comparison of R-CAM 2A, R-CAM 3A and R-CAM 4

| Machine Model | R-CAM 2A | R-CAM 3A | R-CAM 4 |
|---|---|---|---|
| **Part Number*** | **760700-❑** | **761900-❑** | **318800-❑** |
| **Cable Size** | 28 AWG [0.08 mm²], .050 [1.27] centerline | 28 AWG [0.08 mm²], .050 [1.27] centerline | 28 AWG [0.08 mm²], .050 [1.27] centerline and 30 AWG [0.05 mm²], .025 [0.64] centerline |
| **Cable Assembly Configurations** (Refer to page 73) | Maximum cable length of 48 [1 220] | Maximum cable length of 105 [2 665] | Maximum cable length of 100 [2 540] |
| | Produces one- to four-connector assemblies with unterminated tail lengths up to 12 [305] | Produces one- or two-connector assemblies with unterminated tail lengths up to 24 [610] | Produces one- to 10-connector assemblies with unterminated tail lengths up to 24 [610] |
| | Trailing connectors can be oriented up or down | Trailing connectors can be oriented up or down | Trailing connectors can be oriented up or down |
| | — | — | Automatically processes and tests assemblies produced with pre-manufactured slit-and-twist cable |
| **Production Rates** (Refer to page 72) | Depending on cable lengths, can apply and test up to 1 670 connectors per hour | Depending on cable lengths, can apply and test up to 2 000 connectors per hour | Depending on cable lengths, can apply and test up to 1 050 connectors per hour |
| **Size** | 108 [2 745] W x 54 [1 370] D x 60 [1 525] H; 750 lb [340 kg] | 48 [1 220] W x 48 [1 220] D x 62 [1 575] H; 630 lb [286 kg] | 68 [1 730] W x 58 [1 475] D x 72 [1 830] H; 1 300 lb [590 kg] |
| **Programmable** | Operated and programmed by a touchscreen | Operated and programmed by a touchscreen | Operated and programmed by a touchscreen or a keyboard |
| | Parameters for up to 130 cable assemblies can be retained in memory | Parameters for up to 150 cable assemblies can be retained in memory | Parameters for up to 1 000 cable assemblies can be retained in memory |
| | Another menu displays production totals or a log of the machine events | Another menu displays production totals or a log of the machine events | — |
| **Testing** | Automatically stops after each or three consecutive assemblies are rejected, as programmed by the operator | Automatically stops when either a consecutive number of assemblies or a percentage of the batch run are rejected, as programmed by the operator | Automatically stops each time a malfunction is detected |
| **Changeover** | Requires an average of 25 minutes, depending on assembly size | Requires an average of 15 minutes, depending on assembly size | Requires an average of 20 minutes to 1 hour, depending on assembly size and type |

***Note**: Machine may require accessories. Before ordering, contact TE at the numbers listed below.





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Netherlands: +31 (0) 73-6246-999
China: +86 (0) 400-820-6015

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## Typical Production Rates (Assemblies/Hour)

| Machine Model | Connectors Per Assembly | Length | | | | |
|---|---|---|---|---|---|---|
| | | 4 [100] | 8 [205] | 24 [160] | 48 [1 220] | 100 [2 540] |
| R-CAM 2A | 1 | 665 | 620 | — | — | — |
| | 2 | 570 | 500 | 405 | 300 | — |
| | 3 | 475 | 460 | 375 | 280 | — |
| | 4 | — | 420 | 360 | 255 | — |
| R-CAM 3A | 2 | 1 075 | 950 | 780 | 660 | 500 |
| R-CAM 4 | 4 | — | 275 | 265 | 255 | — |
| | 5 | — | 205 | 200 | 190 | — |
| | 6 | — | 170 | 165 | 160 | — |
| | 10 | — | — | — | 115 | 105 |

**Note**: Actual production rates may vary depending on the cable assembly configuration.

## Available Tooling

**Note**: Call TE at the numbers listed below for part numbers or availability.

| Tooling for Connectors | | Number of Positions | | |
|---|---|---|---|---|
| | | R-CAM 2A | R-CAM 3A | R-CAM 4 †† |
| Ultra Novo Receptacles | | — | — | 40 |
| AMPLIMITE .050 Series Connectors | | — | — | 68 |
| AMPLIMITE HDF-20 D-Sub. | Plugs | 15, 25, 37 | 9, 15, 25, 37 | 68 and 80 (Lead and Trail Modules) |
| | Receptacles | | | 68 and 80 (Lead Module Only) |
| .100 x .100 DIP Plugs | | One End Only, 20–64 | One End Only, 10–64 | Available in future |
| Card Edge Connectors* | | 20–64 | 10–64 | 20–50 (10–64 Available in future) |
| Novo Receptacles* | | 20–64 | 10–64 | 10-64 |
| 2 mm Receptacles | | — | 12–50 | — |
| Universal I/O Pin Connectors | | One End Only, 20–64 | — | Trail Module Only |

* Supplied with the R-CAM 2A and R-CAM 3A only.
† Reel fed version.
†† Order Connector Specific Tooling Packages / Feed Shear Tooling separately.



## Products Applied

AMPLIMITE HDF-20 D-Sub. Plugs

AMPLIMITE HDF-20 D-Sub. Receptacles

.100 x .100 DIP Plugs

Card Edge Connectors

Novo Receptacles

2 mm Receptacles

Universal I/O Pin Connectors

Pre-manufactured Slit-and-Twist Cable (R-CAM 4 only)

**Note:** For more product information, call TE at the numbers listed below.



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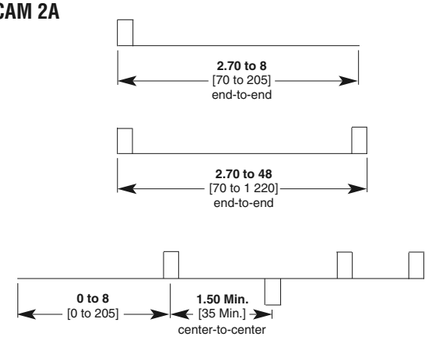
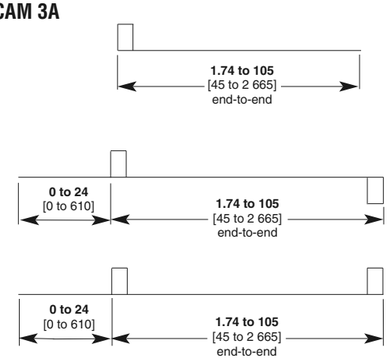
## Cable Assembly Configurations

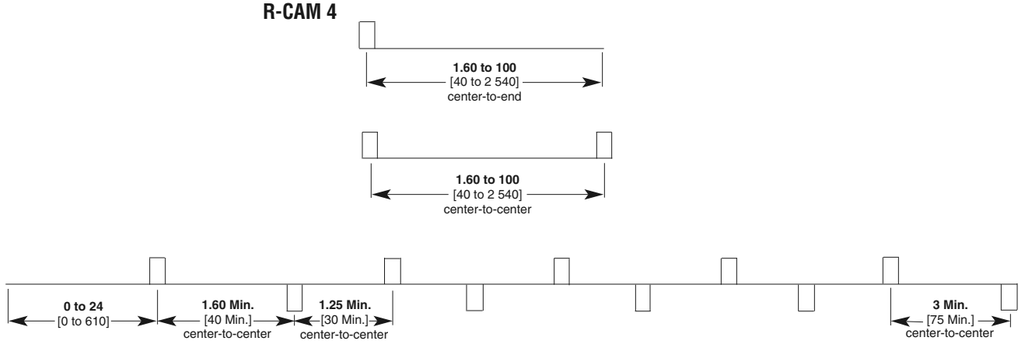
### R-CAM 2A




### R-CAM 3A




### R-CAM 4





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## Application Tooling

**Manual Arbor Frame Assembly, Part No. 91085-2**

Bench frame for applying a variety of IDC connectors, including AMPMODU MT and CHAMP. Features adjustable ram and handle, and a slide base. Tooling is mounted to the ram and into the tracks of the base plate.

**Hand Tool Kit—Part No. 768340-1**

Terminating kit for .050 [1.27] centerline ribbon cable with 28 or 26 AWG [0.08 or 0.15 mm²] stranded or solid, or 30 AWG [0.05 mm²] solid conductors. Includes commercial grade hand tool with ratchet control for complete termination cycle, base assembly, bench-mount, tooling sets for standard and Novo receptacles, card edge connectors and D-Sub HDF low-profile connectors, and a carrying case.

**Pneumatic Auto-Cycle Unit, Part No. 91112-3**

Basically an air-powered version of Manual Arbor Frame Assembly 91085-2. Features adjustable ram and cycle time, and automatic cycling when the lower assembly is slid into the frame to the rear of the base plate. Includes a guard around the frame opening.

**Tooling Instruction Sheets**

**408-7777**—Manual Arbor Frame Assembly

**408-6732**—Pneumatic Auto-Cycle Assembly

**408-9828**—Hand Tool Kit 768340-1 for Connector-Specific Kits

**Pneumatic Foot Pedal Unit Part No. 91112-2**

Foot pedal indicates cycle—features adjustable ram and cycle time.





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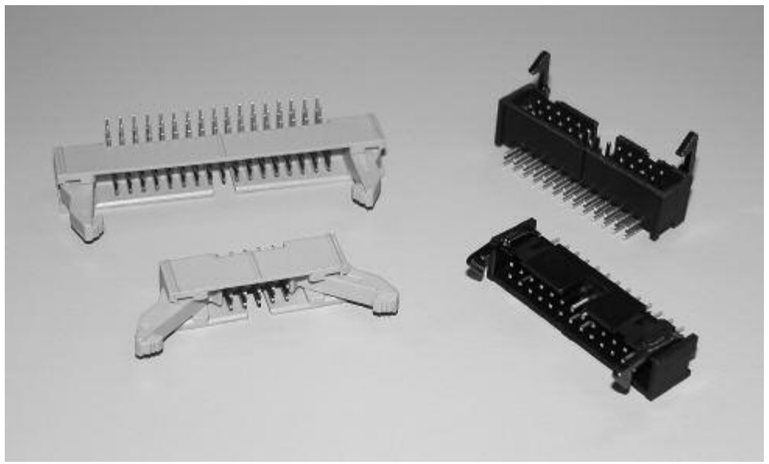
# Low Profile Headers

## Product Facts

- Available in selected positions 10 thru 60
- Flame retardant, thermoplastic housings, 94V-0 rated
- Vertical and right-angle versions available in double row configurations
- Available in .025 [0.64] square drawn wire posts
- Wash out clearance for flux removal
- Mates with Ribbon Cable Connectors
- Available with and without eject latches
- Available with and without "kinked" soldertails for PCB retention
- Headers are recognized under the Component Program of Underwriters Laboratories Inc. File No. E28476
- Headers are certified by Canadian Standards Association, File No. LR 7189
- Low profile IDC headers are recognized under the Component Program of Underwriters Laboratories Inc. File No. E60980, Vol. 5



