SPRING-LOADED CONNECTORS

Mill-Max Spring-Loaded Connectors are ideal for a wide range of applications, from portable data acquisition units and mobile communication to medical and military equipment applications. Their unique design can be the perfect answer for many situations, establishing electrical continuity on virtually any surface including problematic vibratory environments. Unlike the fixed mating height created by pins and receptacles, spring-loaded connectors are able to compensate for floating heights and uneven mating surfaces, thus maintaining a reliable electrical connection.

When strategically placed within an assembly and utilized correctly (shielded from over compression and direct side load forces,) miniature spring-loaded connectors can provide a reliable connection up to a million cycles.

Some typical applications include:

- The internal battery connection in portable instruments, or as the external battery connection for charging these instruments (docking stations.)
- As a method for stacking printed circuit boards in an assembly. Utilizing spring pin connectors is a convenient approach to creating mezzanine-tiered board modules that can be assembled and disassembled quickly.
- Blind-mating applications. The spring pin piston need only make contact with its mating surface. This is typically a land or pad that is larger than the plunger diameter. Compare this to a pin and socket connection where alignment must be more precise for the pin to enter the socket.

Mill-Max Spring-Loaded Connectors can mate to the following surfaces:

- A conductive input/output pad found on the instrument pack itself.
- A gold-plated land on a circuit board. A hard gold over nickel plated surface is recommended for the mating surface. This is the same as would be used for the printed circuit fingers associated with card edge connectors.
- Individual Mill-Max gold-plated nail head pins which can be soldered to the mating circuit board to serve as targets.
- Mill-Max Target Connectors which provide a large 1.78mm flat, gold-plated circuit path to the board.
• Modular contacts for use on 2.54 grid, available in five heights from 3.48 to 5.99, supplied in single and double row contact strips.
• Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
• Pistons have a long stroke relative to the low profile of the assembly.
• Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
• High temperature thermoplastic insulators are suitable for surface mount processes.
• Both 811 & 813 series, contact styles 1 thru 4, are available on 32mm wide carrier tape for pick and place assembly per EIA-481. See page 9 for strip lengths available and ordering information.

SINGLE ROW Series 811

Number of Pins X 2.54

Double Row Series 813

Number of Pins X 2.54 / 2

Ordering Information

Single Row Series 811
811-22-0XX-30-00X-101
Specify contact style 0-4

Double Row Series 813
813-22-0XX-30-00X-101
Specify contact style 0-4

For 811 & 813 Tape & Reel packaging See page 9

<table>
<thead>
<tr>
<th>CONTACT STYLE</th>
<th>INITIAL HEIGHT A</th>
<th>MAX. STROKE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3.48</td>
<td>0.99</td>
</tr>
<tr>
<td>1</td>
<td>4.50</td>
<td>1.14</td>
</tr>
<tr>
<td>2</td>
<td>5.0</td>
<td>1.39</td>
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<tr>
<td>3</td>
<td>5.51</td>
<td>1.39</td>
</tr>
<tr>
<td>4</td>
<td>5.99</td>
<td>1.39</td>
</tr>
</tbody>
</table>

Technical Specifications

Materials:
Contact piston & Base: Machined copper alloy plated 0.51µm gold over 2.54µm nickel
Spring: Beryllium copper plated 0.25µm gold
Insulator: High temp. thermoplastic, rated UL94 V-0

Mechanical:
Spring force @ initial height (A): 25 grams
Spring force @ mid stroke (B/2): 60 grams
Durability: 1,000,000 cycles min.
Coplaneous: 0.13 (Single Row up to 10 pins; Double Row up to 20 pins) For higher pin counts contact Tech Support.

Electrical:
Voltage rating: 100Vrms/150Vdc
Current rating: 2A (continuous), 3A (peak) per contact
Contact resistance: 20mΩ max.
Insulation resistance: 10,000MΩ min.
Dielectric strength: 700Vrms min.
Capacitance: 1pF max.

