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* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
Typical Styles

Standard Ring Tongue

The ring tongue terminal is the safest and most reliable style because it cannot be disconnected unless the screw is completely removed.

The basic Molex barrel, called Krimptite®, is noninsulated and features a quality, one-piece design. It is also the most economical style and has the greatest variety of uses where special features are not required.

The InsulKrimp® version features a rigid insulation sleeve of PVC affixed to the Krimptite barrel or the brazed-seam VersaKrimp® barrel. It attaches to the wire with one quick crimp and the insulation sleeve protects against vibration damage by preventing wire flex at the crimp point. The funnel entrance into the barrel eliminates wire strand “fold back,” increases crimping rates and enhances wire termination reliability.

When the butted-seam Krimptite barrel is bonded with a special brazing alloy, it becomes a VersaKrimp barrel. These brazed-seam barrel terminals will not open under conditions of stress or wire pull. As versatile as it is tough, it can be crimped under most adverse conditions by many types of tooling. The VersaKrimp is ideal for hard-to-crimp solid and stranded wires.

The NylaKrimp® barrel was designed specifically for larger wire applications. The color-coded barrel is formed by affixing a permanent, rigid, color-coded nylon insulating sleeve to the barrel. The insulation has a funnel entrance into the barrel that eliminates wire strand “fold back,” increases crimping rates and enhances wire termination.

AviKrimp® terminals with color-coded barrels offer you the ultimate in high-performance terminal design and rugged construction. The tin-plated Brass sleeve strengthens the barrel and secures the wire to protect against stress and high vibration. The color-coded nylon insulating sleeve extends beyond the metal support sleeve. A funnel ferrule wire entrance into the barrel prevents wire strand “fold back” for increased crimping rates and added wire termination reliability in the standard barrel length.

Features

- Material: Copper
- Available in wire ranges from 24 to 26 AWG to 4/0
- All parts available loose piece; some are also available on mylar tape carrier

Splices

Molex offers standard and special splices for nearly every type of wiring needed.

Butt Splice

Stripped wires are inserted from each end and “butt” in the center, then a crimp at each end secures the connection.

Step Down Butt Splice

The perfect solution when two wires need to be inserted in one end of a splice and a single wire in the other end.

Parallel Splice

Stripped wires lie side-by-side in the splice and are secured by a single crimp in the middle.

“Fold back,” increases crimping rates and enhances wire termination reliability.

When the butted-seam Krimptite barrel is bonded with a special brazing alloy, it becomes a VersaKrimp barrel. These brazed-seam barrel terminals will not open under conditions of stress or wire pull. As versatile as it is tough, it can be crimped under most adverse conditions by many types of tooling. The VersaKrimp is ideal for hard-to-crimp solid and stranded wires.

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Features

- Material: Copper
- Available in wire ranges from 24 to 26 AWG to 4/0
- All parts available loose piece; some are also available on mylar tape carrier

AviKrimp

InsulKrimp

NylaKrimp

Krimptite

VersaKrimp

Note: The connectors shown here are only a representation of our product line. For a complete listing of all solderless terminals and connectors, please contact Molex Industrial Division at 1-800-800-0449, or at www.molex.com.

AviKrimp Butt Splice

With the extra metal sleeve and nylon insulation, these splices should be used when heavy vibration is anticipated and a strong strain relief is needed.

Funnel Entry Butt Splice

With the funnel entry butt splice, the end that will be crimped by the crimping press is funneled to allow quick and easy wire insertion.

Window Butt Splice

The unique feature of this splice is the “window” that is stamped into the copper splice and covered by nylon. The inspection window guarantees proper wire insertion and crimp tool alignment. QPL’d to Mil-T-7928/5

Multi-Lock

This is an insulation displacement connector that allows tap-and-run connections. Using only ordinary channel lock pliers, these color-coded connectors make quick, reliable, preinsulated splices without having to strip, twist or solder.

Nylon Closed End Connector

The nylon closed end connectors are used in a wide variety of situations to “pigtail” or tie together two or more wires.

Wire Tap

The Wire Tap splices onto a wire using an insulation displacement barb. No special tools are required, simply squeeze together with pliers.
Quick Disconnects

Quick Disconnect Terminals For PC Board

Molex offers a large selection of Standard Printed Circuit Board Mountable quick disconnect terminals. Some products offer a tab support mounting feature providing increased mounting reliability and terminal strength. Products are available as strip applied and loose piece. All products can be easily inserted into printed circuit boards using widely available, industry standard bench-type and fully-automated XY insertion tooling.

Molex PC board Quick Disconnect terminals are available in tab sizes ranging from 2.79 by 0.51mm (.110 by .020") to 6.35 by 0.81mm (.250 by .032"). Products are available in both vertical and right angle mounting configurations. All products are manufactured to NEMA specifications and are UL and CSA recognized.

Features
- Material: Brass
- Tab conforms to NEMA specifications
- Plating: Tin 3.81 μm (150 μ") min. thickness

Fully-Insulated Quick Disconnects

Fully-Insulated Piggyback Quick Disconnects

Features
- Meets UL 310 standards (listed under UL File No. E79133)
- Color coded translucent insulator allows easy identification of terminal size and wire gauge
- Funnel entrance designed for increased crimping rates by speeding wire delivery into crimp section and eliminating wire strand fold back
- Wire stop stamped into the crimp barrel prevents insertion of over-stripped wire
- AviKrimp version has extra advantage of the secure metal support sleeve, and fulfills double crimp (support) requirements of VDE and DIN specifications
- The right angle flag terminal provides space saving design
- All parts available as loose piece; most are also available on either mylar tape, metal strip, and/or continuous molded carrier
- Some parts meet the UL 94V-0 flammability rating

Tape-fed And Loose-piece Quick Disconnects

Features
- Same functions as a standard piggyback terminal with the added feature of being fully insulated with a rigid nylon housing
- Also available in expanded flare versions
- Available in InsulKrimp (single crimp) or AviKrimp (double crimp) style
- Also available in barrel insulated InsulKrimp and AviKrimp versions

These non-insulated and partially insulated quick disconnects are available either loose piece or tape-mounted. Loose piece versions are individually fed into the dies of manual and powered hand crimping tools. Tape-fed versions are the same terminals mounted on mylar tape for automatic feeding into air- or electric-powered bench crimping presses.

Tape-fed terminals are ideal for applications where there are too many terminals for hand tool crimping and too few for strip press crimping. All loose piece and tape-fed terminals have a fully Tin-plated Brass construction with closed electrical barrels.

Parts are available in the following styles: Krimptite (butted seam), InsulKrimp (PVC insulated), and AviKrimp (nylon insulated with vibration support).

Note: The connectors shown here are only a representation of our product line. For a complete listing of all solderless terminals and connectors, please contact Molex at 1-800-800-0449, or at www.molex.com.
Perma-Seal™ Terminals and Splices

Perma-Seal terminals and splices provide a rugged, environmentally sealed connection for wire sizes 8 to 22 AWG that will insulate, seal and protect joints from physical abuse and abrasion, water, salt and other corrosive compounds. These terminals give you long-lasting, moisture-proof connections that withstand water, salt, corrosion and heat, all of which cause serious problems for conventional, unsealed splices. The inner wall of the heat-shrinkable insulation sleeve is lined with a special hot-melt adhesive that is inert at room temperature, permitting wires to be inserted easily into the splices and terminals. As the sleeve is heated, the adhesive melts and flows under pressure from the tubing. This action creates a voidless seal that repels moisture incursion even during pressure cycling, and stands up to some of the most rigorous tests that can be applied to high-performance splices, such as the salt fog test MIL-T-7928. The tough insulation sleeve of Perma-Seal splices and terminals resists abrasion and cutting. This protection helps to maintain the insulation and sealing properties even in the most hostile environments, inside and out.

Heavy-Duty Copper Lugs and Splices

Our heavy-duty closed end crimpable terminals are designed for electrical and industrial applications such as welding equipment, forklifts, generators, power distribution equipment, motors, etc. They are manufactured of pure electrolytic copper, and are available in 8 AWG through 4/0 AWG wire and cable with a variety of stud sizes.

Features
- Rated to 35KV applications
- UL listed, CSA certified
- Crimps in industry standard tooling
- Seamless barrel design
- Can be easily soldered or crimped
- Flared barrel entry for easy wire insertion
- AWG wire size identification on barrel
- Made of CDA-110 Copper stock offering 100% conductivity

Star Ring Terminals

The Star Ring is a serrated ring that is mainly used for grounding. Unlike a ring terminal, when you tighten down on a star ring, the “star blades,” or serrated edges, actually pierce through paint or other coatings, and bite into the metal to insure a good connection or ground. The product may also eliminate the need for lock washers.

Features
- Material: Brass or Steel
- Non-insulated, PVC insulated, or nylon insulated
- Wire ranges from 18 to 22 AWG and 14 to 16 AWG

Note: The connectors shown here are only a representation of our product line. For a complete listing of all solderless terminals and connectors, please contact Molex at 1-800-800-0449, or at www.molex.com.
Eurostyle™ PCB Terminal Blocks

**Fixed, One Piece or Pluggable, Two Piece**

Molex manufactures a wide variety of Eurostyle terminal blocks to fit your connector needs. Whether you need a fixed, single-piece solution, or a pluggable, two-piece combination, Eurostyle terminal blocks from Molex provide a quality connection every time.

**Features and Benefits**
- Rising cage clamp termination provides a secure connection without strand damage or intermittence
- Various imprinting styles available making wiring and repair faster and easier in the field
- Optional mounting ends ensure plugs maintain connection with PCB headers
- Some PCB headers available as surface mount compatible
- Industry standard interface for compatibility with existing board layouts
- Made from self-extinguishing nylon material, UL 94 V-0 flammability rating

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**Plugs**

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**Reference Information**

UL File No.: E48521

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**Reference Information**

UL File No.: E48521

---

www.molex.com/product/esetermblocks.html
Beau® Eurostyle™ PCB Terminal Blocks

Fixed Terminal Blocks

<table>
<thead>
<tr>
<th>No. of Circuits</th>
<th>Pitch</th>
<th>Series</th>
<th>Orientation</th>
<th>Current</th>
<th>Voltage</th>
<th>Wire Range (AWG)</th>
<th>Lead-free</th>
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</thead>
<tbody>
<tr>
<td>2-25</td>
<td>3.90mm (.154&quot;)</td>
<td>39357</td>
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<td>2-24</td>
<td>5.00mm (.197&quot;)</td>
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<td>9.53mm (.375&quot;)</td>
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<td>10-30</td>
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*Note: 39380 and 39390 are modular. Two and three circuit parts can be used to assemble larger circuit sizes.

Eurostyle™ PCB Terminal Blocks

Multi-level (Fixed) Blocks

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<th>Circuits</th>
<th>Pitch</th>
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<th>Profile</th>
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Features and Benefits
- Modular design allows larger circuit sizes to be created by stacking smaller circuit parts together, which reduces inventory
- Rising cage clamp wire termination provides secure, reliable contact
- Two and three level parts have staggered rows to make wiring easier

Reference Information
UL File No.: E48521

Industrial Products

S

www.molex.com/link/tblocks.html
Beau® Eurostyle™
PCB Terminal Blocks
High-Power Terminal Blocks

Features and Benefits
• Rising cage clamp wire termination provides secure, reliable contact
• Multiple PCB terminals distribute power more evenly, reducing “hot spots”
• Combination slotted/posi drive screw heads improve transmission of torque for superior wire retention
• Extended wire funnel entry surrounds the wire insulator, eliminating exposed wire strands and possible shorting

Reference Information
UL File No.: E48521

Fixed High-Power

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<th>Pitch</th>
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<th>Orientation</th>
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<th>Lead-free</th>
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<tr>
<td>2-14</td>
<td>10.16 (.400)</td>
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<td>Vertical</td>
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<td>600V</td>
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<td>2-12</td>
<td>15.00 (.591)</td>
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<td>8.00 (.315)</td>
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<td>10.16 (.400)</td>
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Pluggable High-Power Plug

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<th>Component</th>
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<th>Voltage</th>
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<th>Lead-free</th>
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<td>2-10</td>
<td>12.00 (.472)</td>
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<td>Plug</td>
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<td>2-8</td>
<td>12.00 (.472)</td>
<td>39422</td>
<td>Plug with retention screws</td>
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Header

<table>
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<tr>
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<th>Pitch</th>
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<th>Component</th>
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<th>Voltage</th>
<th>Lead-free</th>
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<tbody>
<tr>
<td>2-10</td>
<td>12.00 (.472)</td>
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<td>PCB Header</td>
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<td>2-8</td>
<td>12.00 (.472)</td>
<td>39426</td>
<td>PCB Header with retention inserts</td>
<td>Horizontal</td>
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Pluggable Beau® Euromate™

Features and Benefits
• Wiring terminals are staggered and offset vertically to facilitate easier wiring access
• Rear barrier prevents over-insertion of wire into device
• Accepts 6.35mm (.250”) ring and spade wiring terminals

Reference Information
UL File No.: E48521

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Pitch</th>
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<th>Orientation</th>
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<th>Lead-free</th>
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<td>3-21</td>
<td>3.81 (.138)</td>
<td>39930</td>
<td>Vertical</td>
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<td>300V</td>
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<td>3-24</td>
<td>5.08 (.200)</td>
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<td>12-22</td>
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</table>

* Mates with most 3.81 and 5.08mm (.138 and .200”) pitch headers.

www.molex.com/product/euromate.html


Industrial Products
Positive Locking Plugs and Headers

**Features and Benefits**
- Polarization feature eliminates the potential for mismating
- Low-profile Eurostyle plug
- Positive latching system resists vibration and wire loads
- Surface Mount Compatible headers can withstand reflow soldering temperatures, eliminating the need for a secondary wave soldering operation

**Reference Information**
UL File No.: E48521

### Plugs

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Pitch</th>
<th>Series</th>
<th>Orientation</th>
<th>Current</th>
<th>Voltage</th>
<th>Wire Range (AWG)</th>
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<tr>
<td>2-18</td>
<td>5.00 (.197)</td>
<td>39990</td>
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### Headers

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<th>Orientation</th>
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<td>2-24</td>
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<td>Vertical</td>
<td>10.0A</td>
<td>300V</td>
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<td>2-18</td>
<td>5.00 (.197)</td>
<td>39990</td>
<td>Vertical</td>
<td>10.0A</td>
<td>300V</td>
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</tr>
</tbody>
</table>

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**Eurostyle™ Terminal Blocks**

**Eurostyle Two-Screw Terminal Strips**

**Features and Benefits**
- Modular design allows larger blocks to be easily cut into smaller circuit sizes
- Contacts and screws are recessed in the housing to help prevent short circuits and provide added finger safety
- Wire protectors prevent stranded wire damage during connection

### Eurostyle Two-Screw Terminal Strips

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Pitch</th>
<th>Series</th>
<th>Current</th>
<th>Voltage</th>
<th>Wire Range (AWG)</th>
<th>Description</th>
<th>Lead-free</th>
</tr>
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<tbody>
<tr>
<td>2-12</td>
<td>8.00 (.315)</td>
<td>39100-08XX</td>
<td>20.0A</td>
<td>600V</td>
<td>12-22</td>
<td>Standard profile, with standoffs</td>
<td>Yes</td>
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<tr>
<td></td>
<td>10.00 (.394)</td>
<td>39100-10XX</td>
<td>30.0A</td>
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<td>12.00 (.472)</td>
<td>39100-12XX</td>
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<td>8-20</td>
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<td>6-14</td>
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Low profile (300V) versions of 8.00, 10.00 and 12.00mm (.315, .394 and .472”) terminal blocks available
Jumpers available in 2 or 3 circuit lengths

www.molex.com/product/poslatch_tb.html
Beau® Barrier Strips

Beau terminal blocks provide a robust connection between wires and the PCB.

Beau terminal blocks are a great connector for their durability and versatility. Barrier strips can handle currents of up to 45.0A per circuit and all are rated for 300 or 600V. With the variety of terminal styles, screws and other options available on barrier strips, these parts can be customized in many ways.

Special additions to barrier strips such as topside hardware, marker strips and hinged covers ensure that you get the best possible connector designed specifically for your application.

Features

- Optional topside hardware allows for further customization to fit your design requirements
- Robust and durable screw terminals are ultrasonically welded into the thermoplastic insulator, reducing the risk for terminal twisting and solder joint failure
- Tri-barrier construction of some barrier strips provides a back wall to prevent over insertion and shorting
- No special tools required to terminate wires, only a No. 2 screwdriver required
- Broad range of screw and terminal options improves interconnect performance
- Various imprinting styles aid in labeling circuits for wiring, testing and repair in the field
- RoHS and ELV compliant

8.26mm (.325”) Pitch Barrier Terminal Strips

38700 PC Terminal

Reference Information

Packaging: Tray
UL File No.: E48521
Flammability: UL 94V-0
Designed In: Inches

Electrical

Voltage: 300V
Current: 15.0A
Dielectric Withstanding Voltage: 1600V AC
Insulation Resistance: 1000 Megohms min.

Mechanical

Recommended Tightening Torque: 1.36Nm (12 in.-lb)

Physical

Housing: PBT, black
Terminal: Brass
Screw: Steel, #6-32, Phillips/Slot combo head
Plating: Terminal Area—Tin
Screw—Zinc with clear chromate
Wire Range: 14 to 22 AWG

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Order No. With Mounting Ends</th>
<th>Order No. Without Mounting Ends</th>
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8.26mm (.325") Pitch
Single Row
Tri-BARRIER
Terminal Strips

38704
PC Terminal

Reference Information
Packaging: Tray
UL File No.: E48521
Flammability: UL 94V-0
Designed In: Inches

Electrical
Voltage: 300V
Current: 15.0A
Dielectric Withstanding Voltage: 1600V AC
Insulation Resistance: 1000 Megohms min.

Mechanical
Recommended Tightening Torque: 1.36Nm (12 in.-lb)

Physical
Housing: PBT, black
Terminal: Brass
Screw: Steel, #6-32, Phillips/Slot combo head
Plating: Terminal Area—Tin
Screw—Zinc with clear chromate
Wire Range: 14 to 22 AWG

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Order No. With Mounting Ends</th>
<th>Order No. Without Mounting Ends</th>
<th>Lead-free</th>
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8.26mm (.325") Pitch
Dual Level
Barrier Terminal Strips

38706
Dual Level, PC Terminal

Reference Information
Packaging: Tray
UL File No.: E48521
Flammability: UL 94V-0

Electrical
Voltage: 300V
Current: 15.0A
Insulation Resistance: 5000 Megohms min.
Dielectric Withstanding Voltage: 1600V AC

Mechanical
Recommended Tightening Torque: 1.36Nm (12 in.-lb)
Wire Range: 14 to 22 AWG

Physical
Housing: Polysulfone, black
Terminal: Brass
Screw: Steel, #6-32, Phillips/Slot combo head
Plating: Terminal—Tin
Screw—Zinc with clear chromate

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Order No. With Mounting Ends</th>
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### 9.53mm (.375") Pitch Single Row Barrier Terminal Strips

#### 38720 Panel Mount

**Reference Information**
- Packaging: Tray
- UL File No.: E48521
- Flameability: UL 94V-0
- Designed In: Inches

**Electrical**
- Voltage: 300V
- Current: 15.0A
- Dielectric Withstanding Voltage: 1600V AC
- Insulation Resistance: 3000 Megohms min.

**Mechanical**
- Recommended Tightening Torque: 1.36Nm (12 in.-lb)

**Physical**
- Housing: PBT, black
- Terminal: Brass
- Screw: Steel, #6-32, Phillips/Slot combo head
- Plating: Terminal Area—Tin
- Screw—Zinc with clear chromate
- Wire Range: 14 to 22 AWG

**Reference Information**
- Packaging: Tray
- UL File No.: E48521
- Flameability: UL 94V-0
- Designed In: Inches

**Electrical**
- Voltage: 300V
- Current: 15.0A
- Dielectric Withstanding Voltage: 1600V AC
- Insulation Resistance: 1000 Megohms min.

**Mechanical**
- Recommended Tightening Torque: 1.36Nm (12 in.-lb)

**Physical**
- Housing: PBT, black
- Terminal: Brass
- Screw: Steel, #6-32, Phillips/Slot combo head
- Plating: Terminal Area—Tin
- Screw—Zinc with clear chromate
- Wire Range: 14 to 22 AWG

### 9.53mm (.375") Pitch Single Row Barrier Terminal Strips

#### 38720 PC Terminal

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9.53mm (.375") Pitch
Double Row Barrier
Terminal Strips
38760/38770
Panel Mount

Reference Information
Packaging: Tray
UL File No.: E48521
Flammability: UL 94V-0
Designed In: Inches

Electrical
Voltage: 300V
Current: 15.0A
Dielectric Withstanding Voltage: 1600V AC
Insulation Resistance: 1000 Megohms min.

