

75 OHM UPL2000 DIGITAL VIDEO BNC

HDTV TRANSMISSION LINE NETWORK PRODUCT SOLUTIONS - ALL TRUE 75 OHM



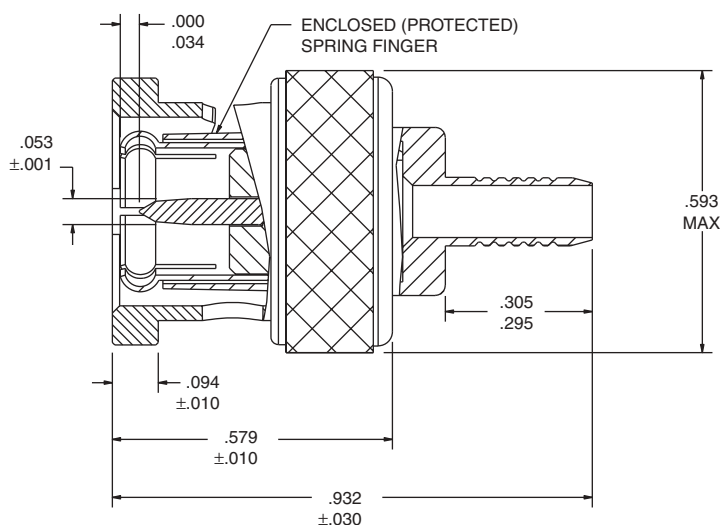
The Trompeter **UPL2000** is a classically robust, high frequency, true 75 ohm BNC connector that is designed to handle high bit-rate digital video signal transmissions in conjunction with the low loss coaxial cables used in broadcast applications.

With Trompeter's typical emphasis on exceptional signal clarity, low noise, rugged design, and tight tolerance construction, the UPL2000 gives long-term field performance at high frequency to allow error-free transmission of digital signals. This is true over the entire bandwidth utilized by HDTV signal transport whether the signal is compressed or uncompressed.

Our test engineers are looking at return loss performance of -30 dB up through 3GHz and calling it the **stealth connector**, so good you almost don't know it is there... (see chart on page 19).

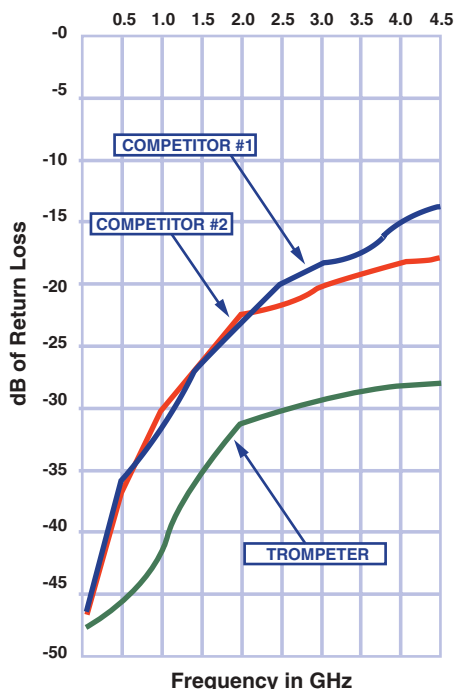
Trompeter design engineers understand the unique problems associated with the combination of high data rate digital traffic and high frequency transmissions. The unique design of the UPL2000 allows for an impedance matched transition through the connector, taking advantage of the electromagnetic effects that are so unique to high frequency transmission lines. The signal is contained within the inside surface of the outer shield through the connector in much the same way that the braid of the coax cable contains the electromagnetic energy of the signal within the cable dielectric itself. This effect is more pronounced as transmission frequency rises, as is the case with DTV and HDTV.

The connector is offered in the larger diameter cable sizes that are supporting transmission of the video broadcast signal in stations, post-production, and CATV headends.



