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# The Sub-miniature-D System

The Sub-miniature-D connector system was developed in 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)

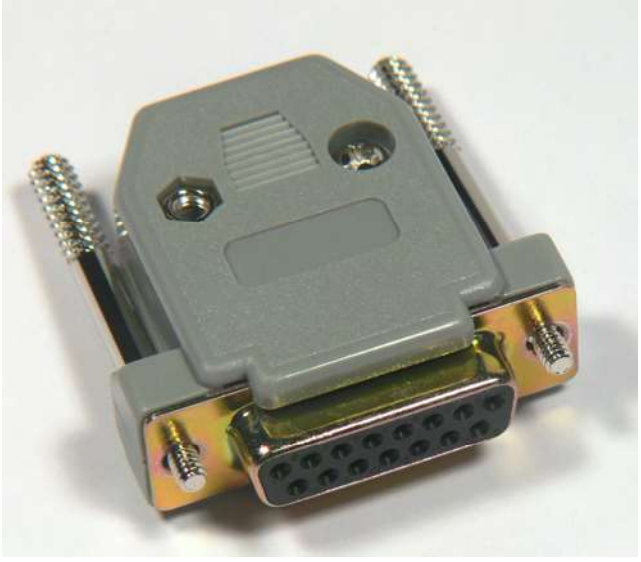
-***Mixed Sub-D*** with high power pins (page 1.26) or with coaxial pins (page 1.28).
High power pins allow up to 20A per Pin.
Coaxial pins are floating shield versions, they are cost effective alternatives for applications, where 50 Ohm impedance is not required.

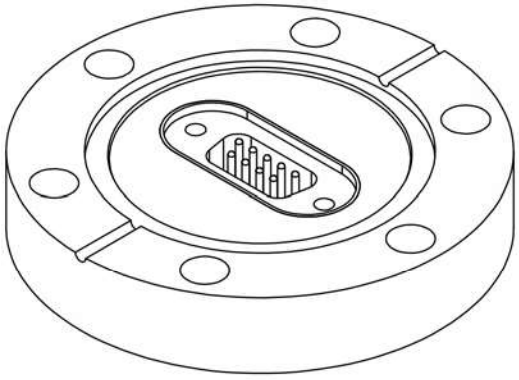
- Special ***non-magnetic*** and ***Titanium*** versions are available as well (page 1.13)

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.

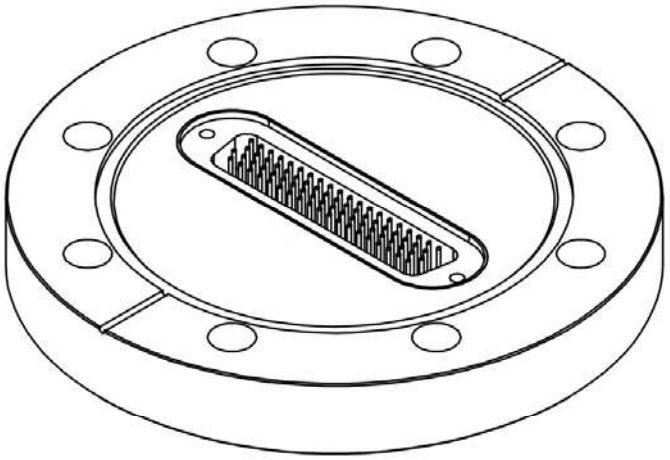
| Version | Nr. of pins | Current (continuous) |
|---|---|---|
| Standard | 9 to 50 | 3A |
| High current | 9 to 50 | 6A |
| High Density | 26 to 78 | 2A |
| Mixed Power | 2 to 5 | 20A |
| Mixed Coax | 2 to 5 | 2A coaxial floating |





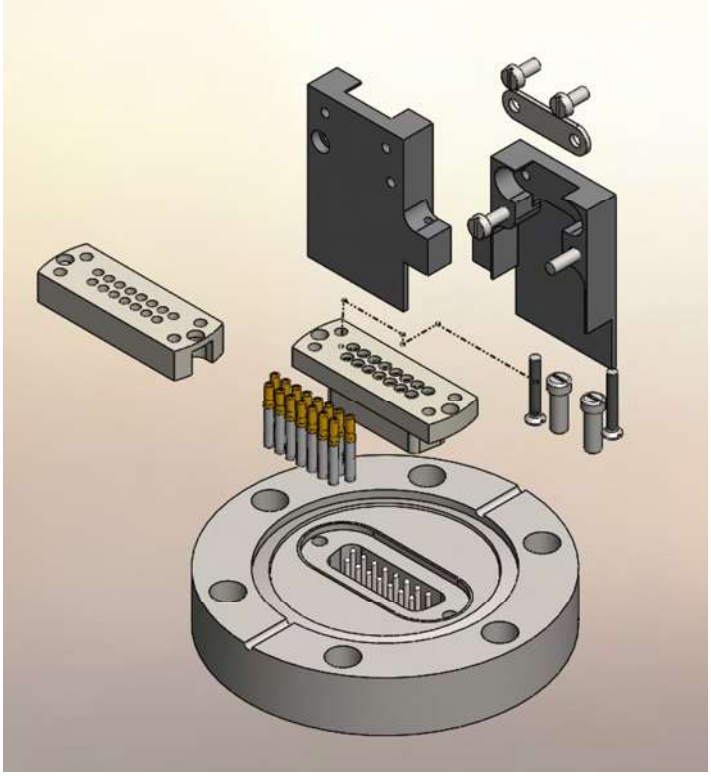
*TOP: The smallest feedthrough, mounted on a CF40 flange.*

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



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<br>3.6mm Mixed Power |
| Leak rate | $<5x10^{-10}$ mbar-l/s He<br>(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*

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## 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

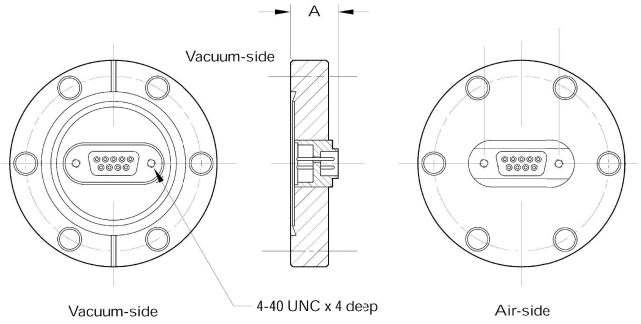
**General Specifications Sub-Miniature D**

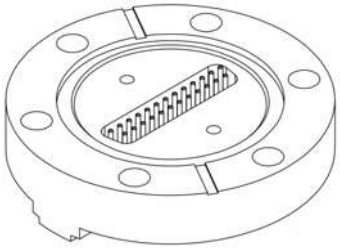
| | |
|---|---|
| Compliance | DIN 41652, MIL-C-24308 |
| Pin-ø | 1.0mm |
| Pin material | Gold plated NiFe |
| Seal | Glass Ceramic |
| Flange | Stainless Steel 316L |
| Test Voltage | 500V DC |
| Maximum Current | 5A per pin |
| Cont. Current | 3A per pin, all pins loaded |
| Temp. | -200°C to 250°C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