

RUGGED VPX

MEDIA & PROTOCOL CONVERSION MODULES

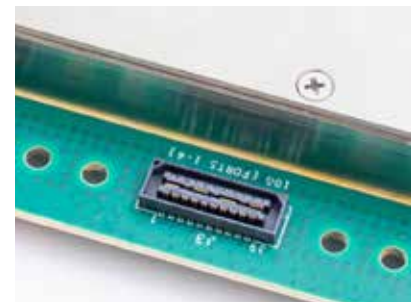


DESCRIPTION

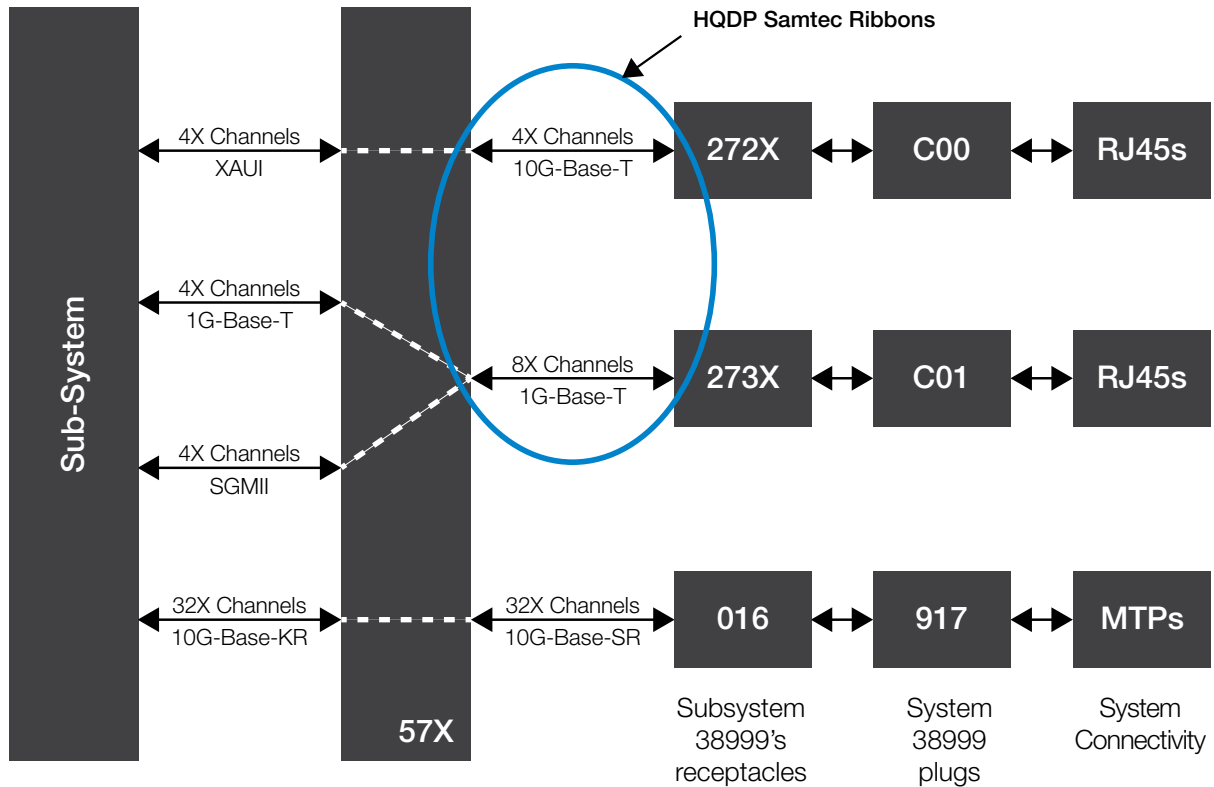
Amphenol Aerospace is the world's leader in high-end performance interconnect products for rugged environment markets. Media and protocol conversion is an important capability enabling system connectivity from commercial off-the-shelf switches, processors, and I/O boards. This new line of VPX media conversion products provides the sweet spot of conversion from both backplane and Base-T connections, as well as backplane and high-end fiber connections. The product suite includes the components needed to quickly integrate this unit into a new sub-system, as well as install and field in rugged environments. By utilizing this architecture as a starting point, new derivatives that support specific requirements can easily be made, ensuring high-technology readiness and low-development costs.

FEATURES AND BENEFITS

- Embedded and integrated set of media and protocol conversion VPX boards for open systems architectures in the military rugged market
- Providing connectivity for 1G, 10G, and up to 40G Ethernet with Base-T and Fiber Base-SR conversion circuitry
- 3U and 6U VPX modules have corresponding internal sub-system connectors/cables as well as full test and integration set of products
- For plug and play integration with COTS VPX CPUs, Switches, and other devices
- New derivatives can be formed to meet new customer requirements
- Full diagnostics and control interfaces for built in test and alternate configurations