RoHS
2002/95/EC

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516-922-6000
• Modular contacts for use on 2.54 grid, available in ten heights from 6.48 to 10.9, supplied in single and double row contact strips.
• Precision-machined piston/base and gold plated components assure a 1,000,000 min. cycle life.
• Pistons have a long stroke relative to the low profile of the assembly.
• Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
• High temperature thermoplastic insulators are suitable for surface mount processes.
• Both 812 & 814 series are available on 32mm or 44mm wide carrier tape for automated pick and place assembly per EIA-481. See page 9 for strip lengths available and ordering information.

### SINGLE ROW Series 812

- Number of Pins X 2.54
- 2.54 (TV)
- 1.07 DIA.
- 1.5 DIA.
- 1.83 DIA.
- 1.4
- 5.03
- 0.41

### DOUBLE ROW Series 814

- Number of Pins X 2.54 / 2
- 2.54 (TV)
- 1.07 DIA.
- 1.5 DIA.
- 1.83 DIA.
- 1.4
- 5.03
- 0.41

### Technical Specifications

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0.51µm gold over 2.54µm nickel
- Spring: Beryllium copper plated 0.25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (0.7mm): 60 grams
- Durability: 1,000,000 cycles min.
- Coplanarity: 0.13 (Single Row up to 10 pins; Double Row up to 20 pins) For higher pin counts contact Tech Support.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.

### Ordering Information

**Single Row Series 812**

812-22-0XX-30-00X-101

Specify contact style 0-9

Specify # of contacts 02-64

**Double Row Series 814**

814-22-0XX-30-00X-101

Specify contact style 0-9

Specify # of contacts 04-72

For 812 & 814 Tape & Reel packaging See page 9

<table>
<thead>
<tr>
<th>CONTACT STYLE</th>
<th>INITIAL HEIGHT A</th>
<th>CONTACT STYLE</th>
<th>INITIAL HEIGHT A</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>1</td>
<td>6.99</td>
<td>6</td>
<td>9.4</td>
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<tr>
<td>2</td>
<td>7.49</td>
<td>7</td>
<td>9.91</td>
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<tr>
<td>3</td>
<td>8.0</td>
<td>8</td>
<td>10.4</td>
</tr>
<tr>
<td>4</td>
<td>8.51</td>
<td>9</td>
<td>10.9</td>
</tr>
</tbody>
</table>
- Modular contacts for use on 2,54 grid, available in a height of 7,32, supplied in single and double row contact strips.
- Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a 1,14 mid. stroke and a 2,29 max. stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 819 & 820 series contact strips are designed for placement onto a Ø 2,08mm solder pad prior to reflow soldering.

### Ordering Information

#### Single Row Series 819

**Fig. 1**

<table>
<thead>
<tr>
<th>819-22-0XX-30-001101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify # of contacts</td>
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</tbody>
</table>

#### Double Row Series 820

**Fig. 2**

<table>
<thead>
<tr>
<th>820-22-0XX-30-001101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify # of contacts</td>
</tr>
</tbody>
</table>

### Technical Specifications

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0,51µm gold over 0,25µm nickel
- Spring: Beryllium copper plated 0,25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height: 25 grams
- Spring force @ mid stroke: 60 grams
- Durability: 1,000,000 cycles min.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.
SPRING-LOADED CONNECTORS
Surface Mount, Horizontal Mount
Single Row Strips

- Modular contacts for use on 2,54 grid, supplied in single row contact strips. Piston action is parallel to the board surface.
- Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a 1,14 mid. stroke & 2,29 max. stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 810 series contact strips are designed for manual placement onto solder pads.

**Ordering Information**

**Series 810**

**Single Row Surface Mount**

810-22-0_ _-40-001101

Specify # of pins 01-10

---

**Technical Specifications**

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0,51µm gold over 2,54µm nickel.
- Spring: Beryllium copper plated 0,25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height: 25 grams
- Spring force @ mid stroke: 60 grams
- Durability: 1,000,000 cycles min.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.

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SPRING-LOADED CONNECTORS
Surface Mount with Alignment pins
Single and Double Row Strips

• Modular contacts for use on 2,54 grid, available in ten heights from 6,48 to 10,92, supplied in single and double row contact strips.
• Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
• Pistons have a 0,69 mid stroke & 1,4 max stroke.
• Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
• High temperature thermoplastic insulators are suitable for surface mount processes.
• 812 & 814 series contact strips are designed for manual placement into Ø 0,58±0,08 plated-thru-holes in the circuit board prior to intrusive reflow soldering.

