High-Reliability at 3mm pitch

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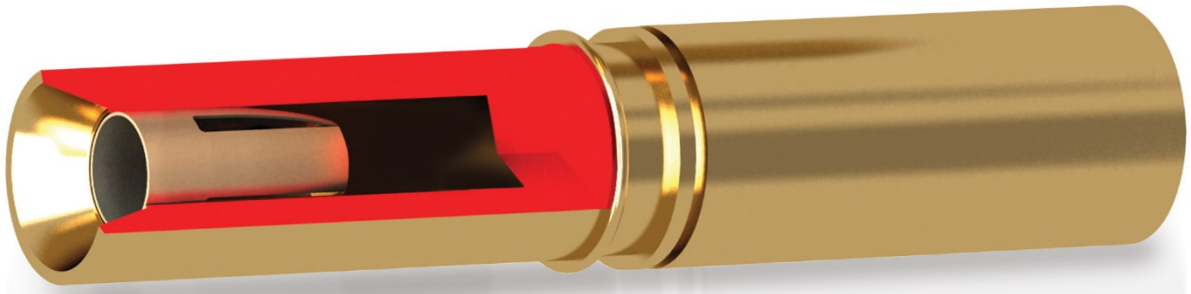
Power gap in high rel connectors

Demand for a power connector system has arisen in a number of high-reliability markets that require durability, high performance and extreme temperature tolerance in the 5-10Amp range.