SUITE OF PRODUCTS



| Part Number | Description |
|----------------|--|
| CF-020010-57X | 6U VPX converter with 4X XAUI/10G-Base-T, 4X SGMII/1G-Base-T, 32X 10G-Base-SR, 12C, MDIO, LEDs |
| CF-020010-58X | 6U VPX converter with 2X XAUI/10G-Base-T, 4X SGMII/1G-Base-T, MDIO, LEDs |
| CF-020010-721 | 6U VPX converter with 6X XAUI/10G-Base-T, 4X SGMII/1G-Base-T, MDIO, LEDs |
| CF-020010-720 | 3U VPX converter with 2X XAUI/10G-Base-T, 8X SGMII/1G-Base-T, 24X 10G-Base-KR/SR, 12C, MDIO, LEDs |
| 10-646402-272X | MIL-DTL-38999 size 19 receptacle with 4X Octonet contacts and mating PC board for Samtec connectivity to VPX boards |
| 10-646402-273X | MIL-DTL-38999 size 25 receptacle with 8X Octonet contacts and mating PC board for Samtec connectivity to VPX boards |
| CA-628485-C00 | MIL-DTL-38999 plug cable assembly for the 272X which breaks out Octonet contacts into RJ-45s |
| CA-628485-C01 | MIL-DTL-38999 plug cable assembly for the 272X which breaks out Octonet contacts into RJ-45s |
| CF-901201-016 | MIL-DTL-38999 dual receptacle MT cable assembly for connection to 57X fiber ports. Each MT has 16 channels of 10G-Base-SR. |
| CF-901200-017 | MIL-DTL-38999 plug MT cable assembly for connection to each receptacle on the CF-901201-016 and breakouts to MTP contacts |
| CF-980062-061 | Quad RJ45 breakout board for the Samtec headers on the 57X and 58X VPX modules |

VPX MEDIA CONVERTER MODULE SUMMARY

CF-020010-57X

VITA 48.2 conduction cooled 6U VPX module with 1 inch pitch :

- 6Ux160mm form factor as defined by IEEE 1101.2 for conduction cooling
- VITA 46 board connectors
- IEEE 1101.2 extraction levers and performance wedge locks
- 3X - Samtec HQDP connectors for 1G-Base-T, 10G-Base-T
- 2X - 48 pin MT contacts for 40G-Base-SR4 / 10G-Base-SR

Copper Conversion formats:

- 4X Channels – XAUI to 10G-Base-T Conversion
- 4X Channels – SGMII to 1G-Base-T Conversion
- 4X Channels – 1G-Base-T pass through from VPX to Samtec
- Diagnostics interface is MDIO interface as well as LEDs per each channel

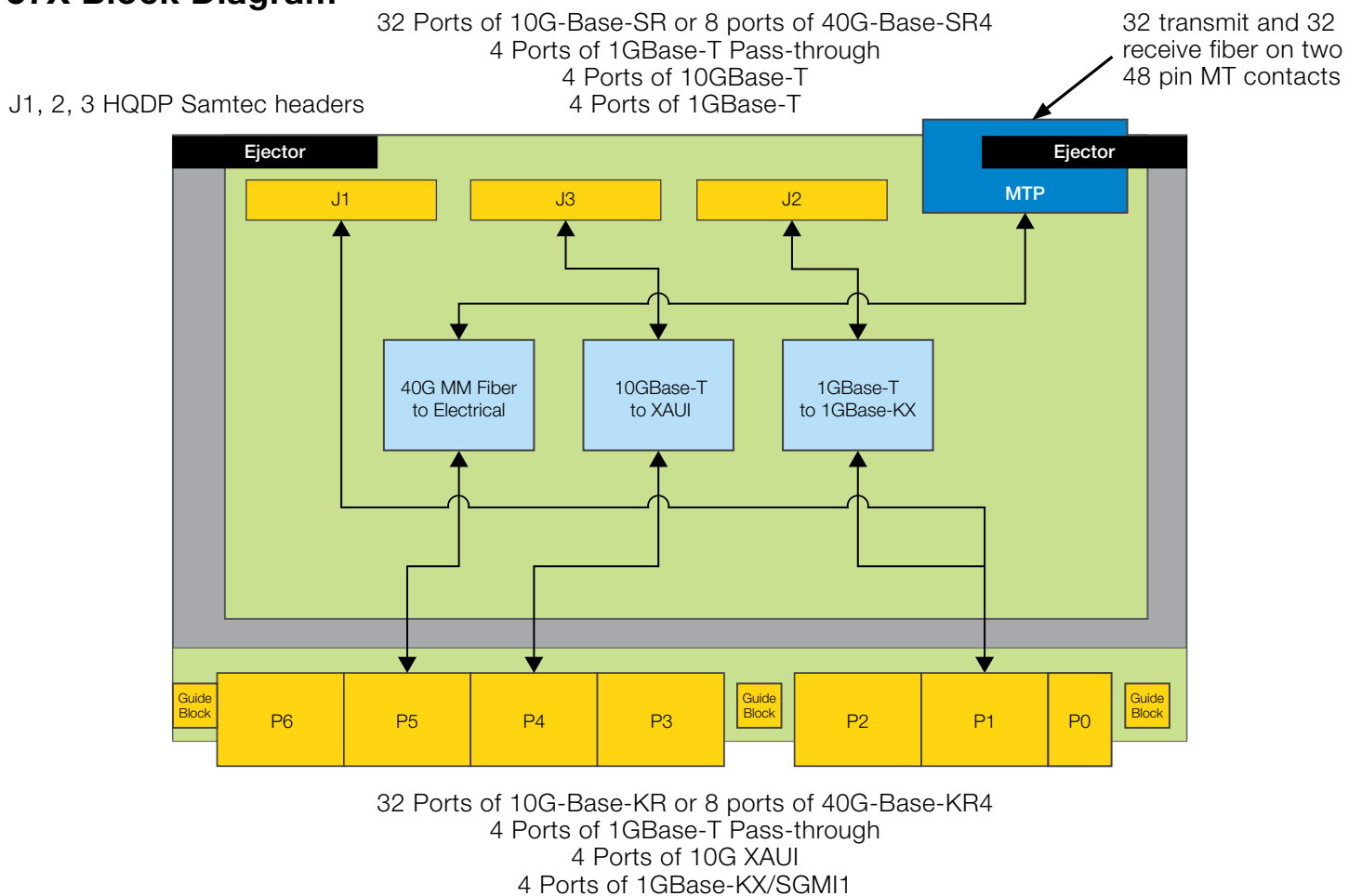
Fiber Conversion formats:

- 32X Channels – 10G-Base-KR to 10G-Base-SR
- Can be ganged together for 8X channels – 40G-Base-KR4 to 40G-Base-SR4
- Diagnostics interface is I2C interface as well as LEDs per each channel
- 10.3 (25 Gbps transceivers 850nm multimode optics)

Environmental Performance:

- Rugged storage and operating temperature range
- Typical vibration specifications in accordance with MIL-STD-810
- Typical power level is 36 Watts on 12Volts or 5Volts
- Integrated system reset function

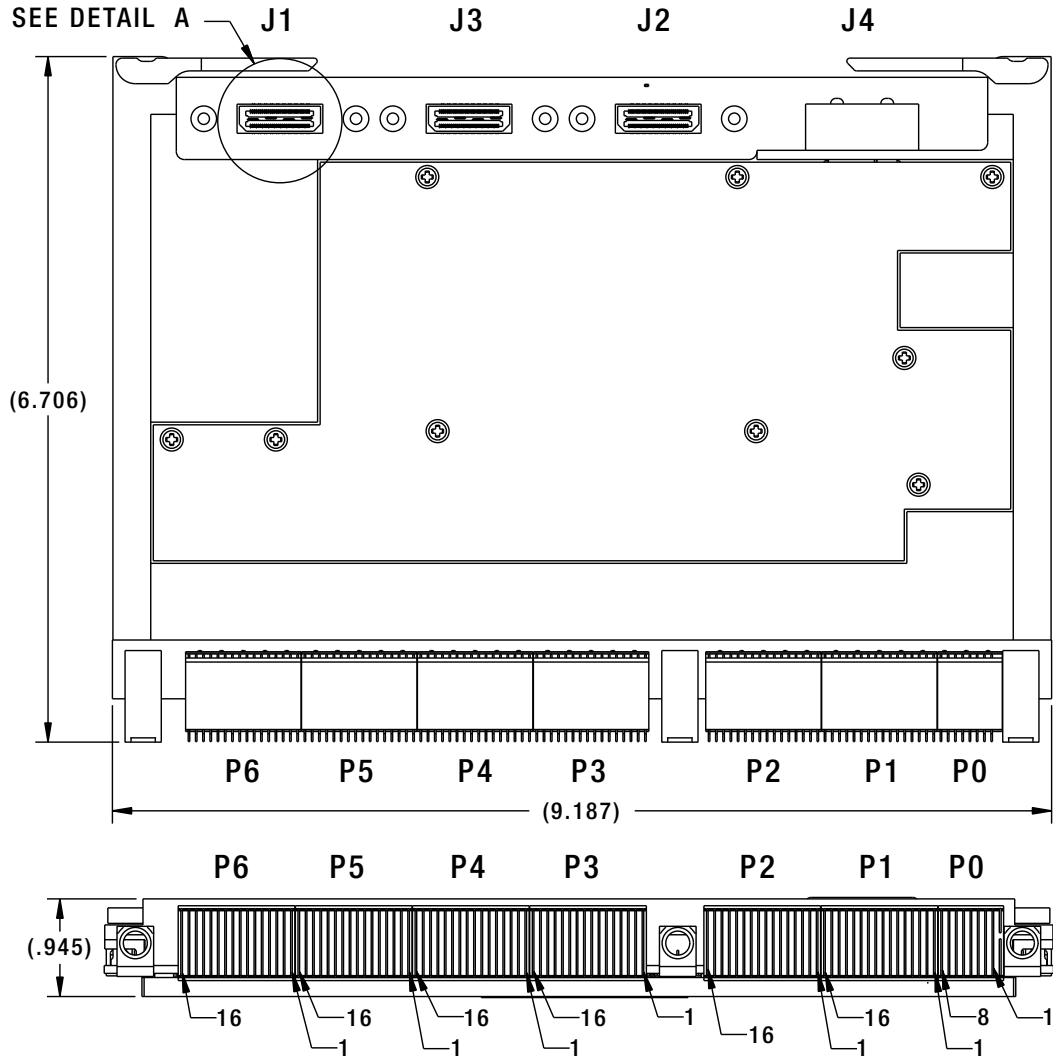
57X Block Diagram



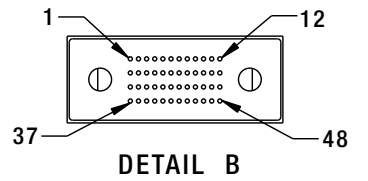
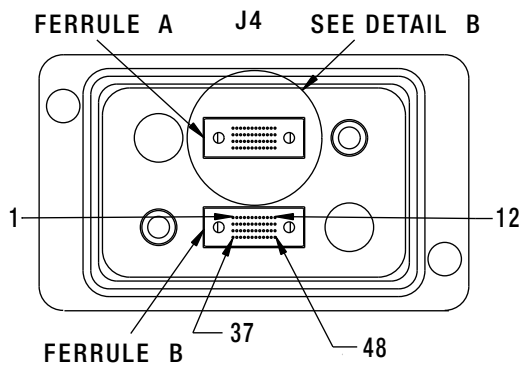
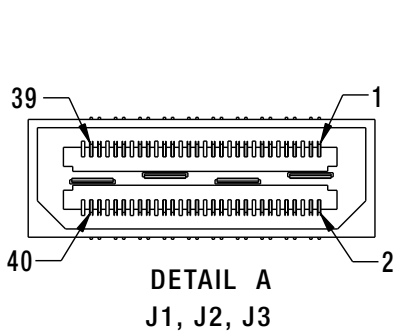
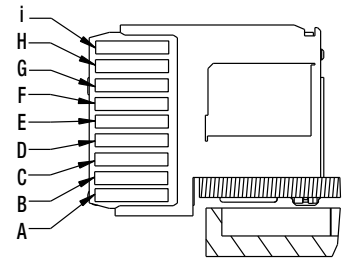
VPX MEDIA CONVERTER MODULE SUMMARY

