

MSPE Series Single Pair Ethernet

Product Specification S6140C Rev 1.4

Amphenol



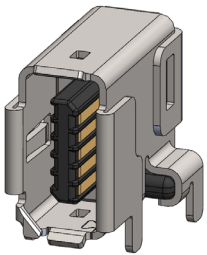
Now you're connected!

About Amphenol Commercial Products

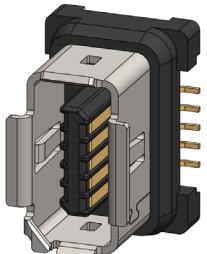
Amphenol's commercial connector products are used in a variety of end user applications including networking, telecom, server & computer, storage & HDD, consumer electronics and entertainment, professional audio & Industrial & Military/Aerospace.

Related Products

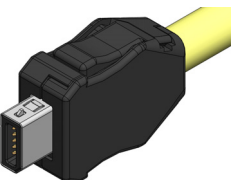
ND9 Series



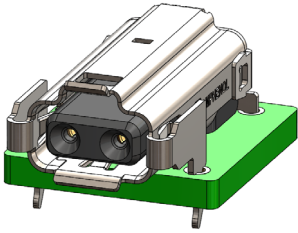
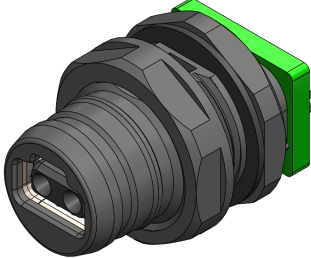

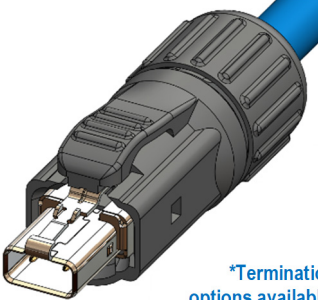

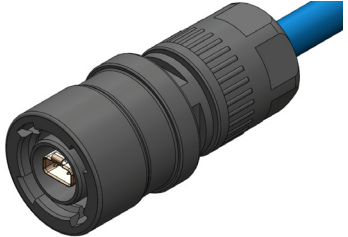
ND9-AS1X-00
CAT6A Receptacle,
10 Position, Right Angle
SMT Termination



ND9-AS2X-00
CAT6A Receptacle,
10 Position, Vertical
SMT Termination



ND9-ACBX-XX
Industrial Ethernet Cable,
Type-A Plug to Plug,
Various Lengths Available

	IP20 Configurations		IP67 Configurations	
	Latch-Locking	Snap-In Locking ¹	Push-Pull Locking ¹	
Jack (Fixed) Connectors	 <p>Right Angle PCB Mount Shown *Different termination options available.</p>	 <p>Vertical PCB Mount Shown *Different termination options available.</p>	 <p>Solder Cup Termination Shown *Different termination options available.</p>	
Plug (Free) Connectors	 <p>*Termination options available.</p>	 <p>*Termination options available.</p>	 <p>*Termination options available.</p>	

¹Under development.

Overview

This product specification defines the general use and performance parameters for Amphenol's MSPE Series of Single Pair Ethernet (SPE) connectors.

Availability:

- Coupling Style: Latch-locking, snap-in locking, or push-pull locking
- Ingress Protection Rating: IP20 (for latch locking) or IP67 (for snap-in & push-pull locking)
- Jack Termination: Right-angle PCB termination, vertical PCB termination, or solder cup termination
- Plug Termination: Field terminable kits (solder pad & IDC termination available) & pre-terminated cable assemblies of various lengths & cable types

Please contact an Amphenol representative with any questions about availability.