UPL2000 RETURN LOSS DATA

Only variable is manufacturer of BNC connectors

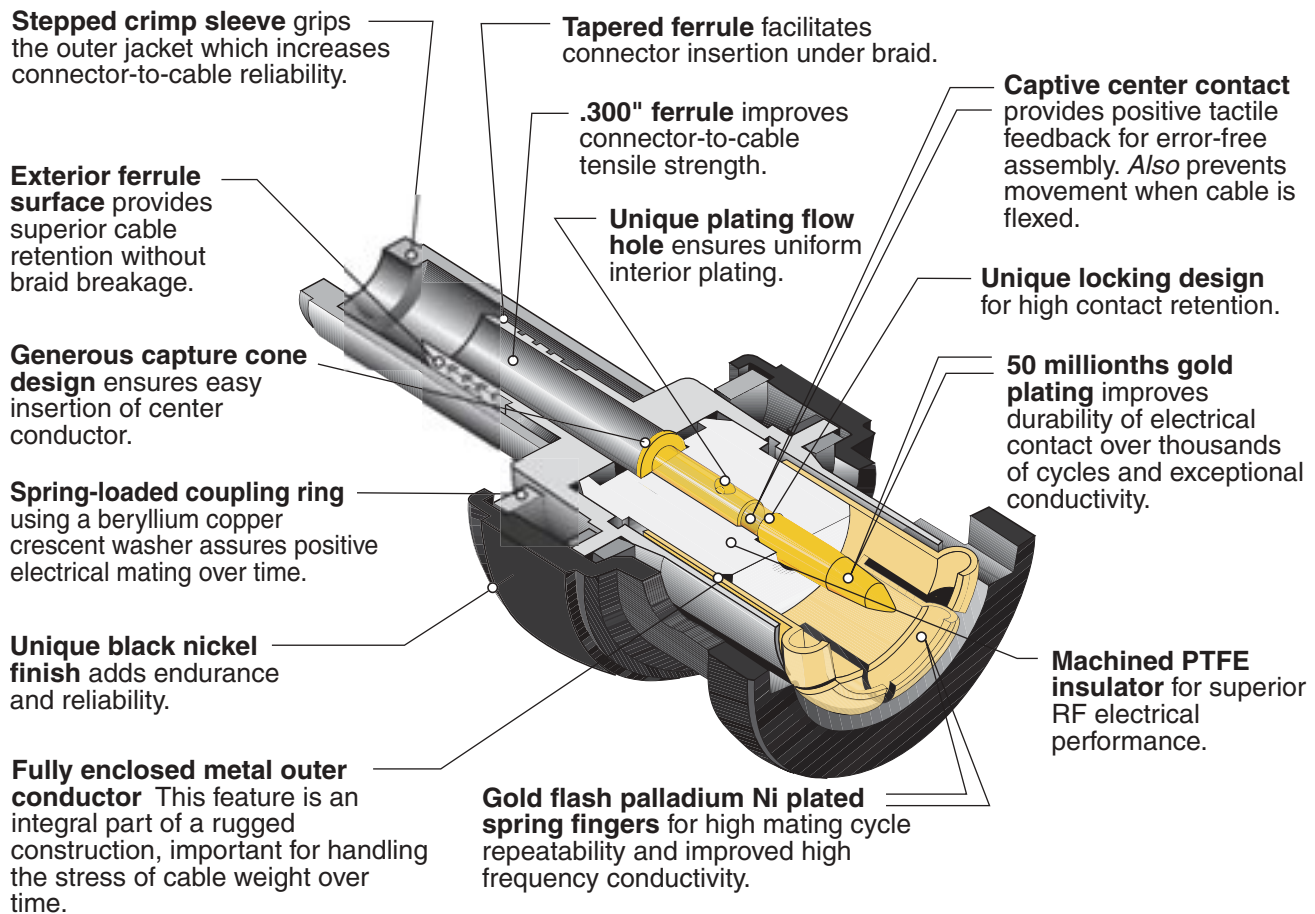


NOTE: Test setup includes one foot Belden 1505A coaxial cable with BNC plug each end plus adapter and termination.

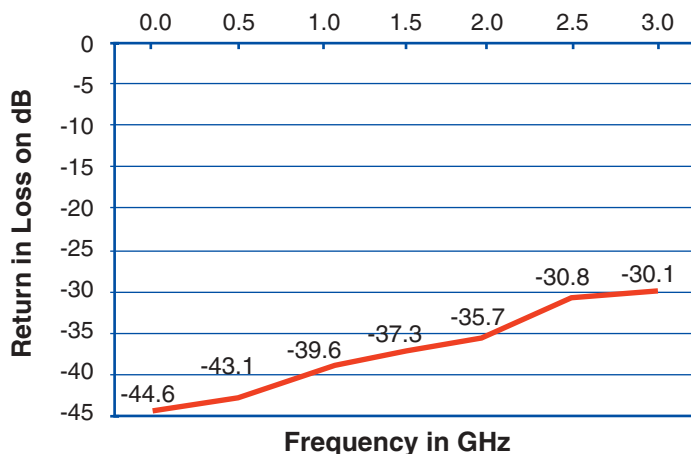
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17 Reasons Why Trompeter BNC Connectors Outperform the Competition Everytime!