CF-020010-57X

57X Drawing

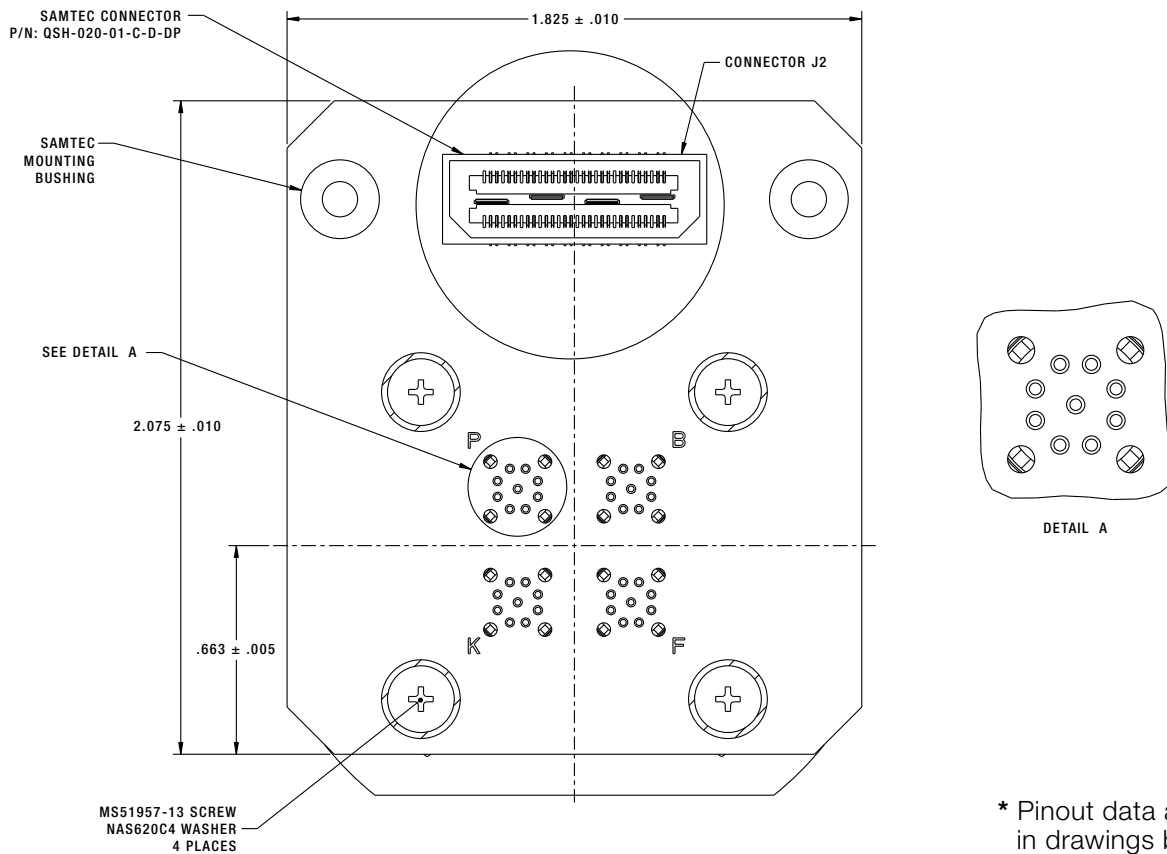
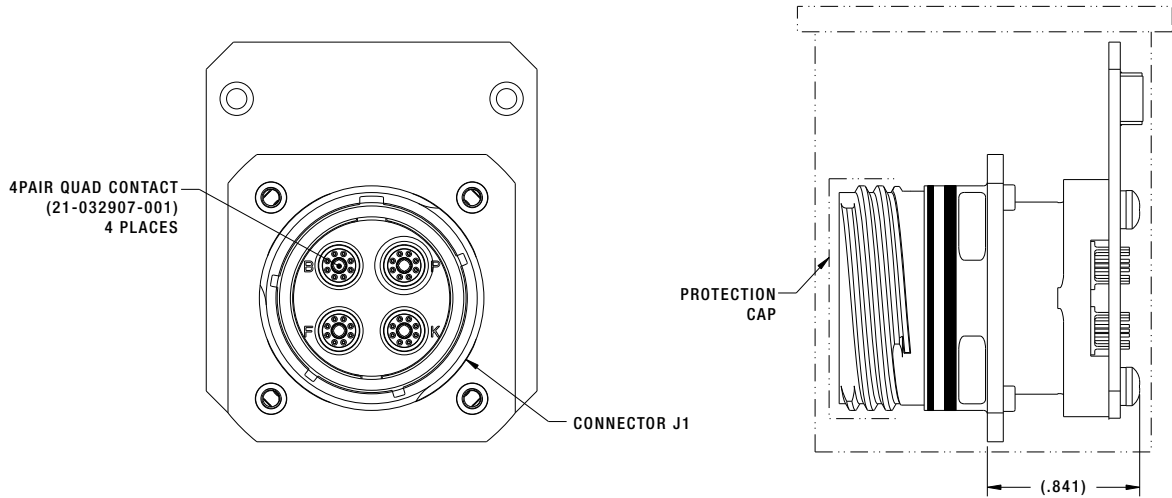


