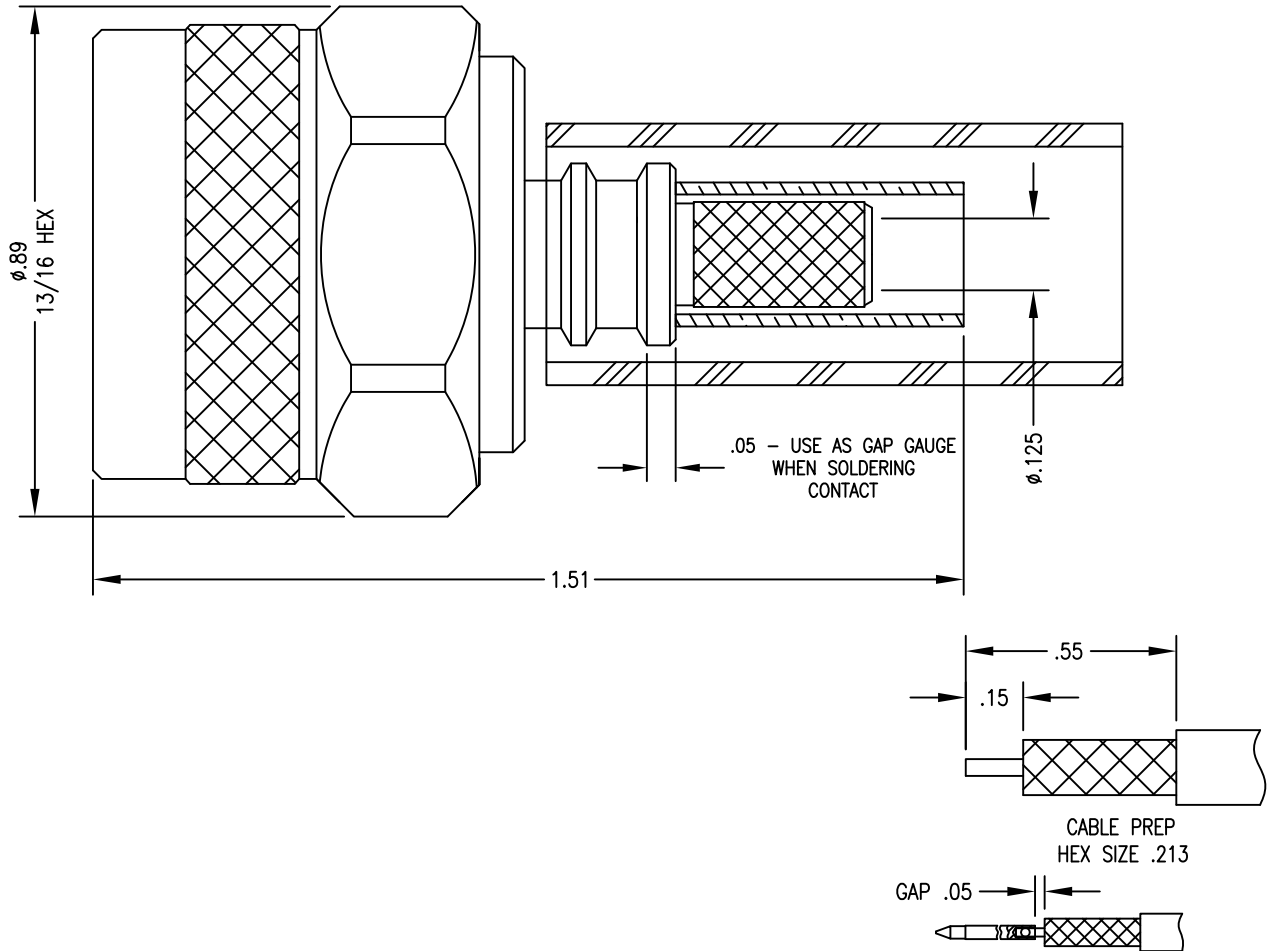


NOTICE OF PROPRIETARY RIGHTS THIS DOCUMENT CONTAINS CONFIDENTIAL TECHNICAL DATA, INCLUDING TRADE SECRETS, PROPRIETARY TO TIMES MICROWAVE SYSTEMS. DISCLOSURE OF THIS DATA IS EXPRESSLY CONDITIONED UPON YOUR ASSENT THAT ITS USE IS LIMITED TO USE WITHIN YOUR COMPANY ONLY. ANY OTHER USE IS STRICTLY PROHIBITED WITHOUT THE PRIOR WRITTEN CONSENT OF TIMES MICROWAVE SYSTEMS.