## Performance Characteristics

### Electrical

**Insulation Resistance** — 5,000 megohms minimum initial

**Dielectric Withstanding Voltage** — 1,000 V rms at sea level

**Current** — 1 ampere maximum per contact

**Operating Voltage** — 250 VAC

### Environmental

**Operating Temperature** — -65°C to +105°C

## Technical Documents

**Product Specifications**
108-40018





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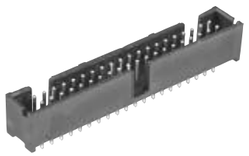
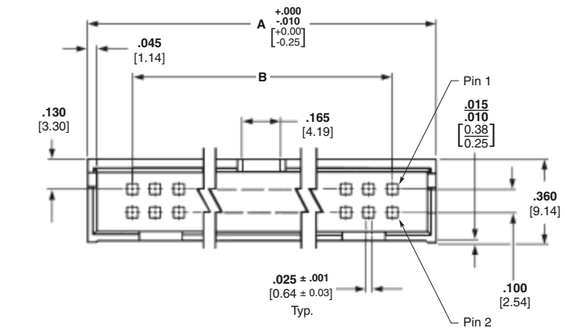
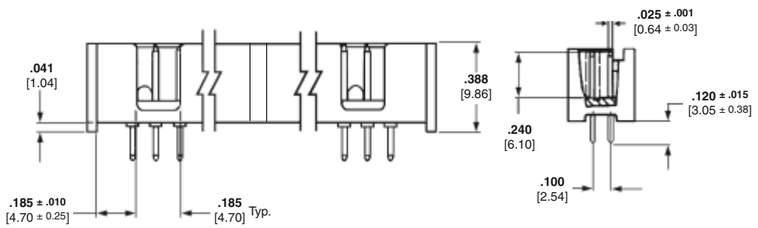
# Low Profile Pin Headers, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines

## Vertical PCB Mount .025 [0.64] Square Post (Mating End)

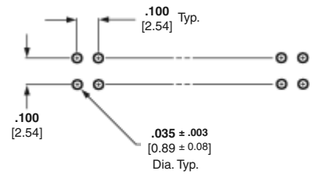











**Recommended PC Board Hole Layout For Manual Insertion**

### Material and Finish

**Housing** — Glass-filled nylon, UL 94V-0 rated, black

**Posts** — Brass, plated as follows:

**Plating A** — Duplex plated, gold flash over palladium-nickel, .000030 [0.00076] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000030 [0.00076] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

**Plating B** — Duplex plated, gold flash over palladium-nickel, .000015 [0.00038] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —
**AMPMODU Wire-Applied Receptacles**
**AMPMODU Board Mount Receptacles**
**Short Point Wire-Applied Connectors**
**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** —
pages 48-55

| No. of Pos. | Dimensions | | Post Plating/Part Nos. | |
|---|---|---|---|---|
| | A | B | Plating A | Plating B |
| 10 | **.800** [20.32] | **.400** [10.16] | 5103309-1 | 5103308-1 |
| 14 | **1.000** [25.40] | **.600** [15.24] | 5103309-2 | 5103308-2 |
| 16 | **1.100** [27.94] | **.700** [17.78] | 5103309-3 | 5103308-3 |
| 20 | **1.300** [33.02] | **.900** [22.86] | 5103309-5 | 5103308-5 |
| 24 | **1.500** [38.10] | **1.100** [27.94] | — | 1-5103308-3 |
| 26 | **1.600** [40.64] | **1.200** [30.48] | 5103309-6 | 5103308-6 |
| 34 | **2.000** [50.80] | **1.600** [40.64] | 5103309-7 | 5103308-7 |
| 40 | **2.300** [58.42] | **1.900** [48.26] | 5103309-8 | 5103308-8 |
| 50 | **2.800** [71.12] | **2.400** [60.96] | 1-5103309-0 | 1-5103308-0 |
| 60 | **3.300** [83.82] | **2.900** [73.66] | — | 1-5103308-2 |

**Note:** All part numbers are RoHS compliant.



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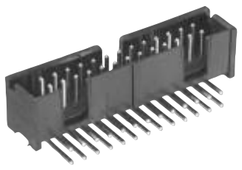
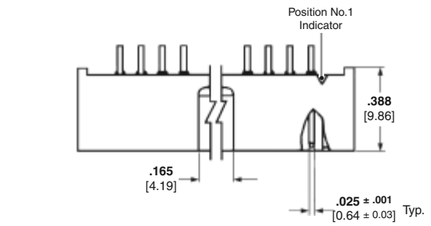
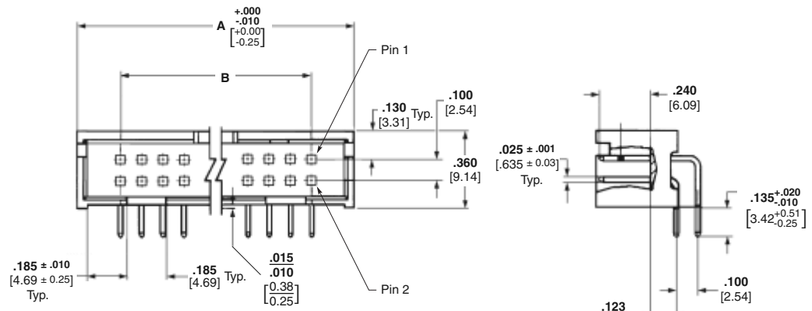
# Low Profile Pin Headers, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)



## Right-Angle PCB Mount .025 [0.64] Square Post (Mating End)

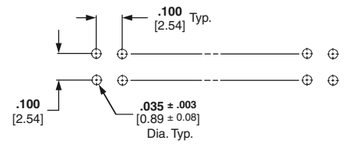











**Recommended PC Board Hole Layout For Manual Insertion**

### Material and Finish

**Housing** — Glass-filled nylon, UL 94V-0 rated, black

**Posts** — Brass, plated as follows:

**Plating A** — Duplex plated, gold flash over palladium-nickel, .000030 [0.00076] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000030 [0.00076] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

**Plating B** — Duplex plated, gold flash over palladium-nickel, .000015 [0.00038] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —
**AMPMODU Wire-Applied Receptacles**
**Short Point Wire-Applied Connectors**
**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55

| No. of Pos. | Dimensions | | Post Plating/Part Nos. | |
|---|---|---|---|---|
| | A | B | Plating A | Plating B |
| 10 | **.800** [20.32] | **.400** [10.16] | 5103311-1 | 5103310-1 |
| 14 | **1.000** [25.40] | **.600** [15.24] | 5103311-2 | 5103310-2 |
| 16 | **1.100** [27.94] | **.700** [17.78] | 5103311-3 | 5103310-3 |
| 20 | **1.300** [33.02] | **.900** [22.86] | 5103311-5 | 5103310-5 |
| 26 | **1.600** [40.64] | **1.200** [30.48] | 5103311-6 | 5103310-6 |
| 34 | **2.000** [50.80] | **1.600** [40.64] | 5103311-7 | 5103310-7 |
| 40 | **2.300** [58.42] | **1.900** [48.26] | 5103311-8 | 5103310-8 |
| 50 | **2.800** [71.12] | **2.400** [60.96] | 1-5103311-0 | 1-5103310-0 |
| 60 | **3.300** [83.82] | **2.900** [73.66] | 1-5103311-2 | — |

**Note:** All part numbers are RoHS compliant.



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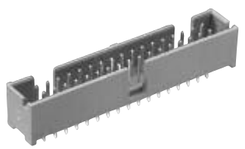
# Low Profile Pin Headers, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines & "Kinked" Solder Tails for PCB Retention

## Vertical PCB Mount .025 [0.64] Square Post (Mating End) with Board Retention Feature



### Material and Finish

**Housing** — Glass-filled PPA, UL 94V-0 rated, black

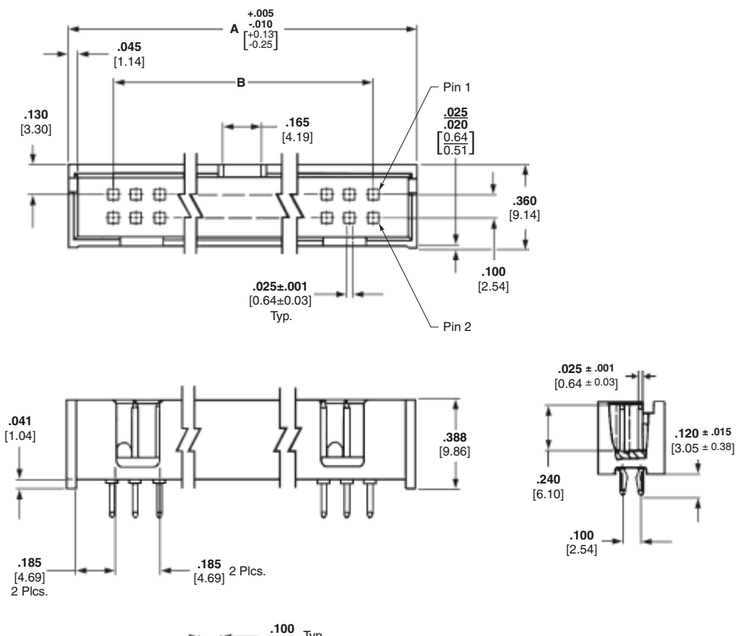
**Posts** — Brass, plated as follows:

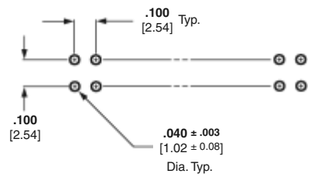
**Plating** — Duplex plated, gold flash over palladium-nickel, .000015 [0.00038] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —
**AMPMODU Wire-Applied Receptacles**
**AMPMODU Board Mount Receptacles**
**Short Point Wire-Applied Connectors**
**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55




**Recommended PC Board Hole Layout For Manual Insertion**

| No. of Pos. | Dimensions A | Dimensions B | Post Plating Part Nos. |
|---|---|---|---|
| 10 | **.800** [20.32] | **.400** [10.16] | 5104338-1 |
| 14 | **1.000** [25.40] | **.600** [15.24] | 5104338-2 |
| 16 | **1.100** [27.94] | **.700** [17.78] | 5104338-3 |
| 20 | **1.300** [33.02] | **.900** [22.86] | 5104338-4 |
| 24 | **1.500** [38.10] | **1.100** [27.94] | 5104338-5 |
| 26 | **1.600** [40.64] | **1.200** [30.48] | 5104338-6 |
| 34 | **2.000** [50.80] | **1.600** [40.64] | 5104338-7 |
| 40 | **2.300** [58.42] | **1.900** [48.26] | 5104338-8 |
| 50 | **2.800** [71.12] | **2.400** [60.96] | 5104338-9 |
| 60 | **3.300** [83.82] | **2.900** [73.66] | 1-5104338-0 |

**Note:** All part numbers are RoHS compliant.



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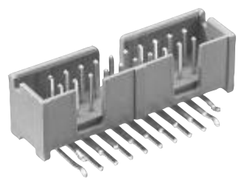
# Low Profile Pin Headers, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines & "Kinked" Solder Tails for PCB Retention (Continued)



## Right-Angle PCB Mount .025 [0.64] Square Post (Mating End) with Board Retention Feature



### Material and Finish

**Housing** — Glass-filled PPA, UL 94V-0 rated, black

**Posts** — Brass, plated as follows:

**Plating** — Duplex plated, gold flash over palladium-nickel, .000015 [0.00038] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel **or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

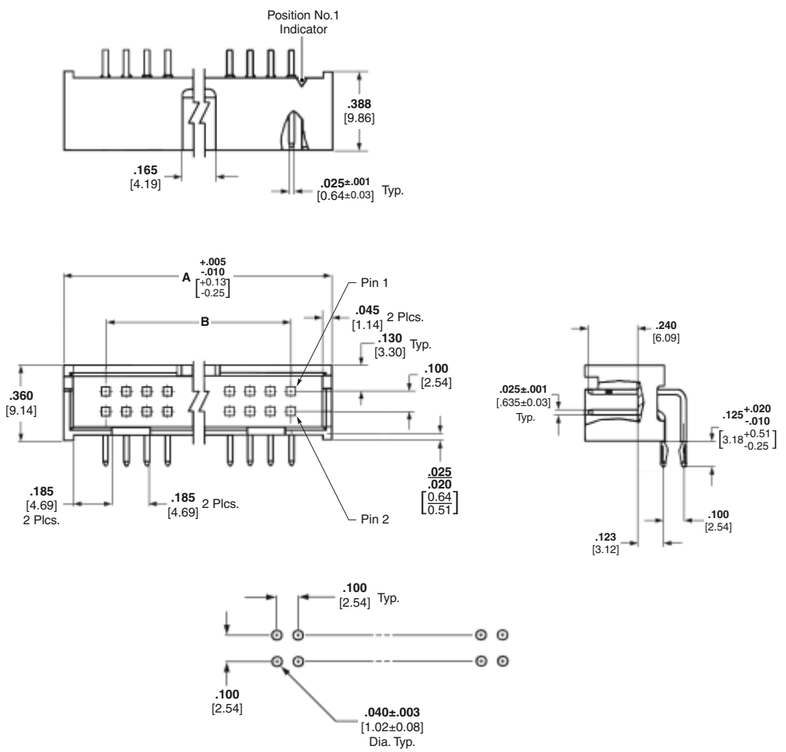
**Electrical Characteristics** — page 75