Mechanical
Recommended Tightening Torque: 1.26Nm (12 in.-lb)

Physical
Housing: PBT, black
Terminal: Brass
Screw: Steel, #6-32, Philips/Slot combo head
Plating: Terminal Area—Tin
Screw—Zinc with clear chromate
Wire Range: 14 to 22 AWG

11.11mm (.438") Pitch
Double Row Barrier
Terminal Strips
38780
Panel Mount

Reference Information
Packaging: Tray
UL File No.: E48521
Flammability: UL 94V-0
Designed In: Inches

Electrical
Voltage: 300V
Current: 15.0A
Dielectric Withstanding Voltage: 1600V AC
Insulation Resistance: 1000 Megohms min.

Mechanical
Recommended Tightening Torque: 1.36Nm (12 in.-lb)

Physical
Housing: PBT, black
Terminal: Brass
Screw: Steel, #6-32, Phillips/Slot combo head
Plating: Terminal Area—Nickel
Screw—Zinc with clear chromate
Wire Range: 14 to 22 AWG
**Beau™ Power Connectors**

**Panel Mount Plugs and Sockets**

**38330**

*Angle Bracket, Angle Bracket Tapped, Without Angle Bracket*

---

**Features and Benefits**

- Robust blade contacts resist damage from improper mating
- Large surface area of dual wipe female contact produces maximum current capacity
- All circuits are rated for full current load

**Reference Information**

Packaging: Tray  
UL File No.: E34763  
CSA File No.: 22156  
Designed In: Inches

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### Plugs

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**Beau™ Power Connectors**

**Cable Mount Plugs and Sockets**

**38331**

*Cable Clamp Top*

---

**Features and Benefits**

- Latch and keeper hardware ensure that plug and socket remain mated even in high vibration applications  
- Robust blade contacts resist damage from improper mating  
- Large surface area of dual wipe female contact produces maximum current capacity  
- All circuits are rated for full current load

**Reference Information**

Packaging: Tray  
UL File No.: E34763  
CSA File No.: 22156  
Designed In: Inches

---

### Plugs

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*Note: Solder Eye is the standard contact tail for plugs and sockets. Contact Molex for additional contact options and order numbers.*

**Electrical**

Voltage: 250V  
Current: 10.0A

**Mechanical**

Durability: 500 cycles

**Physical**

Housing: Phenolic  
Plug Contact: Brass  
Socket Contact: Phosphor Bronze  
Plating: Plug Contact—Tin  
Socket Contact—Tin

---

**www.molex.com/product/power/beauplgskt.html**

---

**Industrial Products**

**MX10 S-13**
# Beau™ Power Connectors
## Panel Mount Plugs and Sockets
### 38540
#### Angle Bracket

**Features and Benefits**
- Robust blade contacts resist damage from improper mating
- Large surface area of dual wipe female contact produces maximum current capacity
- All circuits are rated for full current load

**Reference Information**
- Packaging: Tray
- UL File No.: E34763
- CSA File No.: 22156
- Designed In: Inches

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Note: Solder Hook is the standard contact tail for plugs. Contact Molex for additional contact options and order numbers.

### 38541
#### Cable Clamp Top

**Features and Benefits**
- Strain relief cable clamps can be used with round or flat cable
- Robust blade contacts resist damage from improper mating
- Large surface area of dual wipe female contact produces maximum current capacity
- All circuits are rated for full current load

**Reference Information**
- Packaging: Tray
- UL File No.: E34763
- CSA File No.: 22156
- Designed In: Inches

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Note: Solder Eye is the standard contact tail for sockets. Contact Molex for additional contact options and order numbers.

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**Industrial Products**

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**www.molex.com/product/power/beauplgskt.html**
Wire Splice Terminal
35760

Features and Benefits
- Uninsulated splices shaped like an open “U” to accommodate stranded wire
- Non-insulation support

Reference Information
Product Specification: PS-35760-003
Packaging: Reel
Designed In: Millimeters

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Electrical
Current: 25.0A
Contact Resistance: 3 milliohms max.

Physical
Contact: Brass
Plating: Tin

www.molex.com/customer.html?seriesNumber=35760

Wire Management Products

Heat Shrink Tubing
Molex offers a wide variety of heat shrink tubing including thin-wall, adhesive-lined dual-wall and heavy-wall polyolefin tubing as well as heat shrinkable PVC.

Thin (single) wall is high quality tubing with a wide variety of uses. It is made from flame retardant polyolefin, giving it excellent physical, chemical and electrical properties that meet industrial and military requirements for highly reliable, general-purpose tubing.

Dual-wall tubing is adhesive lined, and manufactured using fully flame retardant polyolefin tubing which offers superior strain relief as well as environmental sealing capabilities.

Heavy-wall tubing is UL rated for direct burial applications. This tubing is chemically cross linked during manufacturing which ensures that it will not split or rupture during installation, even if overheated.

Closed-End Connectors
Molex nylon closed-end connectors feature two-piece construction. A translucent nylon insulator is adhered to the pure electrolytic, copper insert. Closed-end connectors are used in a wide variety of situations to "pigtail" two or more wires together, and can be used as a dead end splice or one power line and multiple lead offs.

Multi-Lock Connectors
The Multi-Lock is an insulation displacement connector that allows quick tap-and-run connections. Using ordinary channel lock pliers, these color-coded connectors make quick, reliable, pre-insulated splices without having to strip, twist or solder.

The Multi-Lock connector consists of a polypropylene insulation with a tin-plated brass barb. Once the appropriate wires have been inserted, the barb is squeezed such that it "displaces" the insulation and makes contact with the wire, creating an electrical connection. The cover is then snapped into position, completely insulating the barb and wire.

Wire Connectors
Molex Wire Connectors offer a cost effective way to produce safe and secure wire connections. The tough, thermoplastic shell provides UL-94V2 flame retardant protection while the fixed square-wire spring construction offers a secure connection that will not relax over time.

Standard Twist Locks feature a threaded funnel entry to easily guide wires into the connector.
Wing Locks offer deep gripping ribs and swept-back wings that permit a higher torque.
High Temp Wire Connectors are used in applications that require continued exposure to heat.

Cable Ties
Molex offers a full line of standard cable ties as well as selected mounting and identification ties. Our cable ties are constructed from durable nylon 6/6 and offer a compact, one piece design. These industry standard products are designed to meet or exceed the MIL-S-23190E tensile strength requirements.
Heavy-Duty Rectangular Industrial Connectors

INTRODUCTION
Molex’s line of HMC heavy-duty rectangular industrial connectors are designed for rugged applications such as robotics, machinery equipment, transportation, power generation and industrial controls. HMC provides an innovative new approach to traditional heavy-duty connections.

The HMC series includes some unique design features such as: rugged metal cable-side hood with easy-to-actuate “one-touch” lock; removable modular housing inserts that can be custom configured; and various circuit and amperage types to meet different power and signal needs.

Features
HMC™ Series

- Unique rounded-shape metal hood with single-action lock for space savings and easy handling
- Easy field removal of modules
- Cable-clamp solution that integrates sealed ring and holder into one-piece cover
- Single-module type enables housing inserts to be loaded into either side
- Multi-module type enables flexible module configurations for hybrid application needs

HMC Series—Module Type

12 circuits, 35.0/10.0A, IP65
40 circuits, 10.0A, IP65
52 circuits, 10.0A, IP65

36 circuits, 12.0A, IP65
48/72 circuits, 20.0/12.0A, IP65

www.molex.com/product/rectind/
HMC™
12 circuits—35A/
10 circuits - IP65
10A/2 circuits
Connection System

Terminal
- 55125 (12 AWG)
- 55124 (14 to 26 AWG)
- 54297 (12 AWG)
- 54296 (14 to 26 AWG)

Housing
- 55348-1215

Plug Shell Assembly

Plug Cover Assembly
- 58462-X011

End Bell Cap Assembly
- 58782-0011
- 58550

Receptacle Shell Assembly
- 58783-0011

Receptacle Cover for Wire-to-Wire
- 58783-0011
- 58474-X001

Housing
- 54479-1215

Terminal
- 54297 (12 AWG)
- 54296 (14 to 26 AWG)
- 55125 (12 AWG)
- 55124 (14 to 26 AWG)

www.molex.com/product/rectind/
HMC™
12A/36 circuits—IP65
Connection System

Terminal

Housing

Plug Cover Assembly

Plug Shell Assembly

Receptacle Cover for Wire-to-Wire

End Bell Cap Assembly

Receptacle Shell Assembly

Terminal

Housing

55506SX

55566SX

51192

51193

58696-0010

58696-1010

58550

51193

51192

58691

56386

5556GSX

5558GSX

5556GSX
HMC™
(20A/48 circuits)—IP65
(12A/72 circuits)
Connection System

- Terminal
  - 5558SX [12.0A/16 to 24 AWG]
  - 5556GSX [12.0A/16 to 24 AWG]
  - 59320 [20.0A/14 to 16 AWG]
  - 59319 [20.0A/14 to 16 AWG]

- Housing
  - 51203
  - 51204
  - 51194
  - 51195

- Plug Cover Assembly
  - 58723

- Plug Shell Assembly
  - 58721

- Receptacle Shell Assembly
  - 58719

- End Bell Cap Assembly
  - 58866

- Housing
  - 51195
  - 51204
  - 51203

- Terminal
  - 59319 [20.0A/14 to 16 AWG]
  - 5556GSX [12.0A/16 to 24 AWG]

www.molex.com/product/rectind/
Mini-HMC™ Rectangular Industrial Connector System

Introduction
Molex's Mini-HMC system was developed to meet the needs of smaller industrial robotic applications. Mini-HMC provides the ruggedness of traditional Heavy Duty connectors but in a smaller form factor.

Mini-HMC offers many of the same unique features of our standard HMC™ (Heavy Duty Modular) connectors such as "one-touch" lock and removable housings. The system also utilizes the same crimp terminals as our CRC™ (Compact Robotic) industrial connectors.

Specifications
- Current: 7.0A
- Voltage: 250V
- Circuit Size Range: 40 (fully loaded)
- Contact Resistance: 10 milliohms max.
- Insulation Resistance: 1000 Megohms min.
- Dielectric Strength: AC 1500V/1 minute
- Contact Retention Force: 24.5N
- Durability: 50 cycles

SELECTION MATRIX

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
<th>Circuits</th>
<th>Rows</th>
<th>Material</th>
<th>Plating</th>
<th>Packaging</th>
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<tbody>
<tr>
<td><strong>Plug</strong></td>
<td>500812-1000</td>
<td>10</td>
<td>2</td>
<td>Nylon 66, Glass-Filled UL 94V-0</td>
<td>Bag</td>
<td></td>
</tr>
<tr>
<td><strong>Receptacle</strong></td>
<td>500813-1000</td>
<td>10</td>
<td>2</td>
<td>Nylon 66, Glass-Filled UL 94V-0</td>
<td>Bag</td>
<td></td>
</tr>
<tr>
<td><strong>Plug Shell</strong></td>
<td>500810-0000 (A)</td>
<td>40</td>
<td>8</td>
<td>Plug Shell: Aluminum Alloy</td>
<td>Nickel</td>
<td>Bag</td>
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<tr>
<td></td>
<td>500810-0010 (B)</td>
<td></td>
<td></td>
<td>Plug Grounded Terminal: Brass</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Head Screws: Steel</td>
<td></td>
<td></td>
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<tr>
<td><strong>Receptacle Shell</strong></td>
<td>500809-0000 (A)</td>
<td>40</td>
<td>8</td>
<td>Receptacle Shell: Aluminum Alloy</td>
<td>Nickel</td>
<td>Bag</td>
</tr>
<tr>
<td></td>
<td>500809-0010 (B)</td>
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<td>Receptacle Ground Terminal: Brass</td>
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<td>Head Screws: Steel</td>
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<tr>
<td><strong>Cover</strong></td>
<td>500811-0010</td>
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<td>Plug Cover: Aluminum Alloy</td>
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<td></td>
<td></td>
<td></td>
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<td>Cover Lock Pin/Level Spring: Stainless Steel</td>
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<td><strong>End Bell Cap Assembly</strong></td>
<td>58550-000*</td>
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<td></td>
<td>Cable Cap: Brass Bush: PEEK</td>
<td>Nickel</td>
<td>Bag</td>
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</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
<th>Material</th>
<th>Plating (Contact/Crimp)</th>
<th>Packaging</th>
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<tr>
<td>AWG#24-28</td>
<td>56118-B*28</td>
<td>Phosphor Bronze</td>
<td>Gold/Tin</td>
<td>-822B: Reel -8328: Bag</td>
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<tr>
<td>AWG#18-22</td>
<td>56119-B*28</td>
<td>Phosphor Bronze</td>
<td>Gold/Tin</td>
<td>-822B: Reel -8328: Bag</td>
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<td>AWG#24-28</td>
<td>56120-B*28</td>
<td>Phosphor Bronze</td>
<td>Gold/Tin</td>
<td>-842B: Reel -8528: Bag</td>
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<tr>
<td>AWG#18-22</td>
<td>56121-B*28</td>
<td>Phosphor Bronze</td>
<td>Gold/Tin</td>
<td>-842B: Reel -8528: Bag</td>
</tr>
</tbody>
</table>
**MX150L™ Sealed Connector System**

The pre-assembled, submersible MX150L is a high performance connector system suitable for challenging, rugged and harsh applications.

The MX150L sealed connector system is designed to meet the need for a rugged, environmentally sealed connector system supporting both low-level signal applications as well as power applications up to 40.0A, from on-engine automotive and marine applications to off-road construction equipment applications. The system is comprised of wire-to-wire, wire-to-panel and wire-to-board configurations.

**Features and Benefits**

- Pre-assembled connector housings, seals, TPA components and mat-seal cap shipped in 1 piece to provide applied labor and cost savings
- Integral TPA assures that crimped terminal leads are properly locked into connector (TPA will not seat into final lock position and connector system will not latch if terminal is not locked properly into position)
- Conforms to UL 1977, which allows for a UL recognized sealed connector system for use in data, signal, control and power applications
- Superior electrical and mechanical performance capabilities surpass performance of most mature competitive products in market
- Audible and tactile clicks on insertion, extraction and mating feedback facilitates reliable mating and terminal loading and removal
- Unused circuits can be blocked using plastic seal plugs, which facilitates flexibility of sealing unused circuits without adding complexity to part numbers and customer inventory
- Integral locking latch with secondary, pre-loaded CPA option assures that connector system is properly latched. CPA will not move to final locked position if connector is not latched. Confirms positive mating of connector
- Sealed panel mount plugs are equipped with a blind hole loss feature that reduces extra hardware while improving the sealing process during assembly by eliminating a leak path
- Integral, 2-way mat and interface seals designed and tested to IEC IP 67 exceeds “waterproof” demands as a true sealed connector system tested under submerged conditions in various fluids
- Easy terminal insertion and extraction provides quick, low-cost field repairs using common screwdriver, needle nose pliers and terminal extraction tool
- Protective mat-seal cap protects, securely retains and provides strain relief to wire seal interface
- Simple crimp, poke and plug application eliminates need to crimp individual wire seals

**MX150L Sealed Connector Systems - Exploded View**

NOTE: All discrete components shown above both the receptacle and plug housing, are pre-assembled. Terminals are simply crimped and poked into the housings. No additional wire seals, wedge locks or CPA locks are required.
MX150L™
Product Overview

14 TO 22 AWG Wire-to-Wire, Wire-to-Board and Panel Mount

8, 10 and 12 AWG Wire-to-Wire and Panel Mount

www.molex.com/product/mx150Lsealedwtw.html
XRC™ Extra Rugged Circular Sealed Connectors Crimp Terminal

84590

Order No. | Wire Range (AWG) | Gender | Terminal Size | Insulation Outside Diameter | Lead-free |
---|---|---|---|---|---|
84590-0021 | 14 to 18 | Pin | 16 | 2.41 to 3.81mm (.095 to .150") | Yes |
84590-0022 | 16 to 18 | pin | 16 | 2.41 to 3.81mm (.095 to .150") | Yes |
84590-0023 | 14 to 18 | Socket | 16 | 2.41 to 3.81mm (.095 to .150") | Yes |
84590-0024 | 16 to 18 | Socket | 16 | 2.41 to 3.81mm (.095 to .150") | Yes |

Features and Benefits
- Environmentally sealed to IP67 standard and protects against the ingress of dust, water and other contaminants to maintain the integrity of the mated pair
- Seal retainer lip is compatible with backshell and overmolding applications
- Bayonet style latch provides quick and easy connections for reduced installation and service time as well as ensures proper depth when mated
- Simple crimp-and-poke technology does not require terminal alignment when installing crimped wires
- Tactile and audible mating feedback facilitates reliable mating

Reference Information
Packaging: Tray
Use With: 84508 receptacle
Use With: 84590 crimp terminals and 84509-0002 circuit plug
Designed In: Inches

XRC™ Extra Rugged Circular Sealed Connectors Plug Housing

84501

Features and Benefits
- Environmentally sealed to IP67 standard and protects against the ingress of dust, water and other contaminants to maintain the integrity of the mated pair
- Seal retainer lip is compatible with backshell and overmolding applications
- Bayonet style latch provides quick and easy connections for reduced installation and service time as well as ensures proper depth when mated
- Simple crimp-and-poke technology does not require terminal alignment when installing crimped wires
- Tactile and audible mating feedback facilitates reliable mating

Reference Information
Packaging: Tray
Use With: 84508 receptacle
Use With: 84590 crimp terminals and 84509-0002 circuit plug
Designed In: Inches

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Shell Size</th>
<th>Order No.</th>
<th>Terminal Insert Configuration</th>
<th>Wire Range</th>
<th>Lead-free</th>
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<tbody>
<tr>
<td>14</td>
<td>10</td>
<td>84501-0001</td>
<td>Pin insert</td>
<td>14 to 18</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Electrical
Current: 18 AWG—10.0A max.
16 and 14 AWG—13.0A max.
Contact Resistance: 30 milliohms max.

Mechanical
Contact Retention to Housing: 53.4N (12 lb)
Durability: 100 cycles

Physical
Housing: Glass-filled PBT
Seals: Silicone rubber
Contact: Copper Alloy
Insulation Outside Diameter: Thin wall

Reference Information
Packaging: Tray
Use With: 84501 and 84507 plug housings
Use With: 84502 and 84508 receptacle housings
Designed In: Inches
**XRC™ Extra Rugged Circular Sealed Connectors**

**Plug Housing**

*84507*

**Features and Benefits**
- Environmentally sealed to IP67 standard and protects against the ingress of dust, water and other contaminants to maintain the integrity of the mated pair
- Seal retainer lip is compatible with backshell and overmolding applications
- Bayonet style latch provides quick and easy connections for reduced installation and service time as well as ensures proper depth when mated
- Simple crimp-and-poke technology does not require terminal alignment when installing crimped wires
- Tactile and audible mating feedback facilitates reliable mating

**Reference Information**
- Packaging: Tray
- Mates With: 84502 receptacle
- Use With: 84590 crimp terminals and 84509-0002 circuit plug
- Designed In: Inches

**Electrical**
- Current: 18 AWG — 10.0 A max.
- 16 and 14 AWG — 13.0 A max.
- Contact Resistance: 30 milliohms max.
- Dielectric Withstanding Voltage: 1600V AC
- Insulation Resistance: 1000 Megohms min.

**Mechanical**
- Contact Retention to Housing: 53.4N (12 lb)
- Mating Force: 133.5N (30 lb) max.
- Unmating Force: 26.7N (6 lb) min.
- Durability: 100 cycles

**Physical**
- Housing: Glass-filled PBT
- Seals: Silicone rubber
- Contact: Copper Alloy
- Insulation Outside Diameter: Thin wall

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Shell Size</th>
<th>Order No.</th>
<th>Terminal Insert Configuration</th>
<th>Wire Range</th>
<th>Lead-free</th>
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</thead>
<tbody>
<tr>
<td>14</td>
<td>18</td>
<td>84507-0012</td>
<td>Socket insert</td>
<td>14 to 18</td>
<td>Yes</td>
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</tbody>
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---

**XRC™ Extra Rugged Circular Sealed Connectors**

**Receptacle Housing**

*84502*

**Features and Benefits**
- Environmentally sealed to IP67 standard and protects against the ingress of dust, water and other contaminants to maintain the integrity of the mated pair
- Seal retainer lip is compatible with backshell and overmolding applications
- Bayonet style latch provides quick and easy connections for reduced installation and service time as well as ensures proper depth when mated
- Simple crimp-and-poke technology does not require terminal alignment when installing crimped wires
- Tactile and audible mating feedback facilitates reliable mating

**Reference Information**
- Packaging: Tray
- Mates With: 84507 plug
- Use With: 84590 crimp terminals, 84502-0004 panel mount hex nut (optional) and 84509-0002 circuit plug
- Designed In: Inches

**Electrical**
- Current: 18 AWG — 10.0 A max.
- 16 and 14 AWG — 13.0 A max.
- Contact Resistance: 30 milliohms max.
- Dielectric Withstanding Voltage: 1600V AC
- Insulation Resistance: 1000 Megohms min.

