TIMES MICROWAVE SYSTEMS

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
- **NEW!** Times Protect® LP-18-400 protector-series



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

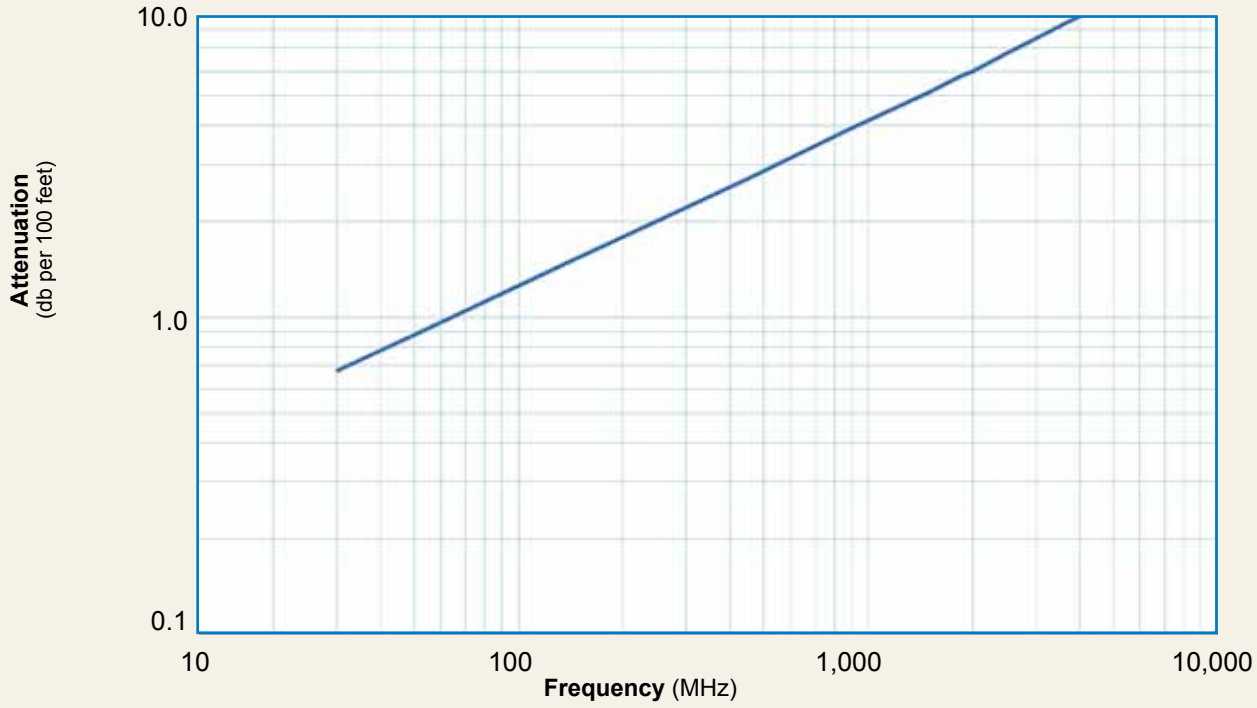
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCAI	0.108	(2.74)
Dielectric	Foam PE	0.285	(7.24)
Outer Conductor	Aluminum Tape	0.291	(7.39)
Overall Braid	Tinned Copper	0.320	(8.13)
Jacket	(see table)	0.405	(10.29)

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

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	1.00	(25.4)
Bend Radius: repeated	in. (mm)	4.0	(101.6)
Bending Moment	ft-lb (N-m)	0.5	(0.68)
Weight	lb/ft (kg/m)	0.068	(0.10)
Tensile Strength	lb (kg)	160	(72.6)
Flat Plate Crush	lb/in. (kg/mm)	40	(0.71)