| SYM | REVISION DESCRIPTION | DFTM | DATE | APPD | DATE |
|-----|-------------------------|---------|---------|----------|---------|
| A | RELEASED FOR PRODUCTION | N. N. N | 2/13/14 | J. D. B. | 2/14/14 |
| B | CHANGED PER CDC #40047 | N. N. N | 6/6/14 | J. D. B. | 6/6/14 |



- | | | |
|---|--|-------------------------------|
| 1.0 PERFORMANCE | 2.0 MATERIALS | 3.0 FINISHES: SEE TABLE |
| 1.1 FREQUENCY RANGE: DC-6 GHz | 2.1 DIELECTRIC: PTFE | 4.0 MECHANICAL |
| 1.2 NOMINAL IMPEDANCE: 50 OHMS | 2.2 CONTACT: BRASS | 4.1 INTERFACE PER MIL-STD-348 |
| 1.3 DWV: 1,000 VRMS @ 60 Hz (SEA LEVEL) | 2.3 LOCKING RING: PHOSPHOR BRONZE | |
| 1.4 TEMPERATURE RANGE: -65°C TO +165°C | 2.4 CRIMP FERRULE: SOFT COPPER | |
| | 2.5 OTHER METAL PARTS: BRASS | |
| | 2.6 GASKET: SILICONE RUBBER | |
| | 2.7 HEAT SHRINK: POLYOLEFIN THICK WALL | |

| | |
|---------|---------|
| BODY | CONTACT |
| ALBALOY | GOLD/NI |

| | | | | |
|------------|---|----------------|--|--|
| MATL: | UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES MACHINED SURFACES FINISH N/A RMS MAX. REMOVE ALL BURRS .005 MAX. BREAK MACHINE CORNERS .005 MAX. FILLET R. TOLERANCES ON DECIMALS . XX ± .03 . XXX ± .005 ANGLES ± 1° FRACTIONS ± 1/32 | DFTM. N. N. N | TIMES MICROWAVE SYSTEMS | |
| | | DATE 2/13/14 | | |
| USED ON: D | | CHKD. J. D. B. | TC-200-NMH-X NM FOR LMR-200 CABLE | |
| | | DATE 2/14/14 | | |
| SCALE: N/A | DWG. SIZE A | APPD. J. D. B. | SHEET 1 of 1 SD3190-2882 REV B | |
| | | DATE 2/14/14 | | |



N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated

RF Connectors Technical Data Sheet

PE45047

Configuration

- N Female Connector
- IEC 61169-16
- 50 Ohms
- Straight Body Geometry
- LMR-200, PE-C200 Interface Type
- Crimp/Solder Attachment
- Bulkhead
- 1/2 inch Hex

Features

- Max. Operating Frequency 3 GHz
- Excellent VSWR of 1.2:1
- Silver Plated Copper Contact
- 5 μ m minimum contact plating
- IP67 Rated

Applications

- General Purpose Test
- Rack and Panel Mount Applications
- Custom Cable Assemblies

Description

Pasternack's PE45047 type N female bulkhead connector with crimp/solder attachment for LMR-200 and PE-C200 is part of our full line of RF components available for same-day shipping. Our type N female connector operates up to a maximum frequency of 3 GHz and offers excellent VSWR of 1.2:1. This type N bulkhead connector allows designers to create external connections on their product enclosures, and can be used in a variety of other rack mount and panel mount applications. The connector has an IP67 rating to protect against dust and temporary moisture protection under immersion conditions.

