

INTERCONNECT SOLUTIONS FOR RUGGEDIZED COMMUNICATIONS



GPS Antenna

Gooseneck Adapter

TNC Waterproof Cable Assembly

Communication radios often carry critical public safety information and must operate reliably in demanding and hostile environments. A key factor in shielding the radio from harsh elements is the interface between the radio and the antenna. The Phoenix Company of Chicago designs and manufactures a wide array of Waterproof Connectors and Cable Assemblies that provide reliable electrical performance while protecting the integrity of all handheld, manpack, and vehicular communication devices in rugged situations.

Phoenix's expanding product line includes all waterproof components pictured. We confidently serve the following industries where radio performance is paramount to mission critical applications in which human lives and the protection of property is at stake.

SMA Waterproof Cable Assembly

Filtered Audio Connector

Dataport Receptacle

Dataport Plug Cable Assembly

Battery Connector Receptacle

Battery Connector Plug

- Homeland Security
- Border Control
- Police
- Fire
- Military
- Coast Guard
- Search and Rescue
- Emergency Medical Services
- Disaster Relief Organizations
- Construction
- Mining
- Petrochemical

 Products may be subject to U.S. Export Regulations. Please consult factory.

WATERPROOF RF CONNECTORS

Environmentally sealed and weather-resistant, Phoenix's Waterproof RF Connectors are designed to withstand severe atmospheric conditions and are rated to exceed IP67* and MIL-STD-202. Connectors feature rear-mount and front-mount designs, 4 standard cable groups, and superior mechanical and electrical performance.

Part Number	Series	Body Material/Finish	Body Style	Mounting Direction	Cable Group	Cable Termination Method
22-1965-0298N	SMA	Brass/Nickel	Bulkhead	Rear-Mount	1.13mm	Solder Crimp
22-1965-0398N	SMA	Brass/Nickel	Bulkhead	Rear-Mount	1.32mm	Solder Crimp
22-1965-0498N	SMA	Brass/Nickel	Bulkhead	Rear-Mount	1.37mm and RG-178	Solder Crimp
22-1917-0298N	SMA	Brass/Nickel	Bulkhead	Front-Mount	1.13mm	Solder Crimp
22-1917-0398N	SMA	Brass/Nickel	Bulkhead	Front-Mount	1.32mm	Solder Crimp
22-1917-0498N	SMA	Brass/Nickel	Bulkhead	Front-Mount	1.37mm and RG-178	Solder Crimp
41-1915-0290N	TNC	Brass/Nickel	Bulkhead	Rear-Mount	1.13mm	Solder Crimp
41-1915-0390N	TNC	Brass/Nickel	Bulkhead	Rear-Mount	1.32mm	Solder Crimp
41-1915-0490N	TNC	Brass/Nickel	Bulkhead	Rear-Mount	1.37mm and RG-178	Solder Crimp
41-1969-0290N	TNC	Brass/Nickel	Bulkhead	Front-Mount	1.13mm	Solder Crimp
41-1969-0390N	TNC	Brass/Nickel	Bulkhead	Front-Mount	1.32mm	Solder Crimp
41-1969-0490N	TNC	Brass/Nickel	Bulkhead	Front-Mount	1.37mm and RG-178	Solder Crimp



Stainless steel bodies (passivated plating) available upon request. Please consult factory for your requirements.

Waterproof SMA (22 Series) Electrical and Environmental Specifications:

Impedance: 50 Ohms

Frequency Range: DC To 6 GHz (Cable Dependent)

Insulation Resistance: 5,000 Megohms

Temperature Rating: -65°C To +165°C

Vibration: MIL-STD-202, Method 204, Test Condition D

Shock: MIL-STD-202, Method 213, Condition I

Thermal Shock: MIL-STD-202, Method 107, Test Condition B

Corrosion: MIL-STD-202, Method 101, Test Condition B, 5% Salt Solution

Moisture Resistance: MIL-STD-202, Method 106 (High Humidity And Heat)

Immersion: Exceeds IP67 (Unmated/Mated Conditions)

*Consult factory for IP68 requirements.



