

SELECTION GUIDE

Flexible RF
Coaxial Cables

Low loss, ultra-flexible, and high-power cable solutions for precision RF routing.

FAMILY POSITIONING

Dynamic **RF Routing**

A comprehensive cable family for routed, handled, and phase-critical microwave interconnects.



THE FLEXIBLE ADVANTAGE

Flexible RF coaxial cables are the preferred engineering choice when rigid or semi-rigid constructions cannot accommodate the required routing path, repetitive handling, or dense spatial constraints.

Vinstronics has developed this cable family to bridge mechanical flexibility and microwave signal integrity across demanding routed applications, from low-loss transmission and phase-sensitive paths to compact interconnect layouts.

- VNA and metrology routing +
- Semiconductor ATE validation +
- 5G / 6G & SATCOM links +
- Aerospace & defense systems +
- Automation and robotic motion paths +

WHY CHOOSE OUR FLEXIBLE FAMILY

Low-Loss Routing

Engineered for attenuation-sensitive paths where signal preservation matters.

Phase Repeatability

Suitable for phase-critical workflows managing temperature and movement.

Ultra-Flexible Integration

Built for compact management, tighter bends, and dense layouts.

High-Power Transmission

A strong starting point when robust delivery is critical.

General-Purpose Routing

Balanced flexible constructions for broad-use RF interconnects, standard routed assemblies, and value-focused microwave projects.

** This family is intended as a selection hub. Subsequent pages expand the major subfamilies in more detail.*

FAMILY MAP

Find the Right **Flexible Cable Path**

Five specialized routing paths for balancing electrical performance and mechanical flexibility.

01

Low Loss Phase Stable Cable

For repeatable phase performance in flexed or temperature-sensitive paths

Best suited to routed interconnects where both attenuation control and phase repeatability matter.

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02

High Power RF Cable

For higher RF power transmission and robust signal delivery

A strong starting point when power handling and thermal margin are more critical than extreme flexibility.

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03

Low Loss Flexible Cable

For attenuation-sensitive microwave routing

Used where insertion loss must be controlled across flexible interconnect paths, longer runs, or higher-frequency routing.

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04

Flexible Low Loss Cable

For routed environments requiring high flexibility

Provides stable signal transmission with a durable PUR jacket for mobile equipment, repeatedly flexed links, and compact enclosures.

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05

Ultra-Flexible RF Cable

For tighter bends, repeated handling, and dense layouts

Designed for compact cable management where mechanical flexibility is the primary requirement.

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06

General Purpose Flexible Cable

For broad-use RF routing with balanced cost and performance

A practical entry point for standard microwave interconnects that do not require a highly specialized cable family.

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SELECTION GUIDE

Compare by **Performance Data**

A quick reference matrix to help engineers align frequency, attenuation, and mechanical requirements with the appropriate Vinstronics cable series.

Subfamily Profile	**Vinstronics Series**	**Max Freq.**(GHz)	**Shielding** (dB)	**Phase vs. Temp** (ppm @ -55~85°C)	**Min. Bend Radius** (Static, mm)
Phase Stable Cable (High Phase Repeatability)	**VXW Series**	Up to 128	> 90	< 500	12.5 ~ 55
High Power Cable (Enhanced Thermal Margin)	**VXB Series**	Up to 35	> 90	Standard	22 ~ 74
Low Loss Cable (Attenuation-Sensitive)	**VXL Series**	Up to 40（70*）	> 90	Standard	11 ~ 50
Flexible Low Loss (High Flexibility)	**VXS Series**	Up to 37	> 90	Standard	20 ~ 50
Ultra-Flexible Cable (Tight Bends / Handled)	**VXF Series**	Up to 50	> 90	Standard	18 ~ 40
General Purpose (Balanced Performance)	**VXI Series**	Up to 110	> 90	Standard	7.5 ~ 35

** Values represent the operational range across different cable diameters within each series. For precise specifications (e.g., insertion loss at specific frequencies), please refer to the dedicated subfamily datasheets on the following pages.*

SUBFAMILY DATASHEET

Low Loss
Phase Stable Cable

Engineered for precision microwave paths. The VXW series utilizes a low-density PTFE dielectric to provide exceptional phase stability and minimal attenuation across temperature shifts and mechanical handling.



