

LMR[®]-500 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.

• **Flexibility** and bendability are hallmarks of the LMR-500 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-500. 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-500 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-500 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-500 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-500 | Outdoor | PE | Black | 54002 |
| LMR-500-DB | Outdoor/Watertight | PE | Black | 54092 |
| LMR-500-FR | Indoor/Outdoor Riser | CMR FRPE | Black | 54031 |

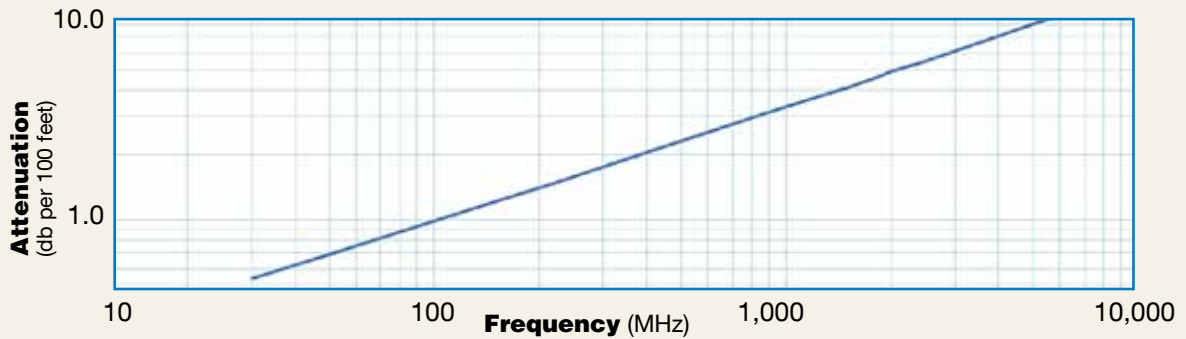
| Construction Specifications | | | |
|-----------------------------|-------------------|-------|---------|
| Description | Material | In. | (mm) |
| Inner Conductor | Solid BCCA1 | 0.142 | (3.61) |
| Dielectric | Foam PE | 0.370 | (9.40) |
| Outer Conductor | Aluminum Tape | 0.376 | (9.55) |
| Overall Braid | Tinned Copper | 0.405 | (10.29) |
| Jacket | (see table above) | 0.500 | (12.70) |

| Mechanical Specifications | | | |
|---------------------------|----------------|-------|----------|
| Performance Property | Units | US | (metric) |
| Bend Radius: installation | in. (mm) | 1.25 | (31.8) |
| Bend Radius: repeated | in. (mm) | 5.0 | (127.0) |
| Bending Moment | ft-lb (N-m) | 1.75 | (2.37) |
| Weight | lb/ft (kg/m) | 0.097 | (0.14) |
| Tensile Strength | lb (kg) | 260 | (118.0) |
| Flat Plate Crush | lb/in. (kg/mm) | 50 | (0.89) |

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

| Electrical Specifications | | | |
|---------------------------|-------------------|-------|----------|
| Performance Property | Units | US | (metric) |
| Velocity of Propagation | % | 86 | |
| Dielectric Constant | NA | 1.35 | |
| Time Delay | nS/ft (nS/m) | 1.18 | (3.88) |
| Impedance | ohms | 50 | |
| Capacitance | pF/ft (pF/m) | 23.6 | (77.5) |
| Inductance | uH/ft (uH/m) | 0.059 | (0.19) |
| Shielding Effectiveness | dB | >90 | |
| DC Resistance | | | |
| Inner Conductor | ohms/1000ft (/km) | 0.82 | (2.7) |
| Outer Conductor | ohms/1000ft (/km) | 1.27 | (4.2) |
| Voltage Withstand | Volts DC | 3000 | |
| Jacket Spark | Volts RMS | 8000 | |
| Peak Power | kW | 22 | |

