

**Power Feedthroughs, Low and High Voltage, Multi-way and Ceramic Breaks**

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Molybdenum, Stainless Steel and Copper Conductors



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Power Feedthroughs rated at up to 5KV and up to 20 A  
 Stainless Steel, Nickel and Copper Conductor



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High Current Feedthroughs rated at up to 1000Amps  
 Copper, Copper Tube Conductor and Screw-on contacts



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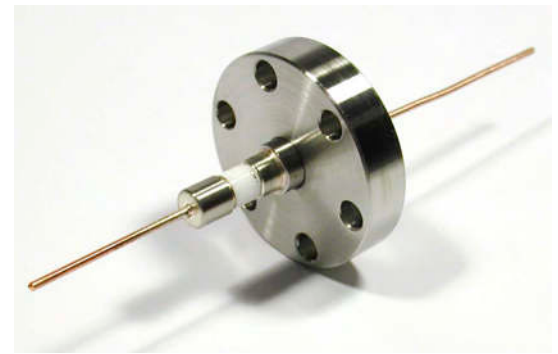
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Crimps, Push-ons, Screw-ons and Clamps

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Power Feedthroughs – low voltage types 500V & 1KV

- Choice of Conductor Materials: Molybdenum, Stainless Steel, Nickel or Copper
- 500 Volt types are very small and ideal when space is limited
- 1KV types are for general purpose instrumentation use  
All conductor materials and all flange types are available even if not shown in the product tables



### General Specification 500V types

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	500V, 8A max per Pin
Pin- $\varnothing$	0.8 mm
Pin material	Molybdenum (Cu, Ni, SS optional)
Weld $\varnothing$	1 Pin type 3.9 mm 2 & 4 Pins types 12.6 mm 8 Pin type 19 mm
Crimps	use 360-CRF-07-10

### 500V 8A Molybdenum Conductor Conductor 0.8 mm



FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-08MO500	30,00
WELD	2	264-08MO500-2	60,00
WELD	4	264-08MO500-4	70,00
WELD	8	264-08MO500-8	100,00
16CF	2	264-08MO500-2-C16	110,00
16CF	4	264-08MO500-4-C16	120,00
16CF	8	264-08MO500-8-C16	145,00

Note: also available with Copper (12A), Nickel (4A), Stainless Steel (1A) and Constantan (2A) conductors

### General Specification 1KV types

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	1KV, max current see below
Pin- $\varnothing$	1.3 mm
Pin material	SS, Cu or Kovar
Current SS	1 A max per pin
Current Cu	20 A max per pin
Current Kovar	7 A max per pin
Weld $\varnothing$	1 Pin type 6.3 mm 2 to 8 Pin types 19 mm
Crimps	use 360-CRIMP-1.3

### 1KV 1A Stainless Steel Conductor Conductor 1.3 mm (8 pin vers. Kovar rated 7A)



FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13SS1K	30,00
WELD	2	264-13SS1K-2	50,00
WELD	4	264-13SS1K-4	75,00
WELD	8*	264-13KO1K-8	100,00
16CF	2	264-13SS1K-2-C16	90,00
16CF	4	264-13SS1K-4-C16	105,00
16CF	8*	264-13KO1K-8-C16	140,00
16KF	2	264-13SS1K-2-K16	90,00
16KF	4	264-13SS1K-4-K16	105,00
16KF	8*	264-13KO1K-8-K16	140,00

Note: feedthroughs marked \* are also available with stainless steel tubes

### 1KV 20A Copper Conductor Conductor 1.3 mm



FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13CU1K	30,00
WELD	2	264-13CU1K-2	50,00
WELD	4	264-13CU1K-4	75,00
WELD	8	264-13CU1K-8	100,00
16CF	2	264-13CU1K-2-C16	90,00
16CF	4	264-13CU1K-4-C16	105,00
16CF	8	264-13CU1K-8-C16	140,00
16KF	2	264-13CU1K-2-K16	90,00
16KF	4	264-13CU1K-4-K16	105,00
16KF	8	264-13CU1K-8-K16	135,00

Note: also available with Nickel (7A) conductors



8 pin 500V version on 16CF (left) and 1KV version (right) with copper pin

**CRYOGENIC OPTION:** Versions with Constantan Pins for use at liquid Helium temperature are available. The current rating is 2A. Please ask for details.

**Power Feedthroughs rated at up to 5KV & up to 20 A**

- Stainless Steel, Nickel and Copper Conductors with a diameter of 1.3mm.
- Single Pin weldables
- up to 4 Pins on 16CF /16 KF Flanges

Custom arrangements on choice of flanges upon request



**General Specification 5KV types**

Vacuum	UHV (leak rate <math> < 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	5KV max current see below
Pin-ø	1.3 mm SS, Ni or Cu
Current Cu	20 A max per pin
Current Ni	7 A max per pin
Current SS	1 A max per pin
Weld-ø	1 pin type 6.3 mm
Weld-ø	2 or 4 pin types 19 mm
Crimps	use 360-CRIMP-1.3



261-13CU5K

For versions on 40CF and 40KF Flanges see next page!

**5KV 20A Copper Conductor Conductor 1.3 mm**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13CU5K	30,00
WELD	2	264-13CU5K-2	65,00
WELD	4	264-13CU5K-4	75,00
16CF	2	264-13CU5K-2-C16	105,00
16CF	4	264-13CU5K-4-C16	115,00
16KF	2	264-13CU5K-2-K16	105,00
16KF	4	264-13CU5K-4-K16	115,00

**5KV 7A Nickel Conductor Conductor 1.3 mm**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13NI5K	30,00
WELD	2	264-13NI5K-2	65,00
WELD	4	264-13NI5K-4	75,00
16CF	2	264-13NI5K-2-C16	105,00
16CF	4	264-13NI5K-4-C16	115,00
16KF	2	264-13NI5K-2-K16	105,00
16KF	4	264-13NI5K-4-K16	115,00

**5KV 1A Stainless Steel Conductor Conductor 1.3 mm**

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-13SS5K	30,00
WELD	2	264-13SS5K-2	65,00
WELD	4	264-13SS5K-4	75,00
16CF	2	264-13SS5K-2-C16	105,00
16CF	4	264-13SS5K-4-C16	115,00
16KF	2	264-13SS5K-2-K16	105,00
16KF	4	264-13SS5K-4-K16	115,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

# 4.4 POWER: 5KV/ 10KV UP TO 30 A

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## Power feedthroughs – 5KV and 10KV up to 30 A

- Stainless Steel, Nickel & Copper Conductors
- Up to 12 Pins on 40CF or 40KF flange
- Custom arrangements of Pins and Flange types upon request



264-24CU5K-4-C40

### General Specification 5KV 30A types

Vacuum	UHV (leak rate $<5 \times 10^{-10}$ mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Pin- $\emptyset$	2.4 mm
Voltage	5KV
Current	30 A per pin CU 15 A per pin Ni
Weld- $\emptyset$	11 mm
Connectors	use 360-CRIMP-2.4

### 5KV 30A Copper Conductor Conductor 2.4 mm

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-24CU5K	30,00
16CF	1	261-24CU5K-C16	75,00
16CF	2	264-24CU5K-2-C16	135,00
40CF	4	264-24CU5K-4-C40	185,00
40CF	8	264-24CU5K-8-C40	300,00
40CF	12	264-24CU5K-12-C40	365,00
16KF	1	261-24CU5K-K16	75,00
16KF	2	264-24CU5K-2-K16	135,00
40KF	4	264-24CU5K-4-K40	185,00
40KF	8	264-24CU5K-8-K40	300,00
40KF	12	264-24CU5K-12-K40	365,00

