

# Interconnect Solutions For Global Technology



- *RF/Microwave Cable Assemblies*
- *Molded Cable Assemblies*
- *Coax Connectors*
- *Filtered Products*
- *Blind Mate Connectors*
- *Electromechanical Assembly*
- *Integrated Products*





## Phoenix's Core Strengths are:

- Blind Mate Connectors and Contacts
- Microminiature Coax Connectors
- RF/Microwave Cable Assemblies
- Integrated Products
- Filtered Products
- Molded Cable Assemblies
- Delay Lines
- Electromechanical Assembly

## About Us

Established in the United States in 1969, The Phoenix Company of Chicago, Inc. has evolved into a network of five synergistic component and contract manufacturing companies. Today we offer products from coax connectors and delay lines to surface mount assemblies. Our commitment to excellence is demonstrated by state-of-the-art equipment, high quality standards, and our dedicated employees.



Palco Connector, Inc. is the RF and Microwave affiliate of The Phoenix

Company of Chicago. Located in Naugatuck, CT, Palco Connector maintains an extensive, vertically integrated manufacturing facility supported by a full design engineering department.



Phoenix of Mexico began in 2001 as the first international manufacturing facility of The Phoenix Company of Chicago.



Located in Guaymas, Mexico we provide customers with a stable and trained workforce with specialized skills in cable and connector assembly. This modern facility contains leading-edge production and test equipment in a business model that is competitive from low-volume/high-mix to high volume production. This model also provides quick-turn NPI support with complete first article test reporting to streamline customer qualification.



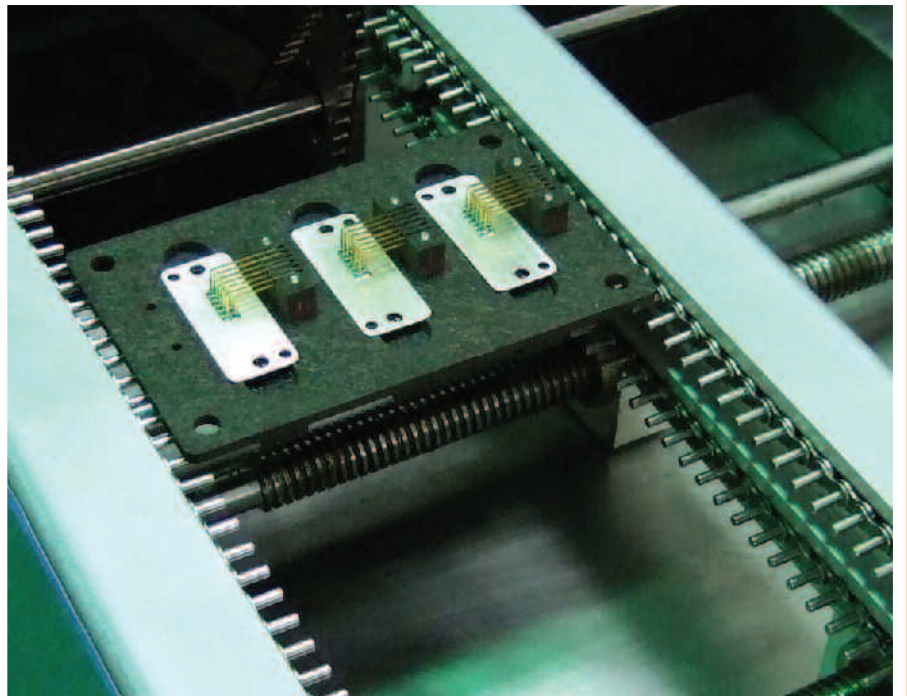
To meet the needs of rapidly growing global markets, Shanghai Phoenix Communication and Technology Co., Ltd. was established in 2002 in Shanghai, P.R. China to manufacture blind mate connectors, coax connectors and cable assemblies. Today our capabilities have grown to include environmental, high frequency, filtered, and power connector products.