Our type N female bulkhead connector PE45047 datasheet specifications and drawing with dimensions are shown below in this PDF. Pasternack's broad catalog of RF, microwave and millimeter wave connectors allows designers to configure and customize their signal connections however they like. Whether the need is to provide an I/O for a board design, or simply create a custom cable assembly configuration, Pasternack has the right connector for the job. Pasternack can also expertly build your custom cable assemblies for you and ship same-day.

Electrical Specifications

| Description | Minimum | Typical | Maximum | Units |
|--------------------------------------|---------|---------|---------|-------|
| Frequency Range | DC | | 3 | GHz |
| VSWR | | | 1.2:1 | |
| Insertion Loss | | | 0.1 | dB |
| Operating Voltage (AC) | | | 2,500 | Vrms |
| Dielectric Withstanding Voltage (AC) | | | 1,700 | Vrms |
| Inner Conductor DC Resistance | | | 0.8 | mOhms |
| Outer Conductor DC Resistance | | | 0.4 | mOhms |
| Insulation Resistance | 5,000 | | | MOhms |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated PE45047](#)



N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated

RF Connectors Technical Data Sheet

PE45047

Mechanical Specifications

Size

| | |
|---------------|---------------------|
| Length | 1.66 in [42.16 mm] |
| Width/Dia. | 0.86 in [21.84 mm] |
| Weight | 0.115 lbs [52.16 g] |
| Mating Cycles | 500 Cycles |

Material Specifications

| Description | Material | Plating |
|-----------------|----------|---------------------------|
| Contact | Copper | Silver 5 µm minimum |
| Insulation | PTFE | |
| Outer Conductor | Brass | Tri-Metal 2 µm minimum |

Environmental Specifications

Temperature

| | |
|--------------------------------|-------------------|
| Operating Range | -40 to +85 deg C |
| Ingress Protection (IP) Rating | IP67 Rated |
| Shock | IEC 60068-2-27 |
| Vibration | IEC 60068-2-6-Fc |
| Thermal Shock | IEC 60068-2-14-Na |

Environmental Specification Notes:

Weather standard: IEC 60068 40/085/21

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated PE45047](#)



N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated

RF Connectors Technical Data Sheet

PE45047

Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [N Female Bulkhead Mount Connector Crimp/Solder Attachment for LMR-200, PE-C200, IP67 Rated PE45047](#)

URL: <https://www.pasternack.com/n-female-lmr-200-pe-c200-connector-pe45047-p.aspx>

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.

LMR[®]-200 Flexible Low Loss Communications Coax

Ideal for...

- Jumper Assemblies in Wireless Communications Systems
- Short Antenna Feeder runs
- Any application (e.g. WLL, GPS, LMR, WLAN, WISP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable

• **LMR[®]** standard is a UV Resistant Polyethylene jacketed cable designed for 20-year service outdoor use. The bending and handling characteristics are significantly better than air-dielectric and corrugated hard-line cables.

• **LMR[®]-DB** is identical to standard LMR plus has the advantage of being watertight. The addition of waterproofing compound in and around the foil/braid insures continuous reliable service should the jacket be inadvertently damaged during installation or in the future.

• **LMR[®]-FR** is a non-halogen (non-toxic), low smoke, fire retardant cable designed for in-building runs that can be routed anywhere except air handling plenums. LMR-FR is UL/NEC & CSA rated 'CMR' and 'FT4' respectively, meets FAA FAR25 requirements and is MSHA-P for mining applications.

• **LMR[®]-FR-PVC** is a general-purpose indoor cable and has a UL/NEC & CSA rating of 'CMR' and 'FT4' respectively. It is less expensive than LMR-FR, however it emits toxic fumes (HCL) and greater smoke density when burned.

• **LMR[®]-PVC** is designed for low loss general-purpose applications and is somewhat more flexible than the standard polyethylene jacketed LMR.

• **LMR[®]-PVC-W** is a white-jacketed version of LMR-PVC for marine and other applications where color compatibility is desired.

