Description

Named for Paul Neill of Bell Labs and developed in the 1940's. The Type N offered the first true microwave performance.

Type N connector was developed to satisfy the need for a durable, weatherproof medium size RF connector with consistent performance through 11 GHz.

There are two families of Type N connectors:

- Standard N (Coaxial Cable)
- Helical N (Corrugated Cable)

Primary applications are the termination of medium to miniature size coaxial cable:

RG-8 and RG-225

RG-58 and RG-141

Features/Benefits

- Accommodates a wide range of medium to miniature sized RG coaxial cables in a rugged medium size design. Provides customer flexibility in their design and manufacturing with a durable connector.
- Broad line of Military (M39012 prefix), Industrial (UG prefix), and Commercial Grade (RFX suffix) products available. Gives customer choices in weighing cost versus performance benefits.
- Available in many styles: Plugs (Straight and Right Angle) and Jacks (Panel Mount, Bulkhead Mount, Receptacle). Meets many customer application demands.

Application

- Antennas
- Base Stations
- Broadcast
- Cable Assemblies
- Components
- Instrumentation
- Mil-Aero
- Radar
- Radios
- Satcom
- Surge Protection
- WLAN

ELECTRICAL

Impedance	50 ohms
Frequency range	0-11 GHz
Voltage rating	1,500 volts peak
Dielectric withstanding voltage	2,500 volts rms.
VSWR (MIL-C-39012 cable connectors)	M39012 straight connectors: 1.3 max. 0-11 GHz M39012 right angle: 1.35 max. 0-11 GHz
Other	Contact resistance: center contact 1.0 milliohm outer contact 0.2 milliohm RF leakage: -90 dB minimum at 3 GHz Insertion loss: .15 dB maximum at 10 GHz Insulation resistance: 5000 megohms minimum

MECHANICAL

Mating	5/8-24 threaded coupling
Cable affixment (braid or jacket)	All crimps: hex braid crimp. Clamps: screw-thread nut and braid clamp
Cable affixment (center conductor)	Crimp: crimp or solder All others: solder only
Captivated contact	All crimps. Others, where specified.
Cable retention	Crimps: 60-120 lbs. Clamps: 30-70 lbs.

MATERIAL

Contacts	Male: brass; Female: phosphor bronze or beryllium copper. Silver or gold plated
Other metal parts	Brass: ASTROplate® finish except M39012 silver.
Insulators	TFE, copolymer of styrene or glass-TFE (hermetic seal)
Weatherproof gaskets	Silicone rubber or synthetic rubber
Crimp ferrule	Copper

ENVIRONMENTAL

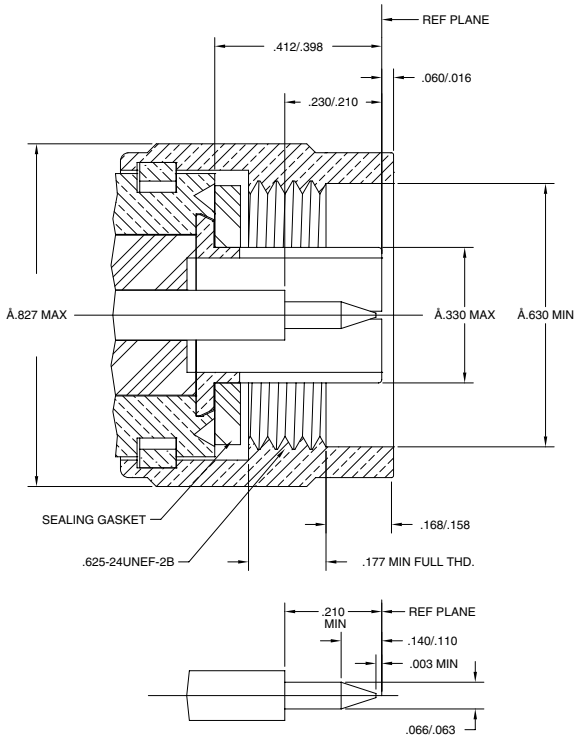
Temperature range	TFE -65°C to + 165°C Copolymer of Styrene: - 55°C to + 85°C
Weatherproof	All series N with gaskets are weatherproof
Hermetic seals	Pass helium leak test of 2 X 10^{-8} cc/sec
Pressurized Shock	Compression seal MIL-Std. 202 method 213
Vibration	MIL-Std. 202 method 204 (test cond. B)
Moisture resistance	MIL-Std. 202 method 106
Corrosion	MIL-Std. 202 method 101 (test cond. B)
Temperature cycling	MIL-Std. 202 method 102 (test cond. C)
Altitude	MIL-Std. 202 method 105 (test cond. C)