* Pinout data available in drawings by request



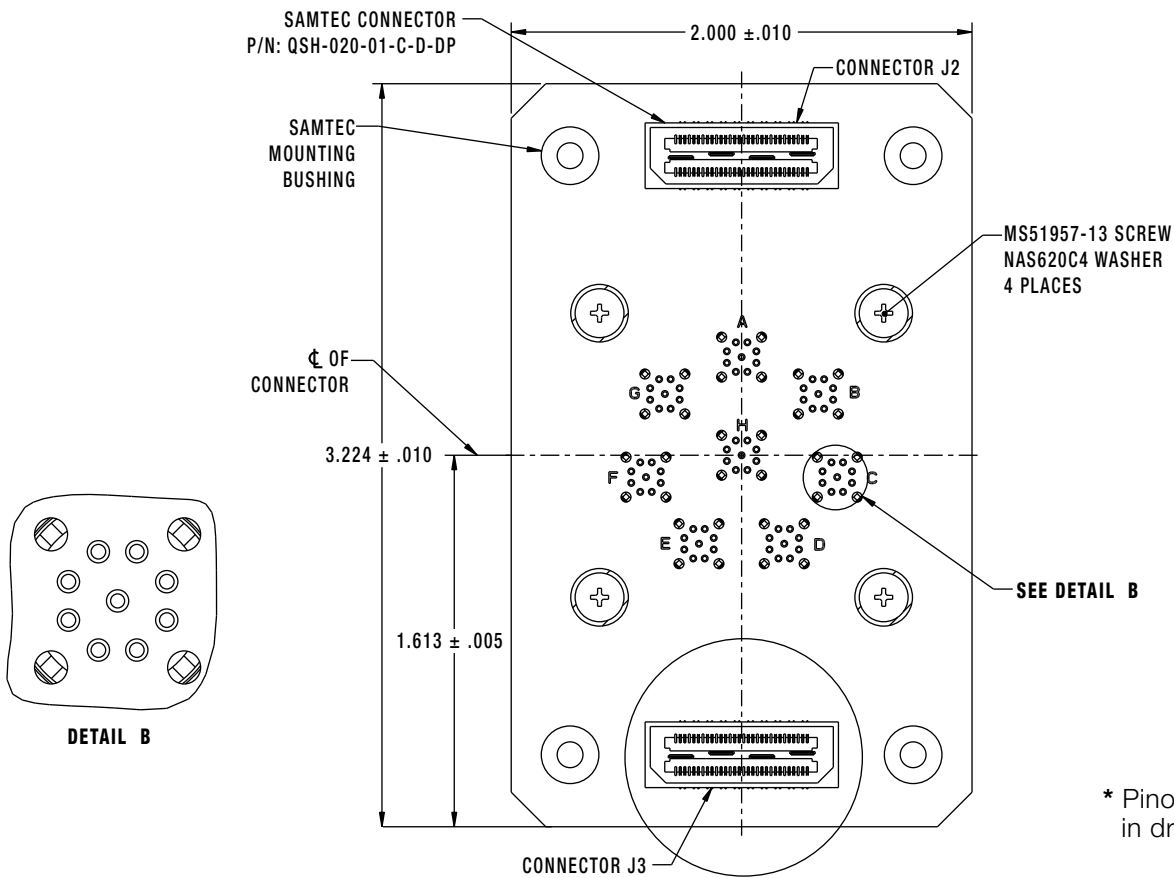
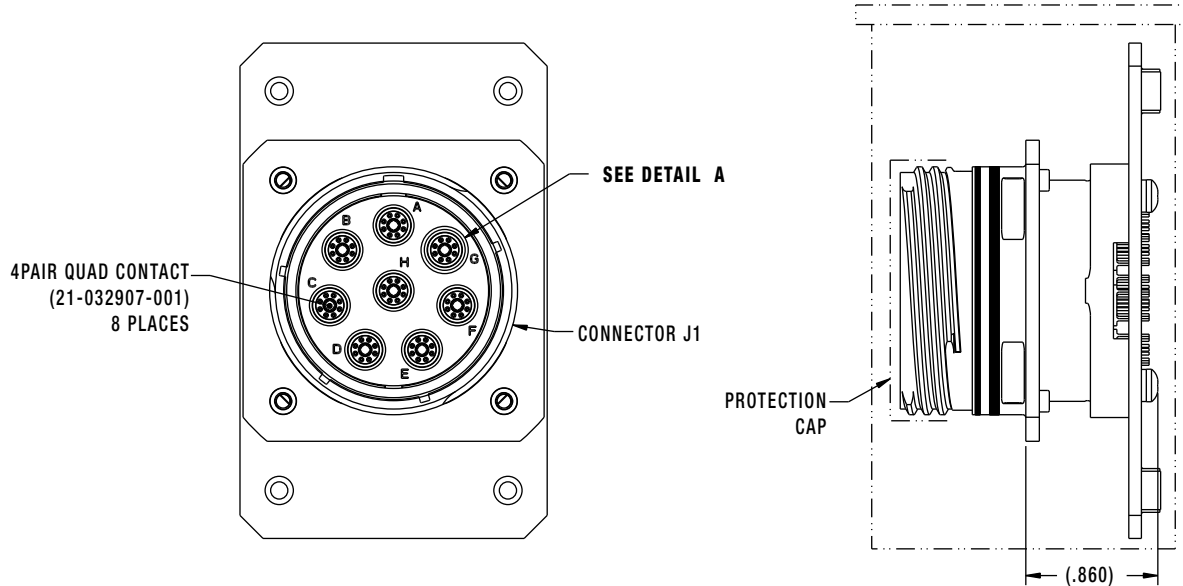
COMPLIMENTARY PRODUCT:

10-646402-272X



COMPLIMENTARY PRODUCT:

10-646402-273X



COMPLIMENTARY PRODUCT:

Octonet Contacts



Description :

Superior Ethernet contact system for MIL-DTL-38999, Series III. Eight strategically spaced inner contacts form four 100 Ohm matched impedance differential pairs.