**Return Loss Performance
UPL2000-D4 on Belden 1694A**



DIALOG BOX

COAX CABLES

The **coax cable** used in transporting the HDTV signal from place to place within a facility is quite good (it will, however, all still need to be replaced since it was designed in around lower frequency and higher insertion loss conditions). The major cable manufacturers that serve this segment have not stopped innovating to achieve better and better insertion loss performance. Use of low dielectric materials and lower dielectric constant materials is growing. Typical values on some new cable types today are 26 dB loss for 100 meters of length at 1 GHz! (Note that the key technical issue of cable selection is insertion loss over distance). Further, the trade off of overall cable diameter, cable weight, and cost are being attended.



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Electricals and Electromagnetics:

True Impedance	75 ohms
Voltage Rating	500 VAC RMS
Insertion Loss	0.2 dB max up to 3 GHz (tested as a 3ft cable assembly)
Return Loss	See page 17 - test method and result is one UPL2000 plug on each end of 12 inches of cable, network analyzer calibrated with load prior to each test, statistical sampling.
Contact Resistance	4 milliohm max end-point after environmental testing (see below) with a current of 5 ma max; 20 mv open circuit
Insulation Resistance	5000 megohms minimum
Operational Frequency	Up through 6 GHz
VSWR	Not more than 1.2 up to 3 GHz
Dielectric Withstanding Voltage	1500 VAC RMS with no breakdown

Materials:

Body	Electrolytic nickel over brass
Bayonet	Black electroless nickel over zinc
Dielectric	Machined polytetrafluoroethylene (PTFE, aka Dupont trade name Teflon)
Spring Finger	Gold flash palladium over nickel over copper over phosphor bronze or BeCu
Gasket	Silicone rubber
Wave Washer	Electrolytic nickel over beryllium copper
Center Contact	Thick (50 millionths of an inch minimum) gold over nickel over copper over brass

Environmental:

Thermal Shock	-40 to +85 degrees C operating
Moisture Resistance	MIL-STD-1344 Method 1002, test condition C, 500+ hours/40 degrees C/90-95% RH
Corrosion Resistance	MIL-STD-1344 (48 hours salt spray)
Vibration	MIL-STD-1344 Method 2005 with no bit loss @ 45 Mbps @ 20G's (BER test)
Solvent Resistance	MIL-STD-202 Method 215

Mechanical Tested Values:

Mating Cycle Rating	500 cycles
Center Contact Retention	6 lbs minimum axial load
Coupling Mechanism Pull Test	100 lbs typical
Force to Engage	5 lbs maximum
Interface Dimension	MIL-C-39012 modified for true 75 ohms (TEI TGS-5)
Outer Contact Pin Gauge Retention	> 260 grams minimum after 500 cycles
Cable Retention at Crimp Sleeve	See chart below - exceeds 40 pounds minimum

Top 3 UPL2000 Product Features

Features:

1 Center Contact:

- Captivated and locking
- 50 micro inches gold

2 Outer Contact

- Gold flash palladium Ni
- Phosphor bronze or BeCu
- Fully enclosed

3 Crimp Sleeve

- Interior precision step

Benefits:

Center Contact Benefits:

- Insures correct center contact location during outer braid crimp operation.
- Tactile feedback for error free installation.
- Eliminates pistoning of contact over product life.
- Exceptional electrical conductivity and durability for long life.

Outer Contact Benefits:

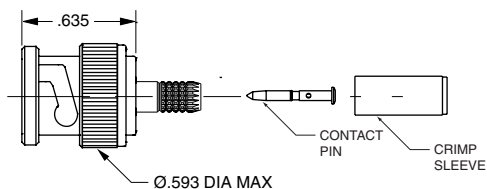
- Combination of high conductivity, ductility, and mechanical durability extended field conditions.
- Extremely high strength alloy which resists compression set over time, maintaining high contact normal forces.
- Reduces RF leakage.

