

Engineered Products:

T-RAD-600 50 Ohm Leaky Feeder Coaxial Cable

- Provides RF coverage in buildings, mines and other enclosed areas
- Offers broadband performance up to 2.5 GHz
- Flexible, non-kinking design provides easier installation
- Accepts standard "EZ" crimp connectors used for LMR-600 cable*
- FR series is MSHA approved for mining applications



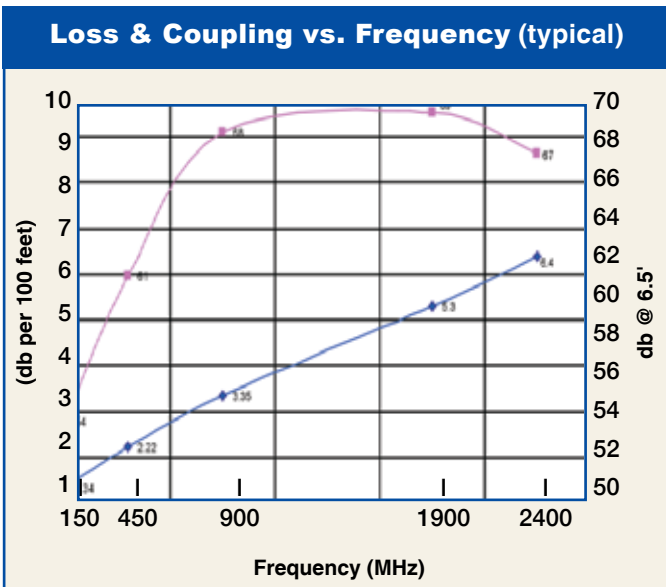
Part Number	Part Description Application	Jacket	Color	Stock Code
AA 9096	T-RAD-600-PVC	PVC	Black	44030
AA-9097	T-RAD-600-FR	FRPE	Black	44031

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCA1	0.176	(4.47)
Dielectric	Gas-Injected Foam Polyethylene	0.455	(11.56)
Inner Shield	Bonded Aluminum Tape	0.458	(11.63)
Jacket	See table above	0.530	(13.46)

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	1.5	(38)
Bend Radius: repeated	in. (mm)	6.0	(152.4)
Weight	lb/ft (kg/m)	0.09	(0.137)

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

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	86	
Dielectric Constant	NA	1.35	
Time Delay	nS/ft (nS/m)	1.18	(3.87)
Impedance	ohms	50	
Voltage Withstand	Volts DC	4000	
Jacket Spark	Volts RMS	6000	



Frequency (MHz)	150	450	900	1900	2400
Attenuation dB/100 ft	1.34	2.22	3.35	5.30	6.40
Attenuation dB/100 m	4.39	7.28	10.98	17.38	20.99
Coupling Loss** dB	54	61	68	69	67

* Request T-RAD-600 connector data sheet and attachment instructions
 ** Coupling loss measured at 6.5 feet (2 meters) *** Patent applied for



Connectors											Length	Width	Weight
Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)	Coupling Nut	Inner Contact Attach	Outer Contact Attach***	Finish* Body /Pin	in (mm)	in (mm)	lb	(g)	
1. 7-16DIN Male	Straight Plug	EZ-600-716-M-X	3190-2643	<1.25:1 (2.5)	Hex	Spring Finger	Crimp	S/S	2.0 (51)	1.30 (33.0)	0.254 (115.2)		
2. N Male	Straight Plug	EZ-600-NMH-X	3190-2627	<1.25:1 (2.5)	Hex/Knurl	Spring Finger	Crimp	A/G	2.1 (53)	0.92 (23.4)	1.164 (74.4)		
3. N Male	Right Angle	EZ-600-NMH-RA-X	3190-2639	<1.35:1 (6)	Hex	Spring Finger	Crimp	S/G	2.1 (53)	0.92 (23.4)	0.185 (83.9)		
4. N Female	Straight Jack	EZ-600-NF-X	3190-2817	<1.25:1 (2.5)	NA	Spring Finger	Crimp	S/G	2.3 (59)	0.87 (22.1)	0.150 (68.0)		
5. 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)		
6. TNC Male	Straight Plug	EZ-600-TM-X	3190-2531	<1.25:1 (2.5)	Knurl	Spring Finger	Crimp	S/G	1.7 (43)	0.59 (15.0)	0.112 (50.8)		
7. 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)		
8. 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)		
9. 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)		
10. Crimp Ring	Crimping	TR-600	3192-038	Package of 50 pieces									
11. Strip Tool	Combination prep tool for TRAD-600 3192-197												

