Single Pair Ethernet (SPE) IP20 Connectors and Cable Assemblies

NEXT GENERATION IEC 63171–6 COMPLIANT INDUSTRIAL ETHERNET CONNECTORS AND CABLE ASSEMBLIES

Single Pair Ethernet (SPE) connectors for Industrial applications bring direct Ethernet connectivity to peripheral devices like sensors, actuators, and vision system cameras that operate at speeds up to 1Gb/s. SPE eliminates slow, expensive and complex fieldbus protocols and connections by simplifying and standardizing existing and new industrial network systems.

Robust right angle and vertical PCB mount SPE receptacles mate to field terminable plugs, providing a complete shielded interface with metal latching features. Current handling up to 4A supports PoDL (Power over Data Link) capability up to 1km.

TARGET MARKETS

- Fully compatible with IEC 63171–6 interconnects from other authorized vendors ensuring future compatibility and investment security
- Single pair cable reduces cost, weight and space requirements compared to 2 and 4 pair cabling
- Mechanically robust and secure latching with 360° shielding for excellent performance in harsh environments
- Field terminable IDC plugs provide installation flexibility
- SPE eliminates the need for costly protocol conversion gateways

FEATURES	BENEFITS
• Two way 600MHz data transmission	• Supports Ethernet protocols of 1Gb/s up to 40m, and 10Mb/s up to 1km
• 2 contacts and 2 wire cable for single pair ethernet	• Minimizes connector and cabling cost, increases cabling density and ease of installation
• 4A current rating	• Supports PoDL, up to 1km cable lengths with no signal degradation
• PCB mount receptacle shields have robust integrated solder tails with available board–locks	• Suitable for Pin–in–Paste assembly and prevents damage from mechanical stresses
• Mated pair maintains 360° shielding for the signal contacts	• Provides excellent EMI immunity
• Positive latching with robust thumb–actuated metal latch	• Prevents accidental unmating
• IDC (Insulation Displacement) termination plugs	• Easier field installation and service

TECHNICAL INFORMATION

MATERIAL

- Housings: High temperature thermoplastic, UL94V-0 flammability rating, Black

- Contacts: Copper alloy, plated with 50µin Ni overall and 30µin Gold in mating area

- EMI Shields: Stainless steel, matte tin or nickel plated

- Gaskets, Grommets & O-Rings: Silicone rubber

MECHANICAL PERFORMANCE

- Insertion/Withdrawal Force (Mating/Unmating): 20N (4.5 lbs-force) max. (per IEC 60512-13-2, Test 13b)

- Pull-Out Force (Forceful Disengagement): 50N (11.2 lbs-force) min. (per IEC 60512-15-6, Test 15f)

- Durability: 1000 mating cycles, MPL1000 (per IEC 60512-9-1, Test 9a)

- Mechanical Shock: 300m/s^2, half-sine 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)

ELECTRICAL PERFORMANCE

- Current Rating: 4A (per IEC 60512, Test 5b)

- 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. @ 500VDC test voltage (per IEC 60512-3-1, Test 3a, Method A)

- Dielectric Withstanding Voltage: 1000VDC contact-to-contact and 2250VDC contact-to-shield (per IEC60512-4-1, Test 4a, Method A)

PACKAGING

- Tray & Bulk pack (receptacle connectors, plug connector components)

- Tape & Reel (right angle Pin-in-Paste receptacle connectors)

- Single Kit (plug connector components)

- Carton (cable assemblies)

SIGNAL CHARACTERISTICS

- Data Rate:
  - 10 Mb/s per IEEE 802.3cg
  - 100 Mb/s per IEEE 802.3bw
  - 1000 Mb/s per IEEE 802.3bp

- Bandwidth: Up to 600 MHz

SPECIFICATION

- Amphenol Product Specification: S6140C

- IEC 63171-6

- IEEE 802.3cg (10BASE-T1)

- IEEE 802.3bw (100BASE-T1)

- IEEE 802.3bp (1000BASE-T1)

- IEEE 802.3bu (PoDL)

ENVIRONMENTAL

- Operating Temperature Range: –40°C to +85°C

- 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)

APPROVALS AND CERTIFICATIONS

- RoHS per EU directive 2011/65/EU and amendments

- UL pending

TARGET MARKETS/APPLICATIONS

Industrial Internet of Things (IIoT)
Factory/Process Automation – Machine to Machine, Sensors, Actuators, Nodes, I/O Modules
Robotics
Building Automation – Environmental, Lighting Control, Sensors

Data

Traffic Control
Monitoring Systems

Healthcare
Medical Equipment

PART NUMBERS

Description	Part Numbers
SPE IP20 Plug, Latch Locking, 28 to 18 AWG Solder Pads	MSPE-P2L0-2X0YY
SPE IP20 Plug, Latch Locking, 26/7 to 24/7 AWG IDC	MSPE-P2L0-4X0YY
SPE IP20 Plug, Latch Locking, 28/7 to 26/7 AWG IDC	MSPE-P2L0-8X0YY
SPE IP20 Receptacle, Latch Locking, Right Angle PCB Pin-in-Paste Tails	MSPE-J2L0-B01
SPE IP20 Receptacle, Latch Locking, Right Angle PCB Board-lock Tails	MSPE-J2L0-B00
SPE IP20 Receptacle, Latch Locking, Vertical PCB Board-lock Tails	MSPE-J2L0-E00
SPE IP20 Plug-Plug Cable Assembly, Latch Locking, various lengths	MSPE-C2L0-BXX10

Find part number details using the search box on www.amphenol-cs.com

YY	Packaging Description
No Digits	Standard Packaging
SK	Single Kit Packaging

X	Cable O/D Range (mm)	Qty Grommets Included
3	3.5 to 4.4	1
6	4.5 to 5.4	1
7	5.5 to 6.4	0
A	3.5 to 6.4	2

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