TIMES MICROWAVE SYSTEMS

LMR® 100A Flexible Low Loss Communications Coax

Ideal for...

- Drop-in Replacement for RG-316/RG-174 (uses standard connectors)
- 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

Part Description

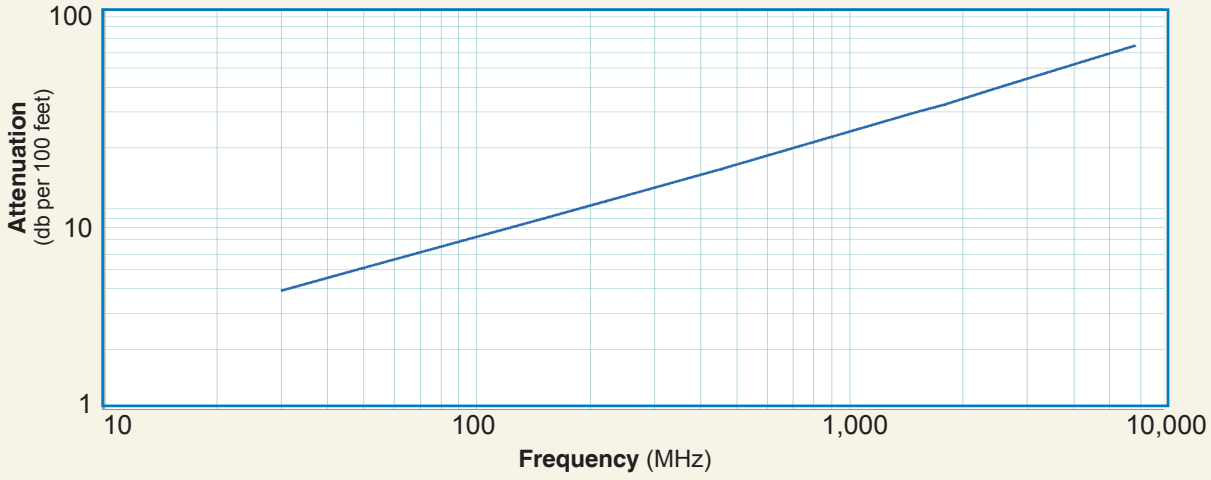
Part Number	Application	Jacket	Color	Stock Code
LMR-100A-FR	Indoor/Outdoor-FR	FRPE	Black	54037
LMR-100A-PVC	Indoor/Outdoor	PVC	Black	54119
LMR-100A-PVC-W	Indoor/Outdoor	PVC	White	54200
LMR-100A-UF	Indoor	TPE	Black	54274
LMR-100-PUR	Indoor	PUR	Black	54363

PVC = Poly Vinyl Chloride

Construction Specifications

Description	Material	In.	(mm)
Inner Conductor	Solid BCCS	0.018	(0.46)
Dielectric	Solid PE	0.060	(1.52)
Outer Conductor	Aluminum Tape	0.065	(1.65)
Overall Braid	Tinned Copper	0.083	(2.11)
Jacket	See Table	0.110	(2.79)

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
Attenuation dB/100 ft	3.9	5.1	8.9	10.9	15.8	22.8	30.1	33.2	35.2	39.8	64.1	77.3
Attenuation dB/100 m	12.9	16.7	29.4	35.8	51.9	74.9	98.7	109.0	115.5	130.6	210.3	253.8
Avg. Power kW	0.230	0.180	0.100	0.083	0.057	0.039	0.029	0.027	0.025	0.022	0.013	0.01

Calculate Attenuation = (0.709140) •$\sqrt{FMHz}$ + (0.001740) • FMHz (interactive calculator available at http://www.timesmicrowave/telecom)
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

Environmental Specifications

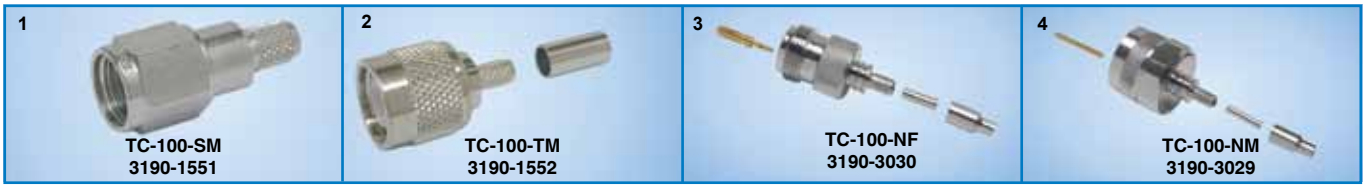
Performance Property	°F	°C
Installation Temperature Range	-40/+185	-40/+85
Storage Temperature Range	-94/+185	-70/+85
Operating Temperature Range	-40/+185	-40/+85

Mechanical Specifications

Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	0.25	(6.4)
Bend Radius: repeated	in. (mm)	1	(25.4)
Bending Moment	ft-lb (N-m)	0.1	(0.014)
Weight	lb/ft (kg/m)	0.0092	(.014)
Tensile Strength	lb (kg)	15	(6.8)
Flat Plate Crush	lb/in. (kg/mm)	10	(0.18)

Electrical Specifications

Performance Property	Units	US	(metric)
Velocity of Propagation	%	66	
Dielectric Constant	NA	2.30	
Time Delay	nS/ft (nS/m)	1.54	(5.05)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	30.8	(101.1)
Inductance	uH/ft (uH/m)	0.077	(0.25)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	81.0	(266)
Outer Conductor	ohms/1000ft (/km)	9.5	(31.2)
Voltage Withstand	Volts DC	500	
Jacket Spark	Volts RMS	2000	
Peak Power	kW	0.6	



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)	lb	Weight (g)
1. SMA Male	Straight Plug	TC-100-SM	3190-1551	<1.25:1	(3)	Hex	Solder	Crimp	SS/G	1.0	(25.4)	0.32	(8.1)	0.015	(6.8)
2. TNC Male	Straight Plug	TC-100-TM	3190-1552	<1.25:1	(3)	Knurl	Solder	Crimp	S/G	1.4	(35.6)	0.59	(15.0)	0.045	(20.4)
3. N Female	Straight Jack	TC-100-NF	3190-3030	<1.25:1	(3)	N/A	Solder	Crimp	A/G	1.3	(32.4)	0.62	(15.8)	0.055	(25.0)
4. N Male	Straight Plug	TC-100-NM	3190-3029	<1.25:1	(3)	Hex	Solder	Crimp	A/G	1.1	(28.2)	0.9	(22.6)	0.066	(30.0)

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

Install Tools

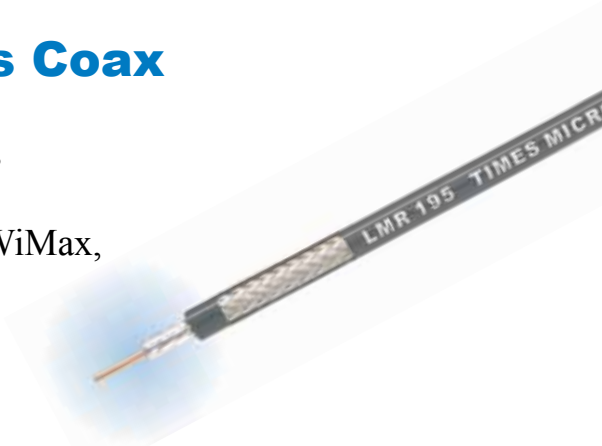
Type	Part Number	Stock Code	Description
Crimp Tool	CT-240/200/195/100	3190-667	Crimp tool for LMR-100, 195, 200 and 240 connectors
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool

TIMES MICROWAVE SYSTEMS

LMR®-195
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
- Drop-in replacement for RG-58 and RG-142



Part Description

Part Number	Application	Jacket	Color	Stock Code
LMR-195	Outdoor	PE	Black	54110
LMR-195-DB	Outdoor/Watertight	PE	Black	54113
LMR-195-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54111
LMR-195-FR-W	Indoor/Outdoor Riser CMR	FRPE	White	54158
LMR-195-FR-PVC	Indoor/Outdoor Riser CMR	FRPVC	Black	54105
LMR-195-MA	Mobile Antennas	PVC	Black	54210
LMR-195-PVC	General Purpose	PVC	Black	54215
LMR-195-PVC-W	General Purpose	PVC	White	54199

Construction Specifications

Description	Material	In.	(mm)
Inner Conductor	Solid BC	0.037	(0.94)
Dielectric	Foam PE	0.110	(2.79)
Outer Conductor	Aluminum Tape	0.116	(2.95)
Overall Braid	Tinned Copper	0.139	(3.53)
Jacket	(see table)	0.195	(4.95)

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

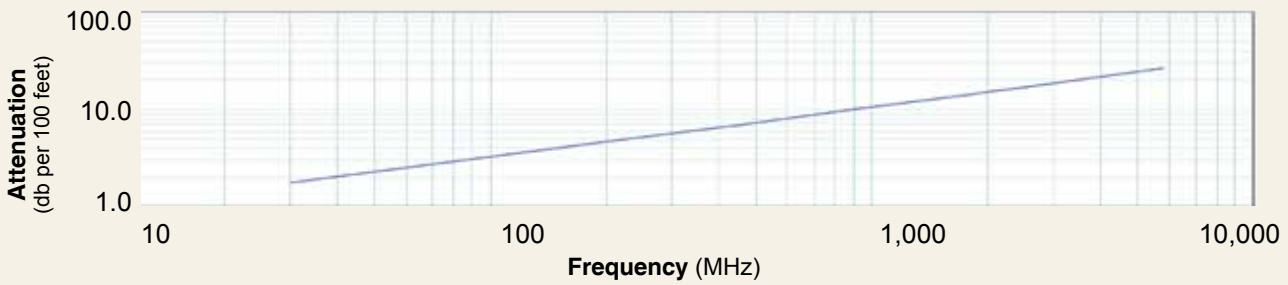
Electrical Specifications

Performance Property	Units	US	(metric)
Velocity of Propagation	%	75	
Dielectric Constant	NA	1.56	
Time Delay	nS/ft (nS/m)	1.27	(4.17)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	25.4	(83.3)
Inductance	uH/ft (uH/m)	0.064	(0.21)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	7.6	(24.9)
Outer Conductor	ohms/1000ft (/km)	4.9	(16.1)
Voltage Withstand	Volts DC	1000	
Jacket Spark	Volts RMS	3000	
Peak Power	kW	2.5	

Mechanical Specifications

Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	0.5	(12.7)
Bend Radius: repeated	in. (mm)	2.0	(50.8)
Bending Moment	ft-lb (N-m)	0.2	(0.27)
Weight	lb/ft (kg/m)	0.021	(0.03)
Tensile Strength	lb (kg)	40	(18.2)
Flat Plate Crush	lb/in. (kg/mm)	15	(0.27)