## Our Quality Policy

Phoenix believes that: Customers are the focus of what we do. Attitude, integrity, and innovative thinking reflect Professionalism. Trust, cooperation, and dedication are enhanced by Teamwork. Well-trained, informed, and empowered employees are more effective. Quality, Service, Delivery, Cost, and Safety are areas for continuous improvement.

## Quality Standards:

- ISO 9001:2000 Certified
- IPC/WHMA-A-620
- IPC J-STD-001
- UL Recognized Products



**Export Control Note:** Products listed in this brochure may be subject to U.S. Government export regulations. Prior written approval from the U.S. Government may be required before they can be made available to a foreign person or exported from the U.S.

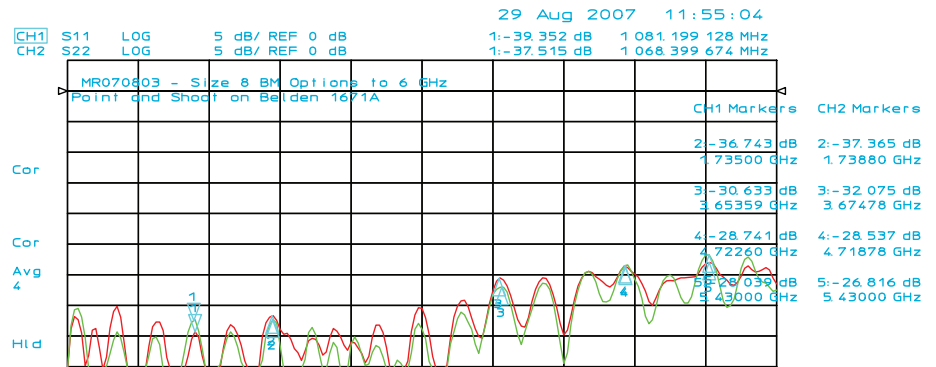
## RF/Microwave Cable Assemblies

Phoenix manufactures assemblies using standard flexible, semi-flexible, and semi-rigid cables as well as high performance cables and connectors. Manufacturing and test capabilities extend to 40 GHz.

Semi-automated manufacturing equipment is used to process cable and CNC bending is used to manufacture semi-rigid cables.

In addition to standard cables and connectors, Phoenix has design and application specialists to assist our customers with connector and cable selection to optimize performance and cost.

For cables requiring exacting return loss or higher frequency



### Typical Cable Types and Sizes

Cable Types	Cable Size
Flexible Cable	0.070" - 0.590"
Semi-Flexible Cable	0.047" - 0.250"
Semi-Rigid Cable	0.034" - 0.250"
Low Loss Cables	0.110" - 0.590"
High Performance	0.120" - 0.235"

performance, our design engineers can offer enhancements on standard connector designs to meet demanding electrical requirements. Phase matched cable assemblies can be manufactured from a variety of cable and connector choices.

## We Specialize In the Following Cable Assembly Applications

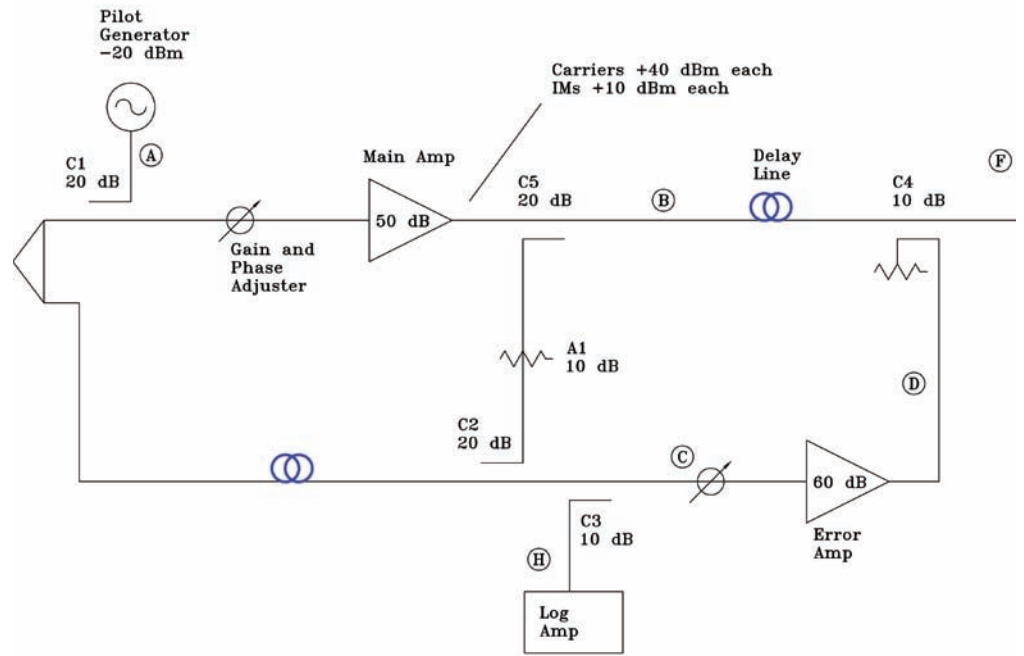
- High Frequency
- Phase Matching
- Delay Lines
- Standard and High Performance Cables
- Custom Connector and Cable Designs