MAX FREQUENCY

128 GHz

PHASE VS. TEMP

< 500 ppm

WHERE IT FITS BEST

- VNA and metrology routing
- Semiconductor ATE validation
- 5G / 6G & SATCOM links
- Aerospace & defense systems
- Automation and robotic motion paths

ELECTRICAL & MATERIAL

Impedance	**50 ± 1 Ω**
Velocity of Propagation	**~ 83%**
Dielectric Material	**LD-PTFE**
Outer Jacket	**FEP (Blue/Clear)**
Operating Temperature	**-55°C to +165°C**

DETAILED MODEL SPECIFICATIONS

Model	Code	OD (mm)	Fmax (GHz)	Description
VXW150	W15	1.5	128	Low Loss Phase Stable
VXW220	W22	2.2	80	Low Loss Phase Stable
VXW300	W30	3.1	60	Low Loss Phase Stable
VXW360	W36	3.6	48	Low Loss Phase Stable
VXW400	W40	4.0	40	Low Loss Phase Stable
VXW480	W48	4.8	30	Low Loss Phase Stable
VXW480B	W48B	4.8	33	Low Loss Phase Stable
VXW500	W50	5.2	29	Low Loss Phase Stable
VXW550	W55	5.6	27	Low Loss Phase Stable
VXW600	W60	6.0	25	Low Loss Phase Stable
VXW750	W75	7.4	20	Low Loss Phase Stable
VXW760D	W76D	7.65	19	Corrugated Low Loss Phase Stable
VXW800	W80	7.9	18	Low Loss Phase Stable
VXW810	W81	8.1	18	Low Loss Phase Stable
VXW830	W83	8.3	18	Low Loss Phase Stable
VXW1000	W100	10.0	13.5	Low Loss Phase Stable
VXW1200	W120	12.0	11	Low Loss Phase Stable

SUBFAMILY DATASHEET

High Power **RF Cable**

The VXB series is purpose-built for high-power RF transmission where maximum thermal margin and signal integrity are mandatory. Featuring high-temp jackets and low-density dielectrics, it is the ideal choice for demanding transmitter and broadband amplifier applications.



MAX POWER (@ 6GHZ)

1820 W

OPERATING TEMP

+200 °C

WHERE IT FITS BEST

- High-power transmitter outputs
- Antenna feed systems
- Broadband high-energy amplifiers
- Industrial RF processing equipment
- Thermal-intensive RF routing

ELECTRICAL & MATERIAL

Impedance	50 ± 1 Ω
Velocity of Propagation	~ 76%
Outer Jacket	FEP / PFA (Blue)
Center Conductor	Silver-Plated Copper
Operating Temperature	-55°C to +200°C

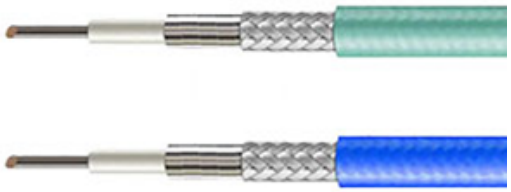
DETAILED MODEL SPECIFICATIONS

Model	**Code**	**OD** (mm)	**Fmax** (GHz)	**Description**
VXB460	B46	4.6	35	Low Loss High Power
VXB520	B52	5.2	28	Low Loss High Power
VXB550	B55	5.45	28	Low Loss High Power
VXB635	B63	6.35	27	Low Loss High Power
VXB762	B76	7.62	19	Low Loss High Power
VXB930	B93	9.3	15	Low Loss High Power
VXB1200	B120	12.0	11	Low Loss High Power
VXB1470	B147	14.7	10	Low Loss High Power

SUBFAMILY DATASHEET

Low Loss **Flexible Cable**

The VXL series represents our most versatile broadband cable family, combining high-grade low-density PTFE dielectrics with precision shielding. Optimized for attenuation-sensitive microwave routing, it offers a balanced profile of flexibility, mechanical durability, and high-frequency signal integrity.



