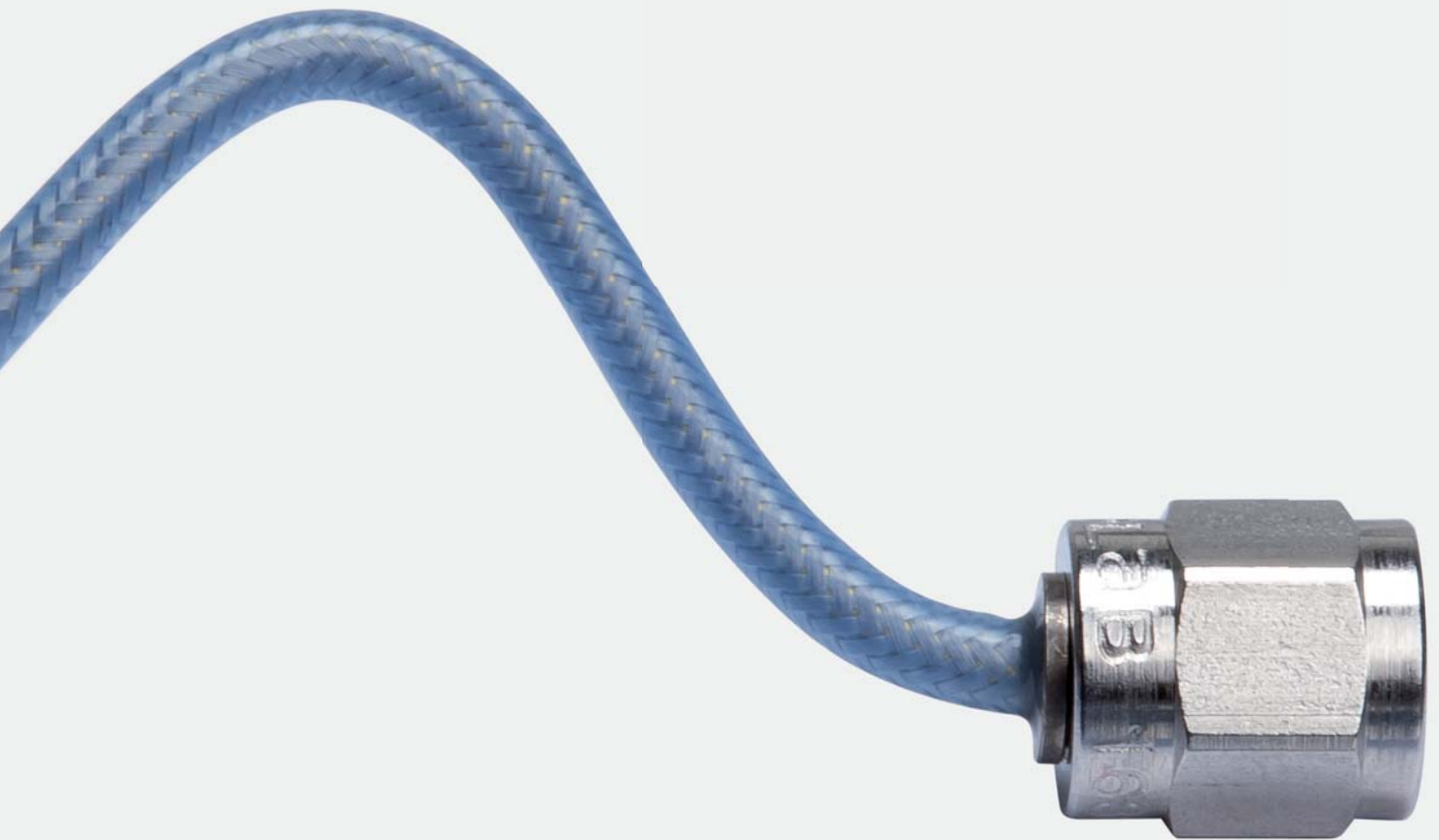


minibend™

The flexible coaxial cable

Edition 2013



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Handle the most difficult routing





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Your partner for system solutions

The HUBER+SUHNER Group is a leading global supplier of components and systems for electrical and optical connectivity. We offer technical expertise in radio frequency technology, fiber optics and low frequency under one roof, thus providing a unique basis for continual innovation focused on the needs of our customers all over the world.

Solutions and services from HUBER+SUHNER Astrolab

HUBER+SUHNER Astrolab has a history of significant contributions to the military, space, test & measurement, medical and other electronic industries. As the industry continuously moves toward higher operating frequencies, smaller components and higher density packages, HUBER+SUHNER Astrolab has recognized and met the growing demand for high-density interconnect solutions that incorporate precision performance, high reliability, and open source technology. This catalogue is a resource for RF and microwave system engineers seeking to improve performance while minimising mass, volume, and footprint.



Product information

minibend™

minibend is a truly flexible coaxial cable assembly which is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. minibend replaces .086 inch custom semi-rigid cables with standard flexible cables, eliminating the need for predefined custom lengths and bend configurations. minibend provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths and connector configurations.

minibend R is designed for use in complex, congested environments where higher cable retention force is required. minibend R's pull strength is more than 70 % greater than a standard minibend. When installed and bent at the minimum bend radius, minibend R will tolerate multiple 90° rotations at the cable/connector junction. The «R» ruggedisation can be added to any minibend connector style. All materials used in minibend R assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications.

Features and benefits

- Frequency range up to 65 GHz
- Triple shielded for high isolation
- Eliminates need for costly right angle connectors
- Direct replacement for .086 inch semi-rigid cables
- Stock delivery on standard lengths
- Guaranteed 15 lbs (67 N) pull force for minibend, 25 lbs (111 N) for minibend R

minibend™ L

minibend L is an enhanced, low loss version of the minibend flexible coaxial cable assembly with increased phase stability and power handling capacity. It is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. minibend L replaces .086 inch custom semi-rigid cables with standard flexible cables providing 30 % lower attenuation and eliminating the need for predefined custom lengths and bend configurations. minibend L provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

minibend LR is designed for use in complex, congested environments where higher cable retention force is required. minibend LR's pull strength is more than 70 % greater than standard minibend L. When installed and bent at the minimum bend radius, minibend LR will tolerate multiple 90° rotations at the cable/connector junction. The «R» ruggedisation can be added to any minibend connector style. All materials used in minibend LR assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications.

Features and benefits

- Frequency range up to 50 GHz
- Triple shielded for high isolation
- Eliminates need for costly right angle connectors
- Direct replacement for .086 inch semi-rigid cables
- Stock delivery on standard lengths
- Guaranteed 15 lbs (67 N) pull force for minibend, 25 lbs (111N) for minibend LR
- Microporous dielectric for 30 % lower insertion loss, improved phase stability and higher power handling

mini141™

mini141 is an enhanced, low loss version of the minibend flexible coaxial cable assembly with increased phase stability and power handling capacity. It is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. mini141 replaces .141 inch custom semi-rigid cables with standard flexible cables providing 20 % lower attenuation and eliminating the need for predefined custom lengths and bend configurations. mini141 provides you with a pre-assembled and tested high performance, cost-effective alternative in a variety of standard lengths.

mini141 is designed for use in complex, congested environments where higher cable retention force is required. When installed and bent at the minimum bend radius, mini141 will tolerate 90° rotations at the cable/connector junction. All materials used in mini141 assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications and are available only in a ruggedised version.

Features and benefits

- Frequency range up to 40 GHz
- Triple shielded for high isolation
- Eliminates need for costly right angle connectors
- Direct replacement for .141 inch semi-rigid cables
- Stock delivery on standard lengths
- Guaranteed 25 lbs (111 N) pull force
- Microporous dielectric for 20 % lower insertion loss, improved phase stability and higher power handling

microbend™

microbend assemblies provide you with a standard preassembled and tested high performance, cost-effective truly flexible alternative to .047 inch custom semi-rigid cable assemblies, eliminating the need for predefined custom lengths and bend configurations. microbend features include 35 % lower loss than .047 inch semi-rigid cable, a minimum bend radius of 1.52 mm (0.060 inch) and triple shielding for high isolation. microbend assemblies are available with a wide range of connector interfaces. All microbend assemblies and are available only in a ruggedised version.

Features and benefits

- Frequency range up to 90 GHz
- Triple shielded for high isolation
- Eliminates need for costly right angle connectors
- Direct replacement for .047 inch semi-rigid cables
- Stock delivery on standard lengths
- Guaranteed 10 lbs (45 N) pull force
- 35 % lower insertion loss than .047 inch semi-rigid cable

Standard assembly selection matrix

Cable	Frequency (GHz)						Interface I										Interface II														
	18	24	26.5	40	50	65	1.85 mm plug, gold plated BeCu contact	2.4/1.85 mm plug	2.4 mm plug, gold plated BeCu contact	2.9 mm plug	SMA plug	SMA plug, fully coplivated	SSMA plug	SMP female	SMPM female	SMPM - T female	N plug	ATNC plug	1.85 mm plug, gold plated BeCu contact	2.4/1.85 mm plug	2.4 mm plug, gold plated BeCu contact	2.9 mm plug	SMA plug	SMA plug, fully coplivated	SSMA plug	SMP female	SMPM female	SMPM - T female	N plug	ATNC plug	
minibend	█	█									•												•								
minibend A	█	█	█	█									•												•						
minibend E	█	█										•												•							
minibend K	█	█	█	█						•												•									
minibend KS	█	█							•																	•					
minibend KV	█	█	█	█				•														•									
minibend QG	█	█	█	█	█				•												•										
minibend S	█	█									•														•						
minibend 2S	█	█	█	█										•											•						
minibend V	█	█	█	█	█			•												•											
minibend VG	█	█	█	█	█		•												•												
minibend WR	█	█									•												•								
minibend L	█	█									•												•								
minibend LS	█	█									•														•						
minibend L2S	█	█	█	█									•												•						
minibend LA	█	█										•													•						
mini141	█	█									•												•								
mini141 K	█	█	█	█					•													•									
mini141 N	█	█														•												•			
mini141 T	█	█															•													•	
mini141 W	█	█	█	█							•												•								
microbend R	█	█									•												•								
microbend AR	█	█	█	█									•												•						
microbend KR	█	█								•											•										
microbend KMR	█	█	█	█				•														•				•					
microbend KMTR	█	█	█	█				•																			•				
microbend KV	█	█	█	█				•											•												
microbend MR	█	█									•															•					
microbend 2MR	█	█	█	█										•												•					
microbend MTR	█	█									•																•				
microbend 2MTR	█	█	█	█											•												•				
microbend MVR	█	█	█	█											•				•												
microbend SR	█	█									•														•						
microbend 2SR	█	█	█	█									•												•						
microbend V	█	█	█	█	█		•												•												

This matrix contains the standard minibend cable assembly variants that are available as stock items. Any unique combination of connector interfaces for a specific customer application is possible. Please contact HUBER+SUHNER Astrolab for further information to construct a product solution specific to your unique application.

Cable	Retention force (lbs)			Ruggedised	ROHS 5	ROHS 6
	10	15	25			
minibend					•	
minibend A					•	
minibend E				•	•	
minibend K					•	
minibend KS					•	
minibend KV				•	•	
minibend QG				•	•	
minibend S					•	
minibend 2S					•	
minibend V				•		•
minibend VG				•	•	
minibend WR				•	•	
minibend L					•	
minibend LS					•	
minibend L2S					•	
minibend LA					•	
mini141				•	•	
mini141 K				•	•	
mini141 N				•	•	
mini141 T				•	•	
mini141 W				•	•	
microbend R				•	•	
microbend AR				•		•
microbend KR				•		•
microbend KMR				•		•
microbend KMTR				•		•
microbend KV				•	•	
microbend MR				•	•	
microbend 2MR				•		•
microbend MTR				•	•	
microbend 2MTR				•		•
microbend MVR				•	•	
microbend SR				•	•	
microbend 2SR				•	•	
microbend V				•	•	

Qualifications

The entire minibend family is certified to the following standards through testing or similar.

