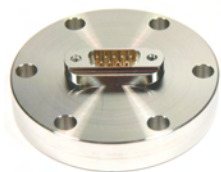


Sub-D Feedthroughs, Connectors, Pins & Cables



SUB-D: System Overview

-> Page 1.2

Sub-miniature Feedthroughs, Connectors, Cables
Different Types (Standard / High Density/ Power/Coax)



SUB-D: Standard Versions

-> Page 1.4

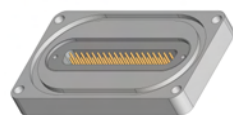
Sub-miniature D type Feedthroughs, Connectors,
Pins, Housings



SUB-D: High Current Versions

-> Page 1.8

Standard Density High Current Versions up to 10A



SUB-D: O-Ring sealed, Titanium Versions

-> Page 1.12

Specialities and weldable versions



SUB-D: Connectors

-> Page 1.14

Connectors for High Vacuum and UHV, Air and Gender Changers



SUB-D: Pins

-> Page 1.18

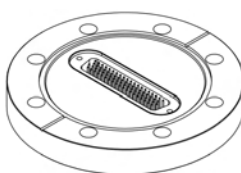
Pins for various size Cables, female and male



SUB-D: For Thermocouple Use

-> Page 1.20

Multiple Feedthrough Flanges
CF, ISO-K and custom



HIGH DENSITY Sub-D

-> Page 1.22

High Pin Density Sub-D, 26 /44 and 78 Pins
Feedthroughs, connectors, pins, housings



Mixed SUB-D with Power Pins

-> Page 1.26

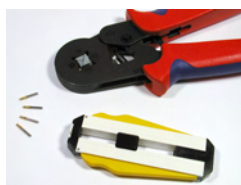
Combination Sub-D Feedthroughs with High Current pins
Feedthroughs, connectors, pins



Mixed SUB-D with Coaxial Pins

-> Page 1.28

Combination Sub-D Feedthroughs with floating shield coaxial pins
Feedthroughs, connectors, pins



SUB-D: Ready made Cables

-> Page 1.30

Sub-D cables for in-vacuum use, standard types

SUB-D: Tools

-> Page 1.32

Crimp Tools for Sib-D pins

The Sub-miniature-D System

The Sub-miniature-D connector system was developed in 1952 by ITT Canon. The name comes from the D-Shape of the housing around the pin arrangement. It was the major connector for computer peripheral connections and is widely used for industrial applications.

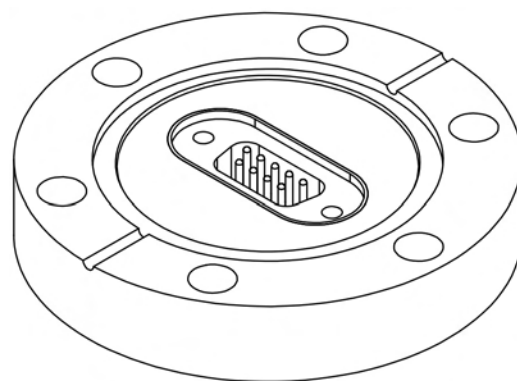
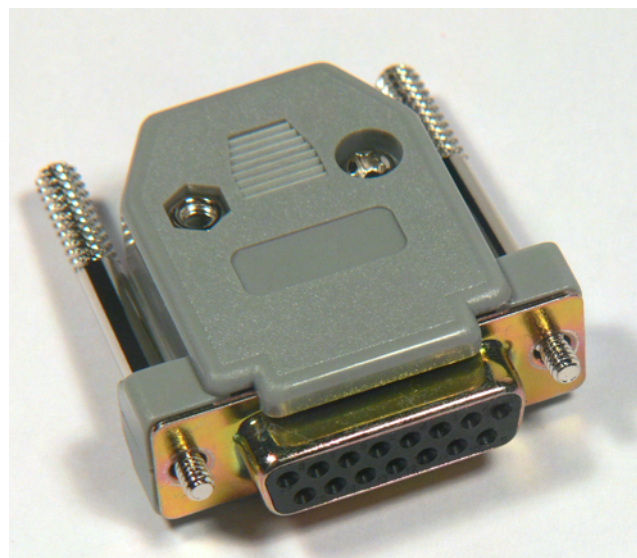
There are several variations available:

- The **Standard Design** with 9 / 15 / 25 / 37 / 50 Pins (pages 1.4- 1.7)
These sizes also define the shell sizes A (15-pin) to E (9-pin) for the other versions. As the name system is not straight forward, Allectra uses the number of pins to define the shell sizes. (pages 1.4 - 1.7)
- As a unique product, Allectra offers a **High current version of the Standard design**. These versions allow a continuous current on all pins of 6A, for short periods up to 10A are possible (pages 1.8 - 1.11)
- **High Density** versions: More pins in the same shell size with reduced pin diameter, from 15 to 78 pins (pages 1.22 - 1.25)
- **Mixed Sub-D** with high power pins (page 1.26) or with coaxial pins (page 1.28).
High power pins allow up to 20A per Pin.
Coaxial pins are floating shield versions, they are cost effective alternatives for applications, where 50 Ohm impedance is not required.
- Special **non-magnetic** and **Titanium** versions are available as well (page 1.13)

Allectra offers a full range of components:

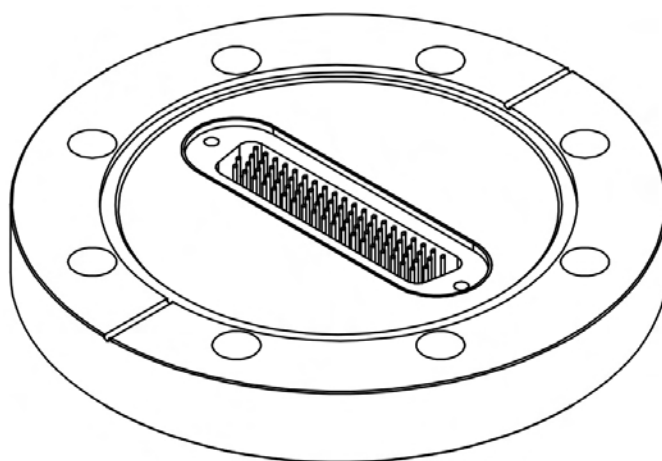
- Air side connectors with housings
- feedthroughs
- vacuum side connectors
- various pins
- housings
- ready made cables

Sub-D connectors are internationally standardized by DIN 41652, MIL-C-24308 and IEC807-2.



TOP: The smallest feedthrough, mounted on a CF40 flange.

BOTTOM: A High Density 78 pin version on a 63CF flange



Version	Nr. of pins	Current (continuous)
Standard	9 to 50	3A
High current	9 to 50	6A
High Density	26 to 78	2A
Mixed Power	2 to 5	20A
Mixed Coax	2 to 5	2A coaxial floating

Useable connectors: On the air side, all standard connectors can be used. The only limitation we know are exotic housing designs.

On the vacuum side, the use of High Vacuum or Ultra High Vacuum connectors supplied from Allectra is assumed.

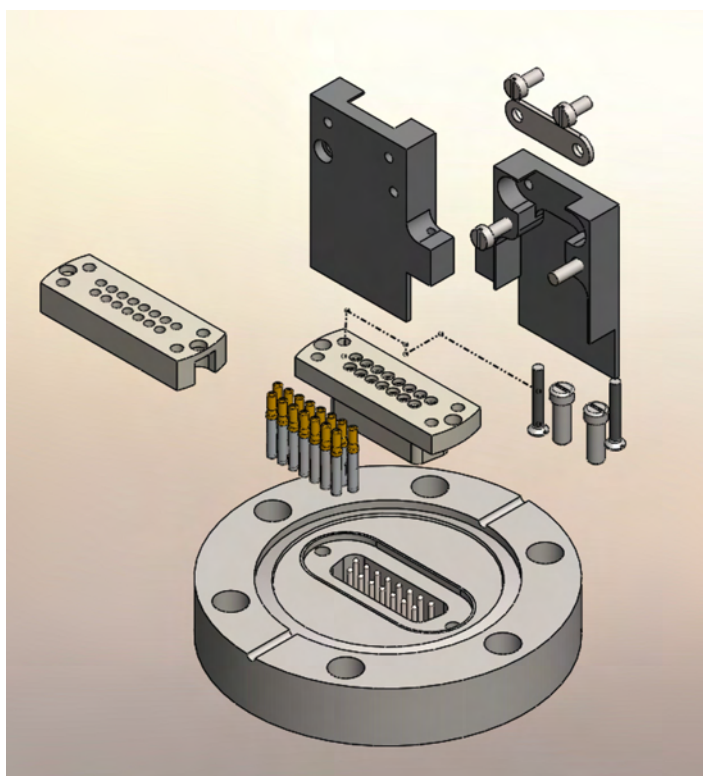
High Density connectors with 15^{*)}, 26, 44 and 68^{*)} pins have a different pin layout on air and vacuum side. So here the air side connectors cannot be used on the vacuum side.

^{*)} not yet offered

All components for the vacuum side:

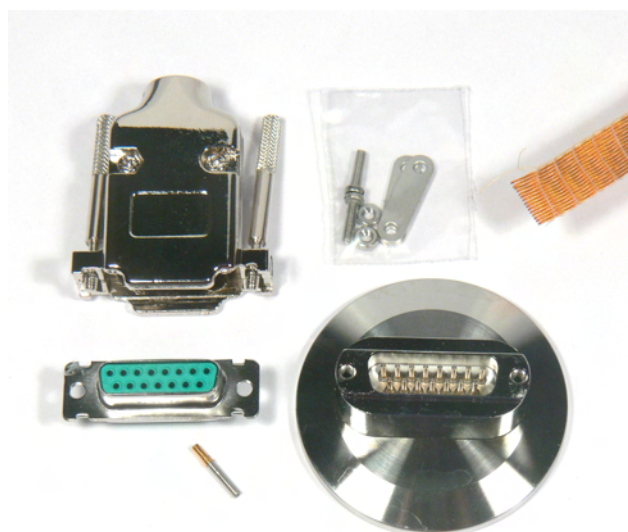
- Flange with feedthrough
- Crimp pins
- UHV compatible connector (front and back part)
- Screws for connector assembly and fixation to flange
- Housing with strain relief

Cables and air side connector are not shown



General Specifications for Sub-D

Pin-ø	1.0mm Standard, 0,7mm High density 3.6mm Mixed Power
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He (for HV and UHV versions)
Temperature	-200°C to 250°C
Pins	Gold plated
Seal	Glass Ceramic
Test Voltage	500V DC Pin to Ground
Max. Current	from 3A (HD versions) to 20A (Mixed Power versions)



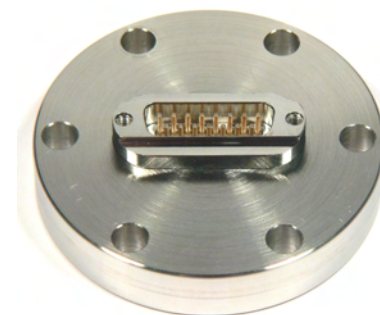
High Vacuum components:

- KF40 Flange with 15-pin feedthrough
- Crimp pin
- HV compatible connector
- Housing with strain relief
- Ribbon cable with 15 wires

Sub-miniature D Type Feedthroughs on CF Flanges

9 to 50 Pin Standard versions, 40CF to 100CF

- Electronics industry standard Sub-miniature D system
- 9, 15 and 25 way Feedthroughs on 40CF flange
- Multiple and custom Feedthrough flanges
- UHV PEEK, Ceramic and Air Side sockets available



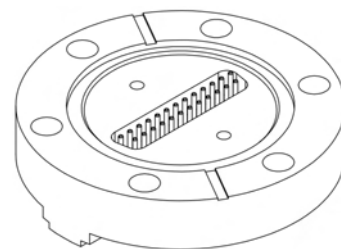
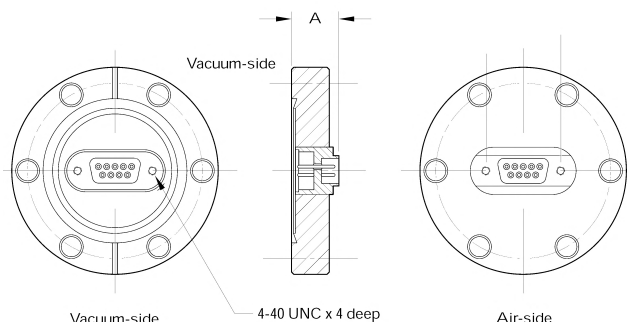
General Specifications Sub-Miniature D

Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Maximum Current	5A per pin
Cont. Current	3A per pin, all pins loaded
Temp.	-200°C to 250°C
Leak rate	<5x10 ⁻¹⁰ mar-I/s He

Sub-D Feedthroughs on CF Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
40CF	9	210-D09-C40
40CF	15	210-D15-C40
40CF	25*	210-D25-C40
63CF	15	210-D15-C63
63CF	25	210-D25-C63
63CF	50	210-D50-C63
100CF	37	210-D37-C100
100CF	50	210-D50-C100

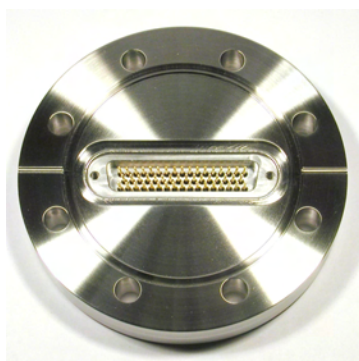
* uses special socket connector on vacuum side- page 1.15



210-D25-C40, please note the special design of this type. The hole - to - feedthrough orientation is different.

