**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>1  KVPX CONNECTOR SERIES</td>
<td>Connector Type</td>
<td>Module Size</td>
<td>Module Style</td>
<td>Module Type</td>
<td>Module Type Variant</td>
<td>Termination Style</td>
<td>Termination Length</td>
<td>Termination Plating</td>
</tr>
<tr>
<td>2  CONNECTOR TYPE</td>
<td>1  DAUGHTERCARD</td>
<td>2  BACKPLANE</td>
<td>3  HALF</td>
<td>4  CENTER</td>
<td>5  CENTER</td>
<td>6  CENTER</td>
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<td>3  CONNECTOR TYPE</td>
<td>1  DAUGHTERCARD</td>
<td>2  BACKPLANE</td>
<td>3  FULL</td>
<td>4  CENTER</td>
<td>5  CENTER</td>
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<td>8  CENTER</td>
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<tr>
<td>4  CONNECTOR TYPE</td>
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<td>2  BACKPLANE</td>
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<td>7  CONNECTOR TYPE</td>
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<td>8  CONNECTOR TYPE</td>
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<td>8  CENTER</td>
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<td>9  CONNECTOR TYPE</td>
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<td>2  BACKPLANE</td>
<td>3  FULL</td>
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<td>8  CENTER</td>
</tr>
</tbody>
</table>

**KVPX® CONNECTOR SERIES**

Rugged High Speed, High Density Interconnects

**TERMINATION LENGTH**

<table>
<thead>
<tr>
<th>Daughtercard Length</th>
<th>Backplane Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8mm (.073&quot;)</td>
<td>3.3mm (.133&quot;)</td>
</tr>
</tbody>
</table>

**TERMINATION PLATING**

<table>
<thead>
<tr>
<th>TIN/LEAD/GOLD (DAUGHTERCARD)</th>
<th>GOLD (BACKPLANE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>B</td>
</tr>
</tbody>
</table>

**FOR MORE INFORMATION**
smithsconnectors.com
especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, data storage, communications and weapon systems.

To solve this problem, Smiths Connectors has integrated its legendary space proven cPCI connector technology. The new KVPX interconnect while vastly increasing the mechanical reliability and physical ruggedness of unmated connectors and modules.

To that end, the KVPX daughtercard connectors incorporate a front face plate which prevents damage to the male contacts in an unmated condition. In addition, the KVPX backplane connectors utilize Smiths Connectors’ space qualified 0.4mm hyperboloid sockets, known to 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.

Like all Smiths Connectors products, the KVPX Series is highly engineered to guarantee top performance under the most severe conditions in aerospace, defense, and industrial applications where failure is not an option.

**TECHNICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatible with VITA 46 and 48 standard applications</td>
<td>Number of Contacts: Half module - 72; Full module - 144</td>
</tr>
<tr>
<td>Verified for 6.25 and 10 Gbps data rate performance</td>
<td>Pitch: 1.6mm</td>
</tr>
<tr>
<td>100 Ohm impedance for differential pair configuration</td>
<td>Current Rating: 1.5625 A per contact 12.5 A per power wafer (derated using a 30°C temperature rise and 1 oz copper)</td>
</tr>
<tr>
<td>Differential, single-ended and power modules</td>
<td>Extraction Force: 1.2 oz per contact typical</td>
</tr>
<tr>
<td>0.56 mm (0.022”) diameter via for backplane connector</td>
<td>Temperature Rating: 65°C to 125°C</td>
</tr>
<tr>
<td>Flexible modular design for standard 3U and 6U as well as custom configurations</td>
<td>Insulator Material: LCP (Liquid Crystal Polymer)</td>
</tr>
<tr>
<td>Press-fit compliant tail</td>
<td>Contact Plating: 50 μm gold over nickel</td>
</tr>
<tr>
<td>Reliable Hypertac hyperboloid contact technology</td>
<td>Flammability Rating: UL94-V0</td>
</tr>
</tbody>
</table>