Cable qualification

- MIL-DTL-17

Connector qualification

- MIL-PRF-39012
- MIL-PRF-31031 (SMP)

Cable assembly qualification

- MIL-PRF-55427

Space qualification

- MIL-STD-1547
- NASA EEE-INST-002
- ESA 3902
- ESA 3402

Thermal shock

- MIL-STD-202, Method 107, Test Condition A, 1000 cycles, with cable bent at min. bend radius

Mechanical shock

- MIL-STD-202, Method 213, 12000 g peak
- MIL-STD-883, Method 2002, 1500 g peak

Sinusoidal vibration

- MIL-STD-202, Method 204, 28 g peak

Random vibration

- MIL-STD-202, Method 214, 46.3 g rms
- MIL-STD-883, Method 2026, 16.4 g rms

Acceleration

- MIL-STD-883, Method 2001, 3000 g peak

Moisture resistance

- MIL-STD-202, Method 106

Corrosion

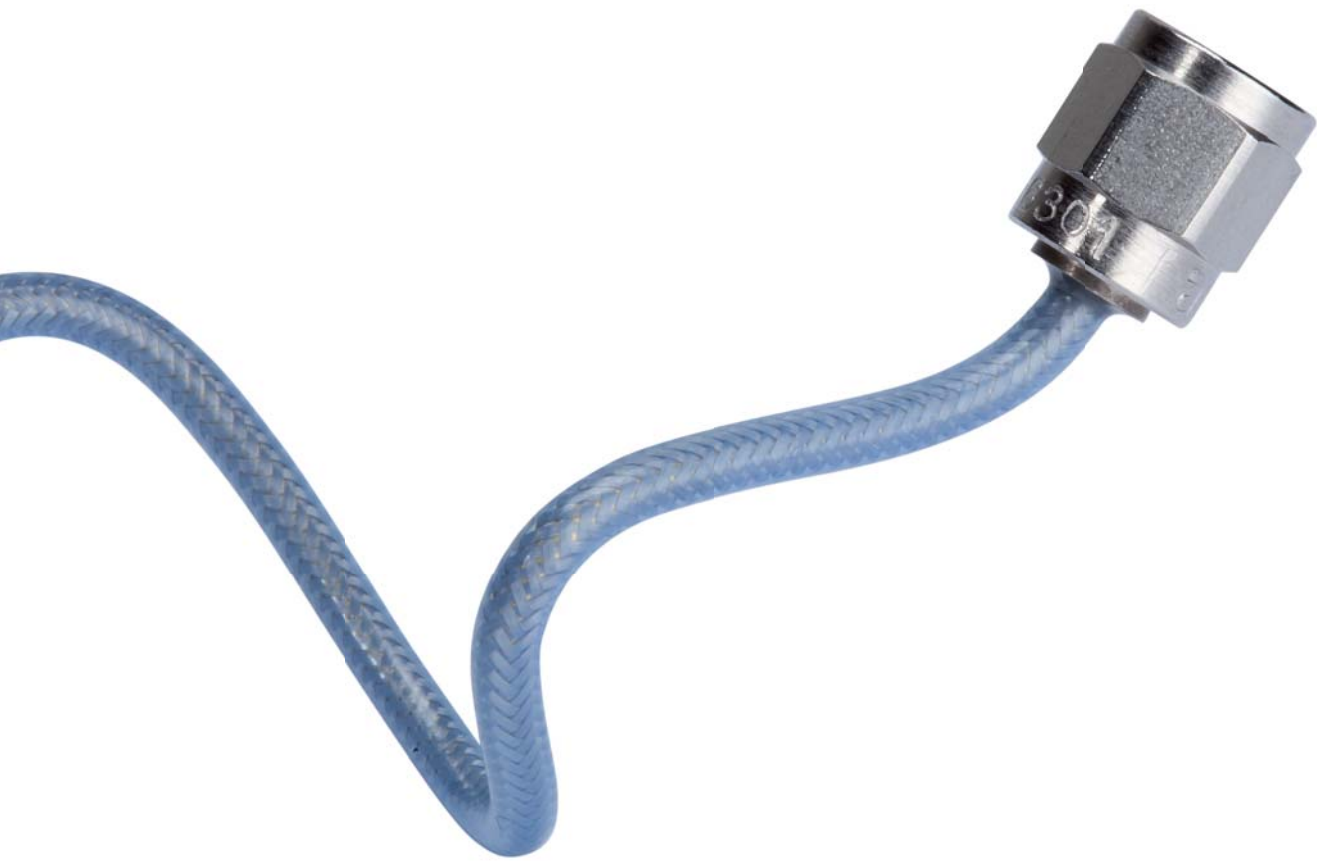
- MIL-STD-202, Method 101, Test Condition B

All minibend cable assembly styles listed in the matrix that are not identified as «ruggedised» can have this additional feature added. Please see the minibend FAQ on page 38 of this catalogue for further information defining the advantages of ruggedised minibend assemblies.

Please contact HUBER+SUHNER Astrolab for further information if you feel that your application may require a ruggedised variant of a standard minibend assembly.

HUBER+SUHNER Astrolab is proactively bringing renewable and environmentally safe product solutions to the market. In support of this, any standard minibend assembly listed in this matrix that is ROHS 5 Compliant is available with an alternate ROHS 6, fully compliant minibend solution.

Please contact HUBER+SUHNER Astrolab for more details on the available ROHS 6 products, material compositions, along with any necessary declarations and certifications, as well as the unique part numbers identifying these products.



minibend™

minibend is a truly flexible coaxial cable assembly which is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. minibend replaces .086 inch custom semi-rigid cables with standard flexible cables, eliminating the need for predefined custom lengths and bend configurations. minibend provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths and connector configurations.

minibend R is designed for use in complex, congested environments where higher cable retention force is required. minibend R's pull strength is more than 70 % greater than standard minibend. When installed and bent at the minimum bend radius, minibend R will tolerate multiple 90° rotations at the cable/connector junction. The «R» ruggedisation can be added to any minibend connector style. All materials used in minibend R assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications.

minibend assemblies are available in lengths from 63.5 mm (2.50 inch) to 406.4 mm (16.00 inch). The respective item numbers are listed on page 30-32 of this product catalogue.

For connector combinations other than those mentioned in the following pages, see the standard assembly selection matrix on page 6/7 of this product catalogue.

High performance / high pull strength microwave coaxial cable type: 32081/32081S

astro-STEEL-flex® I cable types 32081 and 32081S are lightweight flexible replacements for semi-rigid cable. They contain three shields for superior RF shielding, with a solid PTFE dielectric for exceptional crush resistance without the need for heavy armour. The flat wire braid outer conductor provides low loss plus excellent Insertion loss stability with flexure. The stainless steel outer braid provides improved mechanical pull strength when compared to cables with a copper wire outer braid.

Cable	Replacement for	Operating frequency	Velocity	Impedance	Capacity	Weight		Min. bending radius for +/-180°	
		GHz	%	Ohm	pF/ft	lbs/100 ft.	g/m	inch	mm
32081/ 32081S	MIL-DTL-17/152	65	70.3	50	30	1.0	14.9	0.2	5.08

Technical data

Cable design



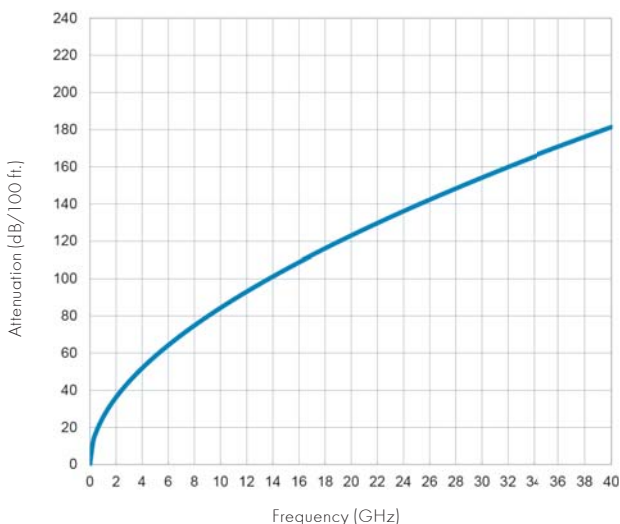
Construction

Cable 32081	Material 32081	Material 32081S	Diameter
1 Centre conductor	solid OFHC*, copper wire, silver coated	solid silver plated copper clad steel wire	0.51 mm/0.020 in
2 Dielectric	PTFE	PTFE	1.55 mm/0.061 in
3 Inner braid	OFHC* copper wire, silver coated	OFHC* copper wire, silver coated	1.70 mm/0.067 in
4 Barrier	aluminium/polyimide tape	aluminium/polyimide tape	1.83 mm/0.072 in
5 Outer braid	stainless steel	stainless steel	2.03 mm/0.080 in
6 Outer jacket	FEP	FEP	2.49 mm/0.098 in

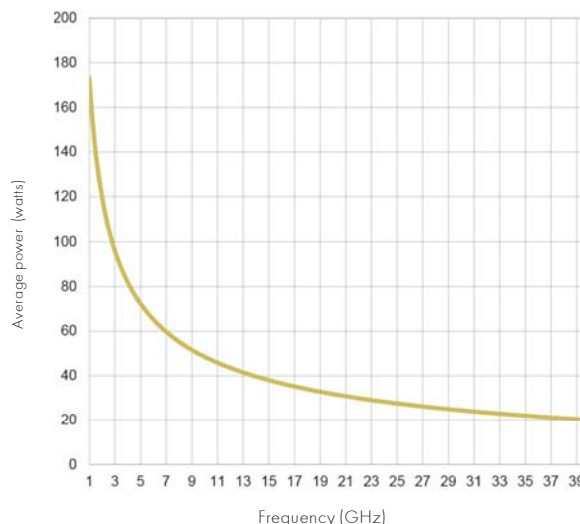
*Oxygene-free high thermal conductivity

Electrical performance

Graph 1: Cable attenuation



Graph 2: Max. power handling (25 °C at sea level)



minibend™

minibend is a flexible coaxial cable assembly which is designed for use in low profile, internal point-to-point interconnections between RF modules within communications systems. minibend replaces .086 inch custom semi-rigid cables with standard flexible cables eliminating the need for predefined custom lengths and bend configurations. minibend provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

Features and benefits

- Frequency range up to 24 GHz
- Precision stainless steel SMA plug connectors
- Ruggedised version available «R»



minibend™ A

minibend A has all the benefits of the original minibend but with precision stainless steel SSMA connectors on each end. minibend A is available in a standard 26.5 GHz max. frequency or an optional 40 GHz max. configuration. minibend A flexible coaxial cable assemblies are cost-effective replacements for .086 inch semi-rigid cables in point-to-point interconnections between RF modules. minibend A eliminates the need for custom pre-defined lengths and bend configurations.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel SSMA plug connectors
- Ruggedised version available «R»



minibend™ E

minibend E is a fully captivated (contact, dielectric and body), ruggedised version of the original minibend that is suitable for use in spacecraft applications, severe environments and high density packages. The minibend E contact will not shift more than .005 inch when subjected to 10 lbs. push force (cabled) or 5 lbs. push force uncabled. All materials used in minibend E assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications.

Features and benefits

- Frequency range up to 18 GHz.
- Precision stainless steel SMA plug connectors
- Automatically ruggedised by design



minibend™ K

minibend K is a 40 GHz version of the minibend flexible coaxial cable assembly which is designed for use in low profile, internal point-to-point interconnections between RF modules within communications systems. minibend K replaces small custom semi-rigid cable with standard flexible cables, eliminating the need for predefined custom lengths and bend configurations. minibend K provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

Features and benefits

- Frequency range up to 40 GHz
- Precision 2.9 mm minibend plug connectors
- Ruggedised version available «R»



minibend™ KS

minibend KS is the 40 GHz version of the original minibend with a 2.9 mm plug connector on one end and an SMP female connector that is DSCC and MIL-STD-348 compliant on the other. minibend KS replaces custom length, predefined bend configuration .086 inch semi-rigid cables with standard, COTS, flexible coax cables for use as internal, point-to-point interconnections between RF modules.

Features and benefits

- Frequency range up to 40 GHz
- Precision 2.9 mm minibend plug connector
- Precision SMP female connector mateable with Corning Gilbert GPO®
- Ruggedised version available «R»



minibend™ KV

minibend KV is a 40 GHz version of the original minibend with a 2.9 mm plug connector on one end and a 2.4 mm/1.85 mm compatible plug connector on the other. minibend KV replaces custom lengths, predefined bend configuration .086 semi-rigid cable assemblies for use as internal, point-to-point interconnections between RF modules and in high bandwidth switching systems.

Features and benefits

- Frequency range up to 40 GHz
- Precision 2.9 mm minibend plug connector
- Precision 2.4 mm/1.85 mm compatible plug connector
- Ruggedised version available «R»



minibend™ QG

minibend QG is a 50 GHz version of the original minibend with a 2.4 mm plug connector on each end that contains a gold plated BeCu contact for applications that require repeated mates/demates of the interface. This flexible coaxial cable assembly is designed for use in low profile, internal point-to-point interconnections between RF modules within communications systems. minibend QG replaces small custom semi-rigid cables with standard flexible cables, eliminating the need for predefined custom lengths and bend configurations. minibend QG provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

Features and benefits

- Frequency range up to 50 GHz
- Precision 2.4 mm compatible plug connectors
- Automatically ruggedised by design



minibend™ S

minibend S is a special version of the original minibend that provides all the benefits of the original minibend but with a precision DSCC and MIL-STD-348 compliant SMP female connector on one end and an SMA plug connector on the other. minibend S replaces custom length, predefined bend configuration cable for use as internal, point-to-point interconnections between RF modules within communications and switching systems.