For the vacuum side a custom build connector is offered.

For up to 10A and a continuous use of up to 6A per pin, please have a look at the high current versions on page 1.8



210-D50-C63, 50 Pins on a DN63 flange

We offer a comprehensive range including unique products:

- 9, 15 and 25 Pins on 40CF
- 50 Pins on 63CF
- 9 Pins on 25KF / 25 Pins on 50KF
- High Density versions with 26, 44 and 78 pins

Sub-miniature D Type Feedthroughs on CF Flanges

Multiple feedthroughs on one flange

Allectra offers multiple Sub-D feedthroughs, mounted on one flange. Some items are standard products, but with our in house manufacturing, we can offer designs according to your wishes fast and to competitive prices.

Allectra offers flanges with multiple feedthroughs. Not all possible combinations can be listed here. Please ask for a quote.

Various types of feedthroughs can be mixed on one flange, for example, Sub-D + coaxial types. Zero length flange adapters with feedthroughs are possible etc. etc.

Size	D09	D15	D25	D37	D50
CF40	1	1	1	---	---
CF63	4	3	2	1*	1
CF100	8	8	5	2	2

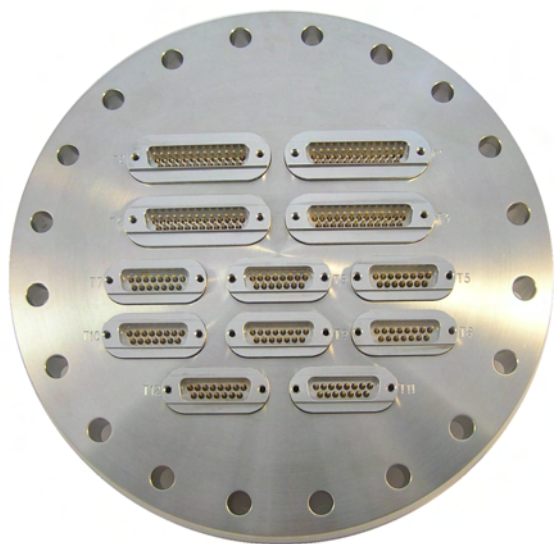
List of how many feedthroughs of one shell size will fit to a given flange size.

*) Sub-D 37 on CF63 fits, but an extended tube size is required to give enough space for the connector.

Multiple Sub-D Feedthroughs on CF Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
63CF	2x D09	210-D09-C63-2
63CF	2x D15	210-D15-C63-2
63CF	2x D25	210-D25-C63-2
63CF	3x D09	210-D09-C63-3
63CF	3x D15	210-D15-C63-3
Examples for versions on 100CF:		
100CF	2x D37	210-D37-C100-2
100CF	2x D50	210-D50-C100-2

other combinations on request, please contact sales office



Some examples of custom made arrangements.

Top: Multiple Sub-D on a 160CF flange

Right Top: 4x 9-pin Sub-D on a flange

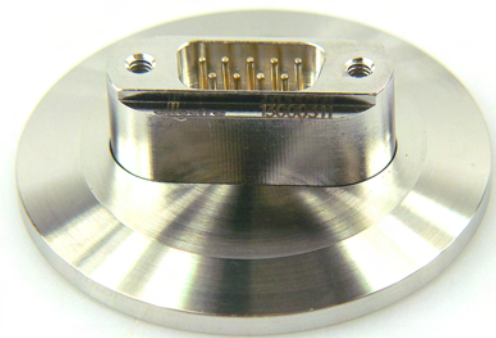
Right Bottom: Combination with Coaxial feedthroughs on a 63CF flange



Sub-miniature D type Feedthroughs on KF and ISO-K Flanges, 9 to 50 Pin

- Versions mounted on KF and ISO-K flanges
- Special types available:
 - 9 pins on a 25KF flange
 - 25 pins on 50KF

(For these versions vacuum side connectors without the mounting screws are required (see page 1.8, standard air side connectors will fit.)



General Specifications Sub-Miniature D

Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Max. Current	5A per pin
Cont. Current	3A per pin, all pins loaded
Temp.	-40°C to 200°C (limited by flange)
Leak rate	<1x10 ⁻⁹ mbar-l/s He

Sub-D Feedthroughs on KF Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
25KF	9*	210-D09-K25
40KF	9	210-D09-K40
40KF	15**	210-D15-K40
50KF	15	210-D15-K50
50KF	25*	210-D25-K50
63ISO-K	25	210-D25-ISO63
63ISO-K	50**	210-D50-ISO63
100ISO-K	37	210-D37-ISO100
100ISO-K	50	210-D50-ISO100

* uses small "SX"-type socket connector - page 1.16

** uses small "S"-type socket connector - page 1.16



Components of a complete system:

- feedthrough 210-D15-K40
- connector 211-FS15-HV
- pins 212-PINF
- housing with strain relief 211-HSG-D15-SR
- ribbon cable 311-KAPM-035-RIB15



Special compact version:
9 pins on a KF25 flange
(210-D09-K25)

This type requires the "SX"
connector on the vacuum
side (211-FS09-SX) - see page
1.16

Allectra offers flanges with multiple feedthroughs. Not all possible combinations can be listed here. Please ask for a quote.

Various types of feedthroughs can be mixed on one flange. The picture on the right shows a custom made arrangement on a right angular, O-ring sealed flange.

Multiple Sub-D Feedthroughs on KF/ ISO-K and custom Flanges, 9 to 50 Pin

Standard combination flanges with 2 or 3 feedthroughs are available on short delivery or even ex stock. More complex combinations are done in our own workshop according your requirements.

General Specifications Sub-Miniature D

Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Max. Current	5A per pin
Cont. Current	3A per pin, all pins loaded
Temp.	-40°C to 200°C (limited by flange)
Leak rate	<1x10 ⁻⁹ mbar-l/s He

Multiple Sub-D F/T's on KF Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
50KF	2x9	210-D09-K50-2
50KF	2x15	210-D15-K50-2
63KF	3x15	210S-D15/3-K63

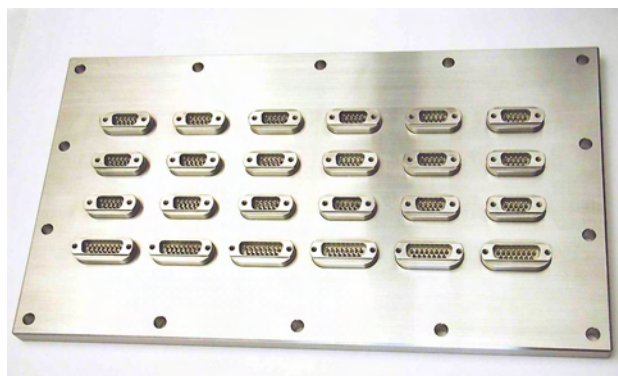
Please note: KF63 flanges are similar to the other KF flanges and use a chain clamp for closing. For more details, please contact our offices.

Multiple Sub-D F/T's on ISO-K Flanges 500V, up to 5 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
63ISO-K	2x9	210-D09-ISO63-2
63ISO-K	2x15	210-D15-ISO63-2
63ISO-K	2x25	210-D25-ISO63-2
100ISO-K	2x37	210-D37-ISO100-2
100ISO-K	2x50	210-D50-ISO100-2
63ISO-K	3x9	210-D09-ISO63-3
63ISO-K	3x15	210-D15-ISO63-3
100ISO-K	3x25	210-D25-ISO100-3

For other combinations, please ask for a quote

Some examples of special assemblies. Please note, that on special assemblies, also the high current versions or the High Density versions can be used!





High Current Sub-D feedthroughs on CF and KF / ISO Flanges

The typical use of Sub-D feedthroughs are signal connections and low current applications. With the HIGH CURRENT versions, Sub-D feedthroughs can replace power feedthroughs with minimal space requirements.

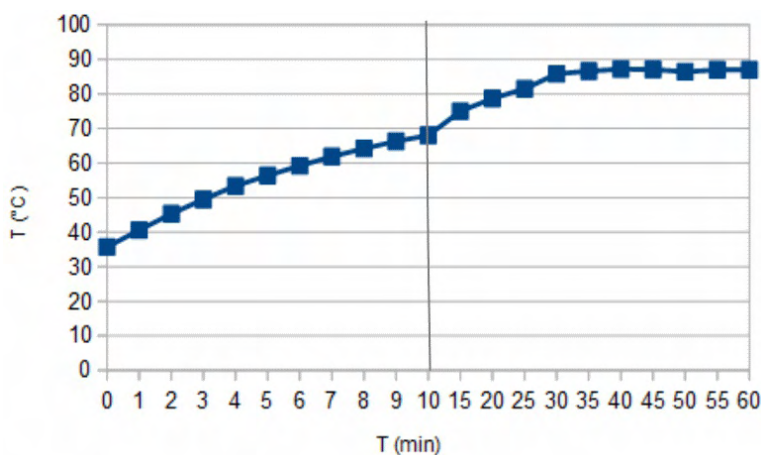
HC Sub-D feedthroughs allow:

- Continuous use with 6A, all pins loaded
- Short time use with 10A, all pins loaded

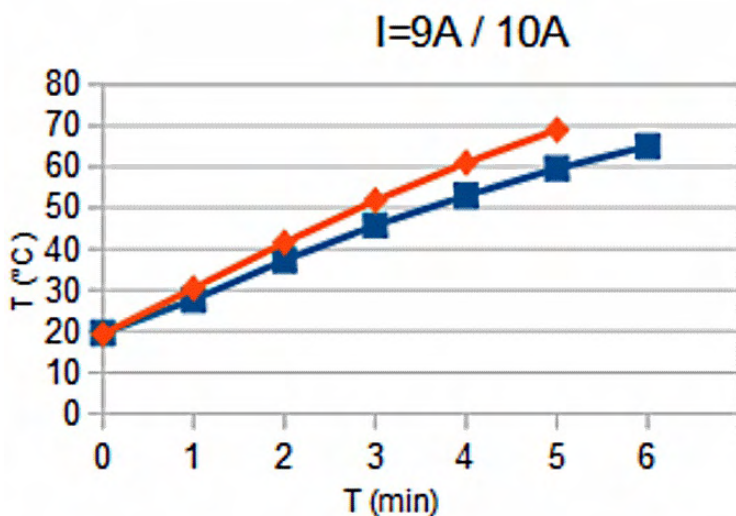
All dimensions are identical to Standard Sub-D types!
 Allectra offers the full range (9 to 50 pins).

Please note, that also the cables and connectors must be chosen, who can handle the high current. Allectra offers all required components:

- Crimp pins for thicker wires
- UHV compatible wire
- Air side connectors with high current rating



Temperature measured on a 25-pin Sub-D HC f/t at 7A versus time
 (=1A more than specified, all pins loaded, so 175A in total).
 The max. reached temperature stays below 90°C.



Temperature versus time with 9 A (blue) and 10A (red) current per pin, all pins loaded.
 (225 / 250A in total)
 All tests were done at room temperature of ~20°C

High Current Sub-D feedthroughs on CF and KF /ISO Flanges

The versions with one HIGH CURRENT (HC) feedthrough per flange are offered here.
Please ask for a quote, if you require more feedthroughs on one flange or if combinations with other types of feedthroughs are desired.

General Specifications High Current Sub-D

Compliance	DIN 41652, MIL-C-24308
Pin-ø	1.0 mm
Pin material	Gold plated proprietary metal
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Maximum Current	10A per pin for 5 min.
Cont. Current	6A per pin, all pins loaded
Temperature	-200°C to 250°C (UHV) -40°C to 200°C (HV)
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He (UHV) <1x10 ⁻⁹ mbar-l/s He (HV)

Sub-D Feedthroughs on CF Flanges 500V, up to 10 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
40CF	9	210-D09-C40-HC
40CF	15	210-D15-C40-HC
63CF	15	210-D15-C63-HC
63CF	25	210-D25-C63-HC
63CF	50	210-D50-C63-HC
100CF	37	210-D37-C100-HC
100CF	50	210-D50-C100-HC

Sub-D Feedthroughs on KF/ISO-K Flanges 500V, up to 10 Amps per Pin

SIZE	NO. OF PINS	PART NUMBER
40KF	9	210-D09-K40-HC
40KF	15	210-D15-K40-HC
63ISO-K	15	210-D15-ISO63-HC
63ISO-K	25	210-D25-ISO63-HC
63ISO-K	50	210-D50-ISO63-HC
100ISO-K	37	210-D37-ISO100-HC
100ISO-K	50	210-D50-ISO100-HC

Please note:

To use the feedthrough with high current, also the **connectors, pins and cables** must be adjusted for the use with high current.