MILITARY SPECIFICATIONS

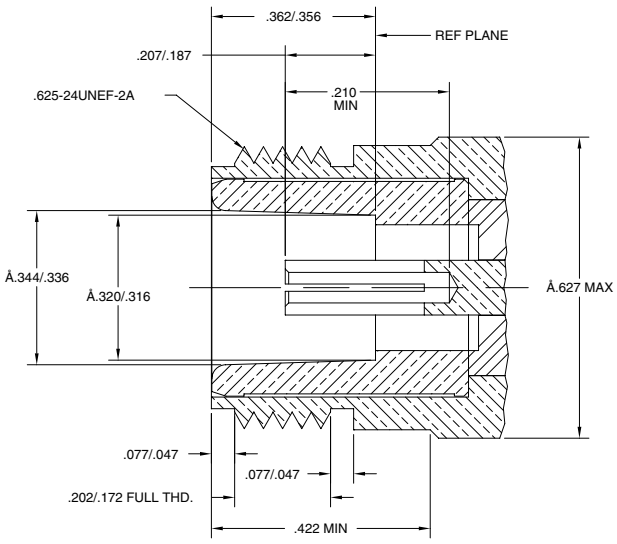
MIL-C-39012 & MIL-A-55339	Where applicable

NOTE: These characteristics are typical and may not apply to all connectors.

PLUG



JACK



Type N
Corrugated Cable Connectors

Description

Intermodulation Distortion (IMD) is of increasing concern to many Wireless Infrastructure OEMs due to the need for higher power applications and increased receiver sensitivity performance. Having the ability to measure IMD in-house gives Amphenol the unique ability to understand the affects of our connector designs on IMD generation and enabling Amphenol to design the highest performance IMD connectors in the industry.

Our new series of Low Intermodulation N connectors is a result of our efforts in connector design optimization.

Features/Benefits

- Typical IMD -125 dBm
- All components silver plated
- 360˚ outer contacts
- Gold plated inner contacts
- EZ HEZTM coupling nut for ease of installation
- Available for 1/4", 3/8" and 1/2" superflexible corrugated cables, and 1/2", 7/8", 1 1/4", 1 5/8", standard flexible corrugated cables
- Consult your Amphenol sales representative for details

Applications

- Cellular
- PCS
- Microwave Radio
- Paging

Annular Type N

Type N
Corrugated Cable Connectors

RF coaxial connectors are the most important element in your cable system. Corrugated copper coaxial cables have the potential to deliver all the performance your system requires, but they are often limited by the performance of the connectors. TXL coaxial connectors have been designed from the ground up to deliver optimum performance, while retaining ease of installation.

Intermodulation distortion, a major concern in today's communications systems, is consistently low with TXL connectors. Typical performance is -125 dBm (-168 dBc). In-house IMD measurement capability gives Amphenol the unique ability to understand the effects of connector design elements on IMD generation and to design the best performing connectors in the industry.

Self-flaring designs are easily attached with standard hand tools in the field, and are highly resistant to pull off and twist off.

All TXL coaxial connectors are optimally matched to their cables for low VSWR and insertion loss.

Two-Piece Design

All TXL connectors feature a simple two-piece design for easier attachment, and all connectors for a given size share a common back nut and trimming dimensions.

Pre-assembled O-Rings

O-rings are pre-assembled to the back nuts, eliminating installation problems and lost parts.

Easy-Hex Coupling Nut

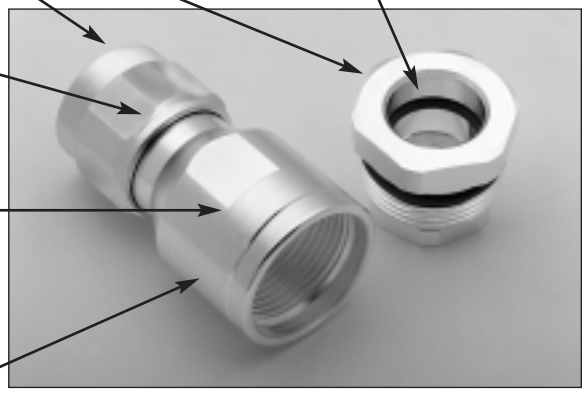
Unique coupling nut design allows tightening by hand or with a standard wrench.