Note: also available with Nickel (15A) conductors

### General Specification 10KV types

Vacuum	UHV (leak rate $<5 \times 10^{-10}$ mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Pin- $\emptyset$	2.4 mm
Voltage	10KV
Current	30 A per pin CU 15 A per pin Ni
Weld- $\emptyset$	11 mm
Connectors	use 360-CRIMP-2.4

### 10KV 30A Copper Conductor Conductor 2.4 mm

REDUCED

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-24CU10K	35,00
16CF	1	261-24CU10K-C16	110,00
16CF	2	264-24CU10K-2-C16	165,00
40CF	4	264-24CU10K-4-C40	225,00
16KF	1	261-24CU10K-K16	110,00
16KF	2	264-24CU10K-2-K16	165,00
40KF	4	264-24CU10K-4-K40	225,00

Note: also available with Nickel (15A) conductors

### 5KV 100A Copper Conductor Conductor 4 mm

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-40CU5K	51,00
16CF	1	261-40CU5K-C16	105,00
40CF	1	261-40CU5K-C40	109,00
40CF	2	261-40CU5K-2-C40	189,00
25KF	1	261-261-40CU5K-K25	115,00
40KF	2	264-261-40CU5K-2-K40	186,00

Note: also available with Nickel (30A) conductors



261-24CU10K

Crimps see page 4.14.  
 Versions with air side Power Glove  
 Cables on page 4.8!

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

**High Current Feedthroughs to 1000A**

High Current Feedthroughs are suitable for heaters, furnaces and Electron Beam Evaporation Sources.

A range of types is offered as weld adaptors or on KF or CF flanges.

Special arrangements on standard or custom flanges are available upon request.

For very high current a 1000 Ampere water cooled Feedthrough is offered.



**Specification 5KV 150A types**

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Pin-ø	6.35 mm
Voltage	5KV
Current	150 A per pin CU 75 A per pin Ni 7 A per Pin SS
Weld-ø	15.8 mm
Connectors	use 360-PPO-6.6 / 360-PPO-6.4

**5KV 150A Copper Conductor  
 Conductor 6.35 mm ø**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
16CF	1	261-63CU5K-C16	97,00
40CF	2	264-63CU5K-2-C40	170,00
40CF	3	264-63CU5K-3-C40	225,00
40CF	4	264-63CU5K-4-C40	275,00
16KF	1	261-63CU5K-K16	80,00
40KF	2	264-63CU5K-2-K40	170,00
40KF	3	264-63CU5K-3-K40	225,00
40KF	4	264-63CU5K-4-K40	275,00

Also available with Nickel (75A) and stainless steel (7A) conductors

**Specification 3KV 250A types**

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	3KV , 250 A
Pin-ø	9.65 mm Cu
Weld-ø	19mm
Clamps	360-CLAMP-9.6

**3KV 250A Copper Conductor  
 Conductor 9.65 mm ø**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-96CU3K	68,00
16CF	1	261-96CU3K-C16	100,00
16KF	1	261-96CU3K-K16	100,00
1" BOLT	1	261-96CU3K-BP	195,00

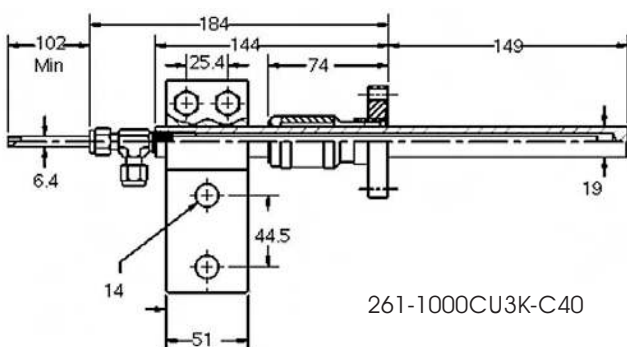
**Specification 3KV 600A types**

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS, Ceramic
Temp.	-200°C to 450°C
Electrical	3KV , 600 A
Pin-ø	19mm Cu
Weld-ø	28.5mm
Clamps	360-CLAMP-19

**3KV 600A Copper Conductor  
 Conductor 19 mm ø**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	261-190CU3K	166,00
40CF	1	261-190CU3K-C40	200,00
40KF	1	261-190CU3K-K40	200,00



**3KV 1000A Copper Tube Conductor  
 Watercooled 1/4" (6.35 mm) Swagelock conn.**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
40CF	1	261-1000CU3K-C40	750,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Multi-way Feedthroughs with MS Circular Sockets

- A range of Multi-way Feedthroughs with 10/ 23 or 40 Amps per Pin
- MS Circular Screw-On Sockets included
- MS sockets comply with MIL-C-5015
- Double Sided option on request



### Specification MS 10 Amps 700 Volts

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Air side Socket	MS Circular included
Temp.	-200°C to 450°C (without conn.)
Electrical	700V DC, 10 Amp max per Pin
Pin-ø	1.4 mm Alumel
Crimps	use 360-CRIMP-1.3/ 360-CRBC-1.4

### 700V 10A Multi-way 4 to 35 Alumel Cond. 1.4 mm includes MS Circular Air Side Socket

**REDUCED**

FLANGE	PINLENGTH	PINS	PART NUMBER	EURO
16CF	66.5	4	221-10AL700-4-C16	190,00
16CF	66.5	6	221-10AL700-6-C16	205,00
40CF	78	6	221-10AL700-6-C40	220,00
16CF	66.5	10	221-10AL700-10-C16	330,00
40CF	78	10	221-10AL700-10-C40	345,00
40CF	87	20	221-10AL700-20-C40	435,00
40CF	52	35	221-10AL700-35-C40	750,00
16KF	66.5	4	221-10AL700-4-K16	190,00
16KF	66.5	6	221-10AL700-6-K16	205,00
16KF	66.5	10	221-10AL700-10-K16	330,00
40KF	88	20	221-10AL700-20-K40	425,00
40KF	51	35	221-10AL700-35-K40	745,00



Double sided 4-pin Version on 40CF, these versions are available on request

Note: all MS types are also available double sided  
 Note: available as weldables to order

### Specification MS 23 Amps 700 Volts

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Air side Socket	MS Circular included
Temp.	-200°C to 450°C (without conn.)
Electrical	700V DC, 23 Amps max per Pin
Pin-ø	2.4 mm Copper
Crimps	use 360-CRIMP-2.4

### 700V 23A Multi-way 2 to 8 Copper Cond. 2.4 mm includes MS Circular Air Side Socket

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
40CF	2	221-23CU700-2-C40	270,00
40CF	3	221-23CU700-3-C40	290,00
40CF	4	221-23CU700-4-C40	335,00
40CF	5	221-23CU700-5-C40	360,00
40CF	7	221-23CU700-7-C40	415,00
40CF	8	221-23CU700-8-C40	445,00

Note: also available with Nickel(15A) conductors



221-40MO700-4-C40

### Specification MS 40 Amps 700 Volts

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar l/s)
Materials	SS, Ceramic
Air side Socket	MS Circular included
Temp.	-200°C to 450°C (without conn.)
Electrical	700V DC, 40 Amp max per Pin
Pin-ø	3.6 mm Molybdenum
Push-ons	use 360-PPO-4

### 700V 40A Multi-way 2 & 4 Molybdenum Cond. 3.6mm includes MS Circular Air Side Socket

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
40CF	2	221-40MO700-2-C40	330,00
40CF	4	221-40MO700-4-C40	400,00
40KF	2	221-40MO700-2-K40	330,00
40KF	4	221-40MO700-4-K40	400,00

Note: available as weldables to order

Note: also available with Nickel (25A) conductors

**High voltage 12KV with MS circular sockets**

- A range of High Voltage Multi-way Feedthroughs with 7.5 Amps per Pin
- MS Circular Screw-On Sockets included for the Air Side
- MS sockets comply with MIL-C-5015

Vacuum Side Sockets are available for 40CF versions. Please ask Sales Office for details.