For the vacuum side the housings are identical to the standard versions, but we recommend the use of a cable with 1.3mm diameter and the fitting crimp pins (see next page)

For the air side, fitting high current connectors are offered as well on next page.



Not listed in the catalogue are flanges with multiple High Current Sub-D feedthroughs.

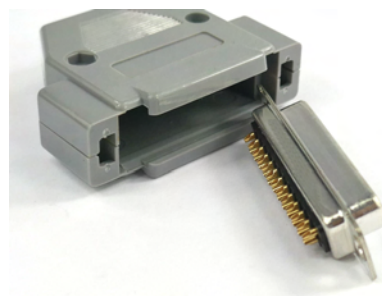
Please ask for a quote, we can do all kind of assemblies with High Current versions as well.

Accessories for HC Sub-D feedthroughs

All components used with HC feedthroughs must be chosen for high current use. Here the fitting components are listed.

Please note, that the vacuum side connectors and housings are identical with the Standard Sub-D versions, only the pins have to be changed. These connectors and housings are listed on page 1.14 to 1.16

HC air side connectors have gold plated contacts. They come including a plastic housing with thumb screws



Specification HIGH CURRENT CRIMP PINS

Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
Pin diameter	1mm ø
Wire size	0.7 to 1.3mm ø max
Crimp tool	214-CTOOL-SUB-D 214-CTOOL
	214-CTOOL-HQ

High Current Crimp Pins for Sub-D Cable ø 1.3mm max, fits HV and UHV Sockets

TYPE/WIRE Ø	No. PER PKT.	PART NUMBER
female, 1.3mm ø	10	212-PINF-10-HC
female, 1.3mm ø	15	212-PINF-15-HC
female, 1.3mm ø	25	212-PINF-25-HC
male, 1.3mm ø	10	212-PINM-10-HC
male, 1.3mm ø	15	212-PINM-15-HC
male, 1.3mm ø	25	212-PINM-25-HC

Specification HIGH CURRENT AIR SIDE CONNECTORS

Pin diameter	1mm ø
Surface	fully Gold plated
Pins	Solder cup
Wire diameter	1.0mm ø max
Rated current	7.5A continuous

Air side connectors, solder pins for up to 7.5A continuous current

TYPE	PINS	PART NUMBER
AIR, 7.5A	9	211-FS09-AIR-HC
AIR, 7.5A	15	211-FS15-AIR-HC
AIR, 7.5A	25	211-FS25-AIR-HC
AIR, 7.5A	37	211-FS37-AIR-HC
AIR, 7.5A	50	211-FS50-AIR-HC

Standard connectors are rated to 5A max. These special connectors can be used at up to 7.5A per pin continuously. Please note, that the typical ready made air side cables are only useable for approx. 1A

Air side connectors have gold plated solder cup pins for 1mm ø wires.

If you want to use thicker wires up to 1.3mm ø, use above listed crimp pins plus the Crimp pin housings 211-FSxx-ATC, see page 1.20



Accessories for HC Sub-D feedthroughs

All components used with HC feedthroughs must be chosen for high current use. Here the fitting components are listed.

Please note, that the vacuum side connectors and housings are identical with the Standard Sub-D versions, only the pins have to be changed. Connectors are listed on page 1.14-1.15

Housings are listed on page 1.14 and 1.16

Specification HIGH CURRENT WIRE

Vacuum	UHV, <10 ⁻¹⁰ mbar
Construction	High flexible 1.3mm ø (19x0.25mm)
Material	Silver plated copper
Insulation	Kapton
Overall diameter	1.4mm
Temp. range	4K 300°C
Radiation	up to 10 ⁹ rad

UHV compatible Wire, Kapton insulated 1.3mm ø, radiation resistant

LENGTH	PART NUMBER
5m	311-KAPM-130-RAD-5M
10m	311-KAPM-130-RAD-10M
50m	311-KAPM-130-RAD-50M

The HC pins allow the use of cable up to 1.3mm diameter with the Sub-D system. The pins fit to all standard connectors.

The cable 311-KAPM-130-RAD can be used for more than 10A and is so the ideal wire for the High Current Sub-D system (top left cable on the photo).

Pins and cables can be used with the standard feedthroughs as well.

For a full range of cables, see Sec. 6



Male pins for the different cable sizes. On the right, the High Current pins are shown, which accept cables up to 1.3mm diameter



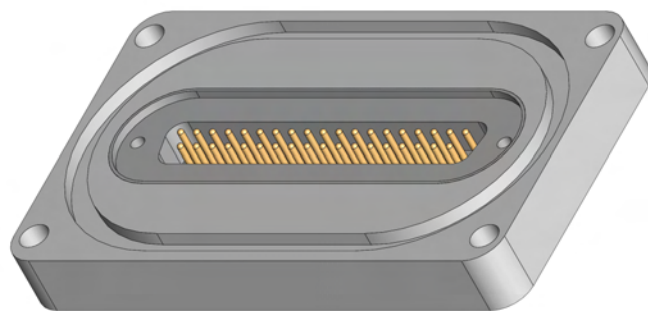
The "HC" Logo on the feedthrough clearly marks the types for high current applications. Of course they can be used with standard pins as well.

O-ring sealed Sub-D feedthroughs for High vacuum applications

For applications down to 10⁻⁷ mbar, Allectra offers a special series of O-ring sealed Sub-D feedthroughs. Depending on the application, either the compact version or a version on a right angular plate can be used.

As the standard right angular plate has the same size for all types, feedthroughs can easily be exchanged.

We can also mount other feedthroughs (e.g. coaxial types) on the same plate size.



General Specifications Baseplate Sub-D

Baseplate Size	85 x 50 mm
Baseplate material	SS 1.4301
Pin-ø	1.0 mm
Pin material	Gold plated proprietary metal
Seal	Glass Ceramic
O-Ring	FKM (Viton) 3mm included
Test Voltage	500V DC
Max. Current	5A / 10A per pin depending on type
Cont. Current	3A / 6A per pin, all pins loaded
Temp.	-40°C to 200°C (HV)
Leak rate	<1x10 ⁻⁹ mbar-l/s He (HV)

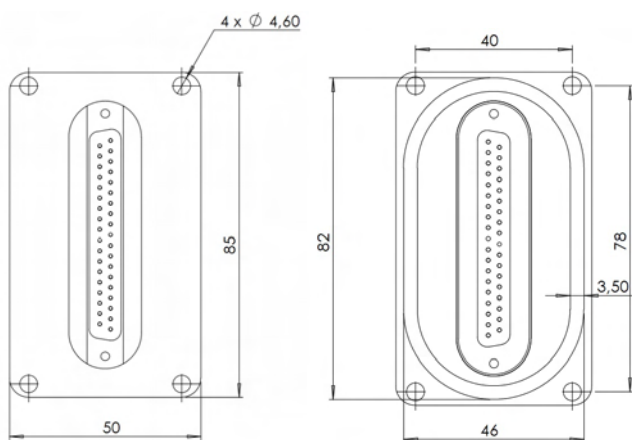
Standard Base Plate with Sub-D feedthroughs (3A)

TYPE	PINS	PART NUMBER
	1x9	215-BP-D09
	1x15	215-BP-D15
	1x25	215-BP-D25
	1x37	215-BP-D37
	1x50	215-BP-D50

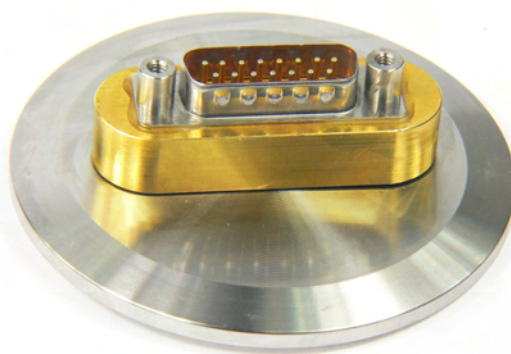


Standard Base Plate with High Current Sub-D feedthroughs (6A)

TYPE	PINS	PART NUMBER
	1x9	215-BP-D09-HC
	1x15	215-BP-D15-HC
	1x25	215-BP-D25-HC
	1x37	215-BP-D37-HC
	1x50	215-BP-D50-HC



The widely used 15 pin Sub-D feedthroughs are also available in a screw type version for custom High Vacuum applications. Please ask the sales office for details



Non-Magnetic Sub-D feedthroughs:

Special SS and Titanium Versions

Standard Sub-D feedthroughs are slightly magnetic. If this is an issue, Allectra offers versions with a permeability $\mu < 1.008$ in 316LN flanges.

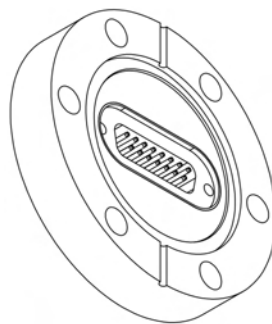
For demanding applications, Allectra offers in addition Sub-D feedthroughs including flanges made out of Titanium.

General Specifications Non-Magnetic Sub-D

Magn. permeability	$\mu < 1.008$
Pins	WCu (non-magnetic)
Housing	Stainless Steel (special alloy) with good weldability

General Specifications Titanium Sub-D

Flange and Housing	Titanium
Pins	Tantalum



Sub-D Feedthrough on CF flanges Non-Magnetic on 316LN Flanges

SIZE	NO. OF PINS	PART NUMBER
40CF	9	210-D09-C40-NM
40CF	15	210-D15-C40-NM
63CF	25	210-D25-C63-NM
63CF	50	210-D50-C63-NM

Allectra can offer multiple non-magnetic feedthroughs on 316LN flanges. Please ask for a quote!

Sub-D Feedthrough on CF40 flange Titanium Flange

SIZE	NO. OF PINS	PART NUMBER
40CF-TI	9	210-D09-C40-TI
40CF-TI	15	210-D15-C40-TI
63CF-TI	25	210-D25-C63-TI

Please ask for a quote for other assemblies

Sub-D weldable versions

For customers, who prefer welding in house, Allectra offers all sizes of Sub-D feedthroughs also as weldable, suitable for TIG or laser welding.

Allectra is happy to quote specials against your requirements. We will quote against your description, sketch or drawing.

General Specifications Weldable Sub-D

Height	17 mm
Slit	180° Radius on both sides
Standard welding	TIG without filler
Material	Stainless Steel
Leak rate	$< 1 \times 10^{-9}$ mbar-l/s He

Please note: Welding Sub-D Feedthroughs requires care and experience. Damage to the feedthroughs during welding is not covered by the warranty. We are happy to offer complete assemblies at competitive prices.

Sub-D Weldable in all sizes from 9 to 50 pins



Sub-D Feedthroughs WELDABLES 500V, up to 5 Amps per Pin

NO. OF PIN	SLIT SIZE (mm)	PART NUMBER
9	14.5x33	218-D09-SS
15	16.5x38	218-D15-SS
25	19x55	218-D25-SS
37	19x70	218-D37-SS
50	19x68	218-D50-SS

non-magnetic versions on request

9 High Current	14.5x33	218-D09-SS-HC
15 High Current	16.5x38	218-D15-SS-HC
25 High Current	19x55	218-D25-SS-HC
37 High Current	19x70	218-D37-SS-HC
50 High Current	19x68	218-D50-SS-HC

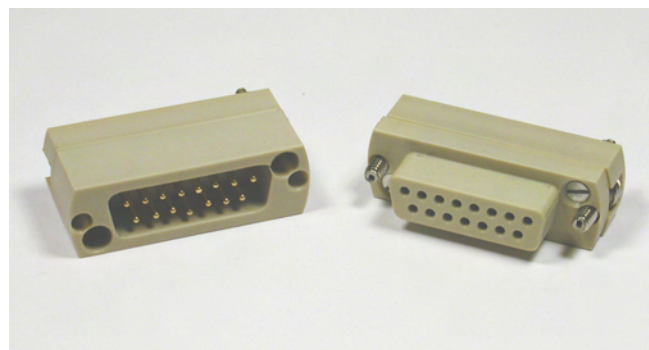
UHV Plugs and Sockets in PEEK

Allectra offers Female Connectors (Sockets) which fit to Feedthroughs as well as Male Connectors (Plugs) for in-vacuum coupling.

On this page, the PEEK connectors for use up to 230°C are listed.

Ceramic connectors see right hand page.