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
Attenuation dB/100 ft	2.0	2.5	4.4	5.4	7.8	11.1	14.5	16.0	16.9	19.0	29.9	35.7
Attenuation dB/100 m	6.5	8.4	14.6	17.7	25.5	36.5	47.7	52.5	55.4	62.4	98.1	117.1
Avg. Power kW	0.89	0.68	0.39	0.32	0.22	0.16	0.12	0.11	0.10	0.09	0.06	0.04

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-195-NMH-X	3190-2880	<1.25:1 (2.5)	Knurl	Solder	Crimp	S/G	1.5 (38.1)	0.75 (19.1)	0.073 (33.1)
2. N Male	Right Angle	TC-195-NMH-RA-D	3190-2425	<1.35:1 (6)	Hex/Knurl	Solder	Crimp	A/G	1.3 (32.1)	1.19 (30.1)	0.083 (37.5)
3. SMA Male	Straight Plug	TC-195-SM-SS-X	3190-2878	<1.25:1 (2.5)	Hex	Solder	Crimp	SS/G	1.0 (25.4)	0.32 (8.1)	0.015 (6.8)
4. TNC Male	Straight Plug	TC-195-TM-X	3190-2879	<1.25:1 (2.5)	Knurl	Solder	Crimp	S/G	1.4 (35.6)	0.59 (15.0)	0.045 (20.4)
5. SMA Male	Straight Plug	EZ-195-SM-X	3190-6140	<1.30:1 (6)	Hex	Spring Finger	Crimp	A/G	0.9 (22.0)	0.37 (9.4)	0.019 (8.6)
6. BNC Male	Straight Plug	EZ-195-BM-X	3190-6141	<1.30:1 (4)	Knurl	Spring Finger	Crimp	A/G	1.1 (28.4)	0.60 (14.5)	0.045 (20.4)
7. TNC Male	Reverse Polarity	EZ-195-TM-RP-X	3190-6142	<1.35:1 (6)	Hex	Spring Finger	Crimp	A/G	1.1 (28.3)	0.87 (22.0)	0.045 (20.4)

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

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-02	3192-165	Cable end flush cut tool
Combination Strip Tool	CST-195/200	3192-102	Prep tool for LMR-195/200
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for all CST cutting tools
Tool Kit	TK-195/200	660-0829	Install tool kit for LMR-195/200 connectors (CCT-02, DBT-U, CST-195/200, CT-240/200/100, FKP-01)

Calculate Attenuation = (0.356859)·√FMHz + (0.000470) • 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

TIMES MICROWAVE SYSTEMS

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

Part Description				Stock
Part Number	Application	Jacket	Color	Code
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

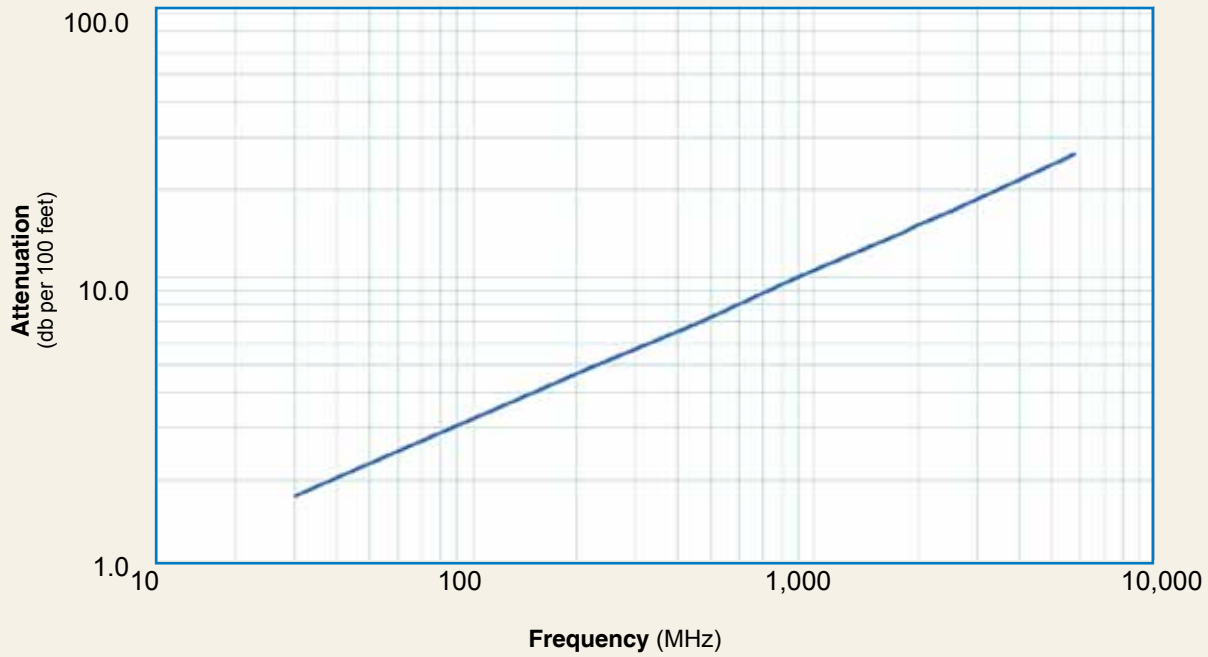
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BC	0.044	(1.12)
Dielectric	Foam PE	0.116	(2.95)
Outer Conductor	Aluminum Tape	0.121	(3.07)
Overall Braid	Tinned Copper	0.144	(3.66)
Jacket	(see table)	0.195	(4.95)

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

Electrical Specifications			
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	

Mechanical Specifications			
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)

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
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	31.3
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	102.8
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	0.06

Calculate Attenuation =
$(0.320900) \cdot \sqrt{FMHz} + (0.000330) \cdot FMHz$ (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

TIMES MICROWAVE SYSTEMS

LMR®-200
Flexible Low Loss Communications Coax

Connectors

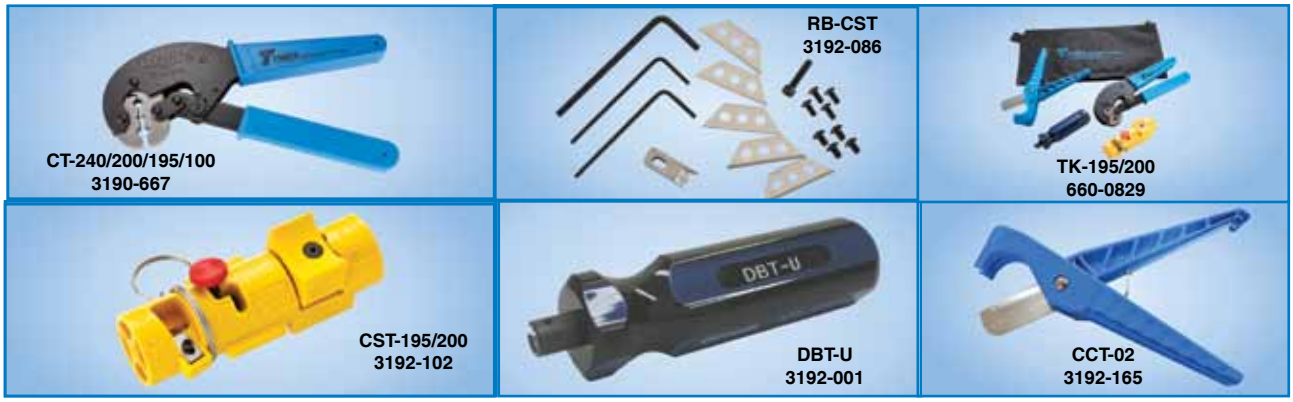
Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)	Coupling Nut	Inner Contact Attach	Outer Contact Attach	Finish* Body /Pin	Length in (mm)	Width in (mm)	Weight lb (g)
1. BNC Male	Straight Plug	TC-200-BM-X	3190-2883	<1.25:1 (2.5)	Knurl	Solder	Crimp	S/G	1.7 (43.2)	0.56 (14.2)	0.045 (20.4)
2. 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)
3. N Male	Straight Plug	EZ-200-NMH-X	3190-2886	<1.25:1 (8)	Hex/Knurl	Spring Finger	Crimp	A/G	1.5 (38.1)	0.75 (19.1)	0.073 (33.1)
4. N Male	Straight Plug	TC-200-NMH-X	3190-2882	<1.25:1 (6)	Hex	Solder	Crimp	A/G	1.5(38.1)	0.89 (22.6)	0.086 (39.0)
5. 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)
6. SMA Male	Straight Plug	TC-200-SM-SS-X	3190-2881	<1.25:1 (2.5)	Hex	Solder	Crimp	SS/G	1.0(38.1)	0.75 (19.1)	0.073 (33.1)
7. 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)
8. TNC Male	Straight Plug	EZ-200-TM-X	3190-2885	<1.25:1 (2.5)	Knurl	Spring Finger	Crimp	S/G	1.4 (35.6)	0.59 (15.0)	0.045 (20.4)
9. 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)
10. TNC Male	Reverse Polarity	EZ-200-TM-RP	3190-792	<1.25:1 (2.5)	Knurl	Spring Finger	Crimp	A/G	1.4 (35.6)	0.32 (8.1)	0.045 (20.4)
11. TNC Female	Straight Jack	TC-200-TF-X	3190-2884	<1.25:1 (2.5)	NA	Solder	Crimp	N/G	1.3 (33.0)	0.57 (14.5)	0.033 (15.0)
12. TNC Female	Reverse Polarity	EZ-200-TF-RP	3190-793	<1.25:1 (2.5)	NA	Spring Finger	Crimp	A/G	1.3 (33.0)	0.57 (14.5)	0.033 (15.0)
13. SMA Female	Straight Jack	EZ-200-SF-SS-X	3190-6007	<1.25:1 (6)	NA	Spring Finger	Crimp	A/G	0.9 (23.2)	0.40 (10.0)	0.019 (8.6)
14. SMA Male	Right Angle	EZ-200-SM-RA-SS-X	3190-6006	<1.30:1 (6)	Hex	Spring Finger	Crimp	A/G	1.0 (24.7)	0.70 (17.7)	0.019 (8.6)
15. TNC Male	Right Angle	EZ-200-TM-RA-X	3190-6008	<1.25:1 (6)	Hex	Spring Finger	Crimp	A/G	1.1 (27.5)	1.10 (28.8)	0.091 (41.7)
16. FME Female	Straight Jack	TC-200-FMEF-X	3190-6249	<1.25:1 (2)	Hex	Solder	Crimp	A/G	1.2 (29.3)	0.36 (9.2)	0.240 (6.1)
17. FME Male	Straight Plug	TC-200-FMEM-X	3190-6250	<1.25:1 (2)	NA	Solder	Crimp	A/G	1.1063(28.1)	0.4252 (10.8)	0.4213 (10.7)

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

Hardware Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S200TT	GK-S200TT	Standard Ground Kit (each)


GK-S200TT



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-02	3192-165	Cable end flush cut tool
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool
Strip Tool	CST-195/200	3192-102	Combination prep tool for LMR-195 and LMR-200
Replacement Blade	RB-CST	3192-086	Replacement blade kit for all CST strip tools
Tool Kit	TK-195/200	660-0829	Install tool kit for LMR-195/200 connectors (CCT-02, DBT-U, CST-195/200, CT-240/200/100, FKP-01)

TIMES MICROWAVE SYSTEMS

LMR®-240
Flexible Low Loss Communications Coax

Ideal for...

