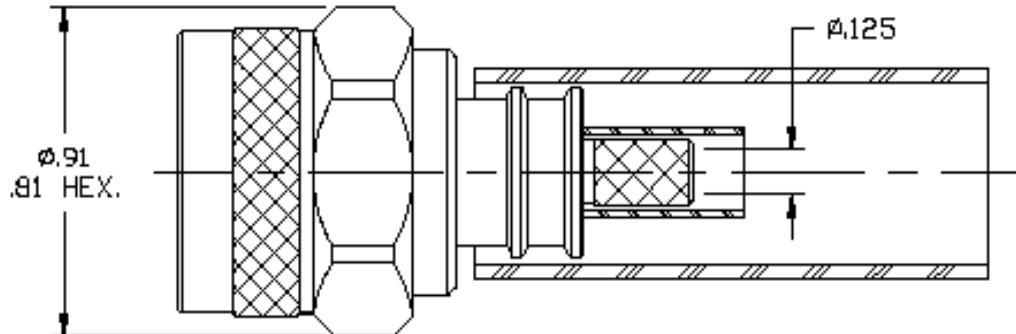


NOTICE OF PROPRIETARY RIGHTS: THIS DOCUMENT CONTAINS CONFIDENTIAL TECHNICAL DATA, INCLUDING TRADE SECRETS, PROPRIETARY TO TIMES MICROWAVE SYSTEMS. DISCLOSURE OF THIS DATA IS EXPRESSLY CONDITIONED UPON YOUR AGREEING THAT ITS USE IS LIMITED TO USE WITHIN YOUR COMPANY ONLY. ANY OTHER USE IS STRICTLY PROHIBITED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

SYM	REVISION DESCRIPTION	REF	DATE	APPD	DATE
-	RELEASED FOR PRODUCTION	J.C.L.	6/6/06	J.C.L.	6/6/06
A	CHANGED PER CDC #29239	J.D.H.	11/10/08	J.D.B.	11/12/08



## EZ-200-NMH-D

ok by tech Svcs

### 1.0 PERFORMANCE

- 1.1 FREQUENCY RANGE: DC-1BGHz
- 1.2 VOLTAGE RANGE: 500V RMS (sea level)
- 1.3 NOMINAL IMPEDANCE: 50 OHMS
- 1.4 DWV: 1500V RMS @ 60Hz (sea level)
- 1.5 TEMPERATURE RANGE: -65°C TO +165°C
- 2.0 MATERIALS
- 2.1 DIELECTRIC: PTFE
- 2.2 CENTER CONTACT: BERYLLIUM COPPER
- 2.3 CRIMP FERRULE: DHP SOFT COPPER

### 2.4 LOCKING RING: PHOSPHOR BRONZE

- 2.5 ALL OTHER METAL PARTS: BRASS
- 2.6 GASKET: SILICON RUBBER
- 2.7 SHRINK SLEEVE: THICK WALL POLYOLEFIN, MIL-I-23053/4, CLASS 3
- 3.0 FINISHES
- 3.1 CENTER CONTACT: GOLD
- 3.2 ALL OTHER METAL PARTS: ALBALDY
- 4.0 MECHANICAL
- 4.1 INTERFACE REFERENCE MIL-STD-348

NOT	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 ± 3°      FRACTIONS ± N/A	REF	J. C. L.	TIME	MICROWAVE SYSTEMS
		DATE	6/6/06		
USED ON	E	CHKD	J. C. L.	REF	EZ-200-NMH-D 'N' MALE, EZ, CRIMP FOR LMR-200 CABLE
		DATE	6/6/06		
SCALE	N/A	DWG SIZE	A	IDENT	68999
DO NOT SCALE DRAWING	DATE	6/6/06	1 of 1	SD3190-1918	REV A


**N Female Bulkhead Connector Crimp/Solder Attachment For LMR-200, .640 inch DD Hole**
**TECHNICAL DATA SHEET**
**PE44767**
**N Female Bulkhead Connector Crimp/Solder Attachment For LMR-200, .640 inch DD Hole**
**Configuration**

Connector	N Female
Connector Interface Type	LMR-200
Cable Attachment Method (Shield/Contact)	Crimp/Solder
Body Style	Straight
Mount Method	Bulkhead

**Electrical Specifications**

Impedance, Ohms	50
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**Mechanical Specifications**

