

SELECTION GUIDE

Precision Test **Cables**

Metrology-grade cable solutions for stable, repeatable, and high-confidence RF measurements.

ENGINEERING VALUES

Designed for **Measurement Confidence**

In precision VNA and laboratory measurements, the test cable should preserve signal integrity without becoming a source of instability. Vinstronics precision test cables are designed to support repeatable phase, amplitude, and insertion-loss performance across demanding RF measurement environments.

PHASE STABILITY

Suitable for reliable point-to-point internal interconnects and mechanically stable fixed routing applications.

LOW-LOSS SIGNAL TRANSMISSION

Low-density PTFE dielectric structures and silver-plated conductors support efficient signal transmission across high-frequency measurement paths.

MECHANICAL RELIABILITY

Available in standard and armored constructions to support different installation, handling, and protection requirements in laboratory and production environments.

PRECISION TEST CONSTRUCTION

Multi-layer shielding and controlled cable construction help support repeatable RF behavior across demanding measurement applications.

TYPICAL CABLE CONSTRUCTION

Representative structure for standard VXT series



① Test and measurement instrumentation

② Low-density PTFE dielectric

③ Silver-plated copper strip inner shield

④ LD PTFE interlayer

⑤ Silver-plated copper wire braid

⑥ FEP outer jacket

PRODUCT ARCHITECTURE

Test Cable **Families**

Vinstronics precision test cables are categorized into two primary architectures. Select the appropriate family based on the routing environment, mechanical protection needs, and handling conditions of your measurement setup.



Standard Precision

VXT SERIES

POSITIONING

Flexible precision test cable for controlled measurement environments.

APPLICATION

Benchtop VNA testing, R&D labs, static device evaluation.

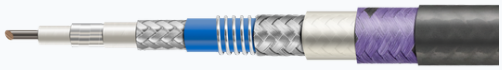
STRUCTURE

Standard precision construction with FEP outer jacket for flexible routing and easy handling.

FREQUENCY CLASS

Up to 110 GHz (depending on model).

DETAILED MODELS ON PAGE 05



Armored Precision

VXT KA/KB SERIES

POSITIONING

Protected precision test cable for dynamic or harsher environments.

APPLICATION

Production testing, EMC labs, field measurement, dynamic setups.

STRUCTURE

KA/KB armored construction with added mechanical protection for more demanding handling environments.

FREQUENCY CLASS

Up to 110 GHz (depending on model).

DETAILED MODELS ON PAGE 06

ENGINEERING CHOICE

Core Selection **Matrix**

Identify the appropriate VXT family reference by matching maximum operating frequency with the required handling and protection level of the measurement setup. Values shown are intended as model-level selection references and may vary depending on connector configuration and assembly design.

	STANDARD PRECISION FAMILY		ARMORED PRECISION FAMILY	
Max. Freq. (GHz)	**Base Model**	**Selection Guidance**	**Armored Variant**	**Protection Level**
110	**VXT180**	Ultra-high frequency precision measurement	**VXT180 KA/KB**	Enhanced mechanical protection
67	**VXT240**	High-frequency metrology and VNA measurement	**VXT240 KA/KB**	Enhanced mechanical protection
50	**VXT360**	General high-frequency laboratory measurement	**VXT360 KA/KB**	Enhanced mechanical protection
40	**VXT420**	Precision RF test and production measurement	**VXT420 KA/KB**	Enhanced mechanical protection
26.5	**VXT500**	General instrument interconnect and laboratory measurement	**VXT500 KA/KB**	Enhanced mechanical protection
18	**VXT800**	Lower-frequency robust RF measurement tasks	**VXT800 KA/KB**	Enhanced mechanical protection

Engineering Notes:

• Final assembly performance (including VSWR and insertion loss) is dependent on the specific connector types, attachment methods, and overall cable length.

• KA and KB designate different armored construction variants within the same frequency class. Detailed structural differences and physical specifications for KA/KB variants are outlined in the subsequent product pages.

QUICK NAVIGATION

Model **Directory**

A quick directory of VXT series precision test cable models and their corresponding detailed family pages. Use this page to locate standard and armored model groups before reviewing the following technical sections.