Crimp Sleeve Benefits:

- Eliminates potential for exposed braid by positive grip on cable jacket for excellent cable retention over time.

75 OHM UPL2000 DIGITAL VIDEO BNC

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HDTV BNC

UPL2000-(Cable Group)/B

*Can only be ordered in bulk packs of 50.
See Cable Groups on page 22.*



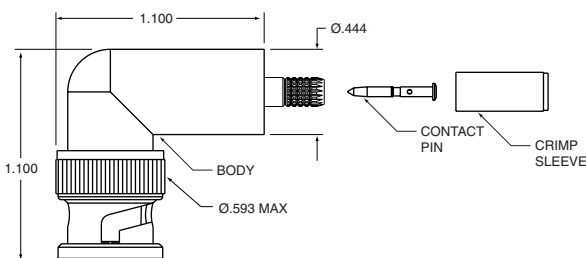
Ordering Example:

sample part # **UPLR2000-D2/B**

Broadcast BNC

Cable Group Dash Number

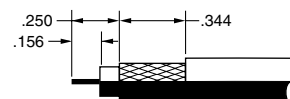
Bulk Pack (50)



90° HDTV BNC

UPLR2000-(Cable Group)/B

*Can only be ordered in bulk packs of 50.
See Cable Groups on page 22.*

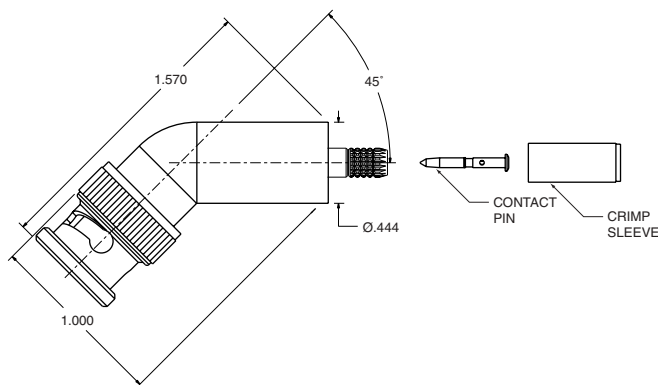


SCALE 1:1

USE AS STRIPPING

TEMPLATE FOR 75 OHM TOOL CRIMP BNC PLUG

Note: Dimension .156 inches is a minimum, the maximum is .175 inches. Either dimension, or anything in between, works fine with the 8 point tool recommended by Trompeter for Broadcast applications. If you are using a 12 point indenter tool in lieu of the more classic 8 point tool, we recommend you use the longer dimension.