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

Engineered Products:

T-RAD-600-DB 50 Ohm Leaky Feeder Coaxial Cable

- Provides RF coverage in buildings, mines and other enclosed areas
- Watertight design for direct bury applications
- Offers broadband performance up to 2.5 GHz
- Flexible, non-kinking design provides easier installation
- Accepts standard "EZ" crimp connectors used for LMR-600 cable*



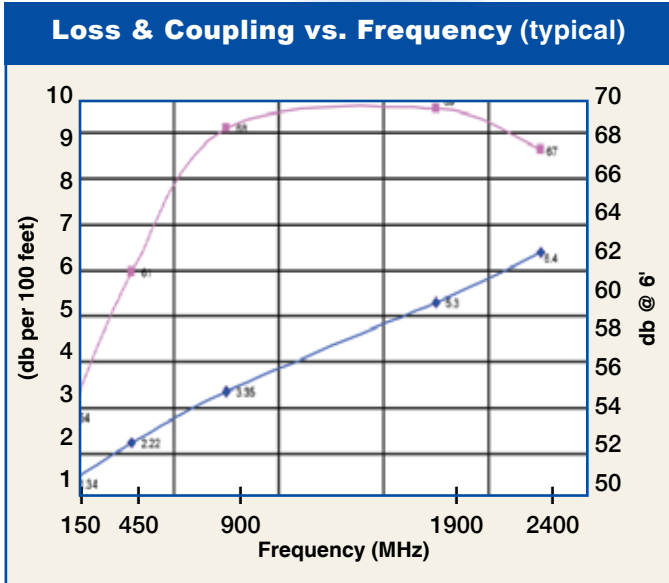
Part Description				Stock
Part No.	Application	Jacket	Color	Code
AA-9299	T-RAD-600-DB	PVC/PE	Black	44038

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCA1	0.176	(4.47)
Dielectric	Gas-Injected Foam Polyethylene	0.455	(11.56)
Inner Shield	Bonded Aluminum Tape	0.458	(11.63)
Jacket	Extruded PVC/PE	0.590	(14.98)

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	1.5	(38)
Bend Radius: repeated	in. (mm)	0.12	(.178)
Weight	lb/ft (kg/m)	0.09	(0.137)

Environmental Specifications		
Performance Property	°F	°C
Operating Temperature Range	+23/+167	-5/+75

Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	86	
Dielectric Constant	NA	1.35	
Time Delay	nS/ft (nS/m)	1.18	(3.87)
Impedance	ohms	50	
Voltage Withstand	Volts DC	4000	
Jacket Spark	Volts RMS	6000	



Frequency (MHz)	150	450	900	1900	2400
Attenuation dB/100 ft	1.34	2.22	3.35	5.30	6.40
Attenuation dB/100 m	4.39	7.28	10.98	17.38	20.99
Coupling Loss** dB	54	61	68	69	67

* Request T-RAD-600 connector data sheet and attachment instructions
 ** Coupling loss measured at 6.5 feet (2 meters) *** Patent applied for

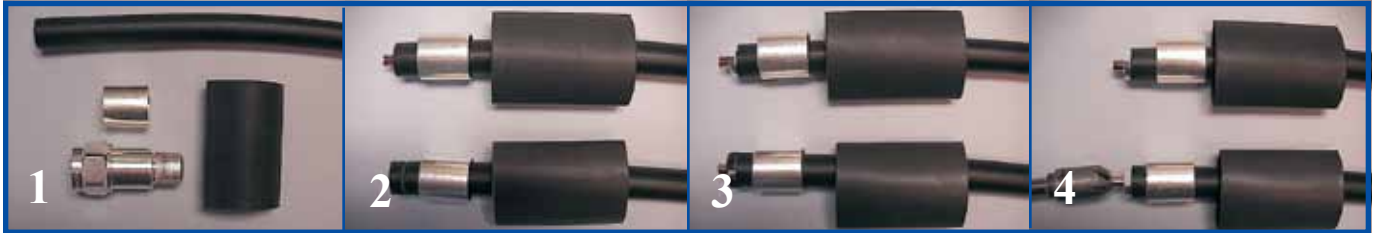
Connectors										
Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)	Coupling Nut	Inner Contact Attach	Outer Finish* Contact Body Attach*** /Pin	Length in (mm)	Width in (mm)	Weight lb (g)
1.	7-16 DIN Male Straight Plug	EZ-600-716-M-X	3190-2643	<1.25:1 (2.5)	Hex	Spring Finger	Crimp A/S	1.8 (42)	1.38 (35.0)	0.209 (94.80)
2.	N Male Straight Plug	EZ-600-NMH-X	3190-2627	<1.25:1 (2.5)	Hex/Knurl	Spring Finger	Crimp A/G	2.1 (53)	0.92 (23.4)	1.164 (74.4)
3.	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)
4.	N Female Straight Jack	EZ-600-NF-X	3190-2871	<1.30:1 (6)	NA	Spring Finger	Crimp A/G	1.7 (43)	0.69 (17.6)	0.150 (68.0)
5.	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)	0.090 (40.6)
6.	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)
7.	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)
8.	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)
9.	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)

