ANDREW®

HELIAX®

Coaxial Cables

Connectors

Accessories

Cable Assemblies

Training/Services

In A Communicating World. . . Andrew Is Everywhere

Global Focus
Local Service

Superior Delivery Performance – Long Term Value

In our products

In our services

In our commitment to you

There are many reasons you choose Andrew, the industry leader in coaxial cable, connectors, and accessories. For confidence that comes with quality; for delivery where and when you want it; for standard products available around the globe; for ease of use, lower costs, and long service life; and for simply unmatched customer service. All good reasons.

Perhaps the best reason of all, though, is that you know real value when you see it.

At Andrew, we're looking forward to serving you.

About Andrew Corporation

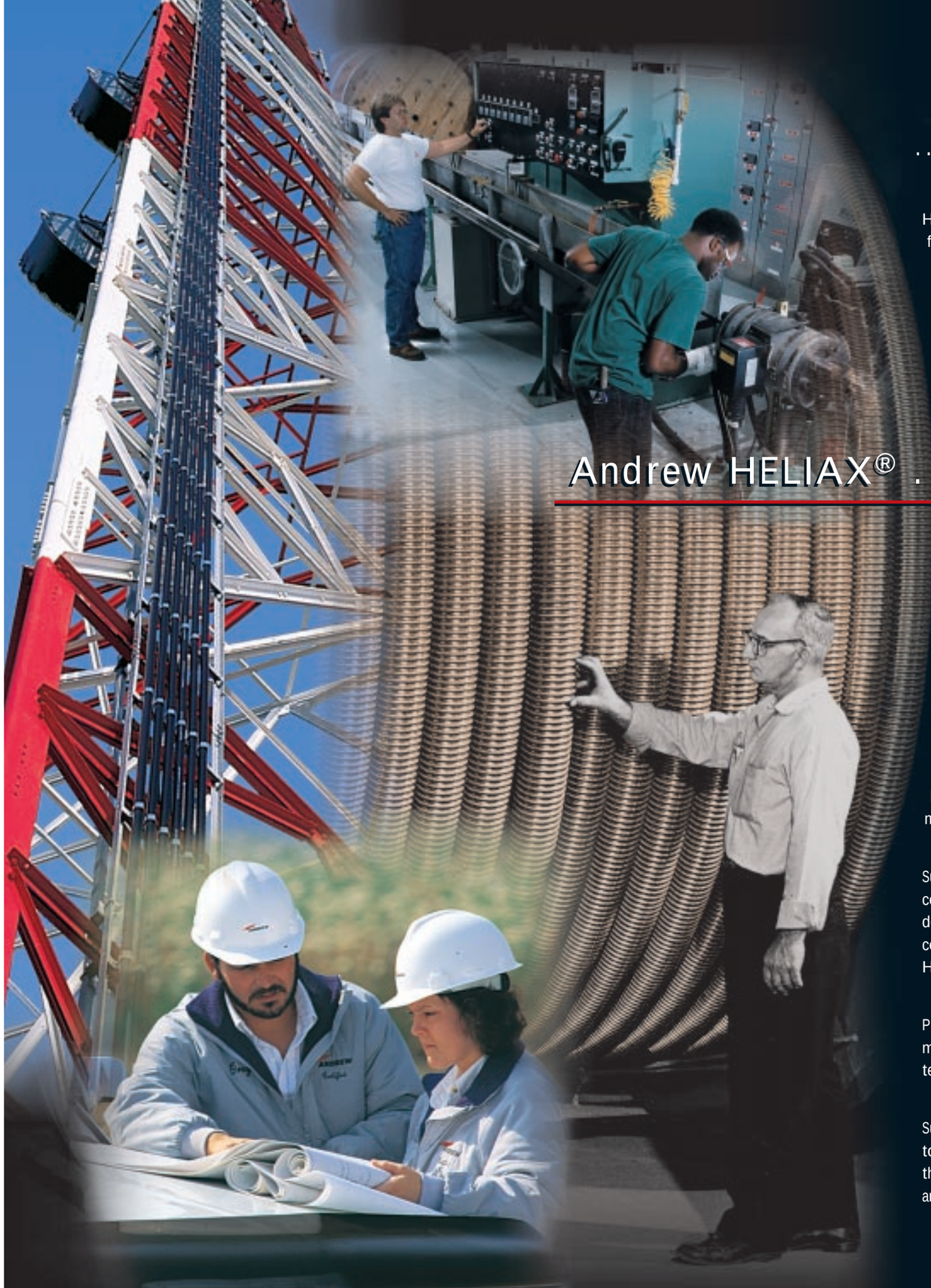
Andrew Corporation is a global supplier of communications products, systems, and services to commercial, industrial, government, and military customers. Andrew has earned a worldwide reputation for providing customers with products that embody leading edge technology, superior quality, and unmatched value.

Founded in 1937, Andrew has established leadership positions in virtually every market it serves, continues to strengthen its solid financial position, and is proud of the efforts of its more than 4000 dedicated employees.

The spirit of leadership and innovation is exemplified throughout the entire range of HELIAX® coaxial cable products. From new cable sizes and types to a greater assortment of easy-to-install connectors to unique time saving accessories that redefine installation practices, HELIAX products deliver unsurpassed system performance, reliability, and greater system value.

With a responsive global distribution network in place, Andrew is uniquely positioned to meet the challenges of today's rapidly evolving communications marketplaces. Andrew HELIAX products, services, and training are available to meet customers' needs, wherever they're located, whenever they need them.

ANDREW®



Andrew HELIAX® . . .

. . . A History of Quality Products and Services

HELIAX® is the Andrew brand name that stands for the most complete cost effective, high performance coaxial cable systems in the world.

For more than 40 years, Andrew Corporation has led the industry in meeting the need for semiflexible RF transmission line. In land mobile, broadcast, cellular, military, terrestrial microwave, HF, earth station, personal communication, and many other applications, HELIAX coaxial cable products, including air- and foam-dielectric cables, are the industry standard of excellence.

An Abbreviated History

1937

"Victor J. Andrew, Manufacturer and Consulting Engineer" established as sole proprietorship on 1 January 1937

1941 – 1945

Supplied coaxial cables and other telecommunications components to US Military during WWII

1949

Entered the microwave antenna field, supplying markets in both civilian and military communications

1956 – 1960

Supplied the nation's Cold War need for high power coaxial transmission lines, waveguides, and related devices used in strategic radar systems; signed contract with German licensor, leading to the HELIAX product line

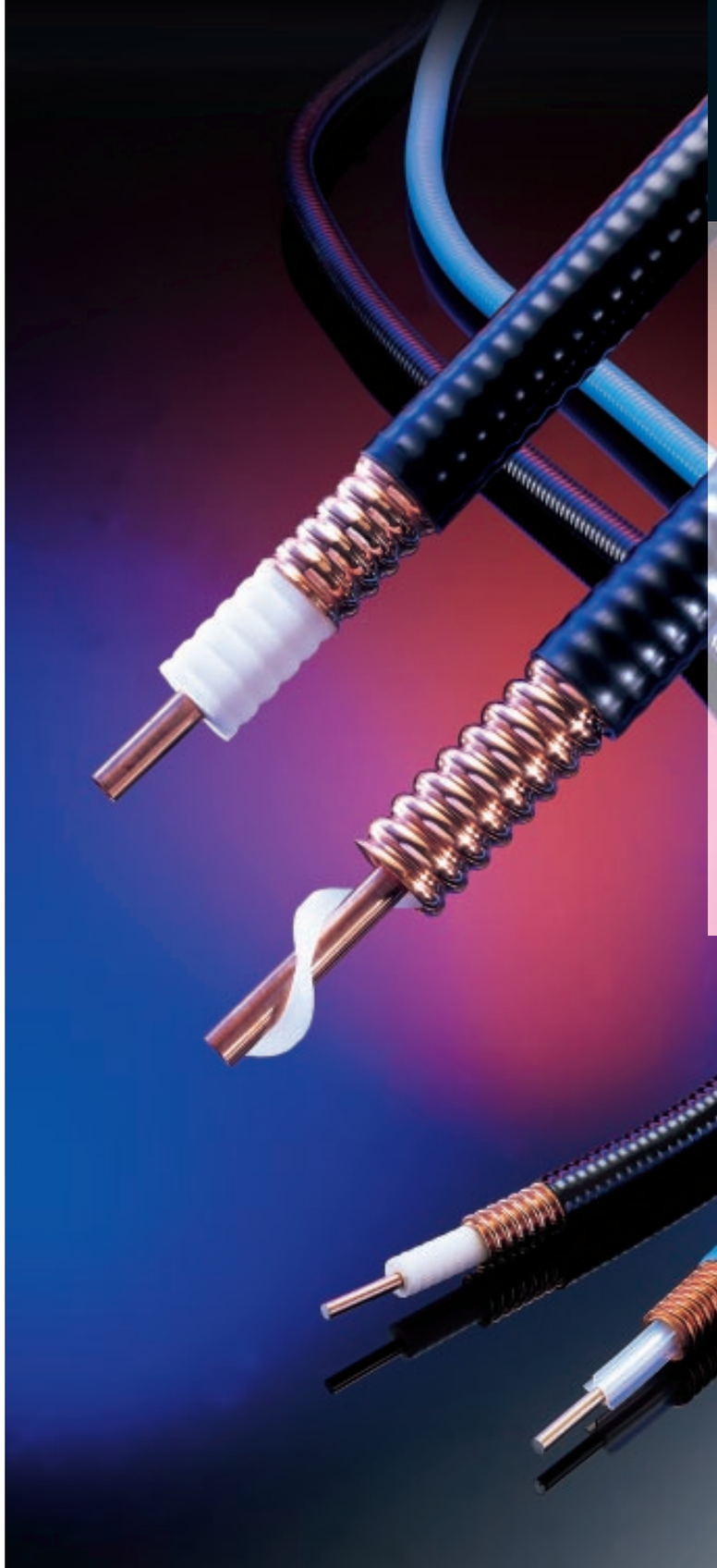
1970 – 1984

Provided coaxial cable and related products for microwave antenna systems for expanding intercity telephone business

1984 – Present

Supplies HELIAX coaxial cable, assemblies, connectors, and accessories to microwave systems around the world, setting the industry standard for quality and delivery performance

Index of
HELIAX® Products and Services



HELIAX®
Coaxial Cables

For more than 40 years, Andrew has engineered and manufactured HELIAX coaxial cables. Continuous improvements in technology and manufacturing processes are your guarantee of the highest level of performance, quality, and reliability.

HELIAX coaxial cables are available in a wide variety of types, sizes, and materials. One will be ideal for your application, whether it is cellular, PCS/PCN, broadcast, microwave, enhanced specialized mobile radio, military, or any other coaxial cable requirement.

HELIAX outer conductors use solid copper strip material that is formed, longitudinally welded, and corrugated.

This construction offers:

Minimal intermodulation
High power capability
Low attenuation
High shielding effectiveness
Excellent weatherability for long life
Flexibility with high tensile and crush strength

Foam-Dielectric Coaxial Cables

(Sizes range from 1/4" to 2-1/4")

The dielectric is closed-cell polyethylene foam that maintains its characteristics over time and cannot absorb moisture. It is specially designed for low loss, with attenuation characteristics that approach those of air-dielectric cables. The low loss foam dielectric is bonded to the inner conductor for mechanical and thermal integrity.

The inner conductor is constructed of solid copper-clad aluminum, copper tubing, or corrugated copper tubing, depending on the cable size.

The outer conductor features annular corrugations, which prevent water migration.

Air-Dielectric Coaxial Cables

(Sizes range from 1/4" to 5")

The dielectric spacers are specially designed to provide precise centering of the inner conductor, low loss, and excellent heat transfer. Their rugged construction assures a successful installation every time.

Andrew DryLine® dehydrators are ideally suited for pressurization of HELIAX® air-dielectric cables. The design is state-of-the-art, and they are available in a wide variety of models.

Superflexible Foam-Dielectric Coaxial Cables

(Sizes range from 1/4" to 1/2")

Superflexible cables are available in 1/4", 3/8", and 1/2" sizes. They have a deeply corrugated, helical outer conductor that is designed to permit a small bending radius, repeated bendings, and redeployment.

The dielectric is low density foam. It is bonded to the copper-clad inner conductor, thus preventing any movement, relative to the outer conductor, caused by temperature variation or longitudinal stress.