**General Specification 267-075HV**

Vacuum	UHV
Compatible	MIL-C-5015
Pin-ø	1.3 mm
Pin material	Mo
Socket	MS circular socket
Leak rate	<math>5 \times 10^{-10}</math> mbar-l/s
Temp.	-200°C to 450°C
Test-Voltage	12KV DC
Current	7.5 A max per pin
Crimps	360-CRBC-1.3

**12KV 7.5A Multi-way 2 to 7 conductors, 1.3 mm includes MS circular air side socket**

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
16CF	2	267-075HV12K-2-C16	465,00
16CF	4	267-075HV12K-4-C16	505,00
16CF	7	267-075HV12K-7-C16	550,00
40CF	2	267-075HV12K-2-C40	465,00
40CF	4	267-075HV12K-4-C40	505,00
40CF	7	267-075HV12K-7-C40	550,00
16KF	2	267-075HV12K-2-K16	465,00
16KF	4	267-075HV12K-4-K16	505,00
16KF	7	267-075HV12K-7-K16	550,00
40KF	2	267-075HV12K-2-K40	465,00
40KF	4	267-075HV12K-4-K40	505,00
40KF	7	267-075HV12K-7-K40	550,00

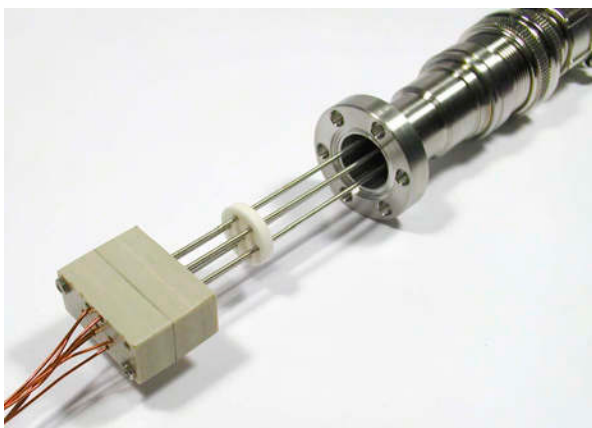
**Crimps Beryllium Copper For Conductor 1.3 mm**

SIZE	No PER PKT.	PART NUMBER	EURO
1.3 mm	10	360-CRBC-1.3	40,00

**Vacuum side Connector for 12KV F/T, 2 to 7 pins, FITS 40CF Feedthrough**

Pins	Qty.	PART NUMBER	EURO
2-4	1	267-CON12K-4	114,00
7	1	267-CON12K-7	126,00

Crimp pins are included



Vacuum side connector 267-CON12K-7. The connector will not fit through a 16CF flange, so it must be fitted from the vacuum side after installation. Alternatively a 40CF flange can be used.

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

### Power Glove Feedthroughs 5KV to 10KV



- A new design of High Voltage 5KV and 10 KV Feedthrough
- Air side cables and High Voltage Glove with 2.4 m length included
- 1, 2 or 4 Pins option on 40CF flange
- Supplied on CF, KF or custom flange designs

#### General Specification 265-025 (CU/ NI/ SS) 5K

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage Power Glove 2.4m
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	5KV DC
Test-Resistivity	>1GΩ (pins to ground)
Current	Cu: 25A max per pin Ni: 15A max per pin SS: 1A max per pin
Connectors	360-CRIMP-2.4 / 360-PPO-2.4
Weld-ø	11 mm

#### 5KV Power Glove Feedthroughs, Copper cond. 25A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-025CU5K	75,00
16CF	1	265-025CU5K-C16	130,00
40CF	2	265-025CU5K-2-C40	215,00
40CF	4	265-025CU5K-4-C40	365,00

#### 5KV Power Glove Feedthroughs, Nickel cond. 15A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-015NI5K	75,00
16CF	1	265-015NI5K-C16	130,00
40CF	2	265-015NI5K-2-C40	215,00
40CF	4	265-015NI5K-4-C40	365,00

#### 5KV Power Glove Feedthroughs, Stainless St. cond. 1A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-001SS5K	75,00
16CF	1	265-001SS5K-C16	130,00
40CF	2	265-001SS5K-2-C40	215,00
40CF	4	265-001SS5K-4-C40	365,00

#### General Specification 265-025 (CU/ NI/ SS) 10K

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage power Glove 2.4 m
Leak rate	<5x10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	10KV DC
Test-Resistivity	>1GΩ (pins to ground)
Current	Cu: 25A max per pin Ni: 15A max per pin SS: 1A max per pin
Connectors	360-CRIMP-2.4 / 360-PPO-2.4
Weld-ø	11 mm

#### 10KV Power Glove Feedthroughs, Nickel cond. 15A includes 2.4 m Air side **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-015NI10K	85,00
16CF	1	265-015NI10K-C16	145,00
40CF	2	265-015NI10K-2-C40	245,00
40CF	4	265-015NI10K-4-C40	425,00

#### 10KV Power Glove Feedthroughs, Copper cond. 25A includes 2.4 m Air side cable **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-025CU10K	85,00
16CF	1	265-025CU10K-C16	145,00
40CF	2	265-025CU10K-2-C40	245,00
40CF	4	265-025CU10K-4-C40	425,00

Note: also available with Stainless Steel (1A) conductors

Sub-D  
1  
CM + DIL  
F/T  
2  
Coax  
F/T  
3  
Power  
High Voltage  
4  
Thermo-  
couple  
5  
Cables  
Accessories  
6  
Viewports  
Fiberoptic  
7  
Valves  
8  
Motion  
Manipulation  
9  
Process  
Control  
10  
CF  
Hardware  
11  
KF  
Hardware  
12  
ISO-K  
Hardware  
13  
Adaptors  
Specials  
14  
HV / UHV  
Chambers  
15  
Atlas  
Bi-Metal  
16



**Power Glove Feedthroughs 20KV to 40KV**

Power Glove High Voltage Feedthroughs include an Air Side insulating cover and 2.4 m of High Voltage Cable  
 Power Glove Feedthroughs are available with Copper, Nickel or Stainless Steel conductors.

It is the users responsibility to ensure that electrical components are used in accordance with local regulations.



40KV Feedthrough with Cable

**Specification 20KV Power Glove**

Vacuum	UHV
Pin-ø	2.4 mm
Pin material	Cu, Ni or SS
Air cable	High Voltage power Glove 2.4m
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C without cable
Test-Voltage	20KV DC
Test-Resistivity	>1GΩ (pins to ground)
Current	Cu: 25A max per pin Ni: 15A max per pin SS: 1A max per pin
Crimps	360-CRIMP-2.4/ 360-PPO-2.4
Weld-ø	11 mm



265-025CU20K-4-C40



265-001SS20K-C40

**Specification 40KV with cable**

Vacuum	UHV
Materials	Straight Ceramic/SS
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Pin-ø	1.6 mm
Pin material	SS
Air cable	9 m cable included
Test-Voltage	40KV DC pin to ground
Current	7A
Crimps	360-CRBC-1.6
Weld-ø	28.5 mm

**20KV Power Glove Feedthroughs, Copper cond. 25A includes 2.4 m Air side cable** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-025CU20K	90,00
16CF	1	265-025CU20K-C16	150,00
40CF	2	265-025CU20K-2-C40	255,00
40CF	4	265-025CU20K-4-C40	445,00

**Air side cable for Power Glove Feedthroughs**

LENGTH	VOLTAGE	PART NUMBER	EURO
2.4 m	5 KV	265-CAB-5K	60,00
2.4 m	20 KV	265-CAB-20K*	60,00

\* also useable for 10KV

**20KV Power Glove Feedthroughs, Nickel cond. 15A includes 2.4 m Air side cable** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-015NI20K	90,00
16CF	1	265-015NI20K-C16	150,00
40CF	2	265-015NI20K-2-C40	255,00
40CF	4	265-015NI20K-4-C40	445,00

**20KV Power Glove Feedthroughs, Stainless St. cond, 1A includes 2.4 m Air side cable** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-001SS20K	90,00
16CF	1	265-001SS20K-C16	150,00
40CF	2	265-001SS20K-2-C40	255,00
40CF	4	265-001SS20K-4-C40	445,00

**40KV Feedthroughs, Stainless St. conductor 7A Air side connector and 9 m cable incl.** **REDUCED**

FLANGE	PINS	PART NUMBER	EURO
WELD	1	265-007SS40K	605,00
40CF	1	265-007SS40K-C40	565,00
40KF	1	265-007SS40K-K40	570,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## High Voltage Feedthroughs – other types

High Voltage Feedthroughs are offered in ratings up to 60KV. They are not built for high currents as high voltage and high current are typically not used together.

