

# Single Pair Ethernet IP67 Circular Push-Pull Connectors and Cables

## NEXT GENERATION IEC63171-6 (M12 PUSH-PULL FORM FACTOR) COMPLIANT SEALED INDUSTRIAL ETHERNET CONNECTORS

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.

Amphenol's IP67 rated SPE connectors have a circular M12 size form factor with push-pull positive latching. Robust panel-mount receptacles are available with right angle and vertical PCB tails or solder cups for discrete wire termination. When mated with the field terminable plugs, a completely sealed, shielded interface is provided, rated up to 4A supporting PoDL (Power over Data Link) up to 1km when using 18AWG single pair cable.

- 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
- IP67 sealing provides protection from water ingress including full immersion in mated conditions
- High strength plastic plug housing and coupling mechanism reduces weight and cost

### FEATURES

- Two-way 600MHz data transmission
- 2 contacts and 2 wire cable for single pair ethernet
- 4A current rating
- Panel mount receptacles include gasket and mounting nut
- 360° interior shielding through the mated connectors
- Thermoplastic plug connector housings
- Zinc diecast panel receptacle housing
- Positive latching with circular push-pull coupling ring
- IDC (Insulation Displacement) termination plugs



### TARGET MARKETS



### BENEFITS

- Two-way 600MHz data transmission & supports ethernet protocols of 1Gb/s up to 40m, and 10Mb/s up to 1km
- Minimizes connector and cabling cost, increases cabling density and ease of installation
- Supports PoDL, up to 1km cable lengths with no signal degradation upto rated data transmission
- Provides IP67 sealing to mounting panel
- Fully shields signal pair providing excellent EMI immunity
- Strong, lightweight assembly reduces cost of cables
- High strength and durability with reduced cost
- Prevents accidental unmating
- 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): 50N (4.5 lbs force) max. (per IEC 60512-13-2, Test 13b)
- Pull-Out Force (Forceful Disengagement): 100N (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<sup>2</sup>, half-sine pulses, 11ms (per IEC 60512-6-3, Test 6c)
- Vibration, Sinusoidal: 10Hz-500Hz, 0.35mm, 50m/s<sup>2</sup> (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)
- Ingress Protection Rating – IP67 in mated condition

#### 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)

#### SPECIFICATIONS

- Amphenol Product Specification: S6140C
- IEC 63171-6
- IEC 61076-2 (for push pull)
- 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



Traffic Control  
Monitoring Systems



Data



Industrial Internet of Things  
Factory/Process Automation  
Machine to Machine  
Sensors, Actuators & Network Nodes  
Robotics  
Test Equipment  
Building Automation – Environmental, Lighting



Healthcare  
Medical Equipment

## Single Pair Ethernet IP67 Circular Push-Pull Connectors and Cables

### PART NUMBERS

Description	Part Numbers
SPE IP67 Receptacle, Push Pull Lock, PCB Right Angle Termination	MSPE-J6P2-BXX
SPE IP67 Receptacle, Push Pull Lock, PCB Vertical Termination	MSPE-J6P2-EXX
SPE IP67 Receptacle, Push Pull Lock, Solder Cup Termination, Without Functional Boardlock	MSPE-J6P2-M02
SPE IP67 Plug, Push Pull Lock, Solder Pad, 28 to 18 AWG	MSPE-P6P2-2YY
SPE IP67 Plug, Push Pull Lock, IDC, 26/7 to 25/7 AWG	MSPE-P6P2-4YY
SPE IP67 Plug, Push Pull Lock, IDC, 28/7 to 26/7 AWG	MSPE-P6P2-8YY
SPE IP67 Cable Assembly, IP67 Plug on one end and Pigtail on other end	MSPE-C6P2-AZZ10
SPE IP67 Cable Assembly, IP67 Plug on both ends	MSPE-C6P2-BZZ10

XX	Type
00	With Board Lock
02	Without Board Lock

YY	Type
30	3.5 [.138] TO 4.4 [.173] Cable Jacket Dia. (1 Grommet Supplied)
60	4.5 [.177] TO 5.4 [.213] Cable Jacket Dia. (1 Grommet Supplied)
70	5.5 [.216] TO 6.4 [.252] Cable Jacket Dia. (1 Grommet Supplied)
A0	3.5 [.138] TO 6.4 [.252] Cable Jacket Dia. (Three Grommets Supplied)

ZZ – Cable Length
Z0 to Z9 – Cable length in cm (e.g. Z0 = 0.5m)
A0 to A9 – Cable length 1 meter + 0 to 9 decimeters (e.g. A3=1.3m)
B0 to B9 – Cable length 2 meters + 0 to 9 decimeters
C0 to C9 – Cable length 3 meters + 0 to 9 decimeters
D0 to D9 – Cable length 4 meters + 0 to 9 decimeters
E0 to E9 – Cable length 5 meters + 0 to 9 decimeters
F0 to F9 – Cable length 6 meters + 0 to 9 decimeters
G0 to G9 – Cable length 7 meters + 0 to 9 decimeters
H0 to H9 – Cable length 8 meters + 0 to 9 decimeters
J0 to J9 – Cable length 9 meters + 0 to 9 decimeters
K0 to K9 – Cable length 10 meters + 0 to 9 meters (e.g. K5=15m)
L0 to L9 – Cable length 20 meters + 0 to 9 meters
M0 to M9 – Cable length 30 meters + 0 to 9 decimeters (e.g. M7=100m)

CM10SPEIP670923EA4