- Jumper Assemblies in Wireless Communications Systems
- Short Antenna Feeder runs (e.g. WLL, GPS, LMR, Mobile Antennas)
- Any application (e.g. WLL, GPS, LMR, WLAN, WISP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable

Part Description				Stock
Part Number	Application	Jacket	Color	Code
LMR-240	Outdoor	PE	Black	54021
LMR-240-DB	Outdoor/Watertight	PE	Black	54090
LMR-240-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54029
LMR-240-FR-PVC	Indoor/Outdoor Riser CMR	FRPVC	Black	54214
LMR-240-PVC	General Purpose	PVC	Black	54140
LMR-240-PVC-W	General Purpose	PVC	White	54202
LMR-240-MA	Indoor & Mobile Antenna	PVC	Black	54046

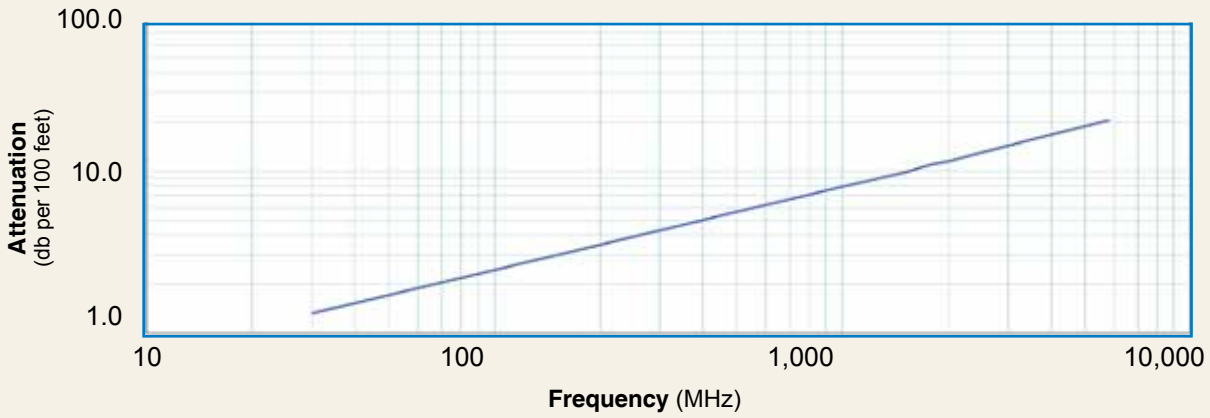
Environmental Specifications		
Performance Property	°F	°C
Installation Temperature Range	-40/+185	-40/+85
Storage Temperature Range	-94/+185	-70/+85
Operating Temperature Range	-40/+185	-40/+85

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	0.75	(19.1)
Bend Radius: repeated	in. (mm)	2.5	(63.5)
Bending Moment	ft-lb (N-m)	0.25	(0.34)
Weight	lb/ft (kg/m)	0.034	(0.05)
Tensile Strength	lb (kg)	80	(36.3)
Flat Plate Crush	lb/in. (kg/mm)	20	(0.36)

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BC	0.056	(1.42)
Dielectric	Foam PE	0.150	(3.81)
Outer Conductor	Aluminum Tape	0.155	(3.94)
Overall Braid	Tinned Copper	0.178	(4.52)
Jacket	(see table)	0.240	(6.10)

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	83	
Dielectric Constant	NA	1.42	
Time Delay	nS/ft (nS/m)	1.21	(3.97)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	24.2	(79.4)
Inductance	uH/ft (uH/m)	0.060	(0.20)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	3.2	(10.5)
Outer Conductor	ohms/1000ft (/km)	3.89	(12.8)
Voltage Withstand	Volts DC	1500	
Jacket Spark	Volts RMS	5000	
Peak Power	kW	5.6	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
Attenuation dB/100 ft	1.3	1.7	3.0	3.7	5.3	7.6	9.9	10.9	11.5	12.9	20.4	24.3
Attenuation dB/100 m	4.4	5.7	9.9	12.0	17.3	24.8	32.4	35.6	37.7	42.4	66.8	79.7
Avg. Power kW	1.49	1.15	0.66	0.54	0.38	0.26	0.20	0.18	0.17	0.15	0.10	0.08

Calculate Attenuation =
(0.242080) • $\sqrt{FMHz}$ + (0.000330) • 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

TIMES MICROWAVE SYSTEMS

LMR®-240
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	Length (mm)	Width in	Width (mm)	Weight lb	Weight (g)
1. F Male	Straight Plug	TC-240-FM-X	3190-2891	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	1.1	(28)	0.45	(11.4)	0.014	(6.4)
2. N Male	Straight Plug	EZ-240-NMH-X	3190-2893	<1.25:1 (2.5)	Hex/Knurl	Spring Finger	Crimp	A/G	1.5	(38.1)	0.78	(19.8)	0.086	(39.0)
3. N Male	Right Angle	EZ-240-NMH-RA-X	3190-6143	<1.35:1 (6)	Hex	Spring Finger	Crimp	A/G	1	(25.1)	1.04	(26.4)	0.115	(52.0)

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)
4. N Male	Right Angle	TC-240-NMH-RA-D	3190-2426	<1.35:1	(6)	Hex/Knurl	Solder	Crimp	A/G	1.2	(32.4)	1.22	(31.0)	0.091	(41.7)
5. N Male	Straight Plug	TC-240-NMH-X	3190-2887#	<1.25:1	(2.5)	Hex/Knurl	Solder	Crimp	N/S	1.5	(38)	0.75	(19.1)	0.086	(39.0)
6. N Male	Straight Plug	TC-240-NMC	3190-244	<1.25:1	(2.5)	Knurl	Solder	Clamp	S/G	1.5	(38)	0.75	(19.1)	0.082	(37.2)
7. 1.0/2.3 DIN	Straight Plug	EZ-240-1023M	3190-6283	<1.35:1	(2.5)	knurl	Spring Finger	Crimp	N/G	1.1	(228.5)	0.33	(8.5)	0.014	(6.63)
8. N Female	Bulkhead Jack	TC-240-NF-BH-X	3190-2888	<1.25:1	(2.5)	NA	Solder	Crimp	A/G	1.7	(44)	0.88	(22.2)	0.115	(52.2)
9. N Female	Panel Mount	TC-240-NF-PM-X	3190-2889#	<1.25:1	(6)	NA	Solder	Crimp	A/G	1.7	(44)	0.88	(22.2)	0.115	(52.2)
10. N Female	Straight Jack	EZ-240-NF-X	3190-2795	<1.25:1	(6)	NA	Spring Finger	Crimp	A/G	1.4	(35.4)	0.62	(15.8)	0.040	(18.0)
11. BNC Male	Straight Plug	TC-240-BMC	3190-242	<1.25:1	(2.5)	Knurl	Solder	Clamp	S/G	1.7	(43)	0.56	(14.2)	0.040	(18.1)
12. BNC Male	Straight Plug	EZ-240-BM-X	3190-6120	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	A/G	1.3	(34)	0.58	(14.7)	0.043	(19.5)
13. BNC Male	Straight Plug	TC-240-BM-X	3190-2890	<1.25:1	(2.5)	Knurl	Solder	Crimp	A/G	1.3	(34)	0.58	(14.7)	0.043	(19.5)
14. BNC Male	Right Angle	TC-240-BM-RA-D	3190-2869	<1.25:1	(2)	Knurl	Solder	Crimp	A/G	1.0	(25.1)	0.57	(14.5)	0.115	(52.0)
15. BNC Male	Right Angle	EZ-240-BM-RA-X	3190-2868	<1.30:1	(4)	Knurl	Spring Finger	Crimp	A/G	1.3	(33.6)	1.19	(30.1)	0.091	(41.7)
16. TNC Male	Straight Plug	EZ-240-TM-X	3190-2725	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	N/G	1.4	(34.3)	0.59	(15.0)	0.043	(19.5)
17. TNC Male	Straight Plug	TC-240-TM-X	3190-2797	<1.25:1	(2.5)	Knurl	Solder	Crimp	N/G	1.7	(43)	0.59	(15.0)	0.043	(19.5)
18. TNC Male	Reverse Polarity	EZ-240-TM-RP-X	3190-2892	<1.25:1	(6)	Knurl	Spring Finger	Crimp	A/G	1.4	(36)	0.59	(15.0)	0.043	(19.5)
19. TNC Male	Right Angle	TC-240-TM-RA-D	3190-2798	<1.25:1	(6)	Hex	Solder	Crimp	A/G	1.0	(25.1)	0.62	(15.7)	0.115	(52.0)
20. TNC Female	Straight Jack	EZ-240-TF-X	3190-6204	<1.25:1	(6)	NA	Spring Finger	Crimp	A/G	1.1	(27.2)	0.87	(22.0)	0.033	(15.0)
21. TNC Female	Reverse Polarity	EZ-240-TF-RP-X	3190-6167	<1.35:1	(6)	NA	Spring Finger	Crimp	A/G	1.1	(27.2)	0.87	(22.0)	0.033	(15.0)
22. QMA Male	Straight Plug	EZ-240-QM-X	3190-2894	<1.25:1	(6)	Knurl	Spring Finger	Crimp	N/G	1.2	(30.0)	0.41	(10.5)	0.014	(6.35)
23. QMA Male	Right Angle	EZ-240-QM-RA-X	3190-2895	<1.25:1	(6)	Knurl	Spring Finger	Crimp	N/G	0.8	(20.3)	0.65	(16.5)	0.019	(8.62)
24. SMA Male	Straight Plug	EZ-240-SM-X	3190-2897	<1:25:1	(6)	Hex	Spring Finger	Crimp	N/G	1.0	(25.4)	0.32	(8.1)	0.016	(7.26)
25. SMA Male	Straight Plug	TC-240-SM-SS-X	3190-2898#	<1.25:1	(10)	Hex	Solder	Crimp	SS/G	1.0	(25)	0.32	(8.1)	0.016	(7.3)
26. SMA Male	Right Angle	TC-240-SM-RA-SS-X	3190-2900#	<1.35:1	(6)	Hex	Solder	Crimp	SS/G	0.8	(20)	0.65	(16.5)	0.019	(8.6)
27. SMA Male	Right Angle	EZ-240-SM-RA-X	3190-2899	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	0.9	(22.8)	0.31	(7.9)	0.019	(8.6)
28. SMA Male	Reverse Polarity	TC-240-SM-RP	3190-326	<1.25:1	(2.5)	Hex	Solder	Crimp	SS/G	1.0	(25)	0.32	(8.1)	0.016	(7.3)
29. SMA Female	Bulkhead Jack	TC-240-SF-SS-BH-X	3190-2896#	<1.25:1	(2.5)	NA	Solder	Crimp	SS/G	1.1	(29)	0.31	(7.9)	0.019	(8.6)
30. Mini-UHF	Straight Plug	TC-240-MUHF	3190-445	<1.25:1	(2.5)	Knurl	Solder	Crimp	N/G	1.1	(28)	0.45	(11.4)	0.014	(6.4)
31. 7/16 Din Male	Straight Plug	TC-240-716M	3190-2982	<1.35:1	(3)	Hex	Spring Finger	Crimp	A/S	2.0	(50.5)	1.26	(32.0)	0.186	(84.4)
32. 7/16 Din Male	Right Angle	TC-240-716M-RA-D	3190-2983	<1.35:1	(3)	Hex	Solder	Crimp	A/S	1.4	(34.3)	1.60	(40.6)	0.239	(108.5)