Tube Feedthroughs (see Page 51) are suitable for liquid cooling applications and High Voltages where higher currents are necessary.



### Specification 20KV Fluted Ceramic

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	20KV, max current as below
Pin	6.35 mm Cu or Ni
Max. Current	Cu 150A Ni 75A
Connector	360-PIC-6.6 (for air and vacuum side)

### 20KV Feedthroughs Nickel and Copper conductor Conductor 6.35 mm Fluted Ceramic

**REDUCED**

FLANGE	AMPS	PART NUMBER	EURO
40CF	75	266-075NI20K-C40	250,00
40CF	150	266-150CU20-C40	250,00

Weldable versions and KF versions available on request

### Specification 30KV Fluted Ceramic

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	30KV, max current as below
Pin	2.4 mm Cu or Ni or SS
Max. Current	Cu 30A SS 3A
Connector	360-PPO-2.4
Air Side	Threaded connection 1/4-28

### 30KV Feedthroughs, Stainless Steel and Copper cond. Conductor 2.4 mm

**REDUCED**

FLANGE	COND.	PART NUMBER	EURO
WELD	SS	266-003SS30K	145,00
40CF	SS	266-003SS30K-C40	200,00
40CF	Cu	266-030CU30K-C40	200,00

### Specification 30KV Fluted Ceramic 2 Pin

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	30KV, 50A (max. 5KV pin to pin)
Pin	2 x copper, 2.4 mm
Connector	360-PPO-2.4
Air Side	Threaded connection 1/4-28

### 30KV 50A Feedthrough - 2 PIN Conductors 2.4 mm

**REDUCED**

FLANGE	COND.	PART NUMBER	EURO
40CF	CU	266-050CU30K-2-C40	425,00



### Specification 60KV Fluted Ceramic

Vacuum	UHV (leak rate <math>< 5 \times 10^{-10}</math> mbar-l/s)
Materials	SS Ceramic
Temp.	-200°C to 450°C
Electrical	60KV 3A per Pin
Pin	Vacuum 4mm
Push-on	360-PPO-4
Air Side	Threaded connection 1/4-28

### 60KV Feedthrough Stainless Steel conductor 3A Conductor 2.4 mm

**REDUCED**

FLANGE	PINS	PART NUMBER	EURO
63CF	1	266-003SS60K-C63	930,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Baseplate Feedthroughs

Baseplate Feedthroughs are designed to fit through a 1" (25.4mm) hole and seal by compressing an O-Ring between 2 nuts.

Applications for these Feedthroughs include High Vacuum Coaters. Many of our Feedthroughs can be supplied as Baseplate types. This page shows a selection of those which are available.

### General Specification OCTAL type

Vacuum	High Vacuum
Materials	SS, Ceramic, Viton O ring
Seal	1" (25.4mm) Bolt type
Plate thickness	32 mm max
Pins	8 Octal pattern
Electrical	1KV 5Amps per Pin
Connectors	Air and Vacuum Octal included

### 1KV 8 way Feedthrough Stainless Steel conductor includes Air and Vacuum Octal Connectors **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	8	221-005OCT1KV-8-BP	358,00



264-13CU1K-2-BP

### Specification 1KV 20A Baseplate Feedthrough

Vacuum	High Vacuum
Materials	Stainless Steel, Viton O ring
Electrical	1 KV DC Max current as below
Seal	1" (25.4 mm) baseplate bolt
Plate thickness	32mm max
Pin material	1.3mm Cu (Ni or SS option)
Max. Current	Cu 20A Ni 7A SS 1A
Crimps	360-CRIMP-1.3
8 way Feedthrough has optionally SS tube or Ni conductors	

### 1KV 20A Baseplate Feedthrough Copper cond. 1.3mm Fits Baseplate with 1" (25.4mm) hole **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	2	264-13CU1K-2-BP	170,00
1" BOLT	4	264-13CU1K-4-BP	225,00
1" BOLT	8	264-13CU1K-8-BP	280,00

Also available with Stainless Steel tube and Nickel (7A) conductors



261-198CU3K-BP

### Specification 250 A BP Feedthrough

Vacuum	High Vacuum
Seal	1" (25.4mm) baseplate bolt
Plate thickness	32mm max
Pin	Cu (3/8-16 thread both sides) ~9.6mm
Electrical	3KV, 250A

### 3KV 250A Baseplate Feedthrough Copper conductor includes air and vacuum side clamping nuts **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	1	261-198CU3K-BP	195,00



261-1000WC-BP

### Specification 1000 A BP Feedthrough

Vacuum	High Vacuum
Seal	1" (25.4mm) baseplate bolt
Plate thickness	32mm max
Pin	Water Cooled Copper
Electrical	50V, 1000A

### 1000A Water Cooled Baseplate Feedthrough includes vacuum side clamping screw **REDUCED**

SIZE	PINS	PART NUMBER	EURO
1" BOLT	1	261-1000WC-BP	205,00

See page 52 for vacuum Side Crimps

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## High Voltage Cryogenic and Vacuum Breaks

- Small Tube Size Breaks for Gas and Liquid lines
- Cryogenic versions for use with Liquid Nitrogen
- Large sizes for System Isolation

N.B. If using Ceramic Breaks to join two Vacuum Systems while maintaining electrical isolation, the use of a bellows in addition to the Break is recommended. Stand-offs (see Page 51) for mounting high voltage items are suitable for use in air or vacuum. (In air the Maximum Voltage rating should be reduced by a factor of 2.5)



### General Specification Ceramic Breaks

Vacuum	UHV
Ceramic	Al <sub>2</sub> O <sub>3</sub>
Leak rate	< 5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C
Temp gradient	25°/ min Max
Test-Voltage	see Product Tables

### 5KV DC Cryogenic breaks Tube sizes 3/32" (2.4 mm), 1/8" (3.2 mm)

**REDUCED**

TUBE OD	LENGTH	PART NUMBER	EURO
3/32"(2.4)	58.4	271-CB-2.4	48,00
1/8"(3.2)	58.4	271-CB-3.2	56,00

### 10KV DC Cryogenic breaks Tube sizes 1/4"(6.35 mm) and 3/8"(9.5 mm)

**REDUCED**

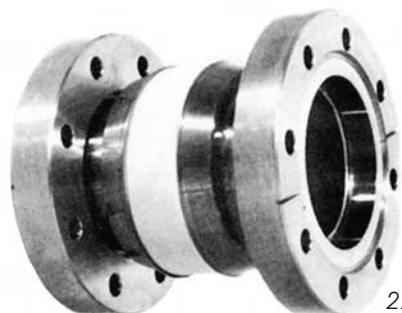
TUBE OD	LENGTH	PART NUMBER	EURO
1/4"(6.35)	76.2	271-CB-6.4	70,00
3/8"(9.5)	76.2	271-CB-9.5	110,00