HELIAX Superflexible cables feature many advantages when compared with conventional braided coaxial cables, including:

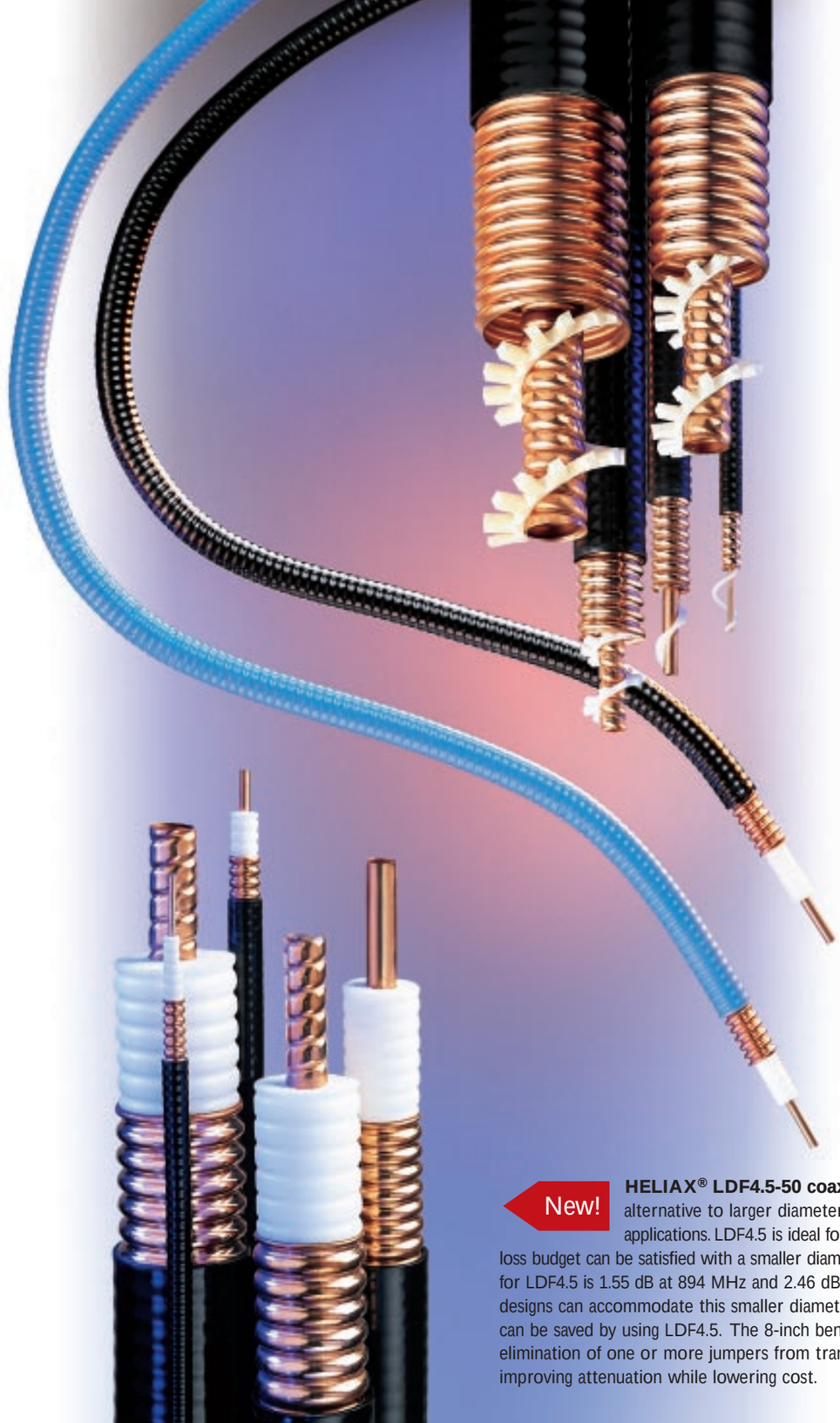
Lower intermodulation
Lower attenuation
Continuous EMI/RFI shielding
Better bending radius
Better power handling

Extraflexible (EFX) Foam-Dielectric Coaxial Cable

(Size is 3/8")

HELIAX Extraflexible (EFX) coaxial cables offer a tight bending radius that withstands repeated bending and redeployment. EFX2 cables feature a dielectric bonded to the inner conductor, preventing movement caused by temperature or longitudinal stress. EFX2 cables bend to a radius of less than two inches. EFX2 cables provide electrical characteristics approaching industry-standard LDF cables. Deeper corrugations and weather resistance make this cable ideal for short runs and indoor or outdoor jumper assemblies.

All HELIAX cables are protected by a rugged, weatherproof jacket. Standard jacketing material is black polyethylene. Flame-retardant and plenum versions are available.



New!

HELIAX® LDF4.5-50 coaxial cable provides a useful alternative to larger diameter feeder cables in many applications. LDF4.5 is ideal for shorter towers where a given loss budget can be satisfied with a smaller diameter cable. Attenuation/100 ft for LDF4.5 is 1.55 dB at 894 MHz and 2.46 dB at 2000 MHz. Where system designs can accommodate this smaller diameter cable, substantial money can be saved by using LDF4.5. The 8-inch bend radius may also allow the elimination of one or more jumpers from transmission line interconnection, improving attenuation while lowering cost.

Applications

Cellular and PCS: The high performance requirements of analog and digital radio telephone equipment are easily met with HELIAX® coaxial cables and connectors. All our cables and connectors are specifically engineered to offer excellent VSWR, shielding, and intermodulation characteristics. The advanced mechanical designs and weatherproof construction ensure long service life.

Broadcast: Air- and foam-dielectric HELIAX coaxial cables and connectors are widely used as radio and television broadcast antenna feeders and for AM, FM, shortwave, VHF, and UHF. Easy installation combined with rugged construction and good electrical characteristics have made HELIAX the recommended feeder throughout the world.

Microwave: Private and PTT microwave systems use HELIAX coaxial cable antenna feeders for nearly all applications below 3 GHz. Both air- and foam-dielectric cables are offered in low VSWR versions that are specially selected and tested for microwave frequencies. The flexibility of HELIAX coaxial cable makes it easy to install in any climate. Its weatherproof properties and rugged mechanical construction result in a typical life expectancy of over 20 years.

Enhanced Specialized Mobile Radio (ESMR): The high shielding effectiveness and low attenuation of HELIAX coaxial cables make them ideal replacements for braided cable. Their lower attenuation typically provides double the coverage area for the same transmit power or lower transmit power for the same coverage area.

Military: The performance advantages of HELIAX coaxial cables have made them the best choice for shipboard, land-based, and airborne military systems. Applications include communication systems, phased array radars, and electronic warfare systems.

HELIAX® Cables: Properties of Fire Retardancy

Fire Retardancy: HELIAX coaxial cables are available in plenum-rated versions or with nonhalogenated flame-retardant jackets. Flame-retardant versions are fully tested and listed to meet the appropriate flame propagation standards as specified in the table below. Tests for flame propagation and smoke evolution are performed on the finished cable. Tests for smoke index, smoke density, gas emission, and oxygen index are performed on the jacket material.

RFI/EMI Shielding: The solid copper corrugated outer conductor of HELIAX cable is a highly effective barrier to RF leakage. As shown in the graph below, the shielding effectiveness of all HELIAX cables exceeds 120 dB.

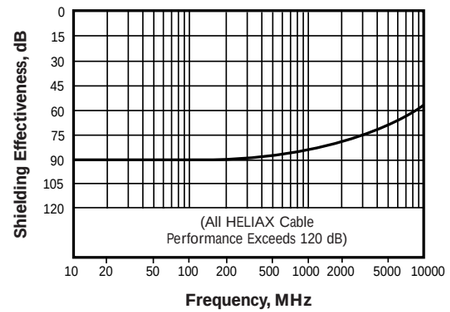
Flexibility: HELIAX Superflexible coaxial cables offer excellent flexibility, making them suitable for applications that require bending or reverse bending during installation, maintenance, or deployment.

Industry Test Procedures

	US	Europe
Flame	UL 910 UL 1581 UL 1666	– – –
Propagation	IEEE 383	IEC 332-3
Smoke Index	NES 711	–
Smoke Density	ASTM E 662	–
Toxicity Index	NES 713	–
Acid Gas Emission	–	VDE 0472-813 IEC 754-1

Number of Reverse Bends

Cable Type	Size	75mm Radius	150mm Radius	305mm Radius
FSJ1-50A	1/4"	110	490	2300
FSJ2-50B	3/8"	160	560	2600
LDF2-50	3/8"	–	80	290



Compared with conventional braided coaxial cables, HELIAX foam-dielectric coaxial cables offer many important advantages for defense applications and jumpers for private mobile radio systems, cellular systems, and RF test equipment.

HELIAX® Coaxial Cable Compared with Braided Cable

	Superflexible FSJ Series		LDF Series		Conventional Braided Cables*		
Cable Type	**FSJ1-50A** 1/4"	**FSJ2-50** 3/8"	**LDF1-50** 1/4"	**LDF2-50** 3/8"	**M17/60** RG-142/U	**M17/75** RG-214/U	**M17/78** RG-217/U
Diameter over jacket, in (mm)	0.29 (7.4)	0.425 (10.8)	0.345 (8.8)	0.44 (11.0)	0.195 (5.0)	0.425 (10.8)	0.545 (13.8)
Weight, lb/ft (kg/m)	0.045 (0.067)	0.078 (0.12)	0.06 (0.09)	0.08 (0.12)	0.043 (0.06)	0.13 (0.19)	0.255 (0.34)
Inner Conductor Diameter, in (mm)	0.075 (1.9)	0.109 (2.8)	0.102 (2.6)	0.123 (3.1)	0.037 (0.94)	0.088 (2.24)	0.106 (2.69)
Min. Bending Radius, (one bend), in (mm)	1 (25)	1 (25)	3 (76)	3.75 (95)	–	–	–
Characteristic Impedance, ohms	50	50	50	50	50	50	50
Velocity of Propagation, %	84	83	86	88	69.5	65.9	65.9
Max. Operating Frequency, MHz	20400	13400	15800	13500	12400	11000	3000
Attenuation, dB/100 ft (dB/100 m). Standard conditions: VSWR 1.0; ambient temperature 24° C (75° F)							
50 MHz	1.27 (4.17)	0.848 (2.78)	0.953 (2.86)	0.75 (2.41)	4	1.4	1
100 MHz	1.81 (5.94)	1.21 (3.97)	1.206 (4.08)	1.05 (3.44)	5.5	2.6	1.6
400 MHz	3.7 (12.1)	2.50 (8.20)	2.41 (8.40)	2.93 (7.09)	12	6.8	3.7
1000 MHz	6 (19.7)	4.09 (13.4)	3.82 (13.37)	3.55 (11.6)	19	12	7
5000 MHz	14.6 (47.9)	10.2 (33.5)	8.53 (34.06)	8.84 (29.0)	48	35	N/A
10000 MHz	21.8 (71.5)	15.6 (51.1)	12.06 (51.72)	13.5 (44.3)	66	56	N/A
Average Power Rating, kW. Standard conditions: VSWR 1.0; ambient temperature 40° C (104° F); inner conductor temperature 100° C (212° F), no solar loading							
50 MHz	1.33	3.06	2.56	3.63	3.5	1.5	2
100 MHz	0.93	2.14	1.79	2.23	2.4	0.9	1.2
400 MHz	0.452	1.04	1.45	1.81	1.1	0.34	0.47
1000 MHz	0.278	0.634	0.53	0.663	0.65	0.17	0.25
5000 MHz	0.11	0.25	0.22	0.29	0.22	0.053	N/A
10000 MHz	0.072	0.166	0.14	0.175	0.11	0.032	N/A

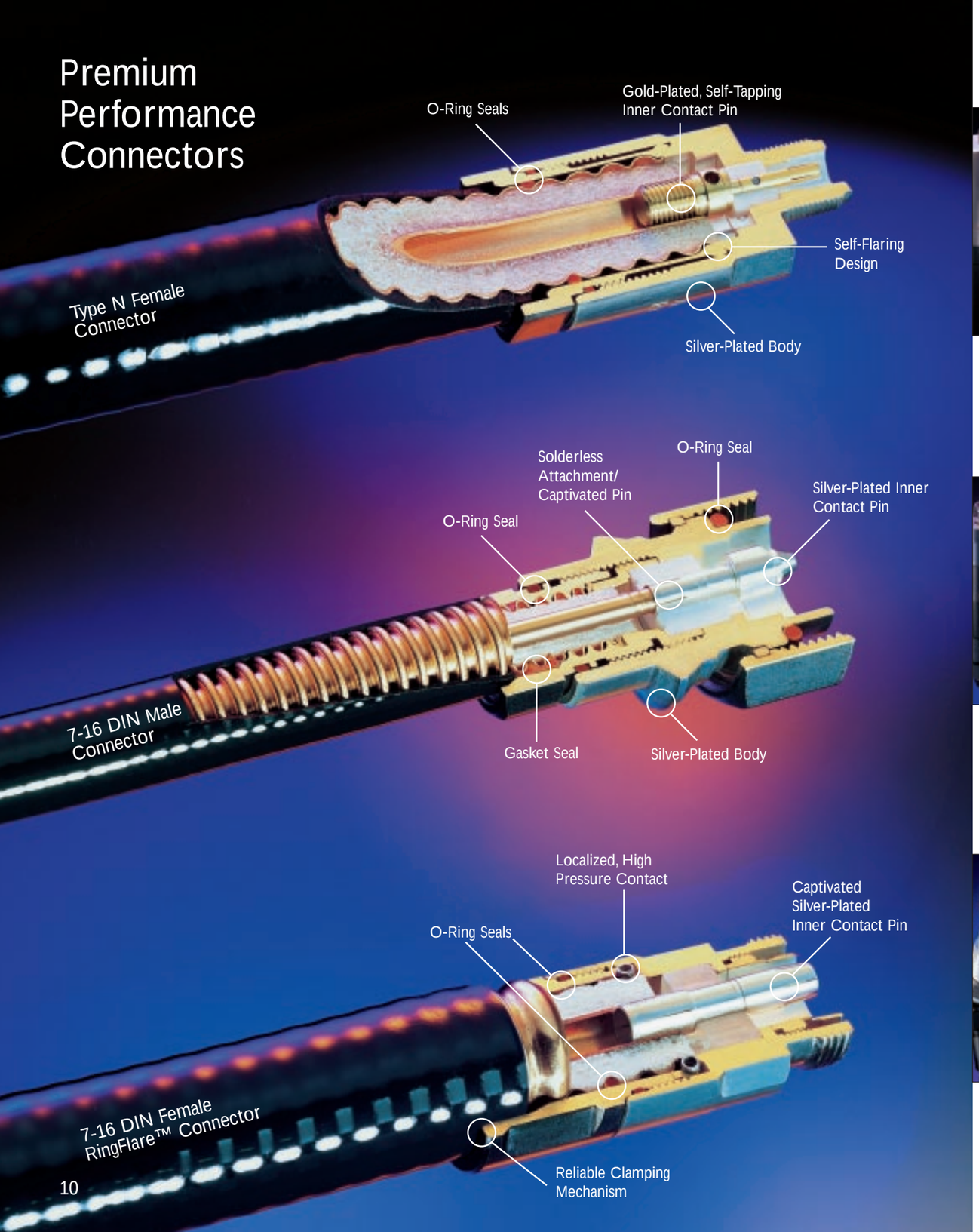
* Not supplied by Andrew

HELIAX® Connectors

Setting the Industry Standard

HELIAX connectors are the only connectors completely compatible with HELIAX cable. Used together, they provide you with a transmission line system that ensures outstanding electrical and mechanical performance. Excellent electrical matching of the connector to the cable ensures low VSWR and minimizes intermodulation. This is critical in today's digital cellular systems.

Premium Performance Connectors



Type N Connectors

DIN Connectors

RingFlare Connectors

Type N and DIN Connectors

Andrew HELIAX® Type N and DIN connectors offer long term performance and reliability, which translate into long term cost savings.