Features and benefits

- Frequency range up to 24 GHz
- Precision stainless steel SMA plug connectors
- Precision SMP female connector mateable with Corning Gilbert GPO®
- Ruggedised version available «R»



minibend™ 2S

minibend 2S is the SMP version of the original minibend that provides all the benefits of the original minibend but with precision DSCC and MIL-STD-348 compliant SMP female connections on each end. minibend flexible coaxial cable assemblies are designed for use in low profile, internal point-to-point interconnections between RF modules. minibend 2S is a cost-effective replacement for .086 inch semi-rigid cable and eliminates the need for predefined custom lengths and bend configurations.

Features and benefits

- Frequency range up to 40 GHz
- Precision SMP female connector mateable with Corning Gilbert GPO®
- Ruggedised version available «R»



minibend™ V

minibend V is the millimeter wave version of the original minibend, designed for use in high-speed (40 GB/sec.), low dispersion applications. minibend V has an Astrolab designed plug connector that mates with standard 1.85 mm and 2.4 mm connections.

Features and benefits

- Frequency range up to 65 GHz
- Precision 2.4 mm/1.85 mm compatible plug connectors
- Automatically ruggedised by design



minibend™ VG

minibend VG is an enhanced version of the minibend V with a 1.85 mm plug connector that contains a gold plated BeCu contact for applications that require repeated mates/demates of the interface. The minibend VG will tolerate up to 500 mates/demates without applicable degradation. minibend VG is designed for use in high bandwidth and high-speed (40 GB/sec) applications.

Features and benefits

- Frequency range up to 65 GHz
- Precision 1.85 mm compatible plug connectors
- Automatically ruggedised by design



minibend™ WR

minibend WR is the «all weather» version of the minibend family environments with high humidity and moisture. minibend WR meets the moisture resistance requirements of MIL-STD-202, Method 106. It is designed for use in low profile, internal or external, point-to-point interconnections between RF modules within communications systems. minibend WR provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connectors
- Automatically ruggedised and weatherproof by design





minibend™ L

minibend L is an enhanced, low loss version of the minibend flexible coaxial cable assembly with increased phase stability and power handling capacity which is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. minibend L replaces .086 inch custom semi-rigid cables with standard flexible cables providing 30 % lower attenuation and eliminating the need for predefined custom lengths and bend configurations. minibend L provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

minibend LR is designed for use in complex, congested environments where higher cable retention force is required. minibend LR's pull strength is more than 70 % greater than standard minibend L. When installed and bent at the minimum bend radius, minibend LR will tolerate multiple 90° rotations at the cable/connector junction. The «R» ruggedisation can be added to any minibend connector style. All materials used in minibend LR assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications.

minibend L assemblies are available in lengths from 63.5 mm (2.50 in) to 406.4 mm (16.00 in). The respective item numbers are listed on page 33 of this product catalogue.

For connector combinations other than those mentioned in the following pages, see the standard assembly selection matrix on page 6/7 of this product catalogue.

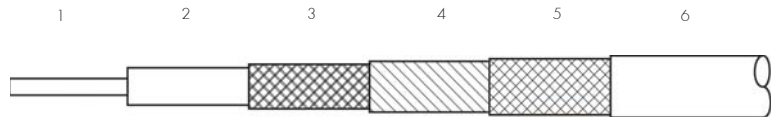
High performance / high pull strength microwave coaxial cable type: 32024

astro-STEEL-flex® II cable type 32024 is a lightweight, low loss and flexible replacement for semi-rigid cable. It contains three shields for superior RF shielding, with a microporous dielectric that provides improved phase characteristics, such as phase versus flexure and phase versus temperature. The flat wire braid outer conductor provides low loss plus excellent Insertion loss stability with flexure. The stainless steel outer braid provides improved mechanical pull strength when compared to cables with a copper wire outer braid.

Cable	Replacement for	Operating frequency GHz	Velocity %	Impedance Ohm	Capacity pF/ft	Weight		Min. bending radius for +/-180°	
						lbs/100 ft.	g/m	inch	mm
32024		50	76.0	50	27.5	1.1	16.4	0.2	5.08

Technical data

Cable design



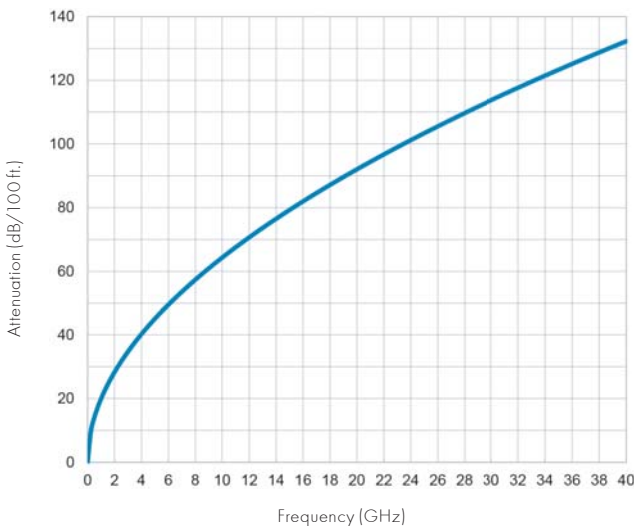
Construction

Cable 32024	Material	Diameter
1 Centre conductor	solid OFHC*, copper wire, silver coated	0.56 mm/0.022 in
2 Dielectric	microporous PTFE	1.70 mm/0.067 in
3 Inner braid	OFHC* copper wire, silver coated	1.85 mm/0.073 in
4 Barrier	aluminium/polyimide tape	1.98 mm/0.078 in
5 Outer braid	stainless steel	2.24 mm/0.088 in
6 Outer jacket	FEP	2.64 mm/0.104 in

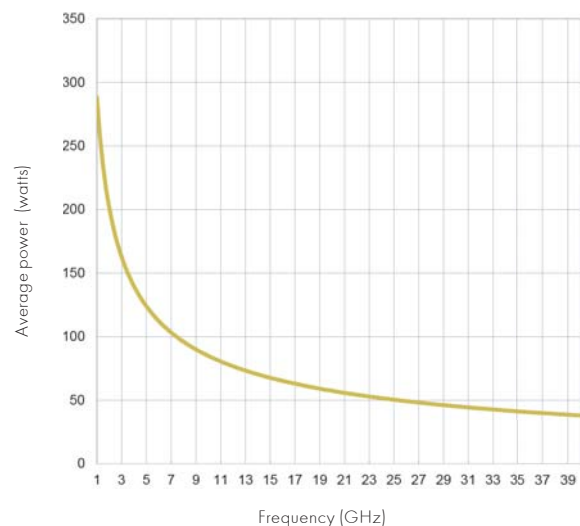
*Oxygene-free high thermal conductivity

Electrical performance

Graph 1: Cable attenuation



Graph 2: Max. power handling (25°C at sea level)



minibend™ L

minibend L is an enhanced, low loss version of the minibend flexible coaxial cable assembly which is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. minibend L eliminates the need for predefined custom lengths and bend configurations. minibend L provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connectors
- Ruggedised version available «R»

minibend™ LS

minibend LS has all of the benefits of the original minibend but with a microporous dielectric for lower loss and improved phase stability. The assembly contains a DSCC and MIL-STD-348 compliant SMP female connector on one end and an SMA plug connector on the other. minibend LS replaces custom length and predefined .086 inch semi-rigid cables with flexible coax cable assemblies for use as internal, point-to-point interconnections between RF modules.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connector
- Precision SMP female connector mateable with Corning Gilbert GPO®
- Ruggedised version available «R»



minibend™ L2S

minibend L2S is the SMP female version of the original minibend with a lower loss, microporous dielectric and DSCC and MIL-STD-348 compliant SMP female connectors on each end. minibend L2S replaces custom length and bend configuration .086 inch semi-rigid cable with truly flexible coax cable assemblies for use as internal interconnections between RF modules.

Features and benefits

- Frequency range up to 40 GHz
- Precision SMP female connector mateable with Corning Gilbert GPO®
- Ruggedised version available «R»



minibend™ LA

minibend LA is the SSMA plug version of the original minibend with a microporous dielectric for lower loss and improved phase stability. minibend LA replaces custom length and predefined bend configuration .086 inch semi-rigid cables with truly flexible coax cable assemblies for use as internal point-to-point interconnections between RF modules.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel SSMA plug connectors
- Ruggedised version available «R»





mini141™

mini141 is an enhanced, low loss version of the minibend flexible coaxial cable assembly with increased phase stability and power handling capacity which is designed for use in low profile, internal, point-to-point interconnections between RF modules within communications systems. mini141 replaces .141 inch custom semi-rigid cables with standard flexible cables providing 20 % lower attenuation and eliminating the need for predefined custom lengths and bend configurations. mini141 provides you with a preassembled and tested high performance, cost-effective alternative in a variety of standard lengths.

mini141 is designed for use in complex, congested environments where higher cable retention force is required. When installed and bent at the minimum bend radius, mini141 will tolerate multiple 90° rotations at the cable/connector junction. All materials used in mini141 assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications and are available only in a ruggedised version.

mini141 assemblies are available in lengths from 127 mm (5.00 inch) to 406.4 mm (16.00 inch). The respective item numbers are listed on page 34 of this product catalogue.

For connector combinations other than those mentioned in the following pages, see the standard assembly selection matrix on page 6/7 of this product catalogue.

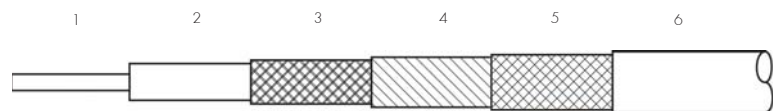
High performance / high pull strength microwave coaxial cable type: 32022

astro-STEEL-flex® II cable type 32022 is a lightweight, low loss flexible replacement for semi-rigid cable. It contains three shields for superior RF shielding, with a microporous dielectric that provides improved phase characteristics, such as phase versus flexure and phase versus temperature. The flat wire braid outer conductor provides low loss plus excellent Insertion loss stability with flexure. The stainless steel outer braid provides improved mechanical pull strength when compared to cables with a copper wire outer braid.

Cable	Replace-ment for	Operating frequency GHz	Velocity %	Impedance Ohm	Capacity pF/ft	Weight		Min. bending radius for +/-180°	
						lbs/100 ft.	g/m	inch	mm
32022	RG-142	40	76.3	50	27.2	2.1	31.3	0.33	8.40

Technical data

Cable design



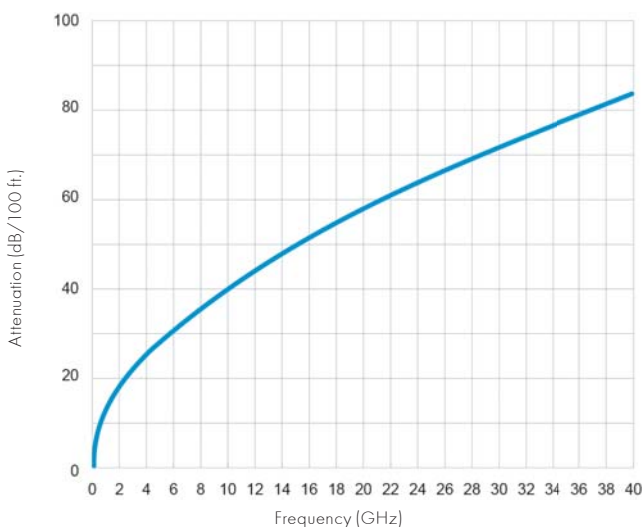
Construction

Cable 32022	Material	Diameter
1 Centre conductor	solid OFHC*, copper wire, silver coated	0.91 mm/0.036 in
2 Dielectric	microporous PTFE	2.72 mm/0.107 in
3 Inner braid	OFHC* copper wire, silver coated	2.79 mm/0.110 in
4 Barrier	aluminium/polyimide tape	3.02 mm/0.119 in
5 Outer braid	stainless steel	3.20 mm/0.126 in
6 Outer jacket	FEP	3.61 mm/0.142 in

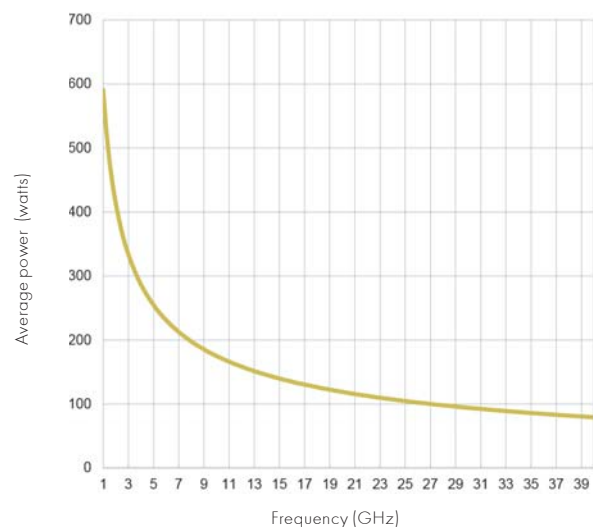
*Oxygene-free high thermal conductivity

Electrical performance

Graph 1: Cable attenuation



Graph 2: Max. power handling (25°C at sea level)



mini141™

mini141 is a superior alternative to custom length, predefined bend configuration semi-rigid cable. mini141 has a microporous dielectric for low loss and improved phase stability. mini141 has precision stainless steel SMA plug connectors on each end.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connectors
- Automatically ruggedised by design



mini141™ K

mini141 K is the 40 GHz. version of the mini141. mini141 K replaces custom length, predefined bend configuration .141 semi-rigid cable with truly flexible, low loss microporous dielectric, phase stable coax cable for use as interconnections between RF modules in microwave systems.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel 2.9 mm plug connectors
- Automatically ruggedised by design



mini141™ N

mini141 N offers all of the features and benefits of the mini141 but with N plug connections. mini141 N replaces custom length, predefined bend configuration .141 inch semi-rigid cable with truly flexible, low loss, phase stable microporous dielectric coax cable in standard lengths.