MAX WORKING FREQ.
43 GHz

CUT-OFF FREQ.
70 GHz

WHERE IT FITS BEST

- Broadband microwave routing
- Avionics and defense electronics
- Wireless infrastructure interconnects
- General laboratory test leads
- Satellite communication (SATCOM) links

ELECTRICAL & MATERIAL

Impedance	50 ± 1 Ω
Velocity of Propagation	~ 76%
Shielding Effectiveness	> 90 dB
Dielectric Material	Low Density PTFE
Outer Jacket	FEP (Blue/Green)
Operating Temperature	-55°C to +165°C

DETAILED MODEL SPECIFICATIONS

Model	**Code**	**OD** (mm)	**Fmax** (GHz)	**Description**
VXL230	L23	2.33	70	Low Loss
VXL375	L37	3.75	43	Low Loss
VXL520	L52	5.2	28	Ultra Low Loss
VXL520S	L52S	5.3	28	Ultra Low Loss
VXL530	L53	5.3	25	Low Loss
VXL530S	L53S	5.3	25	Low Loss
VXL635	L63	6.35	23	Low Loss
VXL870	L87	8.7	14	Low Loss
VXL940	L94	9.4	13	Low Loss

** Frequency represents physical cut-off frequency.*
*** All attenuation and power values for VXL870/940 are measured at 10 GHz.*

SUBFAMILY DATASHEET

Flexible **Low Loss Cable**

The VXS series is designed for applications requiring high flexibility without compromising on insertion loss. Featuring a low-density PTFE dielectric and a durable PUR jacket, it provides stable signal transmission for wireless systems and mobile equipment routing.



MAX FREQUENCY

37 GHz

MIN. STATIC BEND

20 mm

WHERE IT FITS BEST

- Wireless equipment transmission
- Mobile device signal interconnects
- Compact enclosures with complex routing
- Repeatedly flexed internal links
- Laboratory and field test environments

ELECTRICAL & MATERIAL

Impedance	50 ± 1 Ω
Velocity of Propagation	~ 81% - 82%
Shielding Effectiveness	> 90 dB
Outer Jacket	Black PUR
Dielectric Material	Low Density PTFE
Operating Temperature	-55°C to +85°C

DETAILED MODEL SPECIFICATIONS

Model	**Code**	**OD**(mm)	**Fmax** (GHz)	**Description**
VXS500	S50	5.0	37	Low Loss Flexible
VXS730	S73	7.3	23	Low Loss Flexible
VXS1000	S100	10.0	23	Low Loss Flexible

SUBFAMILY DATASHEET

Ultra-Flexible **RF Cable**

The VXF series is engineered for extreme mechanical resilience in dense and high-flexure environments. By utilizing a multi-strand center conductor and high-recovery jackets, these cables provide superior bend repeatability and a remarkably tight bend radius without sacrificing high-frequency electrical performance.



MAX FREQUENCY

50 GHz

MIN. STATIC BEND

18 mm

WHERE IT FITS BEST

- Compact module internal interconnects
- Dense cabinet and chassis routing
- Military mobile communication antennas
- Repeatedly handled test cable assemblies
- Complex routing in restricted spaces

ELECTRICAL & MATERIAL

Impedance	50 ± 1 Ω
Velocity of Propagation	~ 76%
Outer Jacket	Blue PUR or Custom
Center Conductor	Stranded Silver-Plated Copper
Operating Temperature	-55°C to +85°C

DETAILED MODEL SPECIFICATIONS

Model	**Code**	**OD** (mm)	**Fmax** (GHz)	**Description**
VXF360	F36	3.6	50	Ultra Flexible Low Loss
VXF500	F50	5.0	35	Ultra Flexible Low Loss
VXF600	F60	6.0	29	Ultra Flexible Low Loss
VXF800	F80	8.0	20	Ultra Flexible Low Loss

SUBFAMILY DATASHEET

General Purpose **Flexible Cable**

The VXI series is the versatile standard for internal microwave routing. It offers a balanced profile of electrical performance and mechanical flexibility at an economical point, making it suitable for broad-use cabinet links and module-level interconnects.



MAX FREQUENCY

110 GHz

EFFICIENCY

Balanced

WHERE IT FITS BEST

- Internal chassis and cabinet routing
- Economical module interconnects
- General radar system internal routing
- General RF module-level wiring
- Broad-use lab interconnects

ELECTRICAL & MATERIAL

Impedance	50 ± 1 Ω
Velocity of Propagation	~ 70%
Shielding Effectiveness	> 90 dB
Outer Jacket	Blue FEP
Center Conductor	Silver-Plated Copper
Operating Temperature	-55°C to +125°C

