Octonet Contact with Embedded 1G/10G Base-T Transformers

PDS - 371

DESCRIPTION

Amphenol's Octonet Contact with Embedded 1G/10G Base-T Transformers integrates IEEE 802.3an/af/at/bt compliant transformers directly into the contact, enabling seamless compatibility with size 8 Quadrax-keyed MIL-DTL-38999 cavities. This innovative, space-saving design optimizes board real estate by eliminating the need for onboard transformers and reducing interference from traditional Ethernet magnetics, which can disrupt XMCs, PMCs, and other electronic components. Perfect for 1G, 2.5G, 5G, and 10G Base-T applications, each contact fully meets the isolation, insertion loss, and return loss requirements of IEEE 802.3 standards.

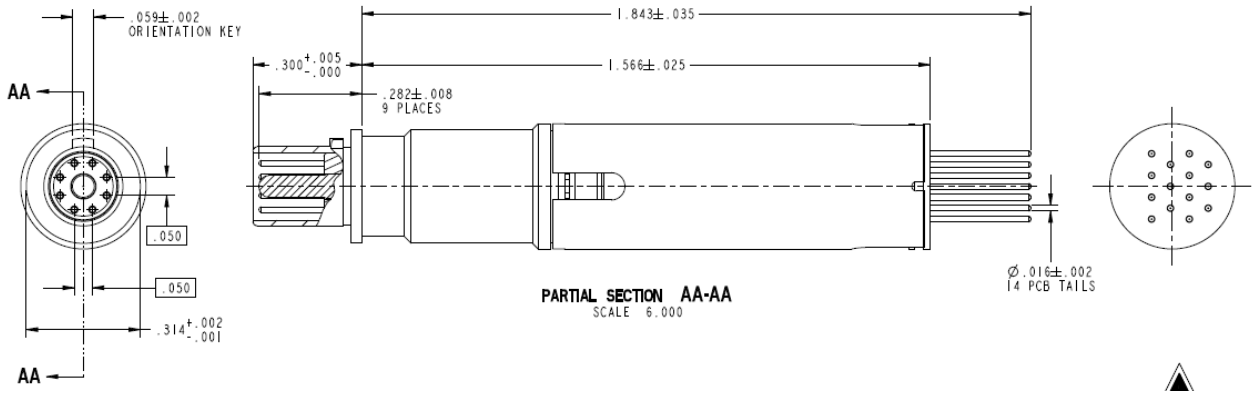
FEATURES & BENEFITS

- **Transformer Integrated into Contact**: Eliminates the need for transformers on circuit boards.
- **Size 8 Contact:** Designed for Quadrax-keyed MIL-DTL-38999 cavities.
- **100 Ohm Impedance:** Ensures optimal signal integrity.
- **4 Differential Pairs Per Contact:** Supports high-performance data transmission.
- **Versatile Receptacle and Plug Designs:** Receptacle side features PC tail with pin or socket options, while the plug side includes a cable crimp with either pin or socket configurations.
- **Up to 1G/2.5G/5G/10G Base-T Applications**
- **Space-Saving:** Embedding transformers within the contact frees up valuable board space.
- **Reduced Interference:** Minimizes disruption from traditional Ethernet magnetics, enhancing performance in systems like XMCs, PMCs, and other electronic components.
- **IEEE 802.3ab Compliance:** Meets isolation, insertion loss, and return loss requirements.
- **UL/EN60950 Certification:** Ensures compliance with industry safety standards.
- **100% Electrical Testing:** Guarantees performance and reliability.
- **1500Vrms Hi-Pot Testing:** Ensures robust dielectric strength.

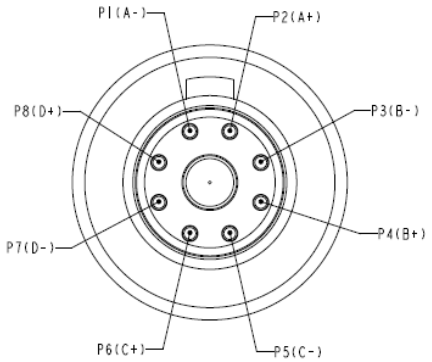
PART NUMBER	DESCRIPTION
21-032906-311	PIN
21-032907-311	SOCKET

