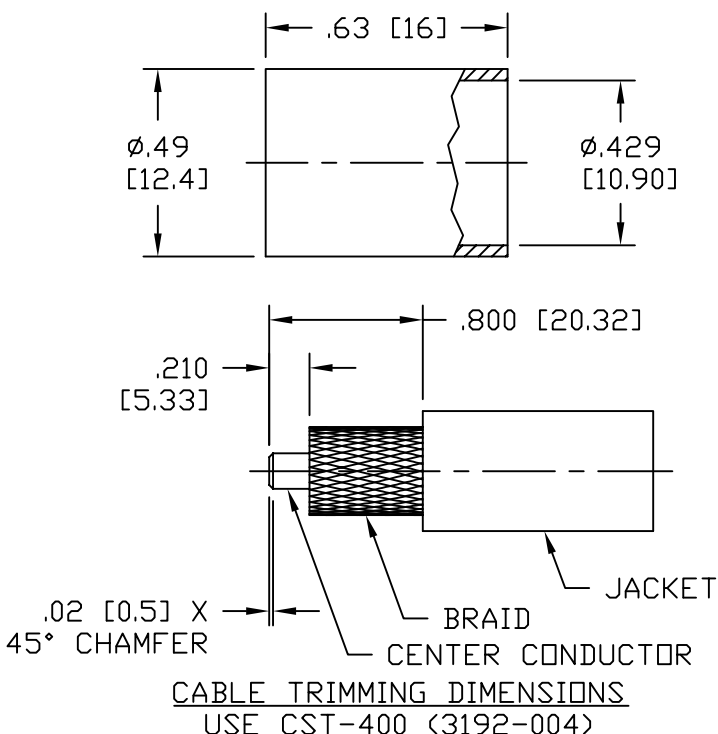
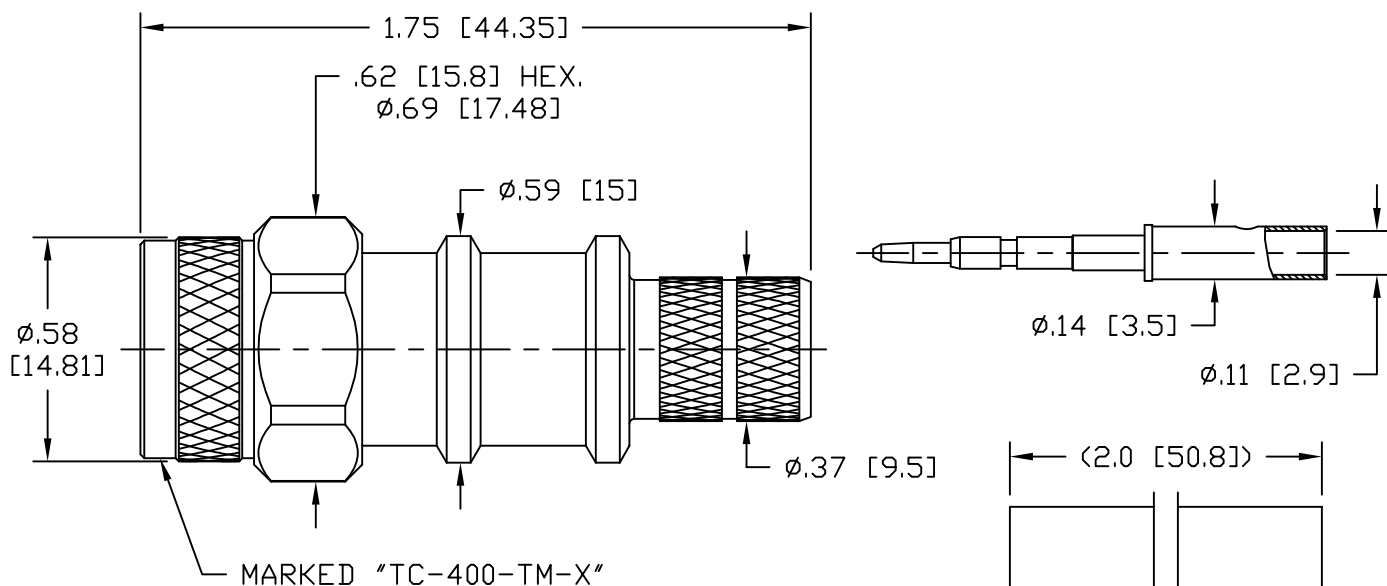


NOTICE OF PROPRIETARY RIGHTS THIS DOCUMENT CONTAINS CONFIDENTIAL TECHNICAL DATA, INCLUDING TRADE SECRETS, PROPRIETARY TO TIMES MICROWAVE SYSTEMS. DISCLOSURE OF THIS DATA IS EXPRESSLY CONDITIONED UPON YOUR ASSENT THAT ITS USE IS LIMITED TO USE WITHIN YOUR COMPANY ONLY. ANY OTHER USE IS STRICTLY PROHIBITED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

