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Hypergrip® series is a well known and proven high reliability circular connector series specifically designed for the medical industry.

Throughout the years since the first product launch at the beginning of the 2000s the product has had a good response from the market and Smiths Interconnect was able to establish a recognized product reputation in the marketplace thanks to its reliability, versatility, customer keying system and quick and accurate connections. In addition it was recognized for the finger-proofing to IEC60601, flammability rated to UL94 V0, and compliance with most sterilization requirements.

Today the market has increased the offering for these type of connectors through similar products with a value aligned price and with performances that reach a satisfactory technical level without exceeding expectations.
Improved value alignment to the market for standard cycle life applications with the use of the MR Contact solution

Reduced inventory and lead times with patented keying system allowing customers to build connectors with 6 different keying options

Increased reliability and chemical resistance (including autoclave, EtO, Sterrad, VHP, and most common cleaning agents) due to engineering-grade polymers

Reduced risks to fail device qualification testing due to existing connector qualifications

Improved total cost of ownership with the use of crimp and poke contacts vs. traditional tested contacts.

Improved value for final device due to premium medical look and feel, fool proof mating, easy cleaning, and reduced chances of cut or torn gloves
Target Applications

- Patient monitoring
- Electrosurgical / Endoscopic tools
- Catheter
- Home healthcare
- Portable therapeutic
Hypergrip® and Hypergrip® Flex | Product Features

Mechanically & Visually Intuitive
• Innovative keying system allows customers to build connectors with 6 different keying options reducing lead time and inventory
• Available in 5 color options for effortless mating recognition

Aesthetic, User-friendly Design
• Sleek and light-colored body; blends well with medical equipment
• Smooth contours with no sharp edges
  • Easy cleaning
  • Safety – won’t cut surgical gloves
• Push / pull ergonomic disconnect for easy, one-hand mating

Medical Quality
• Sealed when mated
• Flammability: UL94 V-0 rated
• Fingerproof: Meets requirements of IEC 60601-1
• Sterilizable: Autoclave, EtO, VHP, and Sterrad®
• Processing Temperatures up to 185°C
• Integrated strain relief

EMI/RFI shielding option available
• Plastic shell with internal shield provides non-conductive touch surfaces for user and patient safety
• Effective up to 3 GHz, 50 dB max attenuation
• Internal shield extends the cable shield through to the system
Potential Custom Configurations with new insulators:

**Fiber Optic**
- **Expanded Beam Fiber Optic**
  - Less chance of degraded optical performance due to dirt, debris, or mechanical vibration
- **Butt Joint (Arinc 801) Fiber Optic**
  - Superior return loss performance on angle polished termini
- **Floating Fiber Optic**
  - Self aligns into standard connector formats

**Spring Probe Technology**
- **Extreme High Density**
- **> 10,000 mating cycles**

**Coaxial Technology**
- **50 Ω characteristic impedance**
- **Low VSWR up to 40 GHz**
MR socket contact features

- Screw machined crimp contact
- 0.4 mm diameter
- RoHS compliant:
  - Beryllium copper clip
  - Copper-zinc-lead body component
  - Gold plating over Nickel underplating

- Tested and qualified according to:
  - EIA-364-23 for Low Level Contact Resistance (LLCR): target below 12 milliohms - Minimum resistance: 3.03 milliohms, Maximum resistance: 4.63 milliohms
  - EIA-364-05B for Installation force: lower than 20 lbs.
  - EIA-364-37C for Contact Insertion/Extraction force: lower than 0.75 newtons.
  - EIA-364-20E for Dielectric Withstanding Voltage (DWV): no evidence of breakdown or flashover with target of 1125 peak voltage and max leakage current of 2 milliamperes. Hypergrip with HC is also qualified to 1125 peak voltage.
## Technical features

<table>
<thead>
<tr>
<th></th>
<th>Hypergrip</th>
<th>Hypergrip Flex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mating cycles</td>
<td>&gt;20,000</td>
<td>&gt;2,000</td>
</tr>
<tr>
<td>6 different keying options</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>HG0 size</td>
<td>✔</td>
<td>✘</td>
</tr>
<tr>
<td>HG2, HG3, &amp; HG4 sizes</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5 color options</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>IP65 sealed when mated</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Push/pull latching design</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>1 A per contact</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Shielded in HG2, HG3, &amp; HG4 sizes</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Hypergrip® with Hyperboloid socket contact vs Hypergrip Flex with MR socket contact

<table>
<thead>
<tr>
<th>Applications</th>
<th>Hypergrip</th>
<th>Hypergrip Flex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient monitoring</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
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<td>✔</td>
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<td>✔</td>
</tr>
<tr>
<td>Portable therapeutic</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Imaging</td>
<td>✔</td>
<td>✘</td>
</tr>
<tr>
<td>Hypergrip® Flex</td>
<td>How to order: additions</td>
<td></td>
</tr>
</tbody>
</table>

### 10 Contact gender
- **Female sockets** (Receptacles only)
- **Male pins** (Plugs only)

### 11 Termination
- Crimp/Solder (26-20 AWG)
  - Contacts are stripped unwind, may be crimped or soldered, then inserted into insulator.
  - For more information, please see Assembly Instructions.