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	84	
Dielectric Constant	NA	1.38	
Time Delay	nS/ft (nS/m)	1.20	(3.92)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	23.9	(78.4)
Inductance	uH/ft (uH/m)	0.060	(0.20)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	1.39	(4.6)
Outer Conductor	ohms/1000ft (/km)	1.65	(5.4)
Voltage Withstand	Volts DC	2500	
Jacket Spark	Volts RMS	8000	
Peak Power	kW	16	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
Attenuation dB/100 ft	0.7	0.9	1.5	1.9	2.7	3.9	5.1	5.7	6.0	6.8	10.8	13.0
Attenuation dB/100 m	2.2	2.9	5.0	6.1	8.9	12.8	16.8	18.6	19.6	22.2	35.5	42.7
Avg. Power kW	3.33	2.57	1.47	1.20	0.83	0.58	0.44	0.40	0.37	0.33	0.21	0.17

Calculate Attenuation =
(0.122290) •$\sqrt{\text{FMHz}}$ + (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

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LMR®-400
Flexible Low Loss Communications

Connectors

Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)		Coupling Nut	Inner Contact Attach	Outer Contact Attach	Finish* Body /Pin	Length in	Length (mm)	Width in	Width (mm)	Weight lb	Weight (g)
1. 4.1-9.5 mini DIN Female	Straight Jack	EZ-400-4195F-X	3190-2968	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	1.8	(45.0)	0.55	(14.0)	0.074	(33.6)
2. 4.1-9.5 mini DIN Female	Straight Plug	EZ-400-4195M-X	3190-2969	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	1.5	(38.1)	0.89	(22.6)	0.103	(46.8)
3. 716 DIN Female	Straight Jack	TC-400-716-FC	3190-376	<1.25:1	(2.5)	N/A	Solder	Clamp	S/S	1.6	(41)	1.13	(28.7)	0.281	(127.5)
4. 7-16 DIN	Right Angle	TC-400-716M-RA-D	3190-2598	<1.35:1	(6)	Hex	Solder	Crimp	A/S	1.7	(43..20	1.98	(50.3)	0.374	(169.5)
5. 7-16 DIN Male	Straight Plug	EZ-400-716M-X	3190-2524	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	1.6	(39.5)	1.38	(35)	0.277	(126.0)
6. 7-16 DIN Male	Straight Plug	TC-400-716M-X	3190-2597	<1.25:1	(6)	Hex	Solder	Crimp	A/S	1.6	(39.5)	1.42	(36.0)	0.320	(145.0)
7. 7-16 DIN Male	Straight Plug	TC-400-716-MC	3190-279	<1.25:1	(2.5)	Hex	Solder	Clamp	S/S	1.4	(36)	1.40	(35.6)	0.268	(121.6)
8. 7-16 DIN Male	Right Angle	TC-400-716MC-RA	3190-1671	<1.25:1	(<3)	Hex	Solder	Clamp	A/S	2.4	(61.5)	1.88	(47.8)	0.35	(159)
9. 7-16 DIN Male	Right Angle	EZ-400-716M-RA-X	3190-2545	<1.35:1	(6)	Hex	Spring Finger	Crimp	A/G	1.6	(41.7)	1.75	(44.3)	0.374	(0.17)
10. BNC Male	Straight Plug	TC-400-BM-X	3190-6232	<1.30:1	(4)	Knurl	Solder	Crimp	A/G	1.8	(46.8)	0.60	(14.5)	0.630	(28.6)