Both interfaces offer many advantages:

Silver-plated bodies/gold-plated or silver-plated inner contacts

Minimize the effects of intermodulation

Dependable contact resistance over time

Resistant to tarnish

Easy Attachment

Fast field attachment using only common hand tools

Completely Weatherproof Connection

O-rings and gaskets keep moisture out and ensure excellent electrical performance

IEC 529, IP68 rated

Durable Construction

Careful attention to material selection

Metals compatible with cables for long term corrosion protection

Designed for HELIAX Cable

Electrically compensated for minimum mismatch to cable

Low VSWR and IM

DIN Connector Advantages

Stable IM performance

Higher contact pressure

Larger contact area

Greater coupling torque

Robust design

Robust design handles higher power requirements

40 kW peak power compared with 10 kW for Type N

Consistent and improved VSWR performance

Tighter pin depth tolerance

Compensated over narrower bandwidth

Physical size allows for more gradual cable transition

Higher contact pressure

10 times greater than Type N

Less chance of loosening over time

Longer service life

Lower contact resistance

Improved intermodulation performance

Retractable coupling nut

Positive conductor engagement ensured

Larger coupling nut thread engagement

Easier assembly to mating connector

Less chance of cross-threading

RingFlare™ Family of Connectors Speed Installation

New!

New, fast-fitting RingFlare connectors are available in a variety of connector types for a large selection of HELIAX LDF series cables.*

The Ringflare connector is a simple two-piece threaded connector with an expandable clamping ring that automatically flares the cable as the connector is tightened. It is equipped with a captivated one piece inner contact pin, factory set to the correct depth, and maintains this correct pin depth when installed. The design's high pressure spring fingers provide a completely reliable connection.

RingFlare connectors are completely weatherproof, and with fewer components and attachment procedures, the RingFlare offers fast installation.

Installation is also simplified with its clamping body's six wrench flats that make attachment quick and easy, especially in cramped places.

7-16 DIN male, 7-16 DIN female, N-male and N-female connectors are available for most HELIAX LDF style cables.

RingFlare connectors drastically reduce the time needed for attachment and are compliant with the stringent IEC 529, IP68 water immersion testing, making them perfect for PCS, PCN, GSM, Wireless Local Loop, and other cellular/wireless applications.

* Standard interface types remain available. RingFlare connectors are designated by "-RC" in part number suffix (for example: L5PDF-RC).

Features

Andrew offers a full range of coaxial connectors with all common interfaces such as Type N, 7-16 DIN, 4.1-9.5 DIN, SMA, BNC, TNC, UHF, SC, LC, and EIA flanges.

Superior features make HELIAX® connectors the industry's finest:

Fewer component parts reduce installation time, costs and improve performance

4.1-9.5 DIN, 7-16 DIN, and Type N designs reduce intermodulation generation

Excellent electrical contact results in outstanding RF shielding

High resistance to pull-off and twist-off provides long term mechanical integrity

Corrosion resistant, compatible materials ensure long life (survive 500 hour salt spray)

Self-flaring connectors are easy to attach and reduce labor costs

Captivated inner contacts eliminate the soldering process and reduce installation time

Weatherproofing ensures long life and consistent performance (compliant with IP68 water immersion testing)

Wide selection of interface types simplifies system planning

Numbering System

User-Friendly Connector Numbering System

This brochure features a functional numbering system that installation, purchasing, and receiving personnel should find easy to understand. With a few exceptions, the system is limited to Andrew Type N and DIN connectors. Here are four examples:

Type Number: **L2NM**

L2 denotes it is used with LDF2-50 cable

NM denotes it is an N Male

Type Number: **L4PDM-C**

L4 denotes it is used with LDF4-50A cable

PDM denotes it is a Plated 7-16 DIN Male

C denotes a Captivated inner contact

Type Number: **L4PNF**

L4 denotes it is used with LDF4-50A cable

PNF denotes it is a Plated N Female

Type Number: **L5PDF-RC**

L5 denotes it is used with LDF5-50A cable

PDF denotes it is a Plated 7-16 DIN Female

RC denotes a RingFlare attachment with Captivated inner contact

The peak power handling capability of a cable assembly is the smaller of the values for the cable and the connectors. This table shows peak power ratings for common connectors at standard conditions of VSWR=1.0, zero modulation, and one atmosphere dry air pressure (0 kPa gauge) at sea level.

Connector Type	dc Test Voltage kV	Average Power kW*	Peak Power kW
SMA	1.0	0.1	2.5
BNC	1.5	0.1	5.6
TNC	1.5	0.3	5.6
UHF	2.0	0.3	10.0
N	2.0	0.6	10.0
HN	4.0	0.6	40.0
SC	4.2	1.2	44.0
7-16 DIN	4.0	3.0	40.0
4.1-9.5 DIN	2.5	1.2	16.0
LC	5.0	3.5	63.0
7/8" EIA	6.0	5.0	90.0
1-5/8" EIA	11.0	5.0	302.0
3-1/8" EIA	19.0	11.0	902.0
4.5" IEC	21.0	19.0	1100.0
6-1/8" EIA	27.5	24.0	1890.0

* Average power ratings of the connector interfaces are based on an operating frequency of 900 MHz. The values shown are typical for most applications.

HELIAX® Accessories

Delivering Superior Lightning Protection

Andrew offers the industry's widest range of accessories, all compatible with HELIAX cable. Together, HELIAX cables and accessories form a lasting and effective transmission line system.

Some of our essential accessories:

Hangers: Stainless steel construction for corrosion resistance and long life.

Compact Angle Adapters: Lightweight stainless steel to cut installation costs.

Snap-In Hangers: Quick and easy attachment in all weather conditions. No hardware needed.

MIL-Spec Grounding Straps: Withstands 99% of all possible lightning strikes for certainty of continued operation. Solid copper construction to eliminate corrosion problems common to braided grounding straps.

Connector/Splice Weatherproofing Kit: Seals connectors from the environment. Provides an additional barrier to moisture penetration.

EASIAX® Cutting Tool: Quick and easy preparation of cable for connector attachment. Provides a square, burr-free cut of outer conductor. Eliminates the need for a saw to remove outer conductor. Precision cuts, consistently and reliably, time after time.

Installation Accessories

Innovative Accessories Lower Costs, Save Time

A Click-on Hangers

Installing cable into hangers is as simple as one easy "click." Ideal for crowded towers, walls, rooftops, water towers, or unusual applications, Andrew Click-on Hangers accommodate two runs of HELIAX® cable and allow several runs of cable to be installed in confined spaces. Replaces Andrew Hanger Blox.

B KwikClamps

Ideal for installing multiple cable runs on towers where space is limited, KwikClamp Cable Hangers eliminate drilling and adapters. These self-clamping cable hangers provide sturdy, reliable, and long term support.

C Velcro® Cable Ties

Velcro cable ties are easy to release and reuse and won't alter cable electrical performance by overtensioning or pinching. They are ideal for indoor applications where overtightening is a concern.

D Cable Ties and Cutting Tool

Cable ties secure cable bundles where space is limited. They are an excellent choice for organizing jumper cables within and between radio cabinets and for bundling jumper cables outdoors.

E Support/Hoisting Grips

Our Support/Hoisting grips lift and support cable faster and more safely in a monopole or tower without the threat of slippage. The grip includes a calibrated clamp to provide permanent cable support.

F HELIAX® Tools

Andrew provides a complete cable installation toolbox, featuring a selection of specialty tools, cutting tools, and measurement devices.

The newest addition is the EASIAX® Plus Automated Cable Preparation Tool. It fits any standard power drill and removes the cable jacket, outer conductor, and foam, then cuts back and chamfers the inner conductor to the correct dimensions for connector attachment – all in less than 15 seconds.

G 3M™ Cold Shrink™ Weatherproofing Kits

Cold Shrink weatherproofing kits are the fastest, easiest way to weatherproof transmission line connections. Cold Shrink requires no tools and no heat, and there is no taping to slow installation. Cold Shrink is simply placed onto the cable prior to completing the connection, slipped over the interface, and activated by unwinding its plastic core. Constant compression forms an absolute seal preventing moisture from entering the system. Cold Shrink kits are available in a variety of sizes to accommodate cable with Type N or 7-16 DIN interfaces at the antenna output, in-line cable splices, dissimilar size cable connections, and Integrated Arrestor Plus® Surge Arrestors.

H Stainless Steel Hangers

Andrew offers two types of stainless steel hangers, featuring high strength, excellent corrosion resistance, and long term reliability. Snap-In Hangers snap directly into 3/4" holes in tower support members, cutting installation time and costs. Standard hangers install easily and are adaptable to almost any mounting structure. They are predrilled for 3/8" mounting hardware and have slots for round member adapter clamps.

Velcro is a registered trademark of Velcro Industries.

Hanger Selection Guide

Hanger Type:	KwikClamp Hanger	Click-On Hanger	Snap In Hanger	Standard Bolted Strap	Cable Tie	Support Hoisting Grip
Primary Applications:	New or existing towers in mild climates	Rooftops, water towers, towers with limited space	Towers with prepunched cable ladders	Tower installations subject to high wind, high corrosion, high ice	Jumper cables and inter-rack cabling	All vertical cable installations
Features:	Built-in adapter for direct tower attachment	Stackable up to 3 high to form compact 6 run cable bundles	Hanger preformed to fit cable and cable ladder	Impervious to environmental extremes	Fits almost any mounting structure	Calibrated clamp for permanent cable support
	Fits round, flat, angle, and channel tower members	Versatile; adaptable to almost any application	Faster hanger installation	Adaptable to various tower configurations	Quick installation	Single cable support point for monopole applications
	Quick installation	Easy to install "click-on" design	Impervious to environmental extremes	High strength for long term reliability	Inexpensive	–

Lightning Protection

A SureGround™ Grounding Kits

Protect your equipment from the effects of lightning with SureGround grounding kits. The SureGround self-securing ground strap provides protection against lightning strikes up to 125 kA. Quality nonbraided solid copper construction prevents moisture retention and wicking, while a heavy duty 16mm 2 IEC 1024-1 compliant copper ground lead maximizes performance. SureGround grounding kits dramatically cut installation time while requiring no tools. Installation is fast, easy, and error-free.

B SureGround Plus Grounding Kits

Transmission line grounding has never been easier. With only four parts, SureGround Plus grounding kits further speed installation while providing a neat appearance to help meet tough local zoning requirements. SureGround Plus offers the lightning protection of SureGround grounding kits with added convenience and quicker installation.

C Integrated Series Surge Arrestors

Offering true multistrike protection, Arrestor Plus® Integrated Surge Arrestors provide unsurpassed lightning protection, overall cost savings, improved system performance, and easy installation not found in any other single product. These maintenance-free surge arrestors uniquely combine the reliability of Quarterwave Shorting Stub (QWS) technology with the proven performance of HELIAX® connectors, delivering premium lightning protection in a single component. Combined with ArrestorPort II, which provides cable entry and grounding in a single unit, these arrestors offer the ultimate protection from lightning.

D Arrestor Plus® Miniature Quarterwave Surge Arrestors

Using quarterwave stub technology, T-shaped Miniature Surge Arrestors provide multistrike protection and outstanding RF performance. The arrestors' bulkhead mounting capability make them ideal for outdoor applications and close spaces such as OEM cabinets and tower top amplifiers. An O-ring seals out moisture for full weatherproofing. Silver-plated components and high pressure contacts throughout ensure low levels of intermodulation and excellent VSWR performance.

E T-Series Surge Arrestors

Arrestor Plus T-series surge arrestors give engineers more flexibility when configuring lightning protection systems. This slim profile arrestor fits easily inside equipment enclosures and offers true multistrike protection (QWS). The Arrestor Plus bulkhead mount T-series features universal Type N and 7-16 DIN interfaces. Either 3/8" hardware or bulkhead one-step mounting/grounding options are available.

F Replaceable Gas Tube Surge Arrestors

Offering broadband performance from 0–2,500 MHz and excellent electrical characteristics, Arrestor Plus Replaceable Gas Tube Surge Arrestors are easy to install and feature a dc-pass capability through the center conductor to the active tower top electronics. The unit's removable cap makes periodic maintenance fast and easy.

G Universal Ground Bar

The Andrew Universal Ground bar offers the mounting flexibility so often needed at many wireless communications sites. This solid copper bar accommodates vertical and 45-degree mounting configurations and provides a central point to collect grounding leads.

HELIAX®
Cable Assemblies

Andrew has state-of-the-art cable assembly facilities all over the world. You no longer have to deal with expensive and labor intensive cable preparation and connector attachment on site. Andrew will do it for you. Our factory automated processes allow us to produce cable assemblies that will meet your specifications, your delivery requirements, and your budget.

HELIAX cable assemblies are ideal for rack-to-rack and radio OEM applications. They are also commonly used for connecting antennas to transmission lines and connecting transmission lines to radios.

Here are the advantages of the Andrew factory made cable assembly program:

Fast delivery... when you want it

100% tested

10-year warranty

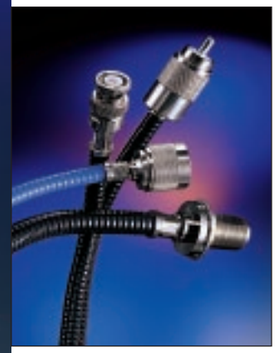
Special lengths and markings per your specifications

A wide variety of HELIAX cable and connector types to choose from

Genuine HELIAX cable, 1/2" and smaller

SureFlex™ Cable Assemblies

Standard Cable Assemblies



VALUFLEX™ Cable Assemblies

Three types of Cable Assemblies

SureFlex™ Assemblies feature new, patent pending completely soldered connectors for indoor and outdoor applications.

Standard Assemblies feature standard HELIAX connectors for indoor and outdoor applications.

VALUFLEX™ Cable Assemblies are value priced. They feature patented connectors for indoor use.

Sealed in Superior Performance with SureFlex Cable Assemblies

New, patent-pending, factory automated SureFlex cable assemblies use an innovative, completely soldered connector attachment to seal in performance and seal out the elements. These new assemblies also offer the benefit of the excellent electrical performance of our unparalleled HELIAX cable while providing an integral weather seal.

The automated outer attachment process employs an induction soldering technique that ensures 360° of electrical contact and a reliable weatherproof seal. Gauged by the pin depth, this automated process also ensures a consistent, robust attachment every time. SureFlex assemblies' unique connector attachment also includes a solder connection to both the inner and outer conductors. No O-rings or additional sealants are needed.

Completely Weatherproof

Highly Accurate Pin Depth

Stable IMD

Consistent VSWR

High Pull-Off Strength

Delivering a Decade of Confidence

We're proud to announce our new 10-year warranty on our standard HELIAX cable assembly products, foam-dielectric and air-dielectric coaxial cables, waveguides, connectors, and accessories*.

This "repair or replace" warranty covers any defects in material and workmanship that may arise under normal use and service and is available on products sold directly by Andrew Corporation and its authorized distributors.