STANDARD PRECISION (VXT)

VXT180	110 GHz	P.05
VXT240	67 GHz	P.05
VXT360	50 GHz	P.05
VXT420	40 GHz	P.05
VXT500	26.5 GHz	P.05
VXT800	18 GHz	P.05

ARMORED PRECISION (VXT KA/KB)

VXT180 KA/KB	110 GHz	P.06
VXT240 KA/KB	67 GHz	P.06
VXT360 KA/KB	50 GHz	P.06
VXT420 KA/KB	40 GHz	P.06
VXT500 KA/KB	26.5 GHz	P.06
VXT800 KA/KB	18 GHz	P.06

> **Quick Reference Note:**
> Use this page to locate the detailed model family pages for standard and armored precision test cable assemblies. KAand KB designate armored construction variants of the corresponding base model.

TECHNICAL SPECIFICATIONS

Standard **Precision Test Cable**

The standard VXT series is designed for precision RF and microwave measurements requiring low loss, flexible routing, and stable RF measurement performance. Built with low-density PTFE dielectric and multi-layer silver-plated shielding structures, the VXT family supports benchtop VNA, laboratory, and general high-frequency test applications, with models available up to 110 GHz.

Parameters	VXT180	VXT240	VXT360	VXT420	VXT500	VXT800
CONSTRUCTION						
Inner Conductor	Silver-plated copper					
Dielectric	Low-density PTFE (LD PTFE)					
Inner Shield	Silver-plated copper strip					
Interlayer	Low-density PTFE (LD PTFE)					
Outer Shield	Silver-plated copper wire braiding					
Outer Jacket	FEP (Blue)					
Overall Diameter (mm)	1.85	2.40	3.60	4.20	5.10	7.80
ELECTRICAL SPECIFICATIONS						
Operating Frequency (GHz)	110	67	50	40	26.5	18
Cutoff Frequency (GHz)	128	82	50	41	29	18
Impedance (Ω)	50	50	50	50	50	50
Velocity (%)	80	81	76	81	82	82
Shielding Efficiency (dB)	> 90	> 90	> 90	> 90	> 90	> 90
Withstanding Voltage (VDC)	400	500	500	500	2000	2000
MECHANICAL & ENVIRONMENTAL SPECIFICATIONS						
Static Bending Radius (mm)	10	12	18	21	25	40
Dynamic Bending Radius (mm)	20	24	36	42	50	80
Weight (kg/m)	0.008	0.016	0.031	0.040	0.055	0.123
Temperature Range (°C)	-55 to +125	-55 to +165	-55 to +165	-55 to +165	-55 to +165	-55 to +165

ENGINEERING GUIDANCE:
Values shown are based on the standard VXT cable data and are intended for model-level engineering reference. Final assembly performance may vary depending on connector type, attachment method, and cable length. Standard VXT constructions are intended for precision laboratory and general RF measurement environments requiring flexible routing and stable electrical behavior.

TECHNICAL SPECIFICATIONS

Armored **Precision Test Cable**

The VXT KA/KB series applies ruggedized armored constructions to the standard VXT precision cable core for applications requiring greater protection under frequent handling or mechanical stress. Electrical characteristics shown here are based on the corresponding VXT core structure, while armored dimensions and mechanical values are provided as representative family reference data for KA/KB configurations.

Parameters	VXT180 KA/KB	VXT240 KA/KB	VXT360 KA/KB	VXT420 KA/KB	VXT500 KA/KB	VXT800 KA/KB
ARMORED CONSTRUCTION OVERVIEW						
Internal Precision Core	Standard VXT Series Precision Cable					
Armor Structure (KA)	Stainless Steel Wire Braiding (Internal Armor)					
Armor Structure (KB)	Stainless Steel Spiral Wrap + Wire Braiding (Internal Armor)					
Outer Jacket	FEP (Blue) or PUR (Application Dependent)					
Overall Diameter (mm)	3.84	4.80	6.10	6.70	7.60	10.40
ELECTRICAL SPECIFICATIONS (CORE REFERENCE)						
Operating Frequency (GHz)	110	67	50	40	26.5	18
CUTOFF FREQUENCY (GHZ)	128	82	50	41	29	18
Impedance (Ω)	50	50	50	50	50	50
Velocity (%)	80	81	76	81	82	82
Shielding Efficiency (dB)	> 90	> 90	> 90	> 90	> 90	> 90
REPRESENTATIVE RUGGEDIZED MECHANICAL SPECIFICATIONS						
Static Bending Radius (mm)	20	25	35	40	50	75
Dynamic Bending Radius (mm)	40	50	70	80	100	150
APPROX. WEIGHT (KG/M)	0.025	0.048	0.082	0.105	0.142	0.265
Mechanical Protection	Enhanced Resistance to Torsion and Tensile Loading					
Temperature Range (°C)	-55 to +125	-55 to +165	-55 to +165	-55 to +165	-55 to +165	-55 to +165

ENGINEERING GUIDANCE:
Electrical characteristics shown on this page are based on the corresponding VXT precision cable core structure. Overall diameter values and ruggedized mechanical data are provided as representative armored family reference values; KA and KB variants use different armor constructions, and exact project-level dimensions should be confirmed during final selection. Armored VXT assemblies are recommended for applications involving frequent handling, cable movement, or elevated external mechanical stress.