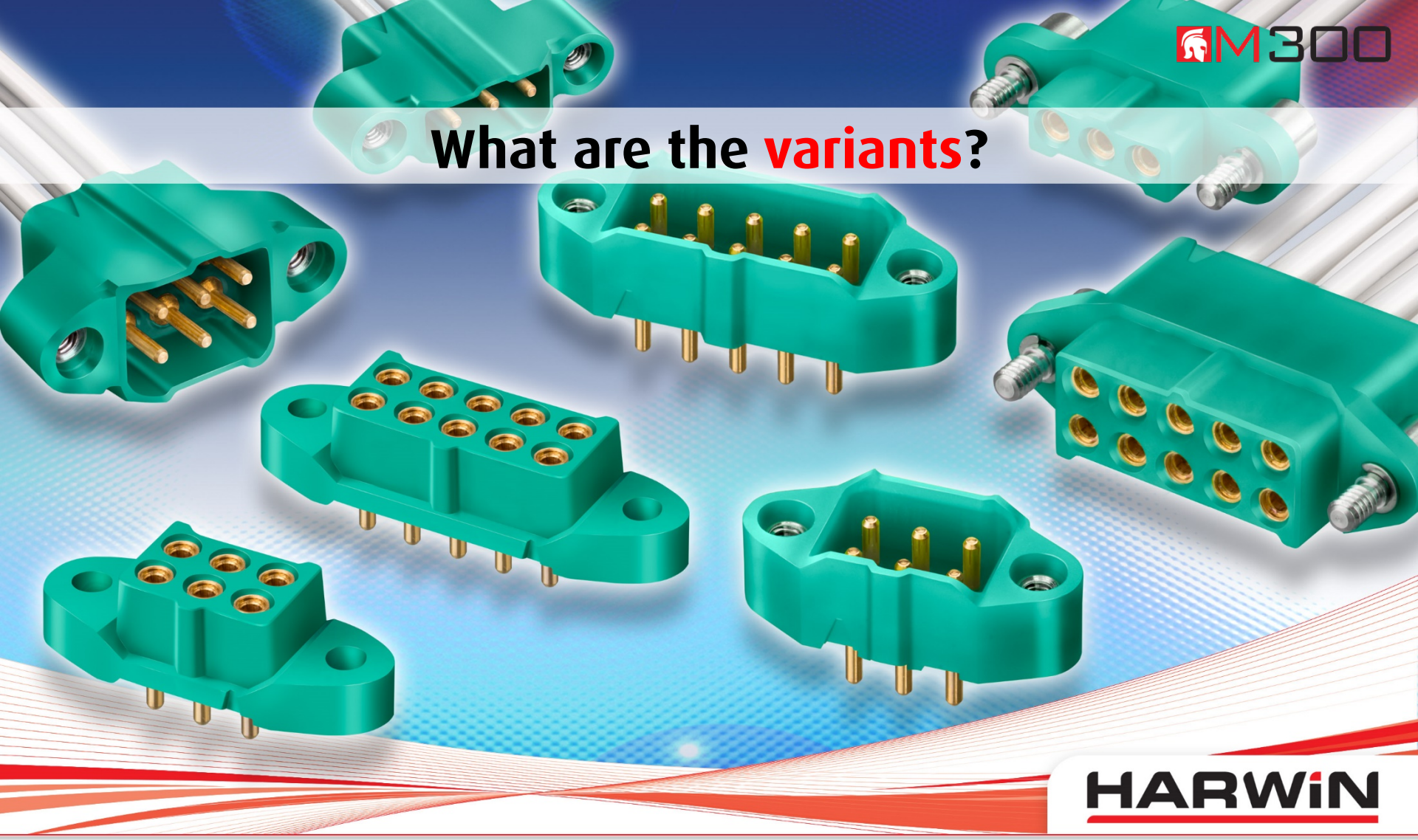
M300 High-Reliability Connectors

The heart of the connector system



A 4-fingered Beryllium Copper female contact gives superb performance, for both electrical and mechanical specifications. The contact clip and shell are both gold plated for multiple insertions and high corrosion resistance.

What are the variants?

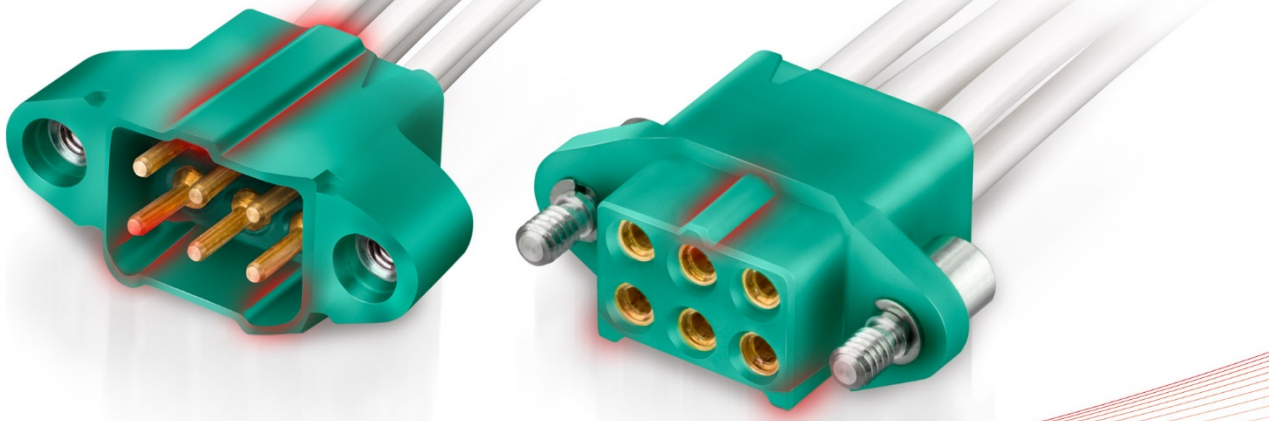


Currently the M300 range covers:

- Male Vertical in PC Throughboard Tail;
- Female Vertical in PC Throughboard Tail;
- Male and Female single-ended Cable Assemblies – ready-made for immediate use;
- Male and Female Crimp – available as separate crimps and mouldings for you to create your own cable assembly.