Technical Specifications

Materials:
- Contact piston & Base: Machined copper alloy plated 0,51µm gold over 2,54µm nickel
- Spring: Beryllium copper plated 0,25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

Mechanical:
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (B/2): 60 grams
- Durability: 1,000,000 cycles min.

Electrical:
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.

Ordering Information

Single Row Series 812...01X101
812-22-0XX-30-01X-101
Specify # of contacts 03-64

Double Row Series 814...01X101
814-22-0XX-30-01X-101
Specify # of contacts 06-72

CONTACT STYLE | INITIAL HEIGHT
--- | ---
0 | 6,48
1 | 6,99
2 | 7,49
3 | 8,0
4 | 8,51
5 | 8,89
6 | 9,4
7 | 9,91
8 | 10,41
9 | 10,92

RoHS 2002/95/EC

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## Ordering Information for Series 811/812/813/814 in Carrier Tape

### Single Row Series 811
- **811-22-0XX-30-00X-191**
  - Specify contact style: 0-4
  - Specify # of contacts: 02 - 08
  
  (32mm wide tape, 400 parts per 330mm reel)

### Double Row Series 813
- **813-22-0XX-30-00X-191**
  - Specify contact style: 0-4
  - Specify # of contacts: 04 - 16
  
  (32mm wide tape, 400 parts per 330mm reel)

### Single Row Series 812
- **812-22-0XX-30-00X-191**
  - Specify contact style: 0-2
  - Specify # of contacts: 02 - 08
  
  (32mm wide tape, 400 parts per 330mm reel)

### Double Row Series 814
- **814-22-0XX-30-00X-191**
  - Specify contact style: 0-2
  - Specify # of contacts: 04 - 16
  
  (32mm wide tape, 400 parts per 330mm reel)

### Single Row Series 812
- **812-22-0XX-30-00X-191**
  - Specify contact style: 0-2
  - Specify # of contacts: 09 - 12
  
  (44mm wide tape, 200 parts per 330mm reel)

### Double Row Series 814
- **814-22-0XX-30-00X-191**
  - Specify contact style: 0-2
  - Specify # of contacts: 18 - 24
  
  (44mm wide tape, 200 parts per 330mm reel)

### Single Row Series 812
- **812-22-0XX-30-00X-191**
  - Specify contact style: 3-9
  - Specify # of contacts: 02 - 12
  
  (44mm wide tape, 200 parts per 330mm reel)

### Double Row Series 814
- **814-22-0XX-30-00X-191**
  - Specify contact style: 3-9
  - Specify # of contacts: 04 - 24
  
  (44mm wide tape, 200 parts per 330mm reel)
- Modular contacts for use on 2.54 grid, available in five heights from 3.48 to 5.99, supplied in single and double row contact strips.
- Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a long stroke relative to the low profile of the assembly.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 821 & 823 series contact strips are designed for manual placement into Ø0.56±0.08 plated-through-holes in the circuit board prior to hand, wave or reflow soldering.

### Single Row Series 821

**Ordering Information**

Single Row Series 821

821-22-0XX-10-00X-101

Specify contact style 0-4

Specify # of contacts 02-64

Double Row Series 823

823-22-0XX-10-00X-101

Specify contact style 0-4

Specify # of contacts 04-72

<table>
<thead>
<tr>
<th>CONTACT STYLE</th>
<th>INITIAL HEIGHT A</th>
<th>MAX. STROKE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3,48</td>
<td>0,99</td>
</tr>
<tr>
<td>1</td>
<td>4,5</td>
<td>1,14</td>
</tr>
<tr>
<td>2</td>
<td>5,0</td>
<td>1,39</td>
</tr>
<tr>
<td>3</td>
<td>5,51</td>
<td>1,39</td>
</tr>
<tr>
<td>4</td>
<td>5,99</td>
<td>1,39</td>
</tr>
</tbody>
</table>

### Technical Specifications

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0.51µm gold over 2.54µm nickel
- Spring: Beryllium copper plated 0.25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (B/2): 60 grams
- Durability: 1,000,000 cycles min.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.
SPRING-LOADED CONNECTORS
Through Hole Mount
Single and Double Row Strips

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0,51µm gold over 0,25µm nickel
- Spring: Beryllium copper plated 0,25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (B/2): 60 grams
- Durability: 1,000,000 cycles min.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.