It's all part of our long tradition of commitment to customers. Install Andrew products and receive unsurpassed performance, uncompromising quality, and unmatched durability and reliability – all backed by a 10-year warranty to keep systems operational not just tomorrow but well into the future.

Genuine HELIAX® Cable

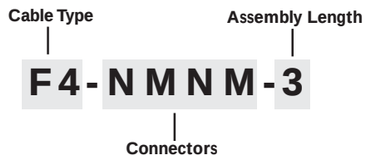
For transmission line systems requiring jumpers, genuine HELIAX cable, 1/2" and under, can provide a high-performance, high-reliability alternative.

*VALUFLEX cable assemblies for indoor use only have a 3-year warranty

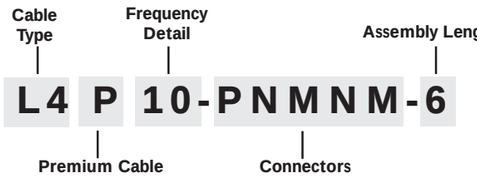
Cable Assembly Numbering System

This publication features a new, functional, cable assembly numbering system that installation, purchasing, and receiving personnel should find easy to understand. This system incorporates the new connector numbering system explained on page 12.

Standard Cable Assemblies



Low VSWR Cable Assemblies



Services and Training

Superior Performance from Superior Services

In addition to the HELIAX® cables, connectors, and accessories described in this catalog, Andrew offers a comprehensive line of products, services, and system planning software for the telecommunications industry.

Superior Value Through Superior Training

The Andrew Institute delivers specialized training on all aspects of the installation and testing of Andrew products for its customers worldwide. At Institute workshops, we teach the most current assembly and installation techniques in the industry. Using hands-on instruction, installers learn how to obtain the highest possible level of performance with every Andrew HELIAX product installed.

Institute Instructors

Andrew Institute is staffed by experienced, certified instructors selected from a variety of disciplines within Andrew. These range from Quality Assurance and Manufacturing to Cable Assembly Production. These instructors have also shared their expertise with major OEMs and telecommunications operators through on-site problem solving and installation instruction. Their experience and thorough working knowledge of RF systems ensures our Institute coursework delivers an education beyond attendees' expectations.

Institute Alumni

Around the world, users of Andrew products are gaining valuable new skills and increasing their effectiveness and the performance of the systems they support. A partial list of past Institute attendees includes:

Motorola
Ford Aerospace
U.S. Navy
Northern Telecom
R.T. Masts
AT&T
Cellular One
U.S. Tower
Ericsson
Vodafone
British Telecom

Local Training Around the World

The Andrew Institute gladly offers on-site training around the world. We customize workshops to meet any level of technical training required by terrestrial microwave, broadcast, or wireless operators. Andrew supplies all the tools, materials, and instruction documentation necessary. Regular Institute sessions are also conducted monthly at Andrew locations in Canada, the United States, Scotland, and Brazil. These more formalized training sessions cover Andrew product preparation, assembly, and installation, along with performance issues and innovative new products.

Current Topics Include:

HELIAX® transmission line preparation

How to install grounding kits, weatherproofing kits, and splices

Troubleshooting VSWR and intermodulation problems

How to maintain quality

New tools that make attachment procedures faster and easier

Our Customers Agree:

"The general feeling of cooperation and attentiveness to our company needs was obvious and, much appreciated."
Cellnet

"You showed us how to do connectors properly. Very informative. Learned a lot about Andrew products, different types of cable, connectors. Discovered the Andrew tool box - great investment."
Canadian Broadcasting Company – Alberta

"I feel competent handling the products the training covered. Now other communications technicians within my group are requesting my assistance."
Maine Department of Public Safety

A New Industry Standard

More and more, customers are mandating that technicians installing their systems complete training such as that offered by the Andrew Institute. Attendees are instructed in the proper handling of Andrew antennas and transmission line products and are awarded a certificate after completing training.

50-Ohm, General Purpose, High Power/Fire Retardant

Type	Standard Superflexible, FSJ Series			High Power/Plenum Superflexible, ETS Series		Extraflexible EFX Series
Nominal Size	1/4"	3/8"	1/2"	1/4"	3/8"	3/8"
Impedance, Ohms	50	50	50	50	50	50
Designation						
Standard Cable, Standard Jacket	FSJ1-50A	FSJ2-50	FSJ4-50B	–	–	EFX2-50
Cable for Cellular (880–960 MHz, 1.10 VSWR)	–	–	FSJ4P-50B-4	–	–	–
(.824–.894 MHz)	–	–	FSJ4P-50B-4	–	–	–
Cable for PCS (1.85–1.99 MHz)	–	–	FSJ4P-50B-24	–	–	–
Cable for Dual Band Cellular/PCS (.824–.894 and 1.85–1.99 MHz)	–	–	FSJ4P-50B-25	–	–	–
Cable for GSM (.870–.960 MHz)	–	–	FSJ4P-50B-5	–	–	–
Cable for PCN (1.7–1.9 MHz)	–	–	FSJ4P-50B-12	–	–	–
Cable for Dual Band GSM/PCN (.870–.960 and 1.7–1.9 MHz)	–	–	FSJ4P-50B-23	–	–	–
Fire-Retardant Jacket CATVR (CATVP)	FSJ1RN-50B	FSJ2RN-50	FSJ4RN-50B	(ETS1-50T)	(ETS2-50T)	EFX2RN-50
Construction Characteristics						
Inner Conductor / Diameter, in (mm)	Cu-Clad Al 0.075 (1.9)	Cu-Clad Al 0.110 (2.8)	Cu-Clad Al 0.137 (3.5)	Silver plt Copper 0.074 (1.9)	Silver plt Cu-Clad Al 0.109 (2.8)	Cu-Clad Al 0.123 (3.1)
Dielectric / Diameter, in (mm)	Closed Cell Polyethylene 0.185 (4.7)	Closed Cell Polyethylene 0.275 (7.0)	Closed Cell Polyethylene 0.343 (8.7)	Expanded PTFE 0.185 (4.7)	Expanded PTFE 0.275 (7.0)	Closed Cell Polyethylene 0.343 (8.7)
Outer Conductor / Diameter, in (mm)	Copper 0.25 (6.4)	Copper 0.375 (9.5)	Copper 0.48 (12.2)	Copper .25 (6.4)	Copper 0.375 (9.53)	Copper 0.38 (9.7)
Standard Jacket / Diameter, in (mm)	Black Polyethylene 0.29 (7.4)	Black Polyethylene 0.415 (10.54)	Black Polyethylene 0.52 (13.2)	Blue High Temp. Fluoropolymer 0.29 (7.4)	Blue High Temp. Fluoropolymer 0.415 (10.54)	Black Polyethylene 0.45 (11.4)
Fire-Retardant Jacket / Diameter, in (mm)	Gray Non-Halogenated 0.31 (7.9)	Gray Non-Halogenated 0.425 (10.8)	Gray Non-Halogenated 0.53 (13.4)	–	–	Gray Non-Halogenated 0.443 (11.25)
Mechanical Characteristics						
Weight, lb/ft (kg/m)	0.045 (0.067)	0.078 (0.12)	0.14 (0.21)	0.066 (0.098)	0.087 (0.13)	0.09 (0.13)
Min. Bending Radius, (one bend), in (mm)	1 (25)	1 (25)	1.25 (32)	1 (25)	1 (25)	1.75 (45)
Min. Bending Radius, (repeated bends), in (mm)	1 (25)	1 (25)	1.25 (32)	1 (25)	1 (25)	1.75 (45)
Number of Bends, Min. (typical)	15 (20)	20 (50)	20 (50)	15 (20)	20 (50)	15 (20)
Tensile Strength, lb (kg)	150 (68)	210 (95)	175 (80)	50 (23)	210 (95)	175 (79)
Bending Moment, lb-ft (N•m)	0.8 (1.1)	1.7 (2.3)	2.0 (2.7)	0.6 (0.8)	1.7 (2.3)	1.7 (2.3)
Crush Strength, lb/in (kg/mm)	100 (1.8)	100 (1.8)	110 (1.9)	100 (1.8)	100 (1.8)	120 (2.1)
Max. Length per Hoisting Grip, ft (m)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)
Max. Standard Hanger Spacing, ft (m)*	–	–	2.5 (0.76)	–	–	–
Recommended Temperature for Installation, °F (°C)						
Standard Jacket	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	–	–	-40/+140 (-40/+60)
Fire-Retardant Jacket	-25/+60 (-13/+140)	-25/+60 (-13/+140)	-25/+60 (-13/+140)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-25/+60 (-13/+140)
Recommended Storage Temperature, °F (°C)						
Standard Jacket	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)	–	–	-94/+185 (-70/+85)
Fire-Retardant Jacket	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-22/+176 (-30/+80)
Operating Temperature, °F (°C)						
Standard Jacket	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)	–	–	-67/+185 (-55/+85)
Flame-Retardant Jacket	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-40/+302 (-40/+150)	-40/+302 (-40/+150)	-22/+176 (-30/+80)
Electrical Characteristics						
Relative Propagation Velocity, %	84	83	81	82	83	85
Capacitance, pF/ft (m)	24.2 (79.4)	24.3 (79.7)	25.2 (82.7)	24.6 (80.6)	24.3 (79.7)	24.1 (79.1)
Maximum Operating Frequency, MHz	20400	13400	10200	20000	13400	13500
Peak RF Voltage Rating, kV	0.8	7.14	1.25	–	–	–
Peak Power Rating, kW	6.4	13.2	15.6	6.4	13.2	15.6
dc Resistance: Inner Conductor, ohms/1000 ft (ohms/km)	3.0 (9.8)	1.29 (4.23)	0.82 (2.69)	1.9 (6.2)	1.29 (4.23)	1.1 (3.61)
dc Resistance: Outer Conductor, ohms/1000 ft (ohms/km)	2.0(6.5)	1.52 (4.99)	1.00 (3.28)	2.0 (6.5)	1.52 (4.99)	0.92 (3.02)
dc Breakdown, V	1600	2300	2500	1600	2300	2500
Jacket Spark, V RMS	5000	5000	5000	4000	4000	5000
Inductance, µH/ft (µH/m)	0.061 (0.200)	0.061 (0.200)	0.0625 (0.205)	0.063 (0.205)	0.061 (0.200)	0.06 (0.197)

* Standard Conditions: 125 mph (200 km/h) survival wind velocity, 0.5 in (13 mm) radial ice.

50-Ohm, General Purpose, High Power/Fire Retardant

Type		Standard Superflexible, FSJ Series			High Power/Plenum Superflexible, ETS Series		Extraflexible EFX Series
Nominal Size		1/4"	3/8"	1/2"	1/4"	3/8"	3/8"
Impedance, Ohms		50	50	50	50	50	50
Attenuation, dB/100 ft (dB/100 m) –							
Standard conditions: VSWR 1.0;	30 MHz	0.98 (3.22)	0.65 (2.14)	0.56 (1.84)	0.98 (3.21)	0.658 (2.16)	0.589 (1.93)
ambient temperature 75° F (24° C)	100 MHz	1.81 (5.94)	1.21 (3.97)	1.05 (3.44)	1.80 (5.91)	1.23 (4.02)	1.09 (3.58)
	150 MHz	2.23 (7.32)	1.49 (4.90)	1.29 (4.23)	2.21 (7.26)	1.52 (4.97)	1.35 (4.43)
	300 MHz	3.19 (10.5)	2.15 (7.04)	1.87 (6.12)	3.16 (10.4)	2.19 (7.19)	1.94 (6.37)
	450 MHz	3.93 (12.9)	2.66 (8.73)	2.32 (7.61)	3.89 (12.8)	2.73 (8.95)	2.40 (7.87)
	600 MHz	4.58 (15.0)	3.10 (10.2)	2.73 (8.95)	4.52 (14.8)	3.19 (10.5)	2.80 (9.19)
	824 MHz	5.42 (17.8)	3.68 (12.1)	3.25 (10.7)	5.33 (17.5)	3.81 (12.5)	3.33 (10.9)
	894 MHz	5.66 (18.6)	3.85 (12.6)	3.40 (11.2)	5.56 (18.2)	3.99 (13.1)	3.48 (11.4)
	960 MHz	5.87 (19.3)	4.00 (13.1)	3.55 (11.6)	5.76 (18.9)	4.15 (13.6)	3.62 (11.9)
	1000 MHz	6.00 (19.7)	4.09 (13.4)	3.63 (11.9)	5.90 (19.4)	4.24 (13.9)	3.70 (12.1)
	1500 MHz	7.47 (24.5)	5.12 (16.8)	4.57 (15.0)	7.31 (24.0)	5.35 (17.5)	4.63 (15.2)
	1700 MHz	7.99 (26.2)	5.49 (18.0)	4.92 (16.1)	7.81 (25.6)	5.75 (18.9)	4.97 (16.3)
	2000 MHz	8.73 (28.6)	6.01 (19.7)	5.41 (17.7)	8.52 (28.0)	6.32 (20.7)	5.45 (17.9)
	2300 MHz	9.43 (30.9)	6.51 (21.4)	5.87 (19.3)	9.19 (30.2)	6.86 (22.5)	5.90 (19.4)
	4000 MHz	12.8 (42.0)	8.96 (29.4)	8.20 (26.9)	12.4 (40.7)	9.56 (31.4)	8.13 (26.7)
	6000 MHz	16.2 (53.2)	11.4 (37.4)	10.6 (34.8)	15.5 (50.9)	12.3 (40.4)	10.4 (34.1)
	10000 MHz	21.8 (71.5)	15.6 (51.1)	14.7 (48.2)	20.7 (68.0)	17.1 (56.1)	14.2 (46.6)
Average Power Rating, kW –							
Standard conditions: VSWR 1.0;	30 MHz	2.28	3.97	5.75	5.48	9.89	3.99
ambient temperature 104° F (40° C);	100 MHz	1.23	2.14	3.08	2.98	5.31	2.15
inner conductor temperature	150 MHz	1.00	1.74	2.49	2.42	4.29	1.74
212° F (100° C); no solar load	300 MHz	0.701	1.21	1.72	1.70	2.97	1.21
ETS1, ETS2 only:	450 MHz	0.567	0.975	1.38	1.38	2.38	0.978
Inner conductor temperature	600 MHz	0.488	0.836	1.18	1.19	2.04	0.838
392° F (200° C)	824 MHz	0.412	0.704	0.991	1.00	1.71	0.706
	894 MHz	0.395	0.674	0.947	0.964	1.63	0.675
	960 MHz	0.380	0.648	0.910	1.04	1.79	0.649
	1000 MHz	0.372	0.634	0.889	0.909	1.53	0.635
	1500 MHz	0.299	0.507	0.705	0.733	1.21	0.507
	1700 MHz	0.279	0.472	0.656	0.686	1.13	0.473
	2000 MHz	0.256	0.431	0.597	0.629	1.03	0.431
	2300 MHz	0.237	0.398	0.549	0.584	0.95	0.398
	4000 MHz	0.174	0.290	0.394	0.432	0.681	0.289
	6000 MHz	0.138	0.228	0.306	0.345	0.529	0.227
	10000 MHz	0.102	0.166	0.220	0.259	0.381	0.165
Connectors††							
Type N Male, Captivated		–	F2PNM-HC	F4PNM-HC	–	F2PNM-HC	–
Type N Male, Solder		F1PNM-H	F2PNM-H	F4PNM-H	F1PNM-H	F2PNM-H	E2PNM-H
Type N Male, Right Angle		F1PNR-HC	–	F4PNR-HC	F1PNR-HC	–	E2PNR-HC
Type N Female, Captivated***		–	F2PNF-C	F4PNF-C	–	F2PNF-C	–
7-16 DIN Male, Captivated		–	F2PDM-C	F4PDM-C	–	F2PDM-C	E2PDM-C
7-16 DIN Male, Solder		F1PDM	F2PDM	F4PDM	F1PDM	F2PDM	–
7-16 DIN Male, Right Angle		–	F2PDR-C	F4PDR-C	–	F2PDR-C	E2PDR-C
7-16 DIN Female, Captivated		–	F2PDF-C	F4PDF-C	–	F2PDF-C	E2PDF-C
7-16 DIN Female, Solder		F1PDF	F2PDF	F4PDF	F1PDF	F2PDF	–
7/8" EIA Flange		–	–	44ASR	–	–	–
Accessories††							
Hanger Kit of 10		–	–	43211A	–	–	–
Compact Angle Adaptor Kit of 10		–	243684	243684	–	–	–
Snap-in Hanger Kit of 10		–	–	206706-1	–	–	–
Click-On Hanger Kit of 10		–	–	L4CLICK	–	–	–
Hoisting Grip		–	–	43094	–	–	–
Arrestor Plus® Quarterwave Surge Protector		APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†
Arrestor Plus Gas Tube Series Surge Protector		APG-*	APG-*	APG-*	APG-*	APG-*	APG-*
Grounding Kit, 1-Hole Lug		223158	223158	204989-1	223158	223158	223158
SureGround™ Grounding Kit, 2-Hole Lug		–	–	–	–	–	–
Wall/Roof Feed Through		–	–	40656A-3	–	–	–
Weatherproofing Kit		221213	221213	221213	221213	221213	221213
Cold Shrink™ Type N*		–	–	–	–	–	–
Cold Shrink 7-16 DIN		–	–	–	–	–	–
Cold Shrink Antenna Type N**		–	–	241548-4	–	–	–
Cold Shrink Antenna 7-16 DIN**		–	–	241548-8	–	–	241548-8
Cable Tie Kit of 50		40417	40417	40417	40417	40417	40417
EASIAX® Tool		207865	241372	207865	207865	241372	–