**TECHNOLOGIES**

<table>
<thead>
<tr>
<th>DAUGHTERCARD</th>
<th>BACKPLANE</th>
</tr>
</thead>
<tbody>
<tr>
<td>KX1HC01C1THB: KVPX Daughtercard Half Power Module with Sn-Pb Press-Fit Tails</td>
<td>KX2HC01C1THB: KVPX Backplane Half Power Module with Gold Press-Fit Tails</td>
</tr>
<tr>
<td>KX1FC01C1THB: KVPX Daughtercard Full Single-Ended Module with Sn-Pb Press-Fit Tails</td>
<td>KX2FC01C1THB: KVPX Backplane Full Universal Module with Gold Press-Fit Tails</td>
</tr>
<tr>
<td>KX1FC01C1THB: KVPX Daughtercard Full Differential Pair Module with Sn-Pb Press-Fit Tails</td>
<td></td>
</tr>
</tbody>
</table>

**HYPERTAC® CONTACTS**

- **Resistance to Shock & Vibration**
- **High Speed 6.25 to 10 Gbps**
- **Faceplate to Protect Daughtercard Pins**

Smiths Connectors introduces the KVPX Series, an embedded system interconnect 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 and defense systems platforms. This is especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, data storage, communications and weapon systems.

Fretting corrosion can be solved by the KVPX design, which incorporates a front face plate that prevents damage to the male contacts in an unmated condition. In addition, the KVPX backplane connectors utilize Smiths Connectors’ space qualified 0.4mm hyperboloid sockets, known to 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 consistent, reliable, maintenance-free performance in extreme environments.

Due to the matched impedance and low loss performance of KVPX, signals travel with minimal disruption through the transmission line. In a transmission line, impedance matching is necessary to minimize reflections, to deliver the correct amplitude and signal to the receiving end. To maximize signal performance, a connector is designed to maintain a constant impedance as close as possible to 50 Ω. The KVPX connector has an impedance varying <±0.5Ω of the target 100 Ω with a 50 ps rise time (relative to 50% signal level) which is representative of the real time of a 5 meters signal.

Due to the matched impedance profile and low loss performance of KVPX,信号 travel with minimal disruption through it. The eye patterns of the connector indicate a low amount of jitter and a wide eye opening which indicates that the KVPX connector is more than capable for 10 Gbps data rates. The eye pattern indicates the amount of impedance matching, return loss, insertion loss, and crosstalk performance used to determine the speed capability of the connector.
that provides unrivaled performance in harsh environments while adapting to the continual shock and vibration in harsh environments is the leading cause of failure in aerospace and defense systems platforms. This is especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, data storage, communications and weapon systems.

Hypertac contact system into a VITA 46/48 form factor by evolving its space proven cPCI connector technology. The new KVPX interconnect space proven cPCI connector technology. The new KVPX interconnect space proven cPCI connector technology. The new KVPX interconnect while vastly increasing the mechanical reliability and physical ruggedness of unmated connectors and modules.

To that end, the KVPX daughtercard connectors incorporate a front face plate which prevents damage to the male contacts in an unmated condition. In addition, the KVPX backplane connectors utilize Smiths Connectors’ space qualified 0.4mm hyperboloid sockets, known to 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.

Like all Smiths Connectors products, the KVPX Series is highly engineered to guarantee top performance under the most severe conditions in aerospace, defense, and industrial applications where failure is not an option.

### RESISTANT TO SHOCK & VIBRATION

Speed is another critical factor when comparing VXP 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 and phase at the receiving end. To maximize signal performance, it is crucial to maintain a continuous impedance as close to the source as possible.

The KVPX connector has an impedance variation <0.5% of the target 100Ω within ±0.5% rise time (50 ps rise time 1%/50°C to 90%/50°C), which is typical of high-speed interfaces.