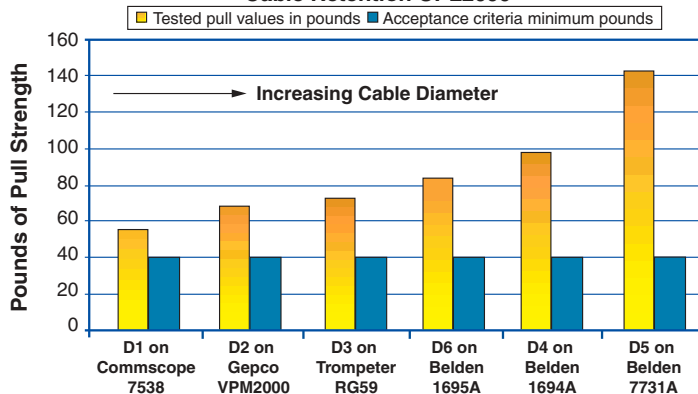


45° HDTV BNC

UPLFF2000-(Cable Group)/B

*Can only be ordered in bulk packs of 50.
See Cable Groups on page 22.*

Mechanical Pull Test Criteria Cable Retention UPL2000



75 OHM UPL2000 DIGITAL VIDEO BNC CABLES

HDTV TRANSMISSION LINE NETWORK PRODUCT SOLUTIONS - ALL TRUE 75 OHM

UPL2000 CABLE GROUPS

CABLE MANUFACTURER	CABLE NO.	UPL2000	CABLE MANUFACTURER	CABLE NO.	UPL2000	CABLE MANUFACTURER	CABLE NO.	UPL2000
ALPHA	8620	-D4	CANARE	5C2VS	-D10	DELCO	396121	-D1
ALPHA	9059	-D3	CANARE	L-3C2VS	-D9	DELCO	396191	-D1
ALPHA	9825C	-D5	CANARE	L-3CFB	-D14	DRAKA	0.6/3.7	-D14
AVAYA	1725B	-D13	CANARE	L-4CFB	-D2	DRAKA	IMAGE720	-D9
BELDEN	1152A	-D15	CANARE	L-5CFB	105-2148	DRAKE	IMAGE1000	-D4
BELDEN	1153A	-D5	CANARE	LV-61S	-D3	ECS	322401	-25A
BELDEN	1164B	-D1	CANARE	LV-77S	-D10	EUROCABLE	LKRX75S2D4	-D1
BELDEN	1167B	-D1	CANARE	V3-1.5C	-D7	GENERAL CABLE	C5844	-D2
BELDEN	1263A	-D1	CANARE	V3-4CFB	-D8	GENERAL CABLE	LL79301	-D8
BELDEN	1406B	-D1	CANARE	V3-5C	-D6	GENERAL WIRE	C5025	-D5
BELDEN	1407B	-D1	CANARE	V4-1.5C	-D7	GEPCO	2279K	-D6
BELDEN	1417B	-D1	CANARE	V4-4CFB	-D8	GEPCO	2279V	-D6
BELDEN	1418B	-D1	CANARE	V4-5C	-D6	GEPCO	2297V	-D6
BELDEN	1426A	-D2	CANARE	V5-1.5C	-D7	GEPCO	7537	-D1
BELDEN	1505A	-D2	CANARE	V5-4CFB	-D8	GEPCO	7538	-D1
BELDEN	1505F	-D20	CANARE	V5-5C	-D6	GEPCO	7913	-D5
BELDEN	1506A	-D8	CANFORD	36-332 VCM RED	105-2145	GEPCO	7915	-D5
BELDEN	1520A	-D7	CANFORD VIDEO	BBC PSF1/2M	D10	GEPCO	RGB6000	-D10
BELDEN	1521A	-D7	CANFORD VIDEO	BBC PSF1/3M	D17	GEPCO	RGB809	-D1
BELDEN	1522A	-D7	COLEMAN CABLE	92005	-D3	GEPCO	RGBS809	-D1
BELDEN	1523A	-D5	COMMSCOPE	2065V	-D8	GEPCO	RGBSC809	-D1
BELDEN	1530A	-D4	COMMSCOPE	2277K	-D6	GEPCO	V618J59	-D3
BELDEN	1672A	-D7	COMMSCOPE	2277V	-D6	GEPCO	V618M59	-D3
BELDEN	1694A	-D4	COMMSCOPE	2279K	-D6	GEPCO	VDFM809	-D1
BELDEN	1695A	-D6	COMMSCOPE	2279V	-D6	GEPCO	VFM809	-D1
BELDEN	1807A	-D7	COMMSCOPE	2282K	-D16	GEPCO	VP6000	-D10
BELDEN	1808A	-D7	COMMSCOPE	2285K	-D16	GEPCO	VP618PE/AP	-D10
BELDEN	1824A	-D8	COMMSCOPE	2286K	-D16	GEPCO	VP618PE01	-D10
BELDEN	1825A	-D8	COMMSCOPE	5065	D1	GEPCO	VP618PVC	-D10
BELDEN	1826A	-D8	COMMSCOPE	5553	-D2	GEPCO	VPM1000	-D3
BELDEN	1828A	-D4	COMMSCOPE	5563	-D3	GEPCO	VPM2000	-D2
BELDEN	1829A	-D4	COMMSCOPE	5565	-D2	GEPCO	VPM2000TK	-D8
BELDEN	1855A	-D19	COMMSCOPE	556510	-D2	GEPCO	VPM2000TS	-D8
BELDEN	1865A	-D1	COMMSCOPE	5575	-D2	GEPCO	VPM618	-D14
BELDEN	543945	-D11	COMMSCOPE	5726R	-D4	GEPCO	VS102000	-D2
BELDEN	633948	-D6	COMMSCOPE	5765	-D4	GEPCO	VSD2001	-D4