Please order Pins separately, see page 1.16 ff. for range. HV versions and air side connectors are listed on page 1.10



Specification PEEK Sub-D Connectors

Type	Sub-D Connectors for in-vacuum use
Vacuum	High Vacuum(HV) and UHV
Type	Female- fits Feedthroughs Male Plugs
Body material	unfilled (pure) PEEK
Locking screws	included for Vac side (vented) (-S type: no Vac side locking screws)
Temp. range	-50°C to 230°C
Use Pins female	212-PINF, -PINF-B, -PINF-S, -PINF-HC, or thermocouple pins
Use Pins male	212-PINM, -PINM-S, -PINF-HC or thermocouple pins

UHV PEEK Sockets Female PEEK Sockets to fit Feedthroughs

VACUUM	No. OF POLES	PART NUMBER
HV/UHV	9	211-FS09-PK
HV/UHV	15	211-FS15-PK
HV/UHV	25	211-FS25-PK
HV/UHV	25	211-FS25-PK-S*
HV/UHV	37	211-FS37-PK
HV/UHV	50	211-FS50-PK

* for use with 210-D25-CF40 (no housing available)

UHV PEEK Plugs Male PEEK Plugs to fit Female Sockets

VACUUM	No. OF POLES	PART NUMBER
HV/UHV	9	211-MS09-PK
HV/UHV	15	211-MS15-PK
HV/UHV	25	211-MS25-PK
HV/UHV	37	211-MS37-PK
HV/UHV	50	211-MS50-PK

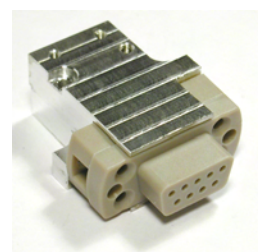
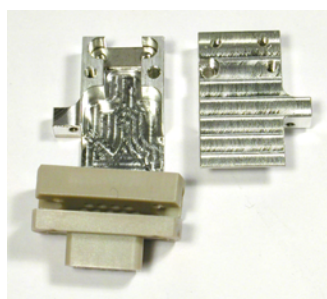


Female Sockets include vented 4-40 UNC screws to fix to the F/T. The Male versions are supplied with long M2.5 screws to connect to a Female Socket.

The housings allow easy handling and provide shielding. They are made out of Aluminium and include a cable clamp for strain relief. Braid can be used to get a fully shielded cable connection (see Sec. 6). They fit to Male and Female Connectors.

Housings with Strain Relief, Al for PEEK and Ceramic Connectors, Male and Female

VACUUM	No. OF POLES	PART NUMBER
HV/UHV	9	211-HSG-D09-UHV
HV/UHV	15	211-HSG-D15-UHV
HV/UHV	25	211-HSG-D25-UHV
HV/UHV	37	211-HSG-D37-UHV
HV/UHV	50	211-HSG-D50-UHV



PEEK connector with housing

- Open (top and bottom shell visible)
- Assembled

UHV Plugs and Sockets in Ceramic

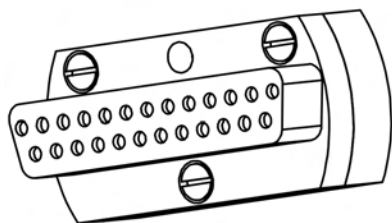
For lowest possible outgassing, connectors made out of ceramic are the best choice. Ceramic does not absorb any water in the volume; in addition, they can be used from cryo temperatures up to 300°C

Please order Pins separately, see page 1.16 ff. for range or add "-PACK" at the end of the part code to get the standard pins with the connector (see below)



Specification Ceramic UHV Sub-D Connectors

Type	Sub-D Connectors for in-vacuum use
Vacuum	UHV 10 ⁻¹⁰ mbar and below
Type	Female- fits Feedthroughs Male Plugs
Body material	Ceramic / glass ceramic
Locking screws	included for Vac side (vented) (-S type: no Vac side locking screws)
Temp. range	4K to 300°C
Use Pins female	212-PINF, -PINF-B, -PINF-S, -PINF-HC, or thermocouple pins
Use Pins male	212-PINM, -PINM-S, -PINF-HC or thermocouple pins



Special 25-pin connector 211-FS25-UHV-S for 25 pin feedthrough on 40CF flange

UHV Ceramic Sockets Female Ceramic Sockets to fit Feedthroughs

VACUUM	No. OF POLES	PART NUMBER
UHV	9	211-FS09-UHV
UHV	15	211-FS15-UHV
UHV	25	211-FS25-UHV
UHV	25	211-FS25-UHV-S*
UHV	37	211-FS37-UHV
UHV	50	211-FS50-UHV

* for use with 210-D25-CF40 (no housing available)

UHV Ceramic Plugs Male Ceramic Plugs to fit Sockets

VACUUM	No. OF POLES	PART NUMBER
UHV	9	211-MS09-UHV
UHV	15	211-MS15-UHV
UHV	25	211-MS25-UHV
UHV	37	211-MS37-UHV
UHV	50	211-MS50-UHV

WHY ARE THE CRIMP PINS NOT INCLUDED?

Allectra offers a selection of pins for various cable diameters, the best fitting size should be chosen according the desired cable.

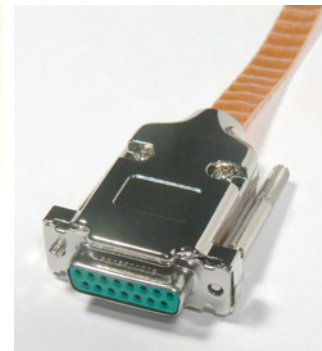
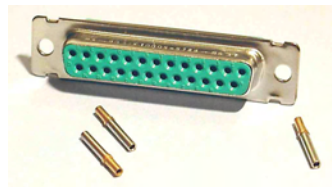
Nevertheless, you can add: "-PACK" at the end of the part code to get the required number of our most common pins Type 212-PINF (female) or 212-PIN-M (male) with the connector!

Example: 211-FS15-PK-PACK: Peek connector including 15 off female pins.

The price is the sum of the connector plus the pin pack.
See Page 1.18 for specification of the crimp pins

High Vacuum Plugs and Sockets

High Vacuum Connectors (glass filled polymer with a stainless steel outer) are suitable for High Vacuum (10^{-8} mbar) and temperatures up to 110°C. To be used with our crimp pins, see page 1.9



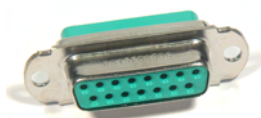
General Specification HV Sub-D Connectors

Vacuum	High Vacuum
Socket type	Female- fits Feedthroughs Male Plugs (for internal connection)
Body material	DAP
S types	reduced outer SS part
SX types	no Vac. side locking screws
Temp. range	-55°C to 110°C
Use Pins	212-PINF, -PINF-B, -PINF-S, -PINF-TC
Male types:	212-PINM-10, -PINM-S, -PINM-TC

High vacuum Sockets for Sub-D FEMALE type to fit Feedthroughs

VACUUM	NO. OF POLES	PART NUMBER
HV	9	211-FS09-HV
HV	9	211-FS09-HV-SX
HV	15	211-FS15-HV
HV	15	211-FS15-HV-S
HV	25	211-FS25-HV
HV	25	211-FS25-HV-SX
HV	37	211-FS37-HV
HV	37	211-FS37-HV-SX
HV	50	211-FS50-HV
HV	50	211-FS50-HV-S

SX versions without metal housing (see photo on the left)



Right: small "-S" version with rounded edges
Left: extra small "-SX" version without screw holes

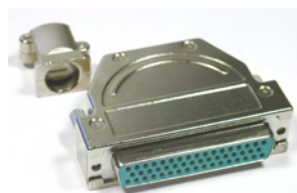
High Vacuum Plugs for Sub-D MALE Plugs to fit female Sockets

VACUUM	NO. OF POLES	PART NUMBER
HV	9	211-MS09-HV
HV	15	211-MS15-HV
HV	25	211-MS25-HV
HV	37	211-MS37-HV
HV	50	211-MS50-HV

The Vacuum side HV housings include Strain Relief and fixing screws for the F/T. They are specially designed to fit the Allectra Sub-D Feedthroughs.

High vacuum Housings for Sub-D for Male and Female Connectors

VACUUM	NO. OF POLES	PART NUMBER
HV	9	211-HSG-D09-SR
HV	15	211-HSG-D15-SR
HV	25	211-HSG-D25-SR
HV	37	211-HSG-D37-SR
HV	50	211-HSG-D50-SR



Gender Changer for Sub-D, Air and UHV

Sub-D feedthroughs are on air and vacuum side male. If on one side a female connector is required, Allectra offers the suitable adapters.

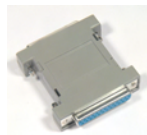
Together with such an adapter (on air or vacuum side), the standard pin numbering is regained.

They come ready for use.



General Specification UHV Gender Changer

Vacuum	HV and UHV <10 ⁻¹⁰ mbar
Pins	Gold plated copper alloy
Housing	PEEK unfilled / Ceramic
Sizes	Standard Sub-D, 9 to 50 pin
Gender	Female to Female
Connection	"straight through": Together with feedthrough, a 1:1 connection is established



General Specification AIR Gender Changer

Housing	polymer
Sizes	Standard Sub-D, 9 to 50 pin
Gender	Female to Female
Connection	"straight through": Together with feedthrough, a 1:1 connection is established

Gender adaptors for Sub-D UHV PEEK / Ceramic Female to Female

VACUUM	No. OF PINS	PART NUMBER
UHV PEEK	9	211-FS09-GA-PK
UHV PEEK	15	211-FS15-GA-PK
UHV PEEK	25	211-FS25-GA-PK
UHV PEEK	37	211-FS37-GA-PK
UHV PEEK	50	211-FS50-GA-PK
CERAMIC VERSIONS		
UHV CER	9	211-FS09-GA-UHV
UHV CER	15	211-FS15-GA-UHV
UHV CER	25	211-FS25-GA-UHV
UHV CER	37	211-FS37-GA-UHV
UHV CER	50	211-FS50-GA-UHV

Polarity adaptors for Sub-D Air side Female to Female

AIR	No. OF PINS	PART NUMBER
AIR	9	211-FS09-GA-AIR
AIR	15	211-FS15-GA-AIR
AIR	25	211-FS25-GA-AIR
AIR	37*	211-D37-ADR
AIR	50*	211-D50-ADR

*) Short cable adaptor

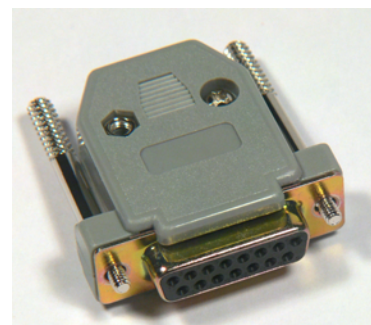
Air side connectors for standard Sub-D

For standard Sub-D feedthroughs Allectra offers three types of connectors:

- Solder cup versions (up to 1mm Ø wire)
- Solder cup High Current versions (see page 1.10)
- Versions for crimp pins including thermocouple pins (see page 1.20)

All versions come with polymer housings and thumb screws for fixing. Colour might vary.

The max. rated temperature for these connectors is 65°C



Air side Sockets with housing for Sub-D Female type to fit Feedthroughs

VACUUM	NO. OF POLES	PART NUMBER
AIR	9	211-FS09-AIR
AIR	15	211-FS15-AIR
AIR	25	211-FS25-AIR
AIR	37	211-FS37-AIR
AIR	50	211-FS50-AIR

Male versions available on request

Crimp Pins for Sub-miniature D, Female

As well as the Standard Crimp Pins, Allectra offers other versions for special purposes:

- Small versions for wires down to 0.08mm \varnothing
- Basic versions without additional Stainless Steel outer
- High Current versions for wires up to 1.3mm \varnothing
- Pins for use without housings
- Zero-magnetic pins and Ni-plated pins are available on request.

General Specification CRIMP PINS, female

Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
SS shell	Not on Basic Pins
Wire diameters	0.25 – 1.0 mm (Standard + Basic) 0.08 to 0.5 mm (Small) 0.8 to 1.3mm (High Current)
Crimp tool	214-CTOOL-SUB-D (wires >0.35mm) 214-CTOOL (no SMALL pins) 214-CTOOL-HQ (all types)



BASIC pins without Stainless Steel Outer



"NH" pin: For use with no housing.

To connect a Crimp Pin directly to a Feedthrough without using a connector, the special "-NH" pins are recommended. These avoid the risk of the Pin tip touching ground.