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

Hardware Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S240TT	GK-S240TT	Standard Ground Kit (each)
Weatherproof Kit	WSB-240	3109-400	Weatherproof/Strain relief kit for

GK-S240TT

WSB-240
3109-400

RB-CST
3192-086

CT-240/200/195/100
3190-667

CCT-02
3192-165

CST-240A
3192-152

DBT-U
3192-001

TK-240
660-0830

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
Strip Tool	CST-240A	3192-152	Prep tool for LMR-240 connectors
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
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for all CST strip tools
Tool Kit	TK-240	660-0830	Install tool kit for LMR-240 connectors (CCT-02, DBT-U, CST-240A, CT-240/200/100, tool pouch)

TIMES MICROWAVE SYSTEMS

LMR®-300
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

Part Description				Stock
Part Number	Application	Jacket	Color	Code
LMR-300	Outdoor	PE	Black	54086
LMR-300-DB	Outdoor/Watertight	PE	Black	54114
LMR-300-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54087
LMR-300-FR-PVC	Indoor/Outdoor Riser CMR	FRPVC	Black	54108
LMR-300-PVC	General Purpose	PVC	Black	54217
LMR-300-PVC-W	General Purpose	PVC	White	54203

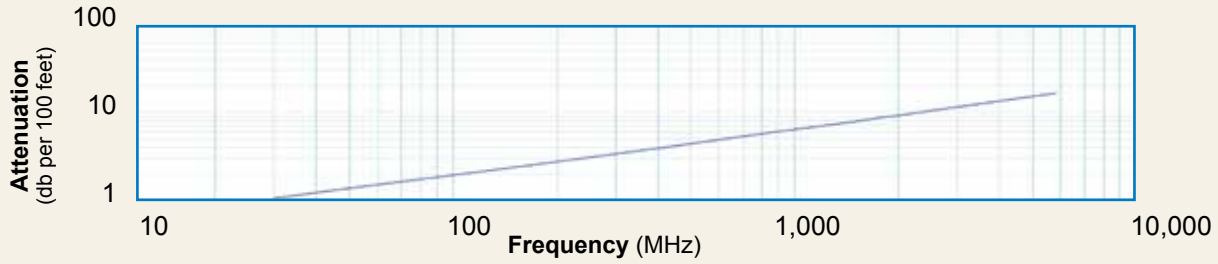
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BC	0.070	(1.78)
Dielectric	Foam PE	0.190	(4.83)
Outer Conductor	Aluminum Tape	0.196	(4.98)
Overall Braid	Tinned Copper	0.225	(5.72)
Jacket	(see table)	0.300	(7.62)

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)	0.88	(22.2)
Bend Radius: repeated	in. (mm)	3.0	(76.2)
Bending Moment	ft-lb (N-m)	0.38	(0.52)
Weight	lb/ft (kg/m)	0.055	(0.08)
Tensile Strength	lb (kg)	120	(54.5)
Flat Plate Crush	lb/in. (kg/mm)	30	(0.54)

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	82	
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)	2.12	(7.0)
Outer Conductor	ohms/1000ft (/km)	2.21	(7.3)
Voltage Withstand	Volts DC	2000	
Jacket Spark	Volts RMS	5000	
Peak Power	kW	10	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
Attenuaton dB/100 ft	1.1	1.4	2.4	2.9	4.2	6.1	7.9	8.7	9.2	10.4	16.5	19.8
Attenuaton dB/100 m	3.5	4.5	7.9	9.6	13.8	19.9	26.0	28.7	30.3	34.2	54.2	65.0
Avg. Power kW	2.09	1.62	0.92	0.76	0.52	0.36	0.28	0.25	0.24	0.21	0.13	0.11

Calculate Attenuation = (0.191930) • $\sqrt{\text{FMHz}}$ + (0.000330) • 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	Right Angle	TC-300-NMH-RA-D	3190-2761	<1.30:1 (2.5)	Hex/Knurl	Solder	Crimp	N/S	1.4 (35)	1.41 (35.8)	0.130 (59.0)
2. N Male	Straight Plug	TC-300-NMH-X	3190-2861	<1.25:1 (6)	Hex/Knurl	Solder	Crimp	A/G	1.3 (33)	0.86 (21.8)	0.084 (38.1)
3. N Male	Straight Plug	EZ-300-NMH-X	3190-2420	<1.25:1 (6)	Hex	Spring finger	Crimp	A/G	1.3 (34)	0.87 (22.0)	0.077(34.95)
4. N Female	Straight Jack	EZ-300-NF-X	3190-3078	<1.25:1 (6)	NA	Solder	Crimp	A/G	1.4 (36.5)	0.87 (22.0)	0.040 (18.0)
5. TNC Male	Straight Plug	TC-300-TM	3190-500	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	1.7 (43)	0.59 (15.0)	0.050 (22.7)
6. SMA Male	Straight Plug	TC-300-SM	3190-501	<1.25:1 (2.5)	Hex	Solder	Crimp	SS/G	1.0 (25)	0.35 (8.9)	0.018 (8.2)
7. SMA Female	Bulkhead Jack	TC-300-SF-BH	3190-590	<1.25:1 (2.5)	NA	Solder	Crimp	SS/G	1.1 (28)	0.31 (7.9)	0.022 (10.0)
8. TNC Male	Straight Plug	EZ-300-TM-X	3190-2421	<1.25:1 (6)	Hex	Spring finger	Crimp	A/G	1.3 (32)	0.66 (16.8)	0.058 (26.2)

* 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-S300TT	GK-S300TT	Standard Ground Kit (each)

Install Tools

Type	Part Number	Stock Code	Description
Crimp Tool	CT-400/300	3190-666	Crimp tool for LMR-300 connectors
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Prep Tool	CST-300	3192-084	Prep tool for LMR-300 Connectors
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for all CST strip tools
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool
Tool Kit	TK-300	660-0831	Install tool kit for LMR-300 connectors (CCT-02, DBT-U, CST-300, CT-400/300, FKP-01)

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

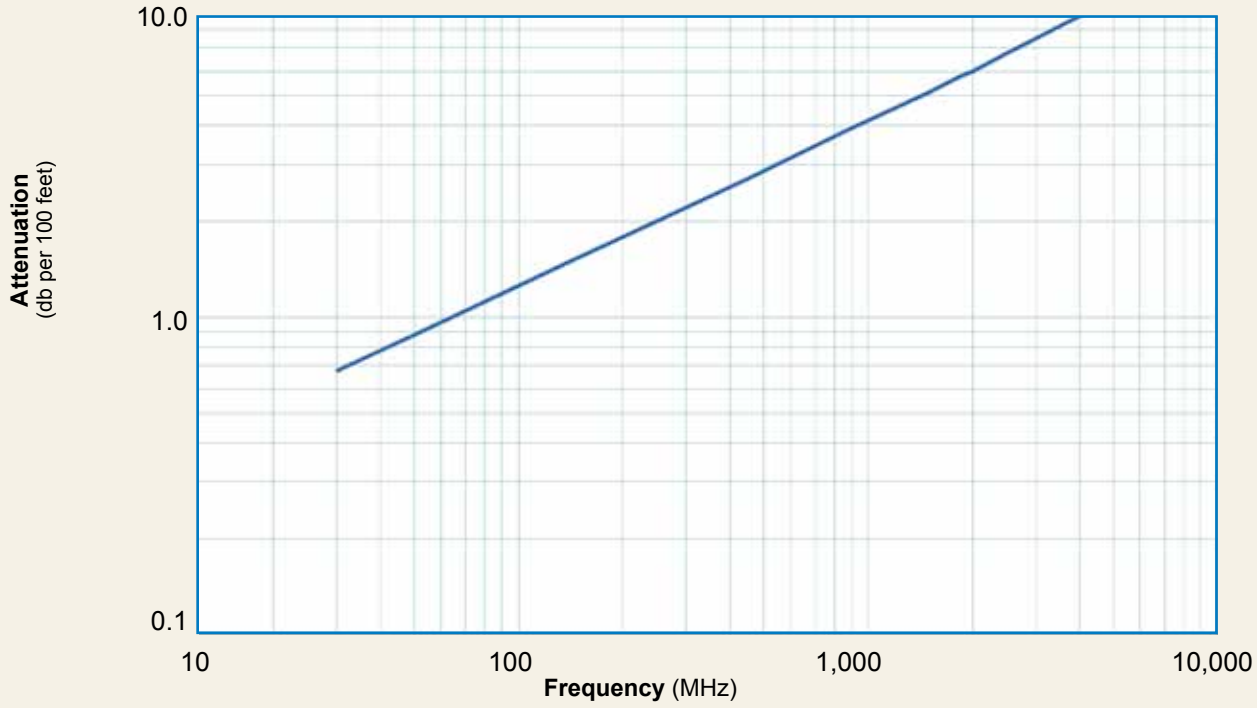
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCAI	0.108	(2.74)
Dielectric	Foam PE	0.285	(7.24)
Outer Conductor	Aluminum Tape	0.291	(7.39)
Overall Braid	Tinned Copper	0.320	(8.13)
Jacket	(see table)	0.405	(10.29)

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

TIMES MICROWAVE SYSTEMS

LMR®-400
Flexible Low Loss Communications

Connectors

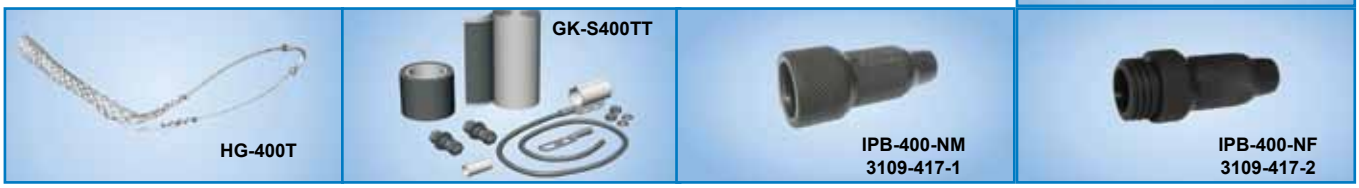
Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)		Coupling Nut	Inner Contact Attach	Outer Contact Attach	Finish* Body /Pin	Length in	Length (mm)	Width in	Width (mm)	Weight lb	Weight (g)
1. 4.1-9.5 mini DIN Female	Straight Jack	EZ-400-4195F-X	3190-2968	<1.25:1	(6)	Hex	Spring Finger	Crimp	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