BELDEN	7700A	-D7	COMMSCOPE	576503	-D4	GEPCO	VSM618	-D1
BELDEN	7710A	-D4	COMMSCOPE	576504	-D4	GORE	GSC 03-2236-00	-D7
BELDEN	7713A	-D4	COMMSCOPE	576505	-D4	HAN WEI	RG 179	-D7
BELDEN	7731A	-D5	COMMSCOPE	5903	-D5	HAN WEI	RG 59	-D3
BELDEN	7732A	-D16	COMMSCOPE	5904	-D5	IN-LINE	7100	-D12
BELDEN	7794A	-D11	COMMSCOPE	5906	-D5	IN-LINE	7600	-D12
BELDEN	7855A	-D13	COMMSCOPE	5913	-D5	JUDD	740	-D7
BELDEN	8212	-D2	COMMSCOPE	5915	-D5	LINK	CVS LKRX75S2D4	-D1
BELDEN	8213	-D5	COMMSCOPE	5916	-D5	MANHATTAN	M4243	-D7
BELDEN	8218	-D1	COMMSCOPE	5917	-D5	MIL-SPEC	M17/29-RG59	-D3
BELDEN	8221	-D3	COMMSCOPE	5940	-D5	MIL-SPEC	RG179/U	-D7
BELDEN	82248	-D6	COMMSCOPE	5951	-D5	MIL-SPEC	RG59B/U	-D3
BELDEN	82259	-D8	COMMSCOPE	7501	-D10	MOHAWK	M52210	-D10
BELDEN	8241	-D3	COMMSCOPE	7503	-D10	MOHAWK	M54426	-D1
BELDEN	8241A	-D3	COMMSCOPE	7505	-D10	MONTRON	IFX4385	-D7
BELDEN	8241B	-D3	COMMSCOPE	7506	-D10	NEK CABLE	NEK 23795	-D12
BELDEN	8263	-D3	COMMSCOPE	7530	-D13	NK NETWORKS	0.51/2.4	-D1
BELDEN	8279	-D14	COMMSCOPE	7536	-D1	NK NETWORKS	0.6/2.8	-D12
BELDEN	8281	-D10	COMMSCOPE	753603	-D1	NK NETWORKS	0.6/3.7	-D17
BELDEN	8281B	-D10	COMMSCOPE	753604	-D1	NK NETWORKS	0.6/3.7 DZ	-D17
BELDEN	8281F	-D10	COMMSCOPE	753605	-D1	NK NETWORKS	0.6L/3.7	-D3
BELDEN	89292	-D16	COMMSCOPE	7537	-D1	NK NETWORKS	0.8/4.9	-D10
BELDEN	9011	-D5	COMMSCOPE	7538	-D1	PKI	0.6/2.8	-D12
BELDEN	9100	-D2	COMMSCOPE	7551	-D4	RAYDEX/CDT	RA7000	-D12
BELDEN	9110	-D2	COMMSCOPE	7573	-D14	SUHNER	S02223	-D7
BELDEN	9114	-D4	COMMSCOPE	F1160BV	-D5	TIMES	2360V	-D4
BELDEN	9141	-D10	COMMSCOPE	F1160BVV	-D5	TIMES	LMR195	-E1
BELDEN	9167	-D2	COMMSCOPE	F59 HEC-2	-D15	TVA	F660BVV	-D4
BELDEN	9170	-D1	COMMSCOPE	F660BVV	-D4	UNK	VCB 100	-D13
BELDEN	9209	-D9	COMMSCOPE	HEC-2	-D15	UNK	VCB 75	-D11
BELDEN	9209A	-D9	COMMSCOPE	S59 HEC	-D18	VIDEOKABEL	0.6/3.7	-D14
BELDEN	9221	-D7	COMMSCOPE	VDM230	-D1	WEST PENN	25806	-D6
BELDEN	9231	-D10	COMMSCOPE NETWORK CABLE	73608 8/30 AWG	-007 SPC	WEST PENN	25806	-D6
BELDEN	9240	-D2	COMPREHENSIVE VIDEO	CVC-59STXF	-D11	WEST PENN	HD825	-D1
BELDEN	9244	-D3				WEST PENN CABLE	818	-D2
BELDEN	9248	-D4				WEST PENN WIRE	6350	-D4
BELDEN	9259	-D11				WESTPENN	25821	-D16
BELDEN	9265	-D2						
BELDEN	9274	-D2						
BELDEN	9275	-D2						
BELDEN	9292	-D5						
BELDEN	9764	-D5						
BELDEN	YR28314	-D1						
BELDEN	YR46400	-D2						
BRYANT BROADCAST	BDS01	-D12						

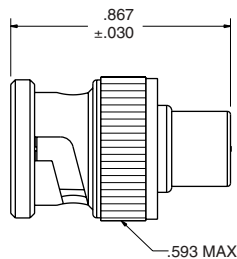
If you do not see your cable listed, contact Trompeter for assistance.