<b>Size</b>	
Length, in [mm]	1.61 [40.89]
Width/Dia., in [mm]	0.87 [22.10]
Weight, lbs [g]	0.11 [49.9]

**Connector**

Type	N Female
Contact Material and Plating	Phosphor Bronze, Gold
Body Material and Plating	Brass, Nickel
Dielectric Type	Teflon

**Compliance Certifications** (visit [www.Pasternack.com](http://www.Pasternack.com) for current document)

RoHS Compliant	Yes
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**Plotted and Other Data**

Notes:	Values at 25 °C, sea level
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N Female Bulkhead Connector Crimp/Solder Attachment For LMR-200, .640 inch DD Hole from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and fiber optic products maintain a 99% availability and are part of the broadest selection in the industry.

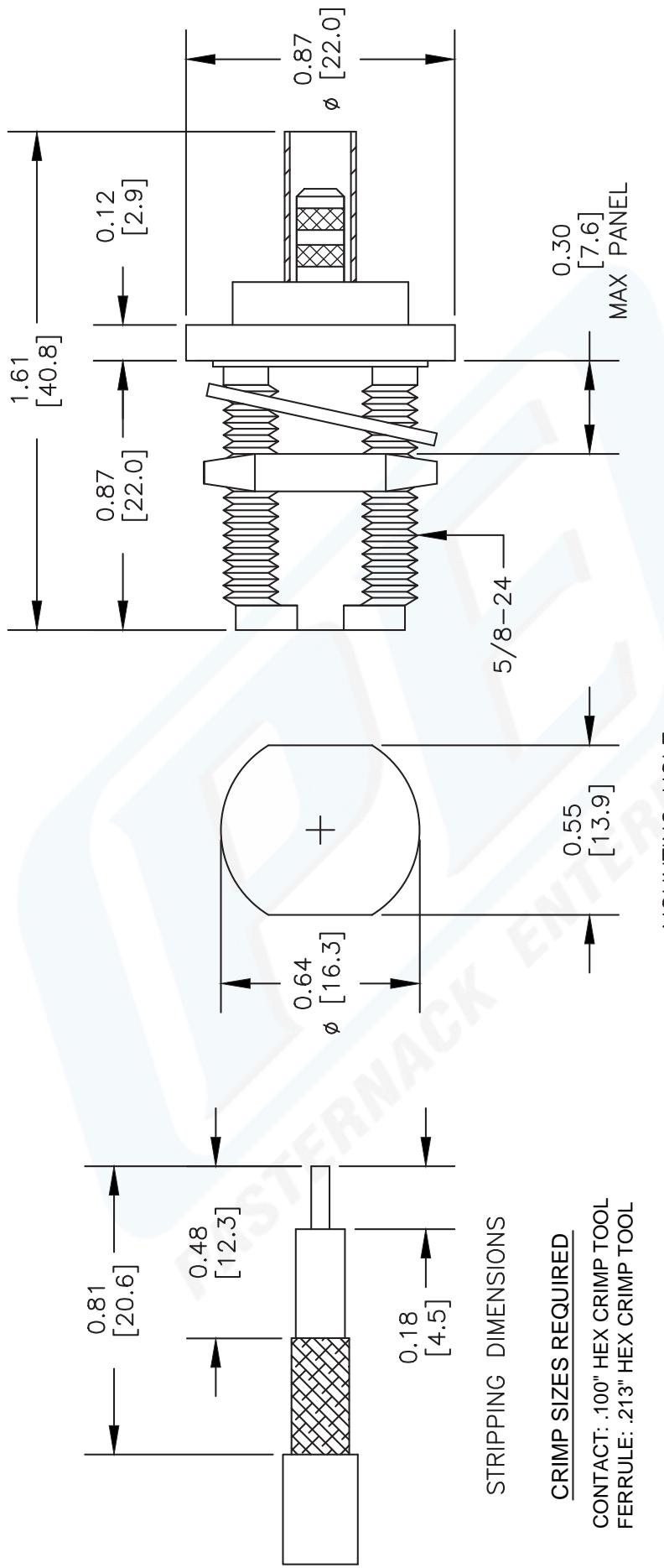
Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: **N Female Bulkhead Connector Crimp/Solder Attachment For LMR-200, .640 inch DD Hole PE44767**

URL: <http://www.pasternack.com/n-female-standard-lmr-200-connector-pe44767-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.