**Mateable Connectors** —

**AMPMODU Wire-Applied Receptacles**

**Short Point Wire-Applied Connectors**

**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55




**Recommended PC Board Hole Layout For Manual Insertion**

| No. of Pos. | Dimensions A | Dimensions B | Post Plating Part Nos. |
|---|---|---|---|
| 10 | **.800** [20.32] | **.400** [10.16] | 5104340-1 |
| 14 | **1.000** [25.40] | **.600** [15.24] | 5104340-2 |
| 16 | **1.100** [27.94] | **.700** [17.78] | 5104340-3 |
| 20 | **1.300** [33.02] | **.900** [22.86] | 5104340-4 |
| 24 | **1.500** [38.10] | **1.100** [27.94] | 5104340-5 |
| 34 | **2.000** [50.80] | **1.600** [40.64] | 5104340-7 |
| 40 | **2.300** [58.42] | **1.900** [48.26] | 5104340-8 |
| 50 | **2.800** [71.12] | **2.400** [60.96] | 5104340-9 |

**Note:** All part numbers are RoHS compliant.



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# IDC Low Profile Ejection Style Pin Headers with Die Cast Ejection Latches, Military and Center Polarized, .100 x .100 [2.54 x 2.54] Centerlines

## Vertical PCB Mount .025 [0.64] Square Post (Mating End)

### Material and Finish

**Housing** — Glass-filled PBT, UL 94V-0 rated, black

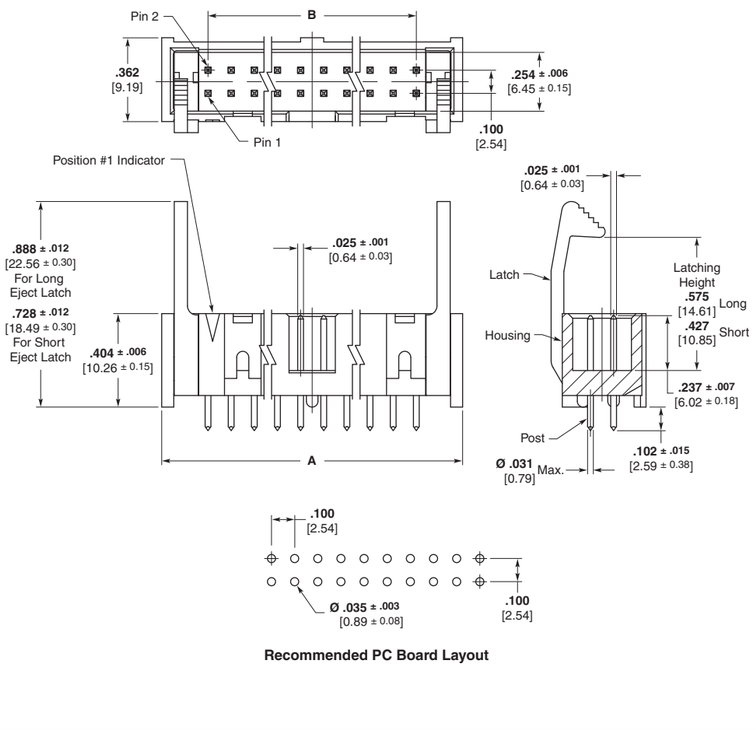
**Posts** — Brass or phosphor bronze, plated as follows:

**Plating** — Duplex plated, gold flash over palladium-nickel, .000030 [0.00076] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000030 [0.00076] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —
**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55




**Recommended PC Board Layout**

| No. of Pos. | Dimensions | | Part Numbers | |
|---|---|---|---|---|
| | A | B | Pin Header with Short Latches (Mates with Receptacles without Strain Relief) | Pin Header with Long Latches (Mates with Receptacles with Strain Relief) |
| 10 | **.800** 20.32 | **.400** 10.16 | 1761608-3 | 1761606-3 |
| 14 | **1.000** 25.40 | **.600** 15.24 | 1761608-5 | 1761606-5 |
| 16 | **1.100** 27.94 | **.700** 17.78 | 1761608-6 | 1761606-6 |
| 20 | **1.300** 33.02 | **.900** 22.86 | 1761608-7 | 1761606-7 |
| 24 | **1.500** 38.10 | **1.100** 27.94 | 1761608-8 | 1761606-8 |
| 26 | **1.600** 40.64 | **1.200** 30.48 | 1761608-9 | 1761606-9 |
| 30 | **1.800** 45.72 | **1.400** 35.56 | — | 1-1761606-0 |
| 34 | **2.000** 50.80 | **1.600** 40.64 | 1-1761608-1 | 1-1761606-1 |
| 40 | **2.300** 58.42 | **1.900** 48.26 | 1-1761608-3 | 1-1761606-3 |
| 50 | **2.800** 71.12 | **2.400** 60.96 | 1-1761608-5 | 1-1761606-5 |
| 60 | **3.300** 83.82 | **2.900** 73.66 | 1-1761608-6 | 1-1761606-6 |

**Note:** All part numbers are RoHS compliant.



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# IDC Low Profile Ejection Style Pin Headers with Die Cast Ejection Latches, Military and Center Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)



## Right-Angle PCB Mount .025 [0.64] Square Post (Mating End)

### Material and Finish

**Housing** — Glass-filled PBT, UL 94V-0 rated, black

**Posts** — Brass or phosphor bronze, plated as follows:

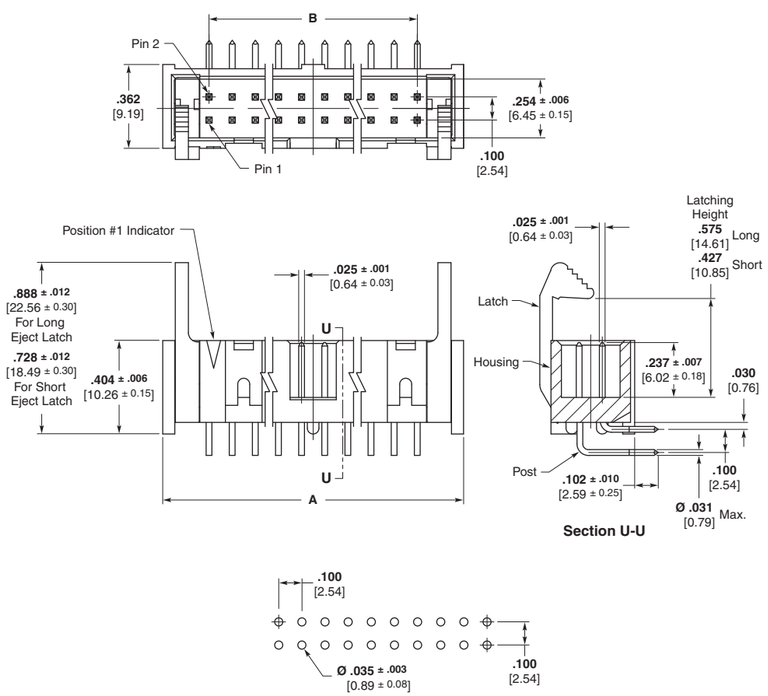
**Plating** — Duplex plated, gold flash over palladium-nickel, .000030 [0.00076] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel
**or** .000030 [0.00076] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —

**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55




**Recommended PC Board Layout**

| No. of Pos. | Dimensions | | Part Numbers | |
|---|---|---|---|---|
| | A | B | Pin Header with Short Latches (Mates with Receptacles without Strain Relief) | Pin Header with Long Latches (Mates with Receptacles with Strain Relief) |
| 10 | **.800** 20.32 | **.400** 10.16 | 1761609-3 | 1761607-3 |
| 14 | **1.000** 25.40 | **.600** 15.24 | 1761609-5 | 1761607-5 |
| 16 | **1.100** 27.94 | **.700** 17.78 | 1761609-6 | 1761607-6 |
| 20 | **1.300** 33.02 | **.900** 22.86 | 1761609-7 | 1761607-7 |
| 26 | **1.600** 40.64 | **1.200** 30.48 | 1761609-9 | 1761607-9 |
| 34 | **2.000** 50.80 | **1.600** 40.64 | 1-1761609-1 | 1-1761607-1 |
| 40 | **2.300** 58.42 | **1.900** 48.26 | 1-1761609-3 | 1-1761607-3 |
| 50 | **2.800** 71.12 | **2.400** 60.96 | 1-1761609-5 | 1-1761607-5 |
| 60 | **3.300** 83.82 | **2.900** 73.66 | 1-1761609-6 | 1-1761607-6 |

**Note:** All part numbers are RoHS compliant.



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# IDC Low Profile Ejection Style Pin Headers, Center Polarized, .100 x .100 [2.54 x 2.54] Centerlines

## Vertical PCB Mount .025 [0.64] Square Post (Mating End)

### Material and Finish

**Housing and Eject Latches** — PBT, UL 94V-0 rated, blue

**Posts** — Phosphor bronze, plated as follows:

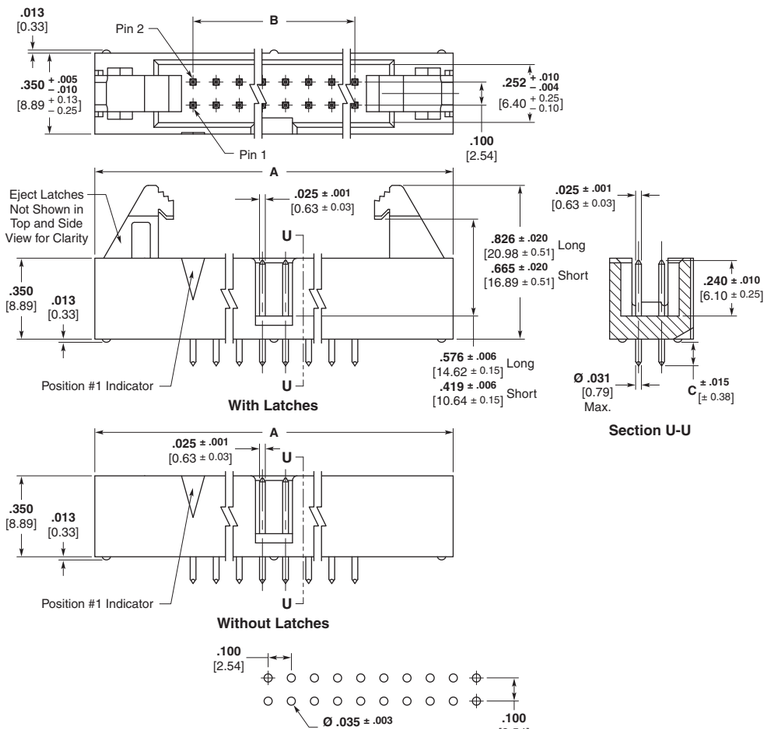
**Plating** — Duplex plated, .000030 [0.00076] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —

**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55




| Dim. C (Soldertail Length) | No. of Pos. | Dimensions A | Dimensions B | Part Numbers: Pin Header without Latches | Part Numbers: Pin Header with Short Latches (Mates with Receptacles without Strain Relief) | Part Numbers: Pin Header with Long Latches (Mates with Receptacles with Strain Relief) |
|---|---|---|---|---|---|---|
| **.102** 2.59 | 10 | **1.250** [31.75] | **.400** [10.16] | 1761693-3 | 1761685-3 | 1761686-3 |
| | 14 | **1.450** [36.83] | **.600** [15.24] | — | — | 1761686-5 |
| | 16 | **1.550** [39.37] | **.700** [17.78] | — | 1761685-6 | 1761686-6 |
| | 20 | **1.750** [44.45] | **.900** [22.86] | — | 1761685-7 | 1761686-7 |
| | 24 | **1.950**[49.53] | **1.100** [27.94] | 1761693-8 | 1761685-8 | 1761686-8 |
| | 26 | **2.050** [52.07] | **1.200** [30.48] | — | 1761685-9 | 1761686-9 |
| | 30 | **2.250** [57.15] | **1.400** [35.56] | — | 1-1761685-0 | — |
| | 34 | **2.450** [62.23] | **1.600** [40.64] | 1-1761693-1 | 1-1761685-1 | 1-1761686-1 |
| | 40 | **2.750** [69.85] | **1.900** [48.26] | — | 1-1761685-3 | 1-1761686-3 |
| | 50 | **3.250** [82.55] | **2.400** [60.96] | — | 1-1761685-5 | 1-1761686-5 |
| | 60 | **3.750** [95.25] | **2.900** [73.66] | 1-1761693-6 | 1-1761685-6 | — |
| **.165** 4.19 | 10 | **1.250** [31.75] | **.400** [10.16] | 1761694-3 | 1761687-3 | — |
| | 14 | **1.450** [36.83] | **.600** [15.24] | — | — | — |
| | 16 | **1.550** [39.37] | **.700** [17.78] | — | — | — |
| | 20 | **1.750** [44.45] | **.900** [22.86] | — | 1761687-7 | 1761688-7 |
| | 24 | **1.950**[49.53] | **1.100** [27.94] | — | — | 1761688-8 |
| | 26 | **2.050** [52.07] | **1.200** [30.48] | 1761694-9 | 1761687-9 | 1761688-9 |
| | 34 | **2.450** [62.23] | **1.600** [40.64] | — | 1-1761687-1 | 1-1761688-1 |
| | 40 | **2.750** [69.85] | **1.900** [48.26] | — | 1-1761687-3 | — |
| | 50 | **3.250** [82.55] | **2.400** [60.96] | — | — | 1-1761688-5 |

**Note:** All part numbers are RoHS compliant.



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# IDC Low Profile Ejection Style Pin Headers, Center Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)

## Right-Angle PCB Mount .025 [0.64] Square Post (Mating End)

### Material and Finish

**Housing and Eject Latches** — PBT, UL 94V-0 rated, blue

**Posts** — Phosphor bronze, plated as follows:

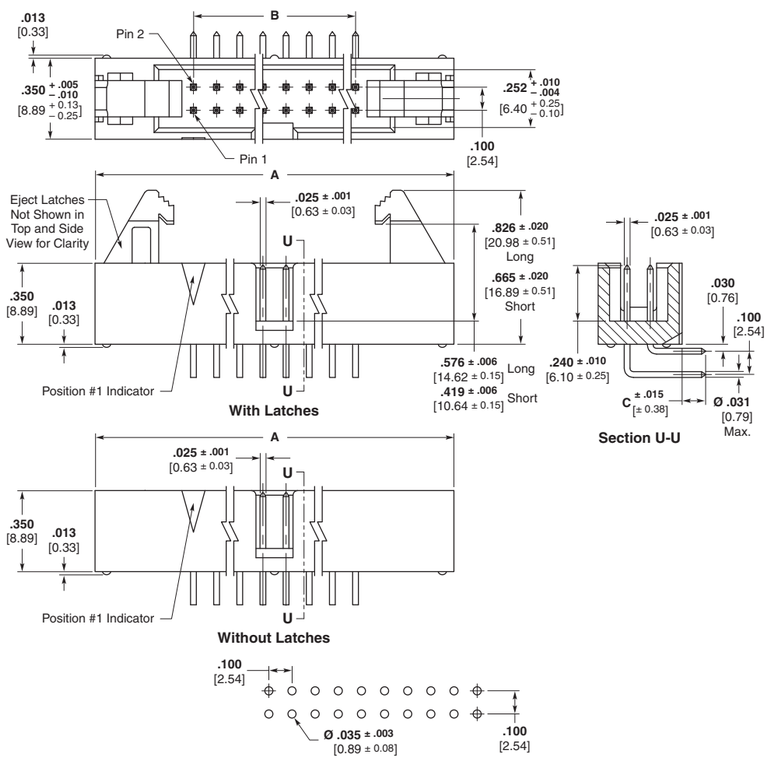
**Plating** — Duplex plated, .000030 [0.00076] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel

### Related Product Data

**Electrical Characteristics** — page 75

**Mateable Connectors** —

**Novo Receptacles and Female Socket Connectors, 609, 622 and 636 Series** — pages 48-55




| Dim. C (Soldertail Length) | No. of Pos. | Dimensions A | Dimensions B | Part Numbers: Pin Header with Long Latches (Mates with Receptacles with Strain Relief) |
|---|---|---|---|---|
| .102 2.59 | 16 | **1.550** [39.37] | **.700** [17.78] | 1761690-6 |
| | 24 | **1.950**[49.53] | **1.100** [27.94] | 1761690-8 |
| | 26 | **2.050** [52.07] | **1.200** [30.48] | 1761690-9 |
| | 30 | **2.250** [57.15] | **1.400** [35.56] | 1-1761690-0 |
| | 60 | **3.750** [95.25] | **2.900** [73.66] | 1-1761690-6 |
| .165 4.19 | 10 | **1.250** [31.75] | **.400** [10.16] | 1761692-3 |
| | 34 | **2.450** [62.23] | **1.600** [40.64] | 1-1761692-1 |
| | 40 | **2.750** [69.85] | **1.900** [48.26] | 1-1761692-3 |

**Note:** All part numbers are RoHS compliant.



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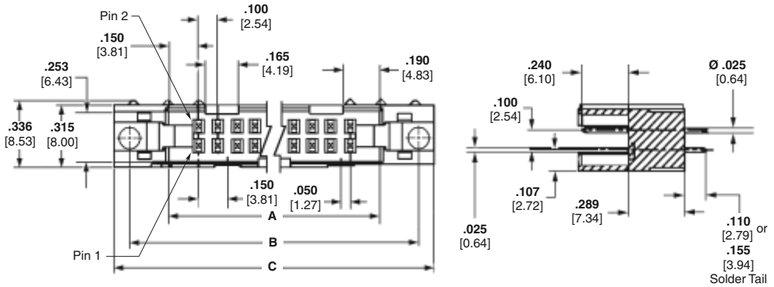
# Universal Ejection Style Pin Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines



## Vertical PCB Mount .025 [0.64] Sq. Posts (Mating End)

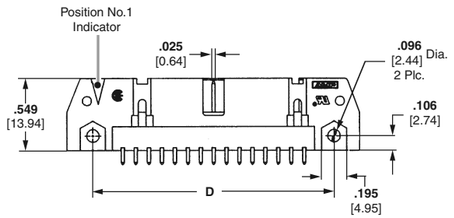
**Pin Header with Latches**

**Pin Header without Latches**










## Material and Finish

**Housing & Latches**—Black PBT or nylon, UL 94V-0 rated

**Contacts** — Brass; duplex plated (See chart, page 85)

## Related Product Data

**Mateable Receptacles** — pages 48-55

**Accessories** — **Snap-In Polarizer** — page 63

## Technical Documents

**Product Specifications**
108-40018 Pin Headers

| No. of Positions | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 10 | **.700** 17.78 | **1.100** 27.94 | **1.260** 32.00 | **.860** 21.84 | **1.100** 27.94 | **.400** 10.16 |
| 14 | **.900** 22.86 | **1.300** 33.02 | **1.460** 37.08 | **1.060** 26.92 | **1.300** 33.02 | **.600** 15.24 |
| 16 | **1.000** 25.40 | **1.400** 35.56 | **1.560** 39.62 | **1.180** 29.46 | **1.400** 35.56 | **.700** 17.78 |
| 20 | **1.200** 30.48 | **1.600** 40.64 | **1.760** 44.70 | **1.360** 34.54 | **1.800** 40.64 | **.900** 22.86 |
| 24 | **1.400** 35.56 | **1.800** 45.72 | **1.960** 49.78 | **1.560** 39.62 | **1.800** 45.72 | **1.100** 27.94 |
| 26 | **1.500** 38.10 | **1.900** 48.26 | **2.060** 52.32 | **1.660** 42.16 | **1.900** 48.26 | **1.200** 30.48 |
| 30 | **1.700** 43.18 | **2.100** 53.34 | **2.260** 57.40 | **1.860** 47.24 | **2.100** 53.34 | **1.400** 35.56 |
| 34 | **1.900** 48.26 | **2.300** 58.42 | **2.460** 62.48 | **2.060** 52.32 | **2.300** 58.42 | **1.600** 40.64 |
| 40 | **2.200** 55.88 | **2.600** 66.04 | **2.760** 70.10 | **2.360** 59.94 | **2.600** 66.04 | **1.900** 48.26 |
| 50 | **2.700** 68.58 | **3.100** 78.74 | **3.260** 82.80 | **2.860** 72.64 | **3.100** 78.74 | **2.400** 60.98 |
| 60 | **3.200** 81.28 | **3.600** 91.44 | **3.760** 95.50 | **3.360** 85.34 | **3.600** 91.44 | **2.900** 73.66 |
| 64 | **3.400** 86.36 | **3.800** 96.52 | **3.960** 100.58 | **3.560** 90.42 | **3.800** 96.52 | **3.100** 78.74 |

**Notes:** 1. Pin headers in 10- and 14-position sizes have only one slot for snap-in polarizer (military polarization), located as shown.
2. Pin headers in 10-position size have only slot for dual polarization, located as shown.
3. For information regarding latch/pin header applications and for ordering latches separately, refer to page 96.