Features and Benefits :

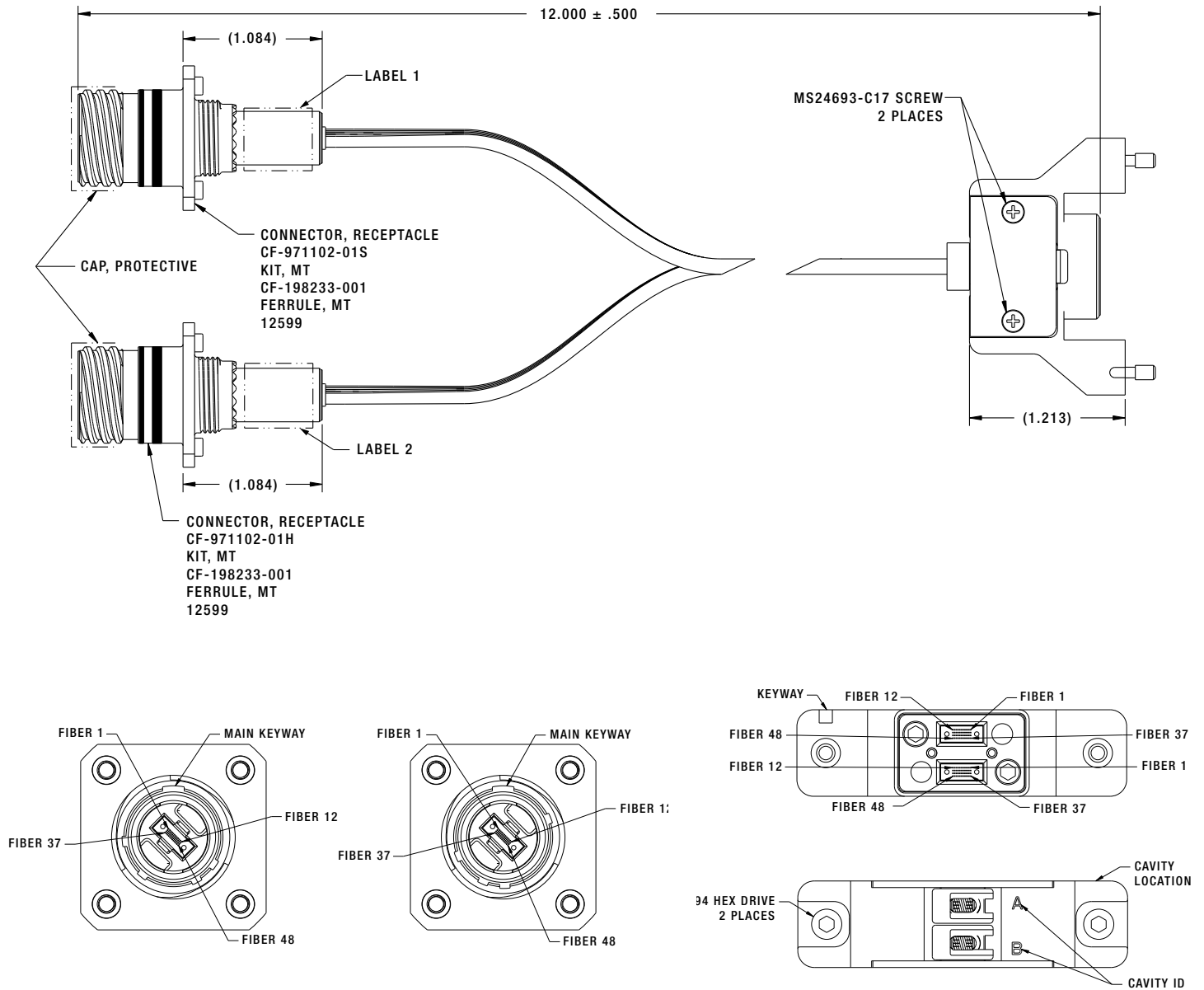
- Available in size 8 crimp termination style
- Also available in PC Tails
- Can be installed in existing size 8 Quadrax cavities
- Meets performance specifications of CAT-6A cable
- 10G Ethernet compliant
- Overall higher bandwidth than standard CAT5E Quadrax-supports up to 4.0 Gbps per pair
- Enhanced crosstalk performance (compared to standard Quadrax)
- Supports wire ranges 26 to 24 gauge
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts
- Operating Temp -65°C to 175°C
- Easy drop-in replacement to installed connectors no need to redesign
- Self removing contact feature - no extra contact extraction tool needed (24 Gauge only)

Part Numbers :

| Contact Style | Part Number | *Cable | AWG |
|---------------|---------------|----------------------|-----|
| Crimp Pin | 21-032904-001 | Thermax: MX10G-24HP | 24 |
| Crimp Socket | 21-032905-001 | Thermax: MX10G-24HP | |
| Crimp Pin | 21-032904-011 | W.L.Gore: RCN8966-24 | |
| Crimp Socket | 21-032905-011 | W.L.Gore: RCN8966-24 | |
| Crimp Pin | 21-032904-021 | PIC E6A3824 | |
| Crimp Socket | 21-032905-021 | PIC E6A3824 | |
| PCB Pin | 21-032906-001 | | |
| PCB Socket | 21-032907-001 | | |