* Specify connector interface ** Contact Andrew for detailed application information *** Solder inner attachment styles also available for most cable types † Frequency must be specified
†† All connectors listed are silver plated. Brass versions also available for most configurations. Contact Andrew for complete coaxial cable connector and accessory ordering information.

50-Ohm, General Purpose and Riser

Type	Foam Dielectric, LDF Series							
Nominal Size	1/4"	3/8"	1/2"	5/8"	7/8"	1-1/4"	1-5/8"	2-1/4"
Impedance, Ohms	50	50	50	50	50	50	50	50
Designation								
Standard Cable, Standard Jacket	LDF1-50	LDF2-50	LDF4-50A	LDF4.5-50	LDF5-50A	LDF6-50	LDF7-50A	LDF12-50
Cable for Cellular (880–960 MHz, 1.20 Max. VSWR)	–	–	LDF4P-50A-2	LDF4.5P-50-1	LDF5P-50-9A	LDF6P-50-3A	LDF7P-50A-3A	–
(.824–.894 MHz)	–	–	LDF4-50A-1	LDF4.5P-50-2	LDF5P-50-9A	LDF6P-50-1A	LDF7P-50A-1A	LDF12P-50-1
Cable for PCS (1.85–1.99 MHz)	–	–	LDF4P-50A-13	LDF4.5P-50-3	LDF5P-50-16A	LDF6P-50-15A	LDF7P-50A-17A	LDF12P-50-2
Cable for Dual Band Cellular/PCS (.824–.894 and 1.85–1.99 MHz)	–	–	LDF4P-50A-13	LDF4.5P-50-3	LDF5P-50-16A	LDF6P-50-15A	LDF7P-50A-17A	LDF12P-50-2
Cable for GSM (.870–.960 MHz)	–	–	LDF4P-50A-2	LDF4.5P-50-2	LDF5P-50-9A	LDF6P-50-2A	LDF7P-50A-2A	LDF12P-50-1
Cable for PCN (1.7–1.9 MHz)	–	–	LDF4P-50A-15	LDF4.5P-50-4	LDF5P-50-18A	LDF6P-50-5A	LDF7P-50A-5A	LDF12P-50-3
Cable for Dual Band GSM/PCN (.870–.960 and 1.7–1.9MHz)	–	–	LDF4P-50A-14	LDF4.5P-50-5	LDF5P-50-17A	–	LDF7P-50A-18A	–
Fire-Retardant Jacket	LDF1RN-50	LDF2RN-50	LDF4RN-50A	LDF4.5RN-50	LDF5RN-50A	LDF6RN-50	LDF7RN-50A	LDF12RN-50
Construction Characteristics								
Inner Conductor / Diameter, in (mm)	Cu-Clad Al 0.102 (2.6)	Cu-Clad Al 0.122 (3.1)	Cu-Clad Al 0.189 (4.6)	Cu-Clad Al 0.277 (7.04)	Copper Tube 0.355 (9.0)	Copper Tube 0.516 (13.1)	Cor. Copper 0.681 (17.3)	Cor. Copper 0.835(21.2)
Dielectric / Diameter, in (mm)	Closed Cell Polyethylene 0.265 (6.7)	Closed Cell Polyethylene 0.343 (8.7)	Closed Cell Polyethylene 0.512 (13.0)	Closed Cell Polyethylene 0.710 (18.03)	Closed Cell Polyethylene 0.930 (23.6)	Closed Cell Polyethylene 1.38 (33.7)	Closed Cell Polyethylene 1.74 (44.1)	Closed Cell Polyethylene 2.11 (53.6)
Outer Conductor / Diameter, in (mm)	Copper 0.31 (7.7)	Copper 0.38 (9.5)	Copper 0.55 (13.8)	Copper 0.777 (19.74)	Copper 0.98 (24.9)	Copper 1.41 (35.8)	Copper 1.83 (46.5)	Copper 2.2 (55.9)
Standard Jacket / Diameter, in (mm)	Black PE 0.345 (8.8)	Black PE 0.44 (11.05)	Black PE 0.63 (16)	Black PE 0.865 (21.97)	Black PE 1.08 (28)	Black PE 1.55 (39.4)	Black PE 1.98 (50.1)	Black PE 2.35 (59.7)
Fire-Retardant Jacket / Diameter, in (mm)	Gray Non-Halogenated 0.355 (9.0)	Gray Non-Halogenated 0.44 (11.05)	Gray Non-Halogenated 0.63 (16)	Gray Non-Halogenated 0.86 (22)	Gray Non-Halogenated 1.08 (28)	Gray Non-Halogenated 1.55 (39)	Gray Non-Halogenated 1.98 (50.1)	Gray Non-Halogenated 2.35 (59.7)
Mechanical Characteristics								
Weight, lb/ft (kg/m)	0.06 (0.09)	0.08 (0.12)	0.15 (0.22)	0.31 (.4613)	0.33 (0.49)	0.66 (0.98)	0.92 (1.36)	1.29 (1.91)
Min. Bending Radius, (one bend), in (mm)	1.5 (38)	1.58 (40)	2 (50)	–	3.55 (90)	5.91 (150)	7.88 (200)	9.45 (240)
Min. Bending Radius, (repeated bends), in (mm)	3.0 (76)	3.75 (95)	5 (125)	8 (200)	10 (250)	15 (380)	20 (510)	22 (560)
Number of Bends, Min. (typical)	15 (30)	15 (60)	15 (50)	15 (40)	15 (50)	15 (50)	15 (50)	15 (50)
Min Bending Radius, (tactical mobile use), in (mm)	–	9.85 (250)	14.75 (375)	–	19.7 (500)	–	N/A	–
Tensile Strength, lb (kg)	200 (91)	250 (113)	250 (113)	800 (363)	325 (147)	1500 (678)	1000 (455)	1500 (681)
Bending Moment, lb-ft (N•m)	0.98 (1.33)	1.4 (1.9)	2.8 (3.8)	9.2 (12.7)	12 (16.3)	39 (53)	50 (68)	60 (83)
Crush Strength, lb/in (kg/mm)	80 (1.4)	110 (2.0)	110 (2.0)	70 (1.3)	80 (1.4)	138 (2.4)	150 (2.7)	150 (2.7)
Max. Length per Hoisting Grip, ft (m)	–	–	200 (60)	–	200 (60)	200 (60)	200 (60)	200 (60)
Max. Standard Hanger Spacing, ft (m)*	1.5 (0.5)	2 (0.61)	3 (0.91)	–	5.5 (1.68)	6 (1.83)	6 (1.83)	6 (1.83)
Recommended Temperature for Installation, °F (°C)								
Standard Jacket	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)
Flame-Retardant Jacket	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)
Recommended Storage Temperature, °F (°C)								
Standard Jacket	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)
Flame-Retardant Jacket	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)
Operating Temperature, °F (°C)								
Standard Jacket	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)
Flame-Retardant Jacket	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)
Electrical Characteristics								
Relative Propagation Velocity, %	87	88	88	89	89	89	88	88
Capacitance, pF/ft (m)	23.4 (76.8)	23.0 (75.5)	23.1 (75.8)	23.2 (76.1)	22.8 (75.0)	22.9 (75.1)	23.1 (75.8)	22.7 (74.6)
Maximum Operating Frequency, MHz	15800	13500	8800	6100	5000	3300	2500	2200
Peak RF Voltage Rating, kV	1.1	1.25	2	–	3.02	4.53	5.61	7.5
Peak Power Rating, kW	12.1	15.6	40	62	91	205	315	425
dc Resistance: Inner Conductor, ohms/1000 ft (ohms/km)	1.57 (5.15)	1.06 (3.48)	0.45 (1.48)	0.15 (0.49)	0.32 (1.05)	0.22 (0.72)	0.21 (0.69)	0.16 (0.52)
dc Resistance: Outer Conductor, ohms/1000 ft (ohms/km)	1.02 (3.33)	0.87 (2.85)	0.58 (1.90)	0.42 (1.37)	0.32 (1.05)	0.15 (0.49)	0.10 (0.33)	0.077 (0.25)
dc Breakdown, V	2200	2500	4000	5000	6000	9000	11000	13000
Jacket Spark, V RMS	5000	5000	8000	8000	8000	10000	10000	10000
Inductance, µH/ft (µH/m)	0.059 (0.19)	0.058 (0.19)	0.058 (0.19)	0.057 (0.187)	0.057 (0.187)	0.056 (0.184)	0.058 (0.19)	0.058 (0.19)

* Standard Conditions: 125 mph (200 km/h) survival wind velocity, 0.5 in (13 mm) radial ice.