271-CB-6.4

### 30KV Vacuum breaks 50.4mm long ceramic, I.D. 31.7 mm

FLANGE	LENGTH	PART NUMBER	EURO
38.1mm ø	97	271-CB30K-32	180,00
40CF	107	271-CB30K-32-C40	285,00
40KF	104	271-CB30K-32-K40	285,00



271-CB-10K-59-C63

### 15KV Vacuum breaks 25.4 mm long ceramic, I.D. 16.0 mm

FLANGE	LENGTH	PART NUMBER	EURO
19mm ø	67	271-CB15K-16	185,00
16CF	92	271-CB15K-16-C16	285,00
16KF	92	271-CB15K-16-K16	285,00

### 30KV Vacuum breaks 117 mm long ceramic, I.D. 16.0 mm

FLANGE	LENGTH	PART NUMBER	EURO
19mm ø	117	271-CB30K-16	290,00
16CF	117	271-CB30K-16-C16	410,00
16KF	117	271-CB30K-16-K16	410,00



271-CB-35K-85-C100

### 35KV Vacuum breaks 60 mm long fluted ceramic

FLANGE	LENGTH	PART NUMBER	EURO
101mm ø	118	271-CB35K-85	900,00
100CF	135	271-CB35K-85-C100	1.350,00

Also available 60KV version.  
 Please call our Sales Office.

### Ceramic Stand-offs, Tube Feedthroughs, High Voltage Vacuum Breaks

Ceramic Stand-offs enable items, which must be held at voltage, to be insulated from the chamber.



273-CSO-10-10



273-CSO-50-20

#### Specification Ceramic Stand-off Isolators

Material	Steatite (MgO)
Screws	SS
Voltage Vac	see table
Voltage Air	approx. 25% of Vacuum rating

#### Ceramic Stand-off isolators height excludes screws

KV	HEIGHT X DIAM	PART NUMBER	EURO
7KV	10 X 10	273-CSO-10-10	40,00
10KV	12.7 X 10	273-CSO-13-10	40,00
12KV	16 X 12.7	273-CSO-16-13	40,00
35KV	51 X 13	273-CSO-51-13	40,00
35KV	51 X 19	273-CSO-51-20	40,00

### Tube Feedthroughs

Tube feedthroughs can be used to carry both current and water for water cooled components in the vacuum system.



272-TU6SS5K welding Version

#### Specification Tube Feedthroughs

Tube	6.35 mm OD SS tube
Leak rate	<math>5 \times 10^{-10}</math> mbar l/s
Test-Voltage	5KV DC
Current	depends on water flow

#### 5kV Tube feedthroughs 1/4" (6.35mm) OD Stainless Steel Tubes

**REDUCED**

FLANGE	No. OF TUBES	PART NUMBER	EURO
16CF	1	272-TU6SS5K-C16	85,00
40CF	2	272-TU6SS5K-2-C40	160,00
40CF	3	272-TU6SS5K-3-C40	225,00
40CF	4	272-TU6SS5K-4-C40	275,00

Note 1: also available with Copper and Nickel Tube conductors

Note 2: also available with KF flanges

### High Voltage Vacuum Breaks up to 40KV

High Voltage vacuum breaks allow components to be coupled together with insulation of up to 40KV



271-CB-30K-51-C63

#### Specification 10kV to 40kV ceramic breaks

Vacuum	UHV
Materials	Ceramic, SS
Test Voltage DC	see Product table
I.D.	10KV : 7.9 mm 20KV: 23 mm 30KV: 51 mm 40KV: 61 mm

#### 10KV to 40KV Vacuum Breaks Straight Ceramic, Weldable Versions

**REDUCED**

TUBE Ø	LENGTH	VOLTAGE	PART NUMBER	EURO
12.9	39.4	10KV	271-CB10K-8	290,00
30.5	65.5	20KV	271-CB20K-23	330,00
60.3	85.3	30KV	271-CB30K-51	390,00
71.1	110.7	40KV	271-CB40K-61	430,00

#### 10KV to 40KV Vacuum Breaks Straight Ceramic, with CF Flanges

**REDUCED**

FLANGE	LENGTH	VOLTAGE	PART NUMBER	EURO
16CF	46.7	10KV	271-CB10K-8-C16	400,00
40CF	76.2	20KV	271-CB20K-23-C40	480,00
63CF	101.6	30KV	271-CB30K-51-C63	690,00
100CF	122.0	40KV	271-CB40K-61-C100	830,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Crimps, Connectors and Sockets

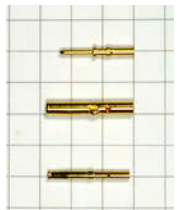
A full range of Crimps, Push-ons and Screw-on Connectors for electrical connection to the Air or Vacuum Side of Power Feedthroughs are offered.



Dimensions and Wire Maximum Sizes  
 - all in mm



Wire ØMax	Crimp Length	Crimp Diam.	Material
0.4	12.5	1.4	Au plated Cu
0.8	13.3	1.7	Au plated Cu
1.0	13.7	2.2	Au plated Cu
1.0	13.7	2.2	Au plated Cu
1.3	28.5	3.8	Au plated Cu
1.7	15.0	4.9	Au plated Cu



Wire ØMax	Crimp Length	Crimp Diam.	Material
0.8	13.2	1.3	Au plated Cu
1.0	14.0	2.2	Au plated Cu
1.0	14.0	2.2	Au plated Cu
1.3	16.0	3.7	Au plated Cu



Wire ØMax	Be Cu	Crimp Length	Crimp Diam.	Material
1.7	19.0	2.6		BeCu
1.7	19.0	2.6		BeCu
1.7	19.0	2.6		BeCu



Wire ØMax	Push-on Length	Push-on Diam.	Material
1.27	17.5	6.4	BeCu
1.27	17.5	6.4	BeCu
1.27	17.5	6.4	BeCu
1.27	17.5	6.4	BeCu
2.44	25.4	12.7	BeCu



Wire ØMax	Screw & Nut Length	Push-on Diam.	Material
-	50	7	Ag plated Cu



Wire ØMax	Socket Length	Socket Diam.	Material
1.5	12.7	4.8	BeCu
1.8	12.7	4.8	BeCu
3.8	14.2	6.3	BeCu
3.0	16.0	6.3	BeCu
6.6	25.4	12.7	BeCu



Wire ØMax	Material
-	Cu Ag plated
-	Cu

### Crimps Female fit to Feedthrough Pins Gold Plated Copper alloy

PIN SIZE	No PER PKT.	PART NUMBER	EURO
0.5 mm	10	360-CRF-05-10	45,00
0.7 - 0.8 mm	10	360-CRF-07-10	45,00
1.0 mm	10	212-PINF-10	13,00
1.0 mm	25	212-PINF-25	27,00
1.3 - 1.5 mm	5	360-CRIMP-1.3	43,00
2.3 - 2.4 mm	5	360-CRIMP-2.4	44,00

### Male Crimps to fit Female Crimps Gold Plated Copper alloy

PIN SIZE	QTY	PART NUMBER	EURO
0.7 - 0.8mm	10	360-CRM-07-10	18,00
1.0mm	10	212-PINM-10	8,00
1.0mm	25	212-PINM-25	17,00
1.3 - 1.5mm	5	360-CRIMP-1.3-M	39,00

