# How To Order

<table>
<thead>
<tr>
<th>KVPX connector series</th>
<th>Connector type</th>
<th>Module size</th>
<th>Module style</th>
<th>Module type</th>
<th>Module type variant</th>
<th>Termination style</th>
<th>Termination Length</th>
<th>Termination Plating</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Fixed]</td>
<td>Daughtercard</td>
<td>Half</td>
<td>Center</td>
<td>Power/Utility</td>
<td>Variant 01</td>
<td>Compliant press-fit</td>
<td>Daughtercard length 1.8 mm</td>
<td>Tin/lead/gold (daughtercard)</td>
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<td></td>
<td>Backplane</td>
<td>Full</td>
<td>Right end</td>
<td>Universal</td>
<td></td>
<td></td>
<td>Backplane length 3.3 mm</td>
<td>Gold (backplane)</td>
</tr>
</tbody>
</table>

**KVPX® Series**

Rugged High speed, Backplane Connector System

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Smiths Interconnect
bringing technology to life
KVPX® series

Resistant to Shock & Vibration
High Speed up to 16 Gbps
Faceplate to Protect Daughtercard Pins

Smiths Interconnect’s KVPX Series is an embedded interconnect system that provides unrivaled performance in harsh environments while adapting to the VITA standard design requirements. By utilizing the Hypertac® superior hyperboloid contact technology, the KVPX Series ensures exceptional tolerance to shock and vibration, low insertion forces, high current ratings and the lowest fretting corrosion available.

Fretting corrosion caused by the relative movement of contacts during continual shock and vibration in harsh environments is the leading cause of failure in aerospace, space and defense systems platforms. This is especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, weapon systems, and space applications, such as launchers and satellites.

To solve this problem, Smiths Interconnect has integrated its legendary Hypertac contact system into a VITA 46/48 form factor by evolving its space proven cPCI connector technology. The KVPX interconnect system meets all of the VITA standard design requirements. By utilizing the Hypertac® superior hyperboloid contact technology, the KVPX interconnect system supports the high-speed electrical requirements of VITA 46/48 while vastly increasing the mechanical reliability and physical ruggedness of unated connectors and modules.

To that end, the KVPX utilizes a reverse gender versus other backplane connectors, further protecting the male pins from damage. KVPX connectors are equipped with Hypertac® space qualified qualified 0.4mm hyperboloid sockets and provide immunity to shock and vibration fretting, numerous linear paths of contact, low-forces, high mating cycles, and a self-wiping cleaning action that results in consistently better integrity in extreme environments.

The KVPX Series is highly engineered to guarantee top performance under the most severe condition in demanding applications where failure is not an option.

### Technologies

#### Daughtercard
- KXHCP01C1TBH: KVPX Daughtercard Half Power Module with Sn-Pb Press-Fit Tails
- KXIFC01C1TBH: KVPX Daughtercard Full Single-Ended Module with Sn-Pb Press-Fit Tails
- KXIFCD01C1TBH: KVPX Daughtercard Full Differential Pair Module with Sn-Pb Press-Fit Tails

#### Backplane
- KX2HC01C1TAH: KVPX Backplane Half Universal Module with Gold Press-Fit Tails
- KX2FC01C1TAH: KVPX Backplane Full Universal Module with Gold Press-Fit Tails

#### Hypertac® contacts
- Immunity to shock & vibration
- Low insertion/extraction forces
- Minimal contact resistance
- Industry leading mating cycles
- Self-clean wipe action for better signal integrity

### Performance

#### Measured impedance through TDR

- 50 ps Rise Time

#### Eye diagram @ 10 Gbps

Crosstalk from 6 Adjacent Channels (NEXT and FEXT)

*See back for ordering information*

### Technical Characteristics

#### Specifications

- **Number of Contacts:**
  - Half module - 72, Full module - 144
  - Pitch: 1.8mm
  - Current Rating: 1.5625 A per contact 12.5 A per wafer (derated using a 30°C temperature rise and 1 oz copper)
  - Extraction Force: 1.2 oz per contact typical
  - Temperature Rating: -55°C to 125°C
  - Insulator Material: LCP (Liquid Crystal Polymer)

- **Contact Plating:**
  - 50 μin gold over nickel
- **Flammability Rating:**
  - UL94-V0
- **Dielectric Withstanding Voltage:**
  - 500 VAC
- **Low Level Circuit Resistance:**
  - 8 milliohms maximum
- **Insulation Resistance:**
  - 500 megohms maximum
- **Random Vibration:**
  - 11.95 Grms 50 to 2000 Hz for 90 mins per axis
- **Mechanical Shock:**
  - 50G

#### Features

- Compatible with VITA 46, 47 and 78 (Space) standards
- Up to 16 Gbps data rate performance
- 100 Ohm impedance for differential pair configuration

#### Performance

- Speed is another critical factor when comparing VPX connector solutions and as technology evolution continues to push the limits. For system solution providers speed is a critical element in their ability to address the computation and I/O requirements of data driven applications.
- When evaluating the speed capability of a connector the key factors are: impedance, return loss, insertion loss and crosstalk.

- The use of impedance-controlled connectors is standard practice in radio frequency applications and is now being utilized for high-speed data transmission. In a transmission line, impedance matching is necessary to minimize reflections, to deliver the correct amplitude signal and to maximize power at the receiving end. To maximize signal performance, it is critical to maintain a differential impedance as close to 100 Ω as possible. The KVPX connector has an impedance variation <10% of the target 100 Ω with a 50 ps rise time (0%, no signal, to 100%, full signal) which is representative of the rise time of a 6 Gbps signal.

- Due to the matched impedance profile and low loss performance of KVPX, signals travel with minimal disruption through it. The eye patterns of the intrinsic connector indicates a low amount of jitter and a wide eye opening which indicates that the KVPX connector is more than capable for 16 Gbps data rates. The eye pattern combines the impacts of impedance matching, return loss, insertion loss and crosstalk talk performance to ultimately determine the speed capability of the connector.
KVPX® series

Resistant to Shock & Vibration
High Speed up to 16 Gbps
Faceplate to Protect Daughtercard Pins

Smiths Interconnect’s KVPX Series is an embedded interconnect system that provides unrivaled performance in harsh environments while adapting to the VITA standard design requirements. By utilizing the Hypertac® superior hyperboloid contact technology, the KVPX Series ensures exceptional tolerance to shock and vibration, low insertion forces, high current ratings and the lowest fretting corrosion available.

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