TIMES MICROWAVE SYSTEMS

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

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

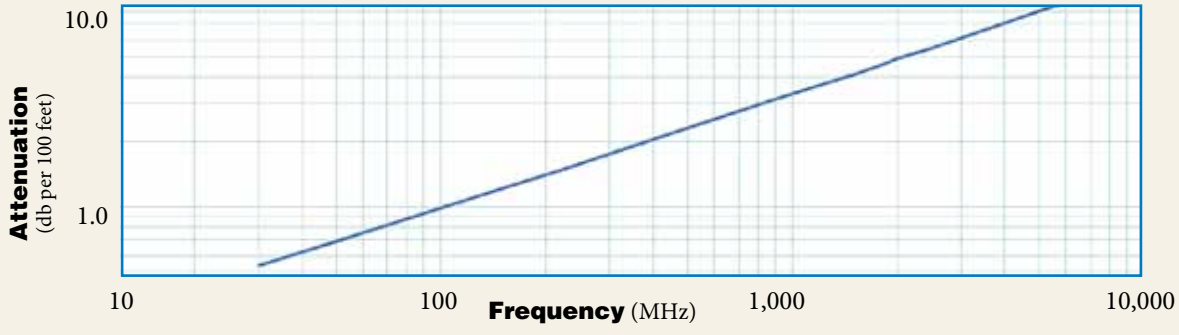
Construction Specifications			
Description	**Material**	**In.**	**(mm)**
Inner Conductor	Solid BCCAl	0.142	(3.61)
Dielectric	Foam PE	0.370	(9.40)
Outer Conductor	Aluminum Tape	0.376	(9.55)
Overall Braid	Tinned Copper	0.405	(10.29)
Jacket	(see table)	0.500	(12.70)

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)

Electrical Specifications			
Performance Property	**Units**	**US**	**(metric)**
Velocity of Propagation	%	82	
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	

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

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
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	10.7
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	35.2
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	0.22

Calculate Attenuation = (0.096590) •$\sqrt{FMHz}$ + (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. 7-16 DIN Female	Straight Plug	TC-500-716F-X	3190-2906	<1.30:1 (6)	N/A	Solder	Crimp	A/S	1.8 (45.9)	1.14 (29.0)	0.298 (135.0)
2. 7-16 DIN Male	Right Angle	TC-500-716M-RA-D	3190-6079	<1.30:1 (6)	Hex	Solder	Crimp	A/S	1.8 (44.9)	1.60(41.6)	0.370 (168.0)
3. 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)
4. N Male	Straight Plug	EZ-500-NMH-X	3190-2596	<.35:1 (6)	Hex/Knurl	Spring Finger	Crimp	A/G	1.7 (44)	0.83 (21.0)	0.111 (50.5)
5. N Male	Right Angle	TC-500-NMH-RA-D	3190-2970	<1.25:1 (6)	Hex/Knurl	Solder	Crimp	A/G	1.5 (39)	1.6 (42.0)	0.279 (127.0)
6. N Female	Straight Jack	TC-500-NFC	3190-215	<1.25:1 (2.5)	N/A	Solder	Clamp	S/G	2.2 (56)	0.94 (23.9)	0.215 (97.5)
7. N Female	Bulkhead Kit	BHA-KIT	3190-223	<1.25:1 (2.5)	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	0.014 (6.4)
8. 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)
9. TNC Male	Straight Plug	TC-500-TM-X	3190-6009	<1.25:1 (2.5)	Hex	Solder	Crimp	N/G	1.5 (38)	1.62 (15.7)	0.082 (28.1)
10. TNC Female	Straight Jack	TC-500-TF-X	3190-6010	<1.30:1 (6)	N/A	Solder	Crimp	A/G	1.8 (44.5)	0.87 (22.0)	0.077 (35.0)
11. 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)

* Finish metals: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alballoy #Available in bulk pack

Install Tools

Type	Part Number	Stock Code	Description
Crimp Tool	CT-U	3192-181	Crimp Handle
Crimp Dies	Y151	3190-465	.532" Hex Dies
Strip Tool	CST-500	3192-075	For Crimp & Clamp Style Connectors
Crimp Tool	CT-500	3192-169	Crimp tool for LMR 500 Connectors
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Cutting Tool	CCT-02	3192-165	Cable End Flush Cut Tool
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for strip tools
Replacement Blade	RB-02	3192-166	Replacement Blade for Cutting Tool
Replacement Blades	RB-456	3190-421	Replacement Blade kit for Strip Tools
Tool Kit	TK-500	660-0832	Install tool kit for LMR-500 connectors, (CCT-02) CST-500, CT-500, FKP-01)

TIMES MICROWAVE SYSTEMS

LMR®-600
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

Part Description				Stock
Part Number	Application	Jacket	Color	Code
LMR-600	Outdoor	PE	Black	54003
LMR-600-DB	Outdoor/Watertight	PE	Black	54093
LMR-600-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54032
LMR-600-FR-PVC	Indoor/Outdoor Riser CMR	FRPVC	Black	54074
LMR-600-PVC	General Purpose	PVC	Black	54219
LMR-600-PVC-W	General Purpose	PVC	White	54206

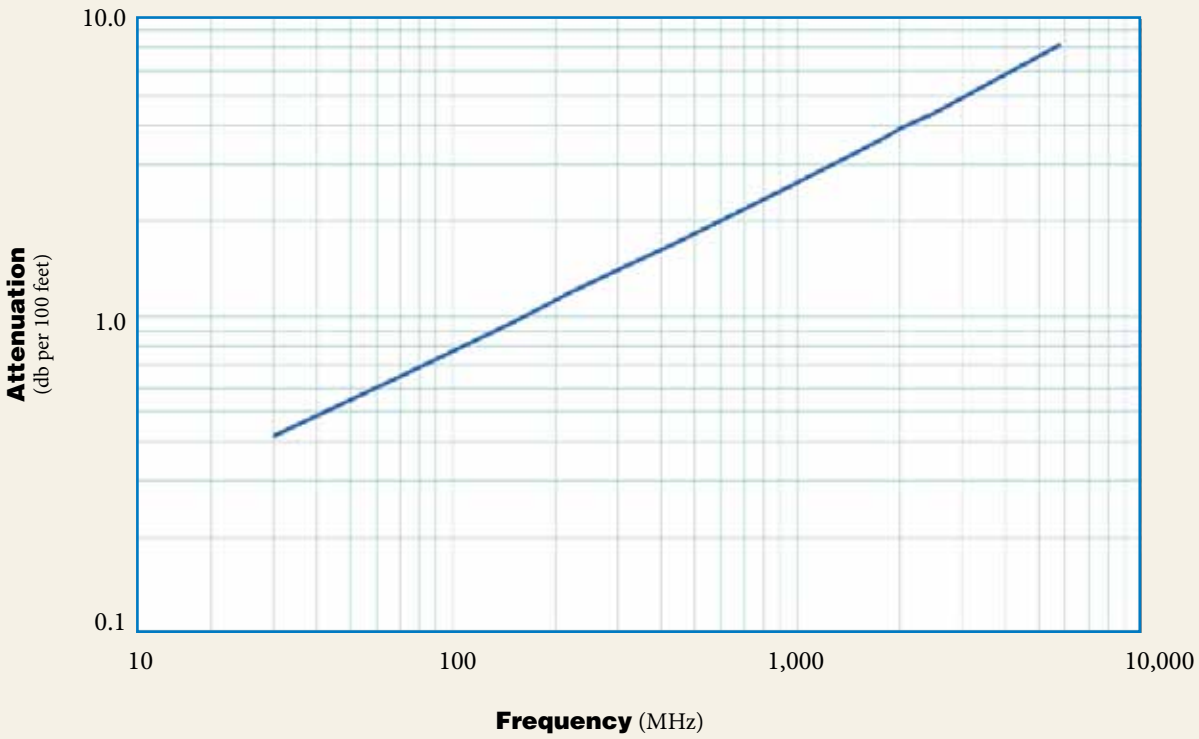
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCAl	0.176	(4.47)
Dielectric	Foam PE	0.455	(11.56)
Outer Conductor	Aluminum Tape	0.461	(11.71)
Overall Braid	Tinned Copper	0.490	(12.45)
Jacket	(see table)	0.590	(14.99)

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	1.50	(38.1)
Bend Radius: repeated	in. (mm)	6.0	(152.4)
Bending Moment	ft-lb (N-m)	2.75	(3.73)
Weight	lb/ft (kg/m)	0.131	(0.20)
Tensile Strength	lb (kg)	350	(158.9)
Flat Plate Crush	lb/in. (kg/mm)	60	(1.07)

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

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	85	
Dielectric Constant	NA	1.32	
Time Delay	nS/ft (nS/m)	1.17	(3.83)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	23.4	(76.6)
Inductance	uH/ft (uH/m)	0.058	(0.19)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	0.53	(1.7)
Outer Conductor	ohms/1000ft (/km)	1.2	(3.9)
Voltage Withstand	Volts DC	4000	
Jacket Spark	Volts RMS	8000	
Peak Power	kW	40	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800	8000
Attenuation dB/100 ft	0.4	0.5	1.0	1.2	1.7	2.5	3.3	3.7	3.9	4.4	7.3	8.8
Attenuation dB/100 m	1.4	1.8	3.2	3.9	5.6	8.2	10.9	12.1	12.8	14.5	23.8	29.0
Avg. Power kW	5.51	4.24	2.41	1.97	1.35	0.93	0.70	0.63	0.59	0.52	0.32	0.26

Calculate Attenuation =
(0.075550) • $\sqrt{\text{FMHz}}$ + (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