Usage

MSPE Series connectors are designed in accordance with IEC 63171-6, which defines a standard interface for SPE, to ensure interoperability & investment security. SPE offers reduced cost, weight, & space compared to traditional 2 & 4-pair Ethernet options. Fully shielded, and with an ingress protection rating of IP20 for latch-locking styles or IP67 for all other styles (per IEC 60529), this series is suitable for any environment where Ethernet/IP protocol is used. MSPE Series connectors are compatible with 10Base-T1 (per IEEE 802.3cg), 100Base-T1 (per IEEE 802.3bw), and 1000Base-T1 (per IEEE 802.3bp) Ethernet. MSPE Series connectors are also compatible with Power over Data Lines (PoDL) per IEEE-802.3bu, providing up to 50W of optional power.

Applications

Intended for use in a broad range of applications such as:

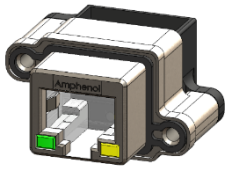
- Industrial Internet of Things (IIoT)
- Machine to Machine (M2M)
- Building Automation
- Industrial
- Agriculture
- Transportation
- Healthcare / Medical Equipment
- Sensors, Actuators, & Network Nodes
- Military Vehicles, Radios, Computers
- Test Equipment
- Mobile Communication Systems
- Traffic Control & Monitoring Systems

Now you're connected!

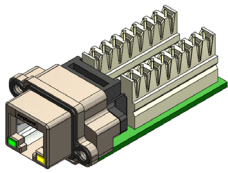
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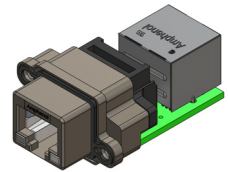
MRJR Series



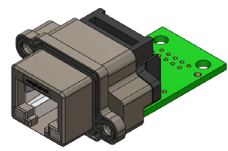
MRJR-9381-0C
CAT6A RJ45, Right Angle PCB Tail, 8 Position, LED's



MRJR-8F81-01
CAT5e RJ45 on PCB with Krone-Style IDC Contacts



MRJR-8780-01
CAT5e RJ45 on PCB with Matching RJ45



MRJR-5C80-01
Standard RJ45 on PCB For Discrete Wiring

Connector Electrical Characteristics

Current Rating: (per IEC 60512-5-2, Test 5b)	4A up to 26 AWG 3A up to 28 AWG
Voltage Rating:	60VDC max
Contact Resistance:	20mΩ max (per IEC 60512-2-1, Test 2a, Method A)
Shielding Resistance:	100mΩ max (per IEC 60512-2-1, Test 2a, Method A)
Insulation Resistance:	500MΩ min @ 500 VDC (per IEC 60512-3-1, Test 3a, Method A)
Dielectric Withstanding Voltage: (per IEC 60512-4-1, Test 4a, Method A)	1000VDC contact-to-contact 2250VDC contact-to-shield

Connector Mechanical Characteristics

Insertion / Withdrawal Force: (per IEC 60512-13-2, Test 13b)	Latch-Locking: 20N max All Other Styles: 50N max
Pull-Out Force: (per IEC 60512-15-6, Test 15f)	Latch Locking: 50N min Snap-In Locking: 30N min Push-Pull Locking: 100N min
Thermal Shock:	10 cycles between -40°C and +85°C (per IEC 60512-11-4, Test 11d)
Humidity:	Low temperature +25°C, high temperature +65°C, cold sub-cycle -10°C, 93% humidity, 10 x 24hr cycles (per IEC 60068-2-38, Test Z/AD)
Mechanical Shock:	300m/s ² , half-sine shock pulses, 11ms (per IEC 60512-6-3, Test 6c)
Vibration, Sinusoidal:	10Hz – 500Hz, 0.35mm, 50m/s ² (per IEC 60512-6-4, Test 6d)
Mating Cycles ¹ :	1000 cycles min, MPL1000 (per IEC 60512-9-1, Test 9a)
Operating Temperature ² :	-40°C to +85°C
Ingress Protection Rating:	Latch Locking: IP20 (per IEC 60529) All Other Styles: IP67 (per IEC 60529)

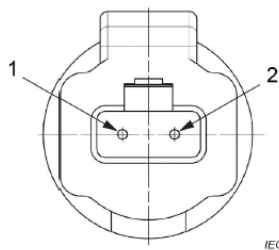
¹The number of mating cycles may vary for the IP67 configurations. Please consult Amphenol with any questions.