SYM	REVISION DESCRIPTION	DFTM	DATE	APPD	DATE
A	RELEASED FOR PRODUCTION	K.A.M.	2/24/10	J.D.B.	3/2/10
B	CHANGED PER CDC #34322	D.J.H.	10/12/11	J.D.B.	10/27/11
C	CHANGED PER CDC #36607	D.J.H.	11/16/12	J.D.B.	11/19/12

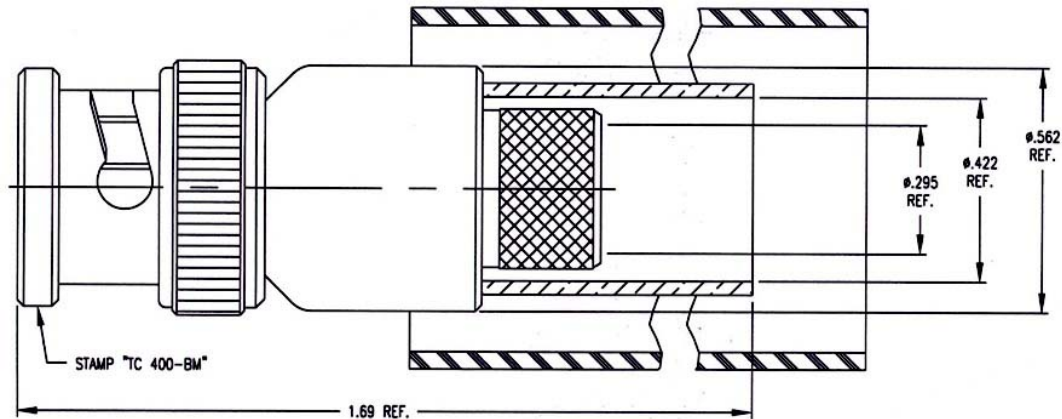


NOTES:

- MATERIALS AND FINISHES:
BODY: BRASS, ALBALOY PLATING
COUPLING NUT: BRASS, ALBALOY PLATING
CENTER CONTACT: BRASS, GOLD PLATING
FERRULE: COPPER, ALBALOY PLATING
- ELECTRICAL:
IMPEDANCE: 50 OHMS NOMINAL
FREQUENCY: DC-6 GHz
VSWR: 1.2 DC-6 GHz
DIELECTRIC WITHSTANDING VOLTAGE: 1,000 VOLTS RMS
- MECHANICAL:
DURABILITY: 500 CYCLES MIN.
TEMPERATURE RANGE: -65°C TO +165°C
- CABLING INSTRUCTIONS:
A. SLIDE FERRULE OVER CABLE JACKET
B. TRIM CABLE TO DIMENSIONS SHOWN. MAKE SURE CUTS ARE SHARP AND SQUARE. DO NOT NICK BRAID OR CENTER CONDUCTOR.
C. TIN CENTER CONDUCTOR AND PLACE CONTACT ON CENTER CONDUCTOR UNTIL BOTTOMED AGAINST DIELECTRIC. SOLDER CONTACT TO CENTER CONDUCTOR.
D. FLAIR BRAID SLIGHTLY AND INSERT CABLE INTO BODY UNTIL BOTTOMED. SLIDE THE FERRULE UP THE CABLE AND OVER THE BRAID UNTIL BOTTOMED ON BODY. CRIMP FERRULE USING A .429 HEX.

MATL:	UNLESS OTHERWISE SPECIFIED	DFTM: K. A. M.	TIMES MICROWAVE SYSTEMS	
USED ON: D	ALL DIMENSIONS ARE IN INCHES MACHINED SURFACES FINISH 32 RMS MAX. REMOVE ALL BURRS .005 MAX. BREAK MACHINE CORNERS .005 MAX. FILLET R. TOLERANCES ON DECIMALS .XX ± .01 .XXX ± .005 ANGLES ± 1° FRACTIONS ± 1/64	DATE: 2/24/10	TC-400-TM-X PLUG, TNC FOR LMR-400	
SCALE: ~	DWG. SIZE: A	CHKD: J. D. B.		
	DO NOT SCALE DRAWING	DATE: 3/2/10		
	CODE IDENT: 68999	APPD: J. D. B.	DATE: 3/2/10	SD3190-2532
			1 of 1	C

LTR	DESCRIPTION	DATE	BY
A	Released	6/7/95	JP

**I. MATERIALS & FINISHES**

center contact: Nickel Plated Brass
 outer contact: Nickel Plated Brass
 coupling nut: Nickel Plated Brass
 body: Nickel Plated Brass
 crimp sleeve: Nickel Plated Copper
 dielectric: Teflon® PTFE
 gasket: Silicone Rubber
 shrink sleeve: Adhesive Lined Polyolefin
 attachment: braid crimp (.429"hex)

II. ELECTRICAL PROPERTIES

impedance: 50 ohms
 working voltage: 500 vrms (max)
 vswr: 1.25:1 (max) up to 3 GHz
 insertion loss: $0.10 \times \sqrt{F_{ghz}}$

Unless otherwise specified, dimensions are in inches. Tolerances are applicable when specified.