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## Universal Ejection Style Pin Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)

### Vertical PCB Mount .025 [0.64] Sq. Posts (Mating End) (Continued)

| Soldertail Length | No. of Positions | Contact Finish (Plating Code) | Pin Header without Latches | Pin Header w/ Short Latches (Mates with AMP-LATCH Receptacles without Strain Relief) | Pin Header w/ Long Latches (Mates with AMP-LATCH Receptacles with Strain Relief) |
|---|---|---|---|---|---|
| **.110** 2.79 | 10 | A | 5102153-1 | 5499910-1 | 5499922-1 |
| | | B | 5102154-1 | 5499160-1 | 5499206-1 |
| | 14 | A | 5102153-2 | 5499910-2 | 5499922-2 |
| | | B | 5102154-2 | 5499160-2 | 5499206-2 |
| | 16 | A | 5102153-3 | 5499910-3 | 5499922-3 |
| | | B | 5102154-3 | 5499160-3 | 5499206-3 |
| | 20 | A | 5102153-4 | 5499910-4 | 5499922-4 |
| | | B | 5102154-4 | 5499160-4 | 5499206-4 |
| | 24 | A | 5102153-5 | 5499910-5 | 5499922-5 |
| | | B | 5102154-5 | — | 5499206-5 |
| | 26 | A | 5102153-6 | 5499910-6 | 5499922-6 |
| | | B | 5102154-6 | 5499160-6 | 5499206-6 |
| | 30 | A | 5102153-7 | 5499910-7 | 5499922-7 |
| | | B | 5102154-7 | — | 5499206-7 |
| | 34 | A | 5102153-8 | 5499910-8 | 5499922-8 |
| | | B | 5102154-8 | 5499160-8 | 5499206-8 |
| | 40 | A | 5102153-9 | 5499910-9 | 5499922-9 |
| | | B | 5102154-9 | 5499160-9 | 5499206-9 |
| | 50 | A | 1-5102153-0 | 1-5499910-0 | 1-5499922-0 |
| | | B | 1-5102154-0 | 1-5499160-0 | 1-5499206-0 |
| | 60 | A | — | — | 1-5499922-1 |
| | | B | 1-5102154-1 | — | 1-5499206-1 |
| | 64 | A | 1-5102153-2 | — | 1-5499922-2 |
| | | B | 1-5102154-2 | 1-5499160-2 | 1-5499206-2 |
| **.155** 3.94 | 10 | A | 5102155-1 | — | 5499923-1 |
| | | B | 5102156-1 | 5499374-1 | 5102321-1 |
| | 14 | A | — | — | — |
| | | B | 5102156-2 | 5499374-2 | 5102321-2 |
| | 16 | A | 5102155-3 | — | 5499923-3 |
| | | B | 5102156-3 | — | 5102321-3 |
| | 20 | A | — | — | 5499923-4 |
| | | B | 5102156-4 | 5499374-4 | 5102321-4 |
| | 24 | A | — | — | 5499923-5 |
| | | B | 5102156-5 | 5499374-5 | 5102321-5 |
| | 26 | A | 5102155-6 | — | 5499923-6 |
| | | B | 5102156-6 | 5499374-6 | 5102321-6 |
| | 30 | A | — | — | 5499923-7 |
| | | B | 5102156-7 | — | 5102321-7 |
| | 34 | A | 5102155-8 | 5499911-8 | 5499923-8 |
| | | B | 5102156-8 | 5499374-8 | 5102321-8 |
| | 40 | A | 5102155-9 | 5499911-9 | 5499923-9 |
| | | B | 5102156-9 | 5499374-9 | 5102321-9 |
| | 50 | A | 1-5102155-0 | — | 1-5499923-0 |
| | | B | 1-5102156-0 | 1-5499374-0 | 1-5102321-0 |
| | 60 | A | — | — | 1-5499923-1 |
| | | B | 1-5102156-1 | — | 1-5102321-1 |
| | 64 | A | 1-5102155-2 | — | 1-5499923-2 |
| | | B | 1-5102156-2 | — | 1-5102321-2 |

**Plating Code A** — Gold flash over palladium-nickel plate, .000015 [0.00038] min. total on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min nickel underplate **or** .000015 [0.00038] min. gold on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min. nickel underplate.
**Plating Code B** — Gold flash over palladium-nickel plate, .000030 [0.00076] min. total on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min nickel underplate **or** .000030 [0.00076] min. gold on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min. nickel underplate.

**Note:** All part numbers are RoHS compliant.





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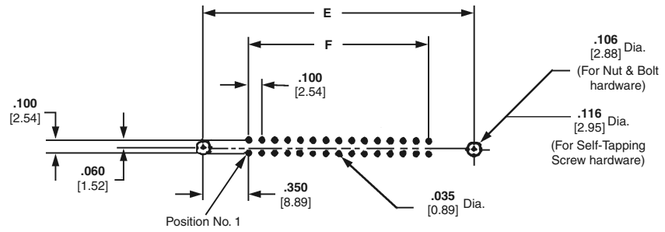
## Universal Ejection Style Pin Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)



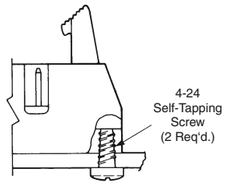
### Mounting Information

4-24 self-tapping screws and 2-56 bolts and nuts are available for mounting straight-thru pin headers of pc boards. Typical applications and part nos. for ordering this hardware are presented below.

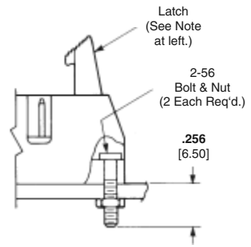



**Recommended Mounting Hole Pattern**
**For Vertical PCB Mount Headers**

PC board thicknesses are : .062 [1.57] for .110 [2.79] long posts,
.125 [3.18] for .155 [3.94] long posts.




**Pin Header Mounting using 4-24 Self-Tapping Screws:**
**Part No. 19156-1 (for .062 [1.57] Thick PC Board)**
**19156-2 (for .093 [2.36] Thick PC Board)**
**19156-3 (for .125 [3.18] Thick PC Board)**




**Pin Header Mounting with 2-56 Bolts and Nuts:**
**Part No. 746383-1 (Bolt Only)**
**Kit No. 102198-1 (Bolt and Nut, 2 Each per Kit)**

**Note:** 2-56 bolts and nuts may be used to mount pin headers with and without latches. If latches are to be used, the bolts must be positioned in the pin header before the latches are installed.

**Note:** All part numbers are RoHS compliant.



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# Universal Ejection Style Pin Headers with ACTION PIN Contacts, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines

## Vertical PCB Mount .025 [0.64] Sq. Posts (Mating End)

**Pin Header without Latches**

### Material and Finish

**Housing** — Black PBT or nylon, UL 94V-0 rated

**Contacts**—Copper alloy; duplex plated (See chart, page 88)

### Related Product Data

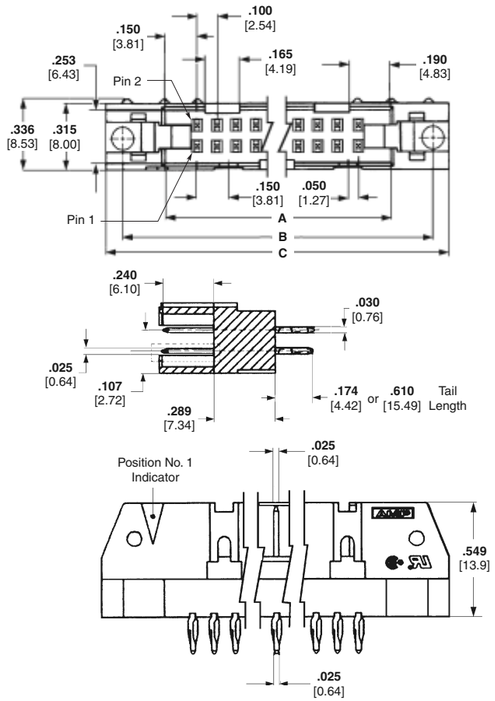
**Mateable Receptacles** — pages 48-55

**Accessories** —
**Snap-In Polarizer** — page 63

### Technical Documents

**Product Specifications**
108-40019 Pin Headers with ACTION PIN Contacts

**Application Specification**
114-40020 AMP-LATCH Universal Headers with ACTION PIN Contacts




| No. of Positions | Dimensions | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 10 | **.700** 17.78 | **1.100** 27.94 | **1.260** 32.00 | **1.100** 27.94 | **.400** 10.16 |
| 14 | **.900** 22.86 | **1.300** 33.02 | **1.460** 37.08 | **1.300** 33.02 | **.600** 15.24 |
| 16 | **1.000** 25.40 | **1.400** 35.56 | **1.560** 39.62 | **1.400** 35.56 | **.700** 17.78 |
| 20 | **1.200** 30.48 | **1.600** 40.64 | **1.760** 44.70 | **1.600** 40.64 | **.900** 22.86 |
| 24 | **1.400** 35.56 | **1.800** 45.72 | **1.960** 49.78 | **1.800** 45.72 | **1.100** 27.94 |
| 26 | **1.500** 38.10 | **1.900** 48.26 | **2.060** 52.32 | **1.900** 48.26 | **1.200** 30.48 |
| 30 | **1.700** 43.18 | **2.100** 53.34 | **2.260** 57.40 | **2.100** 53.34 | **1.400** 35.56 |
| 34 | **1.900** 48.26 | **2.300** 58.42 | **2.460** 62.48 | **2.300** 58.42 | **1.600** 40.64 |
| 40 | **2.200** 55.88 | **2.600** 66.04 | **2.760** 70.10 | **2.600** 66.04 | **1.900** 48.26 |
| 50 | **2.700** 68.58 | **3.100** 78.74 | **3.260** 82.80 | **3.100** 78.74 | **2.400** 60.96 |
| 60 | **3.200** 81.28 | **3.600** 91.44 | **3.760** 95.50 | **3.600** 91.44 | **2.900** 73.66 |
| 64 | **3.400** 86.36 | **3.800** 96.52 | **3.960** 100.58 | **3.800** 96.52 | **3.100** 78.74 |

**Notes:** 1. Pin headers in 10- and 14-position sizes have only one slot for snap-in polarizer (military polarization), located as shown.
2. Pin headers in 10-position size have only slot for dual polarization, located as shown.
3. For information regarding latch/pin header applications and for ordering latches separately, refer to page 96.





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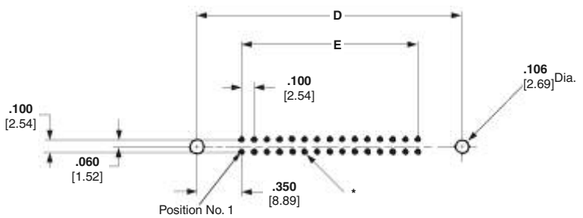
## Universal Ejection Style Pin Headers with ACTION PIN Contacts, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)

| Tail Length | No. of Positions | Contact Finish (Plating Code) | Pin Header (without Latches) |
|---|---|---|---|
| **.174** [4.42] | 10 | B | 1658694-6 |
| | 14 | | 1658694-7 |
| | 16 | | 1658694-8 |
| | 20 | | 1658694-1 |
| | 24 | | 1658694-9 |
| | 26 | | 1658694-2 |
| | 30 | | 1-1658694-0 |
| | 34 | | 1-1658694-1 |
| | 40 | | 1658694-3 |
| | 50 | | 1658694-4 |
| | 64 | | 1658694-5 |
| **.610** [15.49] | 10 | B | 1658695-2 |
| | 14 | | 1658695-3 |
| | 16 | | 1658695-4 |
| | 20 | | 1658695-5 |
| | 26 | | 1658695-6 |
| | 34 | | 1658695-1 |
| | 40 | | 1658695-7 |
| | 50 | | 1658695-8 |
| | 60 | | 1658695-9 |

**Plating Code B** — Gold flash over palladium-nickel plate, .000030 [0.00076] min. total on the mating surfaces, .000100 [0.00254] min. tin plate on the tails, over .000050 [0.00127] min nickel underplate **or** .000030 [0.00076] min. gold on the mating surfaces, .000100 [0.00254] min. tin plate on the tails, over .000050 [0.00127] min. nickel underplate.

### Mounting Information

4-24 self-tapping screws and 2-56 bolts and nuts are available for mounting straight-thru pin headers of pc boards. Typical applications and part nos. for ordering this hardware are presented on page 86.




**Recommended Mounting Hole Pattern For Vertical PCB Mount Header With ACTION PIN Contacts**

*For .080 [2.03] min. thick PCB refer to Application Specification 114-40020 for hole size and finish recommendations.