• **LMR[®]-MA** is a flexible cable designed specifically for mobile antenna applications. It has a PVC jacket and un-bonded aluminum tape to facilitate end stripping with automated equipment.

• **Flexibility** and bendability are hallmarks of the LMR-200 cable design. The flexible outer conductor enables the tightest bend radius available for any cable of similar size and performance.

• **Low Loss** is another hallmark feature of LMR-200. Size for size LMR has the lowest loss of any flexible cable and comparable loss to semirigid hard-line cables.

• **RF Shielding** is 50 dB greater than typical single shielded coax (40 dB). The multi-ply bonded foil outer conductor is rated conservatively at > 90 dB (i.e. >180 dB between two adjacent cables).

• **Weatherability:** LMR-200 cables designed for outdoor exposure incorporate the best materials for UV resistance and have life expectancy in excess of 20 years.

• **Connectors:** A wide variety of connectors are available for LMR-200 cable, including all common interface types, reverse polarity, and a choice of solder or non-solder center pins. Most LMR connectors employ crimp outer attachment using standard hex crimp sizes.

• **Cable Assemblies:** All LMR-200 cable types are available as pre-terminated cable assemblies. Refer to the section on FlexTech for further details.



| Part Description | | | | Stock |
|------------------|----------------------|-----------|-------|-------|
| Part Number | Application | Jacket | Color | Code |
| LMR-200 | Outdoor | PE | Black | 54022 |
| LMR-200-DB | Outdoor/Watertight | PE | Black | 54089 |
| LMR-200-FR | Indoor/Outdoor Riser | CMR FRPE | Black | 54028 |
| LMR-200-FR-PVC | Indoor/Outdoor Riser | CMR FRPVC | Black | 54125 |
| LMR-200-PVC | General Purpose | PVC | Black | 54216 |
| LMR-200-PVC-W | General Purpose | PVC | White | 54201 |
| LMR-200-MA | Mobile Antennas | PVC | Black | 54045 |

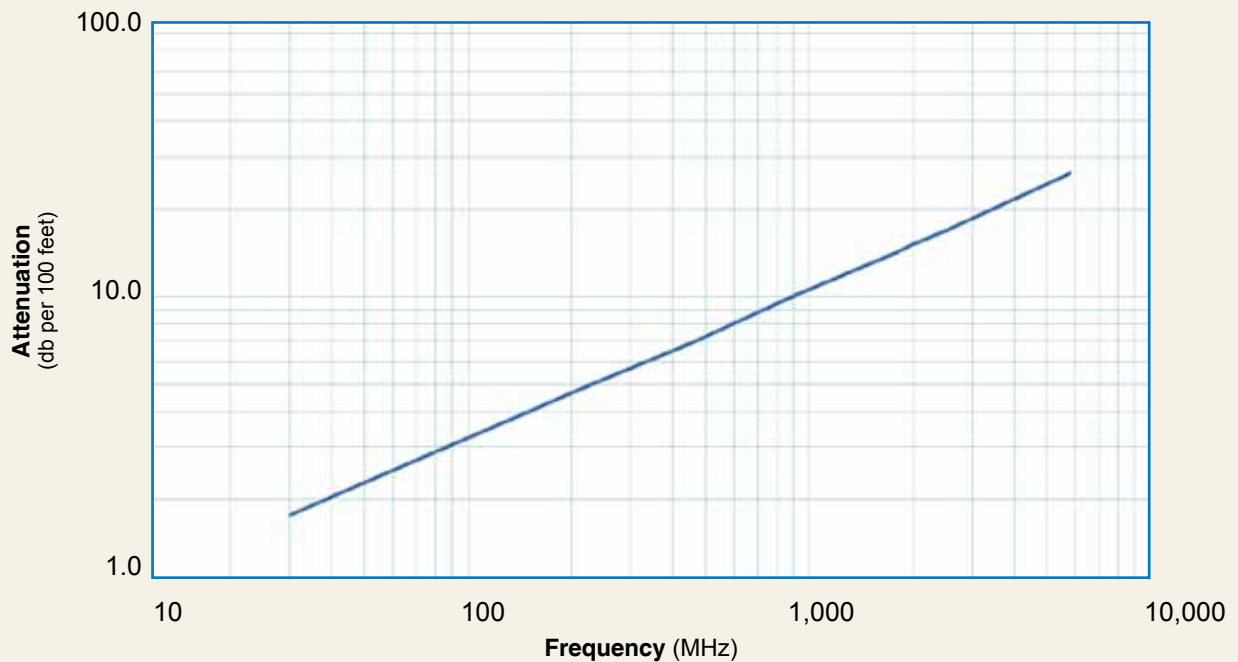
| Construction Specifications | | | |
|-----------------------------|-------------------|-------|--------|
| Description | Material | In. | (mm) |
| Inner Conductor | Solid BC | 0.044 | (1.12) |
| Dielectric | Foam PE | 0.116 | (2.95) |
| Outer Conductor | Aluminum Tape | 0.121 | (3.07) |
| Overall Braid | Tinned Copper | 0.144 | (3.66) |
| Jacket | (see table above) | 0.195 | (4.95) |