**Ordering Information**

**Single Row Series 825**

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>02-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 1</td>
<td>825-22-0XX-10-001101</td>
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</tbody>
</table>

**Double Row Series 827**

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>04-72</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 2</td>
<td>827-22-0XX-10-001101</td>
</tr>
</tbody>
</table>

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**Technical Specifications**

- Modular contacts for use on 2,54 grid, available in a height of 7,67, supplied in single and double row contact strips.
- Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a 1,14 mid stroke & 2,29 max stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 825 & 827 series contact strips are designed for manual placement into Ø 0,76±0,07 plated-thru-holes in the circuit board prior to hand, wave or reflow soldering.

---

**Modular contacts for use on 2,54 grid, available in a height of 7,67, supplied in single and double row contact strips.**

**Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.**

**Pistons have a 1,14 mid stroke & 2,29 max stroke.**

**Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.**

**High temperature thermoplastic insulators are suitable for surface mount processes.**

**825 & 827 series contact strips are designed for manual placement into Ø 0,76±0,07 plated-thru-holes in the circuit board prior to hand, wave or reflow soldering.**

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**Ordering Information**

**Single Row Series 825**

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>02-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 1</td>
<td>825-22-0XX-10-001101</td>
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</tbody>
</table>

**Double Row Series 827**

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>04-72</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 2</td>
<td>827-22-0XX-10-001101</td>
</tr>
</tbody>
</table>

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**Technical Specifications**

- Modular contacts for use on 2,54 grid, available in a height of 7,67, supplied in single and double row contact strips.
- Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a 1,14 mid stroke & 2,29 max stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 825 & 827 series contact strips are designed for manual placement into Ø 0,76±0,07 plated-thru-holes in the circuit board prior to hand, wave or reflow soldering.

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**Modular contacts for use on 2,54 grid, available in a height of 7,67, supplied in single and double row contact strips.**

**Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.**

**Pistons have a 1,14 mid stroke & 2,29 max stroke.**

**Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.**

**High temperature thermoplastic insulators are suitable for surface mount processes.**

**825 & 827 series contact strips are designed for manual placement into Ø 0,76±0,07 plated-thru-holes in the circuit board prior to hand, wave or reflow soldering.**

---

**Ordering Information**

**Single Row Series 825**

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>02-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 1</td>
<td>825-22-0XX-10-001101</td>
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</tbody>
</table>

**Double Row Series 827**

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>04-72</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 2</td>
<td>827-22-0XX-10-001101</td>
</tr>
</tbody>
</table>
Technical Specifications

Materials:
- Contact piston & Base: Machined copper alloy plated 0,51µm gold over 2,54µm nickel
- Spring: Beryllium copper plated 0,25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

Mechanical:
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (B/2): 60 grams
- Durability: 1,000,000 cycles min.

Electrical:
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.
- Modular contacts for use on 1,27 grid, supplied in single and double row contact strips.
- Precision-machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a 0,69 mid stroke & 1,4 max stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 854 & 855 series contact strips are designed for manual placement into Ø 0,58±0,08 plated-thru-holes in the circuit board.

### Technical Specifications

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0,51μm gold over 2,54μm nickel
- Spring: Beryllium copper plated 0,25μm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (B/2): 60 grams
- Durability: 1,000,000 cycles min.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.

### Ordering Information

**Series 854 Single Row Through Hole Mount**

854-22-0_ _-10-001101

Specify # of pins → 02-20

**Series 855 Double Row Through Hole Mount**

855-22-0_ _-10-001101

Specify # of pins → 04-40

---

For Electrical, Mechanical & Environmental Data, See pg. 4.1

For RoHS compliance select plating code.
Technical Specifications

**Materials:**
- Contact piston & Base: Machined copper alloy plated 0,51µm gold over 2,54µm nickel
- Spring: Beryllium copper plated 0,25µm gold
- Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**
- Spring force @ initial height (A): 25 grams
- Spring force @ mid stroke (B/2): 60 grams
- Durability: 1,000,000 cycles min.