Features and benefits

- Frequency range up to 18 GHz
- Precision stainless steel N plug connectors
- Automatically ruggedised by design



mini141™ T

mini141 T offers all of the features and benefits of the mini141 but with ATNC plug connections. mini141 T replaces custom length, predefined bend configuration .141 inch semi-rigid cable with truly flexible, low loss, phase stable microporous dielectric coax cable in standard lengths.

Features and benefits

- Frequency range up to 18.5 GHz
- Precision stainless steel ATNC plug connectors compatible with TNC or TNC-A connectors per MIL-STD-348
- Automatically ruggedised by design



mini141™ W

mini141 W is the «all weather» version of the mini141 for environments with high humidity and moisture. mini141 W meets moisture-resistance requirements of MIL-STD-202, Method 106. mini141 W replaces custom length predefined bend configuration .141 inch semi-rigid cable with truly flexible coax cable for use in external or internal point-to-point interconnections between modules in microwave systems.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connectors
- Automatically ruggedised and weatherproof by design





microbend™

microbend assemblies provide you with a standard preassembled and tested high performance, cost-effective truly flexible alternative to .047 inch custom semi-rigid cable assemblies, eliminating the need for predefined custom lengths and bend configurations. microbend features include 35 % lower loss than .047 inch semi-rigid cable, a minimum bend radius of 1.52 mm (0.060 inch) and triple shielding for high isolation. microbend assemblies are available with a wide range of connector interfaces. All microbend assemblies are available only in a ruggedised version.

microbend is designed for use in complex, congested environments where higher cable retention force is required. When installed and bent at the minimum bend radius, microbend will tolerate multiple 90° rotations at the cable/connector junction. All materials used in microbend assemblies meet or exceed NASA TML and CVCM requirements for use in spacecraft applications and are available only in a ruggedised version.

minibend assemblies are available in lengths from 63.5 mm (2.50 inch) to 304.8 mm (12.00 inch). The respective item numbers are listed on page 35-37 of this product catalogue.

For connector combinations other than those mentioned in the following pages, see the standard assembly selection matrix on page 6/7 of this product catalogue.

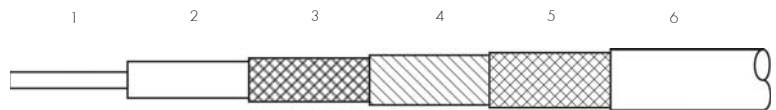
High performance / high pull strength microwave coaxial cable type: 32041

astro-STEEL-flex® I cable type 32041 is a lightweight flexible replacement for semi-rigid cable. It contains three shields for superior RF shielding, with a solid PTFE dielectric for exceptional crush resistance without the need for heavy armour. The flat wire braid outer conductor provides low loss plus excellent Insertion loss stability with flexure. The stainless steel outer braid provides improved mechanical pull strength when compared to cables with a copper wire outer braid.

Cable	Replacement for	Operating frequency	Velocity	Impedance	Capacity	Weight		Min. bending radius for +/-180°	
		GHz	%	Ohm	pF/ft	lbs/100 ft.	g/m	inch	mm
32041	MIL-DTL-17/151	90	70.3	50	29.7	0.8	11.9	0.06	1.50

Technical data

Cable design



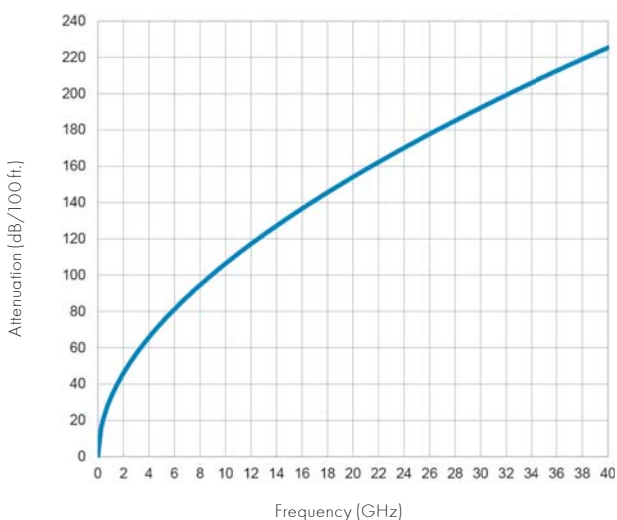
Construction

Cable 32041	Material	Diameter
1 Centre conductor	solid OFHC*, copper wire, silver coated	0.36 mm/0.014 in
2 Dielectric	PTFE	1.14 mm/0.045 in
3 Inner braid	OFHC* copper wire, silver coated	1.30 mm/0.051 in
4 Barrier	aluminium/polyimide tape	1.45 mm/0.057 in
5 Outer braid	stainless steel	1.66 mm/0.065 in
6 Outer jacket	FEP	1.91 mm/0.075 in

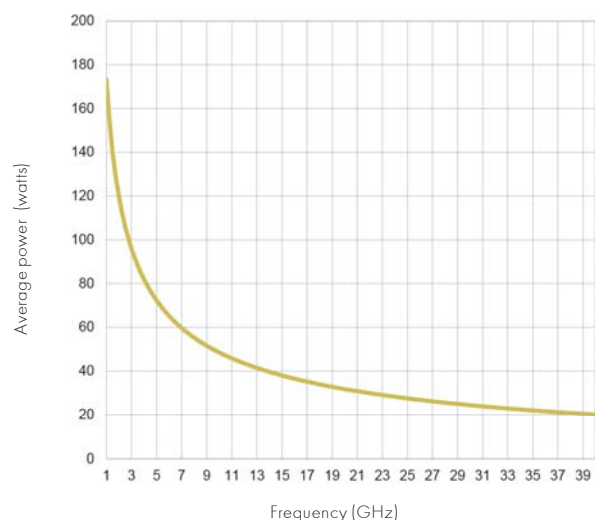
*Oxygene-free high thermal conductivity

Electrical performance

Graph 1: Cable attenuation



Graph 2: Max. power handling (25°C at sea level)



microbend™ R

microbend R eliminates the need for predefined custom lengths and bend configurations. microbend R was designed for use as internal point-to-point interconnections between modules in microwave and fiber optic switching systems. microbend R features include lower loss than .047 inch semi-rigid cable and a minimum bend radius of 1.52 mm (0.060 inch).

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connectors
- Automatically ruggedised by design



microbend™ AR

microbend AR is the SSMA plug version of the of the microbend. microbend AR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible coax cable in standard lengths.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel SSMA plug connectors
- Automatically ruggedised by design



microbend™ KR

microbend KR offers all the benefits of the microbend cable assembly but with a solderless 2.9 mm plug connector on each end for performance up to 40 GHz. microbend KR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with standard length, truly flexible coax cable for use as internal interconnections between RF modules in communications and high bandwidth switching systems.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel 2.9 mm plug connectors
- Automatically ruggedised by design



microbend™ KMR

microbend KMR offers all the benefits of the microbend but with a solderless 2.9 mm plug on one end and an SMPM female connector compliant with MIL-STD-348 on the other. microbend KMR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with standard length truly flexible coax cable.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel 2.9 mm plug connector
- Precision SMPM female connector mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design



microbend™ KMTR

microbend KMTR offers all the benefits of the microbend in a 40 GHz, high bandwidth cable assembly that features an SMPM-T female connector compliant with MIL-STD-348 on one end and a 2.9 mm plug connector on the other. microbend KMTR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length coax cable for use as internal interconnections between modules in microwave and optical fiber switching. It is also used extensively in space applications.

Features and benefits

- Frequency range up to 40 GHz
- Precision stainless steel 2.9 mm plug connector
- Precision SMPM-T female connector mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design



microbend™ KV

microbend KV offers all the benefits of the microbend in a 40 GHz, high bandwidth cable assembly with a 2.9 mm plug connector on one end and a 1.85 mm plug connector containing a gold plated BeCu contact for those applications that require repeated mates/demates of the interface, on the other. microbend KV replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length coax cable for use as internal interconnections between modules in microwave and optical fiber switching systems.

Features and benefits

- Frequency range up to 40 GHz
- 1.85 mm plug connector
- Precision stainless steel 2.9 mm plug connector
- Automatically ruggedised by design



microbend™ MR

microbend MR offers the benefits of the microbend but with an SMA plug connector on one end and an SMPM female connector compliant with MIL-STD-348 on the other. microbend MR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length cable.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connector
- Precision SMPM female connector mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design

microbend™ 2MR

microbend 2MR offers all the benefits of the microbend but with SMPM female connectors on each end that are fully compliant with MIL-STD-348. microbend 2MR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible coax cable in standard lengths.

Features and benefits

- Frequency range up to 65 GHz
- Precision SMPM female connectors mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design

microbend™ MTR

microbend MTR offers all the benefits of the microbend in a 26.5 GHz, high bandwidth cable assembly that features an SMPM-T female connector compliant with MIL-STD-348 on one end and a SMA plug connector on the other. microbend MTR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length coax cable for use as internal interconnections between modules in microwave and optical fiber switching. It is also used extensively in space applications.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connector
- Precision SMPM-T female connector mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design



microbend™ 2MTR

microbend 2MTR offers all the benefits of the microbend MTR in a 40 GHz, high bandwidth cable assembly that features an SMPM-T female connector compliant with MIL-STD-348 on each side. microbend 2MTR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length coax cable for use as internal interconnections between modules in microwave and optical fiber switching. It is also used extensively in space applications.

Features and benefits

- Frequency range up to 65 GHz
- Precision SMPM-T female connectors mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design



microbend™ MVR

microbend MVR offers all the benefits of the microbend in a 65 GHz, high bandwidth cable assembly that features an SMPM female connector compliant with MIL-STD-348 on one end and a 1.85 mm plug connector containing a gold plated BeCu contact for those applications that require repeated mates/demates of the interface on the other. microbend MVR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length coax cable for use as internal interconnections between modules in microwave and optical fiber switching systems.

Features and benefits

- Frequency range up to 65 GHz
- 1.85 mm plug connector
- Precision SMPM female connector mateable with Corning Gilbert GPPO®
- Automatically ruggedised by design



microbend™ SR

microbend SR offers the benefits of the standard microbend with an SMA plug connector on one end and a DSCC and MIL-STD-348 compliant SMP female connector on the other. microbend SR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, cost-effective, standard length coax cables for use as internal interconnections between RF modules of communications systems.

Features and benefits

- Frequency range up to 26.5 GHz
- Precision stainless steel SMA plug connector
- Precision SMP female connector mateable with Corning Gilbert GPO®
- Automatically ruggedised by design

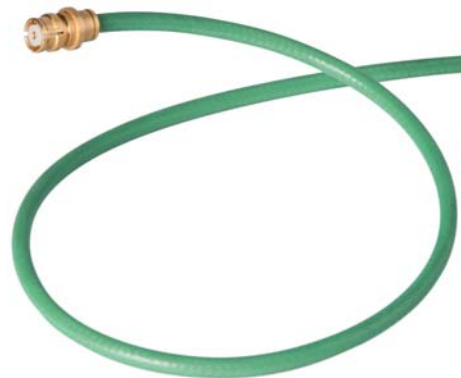


microbend™ 2SR

microbend 2SR offers all of the benefits of the standard microbend but with DSCC and MIL-STD-348 compliant SMP female connectors on each end. microbend 2SR replaces custom length, predefined bend configuration .047 inch semi-rigid cable with truly flexible, standard length, cost-effective coax cable for use as internal interconnections between RF modules in communications systems.