M300 High-Reliability Connectors

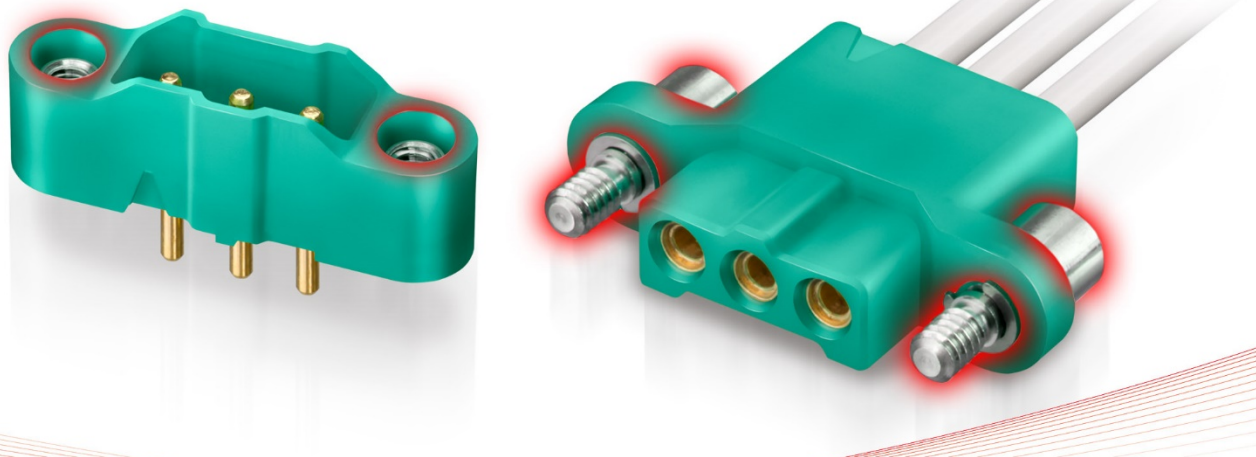
Features – Keyway polarisation



The polarisation has been placed on both sides of the connector, to ensure that these connectors cannot be mated inversely.
Three polarisation keyways have been included in the design, on two corners and in one side.

M300 High-Reliability Connectors

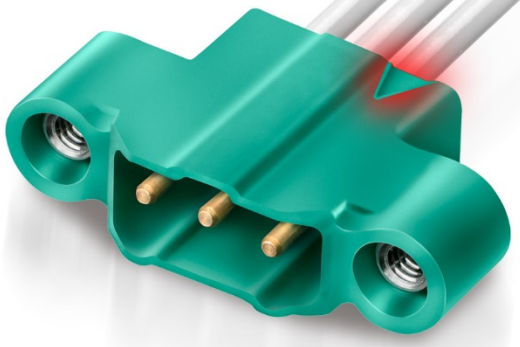
Features – Jackscrews for connection security



Female crimp connectors are fitted with floating Hex Socket jackscrews, suitable for 2mm Hex (Allen) keys. These will engage with jackscrews assembled in both Male PC Tail and Male Crimp connectors.

M300 High-Reliability Connectors

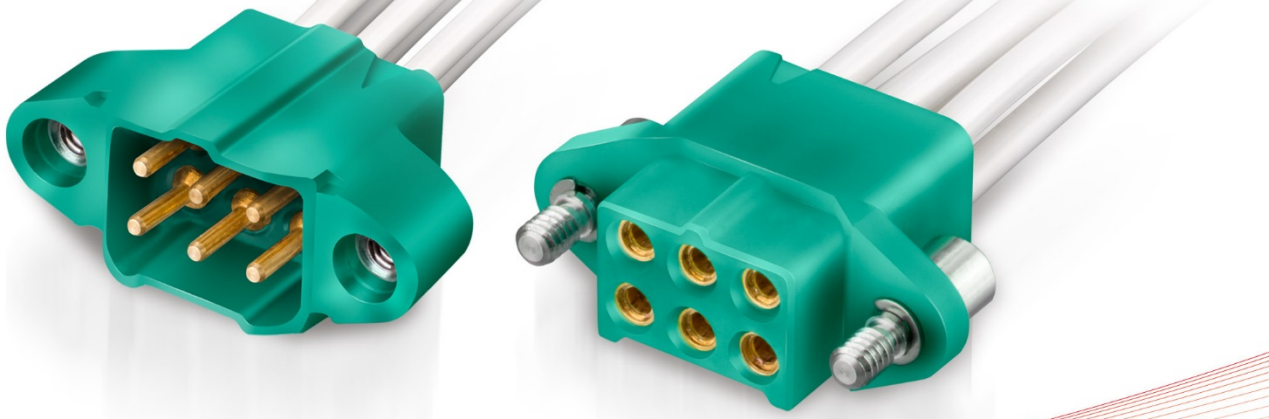
Features – No. 1 position identified



All male and female connector bodies carry a triangular-shaped inset in the housing, to indicate the position of the Number 1 contact. Counting is then continued along the row. For Double row connectors, the numbering restarts on the second row from the contact behind position 1, and continues along the row as before.