TIMES MICROWAVE SYSTEMS

LMR®-600
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)
1. 7/8 EIA	Flange	EZ-600-78EIA	3190-1373	<1.25:1	(2.5)	NA	Spring Finger	Clamp	S/S	2.3	(58)	2.60	(66.0)	0.873	(396.0)
2. 7-16 DIN Female	Straight Jack	TC-600-716FC	3190-375	<1.25:1	(2.5)	NA	Solder	Clamp	S/S	1.1	(28)	1.00	(25.4)	0.249	(112.9)
3. 7-16 DIN	Straight Plug	EZ-600-716M-X	3190-2643	<1.30:1	(6)	Hex	Spring Finger	Crimp	A/S	1.6	(42)	1.38	(35.0)	0.209	(94.80
4. 7-16 DIN	Straight Plug	TC-600-716M-X	3190-2642	<1.30:1	(6)	Hex	Solder	Crimp	A/S	1.6	(40)	1.38	(35.0)	0.191	(86.6
5. 7-16 DIN	Straight Plug	TC-600-716MC	3190-502	<1.25:1	(2.5)	Hex	Solder	Clamp	S/S	2.0	(51)	1.30	(33.0)	0.347	(157.4)
6. 7/16 Male	Right Angle	EZ-600-716M-RA-X	3190-2546	<1.35:1	(6)	Hex	Spring Finger	Crimp	A/G	1.6	(40)	1.38	(35.0)	0.462	(210.0)
7. 7-16 DIN	Right Angle	TC-600-716M-RA-D	3190-2599	<1.35:1	(6)	Hex	Solder	Crimp	A/S	1.7	(44)	2.00	(50.9)	0.362	(164.2)
8. 7-16 DIN	Straight Jack	EZ-600-716F	3190-2447	<1.25:1	(6)	Hex	Spring Finger	Crimp	A/G	1.8	(45)	1.32	(33.6)	0.158	(71.7)
9. HN Male	Straight Plug	TC-600-HNMC	3190-1429	<1.25:1	(<1)	Knurl	Solder	Clamp	S/g	2.3	(59.2)	0.88	(22.4)	0.25	(113)
10. LC Male	Straight Plug	TC-600-LCM	3190-1406	<1.25:1	(<1)	Hex	Solder	Clamp	N/S	3.1	(78.0)	1.62	(41.1)	1.20	(544)
11. N Female	Straight Jack	TC-600-NF-X	3190-2816	<1.30:1	(6)	NA	Solder	Crimp	A/G	1.7	(43)	0.69	(17.6)	0.076	(34.6)
12. N Female	Straight Jack	EZ-600-NF-X	3190-2817	<1.30:1	(6)	NA	Spring Finger	Crimp	A/G	1.7	(43)	0.69	(17.6)	0.090	(40.6)
13. N Female	Bulkhead Jack	EZ-600-NF-BH	3190-616	<1.25:1	(2.5)	NA	Spring Finger	Crimp	S/G	2.4	(61)	0.88	(22.4)	0.195	(88.5)
14. N Female	Bulkhead Jack	TC-600-NF-BH	3190-589	<1.25:1	(2.5)	NA	Solder	Crimp	S/G	2.4	(61)	0.88	(22.4)	0.195	(88.5)
15. N Female	Bulkhead Jack	TC-600-NFC-BH	3190-466	<1.25:1	(2.5)	NA	Solder	Clamp	S/G	2.2	(56)	0.94	(23.9)	0.214	(97.1)
16. N Male	Straight Plug	EZ-600-NMK	3190-669	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	S/G	2.1	(53)	0.92	(23.4)	0.164	(74.4)
17. N Male	Straight Plug	EZ-600-NMC-2-D	3190-2641	<1.25:1	(6)	Hex/Knurl	Spring Finger	Clamp	A/G	2.1	(53)	0.92	(23.4)	0.202	(91.6)
18. N Male	Straight Plug	EZ-600-NMH-X	3190-2627	<1.25:1	(8)	Hex/Knurl	Spring Finger	Crimp	A/G	2.1	(53)	0.92	(23.4)	0.164	(74.4)
19. N Male	Straight Plug	TC-600-NMH-X	3190-2628	<1.25:1	(8)	Hex/Knurl	Solder	Crimp	A/G	2.1	(53)	0.92	(23.4)	0.166	(75.3)
20. N Male	Right Angle	EZ-600-NMH-RA-X	3190-2639	<1.35:1	(6)	Hex	Spring Finger	Crimp	A/G	2.0	(50)	1.42	(36.0)	0.224	(101.7)
21. N Male	Right Angle	TC-600-NMH-RA-D	3190-2427	<1.35:1	(6)	Hex	Solder	Crimp	A/G	1.8	(46.5)	1.62	(41.2)	0.185	(84.3)
22. N Male	Straight Plug	TC-600-NMH-75-50	3190-1610	<1.35:1	(6)	Hex	Solder	Crimp	N/G	2.1	(52.8)	0.91	(23.1)	0.130	(59.0)
23. BNC Male	Right Angle	TC-600-BM-RA	3190-2734	1.30:1	(4)	Knurl	Solder	Crimp	A/G	1.8	(45.5)	1.54	(39.0)	0.164	(74.3)
24. TNC Male	Straight Plug	TC-600-TM-X	3190-2530	<1.25:1	(6)	Hex/Knurl	Solder	Crimp	A/G	2.3	(57.6)	0.75	(19.0)	0.100	(45.6)
25. TNC Male	Straight Plug	EZ-600-TM-X	3190-2531	<1.25:1	(6)	Hex/Knurl	Spring Finger	Crimp	A/G	2.3	(57.6	0.75	(19.0)	0.100	(45.6)
26. TNC Male	Reverse Polarity	EZ-600-TM-RP	3190-796	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	A/G	2.2	(56)	0.87	(22.0)	0.112	(50.8)
27. TNC Male	Reverse Polarity	TC-600-TM-RP	3190-1064	<1.25:1	(6)	Knurl	Solder	Crimp	N/G	2.1	(53.3)	0.68	(17.3)	0.112	(50.8)
28. TNC Male	Right Angle	TC-600-TM-RA-D	3190-2707	<1.35:1	(6)	Hex/Knurl	Solder	Crimp	A/G	1.6	(41)	1.75	(44.5)	0.164	(74.3)
29. TNC Female	Reverse Polarity	EZ-600-TF-RP	3190-797	<1.25:1	(2.5)	NA	Spring Finger	Crimp	A/G	2.3	(58)	0.87	(22.0)	0.100	(45.4)
30. TNC Female	Reverse Polarity	TC-600-TF-RP	3190-1065	<1.35:1	(6)	Knurl	Solder	Crimp	N/G	2.2	(55.8)	0.68	(17.3)	0.100	(45.4)
31. UHF Male	Straight Plug	EZ-600-UM	3190-615	<1.25:1	(2.5)	Knurl	Spring Finger	Crimp	S/G	1.7	(43)	0.88	(22.4)	0.164	(74.4)
32. UHF Male	Straight Plug	TC-600-UMC	3190-213	<1.25:1	(2.5)	Knurl	Solder	Clamp	S/G	1.7	(43)	0.88	(22.4)	0.198	(89.8)

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

Install Tools

Type	Part Number	Stock Code	Description
Crimp Tool	CT-U	3192-181	Crimp Handle
Crimp Dies	Y1720	3190-203	.610" Hex Dies
Crimp Rings	CR-600	3190-831	Crimp Rings for TC/EZ-600 connectors (pkg of 10)
Strip Tool	CST-600	3192-052	Combination prep tool for LMR-600 crimp and clamp style connectors
Crimp Tool	CT-600	3192-170	Crimp tool for LMR 600 connectors
Replacement Blades	RB-456	3190-421	Replacement Blades for Strip Tools
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Midspan Strip Tool	GST-600A	3190-1051	For ground strap attachment
Wrench	WR-600	3190-1435	15/16" Box Wrench (2 required for EZ-600-NMC-2)
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for all CST strip tools
Tool Kit	TK-600EZ	3190-1602	Tool kit for LMR crimp/clamp connectors (includes CCT-02, CST-600, CT-600, Tool Pouch)

Hardware Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S600TT	GK-S600TT	Standard Grounding Kit (each)
Hoisting Grip	HG-600T	HG-600T	Split/Laced Type (each)
Cold Shrink	CS-A600T	CS-A600T	Cable to Antenna Junction (each)
Cold Shrink	CS-60120T	CS-60120T	LMR-600 to -1200 Junction (each)
Cold Shrink	CS-60170T	CS-60170T	LMR-600 to -1700 Junction (each)
Hanger Blocks	CB-600T	CB-600T	Dual Cable Support Block (kit of 10)
Stand. Entry Port Cushion		SC-600T-3	Three cables (each)
Snap-In Hangers	SH-U600T	SH-U600T	Snap-In Hangers (Kit of 10)
Hanger Block Supporting Hardware			Complete Range of Supporting Hardware & Adapters Available
Weather Proof Boot	IPB-600-NM	3109-600-NM	LMR-600 Male IP boot suitable for type N, TNC, BNC, 4310, 4195
Weather Proof Boot	IPB-600-NF	3109-600-NF	LMR-600 Female IP boot suitable for type N, TNC, BNC, 4310, 4195
Weather seal boots	WSB-600	3109-401	Weather seal strain relief boot (10 pk) for use with most popular LMR-600-X series connectors

TIMES MICROWAVE SYSTEMS

LMR®-900
Flexible Low Loss Communications Coax

Ideal for...

- Medium Antenna Feeder runs (no jumpers required)
- Jumper Assemblies for 1-5/8" & 2-1/4" Feeders
- Any application (e.g. WLL, GPS, LMR, WLAN, WISP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable

Part Description				Stock
Part Number	Application	Jacket	Color	Code
LMR-900-DB	Outdoor/Watertight	PE	Black	54094
LMR-900-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54033

PVC: Poly Vinyl Chloride

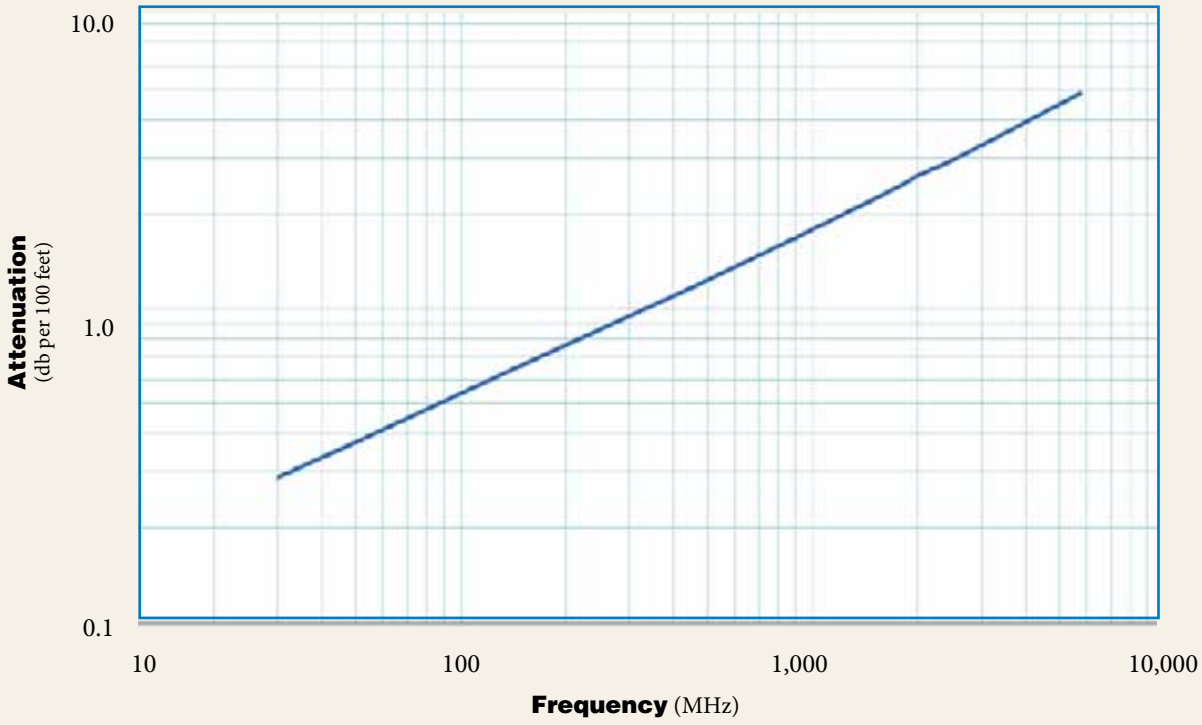
Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	3.00	(76.2)
Bend Radius: repeated	in. (mm)	9.0	(228.6)
Bending Moment	ft-lb (N-m)	9.0	(12.20)
Weight	lb/ft (kg/m)	0.266	(0.40)
Tensile Strength	lb (kg)	750	(340.5)
Flat Plate Crush	lb/in. (kg/mm)	100	(1.79)