Features and benefits

- Frequency range up to 40 GHz
- Precision SMP female connectors mateable with Corning Gilbert GPO®
- Automatically ruggedised by design



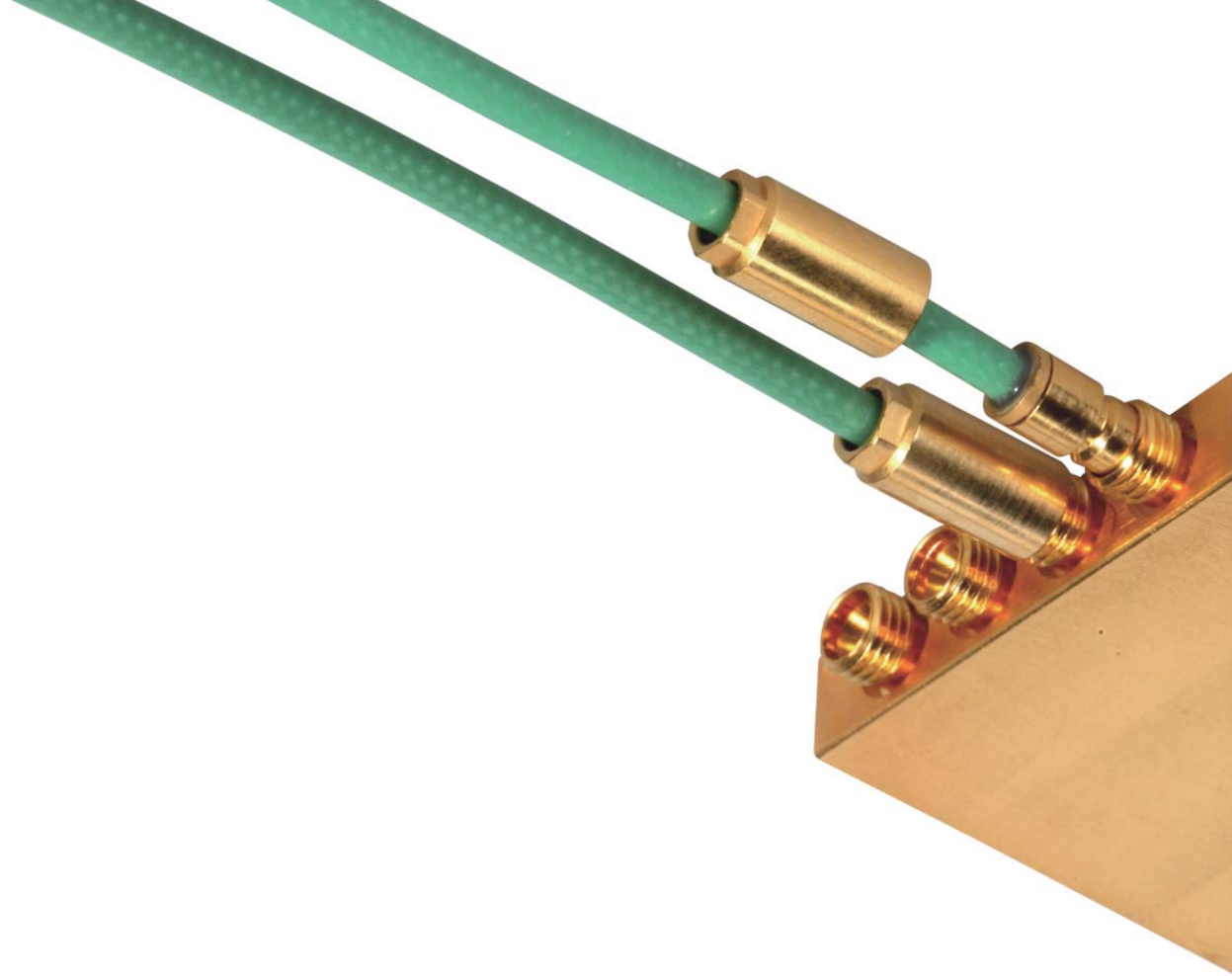
microbend™ V

microbend V is the millimeter wave version of the microbend and was designed for use in high-speed (40Gb/sec.) switching applications such as in fiber optic communications. microbend V has precision 1.85 mm plug connectors on each end that contain a gold plated BeCu contact for applications that require repeated mates/demates of the interface. microbend V replaces custom length, predefined bend configuration .047 inch semi-rigid cables with truly flexible, cost-effective, standard lengths.

Features and benefits

- Frequency range up to 65 GHz
- Precision 1.85 mm compatible plug connectors
- Automatically ruggedised by design





SMPM-T

The SMPM-T is the smallest threaded open source connector on the market. Its unique and innovative combination of a MIL-STD-348 SMPM female interface connector with a retractable threaded nut provides an integrated solution that offers unprecedented electrical and mechanical performance. The SMPM-T handles high density requirements with a connector centreline-to-centreline spacing of just 5 mm (0.20 inch) while offering unmatched electrical stability at frequencies up to 67 GHz in even the harshest operating environments (>12'000 g shock).

The SMPM-T connector is available along with Astrolab`s industry driving microbend «Bend-to-the-end» technology, which is already qualified for any aerospace application. The SMPM-T is designed to comply with the hi-rel material restrictions of NASA while still offering full compliance with RoHS and REACH legislation in the commercial market.

Qualifications

- MIL-DTL-17
- MIL-STD-810
- MIL-PRF-39012
- MIL-STD-1547
- MIL-PRF-55427
- MIL-STD-883
- MIL-STD-202
- MIL-PRF-31031

Item numbers

minibend™

Length mm/in	minibend	Item no.	minibend R	Item no.	minibend A	Item no.
63.5 /2.5	minibend-2.5	80337902	minibend R-2.5	80337536	minibend A-2.5	80336959
76.2/3	minibend-3	80337926	minibend R-3	80337569	minibend A-3	80336961
88.9/3.5	minibend-3.5	80337929	minibend R-3.5	80337570	minibend A-3.5	80336963
101.6/4	minibend-4	80337942	minibend R-4	80337585	minibend A-4	80336965
114.3/4.5	minibend-4.5	80337947	minibend R-4.5	80337587	minibend A-4.5	80366167
127 /5	minibend-5	80337959	minibend R-5	80337606	minibend A-5	80336969
139.7/5.5	minibend-5.5	80337960	minibend R-5.5	80337607	minibend A-5.5	80370925
152.4/6	minibend-6	80337969	minibend R-6	80337616	minibend A-6	80336971
165.1/6.5	minibend-6.5	80337972	minibend R-6.5	80337617	minibend A-6.5	80370926
177.8/7	minibend-7	80337981	minibend R-7	80337625	minibend A-7	80336973
203.2/8	minibend-8	80337990	minibend R-8	80337631	minibend A-8	80336974
228.6/9	minibend-9	80337999	minibend R-9	80337637	minibend A-9	80365469
254/10	minibend-10	80337853	minibend R-10	80337509	minibend A-10	80336954
279.4/11	minibend-11	80337859	minibend R-11	80337512	minibend A-11	80336955
304.8/12	minibend-12	80337864	minibend R-12	80337515	minibend A-12	80336956
330.2/13	minibend-13	80337873	minibend R-13	80337520	minibend A-13	80365470
355.6/14	minibend-14	80337877	minibend R-14	80337522	minibend A-14	80336957
381/15	minibend-15	80337881	minibend R-15	80337525	minibend A-15	80370927
406.4/16	minibend-16	80337886	minibend R-16	80337526	minibend A-16	80336958

Length mm/in	minibend E	Item no.	minibend K	Item no.	minibend KR	Item no.
63.5 /2.5	minibend E-2.5	80369350	minibend K-2.5	80337108	minibend KR-2.5	80337144
76.2/3	minibend E-3	80337037	minibend K-3	80337117	minibend KR-3	80337149
88.9/3.5	minibend E-3.5	80337040	minibend K-3.5	80337119	minibend KR-3.5	80366984
101.6/4	minibend E-4	80337046	minibend K-4	80337121	minibend KR-4	80337152
114.3/4.5	minibend E-4.5	80337047	minibend K-4.5	80337122	minibend KR-4.5	80362898
127 /5	minibend E-5	80337051	minibend K-5	80362456	minibend KR-5	80337154
139.7/5.5	minibend E-5.5	80337052	minibend K-5.5	80337128	minibend KR-5.5	80370656
152.4/6	minibend E-6	80337056	minibend K-6	80337129	minibend KR-6	80337156
165.1/6.5	minibend E-6.5	80337057	minibend K-6.5	80365648	minibend KR-6.5	80370930
177.8/7	minibend E-7	80337061	minibend K-7	80337130	minibend KR-7	80337157
203.2/8	minibend E-8	80337063	minibend K-8	80337132	minibend KR-8	80337160
228.6/9	minibend E-9	80370929	minibend K-9	80337134	minibend KR-9	80337161
254/10	minibend E-10	80337020	minibend K-10	80337097	minibend KR-10	80337138
279.4/11	minibend E-11	80337023	minibend K-11	80337098	minibend KR-11	80363429
304.8/12	minibend E-12	80337025	minibend K-12	80337099	minibend KR-12	80337139
330.2/13	minibend E-13	80366191	minibend K-13	80337100	minibend KR-13	80369274
355.6/14	minibend E-14	80337028	minibend K-14	80337101	minibend KR-14	80337140
381/15	minibend E-15	80337030	minibend K-15	80337102	minibend KR-15	80365529
406.4/16	minibend E-16	80363369	minibend K-16	80337103	minibend KR-16	80337141

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minibend™

Length mm/in	minibend KS	Item no.	minibend KV	Item no.	minibend QG	Item no.
63.5 /2.5	minibend KS-2.5	80365556	minibend KV-2.5	80337175	minibend QG-2.5	80370934
76.2/3	minibend KS-3	80367753	minibend KV-3	80337177	minibend QG-3	80361835
88.9/3.5	minibend KS-3.5	80374003	minibend KV-3.5	80360466	minibend QG-3.5	80370203
101.6/4	minibend KS-4	80368776	minibend KV-4	80337180	minibend QG-4	80337502
114.3/4.5	minibend KS-4.5	80374004	minibend KV-4.5	80337181	minibend QG-4.5	80367704
127 /5	minibend KS-5	80337165	minibend KV-5	80337182	minibend QG-5	80365999
139.7/5.5	minibend KS-5.5	80374005	minibend KV-5.5	80337183	minibend QG-5.5	80370935
152.4/6	minibend KS-6	80337166	minibend KV-6	80337184	minibend QG-6	80362867
165.1/6.5	minibend KS-6.5	80374006	minibend KV-6.5	80370931	minibend QG-6.5	80366000
177.8/7	minibend KS-7	80374007	minibend KV-7	80337185	minibend QG-7	80371525
203.2/8	minibend KS-8	80362863	minibend KV-8	80337187	minibend QG-8	80337503
228.6/9	minibend KS-9	80365458	minibend KV-9	80337188	minibend QG-9	80371780
254/10	minibend KS-10	80362038	minibend KV-10	80337169	minibend QG-10	80363167
279.4/11	minibend KS-11	80374008	minibend KV-11	80370094	minibend QG-11	80367645
304.8/12	minibend KS-12	80337162	minibend KV-12	80337170	minibend QG-12	80362486
330.2/13	minibend KS-13	80374009	minibend KV-13	80370932	minibend QG-13	80370936
355.6/14	minibend KS-14	80374010	minibend KV-14	80337171	minibend QG-14	80370937
381/15	minibend KS-15	80367162	minibend KV-15	80370933	minibend QG-15	80370938
406.4/16	minibend KS-16	80363850	minibend KV-16	80337172	minibend QG-16	80370939