Due to the matched impedance profile and low loss performance of KVPX, signals travel with minimal distortion through it. The eye patterns of the KVPX connector indicate a low amount of jitter and a wide eye opening which indicates that the KVPX connector is more than capable for 10 Gbps data rates. The eye pattern combines the impacts of impedance matching, return loss, insertion loss and crosstalk to ultimately determine the speed capability of the connector.

### HIGH SPEED 6.25 TO 10 Gbps

### FACEPLATE TO PROTECT DAUGHTERCARD PINS

### MEASURED IMPEDANCE THROUGH TDR

![Impedance vs. Time Graph](image1)

#### MEASUREMENTS:
- **Impedance (Ω)**: 90 ± 5
- **Time (ns)**: 0.1 to 1.0

### EYE DIAGRAM @ 10 Gbps

![Eye Diagram](image2)

#### MEASUREMENTS:
- **Impedance (Ω)**: 90 ± 5
- **Time (ns)**: 0.1 to 1.0

### TECHNOLOGIES

#### DAUGHTERCARD
- KX1HCP01C1TH: KVPX Daughtercard Half Power Module with Sn-Pb Press-Fit Tails
- KX1FC01C1TH: KVPX Daughtercard Full Single-Ended Module with Sn-Pb Press-Fit Tails
- KX1FC01C1TH: KVPX Daughtercard Full Differential Pair Module with Sn-Pb Press-Fit Tails

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

#### SPECIFICATIONS
- **Number of Contacts**: Half module - 72; Full module - 144
- **Pitch**: 1.6mm
- **Current Rating**: 1.5625 A per contact 12.5 A per power wafer (derated using a 30°C temperature rise and 1 oz copper)
- **Extraction Force**: 1.2 oz per contact typical
- **Temperature Rating**: -65°C to +125°C
- **Insulator Material**: LCP (Liquid Crystal Polymer)
- **Contact Plating**: 50 μm 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 G rms 50 to 2000 Hz for 90 mins per axis
- **Mechanical Shock**: 50G 11 msec 3 shocks/direction (18 total)

#### FEATURES
- Compatible with VITA 46 and 48 standard applications
- Verified for 6.25 and 10 Gbps data rate performance
- 100 Ohm impedance for differential pair configuration
- Differential, single-ended and power modules
- 0.56 mm (0.022”) diameter via for backplane connector
- Flexible modular design for standard 3U and 6U as well as custom configurations
- Press-fit compliant tail
- Reliable Hypertac hyperboloid contact technology

### 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

#### TECHNICAL CHARACTERISTICS

- **Crosstalk from 6 Adjacent Channels (NEXT and FEXT)**
  - 85 dB at 6 GHz

- **return loss, insertion loss and crosstalk.**

- **Cable delay uniformity**
  - ±2.5 ns across connector length

- **Eye pattern**
  - Wide eye opening

- **Signal integrity**
  - Consistent signal integrity across connector range

- **Reliability**
  - 10 million mating cycles
HOW TO ORDER

K X = 1 2 3 4 5 6 7 8 9

1  >  CONNECTOR SERIES  [Fixed]

2  >  CONNECTOR TYPE
   1  DAUGHTERCARD
   2  BACKPLANE

3  >  MODULE SIZE
   1  HALF
   2  FULL

4  >  MODULE STYLE
   1  CENTER
   2  RIGHT END

5  >  MODULE TYPE
   1  POWER/UTILITY
   2  SINGLE ENDED
   3  DIFFERENTIAL PAIR
   4  UNIVERSAL (ALL BACKPLANE MODULES)

6  >  MODULE TYPE VARIANT
   1  VARIANT 01

7  >  TERMINATION STYLE  [Fixed]
   1  COMPLIANT PRESS-FIT

8  >  TERMINATION LENGTH  [Fixed]
   1  DAUGHTERCARD LENGTH 1.8mm / BACKPLANE LENGTH 3.3mm

9  >  TERMINATION PLATING
   T  B  H  TIN-LEAD/GOLD (DAUGHTERCARD)
   T  A  H  GOLD (BACKPLANE)

FOR MORE INFORMATION | smithsconnectors.com |