50-Ohm, General Purpose and Riser

Type	Foam Dielectric, LDF Series							
Nominal Size	1/4"	3/8"	1/2"	5/8"	7/8"	1-1/4"	1-5/8"	2-1/4"
Impedance, Ohms	50	50	50	50	50	50	50	50
Attenuation, dB/100 ft (dB/100 m) – Standard conditions: VSWR 1.0; ambient temperature 75° F (24° C)								
30 MHz	0.672 (2.20)	0.567 (1.86)	0.369 (1.21)	0.256 (0.840)	0.197 (0.646)	0.136 (0.448)	0.110 (0.362)	0.095 (0.31)
100 MHz	1.24 (4.08)	1.05 (3.44)	0.684 (2.24)	0.477 (1.57)	0.366 (1.20)	0.256 (0.838)	0.208 (0.684)	0.181 (0.59)
150 MHz	1.53 (5.03)	1.30 (4.27)	0.845 (2.77)	0.590 (1.9)	0.453 (1.49)	0.317 (1.04)	0.259 (0.851)	0.226 (0.74)
300 MHz	2.20 (7.22)	1.86 (6.09)	1.22 (4.00)	0.85 (2.8)	0.654 (2.15)	0.460 (1.51)	0.380 (1.25)	0.334 (1.10)
450 MHz	2.73 (8.95)	2.30 (7.56)	1.51 (4.96)	1.06 (3.48)	0.813 (2.67)	0.575 (1.89)	0.478 (1.57)	0.422 (1.38)
600 MHz	3.18 (10.42)	2.69 (8.84)	1.77 (5.80)	1.24 (4.08)	0.952 (3.12)	0.675 (2.22)	0.565 (1.85)	0.500 (1.64)
824 MHz	3.77 (12.40)	3.19 (10.5)	2.10 (6.90)	1.48 (4.86)	1.13 (3.72)	0.808 (2.65)	0.680 (2.23)	0.605 (1.98)
894 MHz	3.94 (12.92)	3.34 (11.0)	2.20 (7.22)	1.55 (5.09)	1.19 (3.89)	0.847 (2.78)	0.714 (2.34)	0.640 (2.09)
960 MHz	4.09 (13.43)	3.47 (11.4)	2.29 (7.51)	1.61 (5.30)	1.23 (4.05)	0.882 (2.89)	0.745 (2.44)	0.665 (2.187)
1000 MHz	4.19 (13.73)	3.55 (11.6)	2.34 (7.68)	1.65 (5.42)	1.26 (4.14)	0.903 (2.96)	0.764 (2.51)	0.682 (2.24)
1500 MHz	5.23 (17.20)	4.43 (14.6)	2.93 (9.61)	2.08 (6.83)	1.59 (5.21)	1.14 (3.75)	0.977 (3.21)	0.879 (2.88)
1700 MHz	5.61 (18.38)	4.75 (15.6)	3.15 (10.3)	2.24 (7.34)	1.71 (5.60)	1.23 (4.04)	1.06 (3.47)	0.952 (3.12)
2000 MHz	6.14 (20.13)	5.21 (17.1)	3.45 (11.3)	2.46 (8.07)	1.88 (6.15)	1.36 (4.46)	1.17 (3.84)	1.060 (3.47)
2300 MHz	6.64 (21.77)	5.63 (18.4)	3.74 (12.3)	2.67 (8.76)	2.04 (6.68)	1.48 (4.85)	1.28 (4.19)	–
4000 MHz	9.12 (29.89)	7.74 (25.4)	5.18 (17.0)	3.72 (12.2)	2.83 (9.29)	–	–	–
6000 MHz	11.6 (37.94)	9.85 (32.3)	6.64 (21.8)	4.79 (15.7)	–	–	–	–
10000 MHz	15.8 (51.80)	13.5 (44.3)	–	–	–	–	–	–
Average Power Rating, kW – Standard conditions: VSWR 1.0; ambient temperature 104° F (40° C); inner conductor temperature 212° F (100° C); No Solar Load								
30 MHz	3.32	4.14	6.31	9.57	14.1	22.0	30.4	39.5
100 MHz	1.79	2.23	3.39	5.14	7.56	11.7	16.1	20.8
150 MHz	1.45	1.81	2.75	4.15	6.12	9.47	12.9	16.6
300 MHz	1.01	1.26	1.91	2.87	4.24	6.52	8.81	11.3
450 MHz	0.818	1.02	1.53	2.31	3.41	5.22	7.00	8.91
600 MHz	0.702	0.874	1.31	1.97	2.91	4.44	5.93	7.52
824 MHz	0.592	0.736	1.10	1.65	2.44	3.71	4.93	6.21
894 MHz	0.566	0.704	1.05	1.58	2.34	3.54	4.69	5.91
960 MHz	0.545	0.678	1.01	1.52	2.24	3.40	4.50	5.66
1000 MHz	0.533	0.663	0.994	1.48	2.19	3.32	4.39	5.52
1500 MHz	0.426	0.530	0.793	1.18	1.74	2.62	3.43	4.28
1700 MHz	0.398	0.494	0.738	1.10	1.62	2.43	3.17	3.95
2000 MHz	0.368	0.451	0.673	0.996	1.48	2.21	2.87	3.55
2300 MHz	0.336	0.417	0.621	0.918	1.36	2.03	2.62	–
4000 MHz	0.245	0.303	0.448	0.658	0.978	–	–	–
6000 MHz	0.193	0.239	0.351	0.511	–	–	–	–
10000 MHz	0.141	0.175	–	–	–	–	–	–
Connectors††								
Type N Male, Captivated	–	–	L4PNM-RC	L4.5PNM-RC	L5PNM-RC	–	–	–
Type N Male, Solder	L1PNM-H	L2PNM-H	L4PNM-H	–	L5PNM†††	L6PNM†††	L7PNM†††	–
Type N Male, Right Angle	L1PNR-HC	–	L4PNR-HC	–	–	–	–	–
Type N Female, Captivated***	–	–	L4PNF-C	L4.5PNF-RC	L5PNF-RC	L6PNF-RC	L7PNF-RC	L12PNF†††
7-16 DIN Male, Captivated	–	L2PDM-C	L4PDM-RC	L4.5PDM-RC	L5PDM-RC	–	–	–
7-16 DIN Male, Solder	–	–	L4PDM	–	L5PDM†††	L6PDM†††	L7PDM†††	L12PDM†††
7-16 DIN Male, Right Angle	–	–	L4PDR-C	–	L5PDR	–	–	–
7-16 DIN Female, Captivated	–	L2PDF-C	L4PDF-C	L4.5PDF-RC	L5PDF-RC	L6PDF-RC	L7PDF-RC	–
7-16 DIN Female, Solder	–	–	L4PDF	–	L5PDF†††	L6PDF†††	L7PDF†††	L12PDF†††
7/8" EIA Flange	–	–	L44R	–	L45R	L46S	L47S	–
1-5/8" EIA Flange	–	–	–	–	–	L46R	L47R	–
3-1/8" EIA Flange	–	–	–	–	–	–	–	L12FP-302
3-1/8" EIA with Gas Barrier	–	–	–	–	–	–	–	L12FB-302
Splice	–	–	L44Z	–	L45Z	L46Z	L47Z	–
Accessories††								
Hanger Kit of 10	–	–	43211A	42396A-9	42396A-5	42396A-1	42396A-2	42396A-4
Compact Angle Adaptor Kit of 10	–	243684	243684	243684	243684	243684	243684	243684
Snap-in Hanger Kit of 10	–	–	206706-1	–	206706-2	206706-3	206706-4	–
Click-on Hangers Kit of 10	–	–	L4CLICK	L45CLICK	L5CLICK	L6CLICK	L7CLICK	–
Hoisting Grip	–	–	43094	29958	19256B	29961	24312A	31535
Arrestor Plus®								
Quarterwave Surge Protector	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APPL7-1-†	APP-1-†
Gas Tube Surge Protector	APG-*	APG-*	APG-*	–	APG-*	APG-*	APG-*	APG-*
SureGround™ Grounding Kit, 2-Hole Lug	–	–	SGL4-06B2	SGL45-06B2	SGL5-06B2	SGL6-06B2	SGL7-06B2	–
Standard Grounding Kit, 2-Hole Lug	223158-2	223158-2	241088-1	241088-2	241088-2	241088-3	241088-4	241088-5
Wall/Roof Feed Through	–	–	40656A-3	–	40656A-1	40656A-5	40656A-2	40656A-6
Weatherproofing Kit	221213	221213	221213	221213	221213	221213	221213	221213
Cold Shrink™ Type N (1/2" jumper)	–	–	241474-4	–	241475-1	241475-2	241475-2	–
Cold Shrink 7-16 DIN (1/2" or 3/8" jumper)	–	–	–	–	241475-4	241475-5	241475-5	–
Cold Shrink Antenna Type N**	241548-10	241548-8	241548-8	–	241548-5	–	–	–
Cold Shrink Antenna 7-16 DIN**	241548-10	241548-8	241548-6	–	241548-5	–	–	–
Cable Tie Kit of 50	40417	40417	40417	–	–	–	–	–
EASIAX® Tool	–	–	207866	–	222951	–	–	–

* Specify connector interface. ** Contact Andrew for detailed application information. *** Solder inner attachment styles also available for most cable types † Frequency must be specified.
†† All connectors listed are silver plated. Brass versions also available for most configurations. Contact Andrew for complete coaxial cable connector and accessory ordering information.
††† Self-tapping inner attachment.

50-Ohm, General Purpose, Fire Retardant and High Power

Type	Air Dielectric Cables											
Nominal Size	1/4"	3/8"	1/2"	1/2"	5/8"	7/8"	1-5/8"	2-1/4"	3"	4"	5"	5"
Impedance, Ohms	50	50	50	50	50	50	50	50	50	50	50	50
Designation												
Standard Cable, Standard Jacket	–	–	–	HJ4-50	HJ4.5-50	HJ5-50	HJ7-50A	HJ12-50	HJ8-50B	HJ11-50	HJ9-50	HJ9HP-50
Cable for Cellular (880–960 MHz, 1.10 VSWR)	–	–	–	–	HJ4.5P-50-2	25831-7	25816A-33	207760-3	–	–	–	–
Fire-Retardant, Halogen-Free Jacket (CATVR)	–	–	–	HJ4RN-50	HJ4.5RN-50	HJ5RN-50	HJ7RN-50A	HJ12RN-50	–	–	–	–
Fire-Retardant Jacket (CATVP, UL910)	HS1RP-50A	HST2-50	HST4-50	–	–	HJ5RP-50	HJ7RP-50A	–	–	–	–	–
High Power, High Temperature	–	HST2-50	HST4-50	–	–	–	–	–	–	–	–	–
Construction Characteristics												
Inner Conductor / Diameter, in (mm)	Cu-Clad Al –	Cu-Clad Al 0.109 (2.8)	Cu-Clad Al 0.139 (3.5)	Cu-Clad Al 0.165 (4.2)	Copper Tube 0.272 (6.9)	Copper Tube 0.359 (9.1)	Cor. Copper 0.713 (18.1)	Cor. Copper 0.890 (22.6)	Cor. Copper 1.14 (29.0)	Cor. Copper 1.55 (39.4)	Cor. Copper 2.02 (51.3)	Cor. Copper 2.07 (52.7)
Dielectric / Diameter, in (mm)	Polyethylene Spline –	PTFE Spline –	PTFE Spline –	Polyethylene Helical Spacer 0.362 (9.2)	Polyethylene Helical Spacer 0.606 (15.4)	Polyethylene Helical Spacer 0.803 (20.4)	Polyethylene Helical Spacer 1.58 (40.1)	Polyethylene Helical Spacer 1.98 (50.2)	Polyolefin Helical Spacer 2.52 (63.9)	Polyolefin Helical Spacer 3.39 (86.0)	Polyethylene Helical Spacer 4.46 (113.3)	Fluoropolymer Helical Spacer 4.44 (113)
Outer Conductor / Diameter, in (mm)	Copper 0.25 (6.4)	Copper 0.375 (9.5)	Copper 0.48 (12.2)	Copper 0.50 (12.7)	Copper 0.775 (19.7)	Copper 1.01 (25.7)	Copper 1.83 (46.5)	Copper 2.23 (56.6)	Copper 2.85 (72.4)	Copper 3.84 (97.5)	Copper 5.00 (127)	Copper 5.00 (127)
Standard Jacket ** / Diameter, in (mm)	Blue High Temp. Fluoropolymer 0.29 (7.4)	Blue High Temp. Fluoropolymer 0.415 (10.5)	Blue High Temp. Fluoropolymer 0.52 (13.2)	Black PE 0.58 (14.7)	Black PE 0.875 (22.2)	Black PE 1.11 (28.2)	Black PE 1.98 (50.3)	Black PE 2.38 (60.4)	Black PE 3.02 (76.6)	Black PE 4.0 (102)	Black PE 5.20 (132)	Black PE 5.20 (132)
Fire-Retardant Jacket (CATVR) / Diameter, in (mm)	–	–	–	Gray 0.58 (14.7)	Gray 0.875 (22.2)	Gray 1.11 (28.2)	Gray 1.98 (50.3)	Gray 2.38 (60.4)	–	–	–	–
Fire-Retardant Jacket (CATVP) / Diameter, in (mm)	–	–	–	–	–	Blue High Temp. Fluoropolymer 1.11 (28.2)	Blue High Temp. Fluoropolymer 1.98 (50.3)	–	–	–	–	–
Mechanical Characteristics												
Weight, lb/ft (kg/m)	0.063 (0.093)	0.076 (0.113)	0.165 (0.245)	0.25 (0.37)	0.40 (0.59)	0.54 (0.80)	1.04 (1.55)	1.16 (1.73)	1.78 (2.6)	2.5 (3.7)	3.3 (4.9)	3.4 (4.9)
Min. Bending Radius, (one bend), in (mm)	1 (25)	1 (50)	1.25 (32)	2 (50)	3.15 (80)	3.55 (90)	6.7 (170)	8.67 (220)	10.64 (270)	17.73 (450)	31.52 (800)	36 (900)
Min. Bending Radius, (repeated bends), in (mm)	–	–	–	5 (125)	7 (180)	10 (250)	20 (510)	22 (560)	30 (760)	40 (1000)	50 (1300)	50 (1270)
Number of Bends, Min. (typical)	15 (35)	20 (50)	20 (50)	15 (20)	15 (20)	15 (20)	15 (30)	15	15	15	15	15
Tensile Strength, lb (kg)	100 (45)	210 (95)	175 (80)	700 (320)	750 (340)	800 (360)	750 (340)	980 (445)	750 (340)	900 (408)	1000 (454)	1000 (454)
Bending Moment, lb-ft (N•m)	1.9 (2.6)	1.8 (2.45)	4.57 (6.3)	8 (10.9)	16 (21.7)	25 (34)	30 (40.7)	55 (75)	30 (41)	191 (259)	200 (271)	200 (271)
Crush Strength, lb/in (kg/mm)	80 (1.4)	100 (1.8)	80 (1.4)	250 (4.5)	250 (4.5)	250 (4.5)	175 (3.1)	145 (2.6)	175 (3,1)	280 (5.0)	275 (4.9)	240 (4.3)
Max. Length per Hoisting Grip, ft (m)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)	200 (60)
Max. Standard Hanger Spacing, ft (m)*	–	–	–	5 (1.52)	6 (1.83)	6 (1.83)	6 (1.83)	6 (1.83)	6 (1.83)	6 (1.83)	6 (1.83)	6 (1.83)
Recommended Temperature for Installation, °F (°C)												
Standard Jacket	–	–	–	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)
Fire-Retardant Jacket (CATVR)	–	–	–	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	-13/+140 (-25/+60)	–	–	–	–
Fire-Retardant Jacket (CATVP)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	-40/+140 (-40/+60)	–	–	-40/+140 (-40/+60)	-40/+140 (-40/+60)	–	–	–	–	–
Recommended Storage Temperature, °F (°C)												
Standard Jacket	–	–	–	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)
Fire-Retardant Jacket (CATVR)	–	–	–	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	–	–	–	–
Fire-Retardant Jacket (CATVP)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	–	–	-40/+185 (-40/+85)	-40/+185 (-40/+85)	–	–	–	–	–
Operating Temperature, °F (°C)												
Standard Jacket	–	–	–	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-40/+185 (-40/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)
Fire-Retardant Jacket (CATVR)	–	–	–	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)	–	–	–	–
Fire-Retardant Jacket (CATVP)	-40/+185 (-40/+85)	-40/+302 (-40/+150)	-40/+302 (-40/+150)	–	–	-40/+185 (-40/+85)	-40/+185 (-40/+85)	–	–	–	–	–
Electrical Characteristics												
Relative Propagation Velocity, %	84	83	81	91.4	92	91.6	92.1	93.1	93.3	92	93.1	96.4
Capacitance, pF/ft (m)	23.7 (77.7)	23.61 (77.47)	25.04 (82.16)	22.2 (73.0)	22.3 (73.2)	22.2 (72.8)	22.1 (72.4)	21.8 (71.5)	21.7 (71.2)	22.0 (72.2)	21.7 (71.2)	20.8 (68.1)
Maximum Operating Frequency, MHz	10000	13400	10200	10900	6600	5200	2700	2300	1640	1220	960	960
Peak RF Voltage Rating, kV	–	–	–	1.45	2	3	5.52	6.52	8	10.5	13.75	13
Peak Power Rating, kW	6.4	13.2	15.6	21	40	90	305	425	640	1100	1890	1690
dc Resistance: Inner Conductor, ohms/1000 ft (ohms/km)	2.1 (6.89)	1.41 (4.64)	0.87 (2.85)	0.45 (1.48)	0.41 (1.35)	0.25 (0.82)	0.22 (0.72)	0.17 (0.56)	0.15 (0.49)	0.11 (0.36)	0.10 (0.30)	0.10 (0.30)
dc Resistance: Outer Conductor, ohms/1000 ft (ohms/km)	2.0 (6.5)	1.52 (4.99)	1.0 (3.28)	0.40 (1.31)	0.23 (0.75)	0.20 (0.66)	0.10 (0.33)	0.075 (0.25)	0.07 (0.23)	0.04 (0.13)	0.04 (0.13)	0.04 (0.13)
dc Breakdown, V	1600	2300	2500	2900	4000	6000	11000	13000	16000	21000	27500	26000
Jacket Spark, V RMS	4000	4000	4000	8000	5500	8000	10000	10000	10000	10000	12000	12000
Inductance, µH/ft (µH/m)	0.060 (0.198)	0.064 (0.208)	0.063 (0.206)	0.056 (0.182)	0.056 (0.182)	0.055 (0.180)	0.055 (0.180)	0.055 (0.180)	0.055 (0.180)	0.055 (0.180)	0.055 (0.180)	0.054 (0.176)

* Standard Conditions: 125 mph (200 km/h) survival wind velocity, 0.5 in (13 mm) radial ice.