SMALL, STANDARD and HC Pins. Hole diameter varies

STANDARD Crimp Pins for Sub-D Fits HV and UHV Female Sockets

TYPE	No. PER PKT.	PART NUMBER
STANDARD	10	212-PINF-10
STANDARD	15	212-PINF-15
STANDARD	25	212-PINF-25
BASIC	10	212-PINF-10-B
BASIC	25	212-PINF-25-B

SMALL Sub-D Crimp Pins for thin wire Fits HV and UHV Female Plugs

TYPE	No. PER PKT.	PART NUMBER
SMALL	10	212-PINF-10-S
SMALL	15	212-PINF-15-S
SMALL	25	212-PINF-25-S

HIGH CURRENT Crimp Pins for Sub-D Fits HV and UHV Female Plugs

TYPE	No. PER PKT.	PART NUMBER
HIGH CURRENT	10	212-PINF-10-HC
HIGH CURRENT	15	212-PINF-15-HC
HIGH CURRENT	25	212-PINF-25-HC

Crimp Pins for Sub-D Special pins for use without Sockets

TYPE	No. PER PKT.	PART NUMBER
STANDARD	10	212-PINF-10-NH
STANDARD	25	212-PINF-25-NH

Crimp Pins for Sub-miniature D, Male

For in-vacuum connections, male Crimp Pins are offered. Of course the pins can be used also for other connections, an insulation is possible by shrink hose or Kapton hoses, for example

Three different versions are offered for different cable sizes, The size of the pin is always 1mm



General Specification CRIMP PINS, male

Pin diameter	1mm
Vacuum	High Vacuum and UHV
Material	Gold plated copper alloy
Wire diameters	0.25 – 1.0 mm (Standard) 0.08 to 0.5 mm (Small) 0.8 to 1.3mm (High Current)
Crimp tool	214-CTOOL-SUB-D (wires ≥ 0.35 mm) 214-CTOOL (no SMALL pins) 214-CTOOL-HQ (all types)

Standard Crimp Pins for Sub-D Fits HV and UHV Male Plugs

TYPE	No. PER PKT.	PART NUMBER
STANDARD	10	212-PINM-10
STANDARD	15	212-PINM-15
STANDARD	25	212-PINM-25

SMALL Crimp Pins for Sub-D Fits HV and UHV Male Plugs

TYPE	No. PER PKT.	PART NUMBER
SMALL	10	212-PINM-10-S
SMALL	15	212-PINM-15-S
SMALL	25	212-PINM-25-S

HIGH CURRENT Crimp Pins for Sub-D Fits HV and UHV Male Plugs

TYPE	No. PER PKT.	PART NUMBER
HIGH CURRENT	10	212-PINM-10-HC
HIGH CURRENT	15	212-PINM-15-HC
HIGH CURRENT	25	212-PINM-25-HC

General Specification Crimp Tools for Sub-D

214-CTOOL-SUB-D: Easy to use 4-indent tool for Standard and High Current pins. Includes a positioner. No settings required. Wire diameter ≥ 0.35 mm

214-CTOOL: Crimp tool for thin wall turned pins, not suitable for SMALL pins. Can also be used for larger pins

214-CTOOL-HQ: Adjustable 4-indent crimp tool for various applications, with positioner. Professional quality with highly reproducible results

Crimp Tools for Sub-D pins

TYPE	PART NUMBER
Std / HC pins, Positioner	214-CTOOL-SUB-D
Std / HC pins	214-CTOOL
Small / Std / HC pins, Positioner	214-CTOOL-HQ



214-CTOOL-SUB-D



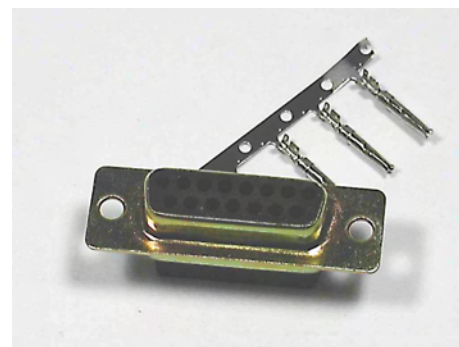
214-CTOOL



214-CTOOL-HQ

Sub-miniature D Feedthroughs for use with various types of Thermocouples

Sub-D F/T's may be used for T/Cs. A Standard D-Type Feedthrough is used but the Air and Vacuum side Pins are changed to T/C types. Although the use of standard Pin material in contact with the T/C Pins results in the creation of two T/C junctions, the measurement error introduced is negligible provided the vacuum side of the Feedthrough contacts and the air side are at the same temperature. Tests showed a maximum error of less than 0.5K



General Specification K type T/C Crimp Pins

Vacuum/ Air Material	High Vacuum and UHV K Type Chromel® / Alumel® Type N Nisil® / Nicrosil® Type J Iron / Constantan® Type T Copper / Constantan®
Fits wire	0.25 – 0.6 mm
Crimp tool	214-CTOOL-TC or 214-CTOOL-TC-HQ
Pack contents	5 Pairs = 5 pieces (+) and 5 pieces (-)

Thermocouple Crimp Pins for Sub-D Fits HV and UHV Female Sockets for Feedthroughs

TYPE	No. PER PKT.	PART NUMBER
K, Female	2x5	213-PINF-K
N, Female	2x5	213-PINF-N
J, Female	2x5	213-PINF-J
T, Female	2x5	213-PINF-T

Thermocouple Crimp Pins for Sub-D Fits HV and UHV Male Plugs

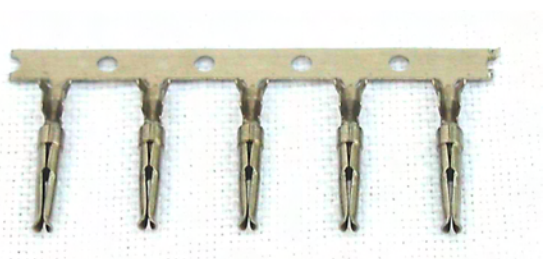
TYPE	No. PER PKT.	PART NUMBER
K, Male	2x5	213-PINM-K
N, Male	2x5	213-PINM-N
J, Male	2x5	213-PINM-J
T, Male	2x5	213-PINM-T

Air side Thermocouple Sockets for Sub-D Fit to K Type Thermocouple Pins

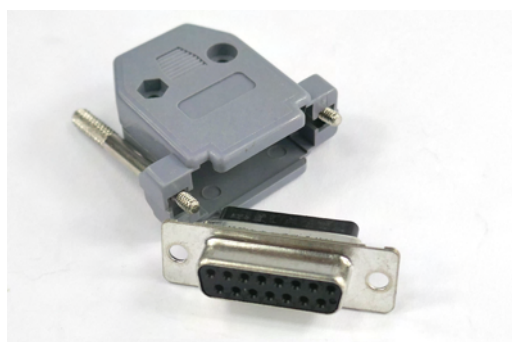
TYPE	SIZE	PART NUMBER
AIR	9	211-FS09-ATC
AIR	15	211-FS15-ATC
AIR	25	211-FS25-ATC
AIR	37	211-FS37-ATC
AIR	50	211-FS50-ATC

Thermocouple Pin Crimp Tool for Sub-D For all HV and UHV types

TYPE	No. PER PKT.	PART NUMBER
Standard	1	214-CTOOL-TC
High Quality	1	214-CTOOL-TC-HQ



If a high accuracy temperature measurement is required, the use of a Platinum Resistance Thermometer (PT100) is recommended. See Sec. 6



214-CTOOL-TC-HQ



214-CTOOL-TC



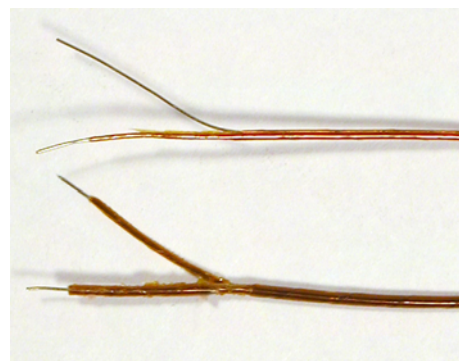
Thermocouple Wires Type K / N

Here is a selection out of our Kapton insulated thermocouple wires. Versions without junction are listed here.

The full range including bare wires and PTFE insulated wires is listed in Section 3

Single insulated
312-KAP-TCK (top)

Double insulated
311-KAP-TCK
(bottom)



General Specification 312-KAP-TC (K, N, E)

Vacuum	UHV
Material	Kapton coated T/C wire
Wire-ø	2 x 0.25 mm (max. OD 0.9 mm)
Temp.	-200°C to 250°C (higher Temperature when stripped)
Insulation	Kapton outer insulation, inside (+) wire blank, (-) wire insulated

Kapton Isolated Thermocouple wires – NO JUNCTION Types K / N / E

T/C TYPE	LENGTH	PART NUMBER
K	1 m	312-KAP-TCK-1M
K	5 m	312-KAP-TCK-5M
K	10 m	312-KAP-TCK-10M
N	1 m	312-KAP-TCN-1M
N	5 m	312-KAP-TCN-5M
N	10 m	312-KAP-TCN-10M
E	5 m	312-KAP-TCE-5M

Note: Wires with junction made available on request

Radiation resistant 311-KAP-TC(K/N/T)-RAD

Vacuum	UHV
Temp.	-200°C to 300°C
Radiation resistant	up to 10 ⁹ rad

Other specifications according 311-KAP-TC(K)

Radiation resistant Kapton Isolated Thermocouple wires Types K / N / T

T/C TYPE	LENGTH	PART NUMBER
K	1 m	301-KAP-TCK-1M
K	5 m	301-KAP-TCK-5M
K	10 m	301-KAP-TCK-10M
N	1 m	311-KAP-TCN-RAD-1M
N	5 m	311-KAP-TCN-RAD-5M
N	10 m	311-KAP-TCN-RAD-10M
T	1 m	311-KAP-TCT-RAD-1M
T	5 m	311-KAP-TCT-RAD-5M
T	10 m	311-KAP-TCT-RAD-10M

Note: Wires with junction made available on request
See section 3!

General Specification 311-KAP-TC (K)

Vacuum	UHV
Material	Kapton double insulated T/C wire Cromel (+) = yellow Alumel (-) = red
Wire-ø	2 x 0.25 mm (max OD 1.3 mm)
Temp.	-200°C to 250°C
Insulation	Kapton outer insulation, inside (+) wire yellow, (-) wire red

Kapton Isolated Thermocouple wires – double insulated NO JUNCTION - Types K / J

T/C TYPE	LENGTH	PART NUMBER
K	1 m	311-KAP-TCK-1M
K	5 m	311-KAP-TCK-5M
K	10 m	311-KAP-TCK-10M
J	10 m	311-KAP-TCJ-10M

Note: Wires with junction made available on request

High Density Sub-D

26, 44 and 78 Pins in a Standard Shell

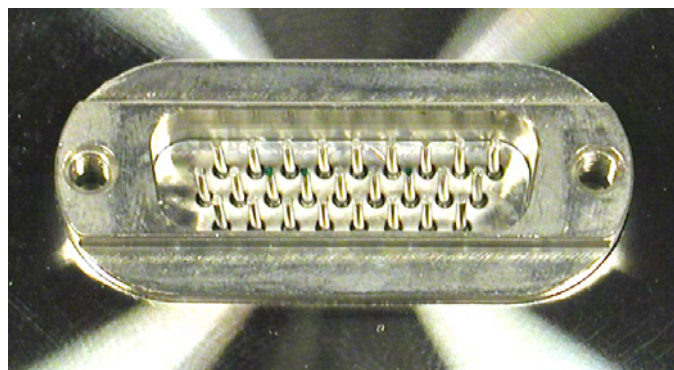
High density Sub-D Connectors offer more pins on the same shell size:

15 Pin standard- Sub-D -> 26 pin HD Sub-D

25 Pin standard- Sub-D -> 44 pin HD Sub-D

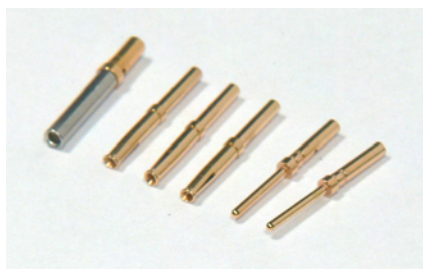
50 Pin standard- Sub-D -> 78 pin HD Sub-D

A 3-row / 4-row pin arrangement with reduced pin diameter makes this possible.

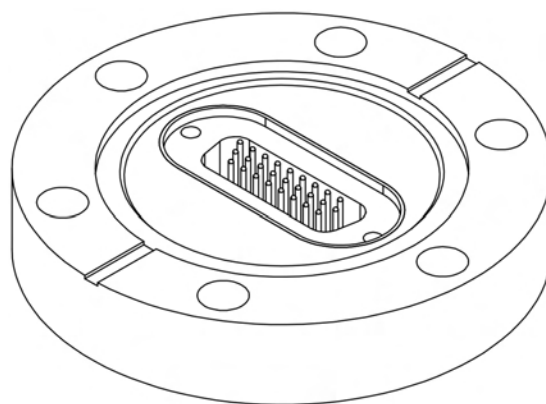


Size	H26	HD44	HD78
CF40	1	-	-
CF63	3	2	1
CF100	8	5	2

List of how many feedthroughs of one shell size will fit to a given CF flange size.



High Density Pins, Male and Female.
 As a comparison, a Standard Sub-D Pin is shown on the left.



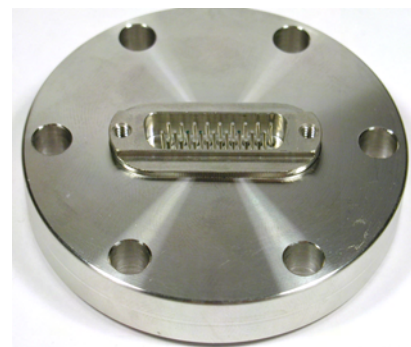
The Allectra 26 pin High Density Sub-D feedthrough fits on a DN40CF Flange.



Air Side Connector. The connector is solder type. It comes with a thumb screw housing.

High Density Sub-D Feedthroughs on CF Flanges / Ceramic Connectors / Weldable

Here the most common assemblies of High Density feedthroughs on CF flanges are listed.
Combinations with other feedthroughs are available



General Specifications HIGH DENSITY SUB-D

Compliance	DIN 41652 part 2 , MIL-C-24308
Pin-ø	0.7 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Max. Current	3A per pin
Cont. Current	1.5A, all pins loaded
Temp.	-200°C to 230°C
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He

Sub-D Feedthroughs on CF Flanges, HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER
40CF	26	210-HD26-C40
63CF	44	210-HD44-C63
63CF	78	210-HD78-C63
100CF	78	210-HD78-C100
63CF	2x26 (52)	210-HD26-C63-2
63CF	3x26 (78)	210-HD26-C63-3
63CF	2x44 (88)	210-HD44-C63-2
100CF	2x78 (156)	210-HD78-C100-2

Please ask for a quote for other combinations!