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	BC Tube (.222" ID)	0.262	(6.65)
Dielectric	Foam PE	0.680	(17.27)
Outer Conductor	Aluminum Tape	0.686	(17.42)
Overall Braid	Tinned Copper	0.732	(18.59)
Jacket	(see table)	0.870	(22.10)

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

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	87	
Dielectric Constant	NA	1.32	
Time Delay	nS/ft (nS/m)	1.17	(3.83)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	23.4	(76.6)
Inductance	uH/ft (uH/m)	0.058	(0.19)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	0.54	(1.77)
Outer Conductor	ohms/1000ft (/km)	0.55	(1.8)
Voltage Withstand	Volts DC	5000	
Jacket Spark	Volts RMS	8000	
Peak Power	kW	62	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800
Attenuation dB/100 ft	0.3	0.4	0.7	0.8	1.2	1.7	2.2	2.5	2.6	3.0	4.9
Attenuation dB/100 m	0.9	1.2	2.2	2.6	3.8	5.6	7.4	8.2	8.6	9.8	16.0
Avg. Power kW	8.89	6.85	3.89	3.19	2.19	1.51	1.14	1.03	0.97	0.86	0.52

Calculate Attenuation =
$(0.051770) \cdot \sqrt{FMHz} + (0.000160) \cdot FMHz$ (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

TIMES MICROWAVE SYSTEMS

LMR®-900
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)
1. 7-16 DIN Female	Straight Jack	EZ-900-716FC-2	3190-1550	<1.25:1 (2.5)	NA	Press Fit	Clamp	S/S	2.0 (51)	1.38 (35.1)	0.379 (171.9)
2. 7-16 DIN Male	Straight Plug	EZ-900-716MC-2	3190-1641	<1.25:1 (2.5)	Hex	Press Fit	Clamp	S/S	2.0 (51)	1.44 (36.6)	0.485 (220.0)
3. 7-16 DIN Male	Right Angle	EZ-900-716-MC-RA	3190-614	<1.35:1 (2.5)	Hex	Press Fit	Clamp	S/S	2.7 (69)	2.15 (55.0)	1.150 (521.6)
4. 7/8 EIA Male	Straight Plug	EZ-900-78EIA-2	3190-1282	<1.25:1 (2.5)	NA	Press Fit	Clamp	S/S	3.0 (76)	2.24 (56.9)	1.013 (459.5)
5. 7/8 EIA Male	Right Angle	EZ-900-78EIA-RA	3190-1450	<1.25:1 (1)	Flange	Press Fit	Clamp	S/S	2.95 (75.0)	2.60 (66.0)	1.50 (680.4)
6. N Female	Straight Jack	EZ-900-NFC-2	3190-1263	<1.25:1 (6)	NA	Press Fit	Clamp	S/S	2.0 (51)	1.38 (35.1)	0.443 (200.9)
7. N Male	Straight Plug	EZ-900-NMC-2	3190-1262	<1.25:1 (6)	Hex/Knurl	Press Fit	Clamp	S/S	2.0 (51)	1.38 (35.1)	0.463 (210.0)

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

Install Tools

Type	Part Number	Stock Code	Description
Strip Tool	ST-900C	3190-1310	For LMR 900 Clamp Style Connectors
Midspan Strip Tool	GST-900A	3190-435	For Ground Strap Attachment
Wrenches	WR-900	3190-509	1-1/4" Box Wrench (2 required)
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool


GK-S900TT


HG-900T


CS-A900T, CS-90120T, CS-90170T


SC-900T


Standard Entry Panels


CB-900T


Hanger Block Hardware


SH-U900T

Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S900TT	GK-S900TT	Standard Grounding Kit (each)
Hoisting Grip	HG-900T	HG-900T	Split/Laced Type (each)
Cold Shrink	CS-A900T	CS-A900T	Cable to Antenna Junction (each)
Cold Shrink	CS-90120T	CS-90120T	LMR-900 to -1200 Junction (each)
Cold Shrink	CS-90170T	CS-90170T	LMR-900 to -1700 Junction (each)
Stand. Entry Port Cushion	SC-900T-3	SC-900T-3	Three Cables (each)
Standard Entry Panels			Full Range of Port Styles/Combinations Available
Hanger Blocks	CB-900T	CB-900T	Dual Cable Support Block (kit of 10)
Hanger Block Supporting Hardware			Complete Range of Supporting Hardware & Adapters Available
Snap-in Hangers	SH-U900T	SH-U900T	Snap-in Hanger (Kit of 10)

TIMES MICROWAVE SYSTEMS

LMR®-1200
Flexible Low Loss Communications Coax

Ideal for...

- Medium Antenna Feeder runs
- Jumper Assemblies for 1-5/8” & 2-1/4” Feeders
- Building-Top Sites
- Any application (e.g. WLL, GPS, LMR, WLAN, WISP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable

Part Description

Part Number	Application	Jacket Color		Stock Code
LMR-1200-DB	Outdoor/Watertight	PE	Black	54095
LMR-1200-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54034

Construction Specifications

Description	Material	In.	(mm)
Inner Conductor	BC Tube (.309" ID)	0.349	(8.86)
Dielectric	Foam PE	0.920	(23.37)
Outer Conductor	Aluminum Tape	0.926	(23.52)
Overall Braid	Tinned Copper	0.972	(24.69)
Jacket	(see table)	1.200	(30.48)

Mechanical Specifications

Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	6.50	(165.1)
Bend Radius: repeated	in. (mm)	12.0	(304.8)
Bending Moment	ft-lb (N-m)	15	(20.34)
Weight	lb/ft (kg/m)	0.448	(0.67)
Tensile Strength	lb (kg)	1300	(590.2)
Flat Plate Crush	lb/in. (kg/mm)	250	(4.47)

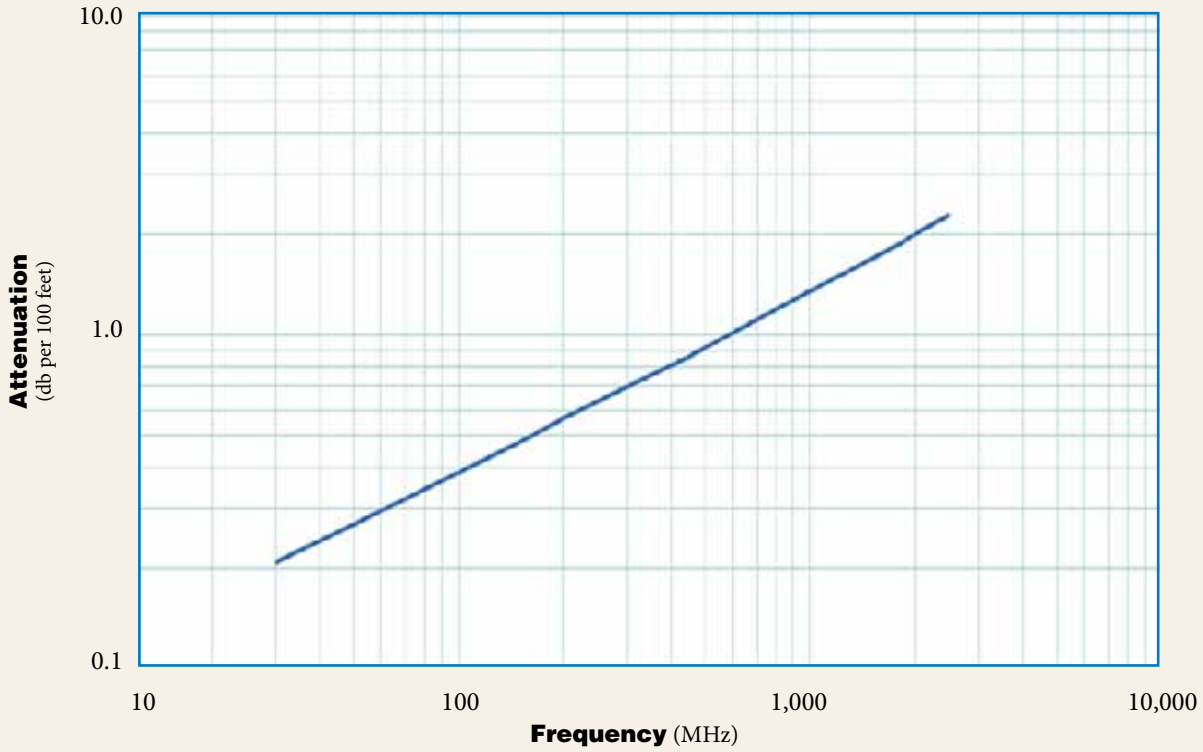
Environmental Specifications

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

Electrical Specifications

Performance Property	Units	US	(metric)
Velocity of Propagation	%	88	
Dielectric Constant	NA	1.29	
Time Delay	nS/ft (nS/m)	1.15	(3.79)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	23.1	(75.8)
Inductance	uH/ft (uH/m)	0.058	(0.19)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	0.32	(1.0)
Outer Conductor	ohms/1000ft (/km)	0.37	(1.2)
Voltage Withstand	Volts DC	6000	
Jacket Spark	Volts RMS	8000	
Peak Power	kW	90	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500
Attenuation dB/100 ft	0.2	0.3	0.5	0.6	0.9	1.3	1.7	1.9	2.0	2.3
Attenuation dB/100 m	0.7	0.9	1.6	1.9	2.8	4.2	5.5	6.1	6.5	7.4
Avg. Power kW	12.63	9.72	5.54	4.49	3.06	2.09	1.57	1.41	1.33	1.16

Calculate Attenuation =
(0.037370) •$\sqrt{FMHz}$ + (0.000160) • 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

TIMES MICROWAVE SYSTEMS

LMR®-1200
Flexible Low Loss Communications Coax

1.

EZ-1200-716-FC-2
3190-2784

2.

EZ-1200-716MC-2
3190-2781

3.

EZ-1200-NFC-2
3190-2785

4.

EZ-1200-NMC-2
3190-2783

5.