**Mechanical**
- Contact Retention to Housing: 53.4N (12 lb)
- Mating Force: 133.5N (30 lb) max.
- Unmating Force: 26.7N (6 lb) min.
- Durability: 100 cycles

**Physical**
- Housing: Glass-filled PBT
- Seals: Silicone rubber
- Contact: Copper Alloy
- Insulation Outside Diameter: Thin wall

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Shell Size</th>
<th>Order No.</th>
<th>Terminal Insert Configuration</th>
<th>Wire Range</th>
<th>Lead-free</th>
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<tr>
<td>14</td>
<td>18</td>
<td>84502-0008</td>
<td>Pin insert</td>
<td>14 to 18</td>
<td>Yes</td>
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</table>
### XRC™ Extra Rugged Circular Sealed Connectors
#### Receptacle Housing

**84508**

**Features and Benefits**
- Environmentally sealed to IP67 standard and protects against the ingress of dust, water and other contaminants to maintain the integrity of the mated pair
- Seal retainer lip is compatible with backshell and overmolding applications
- Bayonet style latch provides quick and easy connections for reduced installation and service time as well as ensures proper depth when mated
- Simple crimp-and-poke technology does not require terminal alignment when installing crimped wires
- Tactile and audible mating feedback facilitates reliable mating

**Reference Information**
- Packaging: Tray
- mates with: 84501 plug
- Use with: 84590 crimp terminals, 84502-0004 panel mount hex nut (optional) and 84509-0002 circuit plug
- Designed In: Inches

<table>
<thead>
<tr>
<th>Circuits</th>
<th>Shell Size</th>
<th>Order No.</th>
<th>Terminal Insert Configuration</th>
<th>Wire Range</th>
<th>Lead-free</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>18</td>
<td>84508-0001</td>
<td>Socket insert</td>
<td>14 to 18</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### XRC™ Extra Rugged Circular Sealed Connectors

#### Circuit Plug

**84509**

**Features and Benefits**
- Optional circuit plug supports the ability to implement sealed blank cavities in both plug and receptacle housings
- Provides the ability to plan for possible future circuit additions while maintaining the sealing integrity of the mated pair

**Reference Information**
- Packaging: Box
- Use with: 84501 and 84507 plug housings 84502 and 84508 receptacle housings
- Designed In: Inches

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Contact Size</th>
<th>Color</th>
<th>Lead-free</th>
</tr>
</thead>
<tbody>
<tr>
<td>84509-0002</td>
<td>12 and 16</td>
<td>Natural/White</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### XRC™ Extra Rugged Circular Sealed Connectors

#### Panel Mount Hex Nut

**84502**

**Reference Information**
- Packaging: Box
- Use with: Molex shell size 18 receptacle housings
- Designed In: Inches

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Color</th>
<th>Lead-free</th>
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</thead>
<tbody>
<tr>
<td>84502-0001</td>
<td>Black</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Electrical**
- Current: 18 AWG—10.0A max.
- 16 and 14 AWG—13.0A max.
- Contact Resistance: 30 milliohms max.
- Dielectric Withstanding Voltage: 1600V AC
- Insulation Resistance: 1000 Megohms min.

**Mechanical**
- Contact Retention to Housing: 53.4N (12 lb)
- Mating Force: 133.5N (30 lb) max.
- Unmating Force: 26.7N (6 lb) min.
- Durability: 100 cycles

**Physical**
- Housing: Glass-filled PBT
- Seals: Silicone rubber
- Contact: Copper Alloy
- Insulation Outside Diameter: Thin wall

www.molex.com/link/xrc.html
**Brad® Nano-Change® (M8) Cordset**

**120027/120028/120086/120087**

**Single and Double-Ended**

**Features and Benefits**
- M8 connector per IEC 61072-2-104
- #24 AWG yellow PVC cable
- Threaded coupling to withstand harsh industrial environments

**Reference Information**
UL File No.: E152210

**Electrical**
- Voltage: 60V AC/75V DC
- Current: 3P—4.0A
- 4P—4.0A
- 5P—3.0A

**Mechanical**
- Connector Face: PBT
- Molded Body: TPE
- O-Ring: Viton
- Coupling Nut: Nickel-plated Brass
- Cable: Yellow, PVC Cable Jacket, #24 AWG over 19 by #36 Copper stranding, UL style 2661
- Outside Diameter:
  - 3P—0.17“ (4.3mm)
  - 4P—0.18“ (4.6mm)
  - 5P—0.20“ (5.1mm)

**Environmental**
- Protection: IP67

### Single-Ended

<table>
<thead>
<tr>
<th>Poles</th>
<th>Cable Length (m)</th>
<th>PVC Cable</th>
<th>PUR Cable</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Male Old Part No.</td>
<td>Female Old Part No.</td>
<td>Male Old Part No.</td>
</tr>
<tr>
<td>3</td>
<td>2.0 030064A010M020</td>
<td>030064A010M020</td>
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<tr>
<td></td>
<td>4.0 120027-0911</td>
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<td>030064A010M020</td>
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<td>5.0 120027-0453</td>
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<td></td>
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</table>

* Preferred Version in Europe

### Double-Ended

<table>
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<tr>
<th>Poles</th>
<th>Cable Length (m)</th>
<th>PVC Cable</th>
<th>PUR Cable</th>
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<tbody>
<tr>
<td></td>
<td>Male Old Part No.</td>
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<td>Male Old Part No.</td>
</tr>
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</table>

* Preferred Version in Europe

**Industrial Products**

S

www.molex.com/link/nanochange.html
Brad® Nano-Change® (M8) 
Receptacle

**120090**

![Brad® Nano-Change® (M8) Receptacle](image)

**Features and Benefits**
- M8 connector per IEC 61072-2-104
- Nickel-plated Brass body
- IP67 rating on threaded connection

**Reference Information**
UL File No.: E152210

**Electrical**
Voltage: 60V AC/75V DC
Current: 3P—4.0A
4P—4.0A
5P—3.0A

<table>
<thead>
<tr>
<th>Poles</th>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Gender</th>
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<tbody>
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<td>483P06A27C300</td>
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<td>483P06A37C300</td>
<td>120090-0020</td>
<td>Male</td>
</tr>
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<td>4</td>
<td>484P06A27C300</td>
<td>120090-0023</td>
<td>Female</td>
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<td>484P06A37C300</td>
<td>120090-0025</td>
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<td>485P06A27C300</td>
<td>120090-0032</td>
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<td>485P06A37C300</td>
<td>120090-0033</td>
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</tbody>
</table>

Brad® Nano-Change® (M8) 
Attachable Connector

**120091**

![Brad® Nano-Change® (M8) Attachable Connector](image)

**Features and Benefits**
- M8 connector per IEC 61076-2-104
- Allows easy field conversion to threaded connection
- quick-disconnect
- Solder connections for reliability in vibration applications
- Male and female in both straight and 90° versions

**Electrical**
Voltage: 60V AC/75V DC
Current: 4.0A

**Mechanical**
Connector Face: PA
Body: PA
Coupling Nut: Nickel-plated Brass
Termination: Solder lugs; accepts conductor to #20 AWG

**Environmental**
Protection: IP67

<table>
<thead>
<tr>
<th>Poles</th>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Orientation</th>
<th>Gender</th>
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<tbody>
<tr>
<td>3</td>
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<td>N03A04124</td>
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<td>N03M03124</td>
<td>120091-0014</td>
<td>Straight</td>
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<td>120091-0066</td>
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<td>N04M03124</td>
<td>120091-0010</td>
<td>Straight</td>
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<td></td>
<td>N04M04124</td>
<td>120091-0012</td>
<td>90°</td>
<td>Male</td>
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</tbody>
</table>
### Features and Benefits
- M8 connector per IEC 61072-2-104
- Connectorized Home Run cable connector version for maximum flexibility
- Flexibility with 4, 8, and 10 ports
- PNP and NPN versions for use with a variety of DC sensor

### Mechanical
- **Insert:** Thermoplastic polyester
- **Housing:** PBT
- **Receptacle Housing:** Nickel-plated Brass
- **ID Label:** ABS
- **O-Ring:** Viton
- **Home Run Connector Cabling:** M16 14 pole connector, metal shell
- **Cable Jacket:** Black PUR/PVC composite, black PUR
- **Diameter:** PUR—0.28” (7mm)

<table>
<thead>
<tr>
<th>Ports</th>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>BNY401P-FBC</td>
<td>120113-0027</td>
<td>Top Mount, Connector with Integral Home Run Connector</td>
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<tr>
<td>8</td>
<td>BNY801P-FBC</td>
<td>120113-0029</td>
<td>Top Mount with Top Cable Entry, Molded Home Run Cable</td>
</tr>
<tr>
<td>10</td>
<td>BNYA01P-FBC</td>
<td>120113-0020</td>
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<td>4</td>
<td>BNY401P-FBP-05</td>
<td>120113-0025</td>
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<td>4</td>
<td>BNY401P-FBP-10</td>
<td>120113-0007</td>
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</tbody>
</table>

### Electrical
- **Voltage:** 10 to 30V DC
- **Current:** 2.0A max. per port; 6A total per MPIS unit
- **Indicating Lights:** Green LED—power; Yellow LED—function
- **Average LED Life:** 100,000 hours

### Environmental
- **Protection:** IP67
**Features and Benefits**
- Single key M12 connector per IEC 61076-2-101's key A/B/C
- 22 AWG yellow PVC, PUR thermoplastic elastomer (TPE) cables
- DC color code
- Single key M12 connector per IEC 61076-2-101's key A/B/C
- Highly reliable low-resistance contact design with Gold/Palladium Nickel plating

**Reference Information**
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
- Voltage: 250V AC/DC
- Current: 4.0A

**Mechanical**
- Connector Face: PUR
- Molded Body: PUR
- O-Ring: Nitrile rubber
- Coupling Nut: Nickel plated brass
- Cable: PVC—Yellow 22 AWG PVC jacket and conductor insulation over 26 x 36 Copper strand, 300V UL Style AWM 2661, CSA AWM I/IT A/B
- TPE—Yellow 22 AWG TPE jacket and conductor insulation over 19 x 34 copper strand, 300V High Flex Cable (>10 million bend cycles), UL IT/C PTC105°C, CSA AWM I/IT AB 90° C 300V FT4
- Cable Outside Diameter: 4P—0.20” (5.10mm) 5P—0.23” (5.80mm)

**Environmental**
- Protection: IP67

---

**Table: Brad® Micro-Change® (M12) Cordset 120006/120065 Single Keyway Single-Ended**

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Poles</th>
<th>Length (m)</th>
<th>Straight</th>
<th>Male</th>
<th>Female</th>
<th>Right Angle</th>
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<tr>
<td>TPE</td>
<td>4</td>
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<td>2.0</td>
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<td>120065-1129</td>
<td>B04004050M020</td>
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<tr>
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<td></td>
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<td></td>
<td>B04004050M040</td>
<td>120065-1150</td>
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</table>

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*Preferred Version in Europe*
Brad® Micro-Change® (M12) Cordset

120066
Double-Ended Single Keyway

Features and Benefits
- Single key M12 connector per IEC 61076-2-101
- 22 AWG yellow PVC and thermoplastic elastomer (TPE) cables
- DC color code
- Highly reliable low-resistance contact design with Gold/Palladium Nickel plating

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 250V AC/DC
Current: 4.0A

Mechanical
Connector Face: PUR
Molded Body: PUR
O-Ring: Nitrile rubber
Coupling Nut: Nickel plated brass
Cable:
- PVC—Yellow 22 AWG PVC jacket and PVC conductor insulation over 26 x 36 Copper strand, 300V, UL Style AWM 2661, CSA AWM I/IT A/B
- TPE—Yellow 22 AWG TPE jacket and PVC conductor insulation over 19 x 34 copper stranding, 300V, High Flex Cable (>10 million bend cycles), UL ITC/PLTC 105˚C, CSA AWM I/IT AB 90˚C 300V FT4
- Cable Outside Diameter: 4P—0.20” (5.10mm) 5P—0.23” (5.80mm)

Environmental
Protection: IP67

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Poles</th>
<th>Length (m)</th>
<th>Old Part No.</th>
<th>Female/Male Extension</th>
<th>Order No.</th>
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</tr>
</tbody>
</table>

*Preferred Version in Europe
Brad® Micro-Change® (M12) Receptacle

**120070**
Single Keyway

**Features and Benefits**
- Single key M12 connector per IEC 61076-2-101
- 22 AWG PVC 12 inch leads—DC color code, epoxy potted
- Black anodized aluminum shell
- Used in control panels, junction boxes and sensors

**Reference Information**
UL File No.: 3P and 4P E152210, 5P UL recognized
CSA File No.: LR6837

**Electrical**
Voltage: 250V AC/DC
Current: 4.0A

<table>
<thead>
<tr>
<th>Poles</th>
<th>Male Old Part No.</th>
<th>Male Order No.</th>
<th>Female Old Part No.</th>
<th>Female Order No.</th>
<th>Mounting Thread</th>
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<tbody>
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<td>120070-0049</td>
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<td>1/4&quot; - 18NPT</td>
</tr>
</tbody>
</table>

*Note: Other mounting threads available, contact Molex.

Brad® Micro-Change® (M12) Field Attachables

**120071**
Single Keyway

**Features and Benefits**
- Single key M12 connector per IEC 61076-2-101
- Screw terminal connection accepts up to 18 AWG conductors
- Easy field installation of quick-disconnect design
- For use with all standard single keyway M12 receptacles and cordsets

**Reference Information**
CSA File No.: LR6837

**Electrical**
Voltage: 4P—250V AC, 300V DC
5P—30V AC, 36V DC
Current: 4.0A

<table>
<thead>
<tr>
<th>Poles</th>
<th>Male Old Part No.</th>
<th>Male Order No.</th>
<th>Female Old Part No.</th>
<th>Female Order No.</th>
<th>Orientation</th>
<th>Description</th>
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<td>BA4000-31</td>
<td>120071-0038</td>
<td>BA4000-31</td>
<td>120071-0035</td>
<td>Straight</td>
<td>With PG 7 Cable Fitting (0.13 - 0.26&quot; O.D. (3.3-6.6mm) cable)</td>
</tr>
<tr>
<td></td>
<td>BA4000-31</td>
<td>120071-0040</td>
<td>BA4000-31</td>
<td>120071-0037</td>
<td>90 degree</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>BA5000-31</td>
<td>120071-0049</td>
<td>BA5000-31</td>
<td>120071-0044</td>
<td>90 degree</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>BA4000-32</td>
<td>120071-0019</td>
<td>BA4000-32</td>
<td>120071-0036</td>
<td>Straight</td>
<td>With PG 9 Cable Fitting (0.16 - 0.32&quot; O.D. (4.1-8.1mm) cable)</td>
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<td>BA5000-32</td>
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<td>BA5000-32</td>
<td>120071-0043</td>
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</tbody>
</table>
**Features and Benefits**
- Simply push down to connect and pull up to disconnect
- Surpasses the performance and reliability of traditional threaded connectors to deliver increased productivity and cost savings
- Ultra-lock connectors incorporate a unique radial seal and mechanical locking design that deliver unsurpassed performance

**Electrical**
- Voltage: 3P and 4P—250V
- 5P—60V
- Insulation Resistance: >10^9 ohms
- Rated Current T Amb. 40C: 4.0A
- Contact Resistance: <5 milliohms

**Mechanical**
- Connector Face: PUR
- Connector Body: PUR
- Locking Mechanism: Nickel-plated Brass
- Female: Phosphor Bronze
- Contact Plating: Gold over Nickel
- O-Ring: Viton

**Environmental**
- Pollution Degree (IEC 60 664-1): 3
- Protection: IP67/69K

<table>
<thead>
<tr>
<th>Poles</th>
<th>Cable Type</th>
<th>Length (m)</th>
<th>Male Straight</th>
<th>Female Straight</th>
<th>Female Right Angle</th>
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<tbody>
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<td>4</td>
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*Preferred Version in Europe*
Brad® Ultra-Lock® (M12) Cordset
120080
Doubled-Ended

Features and Benefits
• Simply push down to connect and pull up to disconnect
• Surpasses the performance and reliability of traditional threaded connectors to deliver increased productivity and cost savings
• Ultra-lock connectors incorporate a unique radial seal and mechanical locking design that deliver unsurpassed performance

Electrical
Voltage: 4P—250V AC/DC
5P—60V AC/DC
Insulation Resistance: >10^9 ohms
Rated Current T Amb.: 4.0A
Contact Resistance: <5 milliohms

Mechanical
Connector Face: PUR
Contact Carrier: PUR
Locking Mechanism: Nickel-plated Brass
Contact: Male—Brass
Female—Phosphor Bronze
Contact Plating: Gold over Nickel
O-Ring: Viton
Durability: 30,000 mate/demate

Environmental
Pollution Degree (IEC 60 664-1): 3
Protection: IP67/IP69K

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Preferred Version in Europe

Brad® Ultra-Lock® (M12) Receptacle
120025/120084
Single Keyway

Features and Benefits
• Mating receptacles for Ultra-Lock® cordsets
• 0.34mm² (22 AWG) PVC 30cm wire leads, DC color code
• Fully potted to maintain water tight rating of enclosure
• Used in control panels, junction boxes and sensors
• Offered with wire leads or PCB pins for easy incorporation into devices

Electrical
Voltage: 4P—250V AC/DC
5P—60V AC/DC
Current: 4.0A

Mechanical
Shell: Nickel-plated Brass
Insert: PUR
Conductors: 0.34mm² (22 AWG) PVC insulation
O-Ring: Viton

Environmental
Protection: IP67/IP69K

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www.molex.com/link/ultralock.html
Brad® Micro-Change®
(½"-20 UNC)
Cordset
120072
Single-Ended
Dual Keyway

**Features and Benefits**
- Dual key connector with ½"-20 UNF coupler
- 22 AWG yellow PVC cable with metallic braid—auto color code
- Low-resistance contact design with Gold/Palladium
- Nickel plating

**Reference Information**
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
Voltage: 250V AC/DC
Current: 4.0A

**Environmental**
Protection: IP67

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Brad® Micro-Change®
(½"-20 UNC)
Receptacle
120074
Dual Keyway

**Features and Benefits**
- Dual keyway connector with ½"-20 UNC coupler
- 22 AWG PVC 12 inch leads—auto color code, epoxy potted
- Gray anodized aluminum shell
- Used in control panels, junction boxes and sensors

**Reference Information**
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
Voltage: 250V AC/DC
Current: 4.0A

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*Note: Other mounting threads available, contact Molex.