# PE44767 CAD Drawing

N Female Bulkhead Connector Crimp/Solder Attachment For LMR-200, .640 inch DD Hole



NOTES:  
 1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.  
 2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.  
 3. DIMENSIONS ARE IN INCHES (mm).  
 4. FITS MIL-C-17 AND EQUIVALENT CABLES.

DWG TITLE  
**PE44767**

**PE PASTERNAK**  
Pasternack Enterprises, Inc.  
P.O. Box 16759 | Irvine | CA | 92623  
Phone: (949) 261-1920 | Fax: (949) 261-7451  
Website: [www.pasterнак.com](http://www.pasterнак.com) | E-Mail: [sales@pasterнак.com](mailto:sales@pasterнак.com)

REV.-	FSCM NO.	53919	CAD FILE	061812	SCALE N/A	SIZE A	2233
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## 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	Stock
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/OutdoorRiser 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	

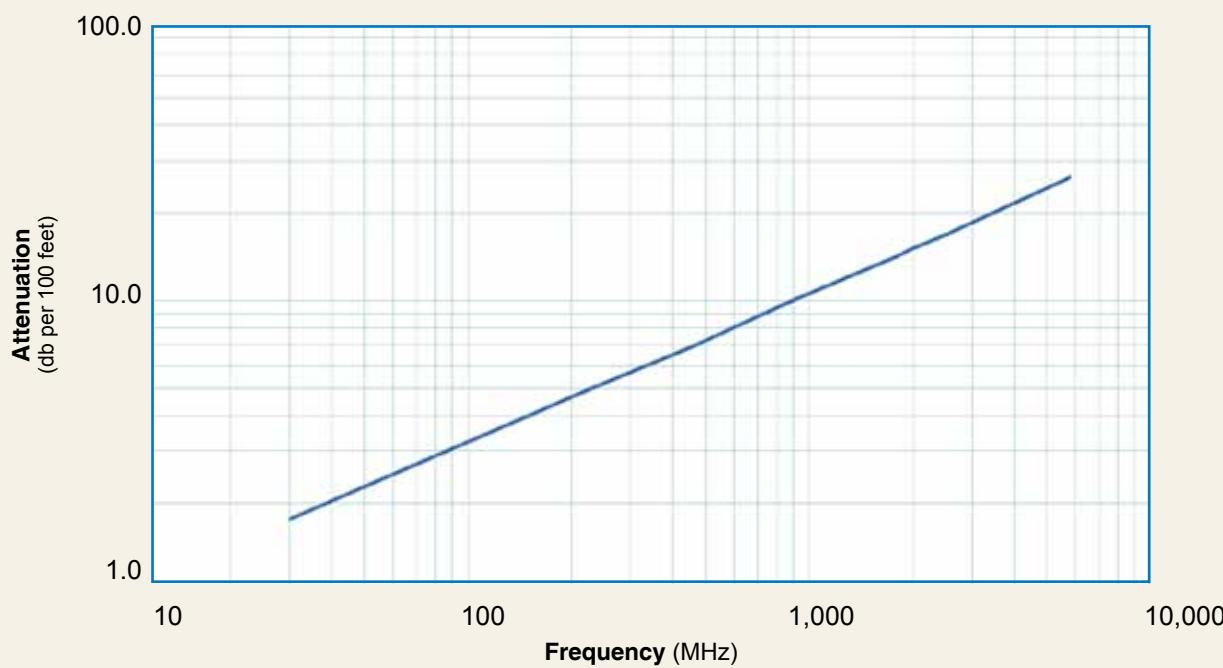
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BC	0.044	(1.12)
Dielectric	Foam PE	0.116	(2.95)
Outer Conductor	Aluminum Tape	0.121	(3.07)
Overall Braid	Tinned Copper	0.144	(3.66)
Jacket	(see table above)	0.195	(4.95)

<b>Mechanical Specifications</b>			
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)	

<b>Electrical Specifications</b>			
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	

<b>Environmental Specifications</b>		
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

### 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 =

$(0.320900) \cdot \sqrt{\text{MHz}} + (0.000330) \cdot \text{MHz}$  (interactive calculator available at [http://www.timesmicrowave.com/cable\\_calculators](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