**Note:** All part numbers are RoHS compliant.





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# Universal Ejection Style Pin Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines

## Right-Angle PCB Mount .025 [0.64] Sq. Posts (Mating End)

**Pin Header with Latches**

**Pin Header without Latches**

## Material and Finish

**Housing & Latches** — Black PBT or nylon, UL 94V-0 rated

**Contacts** — Brass; duplex plated (See chart, page 90)

## Related Product Data

**Mateable Receptacles** — pages 48-55

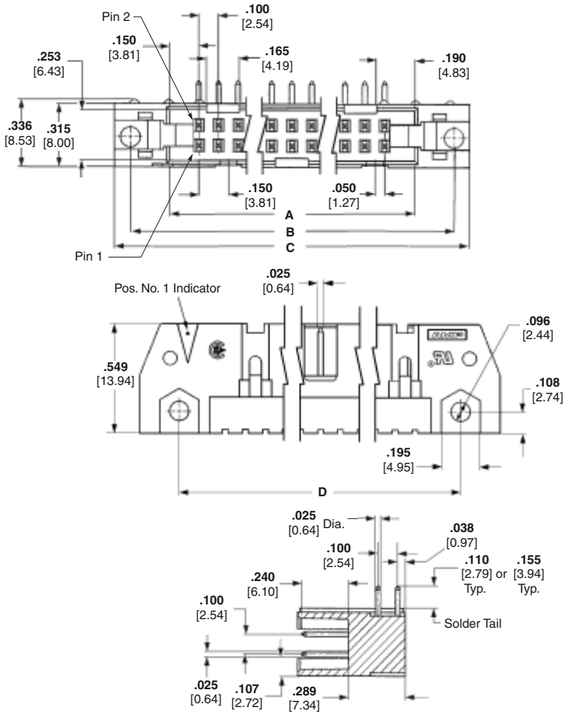
**Accessories** —

**Snap-In Polarizer** — page 63

## Technical Documents

**Product Specifications**

108-40018 Pin Headers




| No. of Positions | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 10 | .700 17.78 | 1.100 27.94 | 1.260 32.00 | .860 21.84 | .860 21.84 | .400 10.16 |
| 14 | .900 22.86 | 1.300 33.02 | 1.460 37.08 | 1.060 26.92 | 1.060 26.92 | .600 15.24 |
| 16 | 1.000 25.40 | 1.400 35.56 | 1.560 39.62 | 1.180 29.46 | 1.180 29.46 | .700 17.78 |
| 20 | 1.200 30.48 | 1.600 40.64 | 1.760 44.70 | 1.380 34.54 | 1.380 34.54 | .900 22.86 |
| 24 | 1.400 35.56 | 1.800 45.72 | 1.960 49.78 | 1.560 39.62 | 1.560 39.62 | 1.100 27.94 |
| 26 | 1.500 38.10 | 1.900 48.26 | 2.060 52.32 | 1.660 42.16 | 1.660 42.16 | 1.200 30.48 |
| 30 | 1.700 43.18 | 2.100 53.34 | 2.260 57.40 | 1.860 47.24 | 1.860 47.24 | 1.400 35.56 |
| 34 | 1.900 48.26 | 2.300 58.42 | 2.460 62.48 | 2.060 52.32 | 2.060 52.32 | 1.600 40.64 |
| 40 | 2.200 55.88 | 2.600 66.04 | 2.760 70.10 | 2.360 59.94 | 2.360 59.94 | 1.900 48.26 |
| 50 | 2.700 68.58 | 3.100 78.74 | 3.260 82.80 | 2.860 72.64 | 2.860 72.64 | 2.400 60.98 |
| 60 | 3.200 81.28 | 3.600 91.44 | 3.760 95.50 | 3.360 85.34 | 3.360 85.34 | 2.900 73.66 |
| 64 | 3.400 86.36 | 3.800 96.52 | 3.960 100.58 | 3.560 90.42 | 3.560 90.42 | 3.100 78.74 |

**Notes:** 1. Pin headers in 10- and 14-position sizes have only one slot for snap-in polarizer (military polarization), located as shown.
2. Pin headers in 10-position size have only slot for dual polarization, located as shown.





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## Universal Ejection Style Pin Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)

### Right-Angle PCB Mount .025 [0.64] Sq. Posts (Mating End) (Continued)

| Soldertail Length | No. of Positions | Contact Finish (Plating Code) | Pin Header without Latches | Pin Header w/ Short Latches (Mates with Receptacles without Strain Relief) | Pin Header w/ Long Latches (Mates with Receptacles with Strain Relief) |
|---|---|---|---|---|---|
| **.110** 2.79 | 10 | A | 5102159-1 | 5499913-1 | 5499786-1 |
| | | B | 5102160-1 | 5499345-1 | 5499141-1 |
| | 14 | A | 5102159-2 | 5499913-2 | 5499786-2 |
| | | B | — | 5499345-2 | 5499141-2 |
| | 16 | A | 5102159-3 | 5499913-3 | — |
| | | B | 5102160-3 | — | 5499141-3 |
| | 20 | A | 5102159-4 | 5499913-4 | 5499786-4 |
| | | B | 5102160-4 | — | 5499141-4 |
| | 24 | A | — | 5499913-5 | 5499786-5 |
| | | B | 5102160-5 | 5499345-5 | — |
| | 26 | A | 5102159-6 | 5499913-6 | 5499786-6 |
| | | B | 5102160-6 | — | 5499141-6 |
| | 30 | A | 5102159-7 | 5499913-7 | — |
| | | B | — | — | 5499141-7 |
| | 34 | A | 5102159-8 | 5499913-8 | 5499786-8 |
| | | B | 5102160-8 | — | 5499141-8 |
| | 40 | A | 5102159-9 | 5499913-9 | 5499786-9 |
| | | B | 5102160-9 | 5499345-9 | 5499141-9 |
| | 50 | A | 1-5102159-0 | 1-5499913-0 | 1-5499786-0 |
| | | B | 1-5102160-0 | 1-5499345-0 | 1-5499141-0 |
| | 60 | A | 1-5102159-1 | 1-5499913-1 | 1-5499786-1 |
| | | B | 1-5102160-1 | — | 1-5499141-1 |
| | 64 | A | 1-5102159-2 | — | 1-5499786-2 |
| | | B | 1-5102160-2 | — | 1-5499141-2 |
| **.155** 3.94 | 10 | A | — | — | — |
| | | B | 5102162-1 | — | 5102322-1 |
| | 14 | A | 5102161-2 | — | 5499925-2 |
| | | B | 5102162-2 | — | 5102322-2 |
| | 16 | A | — | — | — |
| | | B | — | — | 5102322-3 |
| | 20 | A | 5102161-4 | 5499914-4 | — |
| | | B | — | — | 5102322-4 |
| | 24 | A | 5102161-5 | — | 5499925-5 |
| | | B | 5102162-5 | — | 5102322-5 |
| | 26 | A | — | — | — |
| | | B | — | — | 5102322-6 |
| | 30 | A | 5102161-7 | — | — |
| | | B | 5102162-7 | — | — |
| | 34 | A | 5102161-8 | 5499914-8 | — |
| | | B | 5102162-8 | — | 5102322-8 |
| | 40 | A | — | — | — |
| | | B | — | 5499376-9 | — |
| | 50 | A | — | — | 1-5499925-0 |
| | | B | 1-5102162-0 | — | — |
| | 60 | A | — | — | — |
| | | B | 1-5102162-1 | — | — |
| | 64 | A | — | — | — |
| | | B | 1-5102162-2 | — | — |

**Plating Code A** — Gold flash over palladium-nickel plate, .000015 [0.00038] min. total on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min nickel underplate **or** .000015 [0.00038] min. gold on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min. nickel underplate.
**Plating Code B** — Gold flash over palladium-nickel plate, .000030 [0.00076] min. total on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min nickel underplate **or** .000030 [0.00076] min. gold on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min. nickel underplate.

**Note:** All part numbers are RoHS compliant.





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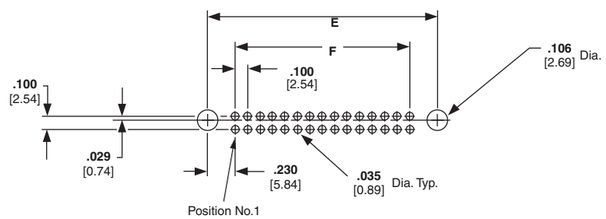
## Universal Ejection Style Pin Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)

### Mounting Information

No mounting hardware is supplied by TE.




**Recommended Mounting Hole Pattern For Right-Angle PCB Mount Headers**

PC board thicknesses are : .062 [1.57] for .110 [2.79] long posts, .125 [3.18] for .155 [3.94] long posts.





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# Universal Ejection Style Pinless Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines

## Vertical PCB Mount .025 [0.64] Sq. Posts (without latches)

**Pinless Header**

### Material and Finish

**Housing** — Black PBT or nylon, UL 94V-0 rated

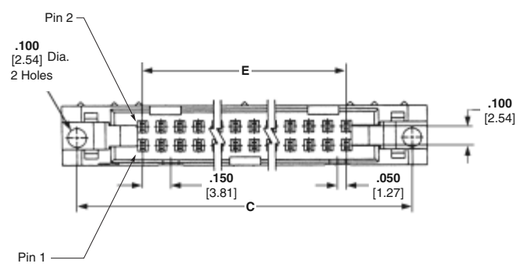
### Related Product Data

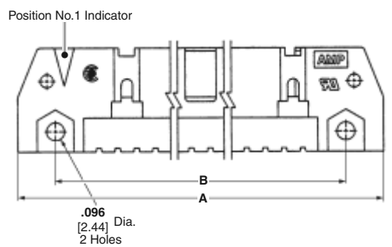
**Mateable Receptacles** — pages 48-55

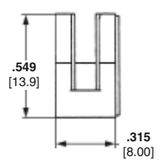
**Accessories** —
**Snap-In Polarizer** — page 63

### Technical Documents

**Product Specifications**
108-40018 Pin Headers




| No. of Pos. | Dimensions | | | | Pinless Header Part Nos. | |
|---|---|---|---|---|---|---|
| | A | B | C | E | Press-Fit | Clearance-Fit |
| 10 | **1.260** 32.00 | **.860** 21.84 | **1.100** 27.94 | **.400** 10.16 | 499726-1 | 102142-6 |
| 14 | **1.460** 37.08 | **1.060** 26.92 | **1.300** 33.02 | **.600** 15.24 | — | 102142-8 |
| 16 | **1.560** 39.62 | **1.160** 29.46 | **1.400** 35.56 | **.700** 17.78 | — | 102142-9 |
| 20 | **1.760** 44.70 | **1.360** 34.54 | **1.600** 40.64 | **.900** 22.86 | — | 102142-1 |
| 24 | **1.960** 49.78 | **1.560** 39.62 | **1.800** 45.72 | **1.100** 27.94 | — | 1-102142-0 |
| 26 | **2.060** 52.32 | **1.660** 42.16 | **1.900** 48.26 | **1.200** 30.48 | — | 102142-2 |
| 34 | **2.460** 62.48 | **2.060** 52.32 | **2.300** 58.42 | **1.600** 40.64 | 499726-8 | 102142-3 |
| 40 | **2.760** 70.10 | **2.360** 59.94 | **2.600** 66.04 | **1.900** 48.26 | 499726-9 | 102142-4 |
| 50 | **3.260** 82.80 | **2.860** 72.64 | **3.100** 78.74 | **2.400** 60.96 | 1-499726-0 | 102142-5 |
| 60 | **3.760** 95.50 | **3.360** 85.34 | **3.600** 91.44 | **2.900** 73.66 | 1-499726-1 | 102142-7 |
| 64 | **3.960** 100.58 | **3.560** 90.42 | **3.800** 96.52 | **3.100** 78.74 | 1-499726-2 | 1-102142-3 |

**Notes:** 1. 10- and 14-position pinless headers have only one slot for snap-in polarizer (military polarization).
2. 10-position pinless headers have only one slot for dual polarization.
3. For information regarding latch/pin header applications and for ordering latches separately, refer to page 96.
All part numbers are RoHS compliant.