### Power Crimps Beryllium Copper for Conductor 0.8, 1.3 and 1.6 mm

SIZE	No PER PKT.	PART NUMBER	EURO
0.8 mm	10	360-CRBC-0.8	63,00
1.3 mm	10	360-CRBC-1.3	40,00
1.6 mm	10	360-CRBC-1.6	40,00

### Power Push-ons with Allen Screw Beryllium Copper

PIN SIZE	No PER PKT.	PART NUMBER	EURO
1.0 mm	10	360-PPO-1.0	74,00
1.3 mm	10	360-PPO-1.3	50,00
1.5 mm	10	360-PPO-1.5	50,00
2.4 mm	10	360-PPO-2.4	50,00
6.4 mm	2	360-PPO-6.4	59,00

### Power Push-on with M5 screw and nut Silver plated copper alloy

PIN SIZE	No PER PKT.	PART NUMBER	EURO
4.0 mm	5	360-PPO-4.0	48,00

### Power In-line Screw-on Sockets Beryllium Copper

MAX PIN SIZE	No PER PKT.	PART NUMBER	EURO
1.5 mm	10	360-PIC-1.5	52,00
1.8 mm	10	360-PIC-1.8	52,00
3.0 mm	10	360-PIC-3.0	52,00
3.4 mm	10	360-PIC-3.4	82,00
6.6 mm	10	360-PIC-6.6	98,00

### Clamps for large conductors - 1 per packet Conductor from 2.0 to 19.0 mm

PIN SIZE	No PER PKT.	PART NUMBER	EURO
3.6 - 9.6 mm	1	360-CLAMP-9.6	85,00
19 mm (See P. 43)	1	360-CLAMP-19	419,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

**Thermocouple Feedthroughs, High Current, Combinations, Sockets and Wires**



**5.1 THERMOCOUPLE F/T TYPES K, N, C AND WIRES -> Page 5.2**

Thermocouple Feedthroughs Types K, N and C  
 Kapton Isolated Thermocouple wires  
 Bare Thermocouple wires  
 PTFE (Teflon) Isolated Thermocouple wires



**5.2 THERMOCOUPLE F/T TYPES R, S, T AND WIRES -> Page 5.4**

Thermocouple Feedthroughs TYPE R/S - with screw terminals  
 Bare Thermocouple wires – NO JUNCTION - 1.5 m long  
 Bare Thermocouple - with welded JUNCTION - 300 mm long



**5.3 COMBINATION POWER/ THERMOCOUPLE F/T -> Page 5.5**

Power Pins up to 30A  
 Power Pins up to 150A



**5.4 THERMOCOUPLE F/T WITH MS CIRCULAR SOCKETS -> Page 5.7**

Thermocouple Feedthrough with MS Air Side Sockets

**5.5 T/C Air Side Crimps -> Page 5.8**

Thermocouple Sockets  
 Screw & Nut Sets  
 Thermocouple Crimps

Type	(+) Material	(-) Material	EMV $\mu\text{V/K}$	Temp Range	Socket Col.	Remarks
K	Chromel® Ni-Cr	Alumel® Ni-Al	41	-200°C... 1250°C	Yellow	Most common, (-) magnetic, Hysteresis effects 250-600°C
N	Nicrosil® Ni-Cr-Si	Nisil® Ni-Si	28	-250°C... 1300°C	Pink/ Orange	Best wide range element high stability
C	W5%Re	W26%Re	15	0°C ... 2320°C	Red	For high temperatures, no IEC element F/T with extension grade material
E	Chromel® Ni-Cr	Constantan® Cu-Ni	68	-200°C... 900°C	Violet	High EMV rarely used
J	Iron	Constantan® Cu-Ni	53	0°C... 750°C	Black	Old style TC
T	Cu	Constantan® Cu-Ni	43	-200°C... 350°C	Blue	Old style TC Cryo use
R	Pt13%Rh	Pt	6	0°C... 1450°C	---	Very high stability,expensive F/T with extension grade material
S	Pt10%Rh	Pt	7	0°C... 1450°C	---	Very high stability,expensive F/T with extension grade material

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermocouple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
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- 11 CF Hardware
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- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Thermocouple Feedthroughs Type K, C and N

Thermocouple feedthroughs have pins made from the corresponding thermocouple pair materials. On the vacuum side the pins terminate with a screw connector (included). The (+) pole is 25 mm shorter than the (-) pole.

Miniature T /C Connectors are included for the Air Side. The Type-N feedthroughs use screw connectors for air and vacuum side similar to R/ S types (see page 56)



### General Specification 262-TC (K, C or N)

Vacuum	UHV
Pin material	Type K,C* or N T/C
Pin length	(+) pole 25mm shorter than (-)pole
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C
Air sockets	Miniature TC Connector / Screw (N)
Vac side	Screw & nut
Weld-ø	1 to 3 pairs 19 mm 4 to 5 pairs 38 mm

\* extension grade material with the same thermo-electric properties for type C only

### Thermocouple Feedthroughs TYPE K 1 to 5 pairs including air side sockets

REDUCED

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCK-1-C16	105,00
16CF	2	262-TCK-2-C16	160,00
16CF	3	262-TCK-3-C16	240,00
40CF	4	262-TCK-4-C40	375,00
40CF	5	262-TCK-5-C40	440,00
16KF	1	262-TCK-1-K16	105,00
16KF	2	262-TCK-2-K16	160,00
16KF	3	262-TCK-3-K16	240,00
40KF	4	262-TCK-4-K40	375,00
40KF	5	262-TCK-5-K40	440,00

Also available as weldables

### Thermocouple Feedthroughs TYPE C 1 to 5 pairs including air side sockets

REDUCED

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCC-1-C16	105,00
16CF	2	262-TCC-2-C16	160,00
16CF	3	262-TCC-3-C16	240,00
40CF	4	262-TCC-4-C40	375,00
40CF	5	262-TCC-5-C40	440,00
16KF	1	262-TCC-1-K16	105,00
16KF	2	262-TCC-2-K16	160,00
16KF	3	262-TCC-3-K16	240,00
40KF	4	262-TCC-4-K40	375,00
40KF	5	262-TCC-5-K40	440,00

Also available as weldables

### Thermocouple Feedthroughs TYPE N 1 to 5 pairs including screw connectors

REDUCED

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCN-1-C16	110,00
16CF	2	262-TCN-2-C16	170,00
16CF	3	262-TCN-3-C16	296,00
40CF	4	262-TCN-4-C40	550,00
40CF	5	262-TCN-5-C40	678,00
16KF	1	262-TCN-1-K16	110,00
16KF	2	262-TCN-2-K16	170,00
16KF	3	262-TCN-3-K16	296,00
40KF	4	262-TCN-4-K40	550,00
40KF	5	262-TCN-5-K40	678,00

Also available as weldables



262-TCC-1-C16

### Pin Identification

<b>K Type</b>	
Temp. Range	-200°C to 1250°C
Pin length	+ pole (short) Chromel - pole (long) Alumel
Air side colour:	yellow
<b>C Type</b>	
Temp. Range	0°C to 2320°C
Pin length	+ pole (short) - pole (long)
Air side colour:	red
<b>N Type</b>	
Temp. Range	-250°C to 1300°C
Pin length	+ pole (short) Nicrosil - pole (long) Nisil screw connectors



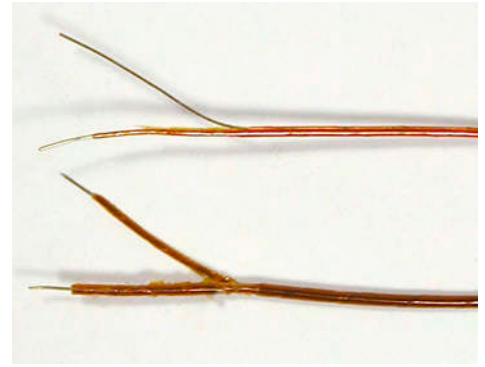
**Thermocouple Wires Type K / N / C**

For the most common types of Thermocouples, Allectra offers a variety of different thermocouple wires.