Length mm/in	minibend S	Item no..	minibend SR	Item no.	minibend 2S	Item no.
63.5 /2.5	minibend S-2.5	80337655	minibend SR-2.5	80337687	minibend 2S-2.5	80336924
76.2/3	minibend S-3	80337657	minibend SR-3	80337692	minibend 2S-3	80336925
88.9/3.5	minibend S-3.5	80370940	minibend SR-3.5	80337693	minibend 2S-3.5	80336926
101.6/4	minibend S-4	80337658	minibend SR-4	80337698	minibend 2S-4	80336927
114.3/4.5	minibend S-4.5	80337660	minibend SR-4.5	80337699	minibend 2S-4.5	80370941
127 /5	minibend S-5	80337661	minibend SR-5	80337704	minibend 2S-5	80336928
139.7/5.5	minibend S-5.5	80337662	minibend SR-5.5	80365201	minibend 2S-5.5	80336929
152.4/6	minibend S-6	80337663	minibend SR-6	80337707	minibend 2S-6	80336931
165.1/6.5	minibend S-6.5	80367381	minibend SR-6.5	80370944	minibend 2S-6.5	80336932
177.8/7	minibend S-7	80337665	minibend SR-7	80337710	minibend 2S-7	80336934
203.2/8	minibend S-8	80337666	minibend SR-8	80337712	minibend 2S-8	80336937
228.6/9	minibend S-9	80337670	minibend SR-9	80362779	minibend 2S-9	80336938
254/10	minibend S-10	80337641	minibend SR-10	80337678	minibend 2S-10	80336918
279.4/11	minibend S-11	80337642	minibend SR-11	80337680	minibend 2S-11	80336919
304.8/12	minibend S-12	80337644	minibend SR-12	80337681	minibend 2S-12	80336920
330.2/13	minibend S-13	80365405	minibend SR-13	80370945	minibend 2S-13	80370942
355.6/14	minibend S-14	80337646	minibend SR-14	80337682	minibend 2S-14	80370943
381/15	minibend S-15	80337647	minibend SR-15	80370946	minibend 2S-15	80365859
406.4/16	minibend S-16	80337649	minibend SR-16	80337683	minibend 2S-16	80336921

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minibend™

Length mm/in	minibend 2SR	Item no.	minibend V	Item no.	minibend VG	Item no.
63.5 /2.5	minibend 2SR-2.5	80362615	minibend V-2.5	80337735	minibend VG-2.5	80337770
76.2/3	minibend 2SR-3	80369626	minibend V-3	80337738	minibend VG-3	80337772
88.9/3.5	minibend 2SR-3.5	80364002	minibend V-3.5	80337740	minibend VG-3.5	80368514
101.6/4	minibend 2SR-4	80369628	minibend V-4	80337743	minibend VG-4	80337773
114.3/4.5	minibend 2SR-4.5	80365267	minibend V-4.5	80337745	minibend VG-4.5	80366661
127 /5	minibend 2SR-5	80336948	minibend V-5	80337748	minibend VG-5	80337774
139.7/5.5	minibend 2SR-5.5	80370947	minibend V-5.5	80337750	minibend VG-5.5	80367949
152.4/6	minibend 2SR-6	80336949	minibend V-6	80337753	minibend VG-6	80337775
165.1/6.5	minibend 2SR-6.5	80370948	minibend V-6.5	80363214	minibend VG-6.5	80365363
177.8/7	minibend 2SR-7	80369627	minibend V-7	80337756	minibend VG-7	80337776
203.2/8	minibend 2SR-8	80365390	minibend V-8	80337760	minibend VG-8	80337779
228.6/9	minibend 2SR-9	80336951	minibend V-9	80337763	minibend VG-9	80370953
254/10	minibend 2SR-10	80363144	minibend V-10	80337721	minibend VG-10	80337765
279.4/11	minibend 2SR-11	80370949	minibend V-11	80337722	minibend VG-11	80367646
304.8/12	minibend 2SR-12	80360902	minibend V-12	80337723	minibend VG-12	80337766
330.2/13	minibend 2SR-13	80370950	minibend V-13	80370952	minibend VG-13	80370954
355.6/14	minibend 2SR-14	80370951	minibend V-14	80337727	minibend VG-14	80366546
381/15	minibend 2SR-15	80365860	minibend V-15	80363018	minibend VG-15	80370955
406.4/16	minibend 2SR-16	80363112	minibend V-16	80337729	minibend VG-16	80337768

Length mm/in	minibend WR	Item no.
63.5 /2.5	minibend WR-2.5	80365802
76.2/3	minibend WR-3	80337821
88.9/3.5	minibend WR-3.5	80337822
101.6/4	minibend WR-4	80337824
114.3/4.5	minibend WR-4.5	80370956
127 /5	minibend WR-5	80337826
139.7/5.5	minibend WR-5.5	80363605
152.4/6	minibend WR-6	80337827
165.1/6.5	minibend WR-6.5	80370957
177.8/7	minibend WR-7	80360521
203.2/8	minibend WR-8	80337830
228.6/9	minibend WR-9	80337832
254/10	minibend WR-10	80360440
279.4/11	minibend WR-11	80363606
304.8/12	minibend WR-12	80337814
330.2/13	minibend WR-13	80337815
355.6/14	minibend WR-14	80360441
381/15	minibend WR-15	80363222
406.4/16	minibend WR-16	80367832

minibend™ L

Length mm/in	minibend L	Item no.	minibend LR	Item no.	minibend LS	Item no.
63.5 /2.5	minibend L-2.5	80360176	minibend LR-2.5	80337368	minibend LS-2.5	80337463
76.2/3	minibend L-3	80337272	minibend LR-3	80337390	minibend LS-3	80337464
88.9/3.5	minibend L-3.5	80337273	minibend LR-3.5	80337392	minibend LS-3.5	80337465
101.6/4	minibend L-4	80337285	minibend LR-4	80337409	minibend LS-4	80337466
114.3/4.5	minibend L-4.5	80337286	minibend LR-4.5	80337412	minibend LS-4.5	80337467
127 /5	minibend L-5	80337292	minibend LR-5	80337423	minibend LS-5	80337468
139.7/5.5	minibend L-5.5	80337293	minibend LR-5.5	80337427	minibend LS-5.5	80337469
152.4/6	minibend L-6	80337298	minibend LR-6	80337433	minibend LS-6	80337470
165.1/6.5	minibend L-6.5	80337299	minibend LR-6.5	80337435	minibend LS-6.5	80337471
177.8/7	minibend L-7	80337304	minibend LR-7	80337443	minibend LS-7	80337475
203.2/8	minibend L-8	80337313	minibend LR-8	80337449	minibend LS-8	80337477
228.6/9	minibend L-9	80337318	minibend LR-9	80337451	minibend LS-9	80360501
254/10	minibend L-10	80337198	minibend LR-10	80337344	minibend LS-10	80337455
279.4/11	minibend L-11	80337201	minibend LR-11	80337348	minibend LS-11	80337456
304.8/12	minibend L-12	80337202	minibend LR-12	80337351	minibend LS-12	80337457
330.2/13	minibend L-13	80337207	minibend LR-13	80337355	minibend LS-13	80337458
355.6/14	minibend L-14	80337209	minibend LR-14	80337356	minibend LS-14	80337459
381/15	minibend L-15	80337212	minibend LR-15	80337357	minibend LS-15	80337460
406.4/16	minibend L-16	80337213	minibend LR-16	80337358	minibend LS-16	80337461

Length mm/in	minibend L2S	Item no.	minibend LA	Item no.
63.5 /2.5	minibend L2S-2.5	80337249	minibend LA-2.5	80370912
76.2/3	minibend L2S-3	80362626	minibend LA-3	80366857
88.9/3.5	minibend L2S-3.5	80367351	minibend LA-3.5	80370913
101.6/4	minibend L2S-4	80366004	minibend LA-4	80366135
114.3/4.5	minibend L2S-4.5	80337250	minibend LA-4.5	80370914
127 /5	minibend L2S-5	80363891	minibend LA-5	80370915
139.7/5.5	minibend L2S-5.5	80337251	minibend LA-5.5	80370916
152.4/6	minibend L2S-6	80365111	minibend LA-6	80366858
165.1/6.5	minibend L2S-6.5	80367341	minibend LA-6.5	80365398
177.8/7	minibend L2S-7	80370924	minibend LA-7	80370917
203.2/8	minibend L2S-8	80366005	minibend LA-8	80366622
228.6/9	minibend L2S-9	80361796	minibend LA-9	80366841
254/10	minibend L2S-10	80362894	minibend LA-10	80370918
279.4/11	minibend L2S-11	80370911	minibend LA-11	80370919
304.8/12	minibend L2S-12	80365427	minibend LA-12	80370920
330.2/13	minibend L2S-13	80366870	minibend LA-13	80370921
355.6/14	minibend L2S-14	80366871	minibend LA-14	80370922
381/15	minibend L2S-15	80366872	minibend LA-15	80370923
406.4/16	minibend L2S-16	80337248	minibend LA-16	80365399

mini141™

Length mm/in	mini141	Item no.	mini141 K	Item no.	mini141 N	Item no.
127/5	mini141-5	80336857	mini141 K-5	80336731	mini141 N-5	80336745
152.4/6	mini141-6	80336872	mini141 K-6	80336732	mini141 N-6	80336747
177.8/7	mini141-7	80336884	mini141 K-7	80336733	mini141 N-7	80365109
203.2/8	mini141-8	80336896	mini141 K-8	80336734	mini141 N-8	80336748
228.6/9	mini141-9	80336905	mini141 K-9	80336735	mini141 N-9	80366643
254/10	mini141-10	80336790	mini141 K-10	80336714	mini141 N-10	80363841
279.4/11	mini141-11	80336793	mini141 K-11	80362851	mini141 N-11	80362163
304.8/12	mini141-12	80336797	mini141 K-12	80336716	mini141 N-12	80336736
330.2/13	mini141-13	80336802	mini141 K-13	80336717	mini141 N-13	80366110
355.6/14	mini141-14	80336804	mini141 K-14	80336718	mini141 N-14	80336737
381/15	mini141-15	80336807	mini141 K-15	80362909	mini141 N-15	80361505
406.4/16	mini141-16	80336810	mini141 K-16	80336719	mini141 N-16	80336738

Length mm/in	mini141 T	Item no.	mini141 W	Item no.
127/5	mini141 T-5	80336751	mini141 W-5	80336781
152.4/6	mini141 T-6	80336752	mini141 W-6	80336784
177.8/7	mini141 T-7	80366192	mini141 W-7	80362734
203.2/8	mini141 T-8	80336753	mini141 W-8	80336785
228.6/9	mini141 T-9	80336912	mini141 W-9	80336786
254/10	mini141 T-10	80363433	mini141 W-10	80336765
279.4/11	mini141 T-11	80370800	mini141 W-11	80336766
304.8/12	mini141 T-12	80336911	mini141 W-12	80336767
330.2/13	mini141 T-13	80366954	mini141 W-13	80336768
355.6/14	mini141 T-14	80370801	mini141 W-14	80336769
381/15	mini141 T-15	80370802	mini141 W-15	80362735
406.4/16	mini141 T-16	80365426	mini141 W-16	80336772

microbend™

Length mm/in	microbend R	Item no.	microbend AR	Item no.	microbend KR	Item no.
63.5 /2.5	microbend R-2.5	80336652	microbend AR-2.5	80370830	microbend KR-2.5	80336568
76.2/3	microbend R-3	80336654	microbend AR-3	80370831	microbend KR-3	80336570
88.9/3.5	microbend R-3.5	80336655	microbend AR-3.5	80370832	microbend KR-3.5	80336571
101.6/4	microbend R-4	80336658	microbend AR-4	80336531	microbend KR-4	80336573
114.3/4.5	microbend R-4.5	80336659	microbend AR-4.5	80370833	microbend KR-4.5	80360390
127 /5	microbend R-5	80336662	microbend AR-5	80363838	microbend KR-5	80336574
139.7/5.5	microbend R-5.5	80336664	microbend AR-5.5	80370834	microbend KR-5.5	80336575
152.4/6	microbend R-6	80336665	microbend AR-6	80336532	microbend KR-6	80336576
165.1/6.5	microbend R-6.5	80363961	microbend AR-6.5	80370835	microbend KR-6.5	80367544
177.8/7	microbend R-7	80336667	microbend AR-7	80370836	microbend KR-7	80336578
203.2/8	microbend R-8	80336668	microbend AR-8	80336533	microbend KR-8	80336579
228.6/9	microbend R-9	80336669	microbend AR-9	80370837	microbend KR-9	80336580
254/10	microbend R-10	80336646	microbend AR-10	80336529	microbend KR-10	80336562
279.4/11	microbend R-11	80336648	microbend AR-11	80370838	microbend KR-11	80336563
304.8/12	microbend R-12	80336649	microbend AR-12	80362731	microbend KR-12	80336564