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**Mechanical**
- Connector Face: Nylon 6/6
- Molded Body: PVC
- O-Ring: Nitrile rubber
- Coupling Nut: Zinc diecast with black epoxy coat
- Cable: Yellow 22 AWG PVC jacket 70% metallic braid and PVC conductor insulation over 26 by #36 Copper stranding, 300V, UL Style 2661, CSA AWM I/II A/B
- Outside Diameter (22 AWG with 70% Braid):
  - 3P—0.23” (5.80mm)
  - 4P—0.25” (6.40mm)
  - 5P—0.26” (6.60mm)

**Environmental**
Protection: IP67
Brad® Micro-Change®
(1/2”-20 UNF)
Field Attachables
120075
Dual Keyway

Features and Benefits
- Dual keyway connector with 1/2”-20 UNC coupler
- Screw terminal connection accepts up to 18 AWG conductors
- Easy field installation of quick-disconnect design
- For use with all standard dual keyway 1/2”-20 UNF receptacles and cordsets

Electrical
Voltage: 250V AC/DC
Current: 3P—4.0A

Mechanical
Connector Face: Nylon 6/6
Molded Body: Nylon 6/6
Contact: Gold plated Copper alloy
Coupling Nut: Nickel plated Brass
Grommet: Nitrile rubber
Maximum Conductor Size: 18 AWG

Environmental
Protection: IP67

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<th>Female Order No.</th>
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<td>120075-0014</td>
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<td>7A3001-31</td>
<td>120075-0016</td>
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Brad® Micro-Change® (M12)
Ultra-Lock®
Sealed Distribution Box
120119/130007/130008

Features and Benefits
- Available in a variety of formats for backward compatibility with different connector styles
- Accepts Ultra-Lock and threaded M12 cordsets

Electrical
Voltage (IEC 60 664-1): 10-30V DC
Insulation Resistance (IEC 60 512-2): >10⁹ ohms
Rated Current (IEC 60 512-3): 2 A per I/O
Contact Resistance (IEC 60 512-2): <5 milliohms

Mechanical
Body: PBT
Contact Carrier: PBT
Shell Material: Nickel over Brass
Contact: Phosphor Bronze
Contact Plating: Gold over Nickel
Cable Jacket: PUR
O-Ring: Viton

Environmental
Pollution Degree (IEC 60 664-1): 3
Protection: IP67/69K

Suggested home-run cable assembly for above junction boxes

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Suggested home-run cable assembly for above junction boxes

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www.molex.com/link/ultralock.html
Brad® Micro-Change® (M12) Sealed Distribution Box

120114
Top Mount, Single Keyway with Molded Home Run Cable

Features and Benefits
- Simplifies wiring installation, molded PVC home run cable
- Flexibility with 4 and 8 port configurations
- PNP and NPN versions for use in a variety of DC sensors

Reference Information
UL File No.: E46237
CSA File No.: LR6837

Electrical
Voltage: 10-30V DC
Current: 4.0A per port, 12.0A max. per unit
Indicating Lights: Green LED—power, yellow LED—function
Average LED Expectancy: 100,000 hours

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Home Run Cables

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 Brad® Micro-Change® (M12) Sealed Distribution Box

120114
Top Mount, Single Keyway with Mini-Change® Home Run Connector

Features and Benefits
- Connectorized home run cable connector version for maximum flexibility
- Flexibility with 4 and 8 port configurations
- PNP and NPN versions for use with a variety of DC sensors

Reference Information
UL File No.: E46237
CSA File No.: LR6837

Electrical
Voltage: 10-30V DC
Current: 4.0A per port, 12.0A total per MPIS unit
Indicating Lights: Green LED—power, yellow LED—function
Average LED Expectancy: 100,000 hours

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Home Run Cables

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Brad® Micro-Change® (M12) Sealed Distribution Box

120114
Top Mount, Single Keyway
Twin Wired with Field Attachable Home Run Cable

Features and Benefits
- Field-attachable home run cable provides flexibility in installation
- Allows for specialty user-supplied control cable options
- User can decide home run cable lengths at last minute
- Cable can exit at either top or end of MPIS

Electrical
Voltage: 10-30V DC
Current: 2.0A max. per port, 12A max. per unit
Indicating Lights: Green LED—power, yellow LED—function
Average LED Expectancy: 100,000 hours

Mechanical
Insert: PBT
Housing: PBT
Receptacle Housing: Nickel-plated Brass
ID Label: PA
Home Run Connector: Screw termination; maximum wire gauge 18 AWG, control cable diameter to fit PG16 grommet 0.31-0.51" (8-14mm)

Environmental
Protection: IP67

<table>
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<tr>
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**Brad® Micro-Change®**  
Sealed Distribution Box  
120115  
Side Mount, Single Keyway with  
Home Run Connector

### Features and Benefits
- Simplifies wiring installation, integrated PVC home run cable  
- Flexibility with 4, 6 and 8 port configurations  
- PNP for use with a variety of DC sensors

### Reference Information
UL File No.: E46237  
CSA File No.: LR6837

### Electrical
- Voltage: 10-30V DC  
- Current: 4.0A max. per port, 12.0A total per MPIS unit  
- Indicating Lights: Green LED—power, yellow LED—function  
- Average LED Expectancy: 100,000 hours

### Mechanical
- Insert: Nylon 6/6  
- Housing: Nylon 6/6  
- Receptacle Housing: Black E-coat  
- ID Label: ABS

- Home Run Connector Cabling: Yellow, PVC cable jacket, (1) 18 AWG and either (5) or (7) 22 AWG control cables and PVC conductor insulation over 41 by #34 (18 AWG) and 26 by #36 (22 AWG) Copper stranding, UL listed style 2661, CSA certified 105° C, 300 V  
- Outside Diameter: 0.29” (7.4mm)

### Environmental
- Protection: IP67

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**Brad® Micro-Change®**  
(½” NPT-20)  
Sealed Distribution Box  
120115  
Side Mount, Dual Keyway  
Parallel Wiring with Home Run Connector

### Features and Benefits
- Connectorized home run cable connection for maximum flexibility  
- Flexibility with 4 and 8 port configurations  
- For use with a variety of DC sensors

### Reference Information
UL File No.: E46237  
CSA File No.: LR6837

### Electrical
- Voltage: 120V AC  
- Current: 4.0A per port, 12.0A total per MPIS unit

### Mechanical
- Insert: Nylon 6/6  
- Housing: PBT  
- Receptacle Housing: Zinc die cast with black epoxy coat  
- ID Label: ABS

- Home Run Connector: Yellow, STOOW PVC cable jacket, 16 AWG/6,8 and 10 conductor and PVC conductor insulation over 65 by #34 Copper stranding, UL listed STOOW 105° C, CSA certified ST 105° C, 600 V  
- Outside Diameter: 4 Port—0.54” (13.7mm)  
- 8 Port—0.66” (16.8mm)

### Environmental
- Protection: IP67

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S-40  
MX10  
www.molex.com/link/microchange.html
BradConnectivity™ mPm® Connectors

Our BradConnectivity mPm product line offers a wide range of connectors including DIN connectors, DIN splitters, molded cable connectors, suppressor adaptors, Junior Timer connectors and proximity switches for magnetic cylinders. The mPm range of connectors is available with standard options including filament, neon or LED illuminating devices, VDR, diodes or transil diodes (with or without illuminating devices) to offer protection against overvoltage or peaks caused when switching off.

The mPm connectors are used extensively to provide electrical connections in a wide range of applications. The most common applications are in conjunction with hydraulic, pneumatic or electromagnet devices, including solenoid valves. Other applications include pressure transducers, proximity switches, flow monitors, level sensors, limit switches, thermostats, industrial thermometers and low energy motors.

The mPm connectors are also available with approval cURus on request.

All mPm connectors offer protection from dust and water according to EN60529 (IP65 and IP67 on request) and conform to VDE 01101/89 operating voltage up to 250V group C with respect to the insulation class. The terminal block in mPm connectors is securely assembled and retained in the connector casing by way of a spring loaded lug. With this feature the terminal block remains secure in the casing reducing the danger of accidental contact or exposure to live parts even when the fixing screw is removed.

The mPm DIN connectors are designed to reduce the number of components, making them easier to assemble and with fewer parts to stock. They are supplied in single set or bulk components, eliminating the costly effort of disassembly and providing further cost savings. The new generation of mPm DIN connectors provide repeatable, unsurpassed IP67 sealing performance (even in humidity) using an external nut over the cable. The external nut accepts a wider range of cables from 4mm to 9mm, reducing the current number of different nuts from 3 (P607, P608, P611) to 1 (external nut).

Choose from the largest selection of DIN field-attachables, molded DIN and DIN accessories. The mPm connectors with moulded cables offer a fast and efficient method of connection resulting in greatly reduced installation time and cost. They can be supplied with or without integral LED indicators and suppression circuits. A diagram is printed on each connector with circuit to allow easy user identification.

BradConnectivity mPm overmolded Junior Timer connectors are available in straight and 90 degree versions. These pre-wired overmolded connectors offer an economical alternative to hard wiring and mate with industry standard Junior Timer interfaces or solenoids and other mobile hydraulic devices and other harsh environment applications. The integrated surge suppression circuitry (VDR) protects the system and extends overall lifetime. LED indication is built into the connector head for easy identification of system status. With an IP65 environmental rating the Junior Timer provides protection in harsh and demanding environments. Plus the cable locking clip protects the connection in high vibration applications.

Also mPm offers a wide range of proximity switches. They are available with attached flying leads or a plug connector, the latter facilitating maintenance operations with all voltage disconnected. The plug connector is also available with an M12 ring nut fastener, giving enhanced security in the presence of high vibrations. The switches are impregnated with epoxy resin to give protection in accordance with IP67, excellent resistance to impact and operational temperature range of -20° to +85°C.

Choose from the largest selection of DIN field-attachables, molded DIN and DIN accessories. The mPm connectors with moulded cables offer a fast and efficient method of connection resulting in greatly reduced installation time and cost. They can be supplied with or without integral LED indicators and suppression circuits. A diagram is printed on each connector with circuit to allow easy user identification.

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Brad® Mini-Change®
A-Size Single-Ended Cordset
STOOW Cable
130006
Internal Thread

**Features and Benefits**
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and weld slag resistant
- Cable is oil, water and UV resistant

**Reference Information**
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
- Voltage: 600V AC/DC
- Current: 2P—13.0A
- 3P—13.0A
- 4P—10.0A
- 5P—8.0A
- 6P—8.0A

**Mechanical**
- Connector Face: PVC UL 94-V0
- Molded Body: PVC UL 94-V0
- Coupling Nut: Zinc diecast with black epoxy coat. Optional Stainless Steel type 303, type 316 or gray Nylon 6/6
- Cable: Yellow, #16 AWG, UL STOOW, CSA ST, PVC jacket and insulation, 65 x #34 stranding
- Cable Diameter: 2P—0.37” (9.4mm)
- 3P—0.41” (10.4mm)
- 4P—0.42” (10.7mm)
- 5P—0.50” (12.7mm)
- 6P—0.54” (13.7mm)

**Environmental**
Protection: IP67

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*Note: This is the A-Size 6-pole Mini-Change, please refer to series 130007 for the B-Size.*
Brad® Mini-Change®
A-Size Double-Ended Cordset
STOOW Cable
130011
Extension Cable
Internal Thread Both Ends

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and weld slag resistant
- Cable is oil, water and UV resistant

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 600V AC/DC
Current: 2P—13.0A
3P—13.0A
4P—10.0A
5P—8.0A
6P—8.0A

Mechanical
Connector Face: PVC UL 94-V0
Molded Body: PVC UL 94-V0
Coupling Nut: Zinc diecast with black epoxy coat. Optional Stainless Steel type 303, type 316 or gray Nylon 6/6
Cable: Yellow, #16 AWG, UL STOOW, CSA ST, PVC jacket and insulation, 65 x #34 stranding
Cable Diameter: 2P—0.37" (9.4mm)
3P—0.41" (10.4mm)
4P—0.42" (10.7mm)
5P—0.50" (12.7mm)
6P—0.54" (13.7mm)

Environmental
Protection: IP67

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*Note: This is the A-Size 6-pole Mini-Change, please refer to series 130011 for the B-Size.
Brad® Mini-Change®
A-Size Double-Ended Cordset
TPE Cable
**130010**

**Extension Cord**
**Male External Thread**
**Female Internal Thread**

**Features and Benefits**
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and sludge resistant
- TPE cable is weld slag and coolant resistant. It is exposed-run, tray routed and continuous flex rated.

**Reference Information**
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
Voltage: 600V AC/DC
Current: 3P—13.0A
4P—10.0A
5P—8.0A

**Mechanical**
Connector Face: PVC UL 94-V0
Molded Body: PVC UL 94-V0
Coupling Nut: Zinc diecast with black epoxy coat. Optional Stainless Steel type 303 or type 316
Cable: Yellow, #16 AWG, UL type TC-ER, CSA TC, TPE jacketed, PVC/Nylon insulation, 65 x #34 stranded
Outside Diameter: 3P—0.41” (10.4mm)
4P—0.42” (10.7mm), 0.43” (10.9mm)
5P—0.50” (12.7mm), 0.46” (11.7mm)

**Environmental**
Protection: IP67

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</table>
Brad® Mini-Change®
A-Size Receptacle
16 AWG
130013/130099
External Thread with Leads

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Black epoxy coated Zinc diecast shell design
- #16 AWG, PVC insulated leads, U.S. color code

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 600V AC/DC
Amperage:
- 2P — 13.0A
- 3P — 13.0A
- 4P — 10.0A
- 5P — 8.0A
- 6P — 8.0A

Mechanical
Shell: Zinc diecast with black epoxy coat, optional stainless steel type 303, type 316 or gray Nylon 6/6
90° — Zinc diecast with black epoxy coat (only)
Flange Mount — Gray anodized aluminum, optional stainless steel type 303
Insert: PVC UL 94-V0
Conductors: #16 AWG, PVC insulation over 26 x #30 Copper stranding, 600V, UL Style 1015, CSA TEW

Environmental
Protection: IP67

Accessories
Old Part No. Order No. Description
5601 130099-0143 Locknut 1/2" - 14NPT, Zinc plated Steel
5611 130099-0149 1/2" Gasket, black neoprene

Solder Cup Contacts

<table>
<thead>
<tr>
<th>Mounting Thread</th>
<th>Poles</th>
<th>Order No.</th>
<th>Male</th>
<th>Female</th>
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Solder Cup Contacts

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<th>Poles</th>
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<th>Male</th>
<th>Female</th>
</tr>
</thead>
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Internal Thread

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<td>130099-0290</td>
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<tr>
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<td>#16 IEC</td>
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</table>

www.molex.com/link/minichange.html
Brad® Mini-Change®
B-Size Single-Ended Cordset
STOOW Cable
130007
Internal Thread

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and held slag resistant
- Cable is oil, water and UV resistant

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 600V AC/DC
Current: 6P—8.0A
7P—8.0A
8P—7.0A

Environmental
Protection: IP67

---

Brad® Mini-Change®
B-Size Double-Ended Cordset
STOOW Cable
130011
Extension Cable
Internal Thread Both Ends

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and held slag resistant
- Cable is oil, water and UV resistant

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 600V AC/DC
Current: 6P—8.0A
7P—8.0A
8P—7.0A

Environmental
Protection: IP67

---

<table>
<thead>
<tr>
<th>Poles</th>
<th>Length</th>
<th>Male Straight</th>
<th>Female Straight</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>3'</td>
<td>20600201F030*</td>
<td>130007-0049*</td>
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<td>20600201F060*</td>
<td>130007-0051*</td>
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<td>12'</td>
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<td>20'</td>
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<td>130007-0055*</td>
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<td>3'</td>
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<td>130007-0113</td>
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<td>130007-0115</td>
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<td>20'</td>
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<td>3'</td>
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*Note: This is the B-Size 6-pole Mini-Change, please refer to series 130006 for the A-Size.

---

<table>
<thead>
<tr>
<th>Poles</th>
<th>Length</th>
<th>Female Straight/Male Straight</th>
</tr>
</thead>
<tbody>
<tr>
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<td>6'</td>
<td>22400201F030*</td>
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<tr>
<td></td>
<td>12'</td>
<td>22400201F120*</td>
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<tr>
<td></td>
<td>20'</td>
<td>22400201F200*</td>
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<tr>
<td>7</td>
<td>6'</td>
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<td>12'</td>
<td>22700201F120</td>
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<td>20'</td>
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<td></td>
<td>20'</td>
<td>22800201F130</td>
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</tbody>
</table>

*Note: This is the B-Size 6-pole Mini-Change, please refer to series 130006 for the A-Size.
**Brad® Mini-Change® B-Size Receptacle**

**16 AWG**

**130014**

**External Thread**

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Black epoxy coated Zinc diecast shell design
- #16 AWG, PVC insulated leads, U.S. color code

Reference Information
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
- Voltage: 600V AC/DC
- Current: 6P—8.0A
  - 6'—8.0A
  - 8P—7.0A

**Mechanical**
- Shell: Zinc diecast with black epoxy coat, optional Stainless Steel type 303
- Insert: PVC UL 94-V0
- Conductors: #16 AWG, PVC insulation over 26 x #30 Copper stranding, 600V, UL Style 1015, CSA TEW

**Environmental**
- Protection: IP67

<table>
<thead>
<tr>
<th>Poles</th>
<th>Lead Length</th>
<th>Male</th>
<th>Female</th>
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<tr>
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*Note: This is the B-Size 6-pole Mini-Change, please refer to series 130006 for the A-Size.

---

**Brad® Mini-Change® C-Size Single-Ended Cordset**

**STOOW Cable**

**130008**

**Internal Thread**

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and weld slag resistant
- Cable is oil, water and UV resistant

Reference Information
UL File No.: E152210
CSA File No.: LR6837

**Electrical**
- Voltage: 600V AC/DC
- Current: 9P—7.0A
  - 10P—7.0A
  - 12P—5.0A

**Mechanical**
- Connector Face: PVC UL 94-V0
- Molded Body: PVC UL 94-V0
- Coupling Nut: Zinc diecast with black epoxy coat. Optional Stainless Steel type 303 or gray Nylon 6/6
- Cable: Yellow, #16 AWG, UL STOOW, CSA ST, PVC jacket and insulation, 65 x #34 stranding
- Outside Diameter: 9P—0.64” (16.3mm)
  - 10P—0.66” (16.8mm)
  - 12P—0.71” (18.0mm)

**Environmental**
- Protection: IP67

<table>
<thead>
<tr>
<th>Poles</th>
<th>Length</th>
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<th>Female Straight</th>
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<tr>
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<td>130008-0115</td>
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www.molex.com/link/minichange.html
Brad® Mini-Change®
C-Size Double-Ended Cordset
PVC Cable

130012
Extension Cord
Internal Thread Both Ends

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Epoxy coated coupling nut is corrosion and weld slag resistant
- Cable is oil, water and UV resistant

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 600V AC/DC
Current: 9P—7.0A
10P—7.0A
12P—5.0A

<table>
<thead>
<tr>
<th>Poles</th>
<th>Length</th>
<th>Male Straight</th>
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<tbody>
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<td>12'</td>
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<td>20'</td>
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<td>12</td>
<td>6'</td>
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<td>20'</td>
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</table>

Environmental
Protection: IP67

Brad® Mini-Change®
C-Size Receptacle

130015
External Thread

Features and Benefits
- Patented Quad Beam contact with gold/nickel plating provides high reliability and low resistance
- Black epoxy coated Zinc diecast shell design
- #16 AWG, PVC insulated leads, U.S. color code

Reference Information
UL File No.: E152210
CSA File No.: LR6837

Electrical
Voltage: 600V AC/DC
Current: 9P—7.0A
10P—7.0A
12P—5.0A

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<thead>
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<th>Poles</th>
<th>Length</th>
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<td>12&quot;</td>
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Environmental
Protection: IP67

Mechanical
Shell: Zinc diecast with black epoxy coat, optional Stainless Steel type 303
Insert: PVC UL 94-V0
Conductors: #16 AWG, PVC insulation over 36 x #30 Copper stranding, 600V, UL Style 1015, CSA TEW
**Brad® Mini-Change®**

**C-Size Single and Double-Ended Cordset and Receptacle**

130008/130012/130015

**19-Pole**

---

### Single-Ended Cordset

<table>
<thead>
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<th>Male Straight</th>
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### Double-Ended Cordset

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### Receptacle

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<td>130015-0102</td>
</tr>
</tbody>
</table>

---

**Brad® Mini-Change® Field Attachable Connector**

130017

---

### Features and Benefits

- Allows easy field conversion to quick disconnect
- Male with internal or external threads—female with internal threads
- Secure screw terminals #15 AWG to #24 AWG—compatible with existing Mini-Change®

### Mechanical

- Connector Face: Polyurethane
- Body: Polyamide PA6
- Contact: Gold-plated Brass
- Coupling Nut: Nickel-plated Brass or type 36 stainless steel
- Grommet: Neoprene
- Cable Range O.D.: .20” to .48” (.5 to 12.0mm)
- Acceptable Wire Gauge Range: #24 AWG (.25mm²) to #15 AWG (2.0mm²)

### Electrical

- Voltage: 600V AC/DC
- Current: 3P—13.0A
- 4P—10.0A
- 5P—8.0A

---

**Reference Information**

CSA File No.: LR6837

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**www.molex.com/link/minichange.html**
Brad® Mini-Change®
Accessories
130006/130013/
130018/130201

Features and Benefits
• Closure caps for receptacles, connectors and Multi-ports
• Threaded unions for mating (2) cordsets
• Female and male plugs for liquid tight conduit terminations
• 90° adapters with (1) male and (1) female plug

Reference Information
UL File No.: E152210*
CSA File No.: LR6837†

Electrical
Liquid-tight plugs and 90° adaptors
Voltage: 600V
Current: 2P—13.0A
3P—10.0A
4P—8.0A
5P—8.0A

Mechanical
Closure Caps: Anodized aluminum, stainless steel or gray nylon (A-size only)
Threaded Union: Gray anodized Aluminum
Liquid-tight Plugs Connector Body: Zinc plated Steel
Coupling Nut: Gray anodized Aluminum
Clamp Nut: Zinc plated Steel
Insert: PVC UL 94-V0
90° Adapter Connector Body: Yellow PVC
Coupling Nuts: Zinc diecast with black epoxy
Insert: PVC UL 94-V0

Environmental
Protection: IP67

---

Dust Cap

<table>
<thead>
<tr>
<th>Size</th>
<th>Poles</th>
<th>Plug Order No.</th>
<th>Receptacle Order No.</th>
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<td>65-0085SS 130201-1110</td>
<td>65-00868 120201-1112</td>
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<tr>
<td></td>
<td></td>
<td>Black Epoxy Coat Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>6, 7, 8</td>
<td>65-0102 130201-1115</td>
<td>65-0103 120201-1116</td>
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<td></td>
</tr>
<tr>
<td>C</td>
<td>9, 10, 12</td>
<td>65-0104 130201-1118</td>
<td>65-0105 120201-1120</td>
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<td>65-0104SS 130201-1119 Stainless Steel</td>
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Threaded Unions

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<th>Order No.</th>
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<td>130201-1228</td>
<td>A-Size: 3P-4P</td>
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<tr>
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<td>130201-1228</td>
<td>C-Size: 9P, 10P-12P</td>
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Bulk Head Pass-Through Adapters

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<td>TR3030</td>
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<td>TR4030</td>
<td>130013-0389†</td>
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<td>TR5030</td>
<td>130013-0541†</td>
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* UL File No.: E152210
† CSA File No.: LR6837

Plugs

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90° Adapters

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<td>41481 130018-0210</td>
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</table>
The Brad® Brand of Automation Products—Designed for Performance and Reliability

Molex empowers the industrial infrastructure through its Brad automation products. Brad products are ruggedly designed, engineered and constructed to provide easy installation and long-term, reliable performance in harsh environments. Whether they’re for connecting power, industrial networks or automation equipment such as sensors, I/O devices, computer systems, robots, or conveyor systems, Brad products are the ideal choice for connecting the plant floor.