* Finish metals: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alloy *** Requires separate crimp ring; contact TMS engineering

T-RAD Connector installation procedure

LMR-600 crimp connectors can be used on T-RAD-600 cables with special TR-600 crimp rings (stock code 3192-038).

NOTE: TR-600 crimp rings must be purchased separately



Step 1: Flush cut the cable squarely

Step 2: Slide the heat shrink and TR-600 crimp ring over the cable. Use a knife or razor to cut a 0.250" long ring from the end of the cable. Make sure that the cut is square.

Step 3: Lightly score the circumference of the cable 0.20" back from the end of the core. Make one long longitudinal cut. Pry up a piece of the jacket and gently peel the ring of the jacket off the core.

Step 4: Debur the center conductor using the DBT 01 deburring tool



Step 5: Slide the connector over the end of the core and push it up to the end of the jacket. Rotate the connection back and forth in a clockwise-counter clockwise motion in reference to the axis of the cable until the back of the connector works its way under the end of the jacket. Now push the connector onto the cable with some back and forth motion until it stops.

NOTE: A small longitudinal cut of 1/4" may be made to the outer jacket to assist with the connector body sliding under the outer jacket.

Step 6: Position the heavy duty HX-4 crimp tool, with the appropriate dies (stock code 3190-203), directly behind and adjacent to the connector body, and crimp the connector. The crimp tool automatically releases when the crimp is complete

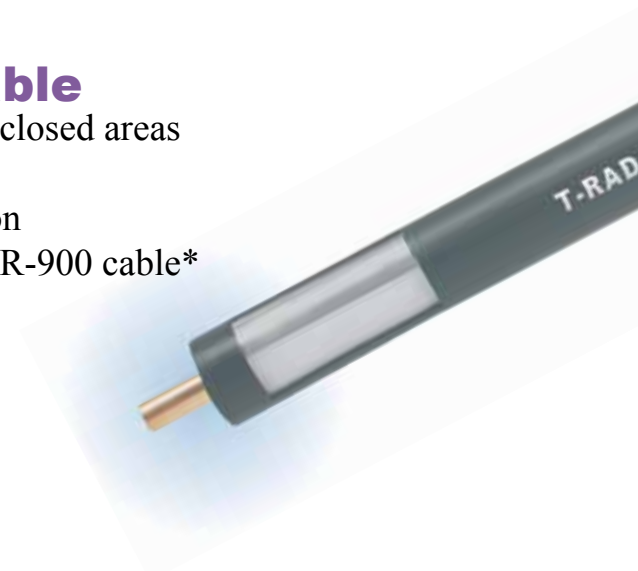
Step 7: Position the heat shrink boot as far forward on the connector body as possible without interfering with the coupling nut; use a heat gun to form a weather-tight seal.



*Special Crimp Ring
part number 3192-038
(TR-600) must be used on
all EZ style connectors*

T-RAD-900 50 Ohm Leaky Feeder Coaxial Cable

- Provides RF coverage in buildings, mines and other enclosed areas
- Offers broadband performance up to 2.5 GHz
- Flexible, non-kinking design provides easier installation
- Accepts standard "EZ" clamp connectors used for LMR-900 cable*
- FR series is MSHA approved for mining applications