Length mm/in	microbend KMR	Item no.	microbend KMTR	Item no.	microbend KV	Item no.
63.5 /2.5	microbend KMR-2.5	80336550	microbend KMTR-2.5	80370885	microbend KV-2.5	80336581
76.2/3	microbend KMR-3	80336552	microbend KMTR-3	80370886	microbend KV-3	80370869
88.9/3.5	microbend KMR-3.5	80336553	microbend KMTR-3.5	80370887	microbend KV-3.5	80370870
101.6/4	microbend KMR-4	80336554	microbend KMTR-4	80370312	microbend KV-4	80363709
114.3/4.5	microbend KMR-4.5	80336555	microbend KMTR-4.5	80370888	microbend KV-4.5	80370871
127 /5	microbend KMR-5	80336556	microbend KMTR-5	80371852	microbend KV-5	80370872
139.7/5.5	microbend KMR-5.5	80336557	microbend KMTR-5.5	80370889	microbend KV-5.5	80370873
152.4/6	microbend KMR-6	80336558	microbend KMTR-6	80362186	microbend KV-6	80336582
165.1/6.5	microbend KMR-6.5	80362862	microbend KMTR-6.5	80370890	microbend KV-6.5	80370874
177.8/7	microbend KMR-7	80336559	microbend KMTR-7	80370891	microbend KV-7	80370875
203.2/8	microbend KMR-8	80336560	microbend KMTR-8	80365259	microbend KV-8	80370876
228.6/9	microbend KMR-9	80336561	microbend KMTR-9	80370892	microbend KV-9	80370877
254/10	microbend KMR-10	80336545	microbend KMTR-10	80369837	microbend KV-10	80370878
279.4/11	microbend KMR-11	80336546	microbend KMTR-11	80370893	microbend KV-11	80370879
304.8/12	microbend KMR-12	80336547	microbend KMTR-12	80362144	microbend KV-12	80369706

microbend™

Length mm/in	microbend MR	Item no.	microbend 2MR	Item no.	microbend MTR	Item no.
63.5 /2.5	microbend MR-2.5	80336593	microbend 2MR-2.5	80336485	microbend MTR-2.5	80370846
76.2/3	microbend MR-3	80336595	microbend 2MR-3	80336490	microbend MTR-3	80371995
88.9/3.5	microbend MR-3.5	80336596	microbend 2MR-3.5	80362597	microbend MTR-3.5	80370847
101.6/4	microbend MR-4	80336598	microbend 2MR-4	80336496	microbend MTR-4	80366736
114.3/4.5	microbend MR-4.5	80370842	microbend 2MR-4.5	80370033	microbend MTR-4.5	80370848
127 /5	microbend MR-5	80336599	microbend 2MR-5	80336500	microbend MTR-5	80366725
139.7/5.5	microbend MR-5.5	80336600	microbend 2MR-5.5	80370844	microbend MTR-5.5	80370849
152.4/6	microbend MR-6	80336603	microbend 2MR-6	80336501	microbend MTR-6	80361103
165.1/6.5	microbend MR-6.5	80370843	microbend 2MR-6.5	80370845	microbend MTR-6.5	80370850
177.8/7	microbend MR-7	80365284	microbend 2MR-7	80362973	microbend MTR-7	80366726
203.2/8	microbend MR-8	80336605	microbend 2MR-8	80336507	microbend MTR-8	80396610
228.6/9	microbend MR-9	80365285	microbend 2MR-9	80336509	microbend MTR-9	80362047
254/10	microbend MR-10	80360212	microbend 2MR-10	80336477	microbend MTR-10	80366737
279.4/11	microbend MR-11	80336588	microbend 2MR-11	80336478	microbend MTR-11	80370851
304.8/12	microbend MR-12	80336590	microbend 2MR-12	80336480	microbend MTR-12	80362145

Length mm/in	microbend 2MTR	Item no.	microbend MVR	Item no.
63.5 /2.5	microbend 2MTR-2.5	80370855	microbend MVR-2.5	80336620
76.2/3	microbend 2MTR-3	80366641	microbend MVR-3	80336623
88.9/3.5	microbend 2MTR-3.5	80367802	microbend MVR-3.5	80336626
101.6/4	microbend 2MTR-4	80370856	microbend MVR-4	80336633
114.3/4.5	microbend 2MTR-4.5	80366674	microbend MVR-4.5	80370862
127 /5	microbend 2MTR-5	80367803	microbend MVR-5	80336638
139.7/5.5	microbend 2MTR-5.5	80370857	microbend MVR-5.5	80370863
152.4/6	microbend 2MTR-6	80365945	microbend MVR-6	80336640
165.1/6.5	microbend 2MTR-6.5	80370858	microbend MVR-6.5	80370864
177.8/7	microbend 2MTR-7	80367804	microbend MVR-7	80336641
203.2/8	microbend 2MTR-8	80360654	microbend MVR-8	80336643
228.6/9	microbend 2MTR-9	80367805	microbend MVR-9	80336645
254/10	microbend 2MTR-10	80367172	microbend MVR-10	80336613
279.4/11	microbend 2MTR-11	80370859	microbend MVR-11	80370865
304.8/12	microbend 2MTR-12	80362560	microbend MVR-12	80336614

microbend™

Length mm/in	microbend SR	Item no.	microbend 2SR	Item no..	microbend V	Item no.
63.5 /2.5	microbend SR-2.5	80336674	microbend 2SR-2.5	80336515	microbend V-2.5	80336690
76.2/3	microbend SR-3	80366686	microbend 2SR-3	80336518	microbend V-3	80336692
88.9/3.5	microbend SR-3.5	80336676	microbend 2SR-3.5	80365453	microbend V-3.5	80336693
101.6/4	microbend SR-4	80336677	microbend 2SR-4	80336521	microbend V-4	80336695
114.3/4.5	microbend SR-4.5	80363639	microbend 2SR-4.5	80366525	microbend V-4.5	80336696
127 /5	microbend SR-5	80336679	microbend 2SR-5	80336522	microbend V-5	80366545
139.7/5.5	microbend SR-5.5	80363701	microbend 2SR-5.5	80336523	microbend V-5.5	80365644
152.4/6	microbend SR-6	80336681	microbend 2SR-6	80336524	microbend V-6	80336700
165.1/6.5	microbend SR-6.5	80366676	microbend 2SR-6.5	80365939	microbend V-6.5	80370906
177.8/7	microbend SR-7	80336684	microbend 2SR-7	80365452	microbend V-7	80370907
203.2/8	microbend SR-8	80336685	microbend 2SR-8	80336525	microbend V-8	80366953
228.6/9	microbend SR-9	80336686	microbend 2SR-9	80365455	microbend V-9	80365792
254/10	microbend SR-10	80370899	microbend 2SR-10	80363819	microbend V-10	80336689
279.4/11	microbend SR-11	80370900	microbend 2SR-11	80365454	microbend V-11	80370908
304.8/12	microbend SR-12	80336671	microbend 2SR-12	80362685	microbend V-12	80362488

FAQ - Frequently Asked Questions

Can any other connector besides an SMA plug be used in a minibend™, microbend or mini141 assembly?

Yes! We now offer a 65.0 GHz 1.85 mm plug, 40.0 GHz 2.9 mm plug, 50 GHz 2.4 mm plug, 26.5 GHz BMA plug, 40.0 GHz SMP pin and socket, 26.0 GHz SSMA plug and jack and a variety of SMA jack minibend connectors!

You can, however, order a minibend assembly with the SMA, SSMA, 1.85 mm, SMP, BMA, 2.9 mm (SMK), or other minibend connector on one end and another connector style on the other.

With microbend, Astrolab offers SMPM-T, SMPM, SMA plug, SMP, 2.9 mm (SMK), SSMA, SMA jack (flange), 1.85 mm/2.4 mm connectors.

With mini141, Astrolab offers SMA plug, SMA jack, SSMA plug, ATNC plug, N plug and BMA float mount, 2.9 mm (SMK) and weatherised assemblies.

What is the shortest standard length minibend assembly?

We can supply 44.5 mm (1.75 inch) minibend and microbend assemblies. With mini141, our shortest standard length is 127 mm (5 inch). Non-standard lengths can be supplied per customer request.

Can you make minibend, microbend and mini141 assemblies longer than 406.4 mm (16 inch) ?

minibend and mini141 were designed to replace standard .085 and .141 semi-rigid cable assemblies which are generally shorter than 406.4 mm (16 inch) in length. Lengths longer than 406.4 mm are supplied as minibend R assemblies. Most customers who request lengths longer than 406.4 mm (16 inch) want to use minibend as a test cable. minibend and mini141 were not designed to be used as a test cable assembly. Instead, please ask about our test & measurement cable assembly portfolio.

microbend assemblies were designed to replace .047 inch semi-rigid assemblies which are generally shorter than 304.8 mm (12 inch).

Can minibend be phased matched?

The ± 6.35 mm (0.25 inch) length tolerance of minibend and microbend yields a $\pm 21.6^\circ$ phase match at 2.0 GHz. minibend, microbend and mini141 cannot be trimmed after assembly. We could select a test on special order but sorting would be limited to standard length assemblies. The cost of this service would depend on the degree of phase matching and the frequency. Typically, phase matching $\pm 5^\circ$ @ 2.0 GHz. would be 2 x and phase matching $\pm 7.5^\circ$ @ 18.0 GHz. would be 4 x the cost of a standard minibend assembly. Contact our sales department for your specific requirements.

mini141 and minibend L will have different phases to minibend or microbend, $\pm 20^\circ$ phase matched at 2 GHz.

What environmental limits have minibend, microbend and mini141 been tested to?

(Note: Ask about minibend WR and mini141 W which are environmentally sealed, the ruggedised minibend R and minibend L which have an extended temperature range, and minibend E for space applications.)

Temperature range:

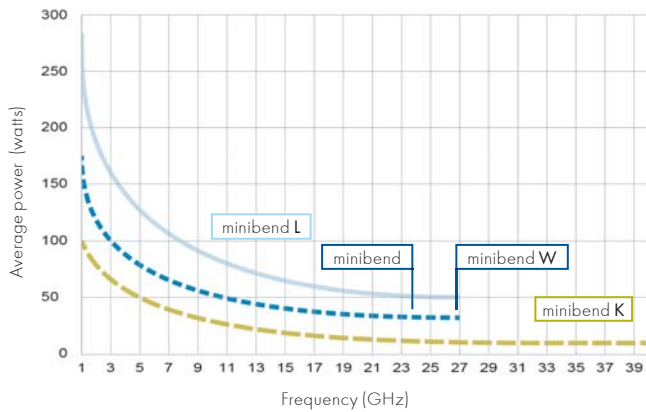
- 45 °C to + 85 °C
only standard minibend (SMA connectors, not ruggedised)

- 55 °C to + 125 °C
all other minibends, minibend L, mini141, microbend

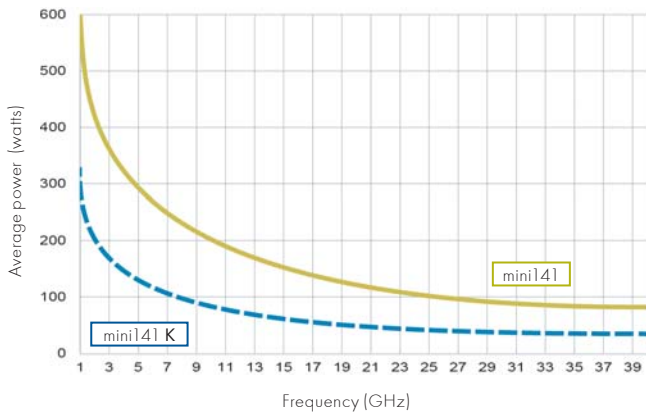
How much power can minibend, mini141 and microbend handle?

(Power handling based on ambient temperature at 25 °C and altitude at sea level)

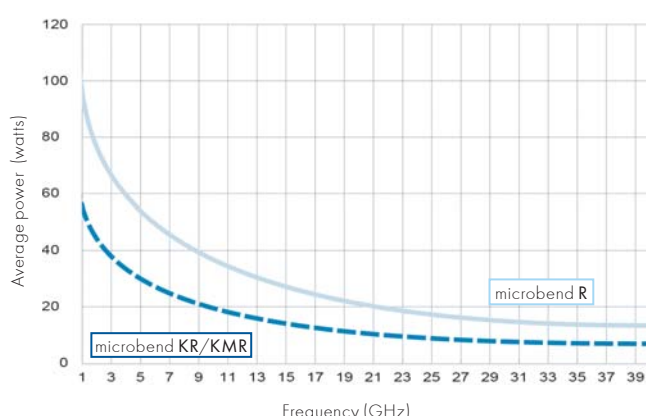
Graph 1: Power handling (minibend)



Graph 2: Power handling (mini141)



Graph 3: Power handling (microbend)

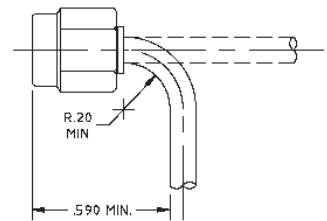


Aren't minibend, mini141 and microbend just more «comformable», «tin dipped» outer conductor cables?