Brad products include:

BradConnectivity™ connectors, cordsets and distribution boxes for sensor and actuator applications. Designed to meet our customers’ requirements and built industrial-tough to ensure flexibility, interoperability and rock-solid performance. The BradConnectivity solutions include:

- **Mini-Change® Connectivity**
  - The industry’s first quick-disconnect alternative to hardwiring, commonly used with 18 and 30mm proximity switches, photoelectric sensors and limit switches as well as for network I/O-power connection.

- **Micro-Change® (M12) Connectivity**
  - When space and time are in short supply, Micro-Change (M12) connectivity provides compact migration towards soft-wiring solutions. These industry standard connectors are available in single and dual keyways for a myriad of network and I/O applications.

- **Nano-Change® (M8) Connectivity**
  - The industry’s broadest selection of space saving cordsets, receptacles, inserts, splitters and molded junction boxes. They provide rugged performance in tight spaces while minimizing downtime, maintenance and wiring time.

BradCommunications™ network interface cards, gateways, diagnostic tools and Industrial Ethernet switches. Designed to enhance communication of industrial networks and devices. The BradCommunications solutions include:

- **Network interface cards**
  - PC network interfaces connect “Soft” PLC, HMI/OI or SCADA applications installed on a PC based computer to an industrial network
  - PLC communication modules connect a PLC to an industrial network
  - Embedded interfaces quickly integrate an industrial network into an OEM device
  - Gateways connect networks to other networks or devices, exchange information across many protocols as well as creating a communications link between the plant floor and the office.
  - Diagnostic tools provide a clear understanding of the “health” of the network to increase production uptime as well as obtaining an early warning through its predictive technologies.
  - Industrial Ethernet switches intelligently route Ethernet messages, eliminate collisions and provide deterministic performance of your Ethernet network.

BradControl™ networked I/O for on-machine applications. Designed to provide reliable connections in harsh environments between industrial controllers communicating on an industrial network and I/O devices. The BradControl solution includes:

- Classic 60mm I/O modules
- Compact 30mm I/O modules

BradPower™ products bring power reliably to motors, lights, heaters and other electrical devices. The BradPower solution includes:

- Cordsets, connectors, receptacles, tees and reducers that create a modular, flexible wiring system for machine power distribution and motor control

www.molex.com/link/bradpower.html
BradPower™ Modular Power Solutions
Overmolded Cordsets and Connectors

Features and Benefits
- Available in 3 or 4 pole
- UL Listed for use in US and Canada
- IP67, IP68 and IP69K rated
- NFPA-79-2002 standard compliance
- Total installed cost can be reduced from 20 to 50% vs. conventional hard-wiring
- Modular components mean faster, easier installation and maintenance
- Eliminates the potential for mis-wiring
- Requires no tools, no pipe bending, no wire pulling, no conduit or raceways
- Complete range of modular components available for food and beverage processors

Modular, Easy to install
BradPower solutions replace machine hard wiring with modular, quick-connect systems comprised of crush-resistant, pre-wired cordsets and factory-molded connectors. The result is a robust, scalable and easy-to-install power distribution system that does not require the specialized tools and labor typically associated with traditional conduit or raceway installations.

Performance
BradPower wiring systems’ modular components make installation faster, easier and more reliable. Where multiple machines are involved, assembling the systems is consistent and repeatable.

Bottom-Line Benefits
Compared to traditional conduit-based hard wiring, BradPower modular solutions provide:
- Reduced labor costs
- Simplified connections
- Increased plant flexibility
- Reduced commission time
BradPower modular solutions deliver rapid return on capital equipment investments

Markets and Applications
Robotic machinery
Material handling equipment
Packaging systems
Food and beverage processing
Factory automation
Motor control
Power distribution
BradPower™
Modular Power
Solutions

Trunk/Feeder Cordsets

Features
- 600V AC; 30.0A (3 pole) and 25.0A (4 pole)
- Dual rated 10 AWG cable
- Multiple key options available

Drop/Branch Cordsets

Features
- 600V AC
- 15.0A (3 pole, 14 AWG); 13.0A (3 pole, 16 AWG)
- 15.0A (4 pole, 14 AWG); 10.0A (4 pole, 16 AWG)
- Features Mini-Change® to allow for quick connection of field devices

Tees

Features
- 600V AC
- 30.0A (3 pole) and 25.0A (4 pole)
- Multiple key options available
- Serve as the termination point at motors and devices

Receptacles

Features
- 600V AC
- 30.0A (3 pole) and 25.0A (4 pole)
- Multiple key options available
- Tees with drop connector available for access points to branch circuits to field devices
- Tees with trunk connector available to split main feeder circuit into sub-segments

Reducers

Features
- 600V AC
- Trunk reducer to female drop
- Reducers are essential in achieving the most versatile, scalable wiring system possible
- Multiple key options available (trunk/feeder lines)
Field Attachables

**Features**
- 600V AC
- Trunk/Feeder—30.0A (3 pole); 25.0A (4 pole)
- Drop/Branch—15.0A
- Cut cable to length on-site for maximum flexibility and convenience

Disconnect Switch

**Features**
- 600V AC
- 15.0A
- Easily installed without special tools or highly skilled labor

Accessories

**Features**
- Closure caps maintain sealing integrity and provide convenient “stop points” for expandable power systems
- Locking clips snap over the outside of trunk/feeder or drop/branch connection points to limit access to the flexible wiring system
BradConnectivity™
M23 Signal and Power Connectors

BradConnectivity M23 connectors and receptacles for signal and power applications were designed to meet our customers' stringent requirements for reliability and performance in the harshest of industrial environments.

**M23 Signal Connectors**
Includes field attachable male and female cable connectors and receptacles from 6-pole to 19-pole in straight and right-angled versions. Cable connectors for a broad range of cable outer diameters and receptacles for front mounting or back mounting guarantee the highest flexibility.

**Features**
- Cable assembly and shielding in one assembly step
- Clipped-on strain-relief insert prevents cable rotation
- Flexible EMC-O-Ring guarantees reliable EMC-protection
- Radial-encompassing spring contacts assure low plug-in resistance and high mating cycles
- Integrated locking clip secures the contact in the insert and allows easy assembly and disassembly

**M23 Power Connectors**
For power applications up to 28 amps. Brad® offers field-attachable cable connectors and receptacles in 5+PE and 4+3+PE versions. Applying the same modular design as the signal connectors, both pole counts can be used in straight and right-angled versions.

Crimp contacts are available with different crimp ranges. Female contacts with integrated springs assure exceptional electrical performance with ultimate contact reliability in both signal and power product ranges.

**Features**
- Modularity—same insert for all housings
- The integrated locking clip allows quick assembly
- Complete assembly and disassembly without special tools
- Lowest contact resistance as a result of a Gold-plated contact area
- Integrated strain-relief fitting

Additional tools and accessories are available, contact Molex
DeviceNet®
IP67 I/O Module
112092

Features and Benefits
- IP67 digital IO modules—reliable world-class product for harsh environment
- Supports ADR and Quick-Connect
- Standard mounting hole pattern allows for interchangeability with popular I/O modules
- Visible diagnostic through status LEDs for network, module, external power, inputs and outputs

Reference Information
Approvals: ODVA, UL, CUL, CUE

Compact
Physical
I/O Configurations:
- 8 inputs
- 4 inputs/4 outputs
I/O Connectors:
- 4 Port—Micro-Change® 5-pole M12 female BradConnectivity™ Ultra-Lock™, internally threaded
- 8 Port—Nano-Change® 3-pole threaded M8 female
Bus Connectors:
- Network In—Micro-Change 5-pole M12 male
- Network Out—Micro-Change 5-pole M12 female
Auxiliary Power Connector:
- Power In—Micro-Change 5-pole M12 male
Address Settings: 0 to 63 using rotary switches or software
Input Type: Compatible with dry contact and PNP or NPN 3-wire switches; electronic short circuit protection.

Housing Dimensions:
- 30 x 175 x 20mm (1.18 x 6.89 x 0.78")
Mounting Dimensions:
- 23mm (0.91") horizontal on centers
- 168mm (6.61") vertical on centers
Center hole
Storage Temperature: -25 to 85˚ C (-13 to 185˚ F)
RH Operating: 5 to 95% non-condensing
EMC: IEC 61000-6-2
Protection: IP67 according to IEC 60529
Vibration: IEC 60068-2-6 conformance
Shock: 10G, 11ms, 3 axis

Electrical
External Power Requirements:
- Module and Input Power—24V DC (input devices plus module)
- Output Power—24V DC (13 to 28V), 4.0A max. per module
Baud Rate Settings: Auto baud—125, 250, 500 Kbaud
Input Delay: 3 ms
Input Device Supply: 140 mA per port at 25˚ C
Input Load Current: 1.0A max. per channel; electronic short circuit protection
Maximum Switching Frequency: 200 Hz

Classic
Physical
I/O Configurations:
- 16 inputs
- 8 inputs/8 outputs
I/O Connectors:
- Micro-Change® 5-pole M12 female BradConnectivity™ Ultra-Lock™, internally threaded
Bus Connectors:
- Network In—Mini-Change® 5-pole male
- Network Out—5-pole female
Auxiliary Power Connector:
- Power In—Mini-Change 4-pole male
Power Out—4-pole female
Address Settings: 0 to 63 using rotary switches or software
Input Type: Compatible with dry contact and PNP or NPN 3-wire switches; electronic short circuit protection.

Housing Dimensions:
- 60 x 220 x 20mm (2.36 x 8.66 x 0.78")
Mounting Dimensions:
- 37.5mm (1.48") horizontal on centers
- 210mm (8.27") vertical on centers
Center hole
Storage Temperature: -20 to 85˚ C (-4 to 185˚ F)
RH Operating: 5 to 95% non-condensing
EMC: IEC 61000-6-2
Protection: IP67 according to IEC 60529
Vibration: IEC 60068-2-6 conformance
Shock: 10G, 11ms, 3 axis

Electrical
External Power Requirements:
- Module and Input Power—24V DC (input devices plus module)
- Output Power—24V DC (13 to 28V), 8.0A max. per module
Baud Rate Settings: Auto baud—125, 250, 500 Kbaud
Input Device Supply: 140 mA per port at 25˚ C
Output Load Current: 1.0A max. per channel; electronic short circuit protection
Maximum Switching Frequency: 200 Hz

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBDDN-480N-80U</td>
<td>DeviceNet Slave, Compact Digital, 4-port, M12 Ultra-Lock, 8 input</td>
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<tr>
<td>TBDDN-480P-80U</td>
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<td>TBDDN-444N-80U</td>
<td>DeviceNet Slave, Compact Digital, 4-port, M12 Ultra-Lock, 4 input, 4 output</td>
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<td>DeviceNet Slave, Compact Digital, 8-port, M8, 8 input</td>
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<td>DeviceNet Slave, Classic Digital, 8-port, M12 Ultra-Lock, 16 input</td>
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<td>TCDDN-880P-11U</td>
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<td>TCDDN-880N-11U</td>
<td>DeviceNet Slave, Classic Digital, 8-port, M12 Ultra-Lock, 8 input, 8 output</td>
</tr>
</tbody>
</table>

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
### Features and Benefits
- Rugged, IP68 rated connectors for continued connection integrity in industrial environments
- Variety of cable types, cable exit, form factor, coupling nut and length options for maximum flexibility
- Connect tees or ports on drop distribution boxes to active devices
- Micro-Change (M12) to Micro-Change (M12) cordsets or Micro-Change (M12) to Nano-Change® (M8) cordsets
- Single and double-ended
- Straight and 90°
- Standard and application-specific lengths

### Thin Standard Specifications
**Overall**
- Rating: 300V 80°C
- Outer Jacket: PVC
- Inner Insulation: Power—Semirigid PVC
- Data—PE foam
- Construction: Two shielded pairs, #22 Tin-Copper drain wire between pairs
- Cable Jacket Color: Gray

**Power Pair**
- Wire: Two #22 individually Tinned stranded Copper
- Shielding: Aluminum foil shield, 25% overlap
- DC Resistance: 16.5 ohms/1000 ft max. at 20°C max.
- Current: 4.0A
- Color Code: Red/black

**Data Pair**
- Wire: Two #22 individually Tinned stranded Copper
- Shielding: Aluminum foil shield, 25% overlap
- DC Resistance: 16.5 ohms/1000 ft max. at 20°C
- Velocity of Propagation: 75%
- Capacitance: 11 pF/ft
- Color Code: White/blue

### Thin High Flex Specifications
**Overall**
- Rating: 300V 80°C
- Outer Jacket: PVC
- Inner Insulation: Power—Semirigid PVC
- Data—PE foam
- Flexure: Rolling Flex > 1 million cycles at 10x bend radius
- Construction: Two foil shielded pairs, #26 Tin-Copper drains between pairs
- Cable Jacket Color: Gray

**Power Pair**
- Wire: Two #22 individually Tinned stranded Copper
- Shielding: Aluminum outside/polyester tape, 25% overlap
- DC Resistance: 17.5 ohms/1000 ft max. at 20°C
- Current: 4.0A max.
- Color Code: Red/black

**Data Pair**
- Wire: Two #24 individually Tinned stranded Copper
- Shielding: Aluminum outside/polyester tape, 25% overlap
- DC Resistance: 28 ohms/1000 ft max. at 20°C
- Velocity of Propagation: 75%
- Capacitance: 12 pF/ft
- Color Code: White/blue

### Thin Standard Cable

<table>
<thead>
<tr>
<th>Cable Length (m)</th>
<th>Single-Ended Male Straight</th>
<th>Single-Ended Male 90°</th>
<th>Single-Ended Female 90°</th>
<th>Double-Ended Female 90°/Male Straight</th>
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### Thin High Flex

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<th>Single-Ended Male Straight</th>
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<th>Single-Ended Female 90°</th>
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<td>DND03A-M050</td>
</tr>
</tbody>
</table>

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)

www.molex.com/link/devicenet.html
DeviceNet*  
Mini-Change®  
Trunk Cordset  
130024/130025  
Single and Double-Ended

**Features and Benefits**
- Plug-and-play connection between DeviceNet nodes
- Mini-Change® cordssets
- Single and double-ended
- Straight and 90°
- Standard and application-specific lengths
- Rugged, IP-68 rated connectors for continual connection integrity in industrial environments
- Phosphor-bronze contacts for greater reliability
- Variety of cable types, cable exit, coupling nut and length options for maximum flexibility

**Reference Information**
- UL File No.: E152210  
- CSA File No.: LR6837

---

### Thin Standard Cable

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: Gray PVC
- Outside Diameter: 0.48" (12.10mm)
- Inner Insulation:
  - Power—PVC with Nylon skin
  - Data—PE foam
- Construction: Two shielded pairs with #18 AWG (19 by #30) drain wires between pairs

**Power Pair**
- Wire: Two #15 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 3.6 ohms/1000 ft max. at 20°C
- Current: 8.0A max.
- Color Code: Red/black

**Data Pair**
- Wire: Two #18 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 6.92 ohms/1000 ft max. at 20°C
- Capacitance: 12pf/ft
- Color Code: White/blue

**Environmental**
- Protection: IP68, NEMA 6P
- Ambient Operating Temp: -4 to 176°F (-20 to 80°C)

**Reference Information**
- UL File No.: UL type CL2, VL 1581 flame resistance
- CSA File No.: CSA AW1M/II and A/B FT4

**Thin Flex-Rated**

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: TPE
- Outside Diameter: 0.48" (12.10mm)
- Inner Insulation:
  - Power—PVC with Nylon skin
  - Data—PE foam
- Construction: Two Shielded Pairs with #18 (19 by #30) drain wires between pairs

**Power Pair**
- Wire: Two #15 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 3.6 ohms/1000 ft max. at 20°C
- Current: 8.0A max.
- Color Code: Red/black

**Data Pair**
- Wire: Two #18 AWG (19 by #28) individually stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 4.1 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Reference Information**
- UL File No.: Style 1569
- CSA File No.: I/II A/B 300V Ft1, 80°C

---

### Thick Standard Cable

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: Gray PVC
- Outside Diameter: 0.48" (12.10mm)
- Inner Insulation:
  - Power—PVC with Nylon skin
  - Data—PE foam
- Construction: Two shielded pairs with #18 AWG (19 by #30) drain wires between pairs

**Power Pair**
- Wire: Two #15 AWG (19 by #28) individually stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 6.9 ohms/1000 ft max. at 20°C
- Capacitance: 7.5pf/ft
- Color Code: Red/black

**Data Pair**
- Wire: Two #18 AWG (19 by #28) individually stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 10.4 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Reference Information**
- UL File No.: UL type CL2, VL 1581 flame resistance
- CSA File No.: CSA AW1M/II and A/B FT4

---

### Thick Flex-Rated Cable

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: TPE
- Outside Diameter: 0.48" (12.10mm)
- Inner Insulation:
  - Power—PVC with Nylon skin
  - Data—PE foam
- Construction: Two shielded pairs with #18 (19 by #30) drain wires between pairs

**Power Pair**
- Wire: Two #15 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 3.6 ohms/1000 ft max. at 20°C
- Current: 8.0A max.
- Color Code: Red/black

**Data Pair**
- Wire: Two #18 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 4.1 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Reference Information**
- UL File No.: Style 1569
- CSA File No.: I/II A/B 300V Ft1, 80°C

---

### Mid Cable

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: Gray PVC
- Outside Diameter: 0.330" (8.38mm)
- Inner Insulation:
  - Power—PVC
  - Data—PE foam
- Construction: Two shielded pairs, #20 AWG Tin Copper drain wire between pair

**Power Pair**
- Wire: Two #16 AWG (65 by 34) stranded Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 10.4 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Data Pair**
- Wire: Two #20 AWG (65 by 36) stranded Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 12.4 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Reference Information**
- UL File No.: UL type CL2, VL 1581 flame resistance
- CSA File No.: CSA AW1M/II and A/B FT4

---

### Thin Standard Cable

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: Gray PVC
- Outside Diameter: 0.48" (12.10mm)
- Inner Insulation:
  - Power—PVC with Nylon skin
  - Data—PE foam
- Construction: Two shielded pairs with #18 AWG (19 by #30) drain wires between pairs

