

## LMR<sup>®</sup> discussion



### What is LMR<sup>®</sup> cable?

Times LMR cables are high performance broadband, flexible, low loss 50 Ohm coaxial communication cables designed for use in wireless applications such as:

- 2-way land mobile
- IEEE, 802. 11a & 802.11b
- Cellular
- Wireless local loop
- PCS
- LMDS
- Wireless Internet (WISP)
- MMDS
- Broadband wireless data
- CLEC
- Telemetry
- Paging

LMR is a complete system of cables, connectors, installation tools and accessories- everything you need to make your job simple and successful.

### Where can LMR<sup>®</sup> cables be used?

Times LMR cables can be used virtually anywhere high performance coaxial cables are used, including:

- Internal component and equipment wiring
- Inter/intra cabinet jumpers
- Base station and antenna jumpers
- Tower and pole feeder runs
- In-building runs, including riser runs and air-handling plenums
- Rooftop installations

### What sizes of LMR<sup>®</sup> cable are available?

A full range of LMR cables are available from LMR-100 (0.100") all the way up to LMR-1700-DB (1 1/4"). Because LMR cables are so flexible, it's possible to eliminate jumpers entirely in many feeder cable applications. The elimination of jumper cables provides reduced cost, better reliability and lower cost- or may even allow the use of a smaller size feeder cable, while achieving the same loss as for a larger corrugated feeder.

### What are the advantages of LMR<sup>®</sup>?

Times LMR cables have RF performance comparable to traditional corrugated copper cables, but unlike corrugated cables they are highly flexible, non-kinking, and offer unsurpassed ease and speed of connector installation. Compared to RG type braided cables, LMR cables offer far lower loss and better RF shielding. These features make LMR cables the best choice for *any* wireless application.

### What makes LMR<sup>®</sup> cable different than corrugated cables?

Design features of Times LMR cable include:

#### 1) Polyethylene Foam Dielectric

- Closed cell
- Dry nitrogen gas injected- no moisture to degrade performance
- High velocity
- Low loss

#### 2) High Performance Flexible Shielding System

- Multi-laminar aluminum composite tape bonded to the dielectric

- Provides >90dB isolation shielding (180dB cross talk)
- Bonded construction ensures 100% effective shielding
- Acts as a second moisture barrier
- Outer Braid of tinned copper:
  - Provides positive means for grounding and connector attachment

### 3) Polyethylene Outer Jacket

- Heavy duty UV, sunlight and weather resistant, 20 to 40 year life

## How does LMR® cable compare to RG type braided cable or 9913?

LMR cables have lower loss and far better shielding than comparably sized braided cables. Polyethylene jacket, closed cell foam poly dielectric and bonded tape conductor all contribute to the superior weather resistance of LMR cables compared to braided cables and 9913.

## Is there only one type of LMR® cable, or are there options?

Included in this catalog are the many different types of LMR cables which are available, so you can always be certain that there is an LMR cable just right for your particular application. Besides standard LMR cable, Times offers:

**LMR-FR:** Fire retardant cable for installation in building vertical risers or where fire retardancy is critical, both UL and CSA listed (CMR/CATVR).

**LMR-LLPL:** Low loss plenum rated cables for use in virtually any in-building application, including air handling plenums and spaces where maximum fire retardancy and low smoke generation are required. LMR-LLPL cables are the most rugged and easiest to install plenum rated cables available, especially for difficult installs in older buildings. Cables are both UL and CSA listed (CMP/CATVP).

**LMR-DB:** Watertight cables with an inert flooding compound injected in the braid to completely eliminate the possibility of any water migration- *with a 10 year warranty!* The DB feature is optional on sizes 600 and smaller, and standard on sizes 900 and larger.

**LMR Ultraflex:** Stranded center conductor and thermoplastic rubber jacket for maximum flexibility.

**LMR-MA:** Unbonded tape conductor for ease of removal for special applications.

**LMR-PVC:** Polyvinylchloride outer jacket for enhanced flexibility.

**LMR-lite:** Lightweight version of the standard LMR cable. Aluminum braid is used instead of tinned copper braid to offer a lighter weight cable.