**Note:** All part numbers are RoHS compliant.





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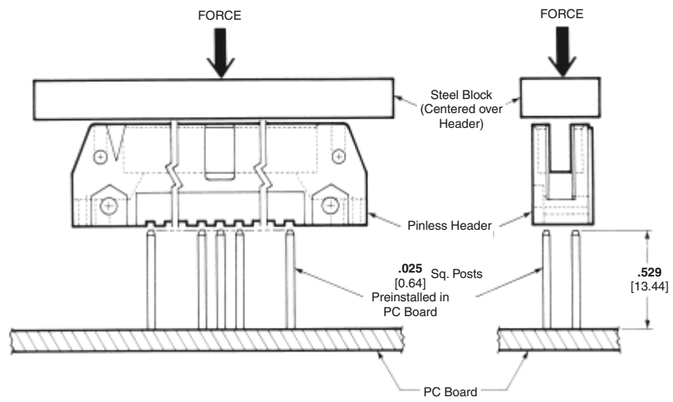
## Universal Ejection Style Pinless Headers, Military, Center and Dual Polarized, .100 x .100 [2.54 x 2.54] Centerlines (Continued)

### Installation of Press-Fit Pinless Headers

Insertion Instructions:

1. Place pinless header over preinstalled posts so that post tips start into header cavities.
2. With bottom of pc board supported, place steel block over header. Steel block must be wider and longer than header so that it covers all four sides of the header. However, for headers with latches pre-assembled, the steel block must not interfere with the latches.
3. Apply an even, centered force on steel block until header bottoms on pc board. If posts are longer than .545 [13.84], they may be forced against the steel block before the header is fully seated. In this situation, extreme caution must be taken so that posts are not damaged or pushed out of the pc board.




**Insertion Force:** 60 lb. [267 N] max.
**Retention Force:** 20 lb. [89 N] min.

**TE recommends the use of a typical manual frame assembly for insertion of pinless headers. The frame assembly and steel block are not supplied by TE.**





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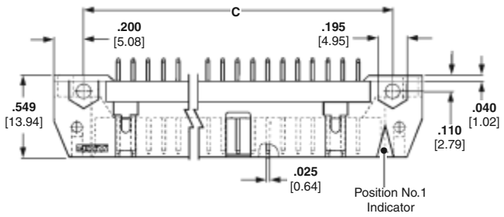
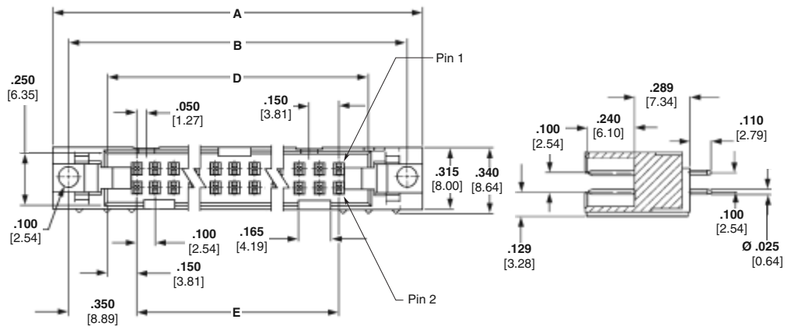
# Universal Ejection Style Pin Headers with PCT Housing, .100 x .100 [2.54 x 2.54] Centerlines, .025 [0.64] Sq. Posts (Mating End)

Vertical PCB Mount



Right-Angle PCB Mount




Vertical

## Material and Finish

**Housing** — Red PCT, UL 94V-0 rated

**Contacts** — Brass; Gold flash over palladium-nickel plate, .000030 [0.00076] min. total on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min. nickel underplate **or** .000030 [0.00076] min. gold on the mating surfaces, .000100 [0.00254] min. tin plate on the soldertails, over .000050 [0.00127] min. nickel underplate

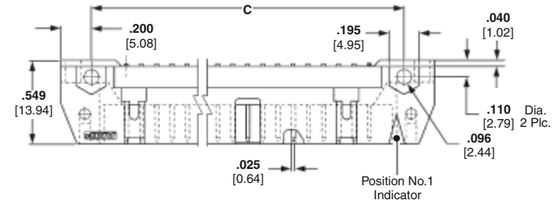
## Related Product Data

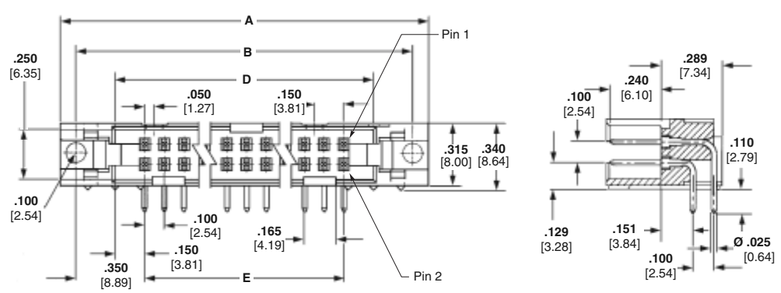
**Mateable Receptacles** — pages 48-55

**Accessories** —
**Snap-In Polarizer** — page 63

## Technical Documents

**Product Specifications**
108-40018 Pin Headers




Right-Angle



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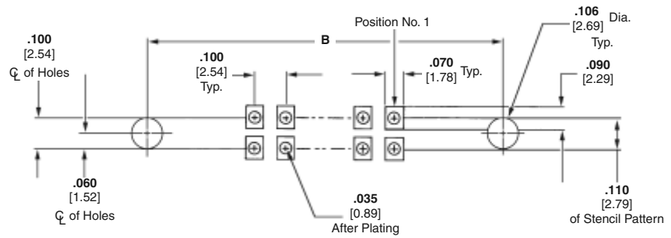
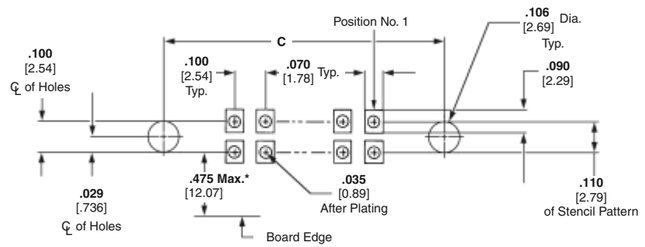
## Universal Ejection Style Pin Headers with PCT Housing, .100 x .100 [2.54 x 2.54] Centerlines, .025 [0.64] Sq. Posts (Mating End) (Continued)

| No. of Pos. | Dimensions | | | | | Part Numbers | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | Vertical Pin Header (without Latches) | Right-Angle Pin Header (without Latches) |
| 10 | **1.260** 32.00 | **1.100** 27.94 | **.860** 21.84 | **.700** 17.78 | **.400** 10.16 | 5111008-1 | — |
| 14 | **1.460** 37.08 | **1.300** 33.02 | **1.060** 26.92 | **.900** 22.86 | **.600** 15.24 | — | 5111105-2 |
| 16 | **1.560** 39.62 | **1.400** 35.56 | **1.160** 29.46 | **1.000** 25.40 | **.700** 17.78 | — | 5111105-3 |
| 20 | **1.760** 44.70 | **1.600** 40.64 | **1.360** 34.54 | **1.200** 30.48 | **.900** 22.86 | — | 5111105-4 |
| 24 | **1.960** 49.78 | **1.800** 40.64 | **1.560** 39.62 | **1.400** 35.56 | **1.100** 27.94 | 5111008-5 | 5111105-5 |
| 26 | **2.060** 52.32 | **1.900** 48.26 | **1.660** 42.16 | **1.500** 38.10 | **1.200** 30.48 | — | 5111105-6 |
| 30 | **2.260** 57.40 | **2.100** 53.34 | **1.860** 47.24 | **1.700** 43.18 | **1.400** 35.56 | 5111008-7 | 5111105-7 |
| 34 | **2.460** 62.48 | **2.300** 58.42 | **2.060** 52.32 | **1.900** 48.26 | **1.600** 40.64 | 5111008-8 | 5111105-8 |
| 40 | **2.760** 70.10 | **2.600** 66.04 | **2.360** 59.94 | **2.200** 55.88 | **1.900** 48.26 | 5111008-9 | 5111105-9 |
| 50 | **3.260** 82.80 | **3.100** 78.74 | **2.860** 72.64 | **2.700** 68.58 | **2.400** 60.98 | 1-5111008-0 | 1-5111105-0 |
| 60 | **3.760** 95.50 | **3.600** 91.44 | **3.360** 85.34 | **3.200** 81.28 | **2.900** 73.66 | 1-5111008-1 | 1-5111105-1 |
| 64 | **3.960** 100.58 | **3.800** 96.52 | **3.560** 90.42 | **3.400** 86.36 | **3.100** 78.74 | 1-5111008-2 | 1-5111105-2 |




**Recommended PC Board Mounting Pattern for Vertical Header**




**Recommended Pc Board Mounting Pattern for Right-Angle Header**
*Max. distance from edge of PC board for daisy chain applications

**Note:** All part numbers are RoHS compliant.





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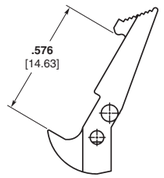
# Latches for Ejection Style Universal Pin Headers and Pinless Headers

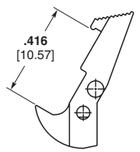
## Latch/Pin Header Applications

### Latches for use with Novo Receptacles and Female Socket Connectors, 609, 622 & 636 Series

**Material**
Red PCT, UL 94V-0 Rated




**Long Latch Part No. 111338-1**
(See Figure 1)




**Short Latch Part No. 111293-1**
(See Figure 2)

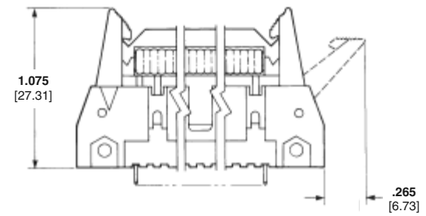



**Figure 1 — Use Long Latch for AMP-LATCH Novo Receptacles with Strain Relief & Female Socket Connectors with Strain Relief**

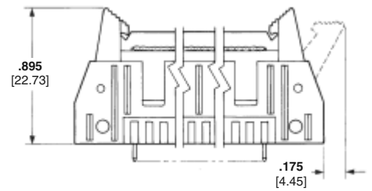
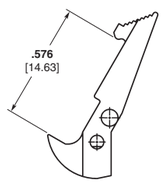
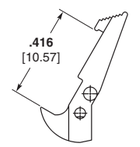



**Figure 2 — Use Short Latch for AMP-LATCH Novo Receptacles without Strain Relief & Female Socket Connectors without Strain Relief**

**Material**
Black thermoplastic, UL 94V-0 Rated

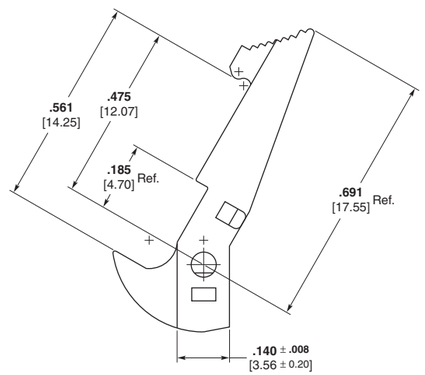



**Long Latch Part No. 102320-1**
(See Figure 1)




**Short Latch Part No. 102312-1**
(See Figure 2)

**Material**
Black thermoplastic, UL 94V-0 Rated




**Special Long Latch Part No. 1825851-1 for AMPMODU Mod IV Housing with Center Polarization Key**

**Note:** All part numbers are RoHS compliant.



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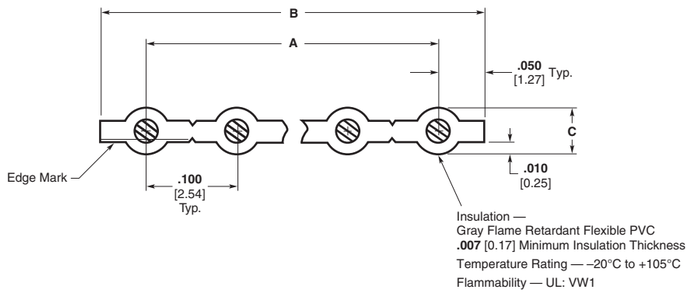
## Cable Solutions