Sub-D High Density CERAMIC CONNECTORS, VACUUM SIDE

TYPE	NO. OF PINS	PART NUMBER
UHV Ceramic	26	211-FS26H-UHV
UHV Ceramic	44	211-FS44H-UHV
UHV Ceramic	78	211-FS78H-UHV

26 / 44 / 78 off Crimp pins are included

PEEK connectors are listed on page 1.25

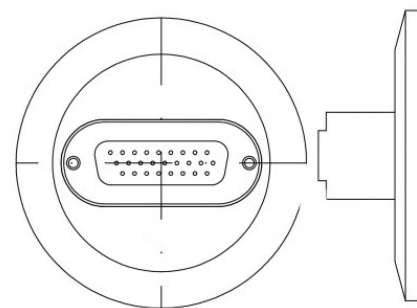
Weldable Sub-D Feedthroughs HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER
WELD	26	218-HD26-SS
WELD	44	218-HD44-SS
WELD	78	218-HD78-SS

Please note: Welding Sub-D Feedthroughs requires care and experience! Damage to the feedthroughs during welding is not covered by the warranty. We are happy to offer complete assemblies at competitive prices.

High Density Sub-D Feedthroughs on KF and ISO Flanges

Here the most common assemblies of High Density feedthroughs on CF flanges are listed. Combinations with other feedthroughs are available.

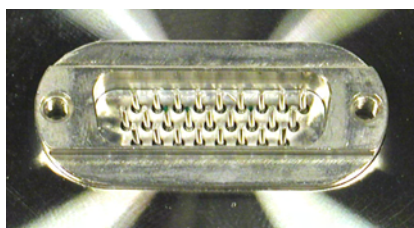


General Specifications HIGH DENSITY SUB-D

Compliance	DIN 41652 part 2 , MIL-C-24308
Pin-ø	0.7 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel 316L
Test Voltage	500V DC
Max. Current	3A per pin
Cont. Current	1.5A, all pins loaded
Temp.	-200°C to 230°C
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He

Sub-D Feedthroughs on KF / ISO-K Flanges, HIGH DENSITY

SIZE	NO. OF PINS	PART NUMBER
40KF	26	210-HD26-K40
50KF	26	210-HD26-K50
ISO-K63	44	210-HD44-ISO63
ISO-K63	78	210-HD78-ISO63
ISO-K63	2x44 (88)	210-HD44-ISO63-2
ISO-K100	2x78 (156)	210-HD78-ISO100-2



Sub-D HIGH DENSITY Gender Changers for Air side

TYPE	NO. OF PINS	PARTNUMBER
Female-Female	26	211-HD26-ADR
Female-Female	44	211-HD44-ADR
Female-Female	78	211-HD78-ADR

Why is there no version with 15 pins and with 68 pins?

The design of the Standard 15-pin Sub D of Allectra fits to a DN40CF, so there is no significant space saving by using a High Density version.

The 68 pin version would be bigger than the 78 pin version (3 row/ 4 row design).

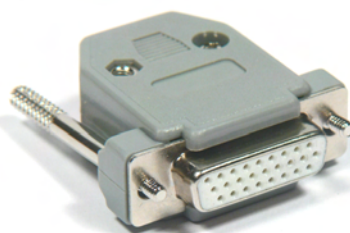
Nevertheless, if you have a reasonable demand for these sizes, Allectra can produce these types.

High Density Sub-D

Connectors for vacuum and air side

For all sizes, fitting vacuum side connectors made from PEEK or Ceramic (page 1.23) are offered. Aluminium housings with strain relief are available.

Important: The versions with 26 and 44 pin are not symmetric on air and vacuum side. By this, the vacuum side connectors will **not** fit to the air side and vice versa. Allectra offers also UHV compatible connectors for the air side for special applications (Please contact sales office for a quote)



General Specifications HIGH DENSITY PINS

Pin-ø	0.7 mm
Cable diameter	0.25 - 0.8 mm max (AWG22)
Material	phosphor bronze (female) Cu-Alloy (male)
Contact finish	hard gold-plated over nickel non-magnetic versions on request

Sub-D High Density CONNECTORS, VACUUM SIDE

TYPE	NO. OF PINS	PART NUMBER
HV/ UHV	26	211-FS26H-PK
HV/ UHV	44	211-FS44H-PK
HV/ UHV	78	211-FS78H-PK

26 / 44 / 78 off Crimp pins are included

Sub-D High Density MALE CONNECTORS, VACUUM SIDE

TYPE	NO. OF PINS	PART NUMBER
HV/ UHV	26	211-MS26H-PK
HV/ UHV	44	211-MS44H-PK
HV/ UHV	78	211-MS78H-PK

Please note: These versions fit to the vacuum side connectors listed above.

Contact sales office for versions fitting to the air side of our feedthroughs for special applications.

26 / 44 / 78 off Crimp pins are included

Sub-D High Density CONNECTORS AIR SIDE

TYPE	NO. OF PINS	PART NUMBER
AIR	26	211-FS26H-AIR
AIR	44	211-FS44H-AIR
AIR	78	211-FS78H-AIR

Sub-D High Density CRIMP PINS

TYPE	NO. OF PINS	PART NUMBER
FEMALE	10	212-PINFHD-10
FEMALE	26	212-PINFHD-26
FEMALE	44	212-PINFHD-44
MALE	10	212-PINMHD-10
MALE	26	212-PINMHD-26
MALE	44	212-PINMHD-44

For 78 pins please use 3x26 pin packages

HD vacuum connectors include already crimp pins

Non-magnetic female pins are available as well, add "-NM" to the part number

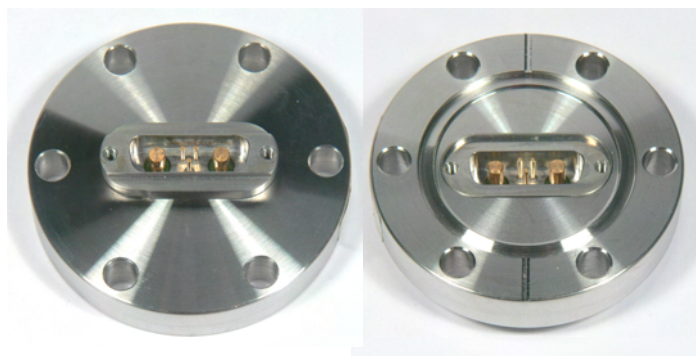
Combination Sub-D:

Power, Coaxial and Standard Pin Feedthroughs

Combination Feedthroughs offer High Power Pins or Coaxial Pins (see page 1.24) in the shell size of Sub-D.

Also combinations with standard pins are available.

The Power Pins are ideal for heater applications.



General Specifications COMBINATION POWER SUB-D

Compliance	DIN 41652, MIL-C-24308
Power Pin-ø	3.6 mm
Standard Pin-ø	1.0 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Max. Current	Power Pin: 20A continuous
Max Current	Standard Pin: 3A
Temp.	-200°C to 230°C
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He

Sub-D Feedthroughs on CF Flanges, POWER and MIXED POWER

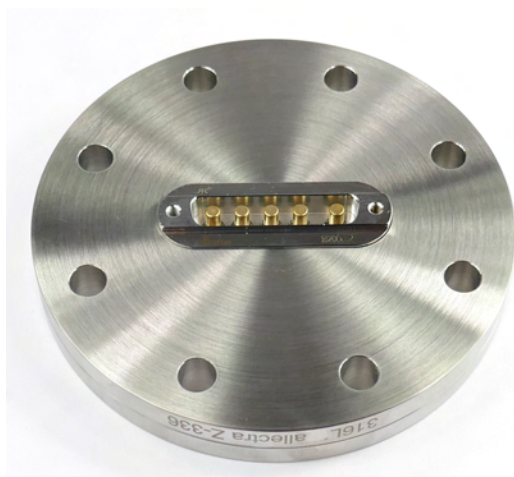
SIZE	NO. OF PINS	PART NUMBER
40CF	2P+5S	210-X15-2P5-C40
40CF	3P	210-X15-3P-C40
63CF	5P	210-X25-5P-C63
63CF	2x 2P+5S	210-X15-2P5-C63-2
63CF	2x 3P (6P)	210-X15-3P-C63-2
63CF	2x 5P (10P)	210-X25-5P-C63-2

P: Power pin, S: Standard pin

Sub-D Feedthroughs on KF and ISO-K Flanges, POWER and MIXED POWER

SIZE	NO. OF PINS	PART NUMBER
40KF	2P+5S	210-X15-2P5-K40
40KF	3P	210-X15-3P-K40
63ISO-K	5P	210-X25-5P-ISO63
63ISO-K	2x 2P+5S	210-X15-2P5-ISO63-2
63ISO-K	2x 3P (6P)	210-X15-3P-ISO63-2
63ISO-K	2x 5P (10P)	210-X25-5P-ISO63-2

C: Coaxial pin, S: Standard pin



Combination Sub-D:

Connectors and crimp pins

UHV connectors made out of PEEK as well as HV connectors are offered for combination Sub-D feedthroughs.
High power and coaxial types use the same connector sizes.



General Specifications Power Pins

Power Pin-ø	3.6 mm
Pin material	Gold plated
Max. Current	20A
Max. cable ø	2.0mm
Temp.	200°C to 230°C
Recommended cables:	
	311-KAPM-200 (flexible)
	311-KAP-180 (massive Cu)



Power Pins

Left: Male, Right: Female

The female versions fit to the F/T.

The Power connectors use the same pins on air and vacuum side.

The air and vacuum side connectors accept power contacts as well as co-axial ones. Please order the desired pins separately and insert them into the connector.

The Standard 1mm pins are included with the connectors.

HIGH POWER Vacuum side Connectors

TYPE	NO. OF PINS	PART NUMBER
HV*	2P/C +5	211-FX15-2X5-HV
HV	3P/C	211-FX15-3X-HV
HV	5P/C	211-FX25-5X-HV
UHV*	2P/C +5	211-FX15-2X5-PK
UHV	3P/C	211-FX15-3X-PK
UHV	5P/C	211-FX25-5X-PK
HV Male	2P/C +5	211-MX15-2X5-HV
HV Male	3P/C	211-MX15-3X-HV
HV Male	5P/C	211-MX25-5X-HV
UHV Male	2P/C +5	211-MX15-2X5-PK
UHV Male	3P/C	211-MX15-3X-PK
UHV Male	5P/C	211-MX25-5X-PK

*) Vacuum connectors include 5 off standard crimp pins
Please order the required power or coaxial pins separately

HIGH POWER Air side Connectors

TYPE	NO. OF PINS	PART NUMBER
AIR	2P/C +5S	211-FX15-2x5-AIR
AIR	2P/C	211-FX15-3X-AIR
AIR	5P/C	211-FX25-5X-AIR
AIR Male	2P/C +5	211-MX15-2X5-AIR
AIR Male	3P/C	211-FX15-3X-AIR
AIR Male	5P/C	211-FX25-5X-AIR

*) Vacuum connectors include 5 off crimp pins
P: Power pins, C: Coaxial pins

HIGH POWER Pins (female and Male)

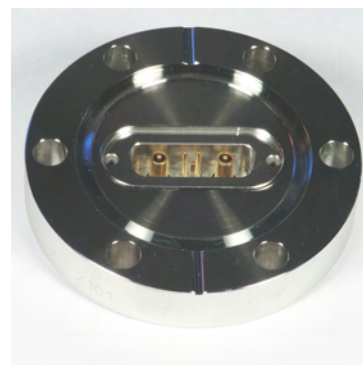
TYPE	NO. OF PINS	PART NUMBER
Power Female	1 off	212-POWER-F
Power Male	1 off	212-POWER-M

Combination Sub-D:

Coaxial Versions

Coaxial Mixed Sub.D feedthroughs are a good choice, if a floating shield coaxial connection is required, but the impedance is not an issue.