Payton Dean • +1 (607) 788 - 0270 • padean@amphenol-aao.com

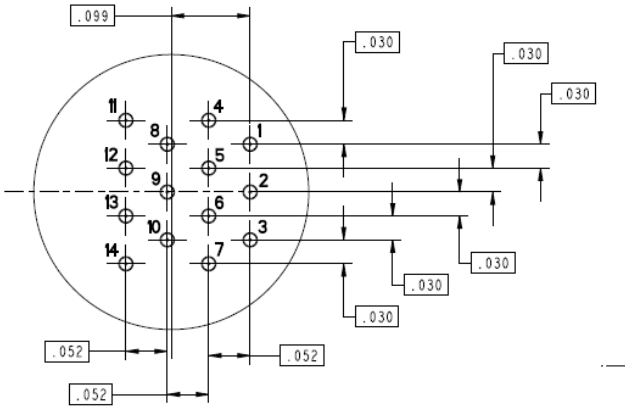
DIMENSIONAL INFORMATION



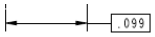
PARTIAL SECTION AA-AA
SCALE 6.000



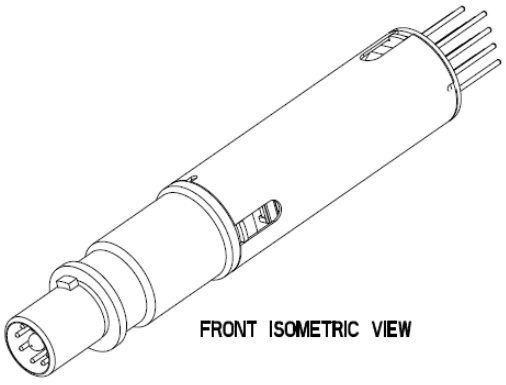
MATING FACE VIEW
SCALE 12.000



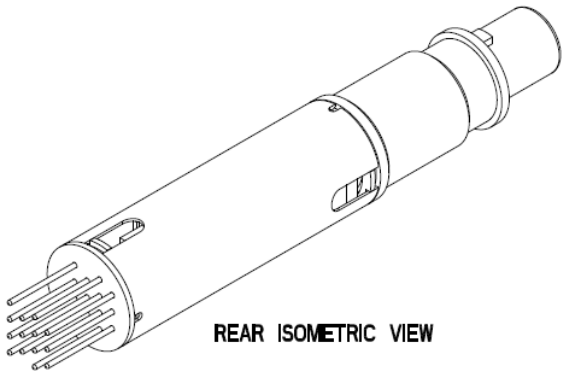
TERMINATION END VIEW
REAR OF ASSEMBLY
(HOLE IDENTIFICATION SHOWN FOR REFERENCE)
SCALE 12.000