Absolutely not! minibend, mini141 and microbend are truly flexible cable assemblies with three shields (flat wire braid outer conductor, Kapton/aluminium inner layer and stainless steel round wire outer braid) and an extruded FEP outer jacket. No solder is used anywhere on the outer conductor.

How tight a bend can minibend handle?

± 180° over a 5.08 mm (0.20 inch) radius.
 (90° over a 3.8 mm (0.15 inch) radius once only)



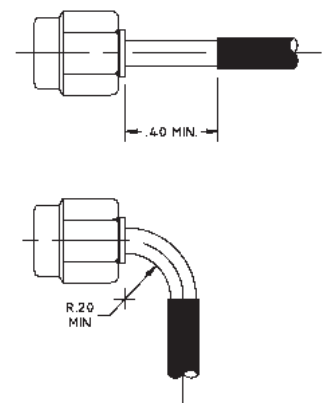
How far back from the SMA connector can I bend the cable?

14.99 mm (0.590 inch) from the face of the SMA nut.
 13.72 mm (0.540 inch), if 3.80 mm (0.15 inch) bend radius)

**Can I add a marker sleeve?
 Where can I locate it?**

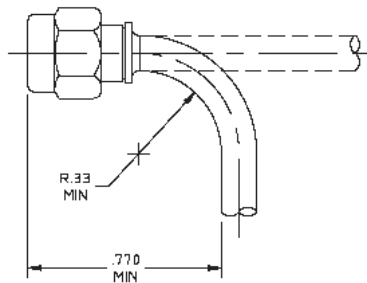
Yes, but do not violate the minimum bend radius of the minibend. Marker sleeves and Brady Lables™ are not as flexible as the minibend.

If they are located too close to the connector, the cable could be overstressed by a bend radius that is too small. To avoid this, locate the marker sleeve at least 10.16 mm (0.40 inch) from the back end of the connector.



How tight a bend can mini141 handle?

±180° over a 8.38 mm (0.33 inch) radius.



How far back from the SMA connector can I bend the cable?

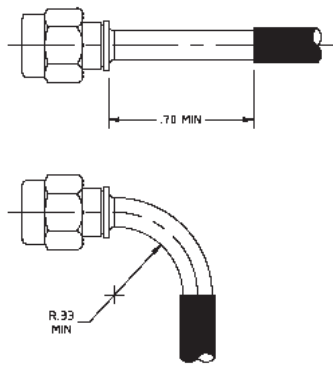
19.56 mm (0.770 inch) from the face of the SMA nut.

Can I add a marker sleeve?

Where can I locate it?

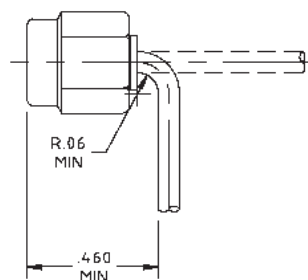
Yes, but do not violate the minimum bend radius of the mini141. marker sleeves and Brady Labels are not as flexible as the mini141.

If they are located too close to the connector, the cable could be overstressed by a bend radius that is too small. To avoid this, locate the marker sleeve at least 17.78 mm (0.70 inch) from the back end of the connector.



How tight a bend can microbend handle?

±180° over a 1.52 mm (0.06 inch) radius.



How far back from the SMA connector can I bend the cable?

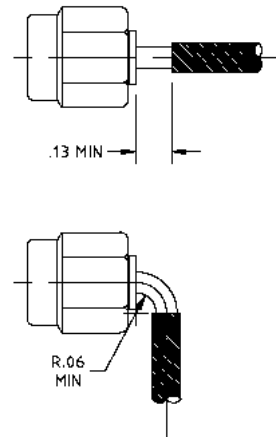
11.43 mm (0.450 inch) from the face of the SMA nut.

Can I add a marker sleeve?

Where can I locate it?

Yes, but do not violate the minimum bend radius of the microbend. Marker sleeves and Brady Labels™ are not as flexible as the microbend.

If they are located too close to the connector, the cable could be overstressed by a bend radius that is too small. To avoid this, locate the marker sleeve at least 3.30 mm (0.13 inch) from the back end of the connector.



How many times can I bend the cable?

± 90° bends over the minimum bend radius, a minimum of 30 times without degradation in VSWR or insertion loss. Larger radii and smaller bend angles will allow more bend cycles.

What do you mean by a «truly flexible» cable?

minibend, microbend and mini141, unlike «conformable» coaxial cables, can be repeatedly bent as defined in question 1 & 2 at any point along the length of the cable without damage. However, the standard minibend and microbend cannot tolerate repeated torsional stress by rotating or twisting around a fixed point. See our minibend R which is designed to tolerate higher cable retention forces.

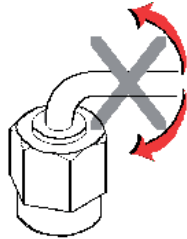
Are there any «anti-torque» features built into minibend and microbend to prevent the cables from rotating while the SMA nut is torqued down?

minibend and microbend do not require any external «anti-torque» features. Other SMA male connectors use a snap ring to retain the SMA nut to the connector body. After the nut is fitted hand tight to the mating connector, the body will rotate up to 15° while the SMA nut is torqued (the snap ring acts as a bearing surface which allows more movement). mini bend and microbend connectors do not use snap rings so they rotate less than 5° while the SMA nut is being torqued.

How far can I rotate the minibend and microbend after bending the cable and torquing the SMA nut?

minibend, mini141 and microbend were designed to be bent close to the back end of the connector on a tight radius.

Do NOT rotate or twist the standard minibend cable after the connector is mated and torqued down. See our new minibend R which is designed to tolerate multiple $\pm 90^\circ$ bends at the cable/connector junction.



Can minibend be used in a space environment?

minibend has an established history of use in several space-craft applications. All materials used in the manufacture of minibend meet or exceed NASA outgassing requirements for < 0.10 % CVCM and < 1.0 % TML. The minibend cable has been certified to withstand 4 megarads minimum of ionising radiation without degradation. mini141, minibend L and microbend have been used on space platforms.

How do I construct the part number for a minibend assembly?

Selecting the minibend, minibend L, mini141 or microbend assembly that best meets your needs requires careful consideration of the frequency, power rating and I.L. requirements of the assembly. We also offer phase, amplitude and electrical length matched versions of the minibend product family. Once you have identified your requirements, you can begin designing your minibend, minibend L, mini141 or microbend assembly.

1. Cable

HUBER+SUHNER Astrolab offers the patented minibend connector attachment method on four high performance, high frequency coaxial cables.

32081/32081S - minibend: A mechanically strong cable that replaces traditional .086 inch diameter semi-rigid cable. It offers excellent resistance to flame, corrosion, elongation, and compression and has high pull strength. This cable offers extremely stable I.L. up to 65.0 GHz.

32024 - minibend L: A durable, low loss alternative to .086 inch diameter semi-rigid cable offering 30 % less attenuation. It offers excellent resistance to flame and corrosion in addition to excellent phase and amplitude stability. This cable is available for applications up to 50.0 GHz.

32022 - mini141: A strong, low loss alternative to .141 inch diameter semi-rigid cable offering 20 % less attenuation. It offers excellent pull strength and resistance to flame, corrosion, and elongation. This cable also provides exceptional phase stability for applications up to 40.0 GHz.

32041 - microbend: An ultra-flexible replacement for .047 inch diameter semi-rigid cable with over 30 % less attenuation. This cable offers excellent pull strength and mechanical durability for its small size. It is also electrically stable up to 90.0 GHz.

2. Connectors

For assemblies other than the ones mentioned in this product catalogue, please contact your sales representative.

We will be pleased to identify a customised solution for your particular needs.

How can I determine the length of my minibend cable assembly?

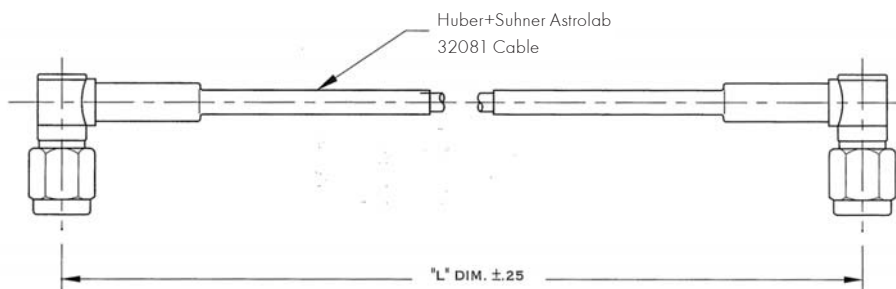
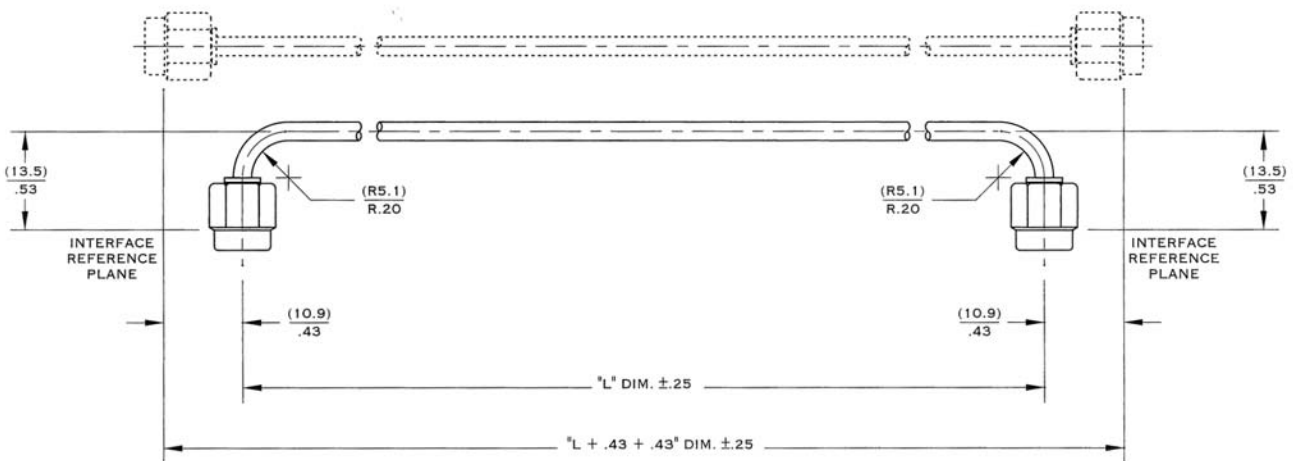
Cable assembly length is defined as the distance between the reference planes or center lines of connectors A and B. The default unit of measure is inches; however, you can also purchase cable assemblies using metric units such as millimeters, centimeters, or meters. This assembly length calculation is applicable for installations where the cable makes a straight path between the two connectors.

HUBER+SUHNER Astrolab's minibend connectors were designed to replace the traditional right angle box and sweep connectors with a lower profile straight connector to allow for point-to-point installations in systems where there is minimal free space. This technology utilizes the cable to perform the 90° bend behind the connector. For any system where the minibend is replacing right angle connectors, the length of the assembly must be increased to include the additional cable length required to make the bend behind the connector.

The figures below show how long the minibend cable assembly must be from reference plane to reference plane if it is to replace a traditional right angle connector assembly.

Where do I find the additional dimensions to add to my assembly length calculation when replacing 90°, box, or sweep connectors?

The additional dimensions have been included in the individual connector drawings. The figure below shows their location. This dimension should be added to the overall length for each 90° box, or sweep connector to be replaced in the assembly to obtain a minibend with the same fit and function.



Online platforms



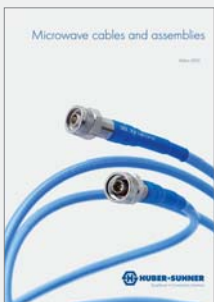
The longstanding experience and know-how of our engineers allows HUBER+SUHNER to operate on a global scale, yet with a local approach tailored to each market. As a one-stop-shop for connectors, cables, cable assemblies, cable systems, antennas and lightning protectors in our three core technologies, we can address our clients' needs for multi-technological solutions in the communication, transportation and industrial markets.

HUBER+SUHNER maintains its competitiveness by continuously innovating products and services in an environmentally beneficial and sustainable manner. We add new technologies and abilities to our portfolio of competences to ensure the long-term success of HUBER+SUHNER and our customers. Please consult our selection page under www.hubersuhner.com



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