Up to 5 floating shield coaxial are offered in one feedthrough in the shell size of a standard 25-way Sub-D



General Specifications COMBINATION COAXIAL SUB-D

Compliance	DIN 41652, MIL-C-24308
Coaxial Pin	Floating shield
Standard Pin-ø	1.0 mm
Pin material	Gold plated NiFe
Seal	Glass Ceramic
Flange	Stainless Steel
Test Voltage	500V DC
Impedance Coax	not constant
Temp.	-200°C to 220°C
Leak rate	<5x10 ⁻¹⁰ mbar-l/s He

Sub-D Feedthroughs on CF Flanges, POWER and MIXED POWER

SIZE	NO. OF PINS	PART NUMBER
40CF	2C+3S	210-X15-2C3-C40
40CF	3C	210-X15-3C-C40
63CF	5C	210-X15-5C-C63
63CF	2x 2C+5S	210-X15-2C3-C63-2
63CF	2x 3C (6C)	210-X15-3C-C63-2
63CF	2x 5C (10C)	210-X15-5C-C63-2

C: Coaxial pin, S: Standard pin



Sub-D Feedthroughs on KF and ISO-K Flanges, POWER and MIXED POWER

SIZE	NO. OF PINS	PART NUMBER
40KF	2C+5S	210-X15-2C3-K40
40KF	3C	210-X15-3C-K40
63ISO-K	5C	210-X15-5C-ISO63
63ISO-K	2x24C+5S	210-X15-2C3-ISO63-2
63ISO-K	2x 3C (6C)	210-X15-3C-ISO63-2
63ISO-K	2x 5C (10C)	210-X15-5C-ISO63-2

C: Coaxial pin, S: Standard pin

Please note: The 5-pin power and coaxial feedthroughs are not symmetrical, BUT you can turn an air side connector by 180° to fit on the vacuum side. The housings are made to accept this. Please mind, that the pin numbering shown on the connectors is no longer valid in this case.

Combination Sub-D:

Coaxial connectors and pins

UHV connectors made out of PEEK as well as HV connectors are offered for combination Sub-D feedthroughs.

High power and coaxial types use the same connector sizes. Actually 3 types are offered:

- 2x Coax or Power pins + 5x 1mm pins
- 3x Coax or Power pins
- 5x Coax or Power pins

General Specifications Coaxial Pins

Centre Pin-	1 mm
Pin material	Gold plated
Max. Current	3A
Impedance	not constant
Temp.	-40°C to 120°C (HV housings) -200°C to 230°C UPEEK housings)
Recommended coaxial cables:	
311-KAP50	
311-KAP50-RAD	



The air and vacuum side connectors accept power contacts as well as co-axial ones. Please order the desired pins separately and insert them into the connector.

The Standard 1mm pins are included with the connectors.



High Voltage pins can be used for in-vacuum connections either on its own or with Mixed male and female connectors. The in-vacuum voltage rating is 5KV DC. Test voltage 10KV in vacuum. Air side use max. 2.7KV DC

A feedthrough for these pins is NOT available.



COAXIAL SUB-D Vacuum side Connectors

TYPE	NO. OF PINS	PART NUMBER
HV*	2P/C +5	211-FX15-2X5-HV
HV	3P/C	211-FX15-3X-HV
HV	5P/C	211-FX25-5X-HV
UHV*	2P/C +5	211-FX15-2X5-PK
UHV	3P/C	211-FX15-3X-PK
UHV	5P/C	211-FX25-5X-PK
HV Male	2P/C +5	211-MX15-2X5-HV
HV Male	3P/C	211-MX15-3X-HV
HV Male	5P/C	211-MX25-5X-HV
UHV Male	2P/C +5	211-MX15-2X5-PK
UHV Male	3P/C	211-MX15-3X-PK
UHV Male	5P/C	211-MX25-5X-PK

*) Vacuum connectors include 5 off standard crimp pins
Please order the required power or coaxial pins separately

COAXIAL SUB-D Air side Connectors

TYPE	NO. OF PINS	PART NUMBER
AIR	2P/C +5S	211-FX15-2x5-AIR
AIR	2P/C	211-FX15-3X-AIR
AIR	5P/C	211-FX25-5X-AIR
AIR Male	2P/C +5	211-MX15-2X5-AIR
AIR Male	3P/C	211-FX15-3X-AIR
AIR Male	5P/C	211-FX25-5X-AIR

*) Vacuum connectors include 5 off crimp pins

COAXIAL SUB-D Pins (female and Male)

TYPE	NO. OF PINS	PART NUMBER
Coaxial Female	1 off	212-COAX-F
Coaxial Male	1 off	212-COAX-M

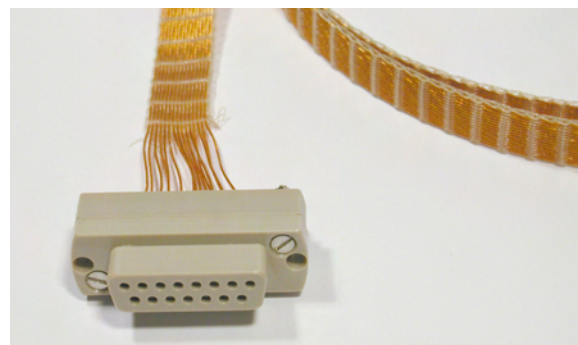
HIGH VOLTAGE PINS fitting to MIXED connectors (female and Male)

TYPE	NO. OF PINS	PART NUMBER
HV Female	1 off	212-HV-F
HVI Male	1 off	212-HV-M

Sub-D ready made In-Vacuum Cables

Allectra offers a full range of vacuum cables including both standard types and cables made to customers' specifications. The standard cable lengths is 0.5 m. Any desired length available.

Please note that only cables with one connector are listed here. The other end is left open.
All other types are available on request.

**Specifications Standard In-Vacuum Cables**

Vacuum	HV or UHV
Socket type	PEEK, Ceramic or HV
Construction	Kapton Ribbon Cable/ PTFE
Current	3A max / 5A max for High Current
Voltage	500V DC
Temp.	Defined by connectors

In-vacuum PTFE Ribbon Cable for Sub-D HV Socket to open end, 500mm long

VACUUM	No OF WIRES	PART NUMBER
HV (PTFE)	9	380-D09FXHPT-500
HV (PTFE)	15	380-D15FXHPT-500
HV (PTFE)	25	380-D25FXHPT-500
HV (PTFE)	37	380-D37FXHPT-500
HV (PTFE)	50	380-D50FXHPT-500

Please supply us with your requirements for custom cables:

Type of connectors, cable, with or without housing, shielding, length

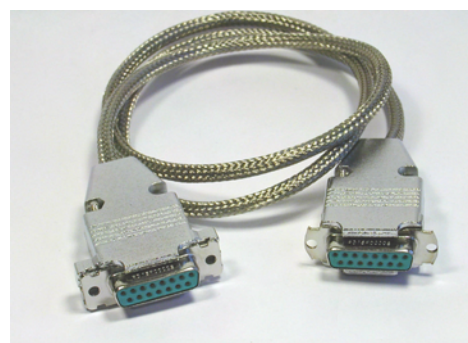
An example of a custom cable is shown below. One connector is made completely according customer specification.

**In-Vacuum KAPTON Ribbon Cable for Sub-D HV Socket to open end, 500mm long**

VACUUM	No. OF PINS	PART NUMBER
HV	9	380-D09FXHR-500
HV	15	380-D15FXHR-500
HV	25	380-D25FXHR-500
HV	37	380-D37FXHR-500
HV	50	380-D50FXHR-500

In-Vacuum KAPTON Ribbon Cable for Sub-D PEEK Socket to open end, 500mm long

VACUUM	No. OF PINS	PART NUMBER
UHV / HV	9	380-D09FXPR-500
UHV / HV	15	380-D15FXPR-500
UHV / HV	25	380-D25FXPR-500
UHV / HV	37	380-D37FXPR-500
UHV / HV	50	380-D50FXPR-500



Custom made HV-Cable with one "Small" connector, housings and complete shielding.
Please ask for a quote for your special application.

Sub-D ready made In-Vacuum Cables

High Density

For High density Sub-D cables, mainly ribbon cable is used. With 4, 10, 15 and 26 way ribbon cables all the sizes can be covered.

We use as well other cables out of our wide cable section according your requirements.

Cable types, Allectra can offer:

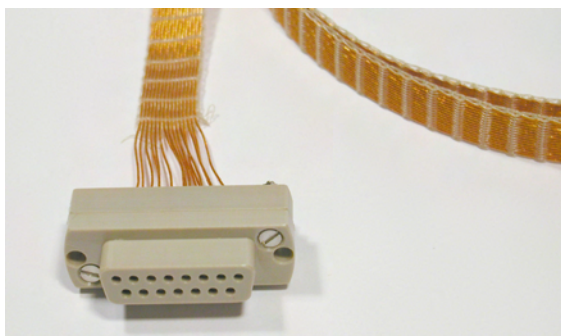
- female to open end
- male to open end
- female to male
- female to female (straight or cross over)
- male to male (straight or cross over)
- Y-cables and other adapter cables
for example from. 25 pin to 3x 9 pin connectors

Most versions can be made with shields for signal protection

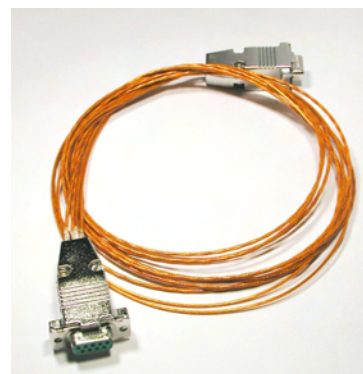
High current Sub-D cables

If required, various cables can be used on one connector

Allectra recommends the use of a housing for better handling and strain relief of the cables.



Please ask for a quote for custom length cables, cables with connectors on both sides and other modifications. Adapter cables from Standard-Density Sub-D to High Density versions are available on request.



Top: 26 pin HD connector with housing and 26way ribbon cable

Bottom: Special BNC to single wires cable



In-Vacuum High Density KAPTON Ribbon Cables UHV PEEK Socket to open end, 500mm long

VACUUM	No. OF PINS	PART NUMBER
UHV PEEK	26	380-HD26FXUR-500
UHV PEEK	44	380-HD44FXUR-500
UHV PPEK	78	380-HD78FXUR-500

How the part code describes the product:

380: Ready made cable group

HD: High Density connectors

26/44/78: Number of pins

F: One female connector

X: Open end

H /P: High vac or Peek connectors

R: Ribbon cable, Kapton insulated

500: Length in mm

Tools for Sub-D cable manufacturing

Here the various tools are listed together:

- Cable stripping tools
- Crimp tools
- Pin insertion and removal tools

Additional useful components are offered in Section 3



321-STRIP10. Both types have 6 settings for wire sizes

Cable Stripper for sizes up to 1mm Ø

DIAMETER	PART NUMBER
0.12 - 0.4mm	321-STRIP04
0.3 - 1.0mm	321-STRIP10



214-CTOOL, for thin wall turned pins



214-CTOOL-SUB-D, for standard Sub-D pins, with positioner



214-CTOOL-SUB-D-HQ, adjustable crimp tool, with positioner

Crimp Tools for Sub-D Pins Standard and Thermocouple

TYPE	PART NUMBER
Circular	214-CTOOL
Sub-D Standard	214-CTOOL-SUB-D
Sub-D High Quality	214-CTOOL-HQ
Thermocouple Std	214-CTOOL-TC
Thermocouple HQ	214-CTOOL-TC-HQ
Thermocouple HQ	214-CTOOL-TC-HQ2

Pin Insertion and Removal Tool for Standard, HD and Power / Coax Pins

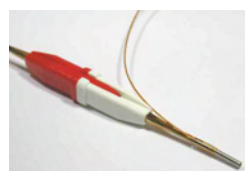
TYPE	USE FOR	PART NUMBER
Sub-D Standard	HV	214-CRIMPINS
Sub-D Std "BLACK"	HV	214-CRIMPINS-PRO-V2
Sub-D High Density	HV	214-CRIMPINS-HD
Power/Coax	HV/UHV	214-EXT-POWER

For UHV connectors, only the 214-EXT-POWER tool is required



High Quality crimp tools for stamped thermocouple pins, with positioners.

Top: 214-CTOOL-TC-HQ with 3 crimp positions
Bottom: 214-CTOOL-TC-HQ2 with 2 crimp positions.
Crimp results are similar for both tools



Various Pin Removal tools:
214-CRIMPINS



214-CRIMPINS-PRO-V2
used for HD housings type V2



214-EXT-POWER
for POWER and COAX pins



Simple low cost crimp
tool for thermocouple
pins.

Circular Miniature (CM) and Dual In-line (DIL) Feedthroughs



2.1 CM FEEDTHROUGHS

-> Page 2.2

12 and 19 Pin Circular Miniature Feedthroughs
6 Pin High Current Versions
Flanged versions CF and weldables



2.1 CM SETS

-> Page 2.3

Circular Miniature Feedthrough Sets
12 and 19 pin types
6 Pin high current types
include Air and Vacuum Sockets



2.3 CM: CONNECTORS

-> Page 2.4

Industry standard air side sockets
PEEK vacuum side sockets



2.4 CM: IN-VACUUM CABLES

-> Page 2.5

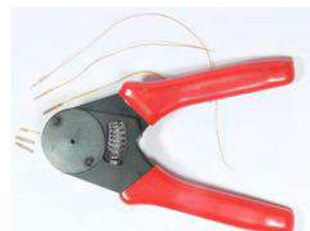
Vacuum ready cables for the Circular Miniature Feedthroughs
with housing and strain relief,
optional with shielding



2.5 DUAL IN-LINE (DIL)

-> Page 2.6

Dual In-line Feedthroughs
for direct connection to PCBs



TOOLS FOR CABLE STRIPPING AND CRIMPING

-> Sec. 6

12 & 19 Pin Circular Miniature Feedthroughs 6 Pin High Current versions

Based on the shell size of DIN connectors, Allectra offers compact feedthroughs with 12 and 19 Pins. Additionally a 6 way High Current version is available. The Industry Standard Air Side connectors are shielded and EMC compliant.

