Amphenol
Industrial

HS Amphe-Lite Series
Industrial High Speed Amphe-Lite

Commercial D38999 High Speed Diversity
Speeding Industrial Revolution

Established in 2007, Amphenol Technology (Zhuhai) Co., Ltd. is a manufacturing facility for Amphenol Industrial Operations, which serves a number of industrial markets, included but not limited to Factory Automation, Transportation, Heavy Equipment, Alternative Energy, Oil & Gas, Server/Data Comm and Power Distribution.

Amphenol Technology (Zhuhai) Co., Ltd. covers an area of 306,449 square feet (28,470m^2) and is equipped with CNCs, plating, injection molding and assembly workshops. This plant specializes in the design and manufacturing of industrial connectors featuring high power, high density inserts, medium to high voltage electrical properties, and harsh environment applications. Many of the products produced here have been certified by independent standards including UL, IEC/TUV, ATEX, IECEx and MA. The facility is also certified to ISO 9001, ISO 14001 and TS16949.

Table of Contents

Markets and Applications

RMT

Intelligent Equipment

Heavy-duty Off-Road Vehicles

Industrial Datalink

Datalink Solutions for the Industrial Environment

- MWB-WTB Signal

- High-Speed Ethernet

- Cockpit (Display + Communications)

- Datalink in vibration and harsh environment

Protocols

- 10/100/1000/10GBASE-T Ethernet

- DVI

- USB 2.0, 3.0

- Serial Rapid IO (up to 3.125Gbps)

- PCI-Express 2.0

- HDMI1.3a

Features and Benefits

Function	Performance	Adoptabililty	Handling
• Anti-vibration and shock • Scoop proof and robust design • EMI shielding	• High bandwidth for high speed protocol • Meet MIL-D38999 criterion	• High density (up to 99 contacts) • Hybrid signal and power • Drop in design for #8 cavity • Crimp and PC tail versions available	• Rear release contacts • Front and rear mount

Differential Quadrax Contacts

Description

High data transfer rates, low power consumption, excellent EMI compatibility.

Main Features

- Two 100 Ohm matched impedance differential pairs.
- The outer contact has a rugged wall section for durability.
- Available in size 8 crimp termination or PC tails.
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts.

Size 8 Quadrax Performance

- Bandwidth: Up to 1.25GHz
- Data Rate: Exceeding 2.5Gbps
- Voltage Rating: 500 Vrms max.@sea level
- Dielectric Withstanding Voltage: 1000 VAC rms between all inner contacts @sea level, 500 VAC rms between inner and outer contacts @sea level

ORIENTATION KEY

PIN CONTACT MATING FACE

SOCKET CONTACT MATING FACE

Quadrax Specifications
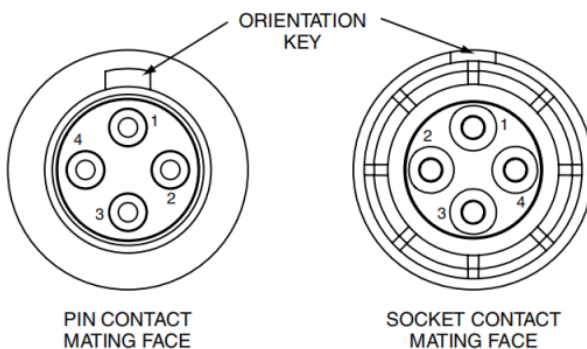
Mechanical

- Durability: Minimum 500 cycles

- Shock: EN2591-402 method A

- Vibration (MIL-DTL-38999) : EN2591-40

- Method A : Sinusoidal
- Method B (figure 3 and table 2, level J) : Random

Environmental

- Salt Spray: 48 hours minimum
- Temperature Range: -55°C to +125°C

Material

- Inner Contact: Copper Alloy
- Body: Copper Alloy
- Insulator: Thermoplastic
- Contact Plating: Gold Over Nickel Plated
- Contact Resistance - Signal Contacts (Low Level): Initial 6mΩ, after testing 7,5mΩ
- Consult Amphenol Industrial Operations for resistance changes under current and temperature
- For Signal Integrity, consult Amphenol Industrial Operations

Split Pair Quadrax Contacts

Description

For use with CAT 5E or CAT 6A type cable.

Main Features

- Two 100 Ohm matched impedance differential pairs.
- The outer contact has a rugged wall section for durability.
- Available in size 8 crimp termination or PC tails.
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts.

Size 8 Split Pair Quadrax Performance

- Supports up to 6.5 Gbps per pair
- Enhanced crosstalk performance (compared to standard quadrax)
- Can be used for a variety of high speed applications beyond current quadrax design

Applications

- 10/100/1000/10GBASE-T Ethernet   •   DVI   •   USB 2.0, 3.0   •   HDMI 1.3a

- Serial Rapid IO (up to 3.125 Gbps)   •   PCI-Express 2.0   •   SATA 2.0 (up to 3 GHz)

PIN CONTACT MATING FACE

SOCKET CONTACT MATING FACE
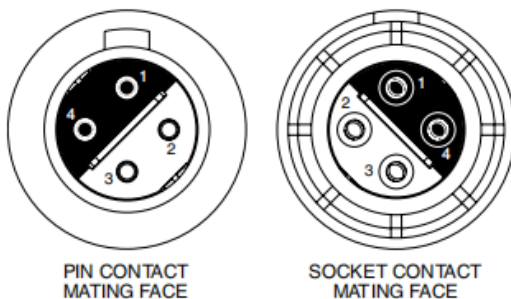
Insert Arrangement Overview

Insert Pattern	Service Rating	Total Contacts	22D	20	16	12	12 SZ Coax	8 SZ Quadrax
17-2●	M	39	38					1
17-22★	Coax	4					2	2
19-31	M	15	12			1		2
21-75★●	M	4						4
23-6★	M	6						6
25-7●	NA	99	97					2
25-8★	NA	8						8
25-17	M	42	36					6
25-20	N	31		10	13		4	3
25-26	I	25		16		5		4
25-46●	I	46		40	4			2

★ Indicates ground plane option avaliable

● Indicates split pair Quadrax avaliable

Notice:
1. Any size 8 can be replaced by Twinax or Quadrax.