** Standard jacket is blue fluoropolymer, CATVP rated.

50-Ohm, General Purpose, Fire Retardant and High Power

	Type	Air Dielectric Cables							Air Dielectric Cables				
	Nominal Size	1/4"	3/8"	1/2"	1/2"	5/8"	7/8"	1-5/8"	2-1/4"	3"	4"	5"	5"
	Impedance, Ohms	50	50	50	50	50	50	50	50	50	50	50	50
Attenuation, dB/100 ft (dB/100 m) –													
Standard conditions:	30MHz	0.949 (3.11)	0.672 (2.21)	0.591 (1.94)	0.45 (1.48)	0.264 (0.867)	0.200 (0.656)	0.112 (0.367)	0.0906 (0.297)	0.0750 (0.246)	0.0600 (0.197)	0.041 (0.135)	0.0381 (0.125)
VSWR 1.0; ambient temperature 75° F (24° C)	100 MHz	1.75 (5.73)	1.24 (4.08)	1.10 (23.60)	0.83 (2.72)	0.488 (1.60)	0.370 (1.21)	0.207 (0.679)	0.169 (0.554)	0.140 (0.459)	0.113 (0.371)	0.079 (0.259)	0.0748 (0.245)
	150 MHz	2.15 (7.05)	1.53 (5.03)	1.36 (4.45)	1.02 (3.35)	0.602 (1.98)	0.460 (1.51)	0.252 (0.827)	0.209 (0.686)	0.178 (0.584)	0.141 (0.464)	0.098 (0.322)	0.0948 (0.311)
	300 MHz	3.07 (10.1)	2.20 (7.21)	1.96 (6.42)	1.45 (4.76)	0.864 (2.83)	0.665 (2.18)	0.361 (1.18)	0.303 (0.994)	0.266 (0.872)	0.212 (0.695)	0.143 (0.471)	0.144 (0.474)
	450 MHz	3.78 (12.4)	2.72 (8.92)	2.43 (7.98)	1.77 (5.82)	1.07 (3.51)	0.822 (2.70)	0.451 (1.48)	0.378 (1.24)	0.341 (1.12)	0.270 (0.885)	0.180 (0.589)	0.186 (0.612)
	600 MHz	4.39 (14.4)	3.17 (10.4)	2.85 (9.33)	2.05 (6.72)	1.25 (4.09)	0.959 (3.15)	0.528 (1.73)	0.442 (1.45)	0.409 (1.34)	0.320 (1.05)	0.212 (0.695)	0.225 (0.737)
	824 MHz	5.18 (17.0)	3.75 (12.3)	3.39 (11.1)	2.40 (7.89)	1.48 (4.85)	1.14 (3.74)	0.629 (2.07)	0.528 (1.73)	0.497 (1.63)	0.385 (1.26)	0.254 (0.833)	0.278 (0.910)
	894 MHz	5.41 (17.8)	3.92 (12.9)	3.54 (11.6)	2.50 (8.22)	1.54 (5.05)	1.19 (3.92)	0.658 (2.16)	0.553 (1.81)	0.523 (1.72)	0.403 (1.32)	0.267 (0.876)	0.293 (0.962)
	960 MHz	5.62 (18.4)	4.07 (13.4)	3.69 (12.1)	2.60 (8.52)	1.60 (5.25)	1.24 (4.07)	0.684 (2.25)	0.576 (1.89)	0.546 (1.79)	0.420 (1.38)	0.278 (0.912)	0.308 (1.010)
	1000 MHz	5.74 (18.8)	4.16 (13.7)	3.77 (12.4)	2.65 (8.69)	1.64 (5.37)	1.27 (4.17)	0.700 (2.30)	0.589 (1.93)	0.560 (1.84)	0.430 (1.41)	–	–
	1500 MHz	7.12 (23.3)	5.19 (17.0)	4.74 (15.5)	3.30 (10.8)	2.04 (6.70)	1.57 (5.15)	0.880 (2.89)	0.744 (2.44)	0.750 (2.48)	–	–	–
	1700 MHz	7.61 (25.0)	5.56 (18.3)	5.09 (16.7)	3.53 (11.6)	2.19 (7.18)	1.69 (5.53)	0.950 (3.12)	0.800 (2.63)	–	–	–	–
	2000 MHz	8.30 (27.2)	6.09 (20.0)	5.59 (18.3)	3.85 (12.6)	2.40 (7.86)	1.85 (6.07)	1.05 (3.44)	0.880 (2.89)	–	–	–	–
	2300 MHz	8.95 (29.4)	6.58 (21.6)	6.06 (19.9)	4.20 (13.8)	2.59 (8.5)	2.03 (6.65)	1.15 (3.76)	0.956 (3.14)	–	–	–	–
	4000 MHz	12.11 (39.7)	9.01 (29.5)	8.41 (27.6)	5.90 (19.4)	3.55 (11.6)	2.90 (9.51)	–	–	–	–	–	–
	6000 MHz	15.20 (49.8)	11.4 (37.4)	10.8 (35.4)	7.84 (25.7)	4.50 (14.8)	–	–	–	–	–	–	–
	10000 MHz	20.3 (66.6)	15.5 (50.8)	14.9 (48.9)	11.7 (38.2)	–	–	–	–	–	–	–	–
Average Power Rating, kW –													
Standard conditions:	30MHz	1.56	9.98	15.6	4.37	8.94	13.8	31.0	43.0	80.5	123	162	335
VSWR 1.0; ambient temperature 104° F (40° C);	100 MHz	0.850	5.40	9.29	2.41	4.84	7.36	16.5	23.1	42.5	64.4	83.9	172
inner conductor temperature 212° F (100° C);	150 MHz	0.691	4.38	7.52	1.96	3.92	5.86	13.4	18.6	33.9	51.7	67.8	137
no solar load	300 MHz	0.484	3.06	5.21	1.38	2.73	4.07	9.34	12.8	22.7	35.1	47.1	90.8
HST2, HST4 only:	450 MHz	0.393	2.47	4.19	1.12	2.20	3.27	7.55	10.3	17.9	27.6	37.6	70.8
inner conductor temperature 482° F (250° C)	600 MHz	0.338	2.12	3.59	0.964	1.89	2.80	6.46	8.81	14.9	23.3	31.6	59.1
HJ9HP only:	824 MHz	0.286	1.79	3.01	0.815	1.59	2.37	5.46	7.38	12.2	19.3	26.0	48.2
inner conductor temperature 302° F (150° C)	894 MHz	0.274	1.71	2.88	0.780	1.52	2.26	5.24	7.04	11.5	18.4	24.6	45.7
HJ8-50B, HJ11-50 only:	960 MHz	0.264	1.65	2.77	0.752	1.47	2.17	5.05	6.77	11.0	17.7	23.5	43.6
inner conductor temperature 250° F (121° C)	1000 MHz	0.259	1.61	2.71	0.736	1.43	2.12	4.94	6.61	10.69	17.2	–	–
	1500 MHz	0.209	1.29	2.15	0.598	1.16	1.72	3.91	5.24	8.05	–	–	–
	1700 MHz	0.195	1.21	2.01	0.556	1.08	1.62	3.64	4.87	–	–	–	–
	2000 MHz	0.179	1.10	1.83	0.506	0.986	1.49	3.33	4.42	–	–	–	–
	2300 MHz	0.166	1.02	1.68	0.462	0.913	1.36	3.01	4.08	–	–	–	–
	4000 MHz	0.123	0.745	1.21	0.322	0.665	0.954	–	–	–	–	–	–
	6000 MHz	0.098	0.588	0.947	0.243	0.525	–	–	–	–	–	–	–
	10000 MHz	0.073	0.433	0.685	0.173	–	–	–	–	–	–	–	–
Connectors††													
	Type N Male, Captivated	–	F2PNM-HC	F4PNM-HC	--	H4.5PNM	–	–	–	–	–	–	–
	Type N Male, Solder	F1PNM-H	F2PNM-H	F4PNM-H	H4PNM	–	H5PNM†††	H7NM-T††††	–	–	–	–	–
	Type N Male, Right Angle	F1PNR-HC	–	F4PNR-HC	–	–	–	–	–	–	–	–	–
	Type N Female, Captivated**	–	F2PNF-C	F4PNF-C	–	–	H5PNF†††	H7PNF††††	H12PNF††††	–	–	–	–
	7-16 DIN Male, Captivated	–	F2PNM-C	F4PNM-C	–	H4.5PDM	H5PDM	–	–	–	–	–	–
	7-16 DIN Male, Solder	F1PDM	F2PDM	F4PDM	H4PDM	–	–	H7PDM††††	H12PDM††††	–	–	–	–
	7-16 DIN Male, Right Angle	–	F2PDR-C	F4PDR-C	–	–	–	–	–	–	–	–	–
	7-16 DIN Female, Captivated	–	F2PDF-C	F4PDF-C	–	–	H5PDF	–	–	–	–	–	–
	7-16 DIN Female, Solder	F1PDF	F2PDF	F4PDF	–	–	–	H7PDF††††	–	–	–	–	–
	7/8" EIA Flange Gas Pass	–	–	44ASR	H4MPB-014	–	75AR	87S	82S	–	–	–	–
	7/8" EIA Flange Gas Block	–	–	–	H4MPB-014	–	H5MB-014	87SG	–	–	–	–	–
	1-5/8" EIA Flange Gas Pass	–	–	–	–	–	–	87R	82R	78AS	–	–	–
	1-5/8" EIA Flange Gas Block	–	–	–	–	–	–	87G	–	–	–	–	–
	3-1/8" EIA Male Gas Block	–	–	–	–	–	–	–	–	H8MB-302	H11MB-302	–	–
	3-1/8" EIA Male Gas Pass	–	–	–	–	–	–	–	–	H8MP-302	H11MP-302	–	–
	3-1/8" EIA Female Gas Block	–	–	–	–	–	–	–	82GF	H8FB-302	H11FB-302	–	–
	3-1/8" EIA Female Gas Pass	–	–	–	–	–	–	–	82RF	H8FP-302	H11FP-302	–	–
	4-1/2" IEC Male Gas Block	–	–	–	–	–	–	–	–	–	H11MB-M408	H9MB-M408	–
	4-1/2" IEC Male Gas Pass	–	–	–	–	–	–	–	–	–	H11MP-M408	H9MP-M408	–
	4-1/2" IEC Female Gas Block	–	–	–	–	–	–	–	–	–	H11FB-M408	H9FB-M408	–
	4-1/2" IEC Female Gas Pass	–	–	–	–	–	–	–	–	–	H11FP-M408	H9FP-M408	–
	6-1/8" EIA Male Gas Block	–	–	–	–	–	–	–	–	–	H11MB-602	H9MB-602	H9HPMB-602
	6-1/8" EIA Male Gas Pass	–	–	–	–	–	–	–	–	–	H11MP-602	H9MP-602	H9HPMP-602
	6-1/8" EIA Female Gas Block	–	–	–	–	–	–	–	–	–	H11FB-602	H9FB-602	H9HPFB-602
	6-1/8" EIA Female Gas Pass	–	–	–	–	–	–	–	–	–	H11FP-602	H9FP-602	H9HPFB-602
	Splice	–	–	–	74Z	85Z	75AZ	87Z	82Z	78BZ	81Z	79AZ	H9HPZ
Accessories††													
	Hanger Kit of 10	–	43211A	43211A	43211A	42396A-9	42396A-5	42396A-2	42396A-4	31766A-11	31766A-10	33598-5	33598-5
	Angle Adapter Kit of 10	–	243684	243684	243684	–	–	243684	243684	–	–	33981A-1	33981A-1
	Snap-in Hanger Kit of 10	–	206706-1	206706-1	206706-1	–	206706-2	206706-4	–	–	–	–	–
	Hoisting Grip	–	43094	43094	43094	29958	19256B	24312A	31535	26985A	34759	31031-1	31031-1
	Arrestor Plus® Quarterwave Surge Protector	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	APT-*-†	–	–	–	–
	Arrestor Plus Gas Tube Surge Protector	APG-*	APG-*	APG-*	APG-*	APG-*	APG-*	APG-*	APG-*	–	–	–	–
	Standard Grounding Kit, 1-Hole Lug	223158-1	204989-1	204989-1	204989-1	204989-2	204989-2	204989-4	204989-5	204989-5	204989-6	204989-7	204989-7
	Standard Grounding Kit, 2-Hole Lug	–	241088-1	241088-1	241088-1	241088-2	241088-2	241088-4	–	–	–	–	–
	Wall/Roof Feed Through	–	40656A-3	40656A-3	40656A-3	40656A-7	40656A-1	40656A-2	40656A-6	40394-2	40394-1	33938-5	33938-5
	Weatherproofing Kit	221213	221213	221213	221213	221213	221213	221213	221213	221213	221213	221213	221213
	Cable Tie Kit of 50	40417	40417	40417	40417	–	–	–	–	–	–	–	–

* Specify connector interface. ** Solder inner attachment styles also available for most cable types. † Frequency must be specified. †† All connectors listed are silver plated. Brass versions also available for most configurations. Contact Andrew for complete coaxial cable connector and accessory ordering information. ††† Self-tapping inner attachment. †††† Tab-flare inner attachment.