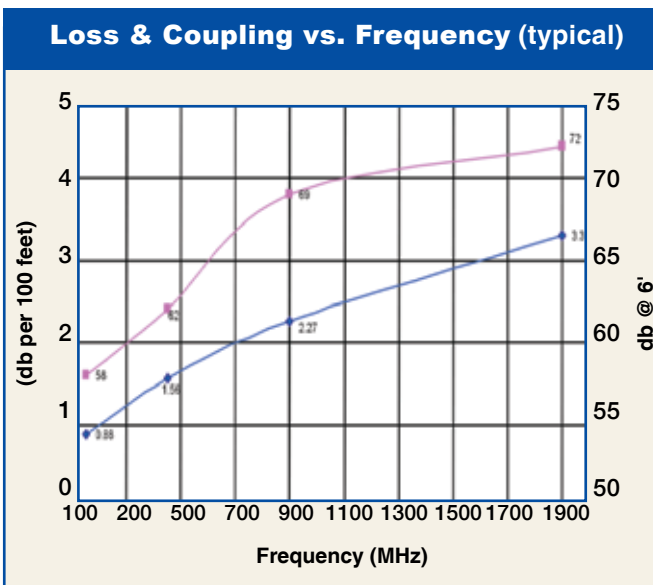
Part Description				Stock
Part No.	Application	Jacket	Color	Code
AA-9298	T-RAD-900-PVC	PVC	Black	44042
AA-9630	T-RAD-900-FR	FRPE	Black	44046

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	BC Tube	0.262	(6.65)
Dielectric	Gas-Injected Foam Polyethylene	0.680	(17.27)
Inner Shield	Bonded Aluminum Tape	0.686	(17.42)
Jacket	see table above	0.870	(22.10)

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)
Weight	lb/ft (kg/m)	0.266	(0.40)

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

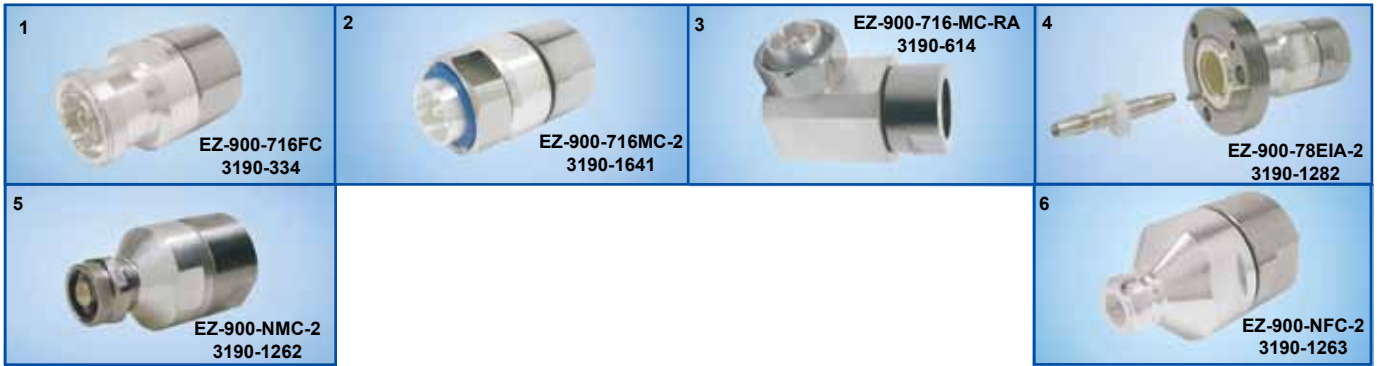
Electrical Specifications			
Performance Property	Units	US	(metric)
Velocity of Propagation	%	87	
Dielectric Constant	NA	1.32	
Time Delay	nS/ft (nS/m)	1.17	(3.83)
Impedance	ohms	50	
Voltage Withstand	Volts DC	5000	
Jacket Spark	Volts RMS	8000	



Frequency (MHz)	150	450	900	1900
Attenuation dB/100 ft	0.88	1.56	2.27	3.3
Attenuation dB/100 m	2.89	5.12	7.44	10.8
Coupling Loss** dB	58	62	69	72

* Request T-RAD-900 connector data sheet and attachment instructions
 ** Coupling loss measured at 6.5 feet (2 meters) *** Patent applied for

-900-PVC TIMES MICROWAVE



Connectors		Part Number	Stock Code	VSWR**	Coupling Nut	Inner Contact Attach	Outer Contact Attach	Finish* Body /Pin	Length in (mm)	Width in (mm)	Weight lb (g)
Interface	Description			Freq. (GHz)							
1. 7-16 DIN Female	Straight Jack	EZ-900-716FC	3190-334	<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	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. N Male	Straight Plug	EZ-900-NMC-2	3190-1262	<1.25:1 (6)	Hex	Press Fit	Clamp	S/S	2.0 (51)	1.38 (35.1)	0.463 (210.0)
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)

* Finish metals: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alballoy **VSWR spec based on 3 foot cable with a connector pair
NOTE: Clamp drain wire for connector attachment. A heavy duty adhesive lined shrink boot is recommended to attach over the connector body and cable jacket