Waterproof TNC (41 Series) Electrical and Environmental Specifications:

Impedance: 50 Ohms

Frequency Range: DC To 6 GHz (Cable Dependent)

Insulation Resistance: 5,000 Megohms

Temperature Rating: -65°C To +165°C

Vibration: MIL-STD-202, Method 204, Test Condition B

Shock: MIL-STD-202, Method 213, Test Condition B

Thermal Shock: MIL-STD-202, Method 107, Test Condition B

Corrosion: MIL-STD-202, Method 101, Test Condition B

Moisture Resistance: MIL-STD-202, Method 106 (High Humidity And Heat)

Immersion: Exceeds IP67 (Unmated/Mated Conditions)

*Consult factory for IP68 requirements.



WATERPROOF ADAPTERS

Phoenix's between series of Waterproof Adapters are designed for rugged environments. Our weatherproof adapters are used to securely connect UHF and GPS antennas, ensuring a constant waterproof seal between the outer antenna and the radio. Adapters exceed IP67* and can accommodate SMA, TNC, and MMCX interface types.

Part Number	Adapter Connector Type	Sealed Condition	Body Material/Finish	Mounting Style	External Interface
2233-1165-00N	SMA Jack to MMCX Jack	Unmated/Mated	Brass/Nickel	Bulkhead Rear-Mount	SMA Jack
2233-1180-00N	SMA Jack to MMCX Jack	Unmated/Mated	Brass/Nickel	Bulkhead Front-Mount	SMA Jack
3341-1115-00N	TNC Jack to MMCX Jack	Unmated/Mated	Brass/Nickel	Bulkhead Rear-Mount	TNC Jack
3341-1169-00N	TNC Jack to MMCX Jack	Unmated/Mated	Brass/Nickel	Bulkhead Front-Mount	TNC Jack



Stainless steel bodies (passivated plating) available upon request. Please consult factory for your requirements.

*Consult factory for IP68 requirements.



WATERPROOF CABLE ASSEMBLIES

The Phoenix Company of Chicago offers a variety of cable assemblies incorporating waterproof SMA or TNC connectors (front and rear-mount available) for reliable performance in extreme environments. These connectors can be terminated to a wide variety of cables such as RG-178, 1.13, 1.32, and 1.37mm diameters for tight-space applications requiring micro-miniature connectors.

IP67 Connector	Cable Type	Length	Internal Connector
SMA	1.13, 1.32, 1.37mm	4-12 in.	U.FL
SMA	RG-178	4-12 in.	MMCX
TNC	1.13, 1.32, 1.37mm	4-12 in.	U.FL
TNC	RG-178	4-12 in.	MMCX



Please consult Phoenix's online "Waterproof Cable Assembly Part Numbering System Guide" to efficiently specify your requirements for a waterproof cable assembly in 4 simple steps.

Visit www.phoenixofchicago.com for more details.

RUGGEDIZED L1 ACTIVE AND PASSIVE GPS ANTENNAS

U.S. Patents 7,670,176 & 7,448,907

Phoenix's GPS Antennas feature the patented PkZ® technology which guards the antenna against shock, vibration, and environmental stress by isolating the antenna element from the connector base while providing protection against the radome interior wall.



Often the weak link in GPS antennas is the internal transition from the element to the connector base. Critical solder joints in this transition zone are susceptible to damage from drop, vibration, and sudden temperature change. Sensitive antenna elements can also be damaged from impacting the radome interior.

Our PkZ technology provides a compressible, protective barrier to isolate the element from external forces. This is made possible by a compliant, constant impedance connection between the antenna element and the connector base. These two features isolate the antenna element to provide exceptional protection and performance through demanding physical conditions.

Part Number	Interface	Antenna Type	Dimensions	Body Material	Mounting Style
AG-200-HA-SSE0	SMA	Active	.70" Dia. X 1.83"	Stainless Steel	Spin-On
AG-200-HP-SSE0	SMA	Passive	.70" Dia. X 1.83"	Stainless Steel	Spin-On
AG-200-HA-SSE1	SMA	Active	.70" Dia. X 2.19"	Stainless Steel	Extended Spin-On
AG-200-HP-SSE1	SMA	Passive	.70" Dia. X 2.19"	Stainless Steel	Extended Spin-On
AG-420-HA-SSE0	TNC	Active	.70" Dia. X 2.02"	Stainless Steel	Spin-On
AG-420-HP-SSE0	TNC	Passive	.70" Dia. X 2.02"	Stainless Steel	Spin-On