## Delay Lines

Delay line design and manufacturing capabilities are offered utilizing a variety of cable and connector styles. We use design simulation software to calculate electrical and mechanical performance of delay lines. Our cable and connector design experience allows our engineers to offer solutions optimized to meet stringent electrical requirements in demanding mechanical packages. Computer programs fully automate electrical testing throughout the manufacturing process. This capability combines repeatable processes with speed and efficiency to deliver a complex delay line with high quality at a competitive price.



### Typical Semi-Rigid Cables

0.034"  
0.047"  
0.086"  
0.141"  
0.250"

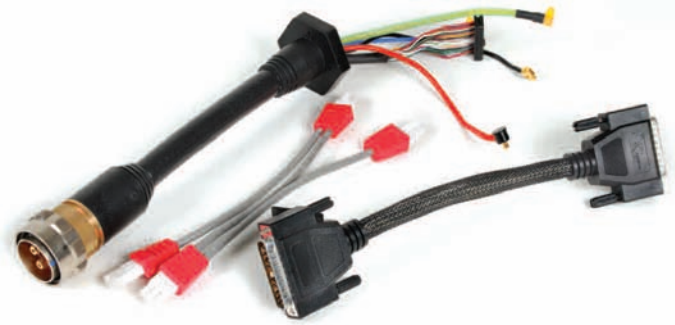
### Common Connectors

SMP, SMPM, MMCX  
SMP, SMPM, MMCX, MCX  
SMP, MCX, SMA  
MCX, SMA  
TNC, N



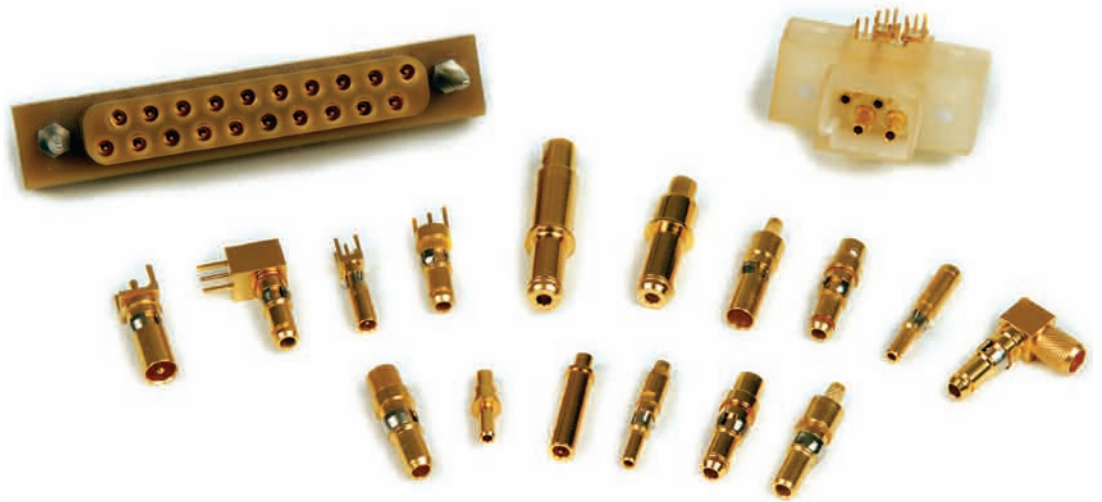
## Molded Cable Assemblies

Phoenix specializes in rapid mold development and quick response to design and production requirements. Our molding capabilities cover a variety of standard and custom-engineered molding materials over a wide range of mold sizes. Our strong design and prototyping skills are supported by an experienced cable assembly department to provide high quality and efficiency over a broad range of molded cable products.



## Blind Mate RF/Microwave Contacts

Phoenix is the proven leader in blind mate technology demonstrating successful performance through generations of global telecommunication systems. We deliver this technology through a broad range of RF and Microwave contacts from 800 MHz to 40 GHz offering variations in size, impedance, termination style, and power rating.



<b>Series</b>	26	27	29	56	HLC 56	68	73
<b>Housing</b>	Combo	Combo	Combo	Special	Special	ARINC	Special
