



BNC Coaxial Interface

Grounded and Floating Shield Feedthroughs

UHV Feedthrough, 110116
Conflat® compatible flange

UHV female cable⁴ assembly,
110180, stainless steel
Accufast™ connector and
Kapton® insulated coaxial
cable.

Air-service female cable⁴
assembly, 110185,
connector and cable

UHV in-vacuum User-specified End
options¹, left to right: Non-terminated
.51 User end, .52 SMA and .53 BNC

BNC Coaxial Interface

The 'Bayonet Neill-Concelman' connector, referred to as a BNC coaxial connection, is commonly used in conjunction with low noise 50-ohm instrumentation signal lines. BNC coaxial feedthroughs are constructed in both grounded and floating shield configurations. Floating shield types provide two concentric conductor paths: an outer metal conductor tube (shield) concentric with, and enclosing, a cylindrical center conductor pin. Both paths are electrically isolated from each other and a mounting flange. Grounded shield BNCs provide only one path that's electrically isolated from the flange, where grounded shield and flange are electrically common.

Vacuum side of single-ended grounded and floating BNC feedthroughs have a 0.094 inch (2.4-mm) diameter conductor pin that mates with grounded or floating AccuFast™ connectors.

Warning — BNC socket contacts are recessed deeper than on MHV feedthroughs and are electrically incompatible. They should never be cross mated. To prevent accidental cross mating in mixed low and high voltage coaxial applications use SHV-5 feedthroughs found on page 76.

BNC
Feedthrough
Interface
.121 to .149
Shell-to-Pin offset



MHV
Feedthrough
Interface
.047 to .082
Shell-to-Pin offset



Features

- BNC Coaxial Interface
- Grounded and Floating Shield
- Single and Double Ended configurations
- Kapton® insulated 50-Ohm cable
- High temperature rated to 250°C
- UHV compatible construction
- Conflat® and ISO KF compatible mounts
- Air service cables / connectors
- Custom solutions on request

Specifications

Electrical

Voltage ¹ , Maximum — Grounded Shield	500 VDC
Voltage ¹ , Maximum — Floating Shield	2500 VDC
Current, Maximum @ 20°C	3 A

Material

Shell	304 Stainless Steel
Pin / Conductor	Ni Plated Stainless Steel
Insulation	Alumina Ceramic
Connector, Vacuum ²	
Accufast™	Stainless Steel, PEEK
BNC	Ni plated brass, PEEK
SMA	Au plated brass, PEEK
User-End	Stainless Steel, Au plated BeCu, PEEK
Connector, Air	Composite
Cable Insulation	Kapton® Type-F Film

Vacuum Range

UHV, Ultrahigh vacuum	1x10 ⁻¹⁰ Torr
HV, High vacuum	1x10 ⁻⁸ Torr

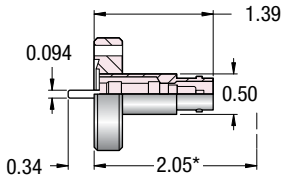
Temperature Range³

Feedthrough	-200° to 450°C
Flange Mount, Conflat®	450°C
Flange Mount, ISO	150°C
Connector / Cable, Vacuum	250°C
Connector / Cable, Air	165°C
Thermal Gradient	25°C / Minute Maximum

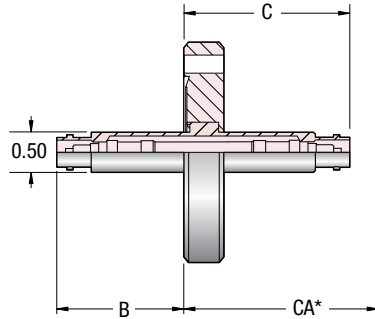
Notes

1. Electrical ratings are maximum test values, with feedthrough's vacuum side at $\leq 1 \times 10^{-4}$ Torr. Feedthroughs are intended for instrumentation applications carrying low level signal voltage and current.
 2. PEEK is a polyether ether ketone thermoplastic.
 3. Overall assembly ratings must be adjusted to that of its lowest rated component. For cryogenic service, the lowest recommended temperature is -200°C
 4. Connectors and cables are not included with feedthrough and must be purchased separately.
- § Unless specified otherwise, dimensional units in all sections of this catalog are expressed in inches.