**Power Pair**
- Wire: Two #15 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 3.6 ohms/1000 ft max. at 20°C
- Current: 8.0A max.
- Color Code: Red/black

**Data Pair**
- Wire: Two #18 AWG (19 by #28) stranded Tinned Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 6.92 ohms/1000 ft max. at 20°C
- Capacitance: 12pf/ft
- Color Code: White/blue

**Reference Information**
- UL File No.: UL type CL2, VL 1581 flame resistance
- CSA File No.: CSA AW1M/II and A/B FT4

---

### Thin High Flex Cable

**Overall**
- Rating: 300V, 80°C
- Outer Jacket: Gray PVC
- Outside Diameter: 0.330" (8.38mm)
- Inner Insulation:
  - Power—PVC
  - Data—PE foam
- Construction: Two shielded pairs, #20 AWG Tin Copper drain wire between pair

**Power Pair**
- Wire: Two #16 AWG (65 by 34) stranded Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 10.4 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Data Pair**
- Wire: Two #20 AWG (65 by 36) stranded Copper
- Shielding: Aluminum outside/polyester tape 25% overlap
- DC Resistance: 12.4 ohms/1000 ft max. at 20°C
- Capacitance: 12.5pf/ft
- Color Code: White/blue

**Reference Information**
- UL File No.: UL type CL2, VL 1581 flame resistance
- CSA File No.: CSA AW1M/II and A/B FT4

---

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
**DeviceNet™ Receptacle**

**120070/130031/130039/130188**

---

**Features and Benefits**
- Connects the external trunk line with an enclosure
- Mini-Change® receptacles with DeviceNet color rotation
- Male and female
- Front-Panel mount
- Bulkhead feed-through
- PCB-mount or cable lead
- A variety of options allows for maximum flexibility in connecting devices nodes
- Bulkhead version features rugged keyways for positive alignment of connections

---

**Thick Media**

**Electrical**
- Voltage: 300V AC/DC
- Current: Based on cable used

**Mechanical**
- Shell (Receptacle): Gray anodized Aluminum
- Shell (Bulkhead): Nickel-Brass
- Gasket Material (Bulkhead): Neoprene
- Locknut Material (Bulkhead): Brass alloy
- Insert: PVC UL 94V
- Outside Diameter: Thick—0.48” (12.10mm)
- Thickness: Thick—0.34” (8.60mm)
- Thickness: Thick—0.48” (12.20mm)

**Environmental**
- Protection: IP67

**Thin Media**

**Reference Information**
- (Except for Bulkhead)
- UL File No.: E152210
- CSA File No.: LR6837

**Electrical**
- Voltage Rating: 250V AC/DC
- Current: 4.0A

**Mechanical**
- Shell: Receptacle—Andonized Aluminum
- Large: Nickel over Brass
- PCB—Thermoplastic
- Insert: Nylon 6/6
- Coupling Nut: PCB—Delrin
- Gasket Material: Bulkhead—Neoprene
- Lock Washer: Bulkhead—Steel Alloy
- Support Bracket: Steel, Tin, Lead, coated
- MB Panel Thickness: PCB—0.639 to 0.070”

**Environmental**
- Protection: Receptacles—IP67
- Bulkhead—PCB IP67

---

**Drop Receptacle Micro-Change (M12)**

<table>
<thead>
<tr>
<th>PCB Mount</th>
<th>12&quot; Wire Pigtail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Straight</td>
<td>Male 90°</td>
</tr>
<tr>
<td>BRS54000-35</td>
<td>120070-0242</td>
</tr>
<tr>
<td>8R5L560005-35</td>
<td>81612</td>
</tr>
</tbody>
</table>

---

**Trunk Receptacle—Front Panel Mount with Cable**

<table>
<thead>
<tr>
<th>Mounting Thread</th>
<th>Cable Length (m)</th>
<th>Description</th>
<th>Male Straight</th>
<th>Female Straight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot; - 14 NPT</td>
<td>0.50</td>
<td>Thick Standard Cable</td>
<td>DNT5100-M005</td>
<td>DNT5100-M005</td>
</tr>
<tr>
<td></td>
<td>1.0</td>
<td>DNT5100-M10</td>
<td>DNT5100-M10</td>
<td>DNT5100-M10</td>
</tr>
<tr>
<td></td>
<td>0.50</td>
<td>Mid Cable</td>
<td>DNT5100-M005</td>
<td>DNT5100-M005</td>
</tr>
<tr>
<td></td>
<td>1.0</td>
<td>DNT5100-M10</td>
<td>DNT5100-M10</td>
<td>DNT5100-M10</td>
</tr>
</tbody>
</table>

---

**Trunk Receptacle—Double-Ended Back Panel Mount to Mini-Change Receptacle (Female/Male)**

<table>
<thead>
<tr>
<th>Mounting Thread</th>
<th>Cable Length (m)</th>
<th>Description</th>
<th>Receptacle/Straight</th>
<th>Receptacle/Straight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot; - 14 NPT</td>
<td>1.0</td>
<td>Thick Standard Cable</td>
<td>DNT5210A-M010</td>
<td>DNT5210A-M010</td>
</tr>
<tr>
<td></td>
<td>DNT5310A-M010</td>
<td>130039-0006</td>
<td>130039-0006</td>
<td></td>
</tr>
</tbody>
</table>

---

**Thin Media**

**Reference Information**
- (Except for Bulkhead)
- UL File No.: E152210
- CSA File No.: LR6837

**Electrical**
- Voltage Rating: 250V AC/DC
- Current: 4.0A

**Mechanical**
- Shell: Receptacle—Andonized Aluminum
- Large: Nickel over Brass
- PCB—Thermoplastic
- Insert: Nylon 6/6
- Coupling Nut: PCB—Delrin
- Gasket Material: Bulkhead—Neoprene
- Lock Washer: Bulkhead—Steel Alloy
- Support Bracket: Steel, Tin, Lead, coated
- MB Panel Thickness: PCB—0.639 to 0.070”

**Environmental**
- Protection: Receptacles—IP67
- Bulkhead—PCB IP67

---

*DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
DeviceNet*  
Sealed Distribution Box  
130036/130037/130039

Features and Benefits
- Allows several trunk cables or drop cables with Mini-Change® style of connectors to be consolidated and can be connected to the trunk
- Eliminate the need to have numerous tees connected near a single point
- Rugged enclosure for reliable connectors in industrial environment

Thin Media

Reference Information  
cCSAus File No.: LR6837

Electrical
Voltage: 120V AC/DC  
Amperage: 7.0A total per unit

Mechanical
Insert: PVC  
Housing: Zinc diecast with black epoxy coat  
ID Label: ABS

Environmental
Protection: IP67

<table>
<thead>
<tr>
<th>Mounting</th>
<th>Parts</th>
<th>Thick Media</th>
<th>Thin Media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mini-Change BUS IN with Mini Parts</td>
<td>Mini-Change BUS IN/BUS OUT with Mini Parts</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>DN6100</td>
<td>130029-0336</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>DN6000</td>
<td>130036-0005</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>DN6000</td>
<td>130036-0008</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mounting</th>
<th>Parts</th>
<th>Thick Media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mini-Change BUS IN with 2 Meter Cable with Micro Parts</td>
</tr>
<tr>
<td>Top</td>
<td>4</td>
<td>DNH4300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mini-Change BUS IN/BUS OUT with 2 Meter Cable with Micro Parts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DNH4300-02</td>
</tr>
</tbody>
</table>

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
DeviceNet®
Tee and Splitter
130035/130039

Features and Benefits
- Phosphor bronze contacts for greatest reliability
- Variety of Mini-Change® to Micro-Change® (M12) cordset configurations for installation flexibility
- Tees enable tapping into trunk line to add drop lines or devices
- Splitters allow service to two devices through just one connection
- Power monitor tees show you what the power condition is, when an improper condition occurred and what that condition is.

### Tee

**Electrical**
- Voltage: 50V
- Current: Mini-Change drop—8.0A
  - Micro-Change drop—3.0A
- Contact Material: Phosphor Bronze Alloy
- Contact Plating: Gold over Nickel Alloy

**Mechanical**
- Connector Face: Mini-Change Drop Tee—TPE
  - Micro-Change Drop Tee—PCV
- Molded Body: Mini-Change Drop Tee—TPE
  - Micro-Change Drop Tee—PCV
- Coupling Nut: Zinc diecast black E-Coat
  - MICT555—Nickel-plated Brass

**Environmental**
- Protection: Mini-Change—IP67
  - Micro-Change—IP67

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Standard Bus Drop with Power Diagnostics</th>
<th>Bus Drop Wye</th>
<th>Mini-Change Drop</th>
<th>Bus Drop Micro</th>
<th>Micro-Bus Drop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Right</td>
<td>DN3020-PM-1</td>
<td>130035-0041</td>
<td>DN3020-PM-3</td>
<td>130035-0060</td>
<td>MICT555</td>
</tr>
<tr>
<td>Back Right</td>
<td>DN3200</td>
<td>130035-0061</td>
<td>DN3020-PM-1</td>
<td>130035-0071</td>
<td></td>
</tr>
<tr>
<td>Back Left</td>
<td>DN3020-PM-3</td>
<td>130035-0060</td>
<td>DN3020-PM-3</td>
<td>130035-0090</td>
<td></td>
</tr>
</tbody>
</table>

### Splitter

**Reference Information**
- UL File No.: E152210
- CSA File No.: LR6337

**Electrical**
- Voltage: Micro-Change—250V AC/DC
  - Mini-Change—600V AC/DC
- Current: Micro-Change—4.0A
  - Mini-Change—10A

**Mechanical**
- Connector Face: Micro-Change—Nylon 6/6
  - Mini-Change—PVC
- Molded Body: PVC
- Coupling Nut: Zinc diecast with black epoxy coat, optional stainless Steel type 303 Nickel-plated Brass
- Outside Diameter: Thin—0.27” (6.9mm)
  - Thin-Flex—0.30” (12.2mm)

**Environmental**
- Protection: IP67

### Tee Gender Configuration Chart

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Left Trunk Connection</th>
<th>Right Trunk Connection</th>
<th>Drop Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN3020-PM-1</td>
<td>130035-0040</td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>DN3020-PM-3</td>
<td>130035-0060</td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>DN3020-PM-3</td>
<td>130035-0061</td>
<td>Female</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>DN3020-PM-3</td>
<td>130035-0071</td>
<td>Female</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>DN3020-PM-3</td>
<td>130035-0090</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
DeviceNet*  
Trunk Gender Changer  
130035/130039  
Mini-Change® Connection  

**Features and Benefits**  
- Phosphor bronze contacts for greatest reliability  
- Change connection interface from male to female or vice-versa  
- Female-to-Male, Straight or 90° versions  
- Right angle version specially designed for tight spaces

<table>
<thead>
<tr>
<th>Male Straight/Male</th>
<th>Female Straight/Female</th>
<th>Female/Male 90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>115060A</td>
<td>130035-0015</td>
<td>115010A</td>
</tr>
</tbody>
</table>

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)

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DeviceNet*  
Termination Resistor  
130039  

**Features and Benefits**  
- Phosphor bronze contacts for greatest reliability  
- Diagnostics versions indicate power connection and correct polarity  
- Used to terminate end of data line  
- Trunk and drop versions  
- LED diagnostic versions

**Electrical**  
- Voltage: 50V  
- Current: 8.0A  
- Contact Material: Phosphor Bronze Alloy  
- Contact Plating: Gold over Copper Alloy

**Mechanical**  
- Connector Face: Mini-Change: PVC  
- Micro-Change: Nylon  
- Molded Body: Diagnostic—Clear PVC  
- Standard—Gray PVC  
- Coupling Nut: Zinc diecast, black E-Coat—Stainless Steel, Nickel-plated Brass optional

**Environmental**  
- Protection: IP67

<table>
<thead>
<tr>
<th>Option</th>
<th>Trunk (Mini-Change Connection)</th>
<th>Drop (Micro-Change (M12) Connection)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Standard</td>
<td>DN100</td>
<td>130039-0370</td>
</tr>
<tr>
<td>with LED</td>
<td>DN100L</td>
<td>130039-0371</td>
</tr>
<tr>
<td>Jumpered</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Bus Extender</th>
<th>Old Part No.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DNETEXT-C</td>
<td>130039-0389</td>
<td></td>
</tr>
</tbody>
</table>

* DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)
**DeviceNet**

**Mini-Change® and Micro-Change® (M12) Field Attachable Connector**

130034

### Features and Benefits
- Accepts a wide range of DeviceNet cables for maximum installation flexibility
- Field termination for specific length or repair
- Internal and external threads
- Color-coded screw terminators make for error free field installation

### Mini-Change® DeviceNet Field Attachable

#### Reference Information
- CSA File No.: LR6837

#### Electrical
- Voltage: 600V AC/DC
- Current: 8.0A

#### Mechanical
- Connector Face: Polyurethane
- Connector Body: Polyamide
- Contact: Gold-plated Brass
- Coupling Nut: Nickel-plated Brass
- Grommet: Neoprene
- Cable Range OD: 0.20-0.48” (5.0-12.0mm)
- Acceptable Cable Types: Thick, thin, mid
- Acceptable Wire Gauges: #24 AWG (0.25mm²) to #15 AWG (2.0mm²)
- Color Coding: Per ODVA Standards

### Environmental
- Protection: IP67

### Micro-Change® (M12) DeviceNet Field Attachable

#### Reference Information
- CSA File No.: LR6835

#### Electrical
- Voltage Rating: 36V DC
- Current: 4.0A

#### Mechanical
- Connector Face: Polyamide
- Molded Body: Polyamide
- Contact: Silver-plated Brass
- Coupling Nut: Nickel-plated Brass
- Grommet: Nitrite rubber
- Cable Range OD: 0.16 to 32” OD (4.1 to 8.1mm)
- Acceptable Cable Types: Thin, Thin-Flex, Thin-600V
- Color Coding: Per DNII standards

#### Environmental
- Protection: IP67

<table>
<thead>
<tr>
<th>Trunk (Mini-Change® Connection)</th>
<th>Drop (Micro-Change® (M12) Connection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Straight</td>
<td>Male Straight</td>
</tr>
<tr>
<td>1A5000-34DN</td>
<td>130034-0005</td>
</tr>
</tbody>
</table>

*DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA)*
**PROFIBUS I/O Module**

**112038**

---

**Features and Benefits**
- Accepts both M12 threaded and Ultra-Lock®
- Compact
  - 30mm wide package size
  - 4 ports, M12 Ultra-Lock technology
  - Speed: 9.6 Kbps to 12 Mbps
  - Slave DP-VO
- Classic
  - 60mm wide package size
  - 8 ports, M12 Ultra-Lock technology
  - Speed: 9.6 Kbps to 12 Mbps
  - Slave DP-VO

**Reference**
- EMC: IEC 61000-6-2
- Protection: IEC IP67 according to IEC 60529
- Vibration: IEC 60068-2-6 conformance
- Approvals: CE, UL, CUL and PNO certification

**Compact**

**Physical**

<table>
<thead>
<tr>
<th>I/O Configurations:</th>
<th>8 input</th>
<th>4 inputs/4 outputs</th>
<th>8 outputs</th>
<th>6 inputs/2 outputs</th>
</tr>
</thead>
</table>

**I/O Connectors:**
- 5-pole female M12 BradConnectivity™ Ultra-Lock or 3-pole female threaded M8 connectors

**Bus Connectors:**
- Bus in: Male reverse keyway M12 5-pole, B-coded
- Bus out: Female reverse keyway M12 5-pole, B-coded

**BradConnectivity Ultra-Lock**

**Electrical**

**External Power Requirements:**
- Module and input power: 24V DC, device current and module
- Output power: 24V DC (13 to 28V), 8.0A max. per module

**Baud Rate Settings:**
- Auto baud, all Profibus® baud rates up to 12 MBaud

**Input Delay:**
- 3ms

**Input Device Supply:**
- 140mA per port at 25°C

**Output Load Current:**
- 1.4A per channel max., 4.0A per module max.

**Input Signal Voltage:**
- “0”: -2 to 7V/ “1”: 9 to 30V

**Output Voltage:**
- Auxiliary power value: 1V

**Classic**

**Physical**

<table>
<thead>
<tr>
<th>I/O Configurations:</th>
<th>16 inputs</th>
<th>12 inputs/4 outputs</th>
<th>14 inputs/2 outputs</th>
<th>8 inputs/8 outputs</th>
</tr>
</thead>
</table>

**Power Connectors:**
- Power in: Male Micro-Change® M12 5-pole
- Address Settings:
  - 1-99 by rotary switches; 1-126 by set_slave_address command

**Input Type:**
- Dry contact, PNP or NPN

**Housing Dimensions:**
- 30 x 175 x 20mm (1.18 x 6.89 x 0.78")

**Mounting Dimensions:**
- 23mm (0.91") horizontal on centers, 168mm (6.61") vertical centers

**Storage Temperature:**
- -25 to 90°C (-13 to 194°F)

**RH Operating:**
- 5 to 95% non-condensing

**Shock:**
- 10G, 11ms, 3 axis

**Mechanical**

**Maximum Switching Frequency:**
- 200 Hz

**Power in:**
- Male Micro-Change® M12 5-pole

**Power Connectors:**
- Power in: Male Mini-Change® 5-pole

**I/O Module Diagnostics:**
- Red: input/output fail
- Green: input/output on

**Output Power:**
- 2.0A per channel max., external short circuit protection

**Input Signal Voltage:**
- “0”: 0 to 5V/ “1”: 10 to 28V

**Output Voltage:**
- Supply value less 1V

**LED Indicators**

**Output Power (O):**
- Green: External supply present

**Input/Output:**
- Compact—4 port: 1A to 4B
  - 8 port: 1 to 8
  - Green: input/output on
  - Red: input/output fault

**Module and Input Power (I):**
- Classic—M12: 1A to 8B
  - Green: input/output on
  - Red: input/output fault

**Profibus Network Status (NET):**
- Green—Running
- Red—Device not configured

**I/O Module Diagnostics:**
- Off—No fault
- Red—Fault

**Module and Input Power:**
- 24V DC (13 to 28V), 4.0A max. per module

---

**Compact Threaded and Ultra-Lock (M12) Connection**

<table>
<thead>
<tr>
<th>Parts Old Part No.</th>
<th>Order No.</th>
<th>Input Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBDPB-408N-BBU</td>
<td>112038-0009</td>
<td>NPN</td>
<td>8 input</td>
</tr>
<tr>
<td>TBDPB-408P-BBU</td>
<td>112038-0011</td>
<td>PNP</td>
<td>6 input/2 output</td>
</tr>
<tr>
<td>TBDPB-462N-BBU</td>
<td>112038-0002</td>
<td>NPN</td>
<td>4 input/4 output</td>
</tr>
<tr>
<td>TBDPB-462P-BBU</td>
<td>112038-0012</td>
<td>PNP</td>
<td>8 output</td>
</tr>
<tr>
<td>TBDPB-862N-BBU</td>
<td>112038-0005</td>
<td>NPN</td>
<td>4 input/4 output</td>
</tr>
<tr>
<td>TBDPB-862P-BBU</td>
<td>112038-0013</td>
<td>PNP</td>
<td>8 output</td>
</tr>
</tbody>
</table>

**Compact Threaded and Ultra-Lock (M8) Connection**

<table>
<thead>
<tr>
<th>Parts Old Part No.</th>
<th>Order No.</th>
<th>Input Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBDPB-808N-BBU</td>
<td>112038-0019</td>
<td>NPN</td>
<td>8 input</td>
</tr>
<tr>
<td>TBDPB-808P-BBU</td>
<td>112038-0021</td>
<td>PNP</td>
<td>6 input/2 output</td>
</tr>
<tr>
<td>TBDPB-844N-BBU</td>
<td>112038-0015</td>
<td>NPN</td>
<td>4 input/4 output</td>
</tr>
<tr>
<td>TBDPB-844P-BBU</td>
<td>112038-0016</td>
<td>PNP</td>
<td>8 output</td>
</tr>
</tbody>
</table>