These drawings and specifications contain proprietary information which is the property of Times Microwave Systems.

Approvals

Drawn	JP	6/7/95

**TIMES MICROWAVE SYSTEMS**

Wallingford, CT 06492
 (203) 949-8400; (203) 949-8423.Fax
 www.timesmicrowave.com

TC-400-BM

Type-BNC male (plug) – Solder Pin
 for LMR-400 Cable

Size A	CAGE CODE 68999	Drawing No.: 3190-318
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Scale: NA

Rev. (A)

Sheet: 1 of 1

LMR®-400 Flexible Low Loss Communications Coax

Ideal for...

- Drop-in replacement for RG-8/9913 Air-Dielectric type Cable
- 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.

• **Flexibility** and bendability are hallmarks of the LMR-400 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-400.

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-400 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-400 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-400 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-400	Outdoor	PE	Black		54001
LMR-400-DB	Outdoor/Watertight	PE	Black		54091
LMR-400-FR	Indoor/Outdoor Riser	CMR FRPE	Black		54030
LMR-400-FR-PVC	Indoor/Outdoor Riser	CMR FRPVC	Black		54073
LMR-400-PVC	General Purpose	PVC	Black		54218
LMR-400-PVC-W	General Purpose	PVC	White		54204

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCAI	0.108	(2.74)
Dielectric	Foam PE	0.285	(7.24)
Outer Conductor	Aluminum Tape	0.291	(7.39)
Overall Braid	Tinned Copper	0.320	(8.13)
Jacket	(see table above)	0.405	(10.29)