<b>Frequency</b>	32 GHz	2.5 GHz	5 GHz	40 GHz	12.5 GHz	32 GHz	2.5 GHz
<b>Axial Mating Tolerance</b>	.090"	.090"	N/A	.070"	.070"	.090"	.070"
<b>Size</b>	8	8	8	12	12	8	12

The patented PkZ® series of constant impedance contacts are designed for a wide range of connector housings including: D-Subminiature connectors, Mil-C-38999 connectors, ARINC, DIN, and custom housings. As the originator of the constant impedance PkZ®, we continue to innovate with new performance and cost solutions.





## D-Subminiature Combination Connectors

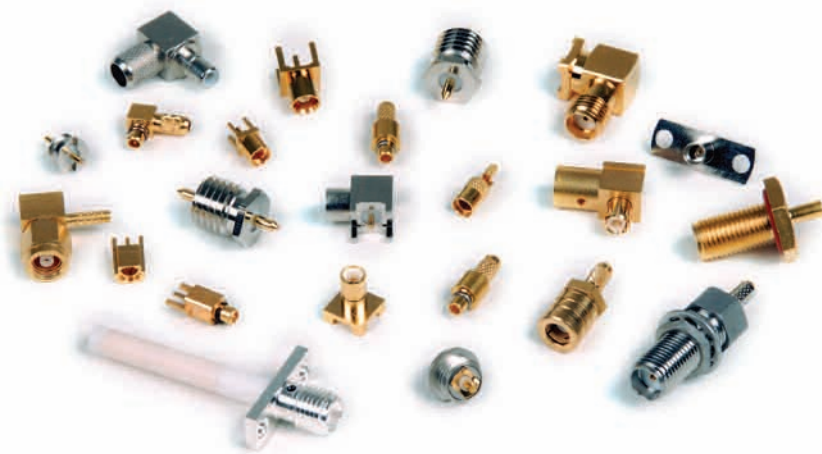
Customers worldwide rely on the Phoenix combination D-Subminiature connector to integrate coax, high power, high voltage, and signal into one, space-saving housing.

In addition, custom designs can be engineered for your specific application to include filters, ground straps, special hardware, and plating, or selectively loaded contact configurations.



## Microminiature Coax Connectors

Phoenix manufactures a complete product line of standard coax connectors from SMA to the microminiature SMPM series. These are available in standard configurations, terminations, and cable groups. In addition, these designs can be modified to accommodate specific electrical, mechanical, or environmental requirements.



## Board-to-Board Connectors

Board-to-Board connectors provide a valued role in reducing the size and cost of connections while providing critical electrical and mechanical performance. Phoenix offers a line of SMP and microminiature SMPM connectors with performance to 40 GHz. These products are available in standard and custom board terminations as well as cable mount and float-mount styles. Custom Board-to-Board designs are available in additional series such as MMCX connectors.