11. BNC Male	Straight Plug	EZ-400-BM-X	3190-2852	<1.35:1	(2)	Knurl	Spring Finger	Crimp	A/G	1.7	(42.7)	0.56	(14.2)	0.066	(29.9)
12. BNC Male	Right Angle	EZ-400-BM-RA-X	3190-2847	<1.35:1	(2)	Knurl	Spring Finger	Crimp	A/G	1.9	(48.0)	1.32	(33.5)	0.097	(44.0)
13. HN Male	Straight Plug	TC-400-HNM	3190-923	<1.25:	(<1)	Knurl	Solder	Clamp	S/G	2.3	(59.2)	0.88	(22.4)	0.25	(113.4)
14. HN Male	Right Angle	TC-400-HNM-RA	3190-2541	<1.25:1	(2.5)	Hex	Solder	Crimp	A/G	1.6	(41.4)	1.56	(39.6)	0.198	(90.0)
15. UHF Male	Straight Plug	EZ-400-UM	3190-997	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	N/G	1.8	(48)	0.80	(20.3)	0.076	(34.4)
16. Mini-UHF	Straight Plug	TC-400-MUHF	3190-520	<1.25:1	(2.5)	Knurl	Solder	Crimp	N/G	1.1	(28)	0.50	(12.7)	0.020	(9.1)
17. N Female	Straight Jack	TC-400-NFC	3190-299	<1.25:1	(2.5)	N/A	Solder	Clamp	N/S	1.6	(41)	0.75	(19.1)	0.119	(54.0)
18. N Female	Straight Jack	EZ-400-NF-X	3190-2818	<1.25:1	(2.5)	N/A	Spring Finger	Crimp	N/G	1.8	(45)	0.66	(16.8)	0.105	(47.6)
19. N Female	Straight Jack	TC-400-NF-X	3190-2815	<1.25:1	(2.5)	N/A	Solder	Crimp	N/G	1.8	(45)	0.66	(16.8)	0.105	(47.6)
20. N Female	Bulkhead Jack	EZ-400-NF-BH	3190-518#	<1.25:1	(2.5)	N/A	Spring Finger	Crimp	N/G	1.8	(46)	0.88	(22.4)	0.102	(46.3)
21. N Female	Bulkhead Jack	TC-400-NFC-BH (A)	3190-872	<1.25:1	(2.5)	N/A	Solder	Clamp	A/G	1.8	(46)	0.88	(22.4)	0.145	(65.8)
22. N Male	Straight Plug	SC-400-NM	3190-1454	<1.25:1	(2.5)	Knurl	Solder	Crimp	N/G	1.5	(38)	0.75	(19.1)	0.090	(40.8)
23. N Male	Straight Plug	TC-400-NMC	3190-6077	<1.25:1	(2.5)	Knurl	Solder	Clamp	N/G	1.5	(38)	0.70	(17.8)	0.121	(54.9)
24. N Male	Straight Plug	EZ-400-NMC-2-D	3190-2640	<1.25:1	(2.5)	Hex/Knurl	Spring Finger	Clamp	N/G	1.5	(38)	0.75	(19.1)	0.121	(54.9)
25. N Male	Straight Plug	EZ-400-NMH-X	3190-2590	<1.25:1	(10)	Hex/Knurl	Spring Finger	Crimp	A/G	1.5	(38)	0.89	(22.6)	0.103	(46.8)
26. N Male	Straight Plug	TC-400-NMH-X	3190-2626	<1.25:1	(10)	Hex/Knurl	Solder	Crimp	A/G	1.5	(38)	0.89	(22.6)	0.113	(51.3)
27. N Male	Right Angle	EZ-400-NMH-RA-X	3190-2638	<1.35:1	(6)	Hex/Knurl	Spring Finger	Crimp	A/G	1.87	(47)	1.42	(36.0)	0.177	(80.2)
28. N Male	Right Angle	TC-400-NMH-RA-SS	3190-1668	<1.25:1	(2.5)	Hex	Solder	Crimp	SS/G	1.5	(38.1)	0.89	(2.6)	0.130	(59.0)
29. N Male	Right Angle	TC-400-NMH-RA-D	3190-2293#	<1.35:1	(6)	Hex/Knurl	Solder	Crimp	A/G	1.8	(46)	1.25	(31.8)	0.130	(59.0)