All Air Side Connectors are screw-on type. If used with the Vacuum Side Housing, a fully shielded connection from air to vacuum is possible.

Specifications

Compliance	IEC60130-9
Pin Diameter	1.6mm (6 pin) / 1.0mm (12+19 pin)
Test Voltage	500V DC (pin to pin / pin to GND)
Current	5A (6 pin) / 3A (12 and 19 pin)
Temp.	-200°C to 220°C
Leak rate	<5x10 ⁻¹⁰ mbar l/s He

Circular Miniature Feedthroughs 6 Pin High Current Versions

FLANGE	No. OF PINS	PART NUMBER
WELD	6	220-CM6
16CF	6	220-CM6-C16
40CF	6	220-CM6-C40
40CF	12 (2x6)	220-CM6-C40-2
63CF	12 (2x6)	220-CM6-C63-2
63CF	18 (3x6)	220-CM6-C63-3

Circular Miniature Feedthroughs 12 Pin Versions

FLANGE	No. OF PINS	PART NUMBER
WELD	12	220-CM12
16CF	12	220-CM12-C16
40CF	12	220-CM12-C40
40CF	24 (2x12)	220-CM12-C40-2
63CF	24 (2x12)	220-CM12-C63-2
63CF	36 (3x12)	220-CM12-C63-3

Circular Miniature Feedthroughs 19 Pin Versions

FLANGE	No. OF PINS	PART NUMBER
WELD	19	220-CM19
16CF	19	220-CM19-C16
40CF	19	220-CM19-C40
40CF	38 (2x19)	220-CM19-C40-2
63CF	38 (2x19)	220-CM19-C63-2
63CF	57 (3x19)	220-CM19-C63-3

Versions on KF flanges are available on request, smallest flange size is 25KF



220-CM12-C40-2
air side view



Weldable versions: 220-CM19 and 220-CM12
Required welding diameter is 21.3mm



220-CM12-C16 air side view

The CM Feedthroughs are designed for 16CF flanges. On larger flanges they can be used in combination with other types like Coaxial Feedthroughs or Sub-Ds.

Circular Miniature (CM) Feedthrough Sets include Air and Vacuum Side Sockets

The sets contain:

- Air side connector
- Vacuum feedthrough
- Vacuum side connector including pins
- Vacuum side housing with strain relief

(If no housing should be used, the parts can be ordered separately)

General Specifications

Vacuum	UHV
Temp. Vacuum Socket	-200°C to 220°C
Temp. Air Socket	85°C
Current 6 Pin type	5A
Current 12 & 19 Pins	3A
Test Voltage	500V DC
Rated Voltage	60V AC / 250V (6 Pin Type)
Thread size connector	M16



220-CM19-C16 with air side connector



Custom flange with 4x12 way CM Feedthroughs on a 63CF flange

The Sets listed here contain the vacuums side housings with strain relief. On request also sets without the housings are available for the 6-pin versions.



6 Pin High Current Circular Miniature F/T Sets on CF Flanges with Air and Vacuum Connectors **NEW**

FLANGE	No. OF PINS	PART NUMBER
16CF	6	220-SET6-C16-SR
40CF	6	220-SET6-C40-SR
40CF	12 (2x6)	220-SET6-C40-2-SR
63CF	12 (2x6)	220-SET6-C63-2-SR

Note: KF Sets available on request. Smallest size is 25KF

12 Pin Circular Miniature Feedthrough Sets on CF flanges with Air and Vacuum Connectors **NEW**

FLANGE	No. OF PINS	PART NUMBER
16CF	12	220-SET12-C16-SR
40CF	12	220-SET12-C40-SR
40CF	24 (2x12)	220-SET12-C40-2-SR
63CF	24 (2x12)	220-SET12-C63-2-SR

Note: KF Sets available on request. Smallest size is 25KF

19 Pin Circular Miniature Feedthrough Sets on CF flanges with Air and Vacuum Connectors **NEW**

FLANGE	No. OF PINS	PART NUMBER
16CF	19	220-SET19-C16-SR
40CF	19	220-SET19-C40-SR
40CF	38 (2x19)	220-SET19-C40-2-SR
63CF	38 (2x19)	220-SET19-C63-2-SR

Note: KF Sets available on request. Smallest size is 25KF

Circular Miniature Feedthrough Housings - Spare parts - **REDUCED**

No. OF PINS	PART NUMBER
6	220-SR6
12/ 19	220-SR



220-SR Housing with Strain Relief clamp

CM Series Air and Vacuum Sockets

PEEK Vacuum Side Sockets

- PEEK UHV Vacuum Side Sockets, 6, 12 or 19 way
 - SS Housings with strain relief
 - Air Side Sockets 6, 12 or 19 way
 - Straight or 90° Air Side Connector
- Allectra recommends the use of the housing for handling

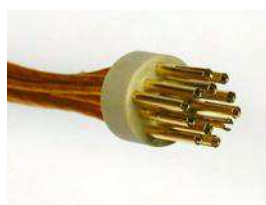


Specifications

Vacuum:	UHV
Materials	PEEK, Stainless steel
Current 6 Pin type	5A
Current 12/19 Pin type	3A
Temp. Vacuum Sockets	-200°C to 220°C
Temp. Air Sockets	-25°C to 85°C

Vacuum Sockets including Standard Pins
STANDARD type (without housing)

No. OF PINS	TYPE	PART NUMBER
6	STANDARD	220-CON6
12	STANDARD	220-CON12
19	STANDARD	220-CON19



Back shell with pins during assembly

Vacuum Sockets including Standard Pins
Type with Housing and Strain Relief

REDUCED

No. OF PINS	TYPE	PART NUMBER
6	HOUSING	220-CON6-SR
12	HOUSING	220-CON12-SR
19	HOUSING	220-CON19-SR

Specifications Pins

Vacuum:	UHV
Materials	Phospor Bronze / BeCu Gold plated
Wire Diameter Standard	0.6 ... 1.0mm Ø
Small	0.25 ... 0.6mm Ø
Connection	crimp or solder

Replacement Pins
Standard and Small Types

TYPE	QTY	PART NUMBER
Standard	12	220-CM-PINF-12
Standard	20	220-CM-PINF-20
Small	12	220-CM-PINF-12-S
Small	20	220-CM-PINF-20-S

The 6-pin Versions use the pins 360-CRBC-1.6
See page 52!

Air Side Sockets
Straight and 90° types

No. OF PINS	TYPE	PART NUMBER
6	STRAIGHT	220-CON6-AIR
6	90°	220-CON6-AIR90
12	STRAIGHT	220-CON12-AIR
12	90°	220-CON12-AIR90
19	STRAIGHT	220-CON19-AIR
19	90°	220-CON19-AIR90



Vacuum Ready Cables for Circular Miniature (CM) Series

- Kapton wire bundles, 6, 12 and 19 way
- UHV Cable lengths of 0.25m and 0.5m as standard
- Right Angle and Straight Air Side cables

The standard Kapton Wire is 311-KAPM-075 (see page 62) for 12- and 19-Pin, alternatively KAPM-060 and KAPM-100 types are available to order.

6-Pin version uses 311-KAPM-100

Specifications

Vacuum Side Cables	UHV
Temp.	-200°C to 250°C
Materials	Kapton coated Copper (311-KAPM-075 for 12-/19-Pin) Peek, Stainless Steel
Air Side Cables	
Temp.	-40°C to 80°C
Materials	PVC isolated Copper



Top: Cable without fitted Housing

Top of page: Cable with Housing and Strain Relief Socket

Left: Cable with Housing and Strain Relief Socket + Braid

Air Side Cables



Air Side Cables per Metrer Shielded cables (without connectors)

NEW

NR. PINS	LENGTH	PART NUMBER
6 (3x2)	1 m	314-CAB6-AIR
6	1 m	314-CAB6-AIR-HC*
12 (6x2)	1 m	314-CAB12-AIR
20 (10x2)	1 m	314-CAB20-AIR

*) High Current cable with 6x 0.75mm², shielded
Other cables: Shielded Twisted Pair 0.14mm²



Vacuum Ready Cable for CM Series with STRAIN RELIEF Socket

NEW

No. OF PINS	LENGTH	PART NUMBER
6	250	380-CM6-250-SR
6	500	380-CM6-500-SR
12	250	380-CM12-250-SR
12	500	380-CM12-500-SR
19	250	380-CM19-250-SR
19	500	380-CM19-500-SR

Vacuum Ready Cable for CM Series with STRAIN RELIEF and BRAIDED CABLE

REDUCED

No. OF PINS	LENGTH	PART NUMBER
6	250	380-CM6-250-SRB
6	500	380-CM6-500-SRB
12	250	380-CM12-250-SRB
12	500	380-CM12-500-SRB
19	250	380-CM19-250-SRB
19	500	380-CM19-500-SRB

Vacuum Ready Cable for CM Series Socket without housing

No. OF PINS	LENGTH	PART NUMBER
6	250	380-CM6-250
6	500	380-CM6-500

Air Side Cable for CM Series With mounted STRAIGHT plug

No. OF PINS	LENGTH	PART NUMBER
6	1 m	220-CAB6-AIR
6 (HC)	1 m	220-CAB6-AIR-HC
12	1 m	220-CAB12-AIR
19	1 m	220-CAB19-AIR

HC = High current

Air Side Cable for CM Series With mounted RIGHT ANGLE plug

No. OF PINS	LENGTH	PART NUMBER
6	1 m	220-CAB6-AIR90
12	1 m	220-CAB12-AIR90
19	1 m	220-CAB19-AIR90

You can get cables in all desired lengths! Above are cables in 1m length. For each additional 1m add the cable costs from the list on the left

Dual In-line Feedthroughs

for direct connection to Printed Circuit Boards

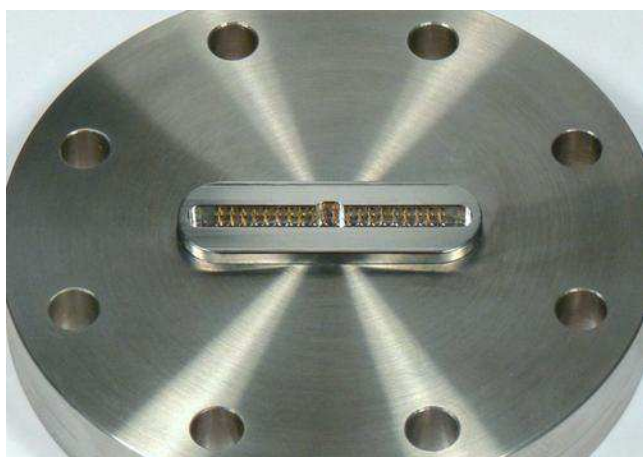
This special F/T allows direct connection to PCB on either Air or Vacuum side. Typically the electronic board is connected to the air side to give the shortest signal path.

Up to 3 Feedthroughs will fit onto a 63CF flange.

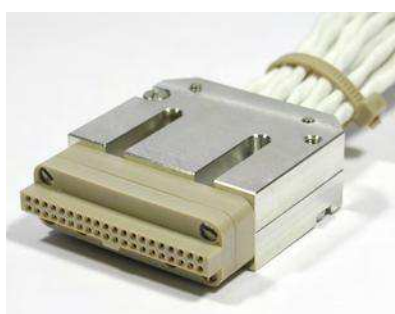


Specifications

Vacuum	UHV
Materials	Stainless Steel/ Glass Ceramic
Temp.	-40°C to 230°C
Current per pin	1A
Pin spacing	2mm pitch



230-DIL40M-C63

Crimp pin
360-CRF-05Vacuum side
connectorVacuum side
connector with
optional housingDual In-line Feedthroughs
2mm x 2mm pitch

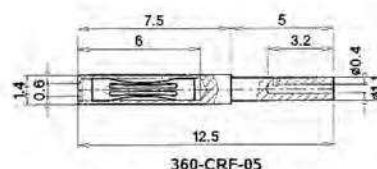
FLANGE	No. OF PINS	PART NUMBER
WELD	40	230-DIL40M
63CF	40	230-DIL40M-C63
63CF	80	230-DIL80M-C63-2
63CF	120	230-DIL120M-C63-3
100CF	40	230-DIL40M-C100
100CF	80	230-DIL80M-C100-2
100CF	120	230-DIL120M-C100-3
100CF	160	230-DIL160M-C100-4

Dual In-line Feedthroughs
Connectors for Air and Vacuum

VACUUM	TYPE	PART NUMBER
AIR	IDC	230-CON40M-IDC-AIR
AIR	SOLDER	230-CON40M-W-AIR
VACUUM	PEEK	230-CON40M-PK

Dual In-line Feedthroughs
Pins for vacuum side

VACUUM	No. PER PKT	PART NUMBER
VACUUM	10	360-CRF-05-10
VACUUM	40	360-CRF-05-40

Dual In-line Feedthroughs
Air side ribbon cable 1m

VACUUM	LENGTH	PART NUMBER
AIR	1 m	314-RIB40-1-AIR

Housings for Dual In-line Feedthroughs for Vacuum are available on request.