**Electrical:**
- Voltage rating: 100Vrms/150Vdc
- Current rating: 2A (continuous), 3A (peak) per contact
- Contact resistance: 20mΩ max.
- Insulation resistance: 10,000MΩ min.
- Dielectric strength: 700Vrms min.
- Capacitance: 1pF max.
• Series 319, 330 and 399 single row strips may be cut to any length.

• Spring Target connectors present a large flat surface for making tangent connections to our standard 1.07 dia spring pin plungers. The target connectors provide an excellent gold plated conductive path back to the board mounted spring pin connector.

• Target connectors use MM #1938, #1940, #1941, #1942 and #3024 pins. See page 185 for details.

• Insulators are high temp. thermoplastic.

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### Ordering Information

<table>
<thead>
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<th>Series</th>
<th>Description</th>
<th>Order Code</th>
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<tbody>
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<td>SMT w/ Alignment Pins</td>
<td>319-10-1_ _-00-041000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>01-64</td>
</tr>
<tr>
<td>Series 319...001</td>
<td>Standard Solder Tails</td>
<td>319-10-1_ _-00-001000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>01-64</td>
</tr>
<tr>
<td>Series 319...002</td>
<td>Long Solder Tails</td>
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<tr>
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<td>Specify # of pins</td>
<td>01-64</td>
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<tr>
<td>Series 319...005</td>
<td>Elevated Solder Tails</td>
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<tr>
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<td>Specify # of pins</td>
<td>01-64</td>
</tr>
<tr>
<td>Series 330...240</td>
<td>Solder Cups</td>
<td>330-10-1_ _-00-240000</td>
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<tr>
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<td>Specify # of pins</td>
<td>01-64</td>
</tr>
<tr>
<td>Series 399...008</td>
<td>Right Angle Solder Tails</td>
<td>399-10-1_ _-10-008000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>01-64</td>
</tr>
</tbody>
</table>

---

**For Electrical, Mechanical & Environmental Data, See pg. 4**

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**PLATING CODE**

<table>
<thead>
<tr>
<th>PLATING CODE</th>
<th>10</th>
</tr>
</thead>
</table>

**Pin Plating**

| Pin Plating | 0.25 µm Au |
### Ordering Information

<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>419...041</td>
<td>Surface Mount</td>
<td>419-10-2_-30-041000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>04-64</td>
</tr>
<tr>
<td>419...001</td>
<td>Standard Solder Tails</td>
<td>419-10-2_-00-001000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>04-64</td>
</tr>
<tr>
<td>419...002</td>
<td>Long Solder Tails</td>
<td>419-10-2_-00-002000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>04-64</td>
</tr>
<tr>
<td>419...005</td>
<td>Elevated Solder Tails</td>
<td>419-10-2_-00-005000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>04-64</td>
</tr>
<tr>
<td>430...240</td>
<td>Solder Cups</td>
<td>430-10-2_-00-240000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>04-64</td>
</tr>
<tr>
<td>499...008</td>
<td>Right Angle Solder Tails</td>
<td>499-10-2_-10-008000</td>
</tr>
<tr>
<td></td>
<td>Specify # of pins</td>
<td>04-64</td>
</tr>
</tbody>
</table>

- Series 419, 430 and 499 double row strips may be cut to any length.
- Spring Target connectors present a large flat surface for making tangent connections to our standard 1.07 dia spring pin plungers. The target connectors provide an excellent gold plated conductive path back to the board mounted spring pin connector.
- Target connectors use MM #1938, #1940, #1941, #1942 and #3024 pins. See page 185 for details.
- Insulators are high temp. thermoplastic.