Ruggedized L1 Active GPS Antennas Electrical and Environmental Specifications:

Frequency: 1575.42 MHz • Polarization: RHCP • Beamwidth: 140° (Both Axes) • Input P1 dB: -2 dBm

Total Active Gain: 11 dBic (± 1dB) • Supply Voltage: 1.5 - 3.5 V • Supply Current: 5 mA

Axial Ratio: 1 dB (Max) • Efficiency: 30% • Bandwidth: 10 MHz (-1 dB)

Filtering: > 35 dB Rejection @ 1575.42 ± 60 MHz • Noise Figure: 1.7 dB

Immersion (Exceeds IP67 Requirements): MIL-STD-810, Method 512.5 (30 Minutes @ 2 Meters Depth)

Humidity: MIL-STD-810, Method 507.4

Operating Temperature: -40°C To +85°C • Durability: 500 Mates Minimum • Drop Test: 48 Inches*

Ruggedized L1 Passive GPS Antennas Electrical and Environmental Specifications:

Frequency: 1575.42 MHz • Polarization: RHCP • Beamwidth: 140° (Both Axes)

Passive Gain: -0.5 dBic (± 0.5 dB) • Efficiency: 30% • Bandwidth: 20 MHz (-1 dB) • Axial Ratio: 1 dB (Max)

Immersion (Exceeds IP67 Requirements): MIL-STD-810, Method 512.5 (30 Minutes @ 2 Meters Depth)

Humidity: MIL-STD-810, Method 507.4

Operating Temperature: -40°C To +85°C • Durability: 500 Mates Minimum • Drop Test: 48 Inches*

* Antennas were mounted to a radio and dropped 48 inches onto a concrete slab.

RUGGEDIZED GOOSENECK ADAPTERS

Ruggedized Gooseneck Adapters enhance an antenna's receiving performance when mounted to a manpack or a body-worn radio. The Gooseneck flexes to permit vertical orientation of a GPS antenna when a manpack radio is laid flat on a horizontal surface. It also positions the GPS antenna away from the body when a hand-held radio is worn in a sling or belt-clip. Positioning the antenna away from the radio can improve decoupling of noise fields at the top of the radio. A Gooseneck Adapter can also move the antenna off the radio surface to allow more room for adjacent control knobs and connectors. Custom design capabilities and vertically-integrated manufacturing allows Phoenix to offer configurations to meet customers' unique environmental and mechanical requirements.

Part Number	Interface Type	Sealed Condition	Body Material	Length
G2020-0100-030	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	3"
G2020-0100-040	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	4"
G2020-0100-050	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	5"
G2020-0100-060	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	6"
G2020-0100-070	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	7"
G2020-0100-080	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	8"
G2020-0100-090	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	9"
G2020-0100-100	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	10"
G2020-0100-110	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	11"
G2020-0100-120	SMA Plug to SMA Jack	Unmated/Mated	Stainless Steel	12"
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G4242-0100-030	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	3"
G4242-0100-040	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	4"
G4242-0100-050	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	5"
G4242-0100-060	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	6"
G4242-0100-070	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	7"
G4242-0100-080	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	8"
G4242-0100-090	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	9"
G4242-0100-100	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	10"
G4242-0100-110	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	11"
G4242-0100-120	TNC Plug to TNC Jack	Unmated/Mated	Stainless Steel	12"



DATAPORT CONNECTORS

Designed to meet harsh environmental requirements to protect the integrity of your radio, Phoenix's Dataport Connectors provide superior performance, reliability, and secure data communications. Our spring-loaded contact system provides a generous contact mating surface to accommodate connector misalignment without impacting performance.

A spring-probe system houses individual touchpad contact areas, which enable an effective electrical engagement.

The individual touchpad contacts prevent the accumulation of contaminants providing reliable mating in critical field conditions. Connectors are available in contact arrangements from 18 to 40-pins and in printed circuit board and solder cup terminations.



As shown: MC1809P-2



MC1809R-1



20 meter water immersion per MIL-STD-810 is available. Please consult factory for your requirements.

AUDIO CONNECTORS

Phoenix's Audio Connectors feature high performance, reliability, and excellent environmental protection for communication devices in harsh weather conditions. Designed per MIL-DTL-55116, Phoenix's five and six-pin filtered and non-filtered audio connectors are available in solder cup and printed circuit board terminations. Our design capabilities support custom applications for greater density, higher pin-count, and smaller size. Dust caps are available for protection against EMI, dust, and water.