## Environmental Connectors

Outdoor applications require connectors designed to meet rugged environmental conditions. Phoenix offers SMA, BNC, TNC, and N connectors designed to meet IP 65 and IP 67 providing environmental protection in mated and unmated conditions. Designs are available in standard polarity, as well as in custom configurations including reverse polarity and reverse thread. For standard and custom connectors, we have the environmental solutions to meet your needs.





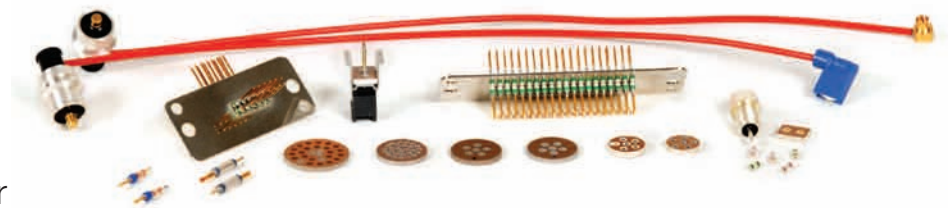
## Power Connectors

Systems often require simple and reliable methods for power connections. Phoenix offers 10, 20, and 40 amp power connectors with quick, snap-on mating available in cable, through-hole, and surface mount terminations. Cable-mount terminations are available in right angle configurations that accommodate 8 to 16-gage wire sizes. This product line is designed for use as a single, stand-alone connection, and can also be provided in custom ganged arrangements of multiple connectors. Filtered designs are also available to meet specific requirements.



## Filtered Products

Selecting a partner for filtered connectors and cables requires broad capabilities in filter design, supported by connector innovation and manufacturing strength. Phoenix's filter design strength, and manufacturing and test capabilities cover a broad range of standard and custom filtered products:



- Combination Connectors
- Power Cables
- RF Connectors
- Power Connectors
- Terminal Blocks
- Filter Plate Assemblies
- Custom Products



We offer excellent support on design and development and quick response on prototype and production requirements.

## Non-Magnetic Connectors & Contacts

Phoenix is a major supplier of non-magnetic coax interconnects to the medical industry for MRI applications. These products meet exacting magnetic requirements of 1.5 Tesla and 3.0 Tesla applications. Non-magnetic connectors are available in SMA, MCX, MMCX, and BNC series connectors, but can be produced in other connector series as a custom solution. Phoenix also provides combination D-Subminiature connectors for non-magnetic applications.



## Custom Designs & Flexible Manufacturing

Phoenix is committed to providing our customers with full engineering design services to support their cost and performance requirements. A flexible, in-house manufacturing system efficiently transforms these designs into products of value. This combination of resources enables Phoenix to react quickly with designs, prototypes, and initial production quantities to meet the most demanding customer requirements.

Phoenix maintains a high standard of engineering and testing practices, and continuously upgrades its connector design capabilities. Our engineering software includes AutoCAD®, Ansoft HFSS®, and AutoDesk Inventor Professional® as well as internally developed design programs.

Phoenix's connector design capabilities extend to the cable level where we can recommend or provide cable with alternate construction matched to a specific connector design to meet demanding electrical and mechanical requirements.

A full compliment of in-house machining resources enables new designs to quickly transition into finished products. These in-house machining resources support low to medium production volumes with high component mix through an efficient manufacturing model.