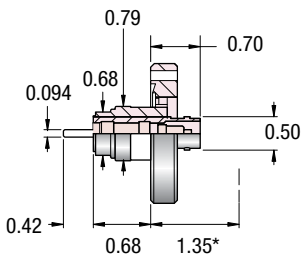
Grounded Shield — Single-Ended
Fig. 1



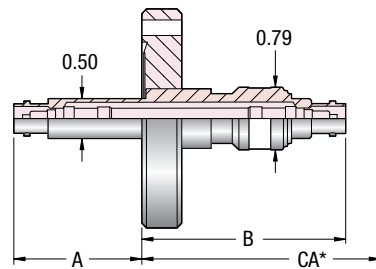
Double-Ended
Fig. 2



Floating Shield — Single-Ended
Fig. 3



Double-Ended
Fig. 4



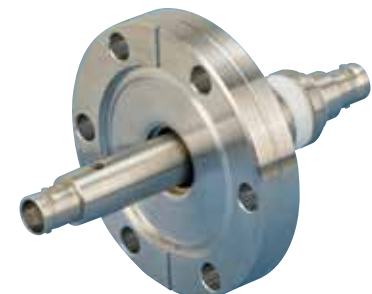
110116 / Single-Ended BNC Grounded Shield



110119 / Single-Ended BNC Grounded Shield



110130 / Single-Ended BNC Floating Shield



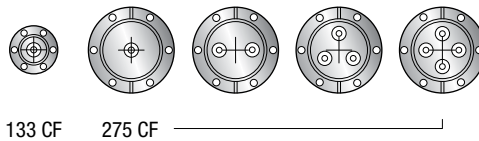
110132 / Double-Ended BNC Floating Shield

Coaxial

No. Pins	SE Circle
1	—
2	0.85
3	0.85
4	0.85

* Connector Attached

End Views showing feedthrough placements



CF Flange¹ — 3 Amp / 250°C / UHV to 1x10⁻¹⁰ Torr

No. Pins	End ² Fig.	CF Type	Flange	OD	B	C	CA	Model Number	Part Number	Unit Price \$
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Grounded Shield — 500 VDC Pin to Ground

1	1	SE	133 CF	1.33	—	—	—	BNC-GS-133	110115	105
1	1	SE	275 CF	2.73	—	—	—	BNC-GS-275	110116	111
2	1	SE	275 CF	2.73	—	—	—	BNC-GS2-275	110117	158
3	1	SE	275 CF	2.73	—	—	—	BNC-GS3-275	110118	216
4	1	SE	275 CF	2.73	—	—	—	BNC-GS4-275	110119	273
1	2	DE	133 CF	1.33	1.08	2.55	3.20	2BNC-GS-133	110120	310
1	2	DE	275 CF	2.73	1.58	2.05	2.70	2BNC-GS-275	110121	314

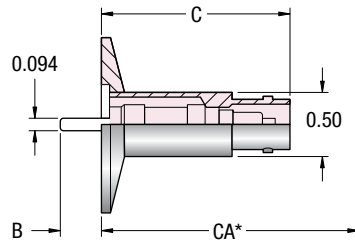
Floating Shield — 2500 VDC Shield to Ground

1	3	SE	275 CF	2.73	—	—	—	BNC-FS-275	110130	237
1	4	DE	133 CF	1.33	1.20	2.91	3.56	2BNC-FS-133	110131	405
1	4	DE	275 CF	2.73	1.60	2.51	3.16	2BNC-FS-275	110132	415

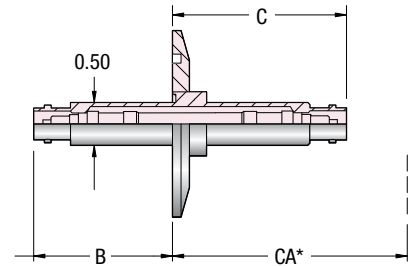
1. Compatible with Conflat® flanges and hardware 2. SE (single-ended) DE (double ended)