Non-Filtered Audio Receptacle Part Number	# of Terminals	Termination Style	Shell Style	Mounting Hardware
MC183	5	Solder Cup	Rear-Mount	4-Slot Castle Nut
MC183-20	5	PCB Terminal .030" x .564"	Rear-Mount	4-Slot Castle Nut
MC183-9	5	PCB Terminal .040" x .437"	Rear-Mount	4-Slot Castle Nut
MC283	6	Solder Cup	Rear-Mount	4-Slot Castle Nut
MC283-20	6	PCB Terminal .030" x .564"	Rear-Mount	4-Slot Castle Nut
MC283-2	6	PCB Terminal .040" x .437"	Rear-Mount	4-Slot Castle Nut
MC183S	5	Solder Cup	Front-Mount	Hex Nut
MC683S	6	Solder Cup	Front-Mount	Hex Nut
MC683S-21CN6	6	PCB Terminal .040" x .110"	Front-Mount	6-Slot Castle Nut
MC683S-21CN4	6	PCB Terminal .040" x .110"	Front-Mount	4-Slot Castle Nut

Non-Filtered Audio Plug Part Number	# of Terminals	Termination Style	Shell Style	Mounting Hardware
MC529	6	Solder Cup	Front-Mount	Hex Nut

Filtered Audio Receptacle Part Number	# of Terminals	Termination Style	Shell Style	Mounting Hardware	Filter Type (Pi)
MC183F-1-025	5	Solder Cup	Rear-Mount	4-Slot Castle Nut	3,000 pF (Pin A Grounded)
MC183F-1-025-5	5	PCB Terminal .040" x .185"	Rear-Mount	4-Slot Castle Nut	3,000 pF (Pin A Grounded)
MC183F-3-025	5	Solder Cup	Rear-Mount	4-Slot Castle Nut	3,000 pF (All Pins Filtered)
MC183F-3-025-5	5	PCB Terminal .040" x .185"	Rear-Mount	4-Slot Castle Nut	3,000 pF (All Pins Filtered)
MC283F-1-025	6	Solder Cup	Rear-Mount	4-Slot Castle Nut	3,000 pF (Pin A Grounded)
MC283F-1-025-5	6	PCB Terminal .040" x .185"	Rear-Mount	4-Slot Castle Nut	3,000 pF (Pin A Grounded)
MC283F-3-025	6	Solder Cup	Rear-Mount	4-Slot Castle Nut	3,000 pF (All Pins Filtered)
MC283F-3-025-5	6	PCB Terminal .040" x .185"	Rear-Mount	4-Slot Castle Nut	3,000 pF (All Pins Filtered)

Dust Cover Part Number	Mates With	Cover Material/Finish	Cord Material/Finish	End Cord Termination	Function
MC800	MC183/283/683	Aluminum/Olive Drab Chromate	Nylon/Olive Drab	Cord Loop	Dust Protection
MC800-2	MC183/283/683	Aluminum/Olive Drab Chromate	Nylon/Olive Drab	Stainless Steel Lug to Stainless Steel Ring	Dust Protection
MC810	MC183/283/683	Stainless Steel/Sand-Blasted, Passivated	Stainless Steel	Stainless Steel Lug to Stainless Steel Ring	Dust Protection
MC811	MC183/283/683	Aluminum/Black Anodized	Stainless Steel	Stainless Steel Lug	Dust/EMI Protection
MC852	MC529	Stainless Steel/Sand-Blasted, Passivated	Stainless Steel/Nylon Coated	Cord Loop	Dust Protection

BATTERY CONNECTORS

The Phoenix Company of Chicago designs and manufactures standard and custom Battery Connectors in filtered and non-filtered versions in solder cup or printed circuit board terminations. Our unique shell design prevents mismatching and protects the contacts from side-load damage for reliable field use. Connectors are sealed to 15 PSI, feature spring-loaded contacts, and a twist-lock mating to the battery. Phoenix's Battery Connectors are compatible with a variety of MIL Batteries such as: BA5590, BB590, BB390A/U, and AN/PRC-148 MBITR.



As shown: MC327
MC427 shown on back cover (top left).

 Water Immersion: 48 hours at 6 feet.



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