PRECISION LOAD TERMINATION BNC

HDTV TRANSMISSION LINE NETWORK PRODUCT SOLUTIONS - ALL TRUE 75 OHM

UTNA2000

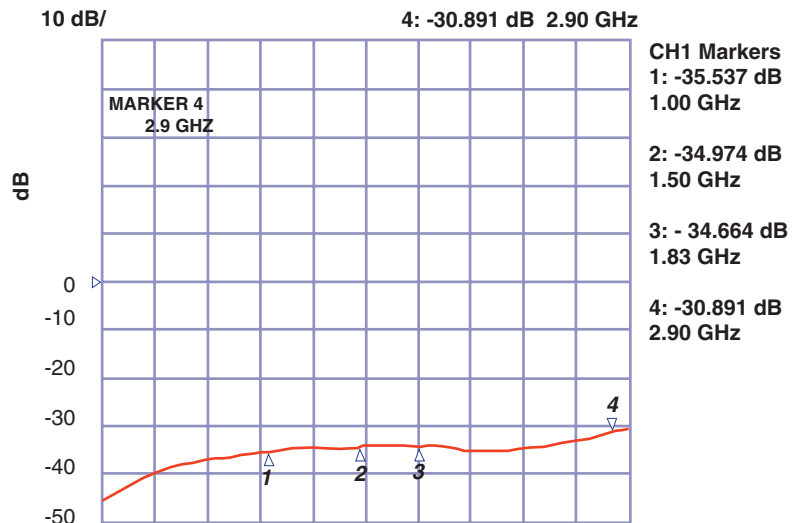


FEATURES

- 75 ohm load
- -30 dB at 3 GHz
- Horizontal noise level over entire bandwidth
- Low profile

The Trompeter UTNA2000 is a precision load of 75 ohms built into a high performance BNC plug. This enables precision return loss testing and successfully terminates a BNC jack.

UTNA2000 Return Loss Test Data



DIALOG BOX

FLAGGING

Installing the center pin on an RF connectors seems simple enough. Simply crimp the contact with any crimp tool and you are good to go, Right? Wrong!

There are two ways to attach a center contact to the center conductor of a coax cable. The first is to use a standard hex die from any of a number of manufacturers - simply ensure that the cavity is the correct size for the given cable. The other method is an indenting tool which actually bonds the center pin to the conductor.

Taking a closer look at the hex die method, the die closure is generally aligned either to the best of the installers ability or by an alignment pin. Both methods, at best, get the closure close to being in alignment. Beware: a phenomenon occurs when using the hex die know as "flagging".

When the die begins to close, it will deform the center pin into the hex shape, however, there will be a slight amount of material movement that will creep into the areas where the dies come together. On a horizontal crimper, it will tend to creep out of both sides of the die. On a pivot crimper, the material tends to only flag on the side furthest away from the pivot point. This excess material changes the ideal shape of the center

pin and can possibly deform the dielectric when the connector is assembled. The result of this, or any change to the intended structure of a connector, will be degraded return loss. Also, the hex crimp merely grips the center contact, thereby not yielding a gas tight bond, and leaving room for potential corrosion between the contact pin and center conductor. Hence more degradation of the return loss.

The indenting method actually puts 8 or 12 small indents into the center contact pin (depending on the model), forming gas tight bonds between the center pin and the center conductor. These bonds result in improved return loss characteristics, improved holding force, and prevention of any type of deposit which could lead as an initiation site for corrosion.

In the world of high frequency (usually defined as >1GHz), this issue has become an important one. As bandwidth increases, reliability become more critical, and equipment is being pushed to its limit. By heeding this advice, your connectors will attain maximum translucence to your signal flow.