Insert Arrangment	17-2		17-22		19-31			21-75	23-6	25-7	
Service Rating	M		Coax		M			M	M	NA	
Number of Contacts	38	1	2	2	2	1	12	4	6	97	2
Contact Size	22D	8	12 Coax	8	8	12	22D	8	8	22D	8

Notice:
1. Any size 8 can be replaced by Twinax or Quadrax.

Insert Arrangment	25-8	25-17		25-20				25-26			25-46		
Service Rating	NA	M		N				I			M		
Number of Contacts	8	36	6	10	13	3	4	16	5	4	40	4	2
Contact Size	8	22D	8	20	16	8	12 Coax	20	12	8	20	16	8

Service Rating

Service Rating	Suggested Operating Voltage (Sea Level)		Test Voltage (Sea Level)
	AC(RMS)	DC	
M	400	550	1300 VRMS
N	300	450	1000 VRMS
I	600	850	1800 VRMS
II	900	1250	2300 VRMS

Contact Size	Crimp Well Data	
	Well Diameter	Norminal Well Depth
22D	.0345±.0010	.141
20	.047±.001	.209
16	.067±.001	.209
12	.100±.002	.209
10 (Power)	.137±.002	.355

Contact Rating

Contact Size	Test Current		Maximum Millivolt Drop Crimp*
	Crimp	Hermetic	
22D	5	3	73
20	7.5	5	55
16	13	10	49
12	23	17	42
10 (Power)	33	NA	33

Quadrax Contacts Ordering Guide

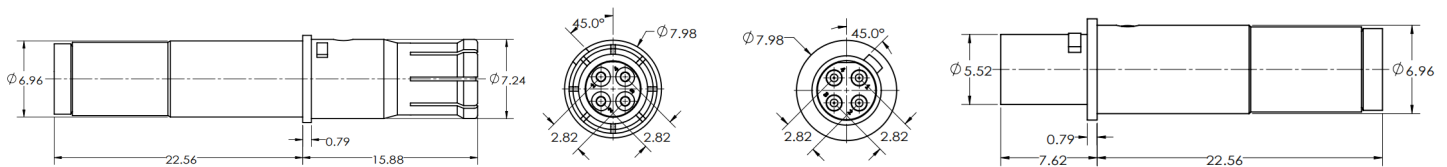| Impedance (Ohms)	Inner Conductor (AWG)	Electrical Protocol†† Cable	PN	Pin or Socket	Cable OD	Termination Instruction Sheet
100Ω	24	1000 Base-T Gigabit Ethernet	ALQC-AA8-PB	Pin	.170~.206 inch	L-2119-D
			ALQC-AA8-SB	Socket	.170~.206 inch	
			ALQC-AA8-PA	Pin	.124~.165 inch	
			ALQC-AA8-SA	Socket	.124~.165 inch	

Quadrax Contacts Dimensions
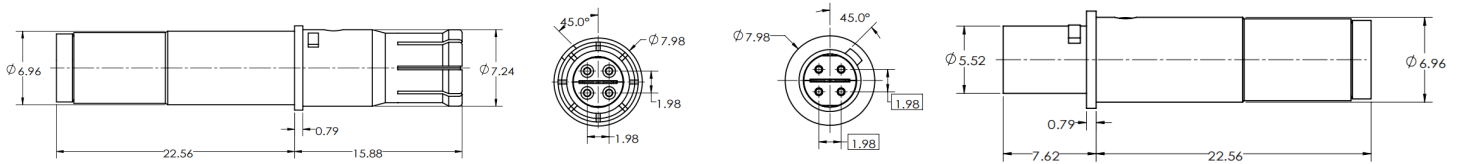
Quadrax Socket

Quadrax Pin

Split Pair Quadrax Socket

Split Pair Quadrax Pin

Amphe-Lite Shell Ordering Guide

Amphe-Lite **AL** **00** **F** **Q** **17** **- 2** **P** **N** **(072)** (**LQ**)

Connector Type

"AL"- Composite Shell

"ALM"- Metal Shell

Shell Style

00, 06, 07

Service Classes

"F" - Plated, oil resistant

'U" - Unplated, oil resistant

Contact Style

"Q" - Quadrax

"T" - Twinax

"F" - Fiber

Shell Size

17, 19, 21, 23, 25

LQ - Less Quadrax Contact

(Contacts except Quadrax are still presented)

Shell Plating

"Omit" - Nickel

"072" - Gray ZnNi (for metal shell)

"946" - Black Zinc Nickel
 (for metal shell)

Insert Rotation - N (Omit)

A B C D E

Contacts Type

"P" - Pin

"S" - Socket

"C" - Pin PC tail

"D" - Socket PC tail

Insert Arrangement

See page 9

Amphenol

IB-12-1

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Amphenol](#):

  [ALQC-AA8-PA](#) [ALQC-AA8-PB](#) [ALQC-AA8-SA](#) [ALQC-AA8-SB](#)