30. N Male	Right Angle	TC-400-NMC-RA (A)	3190-870	<1.35:1	(2.5)	Hex	Solder	Clamp	A/G	1.8	(46)	1.25	(31.8)	0.150	(68.0)
31. N Male	Reverse Polarity	TC-400-NM-RP	3190-960	<1.25:1	(2.5)	Knurl	Solder	Crimp	N/G	1.5	(38)	0.75	(19.1)	0.090	(40.8)
32. QN Male	Straight Plug	EZ-400-QNM-X	3190-2979	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	1.5	(38)	0.89	(22.6)	0.103	(46.8)
33. QN Male	Staright Plug	TC-400-QNM-X	3190-6212	<1.25:1	(6)	Hex	Solder	Crimp	A/G	2.0	(50.2)	0.74	(18.9)	0.103	(46.8)
34. QN Male	Right Angle	EZ-400-QNM-RA-X	3190-2981	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	1.9	(47.0)	1.42	(36.0)	0.177	(80.2)
35. QN Female	Straight Jack	EZ-400-QNF-X	3190-2980	<1.25:1	(6)	N/A	Spring Finger	Crimp	A/G	1.8	(45.0)	0.66	(16.8)	0.105	(47.6)
36. SMA Male	Straight Plug	TC-400-SM-X	3190-3046	<1.25:1	(8)	Hex	Solder	Crimp	N/G	1.2	(29)	0.50	(12.7)	0.032	(14.5)
37. SMA Female	Straight Jack	TC-400-SF-X	3190-6174	<1.35:1	(6)	N/A	Solder	Crimp	A/G	1.2	(29.7)	0.50	(12.7)	0.026	(12.0)
38. TNC Female	Reverse Polarity	TC-400-TF-RP	3190-1063	<1.25:1	(2.5)	N/A	Solder	Crimp	N/G	1.8	(46)	0.55	(14.0)	0.074	(33.6)
39. TNC Female	Reverse Polarity	EZ-400-TF-RP	3190-795	<1.25:1	(2.5)	N/A	Spring Finger	Crimp	A/G	1.8	(46)	0.55	(14.0)	0.074	(33.6)
40. TNC Female	Straight Jack	EZ-400-TF-X	3190-3049	<1.25:1	(6)	N/A	Spring Finger	Crimp	A/G	1.8	(45)	0.55	(14.0)	0.074	(33.6)
41. TNC Female	Straight Jack	TC-400-TF-X	3190-3051	<1.25:1	(6)	N/A	Solder	Crimp	A/G	1.8	(45.0)	0.55	(14.0)	0.074	(33.6)
42. TNC Male	Straight Plug	TC-400-TM-X	3190-2532	<1.25:1	(6)	Hex/Knurl	Solder	Crimp	A/G	1.9	(48)	0.67	(17.5)	0.075	(34.3)
43. TNC Male	Straight Plug	EZ-400-TM-X	3190-2533	<1.25:1	(6)	Hex/Knurl	Spring Finger	Crimp	A/G	1.9	(48)	0.67	(17.5)	0.075	(34.3)
44. TNC Male	Reverse Polarity	TC-400-TM-RP	3190-1062	<1.25:1	(2.5)	Knurl	Solder	Crimp	N/G	1.7	(43)	0.59	(15.0)	0.074	(33.6)
45. TNC Male	Reverse Polarity	EZ-400-TM-RP	3190-794	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	A/G	1.7	(43)	0.59	(15.0)	0.074	(33.6)
46. TNC Male	Right Angle	TC-400-TM-RA-D	3190-2671	<1.35:1	(6)	Hex/Knurl	Solder	Crimp	A/G	1.4	(35)	1.41	(35.8)	0.130	(59.0)
47. TNC Male	Right Angle	EZ-400-TM-RA-X	3190-2800	<1.24:1	(6)	Hex	Spring Finger	Crimp	A/G	2.0	(50.0)	0.62	(15.7)	0.130	(59.0)
48. TNC Male	Right Angle RP	TC-400-TM-RP-RA-D	3190-6147	<1.35:1	(6)	Hex	Solder	Crimp	A/G	1.4	(36.0)	1.20	(30.3)	0.130	(59.0)