Grounded Shield — Single-Ended
Fig. 1

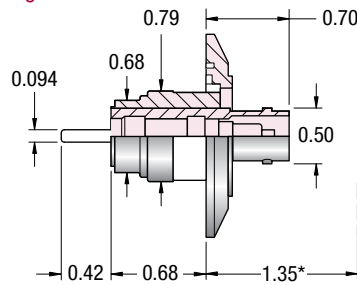


Double-Ended
Fig. 2

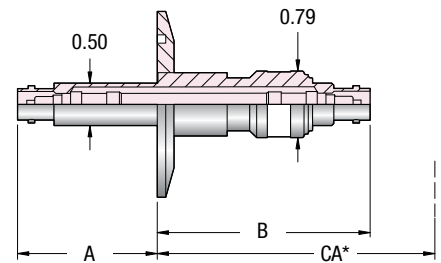


110126 / Single-Ended BNC
Grounded Shield

Floating Shield — Single-Ended
Fig. 3



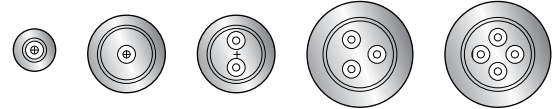
Double-Ended
Fig. 4



110146 / Double-Ended BNC
Grounded Shield

No. Pins	SE Circle	DE Circle
1	—	—
2	0.75	.875
3	0.85	1.10
4	0.85	—

End Views showing feedthrough placements



* Connector Attached

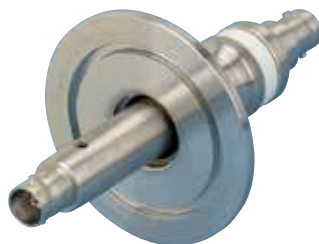
NW16 KF

NW40 KF

NW50 KF



110135 / Single-Ended BNC
Floating Shield



110137 / Double-Ended BNC
Floating Shield

ISO KF Flange¹ — 3 Amp / 150°C / HV to 1x10⁻⁸ Torr

No. Pins	End ² Fig.	ISO Type	ISO Flange	OD	B	C	CA	Model Number	Part Number	Unit Price \$
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Grounded Shield — 500 VDC

1	1	SE	NW16 KF	1.18	0.30	1.44	2.10	BNC-GS-K16	110125	103
1	1	SE	NW40 KF	2.16	0.40	1.34	2.00	BNC-GS-K40	110126	105
1	1	SE	NW50 KF	2.95	0.40	1.34	2.00	BNC-GS-K50	111327	111
2	1	SE	NW40 KF	2.16	0.40	1.34	2.00	BNC-GS2-K40	110127	137
2	1	SE	NW50 KF	2.95	0.40	1.34	2.00	BNC-GS2-K50	111326	158
3	1	SE	NW50 KF	2.95	0.40	1.34	2.00	BNC-GS3-K50	110128	252
4	1	SE	NW50 KF	2.95	0.40	1.34	2.00	BNC-GS4-K50	110129	310
1	2	DE	NW16 KF	1.18	1.08	2.55	3.20	2BNC-GS-K16	110145	310
1	2	DE	NW40 KF	2.16	1.58	2.05	2.70	2BNC-GS-K40	110146	315
1	2	DE	NW50 KF	2.95	1.58	2.05	2.70	2BNC-GS-K50	111325	326
2	2	DE	NW50 KF	2.95	1.58	2.05	2.70	2BNC-GS2-K50	110147	499
3	2	DE	NW50 KF	2.95	1.58	2.05	2.70	2BNC-GS3-K50	110148	730

Floating Shield — 2500 VDC

1	3	SE	NW40 KF	2.16	—	—	—	BNC-FS-K40	110135	237
1	4	DE	NW16 KF	1.18	1.25	2.86	3.51	2BNC-FS-K16	110136	405
1	4	DE	NW40 KF	2.16	1.65	2.46	3.11	2BNC-FS-K40	110137	415

1. Compatible with ISO 2861/1 specification flanges and hardware 2. SE (single-ended) DE (double ended)

See page 62 for **Specifications**

Ultrahigh Vacuum Cable Assemblies

The cables assemblies listed below use Accu-Glass Products' TYP6, 26 AWG, coaxial cable (part number 100720, listed on page 99). These components are UHV compatible to 1×10^{-10} Torr.

Connector to Cable UHV cable assemblies are fitted with stainless steel Accufast™ or BNC Male connectors at one end and a non-terminated, Kapton® insulated wire at the other. The connectors mate directly to the in-vacuum side of our BNC feedthrough flanges on pages 63 and 64.

Connector to User-Specified End UHV cable assemblies are fitted with stainless steel Accufast™ or BNC Male connectors at one end and a user-specified connector at the other: SMA Male, BNC Male or User-End Female.

Cables — 250°C / UHV to 1×10^{-10} Torr

Connector Type	Figure (Below)	Wire Length	Connector Name	Model Number	Part Number	Unit Price \$
Connector to Cable						
Grounded	1	19	Accufast™ 500	KAP-1CX-19AF500	110180	175
Grounded	1	39	Accufast™ 500	KAP-1CX-39AF500	110181	185
Floating	2	19	Accufast™ 875	KAP-1CX-19AF875	110182	175
Floating	2	39	Accufast™ 875	KAP-1CX-39AF875	110183	185
BNC	—	19	BNC Male	KAP-1CX-19BNC	110775	95
BNC	—	39	BNC Male	KAP-1CX-39BNC	110776	105

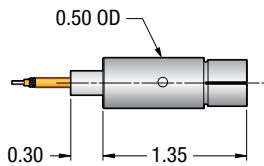
Connector to User-Specified End Options

1 Contact	3	User-End Female	Append to Part Number	.51	170
1 Contact	—	SMA Male	Append to Part Number	.52	90
1 Contact	—	SMA Female	Append to Part Number	.54	90
1 Contact	—	BNC Male	Append to Part Number	.53	90

These are sold as additions to the above cable assemblies and are added at the factory only. Price is added to the unit price. For example, Part Number 110183.53 would have a price of \$275.