Attenuation vs. Frequency (typical)



| Frequency (MHz) | 30 | 50 | 150 | 220 | 450 | 900 | 1500 | 1800 | 2000 | 2500 | 5800 |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Attenuation dB/100 ft | 0.5 | 0.7 | 1.2 | 1.5 | 2.2 | 3.1 | 4.1 | 4.6 | 4.8 | 5.5 | 8.9 |
| Attenuation dB/100 m | 1.8 | 2.3 | 4.0 | 4.9 | 7.1 | 10.3 | 13.6 | 15.0 | 15.9 | 18.0 | 29.1 |
| Avg. Power kW | 4.400 | 3.393 | 1.931 | 1.583 | 1.088 | 0.752 | 0.569 | 0.515 | 0.485 | 0.428 | 0.264 |

Calculate Attenuation = (0.096590) • √FMHZ + (0.000260) • 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



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) |
|-------------|---------------|-----------------|------------|------------------|--------------|----------------------|----------------------|-------------------|----------------|---------------|---------------|-----|
| 1. N Male | Straight Plug | TC-500-NMH-X | 3190-2514 | <1.35:5 (6) | Hex/Knurl | Solder | Crimp | A/G | 1.8 (45) | 0.87 (22.0) | 0.099 (45.0) | |
| 2. N Male | Right Angle | TC-500-NMH-RA-D | 3190-2513 | <1.25:1 (6) | Hex/Knurl | Solder | Crimp | A/G | 1.5 (39) | 1.6 (42.0) | 0.279 (127.0) | |
| 3. N Female | Straight Jack | TC-500-NFC | 3190-215 | <1.25:1 (2.5) | NA | Solder | Clamp | S/G | 2.2 (56) | 0.94 (23.9) | 0.215 (97.5) | |
| 4. N Female | Bulkhead Kit | BHA-KIT | 3190-223 | <1.25:1 (2.5) | NA | NA | NA | NA | NA | NA | 0.014 (6.4) | |
| 5. N Male | Straight Plug | TC-500-NMC | 3190-377* | <1.25:1 (2.5) | Hex | Solder | Clamp | S/G | 2.1 (53) | 0.92 (23.4) | 0.228 (103.4) | |
| 6. N Male | Right Angle | TC-500-NMC-RA | 3190-227* | <1.25:1 (2.5) | Hex | Solder | Clamp | S/G | 2.4 (61) | 1.5 (38.1) | 0.275 (124.7) | |
| 7. TNC Male | Straight Plug | TC-500-TM | 3190-464 | <1.25:1 (2.5) | Hex | Solder | Crimp | N/G | 1.5 (38) | 1.62 (15.7) | 0.082 (28.1) | |
| 8. UHF Male | Straight Plug | TC-500-UMC | 3190-354 | <1.25:1 (2.5) | Knurl | Solder | Clamp | S/G | 2.1 (53) | 0.88 (22.4) | 0.215 (97.5) | |
| 9. N Male | Straight Plug | EZ-500-NMH-D | 3190-2596 | <.35:1 (6) | Hex/Knurl | Spring Finger | Crimp | A/G | 1.7 (44) | 0.83 (21.0) | 0.111 (50.5) | |



Install Tools

| Type | Part Number | Stock Code | Description |
|-----------------------|-------------|------------|---------------------------------------|
| Crimp Tool | HX-4 | 3190-200 | Crimp Handle |
| Crimp Dies | Y151 | 3190-465 | .532" Hex Dies |
| Strip Tool | CST-500 | 3192-075 | For Crimp & Clamp Style Connectors |
| Deburr Tool | DBT-U | 3192-001 | Removes center conductor rough edges |
| Cutting Tool | CCT-01 | 3190-1544 | Cable End Flush Cut Tool |
| Replacement Blade Kit | RB-CST | 3192-086 | Replacement blade kit for strip tools |
| Replacement Blade | RB-01 | 3190-1609 | Replacement Blade for Cutting Tool |
| Replacement Blades | RB-456 | 3190-421 | Replacement Blade kit for Strip Tools |