TERMINATION END VIEW
(HOLE IDENTIFICATION SHOWN FOR REFERENCE)
SCALE 14.000



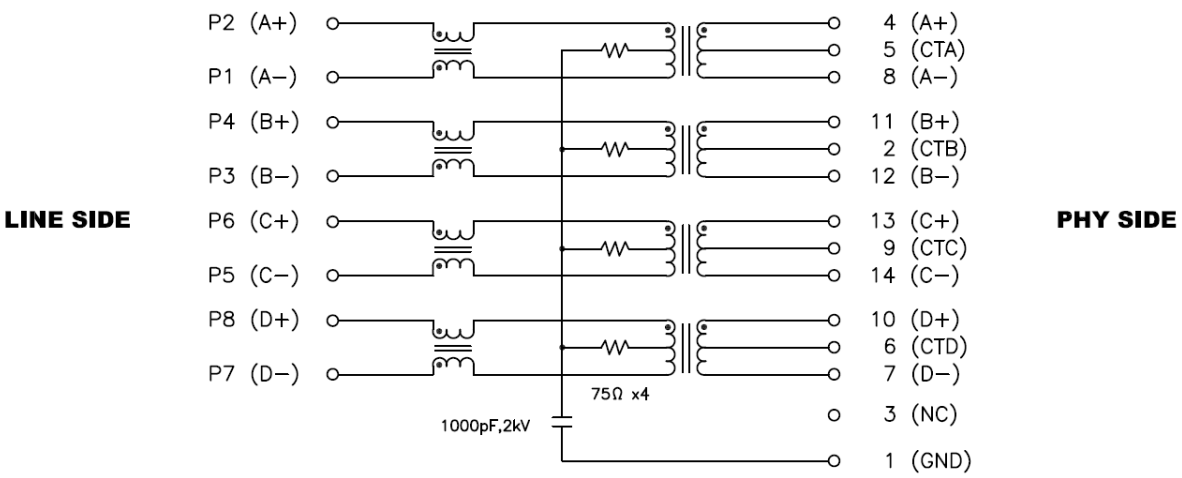
FRONT ISOMETRIC VIEW



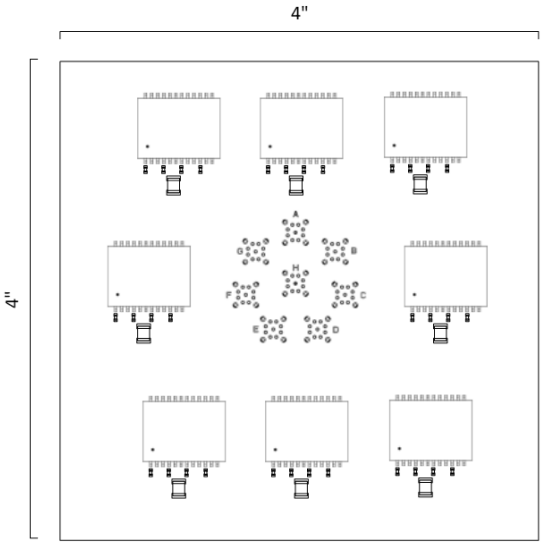
REAR ISOMETRIC VIEW

Payton Dean • +1 (607) 788 - 0270 • padean@amphenol-aao.com

PINOUT CHART



SPACE SAVINGS



- **0.5 x 0.5 X, Y, Z Circuit Board Space Savings per Base-T Connection**
- **Eliminates the Need for Tall PCB Components**

Example:

- 0.5 x 0.5 = 0.25 square inches of board space saved per connection.
- With 8 connections, that's 2 square inches of space saved, freeing up room for additional functionality and enabling simpler frame designs.

Payton Dean • +1 (607) 788 - 0270 • padean@amphenol-aao.com
amphenol-aerospace.com

COMPLIANT CABLES

Pin	Socket	Cable	AWG
21-032904-051	21-032905-051	**Amphenol 10-646360-14R ***	26
21-032904-001	21-032905-001	**Amphenol 10-646325-00R ***	24
21-032904-061	21-032905-061	**Amphenol 10-646360-10R ***	24
21-032904-011	21-032905-011	W.L.Gore: RCN8966-24	24
21-032904-021	21-032905-021	PIC E6A3824, Harbour E10024065, E10024064, E6A6824	24
21-032904-031	21-032905-031	W.L.Gore: GSC-03-84043-01	24
21-032904-041	21-032905-041	Axon P542810	24
21-032904-071	21-032905-071	W.L.Gore: RCN9047-26, RCN8966-26	26
21-032904-081	21-032905-081	TE C6A-26C444XB2MA	26

***Preferred Amphenol Cable Solution**

Amphenol Ruggedization Design

OVERVIEW:

Amphenol integrated electronic products are designed and manufactured to our Ruggedization guidelines listed below. These guidelines ensure years of reliable operation in harsh environment applications where extreme operating temperatures, shock, vibration, and corrosive atmospheres are regularly experienced. Unless otherwise noted, the parts conform to the below specifications

TEMPERATURE:

- Operating Temperature- Thermal Cycles between -40°C and 85°C while device is operating
- Temperature is measured at chassis housing or card edge
- Storage Temperature- Thermal Cycles between -55°C and 125°C

HUMIDITY:

- Operating Humidity- Humidity cycle between 0-100% non-condensing humidity while device operating
- Storage Humidity- Humidity cycle between 0-100% condensing humidity

SEALING:

- Sealing can be optionally provided at the MIL-DTL-38999 interface with up to 10-5 cc/sec performance

SHOCK AND VIBRATION:

- Sine Vibration - 10g Peak, 5-2,000Hz
  - Based on a sine sweep duration of 10 minutes per axis in each of three mutually perpendicular axes. May be displacement limited from 5 to 44 Hz, depending on specific test.
- Random Vibration - 0.0005 @ 5Hz, 0.1 @ 15 Hz, 0.1 @ 2,000 Hz
  - 60 minutes per axis, in each of three mutually perpendicular axes.
- 40 G Peak Shock Cycle
  - Three hits in each axis, both directions, ½ sine and terminal-peak saw tooth, Total 36 hits.

FLUIDS SUSEPTABILITY:

- MIL-DTL-38999 receptacle interface per EIA-364-10E

ALTITUDE:

- -1,500 to 60,000 ft Altitude Testing w/ Rapid Depressurization

ELECTRONMAGNETIC COMPATIBILITY:

- Designed to comply with MIL-STD-461E

PRINTED CIRCUIT BOARD ASSEMBLIES:

- Conformal Coat
- Amphenol performs Conformal Coting to both sides of printed circuit board assemblies using HUSMISEAL IB31 in accordance with IPC-610, Class 3.
- Printed Circuit Board Rigidity
- Amphenol printed circuit boards are fabricated in accordance with IPC-6012, Class 3.
- Printed Circuit Board Fabrication
- Amphenol printed circuit boards acceptance criteria is in accordance with IPC-610, Class 3.

RELIABILITY PREDICTIONS (MTBF):

Amphenol can perform Mean Time Between Failure (MTBF) reliability analysis in full compliance with MIL-HDBK-217F-1 Parts Count Prediction and MIL- HDBK-217F-1 Parts Stress Analysis Prediction. We can also perform reliability analyses in full compliance of ANSI/VITA 51.1 if it is required or preferred over the later method

Amphenol
MILITARY HIGH SPEED

40-60 Delaware Avenue
Sidney, NY 13838
amphenol-aerospace.com | amphenolmao.com