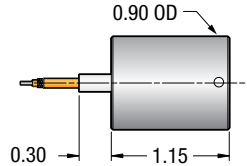
Grounded Shield

Fig. 1



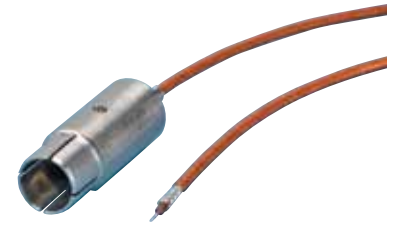
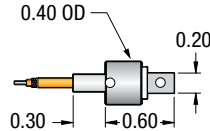
Floating Shield

Fig. 2

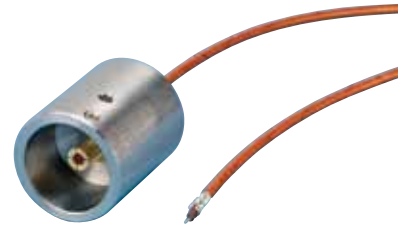


User-End

Fig. 3



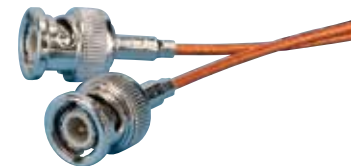
110180 / Grounded Shield UHV Connector



110182 / Floating Shielded UHV Connector



.51, .52 and .53 / User End Female, SMA Male and BNC Male



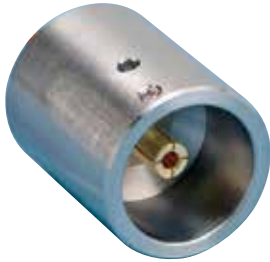
110775.53 / BNC to BNC UHV Cable

See page 62 for **Specifications**

See page 94 for **Cable Specs**



111020 / Accufast™ 500 UHV Connector



111021 / Accufast™ 875 UHV Connector



111023 / BNC Male UHV Connector



111022 / Generic User-End UHV Connector



110950 / BNC to BNC UHV Adapter

Ultrahigh Vacuum Connectors

Components in this section are sold as the most basic components. Connectors do not include wire or cable.

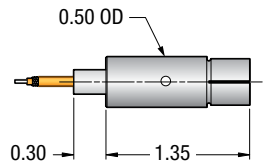
Connectors are designed for use with our TYP6, 26 AWG, coaxial cable (part number 100720, page 99). Use of these connectors on other coaxial cable may require modification to the crimp sleeve of the connector. Please call before ordering if using with other coaxial cable.

Accufast™ 500 and 875 connectors mate directly to the vacuum side of corresponding single-ended feedthroughs on page 63 and 64.

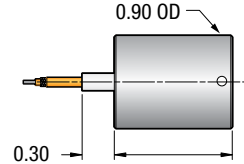
Connectors — 250°C / UHV to 1x10⁻¹⁰ Torr

Connector Type	Figure (Below)	Connector Name	Model Number	Part Number	Unit Price \$
Grounded	1	Accufast™ 500	AF500	111020	155
Floating	2	Accufast™ 875	AF875	111021	155
BNC	—	UHV BNC Male	BNC-UHV-P	111023	80
Generic	3	USER-END	USER-END	111022	145

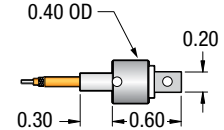
Grounded Shield
Fig. 1



Floating Shield
Fig. 2



User-End
Fig. 3



Assembly Tools and Components

Hex Crimping Tool	1 ea.	HCT-1	111029	95
UHV Solder	1 inch	UHV-SOLDER	110796	39
Solder Flux	1 ea.	S-FLUX	110797	45
Soldering Iron	1 ea.	S-IRON	110800	155

Ultrahigh Vacuum Adapters

Adapters are designed with PEEK insulating sleeve inside of a nickel-plated copper shell. These adapters offer mating of two BNC male connectors inside a vacuum.

Adapters — 250°C / UHV to 1x10⁻¹⁰ Torr

Connector Type	Gender	Model Number	Part Number	Unit Price \$
BNC	Female to Female	UHV-BNC2-ADT	110950	80

See page 62 for **Specifications**

Air-service Cable Assemblies and Connectors

BNC Male to BNC Male air side cable assemblies are fitted with standard BNC connectors at both ends of an RG174/U coaxial cable. The connectors mate directly with the air side feedthrough flanges on page 63 and 64.

Cable Assembly, Connectors, and Cable — 80°C / Air Atmosphere

Type	Gender	Length Inches	Diameter	Model Number	Part Number	Unit Price \$
Cable Assembly — BNC to BNC						
BNC	M / M	48	0.25	AIR-BNC-482PC	110185	30
Connectors — BNC						
BNC	M	—	—	AIR-BNC-C	110188	10



110185 / BNC To BNC Air-Service Cable



110188 / BNC Male Air-Service Connector