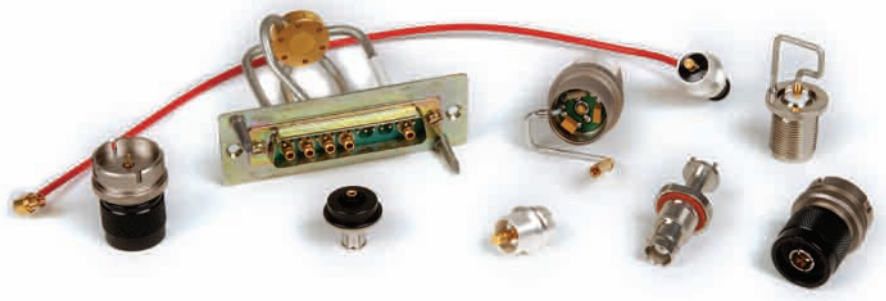


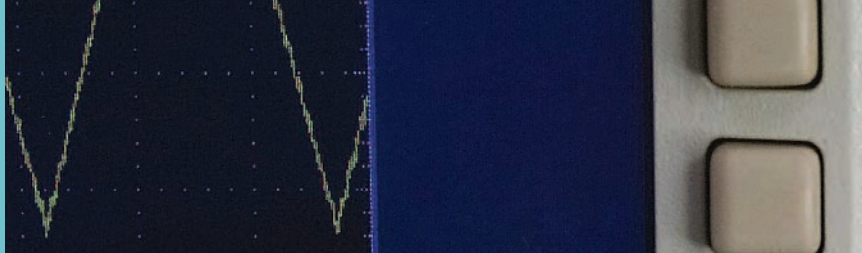
## Integrated Products

Looking to save space and increase reliability? Phoenix can help by integrating multiple components, such as filter networks, antennas, and switches into a convenient connectorized

package. These products are custom-engineered to meet specific customer applications by integrating multiple functions into the connector. Our mechanical and electrical engineers can assist you with adapting functions and designs into an integrated package. These products result in a smaller package of fewer components with improved mechanical integrity. Integrated coax product capabilities include:

- Filtered Cable Assemblies
- Integrated Filter Networks
- Surge Protected Connectors
- Combiner Assemblies
- Filtered RF Connectors





## Connector Transitions for Antenna Elements



Requirements for antennas cover a wide range of applications and markets involving voice, data, and location needs. Phoenix offers extensive electrical and mechanical connector design experience to provide a complete solution for integrating antenna elements into connector packages. Our experience in connector design provides a strong capability to transition a variety of antenna element designs into the mating connector of your choice, while meeting demanding environmental, mechanical, and electrical requirements.

## Large Scale Program Support

Phoenix provides our customers with services and capabilities beyond low cost labor through exceptional on-site management capabilities covering all business processes. This model enhances factory-level knowledge and teamwork and provides a rapid response to our customers' needs.

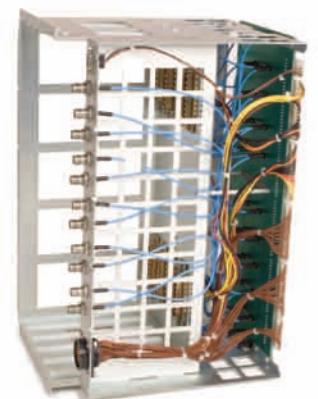


Our professional staff manages all business processes from quotation to shipment while our global team of sales representatives provides local technical support to customers in all locations. On large scale projects, we visit the customer site to accurately identify the program scope and deliver a project proposal covering key parameters and time frames including cost reduction opportunities.

Phoenix also leverages other Phoenix affiliate capabilities, such as global sourcing, to deliver local manufacturing with global material costing.

## Electromechanical Assembly

Phoenix offers a different approach and provides greater value to our customers on Electromechanical Assembly. Beyond an exceptionally skilled labor force, our experienced management team is available to manage standard to complex outsource programs from concept to production. Among the services we offer are:



- Program Coordination and Management
- Electrical and Mechanical Design Services
- Manufacturability Review
- Wiring, Cabling, Connector Termination
- Module, Cage or Sub-Frame Assembly
- Automated Electrical and RF/Microwave Test
- Environmental Test
- ISO 9001:2000 & IPC J-STD-001 Certifications



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**Wood Dale, IL Facility**



**Shanghai Facility**

## Mission Statement

Our mission is to provide our customers with world-class service and deliver interconnect products having valued performance with exceptional quality. We will accomplish this through our commitment to new product technology, new manufacturing capabilities, and continued growth of our human resources. These strengths will form the foundation of our strategic plan to maximize economic value to our customers and to our company.

## The Phoenix Company of Chicago Global Locations:



\* sales & manufacturing locations