The standard wires come without TC connection at the end. As an option Allectra offers welded tips on bare or on the insulated wires. The tip can be left blank (best thermal contact) or electrically insulated with PTFE.

Single insulated  
312-KAP-TCK (top)

Double insulated  
311-KAP-TCK  
(bottom)



**General Specification 312-KAP-TC (K or N)**

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**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	312-KAP-TCK-1M	35,00
K	5 m	312-KAP-TCK-5M	128,00
K	10 m	312-KAP-TCK-10M	240,00
N	1 m	312-KAP-TCN-1M	35,00
N	5 m	312-KAP-TCN-5M	128,00
N	10 m	312-KAP-TCN-10M	240,00

Note: Wires with junction made available on request

**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**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	311-KAP-TCK-1M	45,00
K	5 m	311-KAP-TCK-5M	155,00
K	10 m	311-KAP-TCK-10M	290,00

Note: Wires with junction made available on request

**General Specification 313-TC (K, C or N)**

Vacuum	UHV
Material	Bare T/C wire
Wire-ø	2 x 0.25 mm or 2 x 0.13 mm
Insulation	none
TC junction	on request

**Bare Thermocouple wires – NO JUNCTION - Types K, C & N  
Original Material – No extension grade material**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	313-TCK-025	12,00
C	30 cm	313-TCC-013*	POR
N	1 m	313-TCN-025	13,00

Note: Wires with junction made available on request

\* Wire diameter 0.13 mm, 0.25mm on request

**General Specification 312-PTFE-TCK**

Vacuum	UHV
Material	PTFE insulated K type
Wire-ø	2 x 0.5 mm (max OD 1.4 x 2.5mm)
Temp.	-200°C to 250°C
Insulation	PTFE
TC junction	on request

**PTFE Isolated Thermocouple wires – NO JUNCTION  
Type K**

T/C TYPE	LENGTH	PART NUMBER	EURO
K	1 m	312-PTFE-TCK-1M	26,00
K	5 m	312-PTFE-TCK-5M	104,00
K	10 m	312-PTFE-TCK-10M	208,00

**Type K Kapton Isolated Thermocouple wires  
with welded tip junction**

TIP INSULATED	LENGTH	PART NUMBER	EURO
no	1 m	311-KAP-TCK-1-L	49,00
yes (PTFE)	1 m	311-KAP-TCK-1-X	54,00

also available in 2m length

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

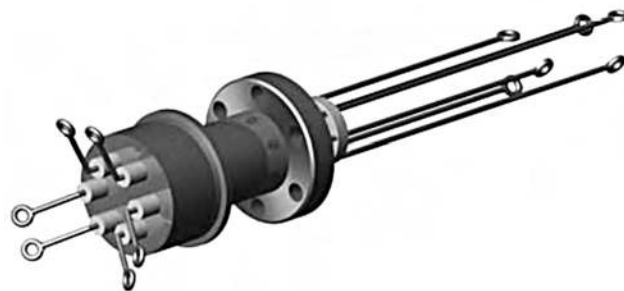
- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Thermocouple Feedthroughs Type R/ S/ T

### Thermocouple Wires for Type K/ C/ N/ R/ S

In addition to the popular K, N and C thermocouples, Allectra offers the special purpose R, S and T types. Types R and S share the same feedthrough pin material and the same F/T may be used in both cases.

Type T is particularly suitable for cryogenic applications. Additionally types E and J are available to order.



#### General Specification 262-TC (R or S)

Vacuum	UHV
Pin material	R – extension grade
Pin length	+ pole 25mm shorter than -pole
Leak rate	< 5 x 10 <sup>-10</sup> mbar l/s
Temp.	-200°C to 450°C
Test-Resistivity	>1GΩ (pins to ground)
Air sockets	screw loops
Vac side	screw loops
Weld-∅	1 to 3 pairs 19 mm 4 to 5 pairs 38 mm

#### Pin Identification

R/ S Type	
Temp.	0°C to 1450°C
Pin length	+ pole (short) R: Pt 13% Rh, S:Pt 10% Rh - pole (long) R and S: Pt
	(F/T uses extension grade material)
T Type	
Temp.	-200°C to 350°C
Pin length	+ pole (short) Cu - pole (long) Constantan

#### General Specification 313-TC (K, C or N)

Vacuum	UHV
Material	Bare TC wire
Wire-∅	2 x 0.25 mm or 2 x 0.13 mm
Temp.	see table page 53
Insulation	none
T/C junction	standard type: None included in JOINT type

#### Thermocouple Feedthroughs Type R/S with screw terminals

**REDUCED**

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	1	262-TCR-1-C16	110,00
16CF	2	262-TCR-2-C16	170,00
16CF	3	262-TCR-3-C16	296,00
40CF	4	262-TCR-4-C40	478,00
40CF	5	262-TCR-5-C40	590,00
16KF	1	262-TCR-1-K16	110,00
16KF	2	262-TCR-2-K16	170,00
16KF	3	262-TCR-3-K16	296,00
40KF	4	262-TCR-4-K40	478,00
40KF	5	262-TCR-5-K40	590,00

Note 2 : also available for Thermocouples type T

Note 1 : also available as weldables

#### Bare Thermocouple wires – NO JUNCTION (1.5 m long) Types R & S - Original Material – Not extension grade

T/C TYPE	DIAMETER	PART NUMBER	EURO
R	0.13 mm	313-TCR-013	POR
R	0.25 mm	313-TCR-025	POR
S	0.13 mm	313-TCS-013	POR
S	0.25 mm	313-TCS-025	POR

Note: Wires with junction made available on request

#### Bare Thermocouple JUNCTION (300 mm long) Types K/ C/ N

T/C TYPE	DIAMETER	PART NUMBER	EURO
K	0.25 mm	313-TCK-JOINT	12,00
C	0.25 mm	313-TCC-JOINT	POR
N	0.25 mm	313-TCN-JOINT	13,00

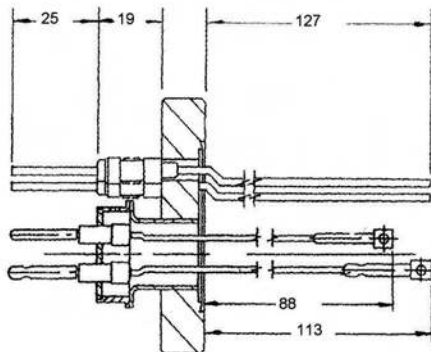
## Combination Power/ Thermocouple Feedthroughs

Combination Feedthroughs are intended for heaters where both power leads and temperature measurement are required.

Combination Feedthroughs are offered with either Nickel or Copper conductors and either K or C type thermocouple connections.