### 12 Plating
- HG2, HG3, HG4 pins
- HG0 pins
- AN H62, H63, HG3, HG4 HC sockets
- AH HG0 HC sockets
- HG2, HG3, HG4 MR sockets

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**Mr contact Female sockets**

**HG2, HG3, HG4 MR sockets**
<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
<th>Smiths Interconnect HG</th>
<th>Smiths Interconnect HG Flex</th>
<th>Next Best Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer keyability</strong></td>
<td>Easily keyed / prevents mismating – 1 part / 6 keys</td>
<td>✓</td>
<td>✓</td>
<td>✗ (must buy differently keyed parts)</td>
</tr>
<tr>
<td><strong>Long Cycle life</strong></td>
<td>Provides up to 2k connector mates and &lt;12 mΩ resistance</td>
<td>✓ (High 20k mates)</td>
<td>✓ (Medium 2k mates)</td>
<td>✓ (Medium 2k mates)</td>
</tr>
<tr>
<td><strong>Contacts shipped unloaded</strong></td>
<td>Easier termination – reduced cost of ownership</td>
<td>✓</td>
<td>✓</td>
<td>✗ (solder cup nest is std)</td>
</tr>
<tr>
<td><strong>Shielding option available in plastic housing (HG2,3,4)</strong></td>
<td>Protection against EMI/RFI</td>
<td>✓</td>
<td>✓</td>
<td>✗ (must go to metal version)</td>
</tr>
<tr>
<td><strong>Push/Pull latching</strong></td>
<td>Quick connect / disconnect – simple one-hand mate / unmate</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Color coding</strong></td>
<td>Visually intuitive mating</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Hypergrip® Flex - Marketing Collateral and samples

- **Website Product Page with:**
  - Updated Product Brochure
  - New Qualification Test Report
  - New product animations

- **Press Release available for media starting end of June 2021**
- **Sample package in distribution Mid-July 2021**
Home > Products > Connectors > Circular > **HyperGrip® Series**

https://www.smithsinterconnect.com/products/connectors/circular/Hypergrip%C2%AE-series/

**HyperGrip® Series**

High Reliability Medical Connectors

Hypergrip is a unique pinless, user-turning, color-coded connector with a robust locking design allowing for one-hand disconnection. It is designed to meet international EN 50015-1 requirements such as hydrogen compliance to EN50015-1. It is fully breakable for built-in, and is compatible with most electrical requirements.

Features & Benefits

- 1.25 mm and 3.5 mm contact positions
- Latching design
- Ideal for disposable applications
- 5 color options

Qualification Test Report

**HYPERGRIP SERIES** – Qualification of MR contact in HG4 Receptacle Connector

June 2nd, 2021
Hypergrip® IP protection | Patents and trademark

**US7,326,091: US Patent, active**

Claim: A connector for electrical or optical conduits that provides a field configurable keying of the insulator plugs relative to each other and relative to the connector casings. A separate relative keying means is included that is separate from the case keying or locating mechanism. The connector also utilizes a retention means for example, a one-way snap apron, to retain the insulator within the receptacle case.

**D596,127: US Design Patent, active**

Claim: The ornamental design for an electrical connector, as shown and described.

**US7,661,995: US Patent, active**

Claim: A connector for electrical or optical conduits that provides a field configurable keying of the insulator plugs relative to each other and relative to the connector casings. A separate relative keying means is included that is separate from the case keying or locating mechanism. The connector also utilizes a retention means for example, a one-way snap apron, to retain the insulator within the receptacle case.

**US7,938,670: US Patent, active**

Claim: A method of mounting a connector assembly to an equipment case, the connector assembly connecting together a first conduit and a second conduit, the method including: inserting a receptacle insulator into a receptacle case to form a receptacle assembly of a female receptacle connector of the connector assembly; retaining the receptacle insulator within the receptacle case using a retainer that axially positions the receptacle insulator in the receptacle case using a snap fit connection; passing a plurality of leads of the first conduit into corresponding bores in the receptacle insulator; inserting an end portion of the receptacle assembly into an opening in the equipment case; and securing the receptacle assembly to the equipment case.

**D615,932: US Design Patent, active**

Claim: The ornamental design for an electrical connector, as shown and described.

**D616,825: US Design Patent, active**

Claim: The ornamental design for an electrical connector, as shown and described.

Hypergrip is a registered US trademark
more > keiconn.com/featuredproducts.php