---

**Classic Threaded and Ultra-Lock (M12) Connection**

<table>
<thead>
<tr>
<th>Parts Old Part No.</th>
<th>Order No.</th>
<th>Input Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCDPB-BDBN-BIU</td>
<td>112038-0030</td>
<td>NPN</td>
<td>16 input</td>
</tr>
<tr>
<td>TCDPB-BDPS-BIU</td>
<td>112038-0031</td>
<td>PNP</td>
<td>14 input/2 output</td>
</tr>
<tr>
<td>TCDPB-BDCN-BIU</td>
<td>112038-0028</td>
<td>PNP</td>
<td>12 input/4 output</td>
</tr>
<tr>
<td>TCDPB-BDPS-BIU</td>
<td>112038-0029</td>
<td>PNP</td>
<td>8 input/8 output</td>
</tr>
<tr>
<td>TCDPB-BBDN-BIU</td>
<td>112038-0032</td>
<td>NPN</td>
<td>14 input/2 output</td>
</tr>
<tr>
<td>TCDPB-BBPN-BIU</td>
<td>112038-0027</td>
<td>PNP</td>
<td>12 input/4 output</td>
</tr>
<tr>
<td>TCDPB-BBBP-BIU</td>
<td>112038-0024</td>
<td>NPN</td>
<td>8 input/8 output</td>
</tr>
</tbody>
</table>

---

**TBDPB-880P-B84**

**TBDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

**TBDPB-844P-B8U**

---

**TCDPB-888P-B1U**

**TCDPB-888P-B1U**

**TCDPB-888P-B1U**

**TCDPB-888P-B1U**

**TCDPB-888P-B1U**

**TCDPB-888P-B1U**

---

**TBDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

**TBDPB-808P-B8U**

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**TBDPB-880P-B84**

**TBDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

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**TDDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

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**TBDPB-880P-B84**

**TBDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

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**TDDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

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**TBDPB-880P-B84**

**TBDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**

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**TBDPB-880P-B84**

**TBDPB-862N-B84**

**TBDPB-842N-B84**

**TBDPB-844P-B84**

**TBDPB-808P-B8U**

**TBDPB-844P-B8U**
## PROFINET Double-Ended and D-Sub Cordset

**120098**

### Features and Benefits (Double-Ended Cordset)
- Double ended straight and 90°
- Used in a variety of configurations where a complete daisy-chain plug-and-play solution is desired

### Features and Benefits (D-Sub Cordset)
- Shielded D-Sub connector maintains signal integrity in noisy environments
- D-Sub includes termination switch for field installation flexibility
- Plug and play connection between PROFINET interface cards and modules
- D-Sub to single or dual ended M12
- Horizontal, vertical, straight or 90° configurations
- Standard and application specific lengths

### Physical
- **Micro-Change Connector**
  - Face: Nylon 6/6
  - Molded Body: PUR
  - Coupling Nut: Nickel-plated Brass (360° Shielded)

- **9-pin D-Sub Connector**
  - Material: ABS

### Environmental
- **Micro-Change Connector**
  - Protection: IP67, NEMA 6

### Cable
- **Outside Diameter**: 8 ± 0.2mm

### Cable Construction
- **Jacket Material**: PUR
- **Inner Material Insulation**: PE insulation
- **Conductor**: Twisted pair 24 AWG

### Cable Flex Information
- **Torsion**: Survived more than 2 million cycles at 360° over 1m
- **C-Track**: Survived more than 3 million cycles at acceleration of 10m/s² and process speed of 5m/s
- **Bend Radius**: 7.5 x cable diameter (static)

### Electrical
- **Voltage**: 250V AC/DC
- **Current**: 4A

---

### D-Sub (9-pin) to D-Sub (9-pin)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Horizontal</th>
<th>Order Number</th>
<th>Vertical</th>
<th>Order Number</th>
<th>Horizontal</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Part No.</td>
<td>120098-0198</td>
<td>120098-0200</td>
<td>Old Part No.</td>
<td>120098-0202</td>
<td>Old Part No.</td>
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<tr>
<td>New Part No.</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M050</td>
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<td>120098-0201</td>
<td>Old Part No.</td>
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<td>Old Part No.</td>
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<td>120098-0200</td>
<td>Old Part No.</td>
<td>120098-0202</td>
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<td>New Part No.</td>
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<td>BM5S62PP4M050</td>
<td>Old Part No.</td>
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<td>Old Part No.</td>
<td>120098-0201</td>
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### D-Sub (9-pin) to Dual D-Sub (9-pin)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Horizontal</th>
<th>Order Number</th>
<th>Vertical</th>
<th>Order Number</th>
<th>Horizontal</th>
<th>Order Number</th>
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</thead>
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<td>Old Part No.</td>
<td>120098-0154</td>
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<td>BM5G62PP4M050</td>
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</tbody>
</table>

### D-Sub (9-pin) to Micro-Change® (M12) Cordsets

#### Single Reverse Keyway (end of segment) Module Connection

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Cable Length (m)</th>
<th>Male Straight</th>
<th>Male 90°</th>
<th>Female Straight</th>
<th>Female 90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Part No.</td>
<td>120098-0042</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
</tr>
<tr>
<td>Order No.</td>
<td>120098-0202</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
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<tr>
<td>Horizontal</td>
<td>120098-0045</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
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</tbody>
</table>

### D-Sub (9-pin) to Dual Micro-Change® (M12) Cordsets

#### Dual Reverse Keyway (Daisy chain) Module Connection

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Cable Length (m)</th>
<th>Male Straight</th>
<th>Male 90°</th>
<th>Female Straight</th>
<th>Female 90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Part No.</td>
<td>120098-0042</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
<td>BM5S60PP4M010</td>
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<td>Order No.</td>
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<tr>
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<td>BM5S60PP4M010</td>
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<td>BM5S60PP4M010</td>
</tr>
</tbody>
</table>

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**www.molex.com/link/profibus.html**
# PROFIBUS Receptacle

**120099**

**Features and Benefits**
- Used in control panels and junction boxes
- Epoxy potted for rugged industrial environments
- Male and female configurations
- Connects the external bus with an enclosure
- Front panel or back panel mount
- Bulkhead feed-through
- Wire or cable lead

**Electrical**
- Voltage: 250V AC/DC
- Current: 4.0A

**Mechanical**
- Shell: Nickel-Plated Brass
- Insert: Nylon 6/6
- Conductors: Receptacles—#22 AWG PVC
  - Bulkhead Feed-Through—Solid Phosphor Bronze
  - O-Ring: Nitrile rubber

**Environmental**
- Protection: IP67

**Data Line Micro-Change® (M12)**

<table>
<thead>
<tr>
<th>Mounting Style</th>
<th>Cable Length (m)</th>
<th>Male Straight</th>
<th>Female Straight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Old Part No.</td>
<td>Order No.</td>
</tr>
<tr>
<td>Back Panel</td>
<td>1.0</td>
<td>BR5U76PP4M0103</td>
<td>120099-0013</td>
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<tr>
<td></td>
<td>5.0</td>
<td>BR5U76PP4M0503</td>
<td>120099-0019</td>
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<table>
<thead>
<tr>
<th>Mounting Style</th>
<th>Wire Length</th>
<th>Male Straight</th>
<th>Female Straight</th>
<th>Horizontal/Vertical</th>
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</thead>
<tbody>
<tr>
<td>Front Panel</td>
<td>3&quot;</td>
<td>81688-030</td>
<td>120099-0025</td>
<td>81689-030</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# PROFIBUS Terminator and Tee

**120101/120102**

**Features and Benefits**
- Shielded to reduce RFI/EMI and improve signal integrity
- Male reverse key Micro-Change® terminator
- M12 threads
- Provides quick disconnection of bus line
- Allows disconnection of node without shutting down the network
- Used with remote activity I/O modules

**Electrical**
- Voltage: Data Line Tee—30V AC/36V DC
  - Terminators—250V AC/DC
- Current: 4A

**Mechanical**
- Connector Face: Nylon 6/6
- Molded Body: PVC
- O-Ring: Data Line Tee—Viton
  - Terminators—Nitrile number
- Coupling Nuts: Nickel-plated Brass
- Shielding Sleeves: Nickel-plated Brass

**Environmental**
- Protection: Data Line Tee—IP67 (IEC 605290)
  - Terminators—IP67

**General**
- Coupling nuts, pin 5 and PCB all connected to provide full shielding; Reverse key for Profibus circuitry includes line balancing inductors

**Data Line Micro-Change® (M12) Tee**

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDTS01</td>
<td>120101-0002</td>
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</table>

**Micro-Change (M12) Terminator**

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
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</thead>
<tbody>
<tr>
<td>BM5006</td>
<td>120102-0002</td>
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</table>

**Tee Gender Configuration Chart**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus in</td>
<td>Bus Out</td>
<td>Drop Bus</td>
<td></td>
</tr>
</tbody>
</table>
PROFIBUS Field-Attachable Connector

Features and Benefits

- Shielded to reduce RFI/EMI and improve signal integrity
- D-Sub IDC with or without built-in diagnostics
- Male and female configurations
- Field termination for specific length or repair
- Easy field installation of quick-disconnect design
- D-Sub horizontal or vertical

**Micro-Change® (M12)**

**Electrical**
Voltage: 250V AC/DC
Current: 4.0A

**Mechanical**
Connector Face: Polyamide
Body: Nickel-plated Brass
Contact: Silver-plated Brass
Coupling Nut: Nickel-plated Brass
Grommet: Nitrile rubber
Conductor Size: 22 AWG

**Environmental**
Protection: IP67

<table>
<thead>
<tr>
<th>Male Straight</th>
<th>Order No.</th>
<th>Female Straight</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Part No.</td>
<td>BA5050-32</td>
<td>Old Part No.</td>
<td>BA5050-32</td>
</tr>
<tr>
<td></td>
<td>120100-0002</td>
<td></td>
<td>120100-0001</td>
</tr>
</tbody>
</table>

**D-Sub**

**Vertical**
With Diagnostics
- Old Part No.: PA9001-42
- Order No.: 120103-0001

Without Diagnostics
- Old Part No.: PA5001-42
- Order No.: 120103-0005

**Horizontal**
With Diagnostics
- Old Part No.: MA9001-42
- Order No.: 120103-0001

**45°**
- Old Part No.: MA9001-42
- Order No.: 120103-0001

**Electrical**
Voltage: 30V AC/DC
Current: 4.0A

**Mechanical**
Housing: Diecast Zinc
Housing Material: ABS
Cable Diameter: 8.0mm
Cable Connection: IDC technology
Terminating Resistor: Yes, externally switch selectable

**Environmental**
Protection: IP20

**Micro-Change® (M12)**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BA5500-32</td>
<td>120100-0002</td>
<td>BA5500-32</td>
<td>120100-0001</td>
</tr>
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</table>

**D-Sub**

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
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<tbody>
<tr>
<td>PA9001-42</td>
<td>120103-0001</td>
</tr>
<tr>
<td>PA5001-42</td>
<td>120103-0005</td>
</tr>
<tr>
<td>MA9001-42</td>
<td>120103-0001</td>
</tr>
<tr>
<td>MA9001-42</td>
<td>120103-0001</td>
</tr>
<tr>
<td>PA9001-42</td>
<td>120103-0001</td>
</tr>
<tr>
<td>MA9001-42</td>
<td>120103-0001</td>
</tr>
</tbody>
</table>

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www.molex.com/link/profibus.html
Unshielded Stranded PVC

**Physical**
- Cable: Stranded
- Conductors: #24 AWG stranded tinned copper
- Insulation: Polyolefin 0.037" (0.94mm) nominal diameter
- Pair: 2 insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
- Core: 4 pairs cabled together
- Binder: Polyester tape, 20% overlay minimum
- Shield: Aluminum/polyester tape, 20% overlay minimum
- Diameter: 0.245" (6.223mm) nominal
- Wiring Sequence: 568B

**Electrical**
- Cable: Stranded
- Capacitance: 5.6 nF/100 meters
- Velocity of Propagation: 72% nominal
- Conductor DC Resistance: 15/100 meter max.
- Impedance: 100 ±15 ohms
- Delay Skew: 45 nS/100 meter max.
- TIA/EIA Rating: Category 5E

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Attenuation (dB/100 m max.)</th>
<th>Next (dB min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.9</td>
<td>76</td>
</tr>
<tr>
<td>4</td>
<td>3.9</td>
<td>72</td>
</tr>
<tr>
<td>16</td>
<td>7.9</td>
<td>61</td>
</tr>
<tr>
<td>20</td>
<td>9.0</td>
<td>40</td>
</tr>
<tr>
<td>31.25</td>
<td>11.0</td>
<td>55</td>
</tr>
<tr>
<td>62.5</td>
<td>15.9</td>
<td>53</td>
</tr>
<tr>
<td>100</td>
<td>20.7</td>
<td>50</td>
</tr>
</tbody>
</table>

Shielded Solid PUR

**Physical**
- Cable: Solid core
- Conductors: 24 AWG solid bare copper, 0.020" (0.510mm)
- Insulation: 0.009" (0.229mm) of cellular polyethylene, 0.041" (1.0mm) nominal diameter
- Pair: 2 insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
- Core: 4 pairs cabled together
- Binder: Polyester tape, 20% overlay minimum
- Shield: Aluminum/polyester tape, 20% overlay minimum
- Diameter: 0.245" (6.223mm) nominal
- Wiring Sequence: 568B

**Electrical**
- Cable: Solid
- Capacitance: 15 pF/FT
- Velocity of Propagation: 70% nominal
- Conductor DC Resistance: 9.0/100 meter max.
- Impedance: 100 ±15 ohms
- Delay Skew: 10 nS/100 meter typical, 25 nS/100 meter max.
- TIA/EIA Rating: Category 5E

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Attenuation (dB/100 M max.)</th>
<th>Next (dB min)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>3.15</td>
<td>62</td>
</tr>
<tr>
<td>4</td>
<td>6.45</td>
<td>53</td>
</tr>
<tr>
<td>16</td>
<td>12.3</td>
<td>44</td>
</tr>
<tr>
<td>20</td>
<td>13.8</td>
<td>42</td>
</tr>
<tr>
<td>31.25</td>
<td>17.7</td>
<td>40</td>
</tr>
<tr>
<td>62.5</td>
<td>25.6</td>
<td>35</td>
</tr>
<tr>
<td>100</td>
<td>33.0</td>
<td>32</td>
</tr>
</tbody>
</table>

Shielded Stranded PUR (Proplex™ Kevlar Wrapped)

**Physical**
- Cable: Proplex™ Kevlar wrapped
- Conductors: #26 AWG stranded bare copper
- Insulation: Color coded HFFR, halogen free, 0.035" (0.900mm) nominal diameter
- Pair: Cabled with Kevlar strength member and tape wrapped
- Core: 4 pairs cabled together
- Shield: Inner—Aluminum mylar, 100% coverage
- Outer—Tinned Copper
- Braid—80% coverage
- Diameter: 0.287" (7.3mm) nominal
- Wiring Sequence: 568B

**Electrical**
- Cable: Proplex Kevlar wrapped
- Capacitance: 4.6 nF/100 meters
- Propagation Delay: 5.2 nS/M maximum
- Conductor DC Resistance: 15/100 meter max.
- Impedance: 100 ±15 ohms
- Delay Skew: 20 nS/100 meter typical, 25 nS/100 meter max.
- TIA/EIA Rating: Category 5E

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Attenuation (dB/100 M max.)</th>
<th>Next (dB min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.15</td>
<td>62</td>
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<tr>
<td>4</td>
<td>6.45</td>
<td>53</td>
</tr>
<tr>
<td>16</td>
<td>12.3</td>
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<td>20</td>
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<td>42</td>
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<tr>
<td>31.25</td>
<td>17.7</td>
<td>40</td>
</tr>
<tr>
<td>62.5</td>
<td>25.6</td>
<td>35</td>
</tr>
<tr>
<td>100</td>
<td>33.0</td>
<td>32</td>
</tr>
</tbody>
</table>
Micro-Change® (M12) Ethernet Cordset

130048
Single and Double-Ended

Features and Benefits

- For connecting Micro-Change (M12) Ethernet system components in harsh industrial environments
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-coded to ensure proper alignment/mating

Unshielded PVC

Mechanical
- Cable Conductors: 4/24 AWG stranded tinned wire
- Outside Diameter (Nom): 5.60mm
- Jacket Material: Teal PVC
- Inner Material Insulation: HDPE
- Certification: UL CMR

Environmental
- Protection: IP67

Shielded PVC

Mechanical
- Connector Face: PUR
- Molded Body: Black PUR
- Coupling Nut: Nickel-plated Brass
- Cable Conductors: 4/24 AWG stranded tinned wire
- Outside Diameter (Nom): 6.10mm
- Jacket Material: Teal PVC
- Inner Material Insulation: Foamed Polypropylene
- Certification: UL CMR
- Shield Type: Foil—100% coverage, 25% min. overlap

Environmental
- Protection: IP67, sun/oil resistant

Electrical
- TIA/EIA Rating: CAT5E
- UL: CL2

Shielded PUR

Mechanical
- Cable Conductors: 4/22 AWG stranded tinned wire
- Outside Diameter (Nom): 6.50mm
- Jacket Material: Green PUR
- Inner Material Insulation: FRNC
- Certification: UL listed CMX
- Shield Type: Foil—100% coverage, Braid—85% coverage

Environmental
- Protection: IP67, sun/oil resistant

Single-Ended

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Length (m)</th>
<th>Male Straight</th>
<th>Male 90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unshielded/Stranded Conductor/PVC Jacket</td>
<td>1.0</td>
<td>E10A0063M010</td>
<td>130048-0038</td>
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<tr>
<td>Shielded/Stranded Conductor/PVC Jacket</td>
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<td>E10A0061M010</td>
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<td>Shielded/Stranded Conductor/PUR Jacket</td>
<td>1.0</td>
<td>E10A0061M050</td>
<td>130048-0048</td>
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Double-Ended

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Length (m)</th>
<th>Male Straight/Male Straight</th>
<th>Male 90°/Male 90°</th>
<th>Female Straight/Male Straight Crossover</th>
<th>Female Straight/Male RJ45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unshielded/Stranded Conductor/PVC Jacket</td>
<td>0.2</td>
<td>E11A0605M010</td>
<td>130048-0193</td>
<td>E11A0625M010</td>
<td>130048-0197</td>
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<tr>
<td>Shielded/Stranded Conductor/PVC Jacket</td>
<td>0.2</td>
<td>E11A0601M010</td>
<td>130048-0195</td>
<td>E11A0621M010</td>
<td>130048-0199</td>
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<tr>
<td>Shielded/Stranded Conductor/PUR Jacket</td>
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<td>E11A0601M050</td>
<td>130048-0197</td>
<td>E11A0621M050</td>
<td>130048-0201</td>
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</tbody>
</table>

Note: Other standard lengths available. Please contact Molex.
Ultra-Lock® (M12) Ethernet Cordset
120108/130048 Double-Ended

Features and Benefits
- All the same benefits as the threaded Ethernet Cordsets, but with the patented Ultra-Lock connection system connectors
- Plug and play solution for quick field installation
- Superior performance, higher reliability and reduce installation time

Unshielded PVC

Mechanical
- Cable Conductors: 4/24 AWG stranded tinned wire
- Outside Diameter (Nom): 5.60mm
- Jacket Material: Teal PVC
- Inner Material Insulation: HDPE
- Certification: UL CMR

Environmental
- Protection: IP67

Shielded PVC

Mechanical
- Connector Face: PUR
- Molded Body: Black PUR
- Coupling Nut: Nickel-plated Brass
- Cable Conductors: 4/24 AWG stranded tinned wire
- Outside Diameter (Nom): 6.10mm
- Jacket Material: Teal PVC
- Inner Material Insulation: Foamed Polypropylene
- Certification: UL CMR
- Shield Type: Foil—100% coverage, 25% min. overlap

Environmental
- Protection: IP67, sun/oil resistant

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Length (m)</th>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Description</th>
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<tr>
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<td>EWW06003M010</td>
<td>120108-0046</td>
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<td>120108-0049</td>
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<td>0.2</td>
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<td>Male Straight/Male 90˚</td>
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<td>EWW06215M050</td>
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<td>Threaded Female Straight/Male Straight Crossover</td>
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<td>120108-0100</td>
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<tr>
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<td>1.0</td>
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<td>120108-0106</td>
<td>Male 90˚/Male 90˚</td>
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<tr>
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<td>0.2</td>
<td>E1WB03010M002</td>
<td>130048-0208</td>
<td>Threaded Female Straight/Male Straight Crossover</td>
</tr>
</tbody>
</table>

Note: Other standard lengths available. Please contact Molex.
Ethernet Receptacle

**RJ45 110 Punchdown**

**130053**

---

**Features and Benefits**
- Simple field termination of cable using a standard punchdown tool
- Category 5e compliant
- Can be used with TIA 568A or 568B wiring sequences
- Color-coded block simplifies wiring