| Mechanical Specifications | | | |
|----------------------------------|----------------|-------|----------|
| Performance Property | Units | US | (metric) |
| Bend Radius: installation | in. (mm) | 0.5 | (12.7) |
| Bend Radius: repeated | in. (mm) | 2 | (50.8) |
| Bending Moment | ft-lb (N-m) | 0.2 | (0.27) |
| Weight | lb/ft (kg/m) | 0.022 | (0.03) |
| Tensile Strength | lb (kg) | 40 | (48) |
| Flat Plate Crush | lb/in. (kg/mm) | 15 | (0.27) |

| Environmental Specifications | | |
|-------------------------------------|----------|---------|
| Performance Property | °F | °C |
| Installation Temperature Range | -40/+185 | -40/+85 |
| Storage Temperature Range | -94/+185 | -70/+85 |
| Operating Temperature Range | -40/+185 | -40/+85 |

| Electrical Specifications | | | |
|----------------------------------|-------------------|-------|----------|
| Performance Property | Units | US | (metric) |
| Velocity of Propagation | % | 83 | |
| Dielectric Constant | NA | 1.45 | |
| Time Delay | nS/ft (nS/m) | 1.22 | (4.02) |
| Impedance | ohms | 50 | |
| Capacitance | pF/ft (pF/m) | 24.5 | (80.3) |
| Inductance | uH/ft (uH/m) | 0.061 | (0.20) |
| Shielding Effectiveness | dB | >90 | |
| DC Resistance | | | |
| Inner Conductor | ohms/1000ft (/km) | 5.36 | (17.6) |
| Outer Conductor | ohms/1000ft (/km) | 4.9 | (16.1) |
| Voltage Withstand | Volts DC | 1000 | |
| Jacket Spark | Volts RMS | 3000 | |
| Peak Power | kW | 2.5 | |

Attenuation vs. Frequency (typical)