![Image of SPRING-LOADED CONNECTORS](image-url)

- **Coplanarity 0.13, For Pin Counts >20 positions consult Technical Support.**
- **Fig. 1**
- **Fig. 2**
- **Fig. 3**
- **Fig. 4**
- **Fig. 5**
- **Fig. 6**

---

**For Electrical, Mechanical & Environmental Data, See pg. 4**

**RoHS**

**2002/95/EC**

**www.mill-max.com**

**516-922-6000**
SPRING-LOADED CONNECTORS
1,27 Grid Target Connectors for Spring-Loaded Assemblies
Single and Double Row

- Series 856, 857 single and double row strips may be cut to any length.
- Spring Target connectors present a large flat surface for making tangent connections to our standard 0.48 dia spring pin plungers. The target connectors provide an excellent gold plated conductive path back to the board mounted spring pin connector.
- Target connectors use MM #1933 and #1935 pins. See page 180 for details.
- Insulators are high temp. thermoplastic.

Fig. 1

Fig. 2

Coplanarity 0.13. For Pin Counts >20 positions consult Technical Support.

Fig. 3

Fig. 4

Coplanarity 0.13. For Pin Counts >40 positions consult Technical Support.

Ordering Information

<table>
<thead>
<tr>
<th>Series 856...051</th>
<th>Standard Solder Tails</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fig. 1</strong></td>
<td>856-10-0_ _-10-051000</td>
</tr>
<tr>
<td>Specify # of pins</td>
<td>01-20</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Series 856...051</th>
<th>Surface Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fig. 2</strong></td>
<td>856-10-0_ _-30-051000</td>
</tr>
<tr>
<td>Specify # of pins</td>
<td>02-20</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Series 857...051</th>
<th>Standard Solder Tails</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fig. 3</strong></td>
<td>857-10-0_ _-10-051000</td>
</tr>
<tr>
<td>Specify # of pins</td>
<td>04-40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series 857...051</th>
<th>Surface Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fig. 4</strong></td>
<td>857-10-0_ _-30-051000</td>
</tr>
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<td>Specify # of pins</td>
<td>04-40</td>
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</tbody>
</table>

PLATING CODE = 10
Pin Plating 0,25μm Au

www.mill-max.com 14.1 516-922-6000

RoHS 2002/95/EC
For Electrical, Mechanical & Environmental Data, See pp. 4
**ORDER CODE: 09XX - X - 15 - 20 - 7X - 14 - XX - 0**

**Spring Number**

<table>
<thead>
<tr>
<th>Number</th>
<th>Basic Part</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>0900-1</td>
<td>1,83 DIA.</td>
<td>4,5</td>
</tr>
<tr>
<td>0900-2</td>
<td>1,83 DIA.</td>
<td>5,0</td>
</tr>
<tr>
<td>0900-3</td>
<td>1,63 DIA.</td>
<td>5,51</td>
</tr>
<tr>
<td>0900-4</td>
<td>1,50 DIA.</td>
<td>5,99</td>
</tr>
</tbody>
</table>

**Material Specifications:**

**SLEEVE & PLUNGER MATERIAL:** Copper Alloy  
**SPRING MATERIAL:** Beryllium Copper  
**SLEEVE & PLUNGER FINISH:** 0,51 μm Gold over Nickel  
**SPRING FINISH:** 0,25 μm Gold over Nickel  
**DIMENSION IN INCHES:**

**TOLERANCES ON:**
- LENGTHS: ±0,15
- DIAMETERS: ±0,05
- ANGLES: ± 2°

**Mechanical & Electrical Specifications:**

**DURABILITY:** 1,000,000 cycles  
**CURRENT RATING:** 2A continuous, 3A peak  
**CONTACT RESISTANCE:** 20 mΩ max.

<table>
<thead>
<tr>
<th>SPRING NUMBER</th>
<th>Mid. STROK</th>
<th>Max. STROKE</th>
<th>FORCE @ Mid. Stroke</th>
<th>Initial Force (Pre-load)</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>0,7</td>
<td>1,4</td>
<td>60 g</td>
<td>25 g</td>
</tr>
<tr>
<td>74</td>
<td>0,7</td>
<td>1,4</td>
<td>50 g</td>
<td>15 g</td>
</tr>
<tr>
<td>75</td>
<td>0,7</td>
<td>1,4</td>
<td>60 g</td>
<td>25 g</td>
</tr>
<tr>
<td>77</td>
<td>1,14</td>
<td>2,29</td>
<td>60 g</td>
<td>25 g</td>
</tr>
</tbody>
</table>

73, 74, 75, 77 Springs are not Interchangeable
SPRING-LOADED CONNECTORS
Discrete Spring-Loaded Contacts

0910-0 to 0910-1
Short Stroke, Surface mount
Packaged on 16mm wide carrier tape: 1,500 parts per 330 reel.