EZ-1200-78EIA-2
3190-2780

6.

EZ-1200-78EIA-RA-2
3190-2782

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. 7-16 DIN Female	Straight Jack	EZ-1200-716FC-2	3190-2784	<1.20:1 (2.5)	NA	Spring Finger	Clamp	A/S	2.3	(58)	1.73	(44.0)	0.586	(265.8)
2. 7-16 DIN Male	Straight Plug	EZ-1200-716MC-2	3190-2781	<1.20:1 (2.5)	Hex	Spring Finger	Clamp	A/S	2.3	(58)	1.73	(44.0)	0.848	(384.6)
3. N Female	Straight Jack	EZ-1200-NFC-2	3190-2785	<1.20:1 (2.5)	NA	Spring Finger	Clamp	A/S	2.2	(51)	1.73	(44.0)	0.630	(285.9)
4. N Male	Straight Plug	EZ-1200-NMC-2	3190-2783	<1.20:1 (2.5)	Hex/Knurl	Spring Finger	Clamp	A/S	2.4	(61)	1.73	(44.0)	0.651	(295.3)
5. 7/8 EIA	Straight Plug	EZ-1200-78EIA-2	3190-2780	<1.15:1 (0.5)	NA	Spring Finger	Clamp	A/S	3.8	(96)	2.22	(56.5)	1.206	(547.0)
6. 7/8 EIA	Right Angle	EZ-1200-78EIA-RA-2	3190-2782	<1.15:1 (0.5)	NA	Spring Finger	Clamp	A/S	3.1	(80)	3.07	(78.1)	1.800	(816.5)

* Finishes: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alballoy **VSWR spec based on 3 foot cable with a connector pair


WR-1200A - 3190-512
WR-1200B - 3190-511


3192-124
ST-1200-CH


CCT-02
3192-165


GST-1200A
3190-436

Install Tools

Type	Part Number	Stock Code	Description
Midspan Strip Tool	GST-1200A	3190-436	For Ground Strap Attachment
Wrench	WR-1200A	3190-512	1-9/16" Box Wrench (1 required)
Wrench	WR-1200B	3190-511	1-7/16" Box Wrench (1 required)
Strip Tool	ST-1200-CH	3192-124	For LMR-1200 clamp style connectors
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool


GK-S1200TT

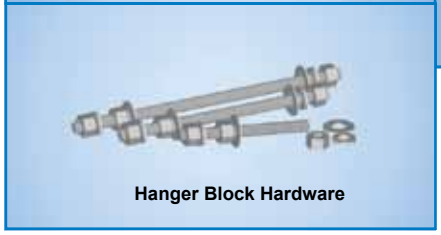

HG-1200T


CS-60120T, CS-90120T


SC-1200T


Standard
Entry Panels


CB-1200T


Hanger Block Hardware


SH-U1200T

Hardware Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S1200TT	GK-S1200TT	Standard Grounding Kit (each)
Hoisting Grip	HG-1200T	HG-1200T	Split/Laced Type (each)
Cold Shrink	CS-90120T	CS-90120T	LMR-900 to -1200 Junction (each)
Cold Shrink	CS-60120T	CS-60120T	LMR-600 to -1200 Junction (each)
Standard Entry Port Cushion	SC-1200T	SC-1200T	Three Cables (each)
Standard Entry Panels	Full Range of Port Styles/Combinations Available		
Hanger Blocks	CB-1200T	CB-1200T	Dual Cable Support Block (kit of 10)
Hanger Block Supporting Hardware	Complete Range of Supporting Hardware & Adapters Available		
Snap-In Hangers	SH-U1200T	SH-U1200T	Snap-In Hangers (Kit of 10)

TIMES MICROWAVE SYSTEMS

LMR®-1700
Flexible Low Loss Communications Coax

Ideal for...

- Long Antenna Feeder runs
- Building-Top Sites
- Any application (e.g. WLL, GPS, LMR, WLAN, WISP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable

Part Description				
Part Number	Application	Jacket Color		Stock Code
LMR-1700-DB	Outdoor/Watertight	PE	Black	54096
LMR-1700-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54035

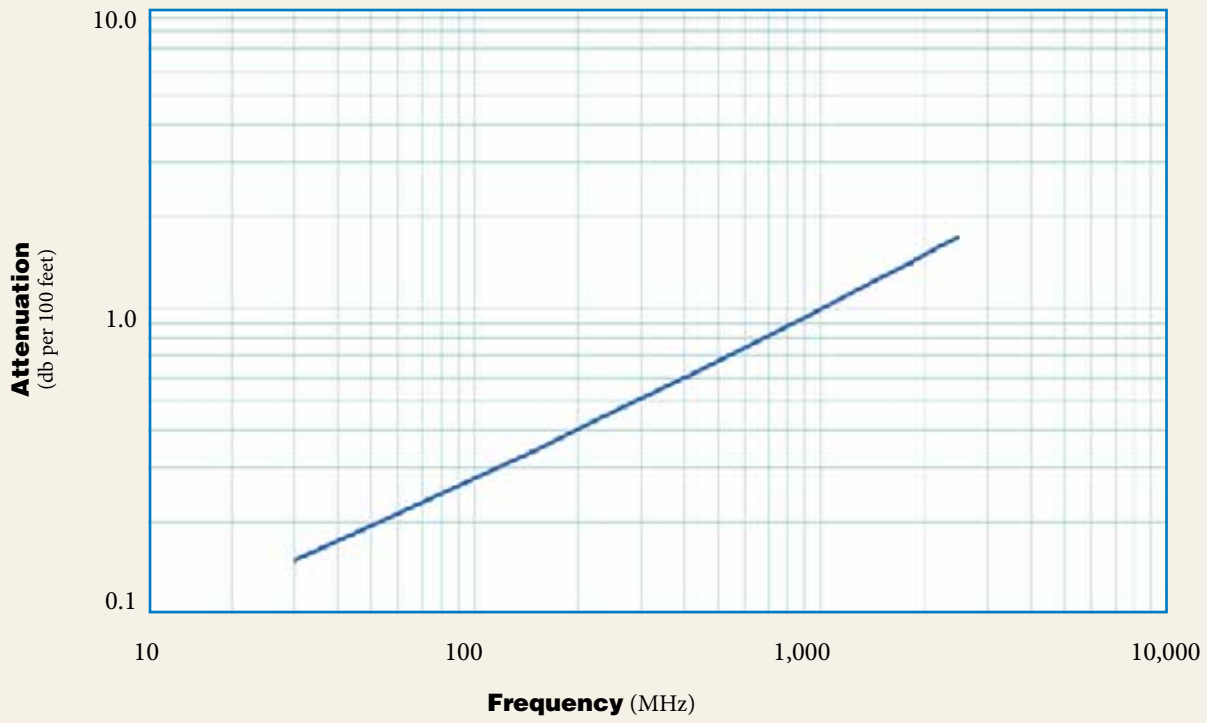
Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	BC Tube (.477" ID)	0.527	(13.39)
Dielectric	Foam PE	1.350	(34.29)
Outer Conductor	Aluminum Tape	1.356	(34.44)
Overall Braid	Tinned Copper	1.402	(35.61)
Jacket	(see table)	1.670	(42.42)

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	13.50	(342.9)
Bend Radius: repeated	in. (mm)	17.0	(431.8)
Bending Moment	ft-lb (N-m)	40	(54.23)
Weight	lb/ft (kg/m)	0.736	(1.10)
Tensile Strength	lb (kg)	1500	(681.0)
Flat Plate Crush	lb/in. (kg/mm)	300	(5.36)

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

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	89	
Dielectric Constant	NA	1.26	
Time Delay	nS/ft (nS/m)	1.14	(3.75)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	22.8	(74.9)
Inductance	uH/ft (uH/m)	0.057	(0.19)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	0.21	(0.7)
Outer Conductor	ohms/1000ft (/km)	0.27	(0.9)
Voltage Withstand	Volts DC	9000	
Jacket Spark	Volts RMS	8000	
Peak Power	kW	202	

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500
Attenuation dB/100 ft	0.1	0.2	0.3	0.4	0.6	0.9	1.3	1.4	1.5	1.7
Attenuation dB/100 m	0.5	0.6	1.1	1.4	2.1	3.1	4.1	4.6	4.9	5.7
Avg. Power kW	20.27	15.55	8.72	7.09	4.79	3.23	2.40	2.15	2.02	1.76

Calculate Attenuation =
$(0.026460) \cdot \sqrt{FMHz} + (0.000160) \cdot FMHz$ (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

TIMES MICROWAVE SYSTEMS

LMR®-1700 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)
1. 7-16 DIN Female	Straight Jack	EZ-1700-716FC	3190-388	<1.25:1 (2.5)	NA	Press Fit	Clamp	S/S	2.17 (55)	2.2 (55.9)	1.005(455.9)
2. 7-16 DIN Male	Straight Plug	EZ-1700-716MC	3190-387	<1.25:1 (2.5)	Hex	Press Fit	Clamp	S/S	2.17 (55)	2.2 (55.9)	1.055(478.5)
3. N Female	Straight Jack	EZ-1700-NFC	3190-386	<1.25:1 (2.5)	NA	Press Fit	Clamp	S/S	2.17 (55)	2.2 (55.9)	1.087(493.1)
4. N Male	Straight Plug	EZ-1700-NMC	3190-385	<1.25:1 (2.5)	Hex	Press Fit	Clamp	S/S	2.17 (55)	2.2 (55.9)	1.058(479.9)

* Finishes: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alballoy **VSWR spec based on 3 foot cable with a connector pair

Install Tools

Type	Part Number	Stock Code	Description
Strip Tool	ST-1700C	3190-312	For Clamp Style Connectors
Midspan Strip Tool	GST-1700A	3190-437	For Ground Strap Attachment
Wrenches	WR-1700	3190-514	2" Box Wrench (2 required)
Cutting Tool	CCT-02	3192-165	Cable end flush cut tool
Replacement Blade	RB-02	3192-166	Replacement blade for cutting tool


GK-S1700TT


HG-1700T


CS-90170T, CS-60170T


SC-1700T


Standard Entry Panels


CB-1700T


Hanger Block Hardware


SH-U1700T

Hardware Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S1700TT	GK-S1700TT	Standard Grounding Kit (each)
Hoisting Grip	HG-1700T	HG-1700T	Split/Laced Type (each)
Cold Shrink	CS-90170T	CS-90170T	LMR-900 to -1700 Junction (each)
Cold Shrink	CS-60170T	CS-60170T	LMR-600 to -1700 Junction (each)
Standard Entry Port Cushion	SC-1700T	SC-1700T	One Cable (each)
Standard Entry Panels	Full Range of Port Styles/Combinations Availabl		
Hanger Blocks	CB-1700T	CB-1700T	Dual Cable Support Block (kit of 10)
Hanger Block Supporting Hardware	Complete Range of Supporting Hardware & Adapters Available		
Snap-In Hangers	SH-U1700T	SH-U1700T	Snap-In Hangers (Kit of 10)