INTERFACE COMPATIBILITY

Connector **Matrix**

This matrix summarizes the standard connector compatibility referenced from the original cable family matrix and aligned to the VXT series naming used in this catalog. It is intended to support preliminary connector selection for standard and armored precision cable assemblies.

Cable Family	SSMP	SMP	SSMA	1.0mm	1.85mm	2.4mm	2.92mm	3.5mm	SMA	N	TNC	L29
VXT180	•		•	•	•							
VXT240	•	•	•	•	•	•	•	•	•			
VXT360						•	•	•	•	•		
VXT420						•	•	•	•	•		
VXT500						•	•	•	•	•	•	
VXT800								•	•	•	•	•

ENGINEERING GUIDANCE:
The maximum operating frequency of a complete assembly is determined by the lowest frequency-rated component in the signal path, including cable and connector selection. Connector availability shown here is presented under the VXT naming system used in this catalog and is intended for preliminary interface selection. SSMP, SMP, and SSMA interfaces are available for compact layouts and higher-density interconnect requirements. Final interface combinations should be confirmed during detailed assembly definition.

ATTENUATION MODELING

Attenuation & **Engineering Reference**

To support RF system planning and attenuation estimation, Vinstronics provides the standard attenuation model coefficients for each VXT cable family. This page serves as an engineering reference for calculating typical attenuation at specific frequency points based on the original cable datasheet constants.

MATHEMATICAL MODEL

$$\text{Attenuation} = K1 \times \sqrt{F} + K2 \times F$$

Where:

- **F** is the operating frequency in **GHz**.
- **K1** represents the resistive loss coefficient.
- **K2** represents the dielectric loss coefficient.
- The calculated result follows the **Unit Base** specified for each cable family.

Cable Family	Unit Base	K1 Constant	K2 Constant
VXT180	dB / m	3.557846	0.001221
VXT240	dB / 100m	1.975832	0.001221
VXT360	dB / 100m	1.507808	0.000440
VXT420	dB / 100m	1.267795	0.000440
VXT500	dB / 100m	0.828800	0.000900
VXT800	dB / 100m	0.518300	0.000320

IMPORTANT ENGINEERING NOTE:
The coefficients provided above are derived from original typical cable data and are intended for engineering reference use. Because the attenuation unit base is not identical across all cable families, the specified unit for each family must be applied exactly when calculating loss. Armored KA/KB assemblies follow the same electrical characteristics as the corresponding standard cable core.

CONFIGURATION REFERENCE

Part Number **Construction**

Vinstronics utilizes a standardized part numbering system to ensure accuracy in configuration and production. Please refer to the structure below when defining the full assembly part number for VXT precision test cable configurations.

CONFIGURATION EXAMPLE

VST-L-292M292F-T24KA-1000

VST	-	L	-	292M	292F	-	T24KA	-	1000
PREFIX		ASSEMBLY TYPE		CONNECTOR A	CONNECTOR B		CABLE CODE		LENGTH (MM)

ASSEMBLY CABLE CODES

VXT180:	T18 / T18KA / T18KB
VXT240:	T24 / T24KA / T24KB
VXT360:	T36 / T36KA / T36KB
VXT420:	T42 / T42KA / T42KB
VXT500:	T50 / T50KA / T50KB
VXT800:	T80 / T80KA / T80KB

PART NUMBER ELEMENTS

Assembly Type	**L** = Standard cable assembly **SPL** = Special/custom assembly
Connector Sequence	Side A followed by Side B
Connector Code Basis	Connector codes follow Vinstronics internal interface abbreviations.
Examples	**10** = 1.0 mm, **24** = 2.4 mm, **292** = 2.92 mm, **S** = SMA, **N** = N-Type
Gender	**M** = Male / Plug, **F** = Female / Jack
Length	Overall assembly length in millimeters (mm)

SPL Designation

Assemblies involving non-standard connector configurations, special phase matching, routing constraints, or project-specific mechanical requirements may be designated under the SPL coding structure after engineering review.

Precision RF Interconnect Solutions

Vinstronics

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