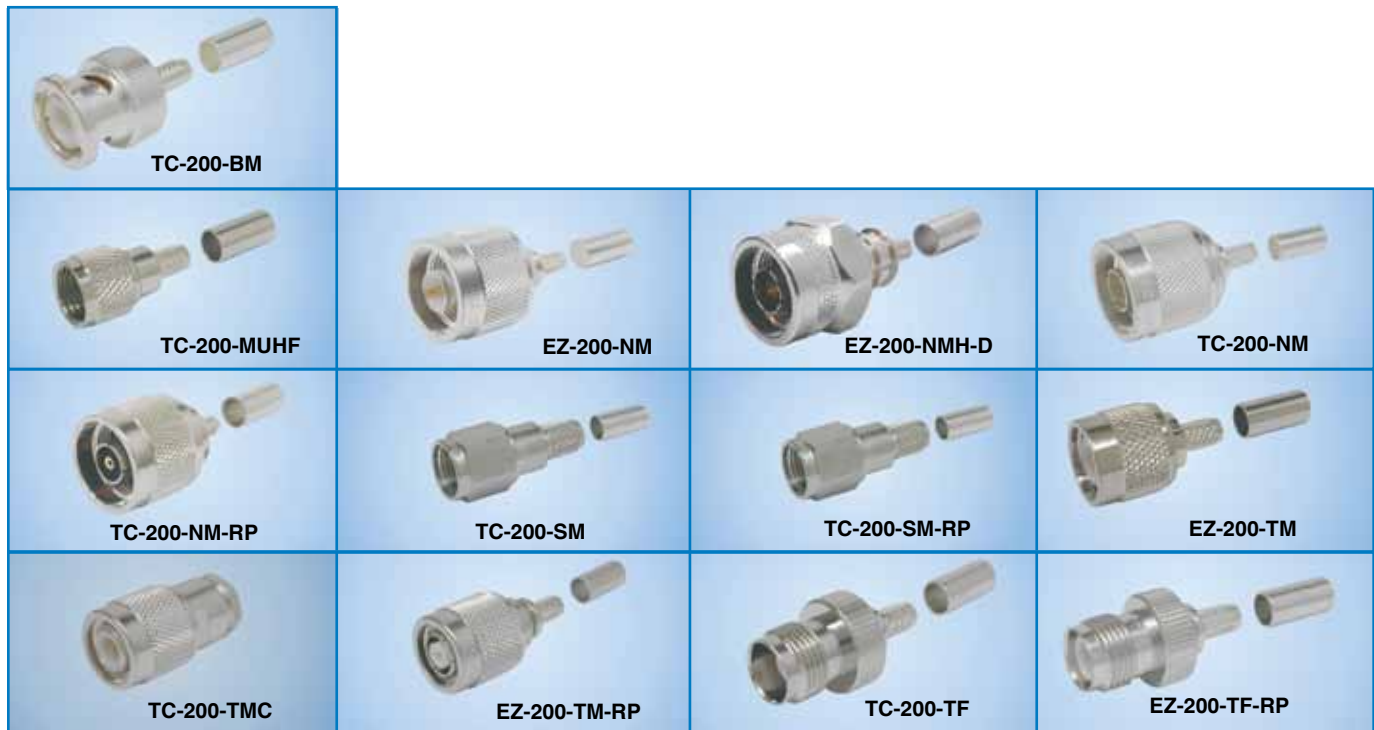
| Frequency (MHz) | 30 | 50 | 150 | 220 | 450 | 900 | 1500 | 1800 | 2000 | 2500 | 5800 |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Attenuation dB/100 ft | 1.8 | 2.3 | 4.0 | 4.8 | 7.0 | 9.9 | 12.9 | 14.2 | 15.0 | 16.9 | 26.4 |
| Attenuation dB/100 m | 5.8 | 7.5 | 13.1 | 15.9 | 22.8 | 32.6 | 42.4 | 46.6 | 49.3 | 55.4 | 86.5 |
| Avg. Power kW | 1.02 | 0.79 | 0.45 | 0.37 | 0.26 | 0.18 | 0.14 | 0.13 | 0.12 | 0.11 | 0.07 |

Calculate Attenuation =
 $(0.320900) \cdot \sqrt{\text{FMHz}} + (0.000330) \cdot \text{FMHz}$ (interactive calculator available at http://www.timesmicrowave.com/cable_calculators)

Attenuation:
 VSWR=1.0; Ambient = +25°C (77°F)

Power:
 VSWR=1.0; Ambient = +40°C; Inner Conductor = 100°C (212°F); Sea Level; dry air; atmospheric pressure; no solar loading