### .100 [2.54] Centerline, IDC Ribbon Cable, PVC Insulation

**Product Specifications**

**Voltage Rating** — 300 Volts
**UL Recognized** — AWM Style 2651
**CSA** — Available on request




| No. of Conductors | Dimensions A | B | C | Part Number |
|---|---|---|---|---|
| **24 AWG 7/32 Tinned Copper** | | | | |
| 2 | .100 [2.54] | .200 [5.08] | .044 [1.12] | 57746-2 |
| 5 | .400 [10.16] | .500 [12.70] | .044 [1.12] | 57746-5 |
| 10 | .900 [22.86] | 1.000 [25.40] | .044 [1.12] | 1-57746-0 |
| 15 | 1.400 [35.56] | 1.500 [38.10] | .044 [1.12] | 1-57746-5 |
| 20 | 1.900 [48.26] | 2.000 [50.80] | .044 [1.12] | 2-57746-0 |
| 25 | 2.400 [60.96] | 2.500 [63.50] | .044 [1.12] | 2-57746-5 |
| 28 | 2.700 [68.58] | 2.800 [71.12] | .044 [1.12] | 2-57746-8 |
| **26 AWG 7/34 Tinned Copper** | | | | |
| 2 | .100 [2.54] | .200 [5.08] | .039 [0.99] | 57744-2 |
| 5 | .400 [10.16] | .500 [12.70] | .039 [0.99] | 57744-5 |
| 10 | .900 [22.86] | 1.000 [25.40] | .039 [0.99] | 1-57744-0 |
| 15 | 1.400 [35.56] | 1.500 [38.10] | .039 [0.99] | 1-57744-5 |
| 20 | 1.900 [48.26] | 2.000 [50.80] | .039 [0.99] | 2-57744-0 |
| 25 | 2.400 [60.96] | 2.500 [63.50] | .039 [0.99] | 2-57744-5 |
| 28 | 2.700 [68.58] | 2.800 [71.12] | .039 [0.99] | 2-57744-8 |
| **26 AWG 7/34 Overcoated Tinned Copper** | | | | |
| 2 | .100 [2.54] | .200 [5.08] | .039 [0.99] | 57745-2 |
| 5 | .400 [10.16] | .500 [12.70] | .039 [0.99] | 57745-5 |
| 10 | .900 [22.86] | 1.000 [25.40] | .039 [0.99] | 1-57745-0 |
| 15 | 1.400 [35.56] | 1.500 [38.10] | .039 [0.99] | 1-57745-5 |
| 20 | 1.900 [48.26] | 2.000 [50.80] | .039 [0.99] | 2-57745-0 |
| 25 | 2.400 [60.96] | 2.500 [63.50] | .039 [0.99] | 2-57745-5 |
| 28 | 2.700 [68.58] | 2.800 [71.12] | .039 [0.99] | 2-57745-8 |

| No. of Conductors | Dimensions A | B | C | Part Number |
|---|---|---|---|---|
| **24 AWG 7/32 Overcoated Tinned Copper** | | | | |
| 2 | .100 [2.54] | .200 [5.08] | .044 [1.12] | 57747-2 |
| 5 | .400 [10.16] | .500 [12.70] | .044 [1.12] | 57747-5 |
| 10 | .900 [22.86] | 1.000 [25.40] | .044 [1.12] | 1-57747-0 |
| 15 | 1.400 [35.56] | 1.500 [38.10] | .044 [1.12] | 1-57747-5 |
| 20 | 1.900 [48.26] | 2.000 [50.80] | .044 [1.12] | 2-57747-0 |
| 25 | 2.400 [60.96] | 2.500 [63.50] | .044 [1.12] | 2-57747-5 |
| 28 | 2.700 [68.58] | 2.800 [71.12] | .044 [1.12] | 2-57747-8 |
| **22 AWG 7/30 Tinned Copper** | | | | |
| 2 | .100 [2.54] | .200 [5.08] | .051 [1.30] | 57748-2 |
| 5 | .400 [10.16] | .500 [12.70] | .051 [1.30] | 57748-5 |
| 10 | .900 [22.86] | 1.000 [25.40] | .051 [1.30] | 1-57748-0 |
| 15 | 1.400 [35.56] | 1.500 [38.10] | .051 [1.30] | 1-57748-5 |
| 20 | 1.900 [48.26] | 2.000 [50.80] | .051 [1.30] | 2-57748-0 |
| 25 | 2.400 [60.96] | 2.500 [63.50] | .051 [1.30] | 2-57748-5 |
| 28 | 2.700 [68.58] | 2.800 [71.12] | .051 [1.30] | 2-57748-8 |

Other Conductor Counts Available on Request.

Contact MADISON CABLE (1-877-MADISON), a Division of TE, for engineering questions or for order placement of this cable.





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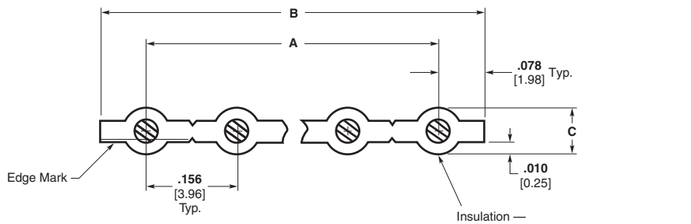
## Cable Solutions (Continued)

### .156 [3.96] Centerline, Flat Ribbon Cable, PVC Insulation

**Product Specifications**

**Voltage Rating** — 300 Volts
**UL Recognized** — AWM Style 2651
**CSA** — Available on request




Insulation —
Gray Flame Retardant Flexible PVC
**.007** [0.17] Minimum Insulation Thickness
Temperature Rating — –20°C to +105°C
Flammability — UL: VW1

| No. of Conductors | Dimensions A | B | C | Part Number |
|---|---|---|---|---|
| **22 AWG 7/30 Tinned Copper** | | | | |
| 2 | .156 [3.96] | .312 [7.92] | .051 [1.30] | 57750-2 |
| 5 | .624 [15.85] | .780 [19.81] | .051 [1.30] | 57750-5 |
| 10 | 1.404 [35.66] | 1.560 [39.62] | .051 [1.30] | 1-57750-0 |
| 15 | 2.184 [55.47] | 2.340 [59.44] | .051 [1.30] | 1-57750-5 |
| 20 | 2.964 [75.29] | 3.120 [79.25] | .051 [1.30] | 2-57750-0 |
| 24 | 3.588 [91.14] | 3.744 [95.10] | .051 [1.30] | 2-57750-4 |
| **18 AWG 7/26 Tinned Copper** | | | | |
| 2 | .156 [3.96] | .312 [7.92] | .068 [1.73] | 57752-2 |
| 5 | .624 [15.85] | .780 [19.81] | .068 [1.73] | 57752-5 |
| 10 | 1.404 [35.66] | 1.560 [39.62] | .068 [1.73] | 1-57752-0 |
| 15 | 2.184 [55.47] | 2.340 [59.44] | .068 [1.73] | 1-57752-5 |
| 20 | 2.964 [75.29] | 3.120 [79.25] | .068 [1.73] | 2-57752-0 |
| 24 | 3.588 [91.14] | 3.744 [95.10] | .068 [1.73] | 2-57752-4 |

Other Conductor Counts Available on Request.

Contact MADISON CABLE (1-877-MADISON), a Division of TE, for engineering questions or for order placement of this cable.



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# Part Number Index

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| 57748 | 97 |
| 57750 | 98 |
| 57752 | 98 |
| 100411 | 41 |
| 102142 | 92 |
| 102198 | 86 |
| 102312 | 96 |
| 102320 | 96 |
| 104068 | 9, 10 |
| 104069 | 9, 11 |
| 104069 | 11 |
| 104072 | 65 |
| 104652 | 20 |
| 104655 | 21 |
| 104656 | 21 |
| 104693 | 21 |
| 104891 | 27 |
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| 104893 | 26 |
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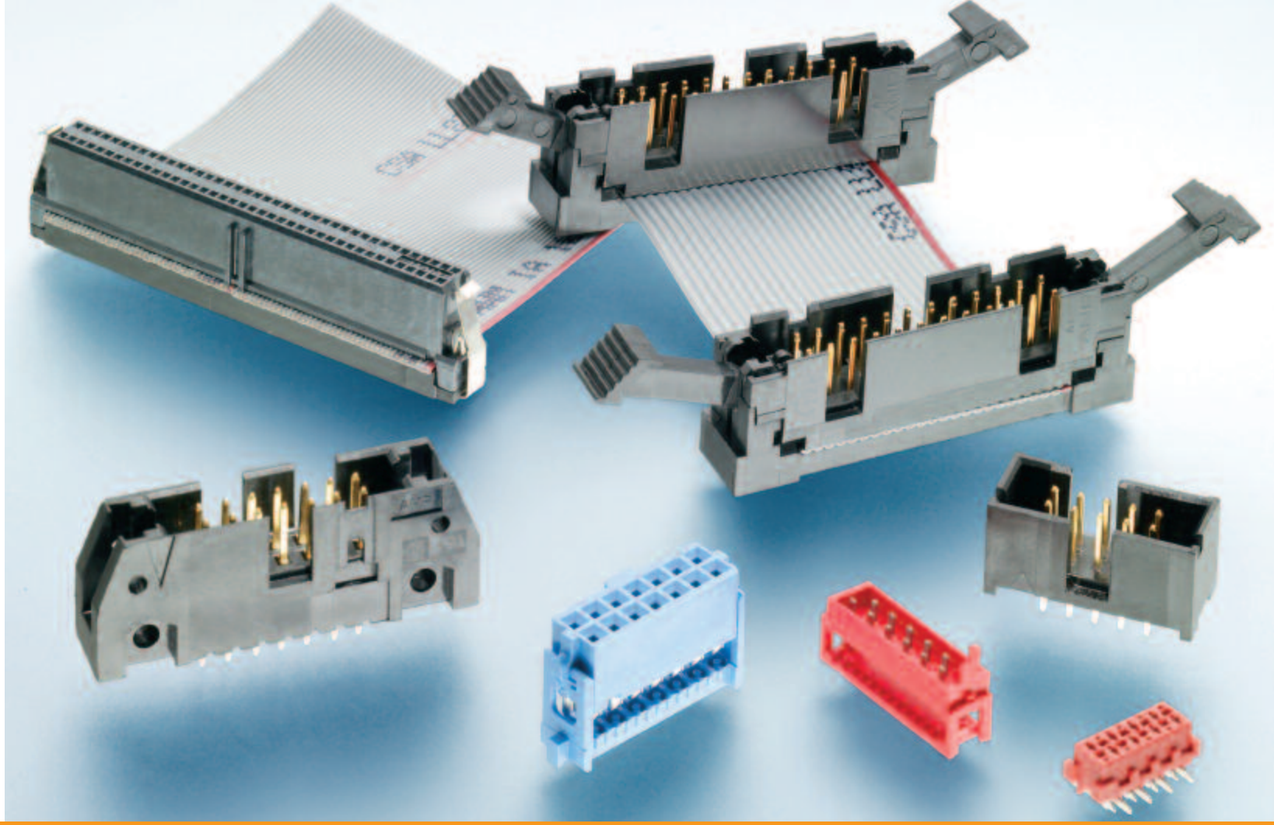

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Ribbon Cable Interconnect Solutions

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