75-Ohm, General Purpose, Fire Retardant and High Power

Type	Superflexible		Foam Dielectric
Nominal Size	1/4"	1/2"	1/2"
Impedance, Ohms	75	75	75
Designation			
Standard Cable, Standard Jacket	FSJ1-75	FSJ4-75A	LDF4-75A
Cable for Cellular (880–960 MHz, 1.10 VSWR	–	–	–
Fire-Retardant Jacket (CATVP, UL910)	FSJ1RN-75A	FSJ4RN-75A	LDF4RN-75A
Construction Characteristics			
Inner Conductor / Diameter, in (mm)	Cu-Clad Steel 0.04 (1.05)	Copper 0.08 (2.1)	Cu-Clad Al 0.118 (3.0)
Dielectric / Diameter, in (mm)	Closed Cell Polyethylene 0.185 (4.7)	Closed Cell Polyethylene 0.51 (13.0)	Closed Cell Polyethylene 0.51 (13.0)
Outer Conductor / Diameter, in (mm)	Copper 0.25 (6.4)	Copper 0.48 (12.1)	Copper 0.545 (13.84)
Standard Jacket / Diameter, in (mm)	Black Polyethylene 0.29 (7.4)	Black Polyethylene 0.52 (13.2)	Black Polyethylene 0.63 (16)
Fire-Retardant Jacket / Diameter, in (mm)	Gray 0.29 (7.4)	Gray 0.52 (13.2)	–
Mechanical Characteristics			
Weight, lb/ft (kg/m)	0.046 (0.068)	0.14 (0.21)	0.14 (0.21)
Min. Bending Radius, (one bend), in (mm)	1(25)	1.25 (32)	–
Min. Bending Radius, (repeated bends), in (mm)	1 (25)	1.25 (32)	5 (125)
Number of Bends, Min. (typical)	15 (50)	20 (50)	15 (50)
Tensile Strength, lb (kg)	150 (68)	140 (63.5)	200 (90.7)
Bending Moment, lb-ft (N•m)	.5 (.68)	2.0 (2.7)	2.8 (3.8)
Crush Strength, lb/in (kg/mm)	100 (1.8)	105 (1.9)	110 (2.0)
Max. Length per Hoisting Grip, ft (m)	–	–	200 (60)
Max. Standard Hanger Spacing, ft (m)*	–	2.5 (0.76)	3 (0.91)
Recommended Temperature for Installation, °F (°C)			
Standard Jacket	-40/+122 (-40/+50)	-40/+122 (-40/+50)	-40/+122 (-40/+50)
Flame-Retardant Jacket	-13/+122 (-25/+50)	-13/+122 (-25/+50)	-13/+122 (-25/+50)
Recommended Storage Temperature, °F (°C)			
Standard Jacket	-94/+185 (-70/+85)	-94/+185 (-70/+85)	-94/+185 (-70/+85)
Flame-Retardant Jacket	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)
Operating Temperature, °F (°C)			
Standard Jacket	-67/+185 (-55/+85)	-67/+185 (-55/+85)	-67/+185 (-55/+85)
Flame-Retardant Jacket	-22/+176 (-30/+80)	-22/+176 (-30/+80)	-22/+176 (-30/+80)
Electrical Characteristics			
Relative Propagation Velocity, %	78	81	88
Capacitance, pF/ft (m)	17.4 (57.0)	16.7 (54.9)	15.4 (50.5)
Maximum Operating Frequency, MHz	22000	11500	10000
Peak RF Voltage Rating, kV	–	–	1.97
Peak Power Rating, kW	6.7	10	26
dc Resistance: Inner Conductor, ohms/1000 ft (ohms/km)	15 (49.2)	1.50(4.9)	1.15 (3.77)
dc Resistance: Outer Conductor, ohms/1000 ft (ohms/km)	1.8 (5.9)	1.00 (3.28)	0.58 (1.90)
dc Breakdown, V	2000	2500	4000
Jacket Spark, V RMS	5000	5000	8000
Inductance, µH/ft (µH/m)	0.098 (0.321)	0.094 (0.309)	0.087 (0.294)

* Standard Conditions: 125 mph (200 km/h) survival wind velocity, 0.5 in (13 mm) radial ice.

75-Ohm, General Purpose, Fire Retardant and High Power

Type		Superflexible		Foam Dielectric
	Nominal Size	1/4"	1/2"	1/2"
	Impedance, Ohms	75	75	75
Attenuation, dB/100 ft (dB/100 m) –				
Standard conditions:	30MHz	1.00 (3.28)	0.52 (1.70)	0.335 (1.10)
VSWR 1.0; ambient temperature 75° F (24° C)	100 MHz	1.87 (6.14)	0.96 (3.17)	0.623 (2.04)
	150 MHz	2.31 (7.58)	1.19 (3.90)	0.770 (2.53)
	300 MHz	3.34 (11)	1.73 (5.68)	1.11 (3.65)
	450 MHz	4.17 (13.7)	2.16 (7.07)	1.38 (4.53)
	600 MHz	4.87 (16)	2.53 (8.29)	1.62 (5.30)
	824 MHz	5.82 (19.1)	3.01 (9.89)	1.92 (6.31)
	894 MHz	6.10 (20)	3.16 (10.4)	2.01 (6.60)
	960 MHz	6.35 (20.8)	3.28 (10.8)	2.09 (6,86)
	1000 MHz	6.50 (21.3)	3.36 (11.0)	2.14 (7.02)
	1500 MHz	8.23 (27)	4.24 (13.9)	2.69 (8.82)
	1700 MHz	8.84 (29)	4.56 (15.0)	2.89 (9.48)
	2000 MHz	9.70 (31.8)	5.02 (16.5)	3.17 (10.4)
	2300 MHz	10.6 (34.7)	5.46 (17.9)	3.44 (11.3)
	4000 MHz	14.9 (48.7)	7.62 (25.0)	4.77 (15.7)
	6000 MHz	19.2 (62.9)	9.85 (32.3)	6.14 (20.1)
	10000 MHz	26.9 (88.3)	13.7 (44.9)	8.46 (27.8)
Average Power Rating, kW –				
Standard conditions:	30MHz	1.060	3.31	3.09
VSWR 1.0; ambient temperature 104° F (40° C);	100 MHz	0.564	1.77	1.67
inner conductor temperature 212° F (100° C);	150 MHz	0.462	1.44	1.35
no solar load	300 MHz	0.320	0.989	0.932
	450 MHz	0.256	0.690	0.751
	600 MHz	0.219	0.667	0.641
	824 MHz	0.183	0.568	0.538
	894 MHz	0.174	0.543	0.515
	960 MHz	0.167	0.521	0.495
	1000 MHz	0.163	0.440	0.484
	1500 MHz	0.130	0.407	0.385
	1700 MHz	0.121	0.375	0.359
	2000 MHz	1.090	0.342	0.327
	2300 MHz	0.100	0.314	0.300
	4000 MHz	0.0714	0.224	0.217
	6000 MHz	0.0553	0.177	0.169
	10000 MHz	0.0396	0.125	0.122
Connectors†				
Type N Male, 70-ohm Mating Pin		F1NM-7570**	F4NM-7570**	L4NM-7570**
Type N Female, 70-ohm Mating Pin		F1NF-7570	F4NF-7570**	L4NF-7570**
Type N Male, Right Angle 50-ohm Mating Pin		–	F4NR-7550	L4NR-7550
Splice		–	–	L44Z-75
Accessories†				
Hanger Kit of 10		–	43211A	43211A
Compact Angle Adapter Kit of 10		–	243684	243684
Snap-in Hanger Kit of 10		–	206706-1	206706-1
Click-on Hanger Kit of 10		–	–	L4CLICK
Hoisting Grip		–	43094	43094
Grounding Kit, 1-Hole Lug		223158	204989-1	204989-1
SureGround™ Grounding Kit, 2-Hole Lug		–	SGL4-06B2	SGL4-06B2
Wall/Roof Feed Through		–	40656A-3	40656A-3
Weatherproofing Kit		221213	221213	221213
Cold Shrink™ Type N		–	–	241474-4
Cold Shrink 7-16 DIN		–	–	–
Cold Shrink Antenna Type N*		–	241548-8	241548-8
Cold Shrink Antenna 7-16 DIN*		–	241548-7	241548-6
Cable Tie Kit of 50		40417	40417	40417
EASIAX® Tool		207865	207865	207866

* Contact Andrew for detailed application information. ** 50-ohm mating pin version also available.
† Contact Andrew for a wider selection of coaxial cable connectors and accessories.

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Customer Support Center (CSC)

Service Around the Clock, Around the World

Andrew Corporation's CSC provides easy access to comprehensive technical and customer support – including product information, catalog guidance, and other reference information – to Andrew customers worldwide.

Worldwide service, 7/24 – For unmatched customer convenience, the CSC provides support any time, any day, to anywhere in the world.

Answers you need when you need them – The CSC staff can furnish needed information on topics such as product availability, specifications, and technical support issues.

A diverse, knowledgeable staff – With an international background and complete training on Andrew products, the CSC staff provides support regardless of the project's location.

A full complement of resources – Our resources include engineering drawings on all Andrew product literature, technical updates, installation instructions, and product specifications.

Rapid Access – CSC representatives can quickly consult a product engineer to address very specialized or highly technical issues.

Contact the Andrew Customer Support Center for:

Technical Support
Order Status
Replacement Materials
Product Information
Coordinating Product Service, Repairs, or Replacement

Planning Software

AASP – the First and Only PCS/Cellular Systems Design Software

Design a PCS or cellular system in less time, with greater accuracy, and with lower costs with advanced Antenna Systems Planner software (AASP) from Andrew Corporation. Powerful AASP software graphically guides the user through the entire design process, from the choice of frequency to the available shipping options. The program's dynamic, rule-based logic generates custom solutions using standard Andrew products, while automatically checking component compatibility and preventing the design of an incompatible system. Upon completion, the AASP provides a customized bill of materials of the Andrew parts necessary for the system.

AASP can increase revenues, shortening the design time line and getting a system on the air faster. AASP can lower costs. More accurate design calculations mean less waste, less down time on site, and fewer costly surprises. And AASP can improve reliability. AASP's computer design virtually eliminates mathematical errors and ordering incorrect parts.

Catalog 37

Andrew Corporation's Catalog 37, available both in print and CD-ROM versions, describes most major products and services available from Andrew. This comprehensive resource includes ordering information, detailed descriptions, specifications, planning guides, and technical data.

Fax-On-Demand/Internet

With our automated Fax-On-Demand Service and World Wide Web site, we provide multiple ways to get information. Andrew Corporation's automated Fax-On-Demand service allows fax copies of Andrew product bulletins, installation instructions, technical data, and other information to be sent to any fax anywhere. On the Internet, our World Wide Web site provides updated information on Andrew products, services, and activities.

Contact Andrew

Andrew Customer Support Center

Call toll-free from . . .

North America:
1-800-255-1479
Fax: 1-800-349-5444

International:
+1-708-873-2307
Fax: +1-708-349-5444

United Kingdom:
0800-250055

Australia:
1800-803 219

New Zealand:
0800-441-747

Superior Delivery Performance

Long Term Value

Fax-on-Demand

North America: **1-800-861-1700**
Australia: **1-800-141317**
Belgium: **0800-7-2790**
Hong Kong: **800-933117**
Ireland: **1-800-55-9433**
Netherlands: **06-0225949**
United Kingdom: **0800-96-2197**
Other Regions: **+1-708-873-3614**

Internet
http://www.andrew.com

In A Communicating World. . .
Andrew Is Everywhere

Andrew Sales Agents and Distributors

Andrew has Sales Agents and Distributors located throughout the world.

ANDREW®

Primary Andrew Locations

United States
Atlanta, Georgia
Camp Hill, Pennsylvania
Denton, Texas*
Denver, Colorado
Hayward, California
Los Angeles, California
Newnan, Georgia*
Orland Park, Illinois*
Phoenix, Arizona
Richardson, Texas*
Sacramento, California*
Seattle, Washington
Tinley Park, Illinois*
Woodinville, Washington
Andrew Corporation

Garland, Texas*
Andrew SciComm Inc.

Andrew Corporation also maintains 16 sales, engineering and operating offices throughout the United States.

International
Stockholm, Sweden
Andrew AB

Zurich, Switzerland
Andrew AG

Lochgelly, Scotland*
Wokingham, England
Andrew Ltd.

Manila, Philippines
Andrew Philippines Inc.

Whitby, Canada*
Andrew Canada Inc.

Helsinki, Finland
Andrew Communications Oy

Hong Kong, China
Andrew Hong Kong Ltd.

Melbourne, Australia*
Andrew Australia

Riyadh, Saudi Arabia
Andrew Corporation

New Delhi, India
Andrew Corporation Liaison Office India

Goa, India*
Andrew Telecommunications India Private Limited

Guadalajara, Mexico
Mexico City, Mexico
Andrew Corporation Mexico S.A. de C.V.

Madrid, Spain
Andrew España, SA

Essen, Germany
Munich, Germany
Pforzheim, Germany
Andrew GmbH

Sorocaba, Brazil*
Andrew Industria e Comercio Ltd.

Bangkok, Thailand
Beijing, China
Jakarta, Indonesia
Kiev, Ukraine
Krasnoyarsk, Russia*
Kuala Lumpur, Malaysia
Moscow, Russia
Novosibirsk, Russia
St. Petersburg, Russia
Shanghai, China
Taipei, Taiwan
Tokyo, Japan
Andrew International Corporation

Zurich, Switzerland
Andrew Kommunikationssysteme AG

Sandton, South Africa
Andrew Satcom Africa (Pty) Ltd

Milan, Italy
Andrew SRL

Paris, France
Andrew

Buenos Aires, Argentina
Andrew Systems, Inc.

Suzhou, China*
Andrew Telecommunications (Suzhou) Co. Ltd.

Toronto, Canada
Andrew Wireless Products Canada, Inc.

**Manufacturing Locations*