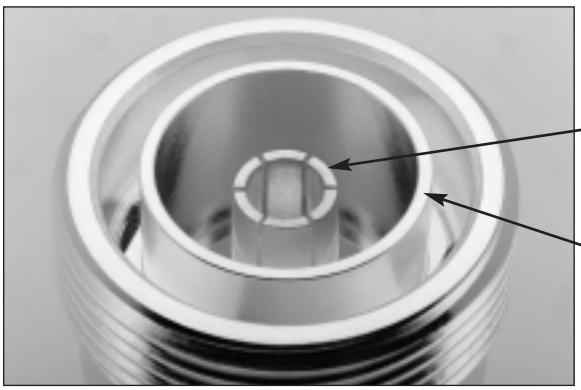
One-Piece Body

Many TXL connectors feature one-piece bodies. The outer conductor contact and connector body are a single piece to minimize IMD generation.

Plated Surfaces

Center contacts are gold or silver plated. Bodies are white bronze plated for excellent IMD performance, and are corrosion resistant for a long, trouble-free life.





Captive Center Pins

Captive center pins simplify installation and eliminate performance variations due to soldering errors and incorrect pin depths.

360° Contact

Continuous 360° outer conductor contact is proven to minimize IMD generation compared to spring finger contacts.

Type N - Corrugated Specifications

ELECTRICAL

Impedance	50 ohms
Frequency range	11.0 GHz
Return Loss (Freq. GHz)	33 dB (1-2 GHz) 28 dB (2-3 GHz)
Operating voltage	max. 707 vrms
Dielectric withstanding voltage	2,000 vdc
Other	Peak power: max 10kW Avg. power: max .60kW Insulation resistance: min 5,000 MOhms Insertion loss: .05 freq GHz Shielding effectiveness: min. 125 dB 3rd order IM product, typical -125 dBm (-168 dBc)

MECHANICAL

Mating	MIL-Std. 348
Inner attachment method	Solder or captivated
Outer attachment method	Compression
Assembly torque	18/22 lb-ft (25/30 N-m)
Coupling torque	15.00 lb-in (1.70 N-m)
Coupling nut retention force	100.00 lbs (444.80 N)
Connector durability	500 cycles, 12 cycles/min

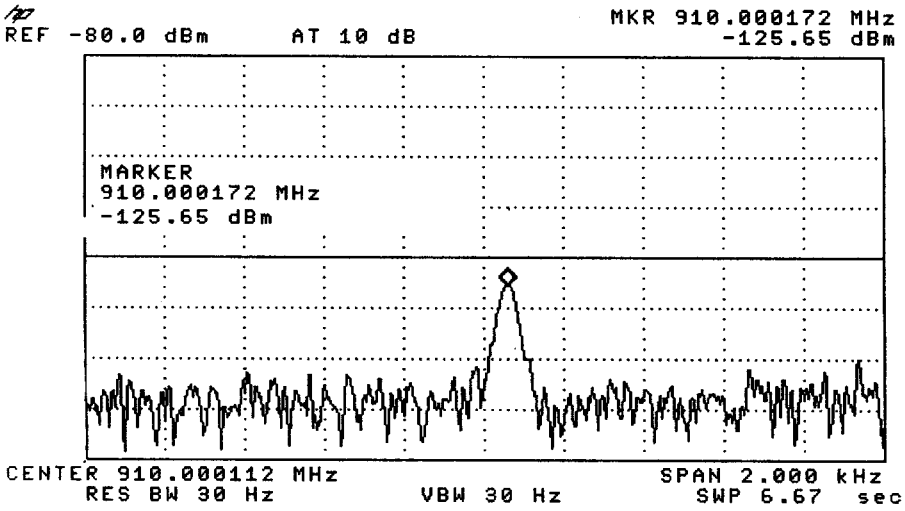
MATERIAL

Body	Brass, silver plated
Contacts	Outer: Brass, silver plated Inner: BeCu, gold plated
Other metal parts	Brass; silver plated
Insulators	TFE
Gaskets	Silicone rubber

ENVIRONMENTAL

Temperature range	Operating: -40°C to +150°C Storage: -70°C to +100°C
Thermal Shock	MIL-Std. 202 method 107 (test cond. A-1)
Immersion	IEC 529, IP68
Vibration	MIL-Std. 202 method 204 (test cond. B)
Corrosion	MIL-Std. 202 method 101 (test cond. B)
Mechanical Shock	MIL-Std. 202 method 213 (test cond. I)

* These characteristics are typical and may not apply to all connectors.



S	1	W	N	M	PM
Corrugated Cable	**Cable Diameter**	**Plating**	**Interface**	**Gender**	**Options**
S=Superflex (helical) **A**=Annular	**1**=1/4” **2**=3/8” **4**=1/2” **5**=7/8” **6**=1-1/4” **7**=1-5/8”	**W**=While Bronze **P**=Plated Body (none)=Unplated	**N**=Type N	**M**=Male (plug) **F**=Female (jack) **R**=Right Angle Male (plug)	**PM**=Panel Mount **PM-SO**=Panel Mount-Slotted Outer **U**=Universal