0967
Standard Stroke, Horizontal Surface mount
Also available on 16mm wide carrier tape: 2,200 parts per 330 reel. Order as: 0967-0-58-20-75-14-11-0

0990-0
Short Stroke, Surface mount
Large Base

0990-1
Standard Stroke, Surface mount
Large Base

0997-0
Standard Stroke, Surface mount
Large Base

ORDER CODE: 09XX - X - XX - 20 - 7X - 14 - 11 - 0
Spring Number

MATERIAL SPECIFICATIONS:
SLEEVE & PLUNGER MATERIAL: Copper Alloy
SPRING MATERIAL: Beryllium Copper
SLEEVE & PLUNGER FINISH: 0,51 μm Gold over Nickel
SPRING FINISH: 0,25 μm Gold over Nickel
DIMENSION IN INCHES:
TOLERANCES ON: LENGTHS: ±0,15
DIAMETERS: ±0,05
ANGLES: ± 2°

DURABILITY: 1,000,000 cycles
CURRENT RATING: 2A continuous, 3A peak
CONTACT RESISTANCE: 20 mΩ max.

MECHANICAL & ELECTRICAL SPECIFICATIONS:
75 & 76 Springs are not Interchangeable

www.mill-max.com 17 516-922-6000
**SLEEVE & PLUNGER MATERIAL:** Copper Alloy  
**SPRING MATERIAL:** Beryllium Copper  
**SLEEVE & PLUNGER FINISH:** 0,51 μm Gold over Nickel  
**SPRING FINISH:** 0,25 μm Gold over Nickel

**DIMENSION IN INCHES:**  
- LENGTHS: ±0,15
- DIAMETERS: ±0,05
- ANGLES: ± 2°

**ORDER CODE:** 09XX - X - 15 - 20 - 71 - 14 - 11 - 0

**MECHANICAL & ELECTRICAL SPECIFICATIONS:**  
- **DURABILITY:** 1,000,000 cycles  
- **CURRENT RATING:** 2A continuous, 3A peak  
- **CONTACT RESISTANCE:** 20 mΩ max.

<table>
<thead>
<tr>
<th>SPRING NUMBER</th>
<th>Mid. STROKE</th>
<th>Max. STROKE</th>
<th>FORCE @ Mid. Stroke</th>
<th>Initial Force (Pre-load)</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>0,7</td>
<td>1,4</td>
<td>50 g</td>
<td>15 g</td>
</tr>
</tbody>
</table>

Springs are not Interchangeable

**SPRING-LOADED CONNECTORS**  
Discrete Spring-Loaded Contacts

**0950**  
**0951**

0950-0-15-20-71-14-11-0  
Standard Stroke  
Solder Mount in 0,46 min. mounting hole

0951-0-15-20-71-14-11-0  
Standard Stroke, Surface mount  
High profile

[www.mill-max.com](http://www.mill-max.com)  
516-922-6000
Specifications for #0850-0:

Material:
- Sleeve & Plunger Material: Copper Alloy
- Spring Material: Stainless Steel 302.

Mechanical Characteristics:
- Force @ mid-stroke (1,14) = 120 grams
- Maximum stroke length = 2,29
- Mechanical life: 1,000,000 cycles

Electrical Characteristics:
- Rated Current (Free air): Continuous 9 amps @ 10° C temperature rise.

Specifications for #0851-0:

Material:
- Sleeve & Plunger Material: Copper Alloy
- Spring Material: Stainless Steel 302.

Mechanical Characteristics:
- Force @ mid-stroke (1,14) = 120 grams
- Maximum stroke length = 2,29
- Mechanical life: 1,000,000 cycles

Electrical Characteristics:
- Rated Current (Free air): Continuous 9 amps @ 10° C temperature rise.