M300 High-Reliability Connectors

Features – Cabling sizes

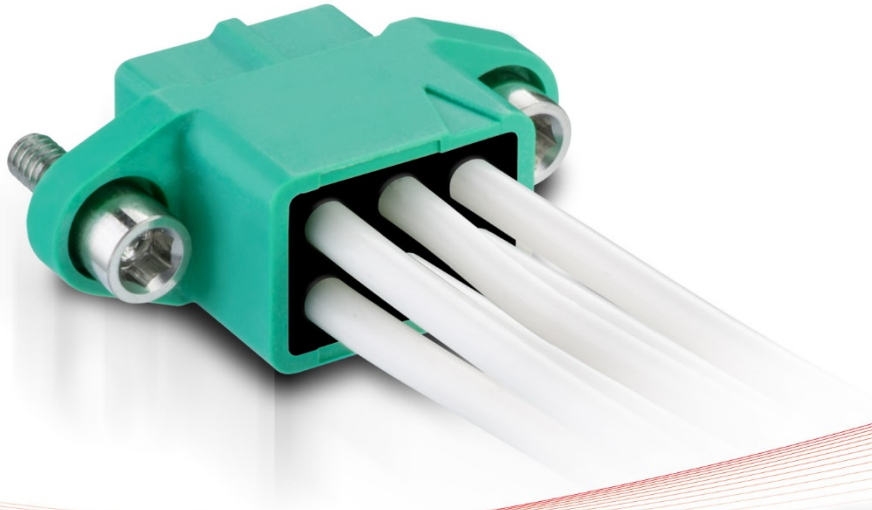


Both Male and Female cable connectors are designed to suit 18AWG to 22AWG equipment wires, with a maximum external diameter of Ø1.8mm for 18-20AWG, and Ø1.4mm max for 22AWG.

Wire specification M22759/11 (PTFE) is used on the off-the-shelf cable assemblies – other suitable wire types include BS 3G 210 Type A and MIL-16878E Type E.

M300 High-Reliability Connectors

Features – Potting Wall



The crimp housings feature a potting wall to keep potting fluids retained during application. The use of potting improves the retention of the crimp contacts in the housing by adding strain relief. The ready-made cable assemblies come with backpotting in place.

M300 High-Reliability Connectors

Accessories – Hand Tooling

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All the hand tools required to use these connectors are available from Harwin:

- Hand Crimp tool M22520/2-01, and Positioner Z80-058 (both are required for correct crimping);
- Insertion/Removal Tool Z300-902 (for correctly inserting or removing the crimped contacts into a housing);

A video is available on the Harwin website for Datamate Crimping, which uses the same methodology.

M300 High-Reliability Connectors

Performance – Electrical Specifications

Current Rating	10A	EIA-364-70A
Contact Resistance	6mΩ Max	EIA-364-23B
Insulation Resistance	100MΩ min at 100V DC	EIA-364-21C

10A

The high reliability design of the M300 connector means achieving the full 10A current rating with the compact pitch of just 3mm. Other performance ratings are comparable to the rest of the High-Reliability connectors available from Harwin.

10A is achievable using the 18AWG wire (or board-to-board) – the smaller wire sizes are not recommended for this current rating.

M300 High-Reliability Connectors

Performance – Environmental Specifications

Temperature Range	-65° to +175°C	EIA-364-32C
Environmental Classification	65/175/56 days at 90% RH	EIA-364-31B

-65°C to +175°C

With the modern choices of insulator materials, the temperature range is a significant improvement over existing high-reliability connectors, achieving up to 175 degrees C as a continuous working environment.

M300 High-Reliability Connectors

Performance – Mechanical Specifications

Durability	1000 operations	EIA-364-09C
Vibration	10g No Discontinuity >1µs	EIA-364-28
Shock	100g 6ms No Discontinuity >1µs	EIA-364-27

Shock: 100g 6ms

Mechanical vibration and shock are again comparable to existing high-reliability connectors. The full Connector Specification and Test Report is available for these performance specifications.

M300 High-Reliability Connectors

Legislation – Environmentally friendly material

The materials used in the M300 connectors do not contain any Lead, Brominated Flame Retardants, Red Phosphor (PFOS/PFOA) or Antimony. They are fully RoHS Compatible and contain no REACH SVHCs.

M300 High-Reliability Connectors

Outgassing

The Nylon 4T plastic used in the construction of M300 housings has a low outgassing index. Details can be found on the Harwin Outgassing web page.

M300 High-Reliability Connectors

Markets

Many markets have a requirement for rugged, high-reliability connectors, with the additional requirement for a compact size to deliver a power current. Built to the same exacting standards as our Datamate range, M300 delivers in these industries:

- Robotics
- Aviation
- UAVs
- Field Comms
- Oil & Gas

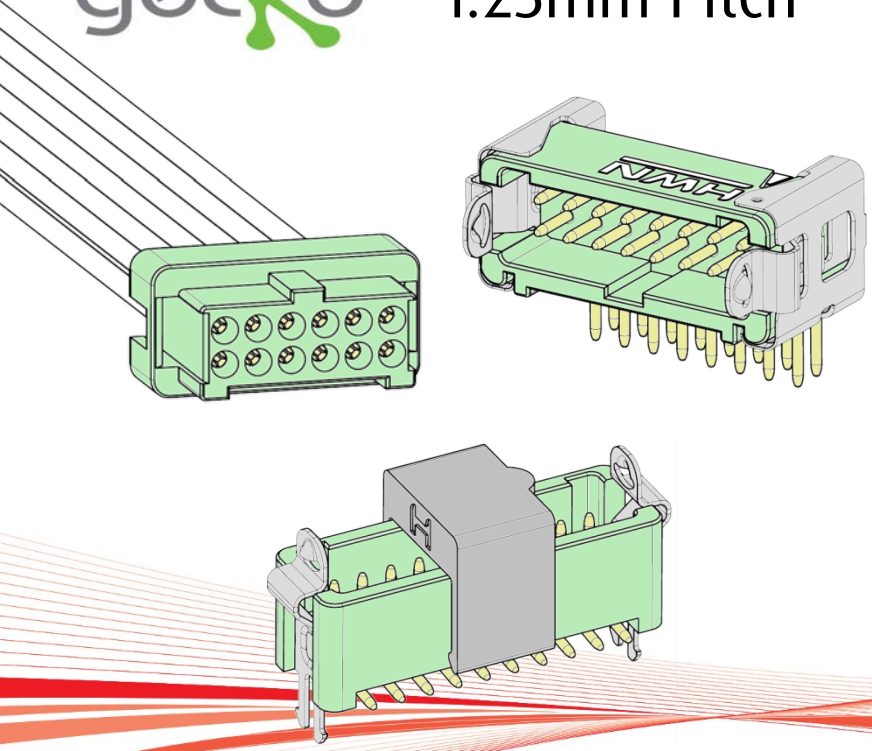
M300 – Design Tools

We can offer 3D CAD models in STP and IGES format, Videos, Diagrams and Test Reports, as well as our Live Technical Support. Search our Technical Resource area of the website, or contact Harwin for more information.

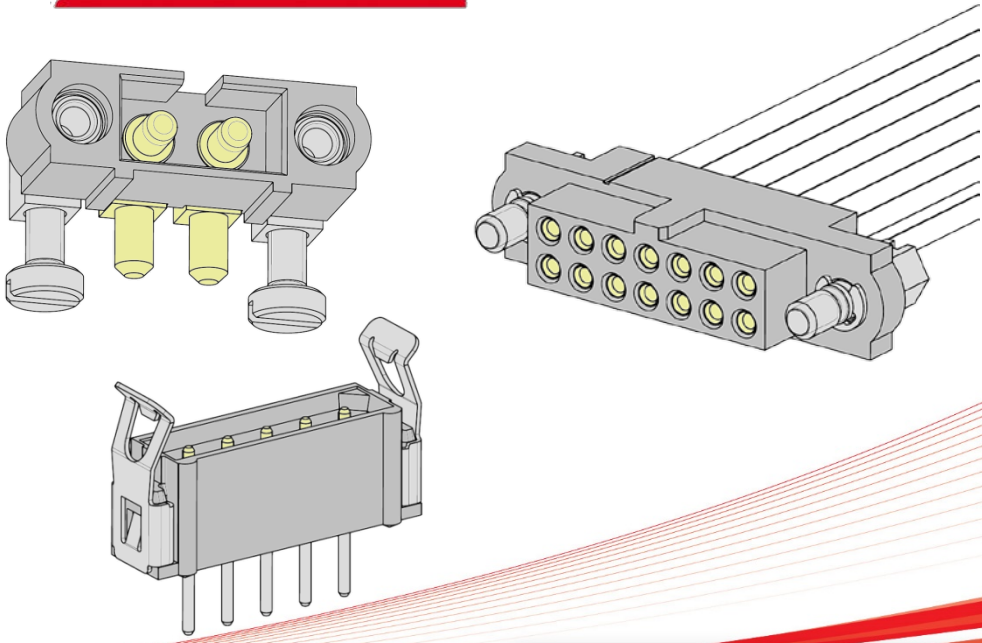

M300
POWERFUL
RUGGED
DEFIES
EXTREME HEAT
HARWiN

If you like this product, try...

gecko - 1.25mm Pitch



Datamate - 2.00mm Pitch



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- 2A per contact
- Locking latch system for strain relief
- Resists Vibration to 20G and Shock to 50G
- Temperature range -65 deg C to +150 deg C
- Vertical, Horizontal and Cable options

- 3A per signal, up to 40A per power contact
- Jackscrew or latching system for strain relief
- Resists Vibration to 10G and Shock to 100G
- Temperature range -55 deg C to +125 deg C
- PCB connectors in Throughboard or SMT, Cable options

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