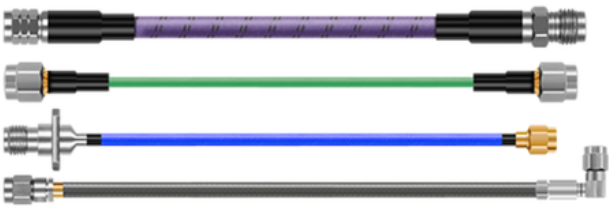
DETAILED MODEL SPECIFICATIONS

Model	**Code**	**OD** (mm)	**Fmax** (GHz)	**Description**
VXI160	I16	1.45	110	Flexible RF Interconnect
VXI260	I26	2.65	62	Flexible RF Interconnect
VXI400	I40	4.0	34	Flexible RF Interconnect
VXI700	I70	7.0	19	Flexible RF Interconnect

END-TO-END SOLUTIONS

Connectors & **Expert Assemblies**

VINSTRONICS offers a seamless integration of high-performance cable, precision connectors, and factory-terminated assemblies. By leveraging a broad portfolio of connector interfaces and armor options, we provide custom cable solutions tailored to your specific insertion loss, flexibility, and environmental requirements, ensuring uncompromised signal integrity from port to port.



RF CONNECTOR INTERFACE GUIDE

N Type	Rugged, standard utility	18 GHz
SMA	Versatile microwave standard	27 GHz
3.5mm	Precision lab interface	34 GHz
2.92mm (K)	Precision, direct SMA mate	40 GHz
1.85mm (V)	Top-tier high frequency	67 GHz
SMP/SMPM	Blind-mate, miniature	40+ GHz

RUGGEDIZATION & ARMOR OPTIONS

+ **Crush Resistant Armor**
  Stainless steel monocoil protects dielectric under heavy compressive loads.
+ **Abrasion Protection**
  Braided armor or monocoil with FEP jacket extends assembly life in handled environments.
+ **Strain Relief & IP Rated Jackets**
  Waterproof (IP67/68) jackets with reinforced transitions for outdoor use.

READY-TO-USE CABLE ASSEMBLIES

VINSTRONICS provides professional factory-terminated assemblies, eliminating the time and risks associated with self-assembly. Our expert assembly capabilities ensure predictable performance and unmatched reliability for your critical signal paths.

- 100% Factory VSWR & Insertion Loss Tested +
- Serialized & Custom Labeled Assemblies +
- Thermal Cycling & Phase Matching Capabilities +
- Flexible Length & Custom Connector Matching +

TECHNICAL SUPPORT

Built for Your **Exact Specifications**

Beyond standard catalog items, VINSTRONICS provides comprehensive engineering support for complex microwave routing challenges. From calculating precise bend radiuses for tight enclosures to developing phase-matched test assemblies, our engineering team ensures your RF system performs exactly as simulated.

CABLE ROUTING & BEND RADIUS



Static Bend Radius (Installation): The minimum radius a cable can be bent for a single, fixed installation. Exceeding this limit will cause irreversible damage to the dielectric and center conductor, altering the impedance (VSWR).

Dynamic Bend Radius (Flexure): The minimum radius applicable when the cable is subject to repeated bending or continuous movement. This is typically 2 to 3 times larger than the static bend radius to ensure long-term mechanical survival and electrical stability.

THE CUSTOM BUILD PROCESS

01 **Application Review**
We analyze your frequency requirements, acceptable insertion loss, mechanical constraints, and environmental factors.

02 **Component Selection**
Matching the optimal raw cable family (e.g., VXW for phase stability) with precision connectors and appropriate armoring.

03 **Prototype & Simulation**
Defining exact cut lengths, phase-matching criteria, and calculating theoretical performance limits.

04 **Testing & Delivery**
100% factory verification before shipping, complete with documented test plots for insertion loss and VSWR.

ADVANCED TESTING CAPABILITIES

PHASE MATCHING

For phased array radars and multi-port systems, we provide absolute or relative phase-matched cable sets with stringent tolerances across designated frequency bands.

VNA VERIFICATION

Every custom assembly is individually tested using Vector Network Analyzers to guarantee VSWR, Return Loss, and Insertion Loss meet or exceed specifications.

ENVIRONMENTAL STRESS

Capability to perform thermal cycling testing to evaluate phase tracking behavior and mechanical integrity under extreme temperature shifts.

Precision RF Interconnect Solutions

Vinstronics

COMPANY

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