²The operating temperature may vary based on the wire / cable type used. Please consult Amphenol with any questions.

Signal Characteristics

Data Rate:	10 Mb/s up to 1km, per IEEE 802.3cg 100 Mb/s up to 15m, per IEEE 802.3bw 1000 Mb/s up to 40m, per IEEE 802.3bp
Bandwidth:	Up to 600 MHz

Pin Assignment



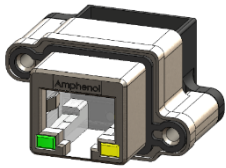
Pin No.	Signal
1	BI_DA+
2	BI_DA-

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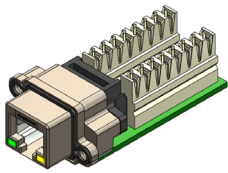
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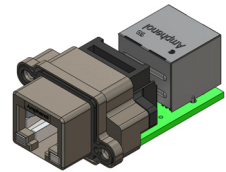
MRJR Series



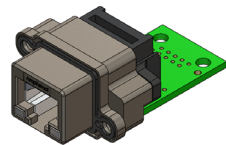
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MRJR-5C80-01
Standard RJ45 on PCB For Discrete Wiring

Material Characteristics

MSPE Series connectors are RoHS compliant per EU directive 2011/65/EU and amendments. Unless otherwise specified, the materials shall be:

- Contacts: Copper alloy plated with 1.27µm (50µ") min Nickel overall and 0.76µm (30µ") min Gold in the mating area
- Housings / Insulators: High temperature thermoplastic, UL94V-0 flammability rating
- EMI Shields: Stainless steel, matte Tin or Nickel plated
- Gaskets, Grommets & O-Rings: Silicone rubber
- Refer to drawing for more detailed information

Specifications

■ IEC 63171-6	N/A	Connector specification (formerly IEC 61076-3-125)
■ IEEE 802.3cg	10BASE-T1	Speeds up to 10Mb/s over distances up to 1km
■ IEEE 802.3bw	100BASE-T1	Speeds up to 100Mb/s over distances up to 15m
■ IEEE 802.3bp	1000BASE-T1	Speeds up to 1Gb/s over distances up to 40m
■ IEEE 802.3bu	PoDL	Power over Data Lines, up to 50W



Amphenol ICC is a member of the SPE Industrial Partner Network, in support of IEC 63171-6 as a uniform Media Dependent Interface (MDI) as defined by the ISO/IEC JTC 1/SC 25/WG 3 and TIA42 in 2018.

Reference Documents

■ P-MSPE-J2L0-B00	IP20 Jack, Latch-Locking, Right Angle PCB Mount (with Board-Lock)
■ P-MSPE-J2L0-B01	IP20 Jack, Latch-Locking, Right Angle PCB Mount (Pin-in-Paste)
■ P-MSPE-J2L0-E00	IP20 Jack, Latch-Locking, Vertical PCB Mount (with Board-Lock)
■ P-MSPE-P2L0-XX0XX	IP20 Plug, Latch-Locking, Termination Options
■ P-MSPE-C2L0-BXX10	IP20 Plug-Plug Cable Assembly, Latch-Locking, Various Lengths
■ P-MSPE-J6S8-B00	IP67 Jack, Snap-Locking, Right Angle PCB Mount (with Board-Lock)
■ P-MSPE-J6S8-E00	IP67 Jack, Snap-Locking, Vertical PCB Mount (with Board-Lock)
■ P-MSPE-P6S8-XX0XX	IP67 Plug, Snap-Locking, Termination Options