**Reference**
- TIA/EIA Rating: Category 5e compliant

**Electrical**
- Voltage: 125V DC
- Current: 1.5A

---

**Old Part No.** | **Order No.**
---|---
ENDR2FB5 | 130053-0002

---

**Mechanical**
- O-Ring Material: Viton
- Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Overmold Material: Polyurethane
- Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Knockout Hole: 1.063”
- Thread Size: UNC 1” - 14
- Panel Thickness: With Gasket—0.125” max.
- Without Gasket—0.187” max., 0.062” min.
- Plating: RJ45 Jack—50µ Gold over 100µ Nickel
- Return Loss: 5 dB at 100 MHZ

**Environmental**
- Environmental Rating: IEC IP67

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**Ethernet Receptacle**

**Direct PCB Mount**

**130053**

---

**Features and Benefits**
- Ideal for OEMs looking to incorporate a sealed, robust connection into their field device
- Category 5e compliant
- Short depths for space constrained applications
- Achieves IP67 rated seal when mated with an RJ-Lnxx cordset but also compatible with commercial RJ45 patch cords

**Reference**
- TIA/EIA Rating: Category 5e compliant

**Electrical**
- Voltage: 125V DC
- Current: 1.5A

---

**Old Part No.** | **Order No.**
---|---
ENPR1FF5 | 130053-0004

---

**Mechanical**
- O-Ring Material: Viton
- Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Overmold Material: Polyurethane
- Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Knockout Hole: 1.063”
- Thread Size: UNC 1” - 14
- Panel Thickness: With Gasket—0.125” max.
- Without Gasket—0.187” max., 0.062” min.
- Plating: RJ45 Jack—50µ Gold over 100µ Nickel
- Return Loss: 5 dB at 100 MHZ

**Environmental**
- Environmental Rating: IEC IP67

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**www.molex.com/link/bradinethernet.html**
**Ethernet Receptacle**

**PC Board to Cable**

**130055**

![Image of Ethernet Receptacle PC Board to Cable](image)

**Features and Benefits**

- Highly flexible solution for OEMs looking to incorporate a sealed, robust receptacle into their field device or control panel
- Achieves IP67 rated seal when mated with an RJ-Lnxx cordset but also compatible with commercial RJ45 patch cords

**Reference**

TIA/EIA Rating: Not rated as additional customer termination is required

**Electrical**

- Voltage: 125V DC
- Current: 1.5A

**Mechanical**

- O-Ring Material: Viton
- Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Overmold Material: Polyurethane
- Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Knockout Hole: 1.063”
- Thread Size: UNC 1” - 14
- Panel Thickness: With Gasket——0.125” max.
  - Without Gasket——0.187” max., 0.062” min.
- RJ45 Jack Plating: 50µ Gold over 100µ of Nickel
- Return Loss: 5 dB at 100 MHZ

**Environmental**

Environmental Rating: IEC IP67

---

**Environmental Receptacle**

**Solder PCB and Cable Termination**

**130055**

![Image of Ethernet Receptacle Solder PCB and Cable Termination](image)

**Features and Benefits**

- Highly flexible solution for incorporating a sealed, robust receptacle into a field device or control panel, particularly when the Ethernet transceiver is located some distance from the desired mounting point for the receptacle
- Achieves IEC IP67 rated seal when mated with an RJ-Lnxx cordset but also compatible with commercial RJ45 patch cords

**Reference**

TIA/EIA Rating: Not rated as additional customer termination is required

**Electrical**

- Voltage: 125V DC
- Current: 1.5A

**Mechanical**

- O-Ring Material: Viton
- Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Overmold Material: Polyurethane
- Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Knockout Hole: 1.063”
- Thread Size: UNC 1” - 14
- Panel Thickness: With Gasket——0.125” max.
  - Without Gasket——0.187” max., 0.062” min.
- RJ45 Jack Plating: 50µ Gold over 100µ of Nickel
- Return Loss: 5 dB at 100 MHZ

**Environmental**

Environmental Rating: IEC IP67

---

**Old Part No.** | **Order No.** | **Description**
--- | --- | ---
ENSR1FB5 | 130055-0005 | Male RJ45

---

**Old Part No.** | **Order No.** | **Description**
--- | --- | ---
EH8R1FB5M010 | 130055-0020 | Male RJ45
EDRP1FSM010 | 130055-0005 | Male RJ45

---

www.molex.com/link/bradindethernet.html
Ultra-Lock® (M12) Ethernet Receptacle

120109
4-Pole

Features and Benefits

- Accepts both threaded and Ultra-Lock (M12) Cordsets
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-coded to ensure proper alignment/mating
- Board locking feature for more secure mounting

Electrical

Voltage: 215V
Current: 4.0A
TIA/EIA Rating: Category 5E

Mechanical

Shell: Nickel-Plated Brass
Insert: PUR
Conductors: Brass Gold plated/Bronze selective Gold plated
O-Ring: FPM (also called Viton or FKM)

Environmental

Protection: IP67, sun/oil resistant

---

Old Part No. | Order No. | Description | Mount
------------|-----------|-------------|-----
ERWD2U70    | 120109-5005 | PCB-Mount   | Back-Panel Mount  
ERWD2J30    | 120109-5003 | PCB-Mount   | Front-Panel Mount/PG9  
ERWD2U30    | 120109-5004 | PCB-Mount   | Front-Panel Mount/M16  
ERWAAU7000C050 | 120109-0002 | With 0.5 M Flying Lead | Front-Panel Mount/M16  
ERWAAJ3000C050 | 120109-0004 | With 0.5 M Flying Lead | Front-Panel Mount/M16  
ERWAAU3000C050 | 120109-5001 | Front-Panel Mount/M16 | Back-Panel Mount  

Adapters

Old Part No. | Order No. | Description | Mount
-------------|-----------|-------------|-----
ERYPADAPTER | 130054-0009 | Straight | Back-Panel Mount/ M16 to RJ45 Adapter  
ERYPADAPTER90 | 130054-0010 | 90° | Back-Panel Mount/ M16 to RJ45 Adapter  

www.molex.com/link/bradindethernet.html
**Ethernet Field-Attachable Connector**

**M12 Threaded**

**130047**

**Features and Benefits**
- Mirco-Change® (M12) field attachable connectors allow you to make field connections to bulk cable or single-ended cordsets
- Fast field termination without special tooling
- D-coded to ensure proper alignment/mating

**Electrical**
- Voltage: 32V
- Current: 4.0A

**Old Part No.** | **Order No.** | **Description**
--- | --- | ---
E1A004-52 | 130047-0018 | Male
E1A500-52 | 130047-0017 | Female

**Old Part No.** | **Order No.** | **Description**
--- | --- | ---
ENQAM315 | 130057-0001 | RJ45 Connector (for Stranded Core Cable)
ENSAM315 | 130057-0003 | RJ45 Connector (for Solid Core Cable)

**Environmental**
- Protection: IP67

**Mechanical**
- Coupling Nut: Zinc die-cast
- Shell Material: Zinc die-cast
- Contacts: Gold-plated Palladium Nickel
- Cable: 22-24 AWG 0.25 to 0.34mm²
- Conductor Insulation: PVC
- Conductor Diameter: 1.60 to 2.0mm
- Conductor Cross-Section: 1.60 to 2.0mm
- Cable Diameter: 5.50 to 7.20mm

**Ethernet Field-Attachable Connector**

**RJ45 Threaded**

**130057**

**Features and Benefits**
- Create an industrial Ethernet cordset in the field using standard crimp tools
- Achieves IEC IP67 rated seal when mated with an RJ-Lnxx receptacle

**Mechanical**
- O-Ring Material: Viton
- Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Overmold Material: Polyurethane
- Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
- Thread Size: UNC 1" - 14

**Environmental**
- Environmental Rating: IEC IP67

**Old Part No.** | **Order No.** | **Rating**
--- | --- | ---
67-0300 | 130058-0035 | IP65
67-0301 | 130058-0036 | IP67

**Old Part No.** | **Order No.** | **Rating**
--- | --- | ---
67-0300 | 130058-0035 | IP65
67-0301 | 130058-0036 | IP67
## Features and Benefits
- Highly resistant to impact
- Totally corrosion resistant
- Non-metallic MAX-LOC® cord sealing grip will not support combustion
- Suitable for use in wet locations so long as the listed sealing ring is used between box and fitting

## Applications
- Electrical boxes
- Cabinets
- Push buttons
- Enclosures

## Reference Information
- UL File No.: E76954
- CSA File No.: LR32159
- NEMA:
  - Without O-Ring—NEMA 3R
  - With O-Ring—NEMA 6P

## Mechanical
- Strain Relief Force: 35 lb.

## Physical
- Body: Nylon
- Fitting: UL 94V-2

## Old Part No. Order No. Cable Diameter Range Mounting Thread Body Style NEMA Rating
<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Cable Diameter Range</th>
<th>Mounting Thread</th>
<th>Body Style</th>
<th>NEMA Rating</th>
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<td>NEMA 6P</td>
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<td>3/4&quot; NPT</td>
<td>Straight Male</td>
<td>NEMA 3R</td>
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<td>Straight Male</td>
<td>NEMA 3R</td>
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<td>5620</td>
<td>130098-0225</td>
<td>0.250-0.375&quot;</td>
<td>3/4&quot; NPT</td>
<td>Straight Male</td>
<td>NEMA 3R</td>
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<td>5622</td>
<td>130098-0236</td>
<td>0.375-0.432&quot;</td>
<td>3/4&quot; NPT</td>
<td>Straight Male</td>
<td>NEMA 3R</td>
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<td>5624</td>
<td>130098-0227</td>
<td>0.375-0.432&quot;</td>
<td>3/4&quot; NPT</td>
<td>Straight Male</td>
<td>NEMA 3R</td>
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<td>Straight Male</td>
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<td>3/4&quot; NPT</td>
<td>Straight Male</td>
<td>NEMA 3R</td>
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<td>5542W</td>
<td>130098-0228</td>
<td>0.425-0.750&quot;</td>
<td>3/4&quot; NPT</td>
<td>Straight Male</td>
<td>NEMA 3R</td>
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</tbody>
</table>

Note: Additional thread sizes available, contact Molex

## Multi-Hole Strain Relief

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Cable Diameter Range</th>
<th>No. of Holes</th>
<th>Mounting Thread</th>
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</thead>
<tbody>
<tr>
<td>5594-007</td>
<td>130098-0202</td>
<td>5594-007W</td>
<td>130098-0203</td>
<td>0.156&quot;</td>
<td>2, 3 or 4</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>5594-008</td>
<td>130098-0204</td>
<td>5594-008W</td>
<td>130098-0205</td>
<td>0.187&quot;</td>
<td>2, 3, 4, 5, 6 or 7&quot;</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>5594-009</td>
<td>130098-0205</td>
<td>5594-009W</td>
<td>130098-0206</td>
<td>0.250&quot;</td>
<td>2, 3 or 4</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>5594-015</td>
<td>130098-0197</td>
<td>5594-015W</td>
<td>130098-0198</td>
<td>0.250&quot;</td>
<td>2, 3 or 4</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>5594-016</td>
<td>130098-0199</td>
<td>5594-016W</td>
<td>130098-0200</td>
<td>0.290&quot;</td>
<td>2</td>
<td>1/2&quot; NPT</td>
</tr>
</tbody>
</table>

Note: Additional thread sizes available, contact Molex

1 Indicates one or more holes are covered by a thin membrane which can easily be “poked” open if required.

## O-Ring

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Mounting Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>5599</td>
<td>130099-0141</td>
<td>1/4&quot; NPT</td>
</tr>
<tr>
<td>5600</td>
<td>130099-0142</td>
<td>3/8&quot; NPT</td>
</tr>
<tr>
<td>5601</td>
<td>130099-0143</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>5602</td>
<td>130099-0144</td>
<td>3/4&quot; NPT</td>
</tr>
</tbody>
</table>

## Lock Nut

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Mounting Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>5599</td>
<td>130099-0141</td>
<td>1/4&quot; NPT</td>
</tr>
<tr>
<td>5600</td>
<td>130099-0142</td>
<td>3/8&quot; NPT</td>
</tr>
<tr>
<td>5601</td>
<td>130099-0143</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>5602</td>
<td>130099-0144</td>
<td>3/4&quot; NPT</td>
</tr>
</tbody>
</table>

www.molex.com/link/grips.html
### Woodhead® Strain Relief Deluxe Cord Grip

**Model:** 130097/130099

**Features and Benefits**
- Stainless steel mesh with an aluminum body for corrosion resistance
- Offered in single/double weave construction to help absorb direct pull, to resist flexing and binding and to eliminate strain
- Recommended for indoor and outdoor use
- Suitable for use in hazardous locations per Class I, Div. 2, Class II, Div. 1 and 2, and Class III, Div. 1 and 2

**Applications**
- Pendant stations
- Processing equipment
- Hand tools
- Extension cord sets

**Reference Information**
- UL File No.: E76954
- CSA File No.: LR32159
- Hazardous Locations:
  - Class I, Div. 2
  - Class II, Div. 1 and 2
  - Class III, Div. 1 and 2

**Physical**
- Thread: NPT
- Body: Aluminum
- Woven Mesh: Stainless Steel

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Cable Diameter Range</th>
<th>Mounting Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>36490</td>
<td>130097-0250</td>
<td>0.187-0.250”</td>
<td>3/8” NPT</td>
</tr>
<tr>
<td>36491</td>
<td>130097-0225</td>
<td>0.250-0.312”</td>
<td>1/2” NPT</td>
</tr>
<tr>
<td>36492</td>
<td>130097-0226</td>
<td>0.312-0.375”</td>
<td>3/4” NPT</td>
</tr>
<tr>
<td>36250</td>
<td>130097-0146</td>
<td>0.187-0.250”</td>
<td></td>
</tr>
<tr>
<td>36251</td>
<td>130097-0141</td>
<td>0.250-0.375”</td>
<td></td>
</tr>
<tr>
<td>36254</td>
<td>130097-0144</td>
<td>0.375-0.500”</td>
<td></td>
</tr>
<tr>
<td>36259</td>
<td>130097-0142</td>
<td>0.500-0.625”</td>
<td></td>
</tr>
<tr>
<td>36261</td>
<td>130097-0140</td>
<td>0.625-0.750”</td>
<td></td>
</tr>
<tr>
<td>36263</td>
<td>130097-0156</td>
<td>0.750-0.875”</td>
<td></td>
</tr>
<tr>
<td>36264</td>
<td>130097-0158</td>
<td>0.875-1.00”</td>
<td></td>
</tr>
</tbody>
</table>

### Woodhead® Strain Relief Wide Range Dust Tight Grip

**Model:** 130097

**Features and Benefits**
- For indoor use
- Cost effective solution
- Dust tight, rubber membrane conforms to cable
- Includes insulfed bushing

**Applications**
- Enclosures
- Power boxes
- Machine tools
- Power centers

**Reference Information**
- UL File No.: E76954
- CSA File No.: LR32159

**Physical**
- Thread: NPT
- Body: Aluminum
- Woven Mesh: Galvanized Steel

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Cable Diameter Range</th>
<th>Mounting Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>36501</td>
<td>130097-0250</td>
<td>0.220-0.320”</td>
<td>1/2” NPT</td>
</tr>
<tr>
<td>36503</td>
<td>130097-0230</td>
<td>0.300-0.430”</td>
<td></td>
</tr>
<tr>
<td>36505</td>
<td>130097-0260</td>
<td>0.400-0.540”</td>
<td></td>
</tr>
<tr>
<td>36508</td>
<td>130097-0262</td>
<td>0.520-0.730”</td>
<td>3/4” NPT</td>
</tr>
</tbody>
</table>

Note: Additional thread sizes available, contact Molex
Woodhead®
Support Grip for Fiber Optics
130094
Closed Mesh, Single Eye

Features and Benefits
- Used to support Fiber Optic communication lines for temporary or permanent applications
- Designed to reduce stress on fragile cables in vertical or sloping runs
- Woven nonmagnetic tinned bronze wire
- Available in both single eye and locking bale configurations

Applications
- Vertical or sloping runs

Features and Benefits
- Used for installation of fiber optic communications lines
- Easily installed on cables and reusable
- Rotating eye eliminates torsional stress between your pulling apparatus and your cable for long runs

Applications
- Underground
- Overhead
- Through conduit and/or enclosure-type pulls

Reference Information
CSA File No.: LR32159

Physical
Woven Mesh: Nonmagnetic Tinned Bronze Wire

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Cable Diameter Range</th>
<th>Bale Length</th>
<th>Mesh Length</th>
<th>Approximate Break Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>36670</td>
<td>130094-0322</td>
<td>0.180-0.250&quot;</td>
<td>3&quot;</td>
<td>1.5&quot;</td>
<td>300 lbs</td>
</tr>
<tr>
<td>36671</td>
<td>130094-0323</td>
<td>0.230-0.320&quot;</td>
<td>3&quot;</td>
<td>2.5&quot;</td>
<td></td>
</tr>
<tr>
<td>36672</td>
<td>130094-0324</td>
<td>0.300-0.390&quot;</td>
<td>4&quot;</td>
<td>2.5&quot;</td>
<td></td>
</tr>
<tr>
<td>36673</td>
<td>130094-0325</td>
<td>0.370-0.480&quot;</td>
<td>5&quot;</td>
<td>4.0&quot;</td>
<td></td>
</tr>
<tr>
<td>36674</td>
<td>130094-0326</td>
<td>0.460-0.580&quot;</td>
<td>6&quot;</td>
<td>4.0&quot;</td>
<td>400 lbs</td>
</tr>
<tr>
<td>36675</td>
<td>130094-0327</td>
<td>0.560-0.710&quot;</td>
<td>7&quot;</td>
<td>5.5&quot;</td>
<td>600 lbs</td>
</tr>
<tr>
<td>36676</td>
<td>130094-0328</td>
<td>0.690-0.880&quot;</td>
<td>8&quot;</td>
<td>6.0&quot;</td>
<td>800 lbs</td>
</tr>
</tbody>
</table>

Note: Additional thread sizes available, contact Molex.

1 To determine workload safety factor, divide approximate break strength by 10.

---

Woodhead®
Pulling Grip for Fiber Optics
130095
Closed Mesh, Rotating Eye

Features and Benefits
- Used for installation of fiber optic communications lines
- Easily installed on cables and reusable
- Rotating eye eliminates torsional stress between your pulling apparatus and your cable for long runs

Applications
- Underground
- Overhead
- Through conduit and/or enclosure-type pulls

Reference Information
CSA File No.: LR32159

<table>
<thead>
<tr>
<th>Old Part No.</th>
<th>Order No.</th>
<th>Cable Diameter Range</th>
<th>Bale Length</th>
<th>Mesh Length</th>
<th>Approximate Break Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>36662</td>
<td>130095-0298</td>
<td>0.350-0.480&quot;</td>
<td>5&quot;</td>
<td>18&quot;</td>
<td>2,200 lbs</td>
</tr>
<tr>
<td>36663</td>
<td>130095-0299</td>
<td>0.420-0.610&quot;</td>
<td>21&quot;</td>
<td>2,600 lbs</td>
<td></td>
</tr>
<tr>
<td>36664</td>
<td>130095-0300</td>
<td>0.530-0.740&quot;</td>
<td>24&quot;</td>
<td>3,300 lbs</td>
<td></td>
</tr>
<tr>
<td>36665</td>
<td>130095-0301</td>
<td>0.640-0.870&quot;</td>
<td>27&quot;</td>
<td>4,700 lbs</td>
<td></td>
</tr>
</tbody>
</table>

Note: Additional thread sizes available, contact Molex.

1 To determine workload safety factor, divide approximate break strength by 10.
Commercial Micro-D Connector

This commercial line of shielded Micro-D products with a 1.27mm (.050") pitch, offers an economical solution for commercial and industrial applications that require the density of a microminiature connector. The series is available in a right angle and vertical configuration, designed with a metal interface and grounding tabs for improved mechanical and electrical shield connection.

Also available is the cable receptacle, which has a “crimp and poke” configuration designed for hand or semi-automatic crimping. Our unique backshell design will maintain the integrity of the cable construction while the strain relief is crimped over the cable.

A wide variety of pre-made over-moulded cable assemblies are also available. Configurations include single-ended and double-end CMD, as well as CMD to standard D-sub connectors in 9, 15 and 25 circuit densities.

Features
- Right angle plug available in 9, 15, 18, 25, 30 and 50 circuits
- Vertical plug available in 9, 15 and 25 circuits
- Cable receptacle available in 9, 15 and 25 circuits
- LCP insulator, stamped metal shell
- Crimp and poke contacts on the cable receptacle for customer termination
- Current: 1.0A max.
- UL File No: E34763

Applications
- Commercial
- Computer I/O
- Data storage
- Telecommunications
- Industrial