LMR®-400 Flexible Low Loss Communications Coax



Connectors

							Inner	Outer	Finish*						
Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)	Coupling Nut	Contact	Contact	Contact	Body	Length		Width		Weight	
						Attach	Attach	Attach	/Pin	in (mm)		in (mm)		lb(g)	
7-16 DIN Female	Straight Jack	TC-400-716-FC	3190-376	<1.25:1 (2.5)	NA	Solder	Clamp	S/S	S/S	1.6 (41)	1.13 (28.7)	0.281 (127.5)			
7-16 DIN Male	Straight Plug	EZ-400-716M-X	3190-2524	<1.25:1 (6)	Hex	Spring Finger	Crimp	A/G	A/G	1.6 (39.5)	1.38 (35)	0.277 (126.0)			
7-16 DIN Male	Straight Plug	TC-400-716-MC	3190-279	<1.25:1 (2.5)	Hex	Solder	Clamp	S/S	S/S	1.4 (36)	1.40 (35.6)	0.268 (121.6)			
7-16 DIN Male	Right Angle	TC-400-716MC-RA	3190-1671	<1.25:1 (<3)	Hex	Solder	Clamp	A/S	A/S	2.4 (61.5)	1.88 (47.8)	0.35 (159)			
7-16DIN Male	Right Angle	EZ-400-716M-RA-X	3190-2545	<1.35:1 (6)	Hex	Spring Finger	Crimp	A/G	A/G	1.6 (41.7)	1.75 (44.3)	0.374 (0.17)			
BNC Male	Straight Plug	TC-400-BM	3190-318	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/S	N/S	1.7 (43)	0.56 (14.2)	0.063 (28.6)			
HN Male	Straight Plug	TC-400-HNM	3190-923	<1.25:1 (<1)	Knurl	Solder	Clamp	S/G	S/G	2.3 (59.2)	0.88 (22.4)	0.25 (113.4)			
HN Male	Right Angle	TC-400-HNM-RA	3190-2541	<1.25:1 (2.5)	Hex	Solder	Crimp	A/G	A/G	1.6 (41.4)	1.56 (39.6)	0.198 (90.0)			
QDS Male	Straight Plug	TC-400-QDSM	3190-620	<1.25:1 (<3)	Knurl	Solder	Clamp	A/G	A/G	1.8 (46.6)	1.00 (25.4)	0.25 (113.4)			
Mini-UHF	Straight Plug	TC-400-MUHF	3190-520	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	N/G	1.1 (28)	0.50 (12.7)	0.020 (9.1)			
N Female	Straight Jack	TC-400-NFC	3190-299	<1.25:1 (2.5)	NA	Solder	Clamp	N/S	N/S	1.6 (41)	0.75 (19.1)	0.119 (54.0)			
	Straight Jack	EZ-400-NF	3190-956	<1.25:1 (2.5)	NA	Spring Finger	Crimp	N/G	N/G	1.8 (45)	0.66 (16.8)	0.105 (47.6)			
	Straight Jack	TC-400-NF	3190-2255	<1.25:1 (2.5)	NA	Solder	Crimp	N/G	N/G	1.8 (45)	0.66 (16.8)	0.105 (47.6)			
	Bulkhead Jack	EZ-400-NF-BH	3190-518*	<1.25:1 (2.5)	NA	Spring Finger	Crimp	N/G	N/G	1.8 (46)	0.88 (22.4)	0.102 (46.3)			
	Bulkhead Jack	TC-400-NFC-BH (A)	3190-872	<1.25:1 (2.5)	NA	Solder	Clamp	A/G	A/G	1.8 (46)	0.88 (22.4)	0.145 (65.8)			
N Male	Straight Plug	SC-400-NM	3190-1454	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	N/G	1.5 (38)	0.75 (19.1)	0.090 (40.8)			
	Straight Plug	TC-400-NMC	3190-277	<1.25:1 (2.5)	Knurl	Solder	Clamp	N/G	N/G	1.5 (38)	0.70 (17.8)	0.121 (54.9)			
	Straight Plug	EZ-400-NMC-2	3190-2640	<1.25:1 (2.5)	Hex/Knurl	Spring Finger	Crimp	N/G	N/G	1.5 (38)	0.75 (19.1)	0.121 (54.9)			
	Straight Plug	EZ-400-NMH-X	3190-2590	<1.25:1 (10)	Hex/Knurl	Spring Finger	Crimp	A/G	A/G	1.5 (38)	0.89 (22.6)	0.103 (46.8)			
	Straight Plug	TC-400-NMH-X	3190-2626	<1.25:1 (10)	Hex/Knurl	Solder	Crimp	A/G	A/G	1.5 (38)	0.89 (22.6)	0.113 (51.3)			
	Straight Plug	EZ-400-NMK	3190-661	<1.25:1 (10)	Knurl	Spring Finger	Crimp	S/G	S/G	1.5 (38)	0.75 (22.6)	0.113 (51.3)			
	Right Angle	EZ-400-NMH-RA-X	3190-2638	<1.35:1 (6)	Hex/Knurl	Spring Finger	Crimp	A/G	A/G	1.87 (47)	1.42 (36.0)	0.177 (80.2)			
	Right Angle	TC-400-NMH-RA-D	3190-2293*	<1.35:1 (6)	Hex/Knurl	Solder	Crimp	A/G	A/G	1.8 (46)	1.25 (31.8)	0.130 (59.0)			
	Right Angle	TC-400-NMC-RA (A)	3190-870	<1.35:1 (2.5)	Hex	Solder	Clamp	A/G	A/G	1.8 (46)	1.25 (31.8)	0.150 (68.0)			
	Reverse Polarity	TC-400-NM-RP	3190-960	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	N/G	1.5 (38)	0.75 (19.1)	0.090 (40.8)			
SMA Male	Straight Plug	TC-400-SM	3190-439	<1.25:1 (8)	Hex	Solder	Crimp	N/G	N/G	1.2 (29)	0.50 (12.7)	0.032 (14.5)			
TNC Female	Reverse Polarity	TC-400-TF-RP	3190-1063	<1.25:1 (2.5)	NA	Solder	Crimp	N/G	N/G	1.8 (46)	0.55 (14.0)	0.074 (33.6)			
	Reverse Polarity	EZ-400-TF-RP	3190-795	<1.25:1 (2.5)	NA	Spring Finger	Crimp	A/G	A/G	1.8 (46)	0.55 (14.0)	0.074 (33.6)			
TNC Male	Straight Plug	TC-400-TM-X	3190-2532	<1.25:1 (6)	Hex/Knurl	Solder	Crimp	A/G	A/G	1.9 (48)	0.67 (17.5)	0.075 (34.3)			
	Straight Plug	EZ-400-TM-X	3190-2533	<1.25:1 (6)	Hex/Knurl	Spring Finger	Crimp	A/G	A/G	1.9 (48)	0.67 (17.5)	0.075 (34.3)			
	Right Angle	TC-400-TM-RA	3190-442*	<1.35:1 (2.5)	Knurl	Solder	Crimp	N/G	N/G	1.7 (43)	0.59 (15.0)	0.085 (38.6)			
	Reverse Polarity	TC-400-TM-RP	3190-1062	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	N/G	1.7 (43)	0.59 (15.0)	0.074 (33.6)			
	Reverse Polarity	EZ-400-TM-RP	3190-794	<1.25:1 (2.5)	Knurl	Spring Finger	Crimp	A/G	A/G	1.7 (43)	0.59 (15.0)	0.074 (33.6)			