COMPLIMENTARY PRODUCTS:

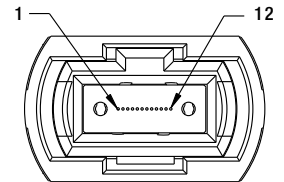
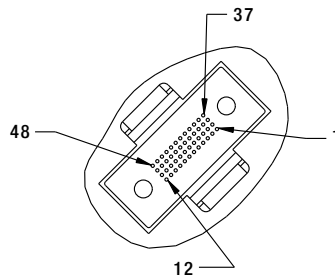
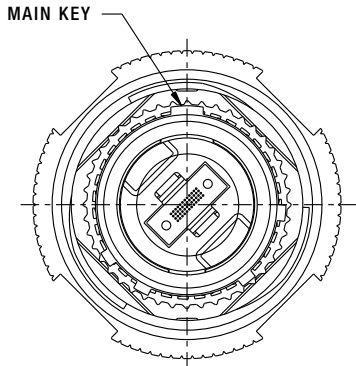
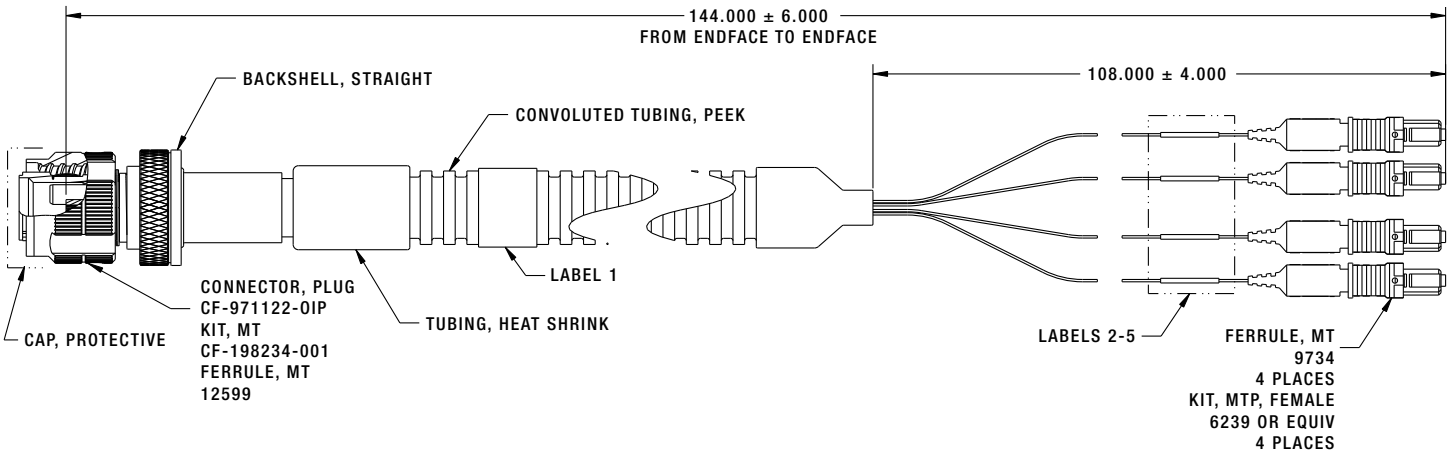
Internal Fiber Cable: CF-020010-016



* Pinout data available in drawings by request

COMPLIMENTARY PRODUCTS:

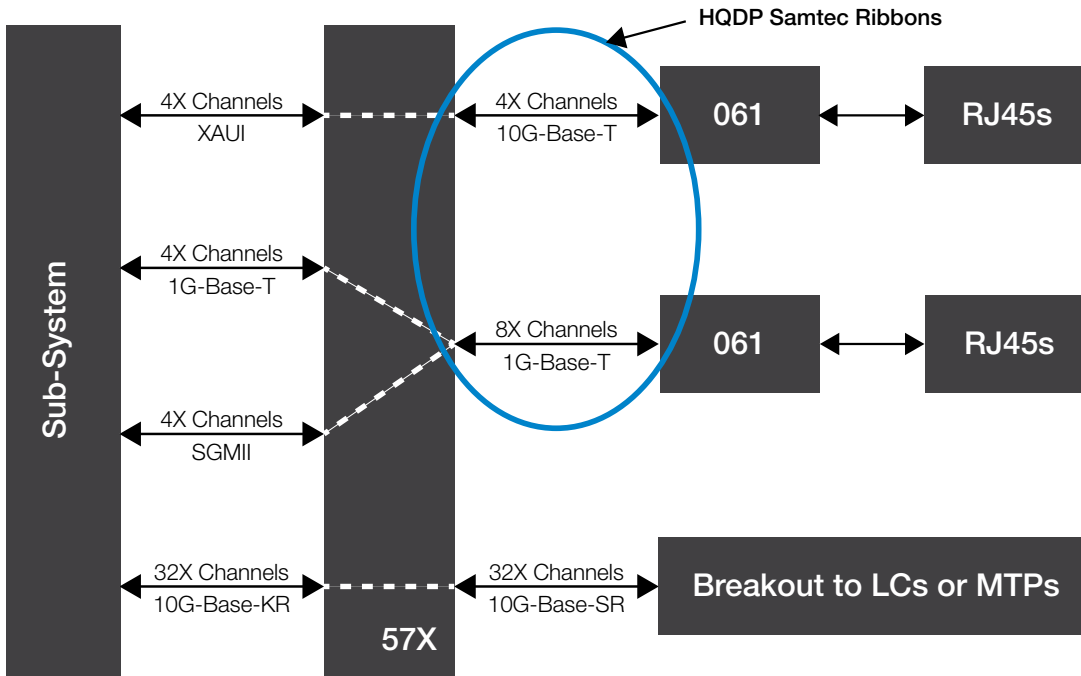
External Fiber Cable: CF-901200-917



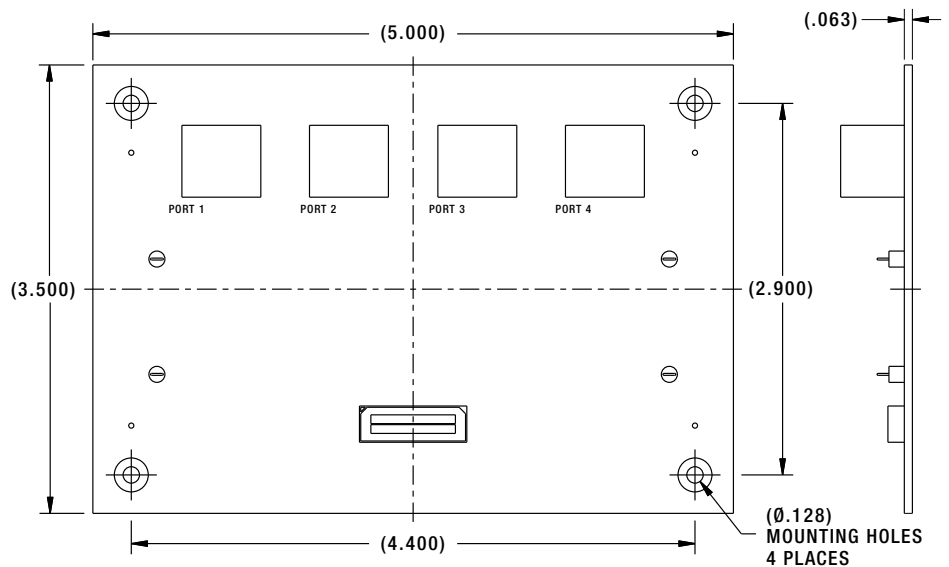
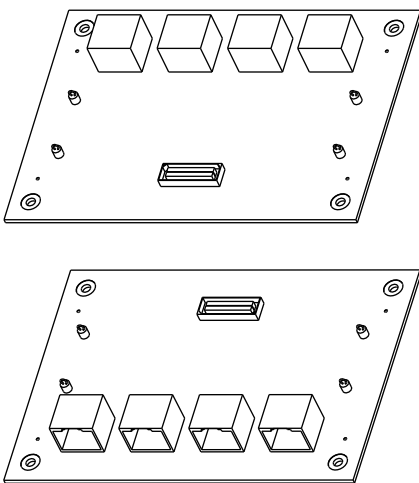
* Pinout data available
in drawings by request

COMPLIMENTARY PRODUCTS:

Test and De-bug RJ45 Adapter :



CF-980062-061 1G-Base-T and 10G-Base-T :



1G-Base-T/ SGMII Conversion Specs:

- Highly integrated four channel 1GBASE-T Ethernet transceiver
- The MDI twisted-pair transceiver consists of four triple-speed 10/100/1000BASE-T Ethernet transceivers
- IEEE 802.3az Compliant (Energy Efficient Ethernet): support for native EEE MACs, support for legacy non-EEE MACs using AutogrEEEn[®] mode
- SyncE, IEEE 1588v2 PTP and ITU-T Y.1731 delay measurement support
- Cable plant diagnostics

10G-Base-T/ XAUI Conversion Specs:

- Highly integrated four channel 10GBASE-T Ethernet transceiver
- Supports multiple speeds: 100BASE-TX , 1000BASE-T, and 10G-Base-T
- XAUI[™], XFI, and SGMII MAC interface options
- Compliant with IEEE 802.3[™], IEEE 802.3an, IEEE 802.3ab, IEEE 802.3u, and IEEE 802.3az standards
- Synchronous Ethernet support
- Line-side XAUI enables dual-media applications
- Cable plant diagnostics
- IEEE standard 1588-2008 (version 2) support

10G-Base-SR4 Fiber Conversion Specs:

- 32 channels (32 transmit, 32 receive) of fiber/copper conversion
- Speeds from 100Mbps to 10.3125Gb ps
- Encoded protocol support for Ethernet, PCI Express, Fiber Channel, and others
- Optical specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Remarks |
|-------------------------------------|------------------|------|------|---------|------|---------|
| Maximum bit rate | BR | | | 10.3125 | GBps | |
| Average Optical Power (per channel) | P _{OUT} | -1.5 | | +3.5 | dBm | 1 |
| Crimp Pin | P _{OFF} | | | -30 | dBm | |
| Crimp Socket | ER | 3 | 4.5 | | dB | |
| Crimp Pin | λ _C | 830 | 850 | 860 | nm | |
| Crimp Socket | λ | | 0.5 | 0.65 | nm | |
| PCB Pin | TJ | | 35 | | ps | |

1. Based on recommended register settings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Remarks |
|---|---------------------|------|------|------|------|---------|
| Optical Power Sensitivity (per channel) | P _{IN MAX} | | | -9.0 | dBm | |
| Optical Power Saturation (per channel) | P _{IN MAX} | +4 | | | dBm | |
| Crimp Pin | λ _C | 830 | | 870 | nm | |

1. Defined as the average optical power necessary to produce a BER of 10⁻¹² at the center of the baud interval using a 10.3125 Gbps PRBS of length 2³¹-1 or equivalent. Input power is provided as an ideal source and all receiver channels are operating.