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

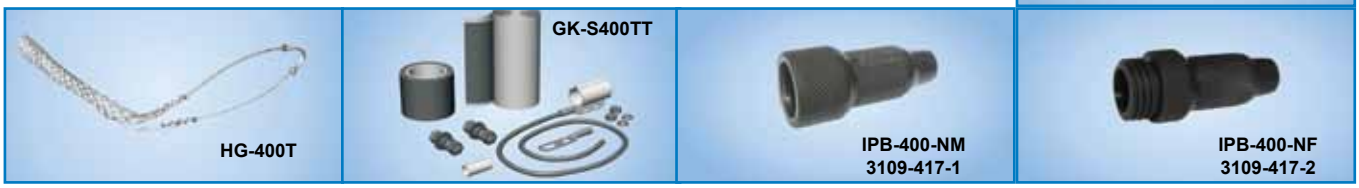

1-2
EZ-400-4195F-X /3190-2968
TC-400-4195M-X / 3190-2969
3
TC-400-716FC
3190-376
4
TC-400-716M-RA-D
3190-2598
5
EZ-400-716M-X
3190-2524
6
TC-400-716M-X
3190-2597
7
TC-400-716MC
3190-279
8
TC-400-716MC-RA
3190-1671
9
EZ-400-716M-RA-X
3190-2545
10
TC-400-BM-X
3190-6232
11
EZ-400-BM-X
3190-2852
12
EZ-400-BM-RA-X
3190-2847
13
TC-400-HNM
3190-923
14
TC-400-HNM-RA
3190-2541
15
EZ-400-UM
3190-997
16
TC-400-MUHF
3190-520
17
TC-400-NFC
3190-299
18
EZ-400-NF-X
3190-2818
19
TC-400-NF-X
3190-2815
20
EZ-400-NF-BH
3190-518
21
TC-400-NFC-BH (A)
3190-872
22
SC-400-NM
3190-1454
23
TC-400-NMC
3190-6077
24
EZ-400-NMC-2-D
3190-2640
25
EZ-400-NMH-X
3190-2590
26
TC-400-NMH-X
3190-2626
27
EZ-400-NMH-RA-X
3190-2638

TIMES MICROWAVE SYSTEMS



Hardware





Type	Part Number	Stock Code	Description
Hoisting Grip	HG-400T	HG-400T	Laced Type (each)
Ground Kit	GK-S400TT	GK-S400TT	Standard Ground Kit (each)
Weather Proof Boots	3109-417-1	IPB-400 NM	LMR-400 Male IP boot suitable for type N, TNC, BNC, 4310, 4195
Weather Proof Boots	3109-417-2	IPB-400 NM	LMR-400 Female IP boots suitable for type N, TNC, BNC, 4310, 4195
Weather Seal Strain Relief Boots	3109-394	WSB-400	Weather seal strain relief boots (10 pk) for use with most popular LMR-400-X series connectors



Install Tools

Type	Part Number	Stock Code	Description
Crimp Tool	CT-U	3192-181	Crimp Handle
Crimp Dies	Y1719	3190-202	.429" Hex Dies
Crimp Tool	CT-400/300	3190-666	Crimp tool for LMR 400 connectors
Crimp Rings	CR-400	3190-830	Crimp rings for TC/EZ-400 connectors (package of 10)
Strip Tool	ST-400C-2	3190-1972	Prep tool for EZ-400-NMC-2 two piece clamp style connector
Strip Tool	CST-400	3192-004	Combination prep tool for LMR-400 crimp and clamp style connectors
Mid-Span Strip Tool	GST-400	3190-2174	For ground strap attachment
Replacement Blades	RB-456	3190-421	Replacement blades for Strip Tool
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool
Tool Kit	TK-400EZ	3190-1601	Tool kit for LMR-400 Crimp Connectors (includes CCT-02, CST-400, CT-400/300, Tool Pouch)
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for all CST strip tools

Unikeyic Electronics

Global Electronic Components Distributor

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Amphenol:

GTC08-32-17SX-025-LC L77SDC37SVFC309 M85049/79-09W02 EP-8-11P 1115-6088 112589 AD-NPMCXJ-2 M85049/7915W03 M85049/52S18W MRDAH03M15000 97-3102A-10SL-3P(958) SLPIPB70BSB2EH 97-4106A-18-12P RTS010N4S03 D38999/20WE6PN 62GB56TG1404PN C016 20G003 200 12 M39012/56-3028 M85049/1819W03 MS3102A-14S-2SY 9760-24P MUSB2K15015BP PTIH-8-4P RJHSE7367 CF-198136-000 122373 97-14S-6P GTS08-32-17SY-025 MA1LAE1200-KIT 034-1046