LMR[®]-200 Flexible Low Loss Communications Coax



Connectors

| Interface | Description | Part Number | Stock Code | VSWR** Freq. (GHz) | Coupling Nut | Inner Contact Attach | Outer Contact Attach | Finish* Body /Pin | Length in (mm) | Width in (mm) | Weight lb (g) |
|------------|------------------|--------------|------------|-----------------------|--------------|----------------------|----------------------|----------------------|-------------------|------------------|------------------|
| BNC male | Straight Plug | TC-200-BM | 3190-225 | <1.25:1 (2.5) | Knurl | Solder | Crimp | S/G | 1.7 (43.2) | 0.56 (14.2) | 0.045 (20.4) |
| Mini-UHF | Straight Plug | TC-200-MUHF | 3190-444 | <1.25:1 (2.5) | Knurl | Solder | Crimp | NG | 1.1 (27.9) | 0.45 (11.4) | 0.015 (6.8) |
| N male | Straight Plug | EZ-200-NM | 3190-1475 | <1.25:1 (8) | Knurl | Spring Fit | Crimp | S/G | 1.5 (38.1) | 0.75 (19.1) | 0.073 (33.1) |
| N male | Straight Plug | EZ-200-NMH-D | 3190-1918 | <1.25:1 (8) | Hex/Knurl | Spring Fit | Crimp | A/G | 1.5 (38.1) | 0.75 (19.1) | 0.073 (33.1) |
| N male | Straight Plug | TC-200-NM | 3190-224 | <1.25:1 (2.5) | Knurl | Solder | Crimp | S/G | 1.5 (38.1) | 0.75 (19.1) | 0.073 (33.1) |
| N male | Reverse Polarity | TC-200-NM-RP | 3190-959 | <1.25:1 (2.5) | Knurl | Solder | Crimp | N/G | 1.5 (38.1) | 0.75 (19.1) | 0.073 (33.1) |
| SMA male | Straight Plug | TC-200-SM | 3190-612 | <1.25:1 (8) | Hex | Solder | Crimp | SS/G | 1.0 (25.4) | 0.32 (8.1) | 0.015 (6.8) |
| SMA male | Reverse Polarity | TC-200-SM-RP | 3190-327 | <1.25:1 (2.5) | Hex | Solder | Crimp | SS/G | 1.0 (25.4) | 0.32 (8.1) | 0.015 (6.8) |
| TNC male | Straight Plug | EZ-200-TM | 3190-1266 | <1.25:1 (2.5) | Knurl | Spring Fit | Crimp | S/G | 1.4 (35.6) | 0.59 (15.0) | 0.045 (20.4) |
| TNC male | Straight Plug | TC-200-TMC | 3190-240 | <1.25:1 (2.5) | Knurl | Solder | Clamp | S/G | 1.7 (43.2) | 0.59 (15.0) | 0.045 (20.4) |
| TNC male | Reverse Polarity | EZ-200-TM-RP | 3190-792 | <1.25:1 (2.5) | Knurl | Spring Fit | Crimp | A/G | 1.4 (35.6) | 0.32 (8.1) | 0.045 (20.4) |
| TNC female | Straight Jack | TC-200-TF | 3190-263 | <1.25:1 (2.5) | NA | Solder | Crimp | N/G | 1.3 (33.0) | 0.57 (14.5) | 0.033 (15.0) |
| TNC female | Reverse Polarity | EZ-200-TF-RP | 3190-793 | <1.25:1 (2.5) | NA | Spring Fit | Crimp | A/G | 1.3 (33.0) | 0.57 (14.5) | 0.033 (15.0) |

* Finish metals: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alballoy **VSWR spec based on 3 foot cable with a connector pair



Hardware Accessories

| Type | Part Number | Stock Code | Description |
|------------|-------------|------------|----------------------------|
| Ground Kit | GK-S200TT | GK-S200TT | Standard Ground Kit (each) |



Install Tools

| Type | Part Number | Stock Code | Description |
|-------------------|--------------------|------------|---|
| Crimp Tool | CT-240/200/195/100 | 3190-667 | Crimp tool for LMR-100, 195, 200 and 240 connectors |
| Cutting Tool | CCT-01 | 3190-1544 | Cable end flush cut tool |
| Deburr Tool | DBT-U | 3192-001 | Removes center conductor rough edges |
| Replacement Blade | RB-01 | 3190-1609 | Replacement blade for cutting tool |