**FBT:** Similar to LMR-LLPL, but with a fluoropolymer (FEP) outer jacket for high temperature performance up to 150°C (302°F).

**T-COM:** The ultimate in low loss, high performance coax with a triple shielding system pioneered by Times to achieve enhanced shielding and low passive intermod (-155dB).

**LMR-75:** These are 75 Ohm versions of the standard LMR cable for unsurpassed performance in broadband video and specialized RF applications.

**T-RAD:** 50 Ohm leaky feeder cable for RF coverage up to 2.5GHz. For use in buildings, mines, tunnels or any enclosed area. Flexible, non-kinking low cost design.



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### What about connectors and installation tools?

Times offers a complete line of connectors for all its cables. A wide variety of connector interfaces is offered for almost every application:

- N
- BNC
- TNC
- UHF
- Reverse polarity
- MUHF
- 716DIN
- SMA
- QDS (quick disconnect)
- F
- LC
- HN
- QMA

Special connectors are available, and Times is always adding new ones. Times also offers a complete line of cable prep and connector installation tools, so you never will be frustrated by not having the right tools- Times is your one-stop source.

### Do all Times connectors require soldering?

An extensive line of solder-pin type connectors is offered. However, Times has become the recognized industry leader in developing simplified connectors especially suited for field applications offering more non-solder type connectors than any other cable manufacturers. The Times well-known line of *EZ* non-solder connectors has become renowned in the industry. With center pin contacts made from silver or gold plated beryllium-copper, *EZ* connectors are the preferred choice for quick and reliable field installations.

### How can I get cable and tower installation accessories that work with LMR® cable?

Easy- Times furnishes a complete line of site installation hardware and accessories- everything you need to get you from the antenna to the equipment:

- **Ground kits:** Perfectly sized to each LMR cable, with never a chance of the ground strap being too tight (crushed cable), or too loose (poor grounding).
- **Hangers:** Snap-in, butterfly
- **Hoisting grips**
- **Weatherproofing kits:** Tape and cold shrink
- **Tie wraps**
- **Mounting hardware**
- **Entry ports and hardware**

### Does anyone else make a cable like LMR®?

Some have tried, but no one can match Times LMR when it comes to what's important to the customer. Some don't even offer anything but cable, while Times offers:

- The most complete line of cable, connectors (including *EZ*), tools and accessories
- The biggest range of sizes
- The most cable type options
- The most extensive distribution network
- Unsurpassed technical support
- The assurance that comes from knowing you are dealing with the industry leader, and
- ***The only company with its phone number printed on every foot of cable we make.*** You never have to guess who to call if you have a question or need help solving a problem, because everything is supplied by Times.

### What about price?

In most cases Times LMR cables and connectors will save you money compared to corrugated cable. By combining the lower purchase cost with the ease and speed of installation, excellent savings are achieved. LMR cables also offer significant performance advantages compared to RG type cables at comparable prices.

## How about jumpers and cable assemblies?

Times manufactures high quality LMR cable assemblies and Flextech jumpers- 100% factory tested before shipment for insertion loss and VSWR. Many of Times' LMR distributors also supply LMR cable assemblies and provide excellent service, especially for quick delivery requirements.

## Where are LMR® cables made?

Times LMR cables are manufactured in our ISO certified Wallingford, Connecticut plant, where we have been making high quality coaxial cable for over 60 years.

## What about availability?

Times LMR cables, connectors and accessories are stocked by our vast network of national, regional and international distributors worldwide, so you are never far from a convenient source.

## How can I get started using LMR® cables?

Easy- just call our friendly Sales Department at either 1-800-TMS-COAX (1-800-867-2629) or 203-949-8400 and you can also visit our comprehensive web site at [www.timesmicrowave.com](http://www.timesmicrowave.com) for product and technical information or to request other Times literature.

## I'm new at this and might need help with the connectors or accessories

Times has put together a CD-ROM with full "how-to" videos of many of the most popular EZ connectors as well as ground kits and other accessories. It also includes all our catalogs and a convenient Loss Calculator. We'd be glad to send you one to help you do the job right, so just call us or e-mail us and we'll get one right out to you. And if you ever need help on a job, just call us- our phone number is right on the cable.