### Specification Combination T/C Power F/T

Vacuum	UHV
T/C type	K or C
Power pins	Copper/ Nickel
Pin-ø	1.3mm or 2.4mm
Leak rate	$<5 \times 10^{-10}$ mbar l/s
Temp.	-200°C to 450°C
Air sockets	T/C conductor included
Vac side	Screw & nut for T/C
Power pins	use 360-PPO-1.3 or 360-PPO-2.4



263-TCK-1-CU30-2-C16



263-TCK-1-NI05-2-C16



263-TCK-1-NI15-2-C16

### 2 Power Pins 1KV 15A + 1 Thermocouple F/T COPPER Conductor 1.3 mm -

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-CU15-2-C16	205,00
16CF	C	263-TCC-1-CU15-2-C16	205,00
16KF	K	263-TCK-1-CU15-2-K16	210,00
16KF	C	263-TCC-1-CU15-2-K16	210,00

### 2 Power Pins 5KV 30A + 1 Thermocouple F/T COPPER Conductor 2.4 mm

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-CU30-2-C16	230,00
16CF	C	263-TCC-1-CU30-2-C16	230,00
16KF	K	263-TCK-1-CU30-2-K16	230,00
16KF	C	263-TCC-1-CU30-2-K16	230,00

### 2 Power Pins 1KV 5A + 1 Thermocouple F/T NICKEL Conductor 1.3 mm

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-NI05-2-C16	200,00
16CF	C	263-TCC-1-NI05-2-C16	200,00
16KF	K	263-TCK-1-NI05-2-K16	205,00
16KF	C	263-TCC-1-NI05-2-K16	205,00

### 2 Power Pins 5KV 15A + 1 Thermocouple F/T NICKEL Conductor 2.3 mm

REDUCED

FLANGE	T/C TYPE	PART NUMBER	EURO
16CF	K	263-TCK-1-NI15-2-C16	257,00
16CF	C	263-TCC-1-NI15-2-C16	257,00
16KF	K	263-TCK-1-NI15-2-K16	257,00
16KF	C	263-TCC-1-NI15-2-K16	257,00

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

# 5.6 COMBINATION: HIGH CURRENT

DE: Info@allectra.com  
 UK: uk@allectra.com  
 F: fr@allectra.com



## Combination Power/ Thermocouple Feedthroughs-High Current Types

The high current types shown below are intended for applications where currents of up to 150 Amps are necessary together with temperature measurement. These feedthroughs may be used for Vacuum Furnaces.



### 5KV, 60 or 150A, 2 or 3 Power Pins + 1 Thermocouple COPPER Conductor on DN40CF

REDUCED

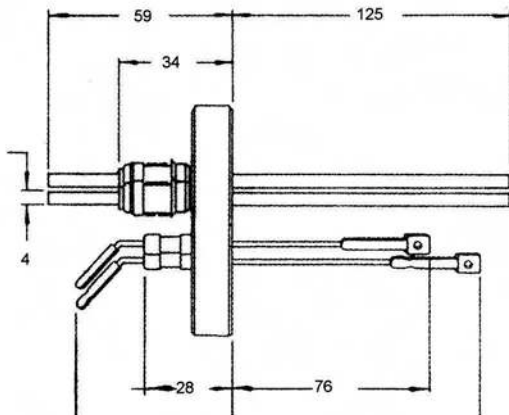
MAX AMPS	T/C TYPE	PART NUMBER	EURO
3 x 60A	K	263-TCK-1-CU60-3-C40	405,00
3 x 60A	C	263-TCC-1-CU60-3-C40	405,00
2 x 150A	K	263-TCK-1-CU150-2-C40	400,00
2 x 150A	C	263-TCC-1-CU150-2-C40	400,00

### Specification Combination High Current - T/C

Vacuum	UHV
T/C type	K or C
Power pins	Copper
Pin-ø	30A pin 2.4 mm 60A pin 4.0 mm 150A pin 6.35 mm
Leak rate	<5 x 10 <sup>-10</sup> mbar l/s He
Temp.	-200°C to 450°C
Air sockets	T/C connectors included
Vac side	Screw & nut for T/C
Power pins	use 360-PPO-2.4 or 360-PPO-4 or 360-PIC-6.6



263-TCK-1-CU150-2-C40



263-TCK-1-CU60-2-C40

### 5KV 30, 60 or 150A, 2 or 3 Power Pins + 2 Thermocouple COPPER Conductor on DN40CF

REDUCED

MAX AMPS	T/C TYPE	PART NUMBER	EURO
3 x 30A	2 x K	263-TCK-2-CU30-3-C40	425,00
3 x 30A	2 x C	263-TCC-2-CU30-3-C40	425,00
3 x 60A	2 x K	263-TCK-2-CU60-3-C40	445,00
3 x 60A	2 x C	263-TCC-2-CU60-3-C40	445,00
2 x 150A	2 x K	263-TCK-2-CU150-2-C40	502,00
2 x 150A	2 x C	263-TCC-2-CU150-2-C40	502,00



263-TCK-2-CU60-3-C40

- 1 Sub-D
- 2 CM + DIL
- 3 Coax
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

## Thermocouple Feedthroughs with MS Circular Sockets

The MS circular connector is a very robust industrial grade socket. Up to 10 pairs of K type thermocouples are available in one MS style feedthrough.

Air Side MS Connector included.

Vacuum side crimp pins available - on page 60.

Double sided types with MS Sockets on the air and vacuum side are available to order.



### General Specification 263-TCK-MS

Vacuum	UHV
Pin material	Chromel / Alumel
Leak rate	$< 5 \times 10^{-10}$ mbar l/s
Temp.	-200°C to 450°C
MS Socket max	125°C
Air sockets	MS circular socket included
Vac side	1.4 mm pins

### Thermocouple F/T with MS Circular Air Side Sockets Type K

**REDUCED**

FLANGE	No OF PAIRS	PART NUMBER	EURO
16CF	2	263-TCK-MS-2-C16	280,00
16CF	3	263-TCK-MS-3-C16	310,00
16CF	5	263-TCK-MS-5-C16	370,00
40CF	2	263-TCK-MS-2-C40	295,00
40CF	3	263-TCK-MS-3-C40	315,00
40CF	5	263-TCK-MS-5-C40	390,00
40CF	10	263-TCK-MS-10-C40	695,00
16KF	2	263-TCK-MS-2-K16	275,00
16KF	3	263-TCK-MS-3-K16	295,00
16KF	5	263-TCK-MS-5-K16	360,00
40KF	2	263-TCK-MS-2-K40	290,00
40KF	3	263-TCK-MS-3-K40	310,00
40KF	5	263-TCK-MS-5-K40	380,00
40KF	10	263-TCK-MS-10-K40	675,00

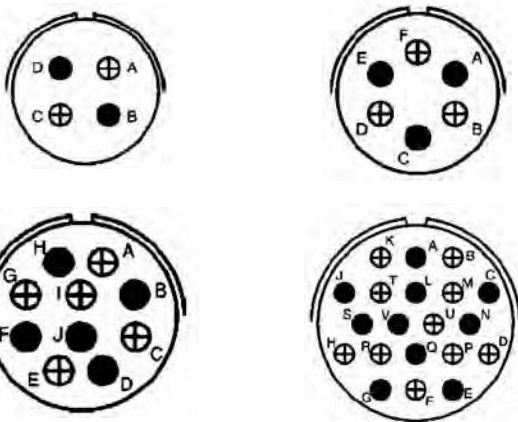
Note 1 : also available as weldables

Note 2 : also available as double sided versions

Note 3: also available for T/C types E and J



263-TCK-MS-2-C16



#### Polarity for TC Pins

View from the Air Side,

Black Pins: Chromel, Cross Marked Pins: Alumel

TOP ROW 2 and 3 Pairs,

LOWER ROW 5 and 10 pairs

Thermocouple Crimps for the Vacuum Side - see Page 60.



361-TCRIMP-CR

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

- 1 Sub-D
- 2 CM + DIL F/T
- 3 Coax F/T
- 4 Power High Voltage
- 5 Thermo-couple
- 6 Cables Accessories
- 7 Viewports Fiberoptic
- 8 Valves
- 9 Motion Manipulation
- 10 Process Control
- 11 CF Hardware
- 12 KF Hardware
- 13 ISO-K Hardware
- 14 Adaptors Specials
- 15 HV / UHV Chambers
- 16 Atlas Bi-Metal

T/C Feedthrough Air Side Sockets

Vacuum Side Sockets & Crimps

Standard Air Side T/C Sockets can be used up to 125°C High Temperature Air side Sockets up to 650°C are also offered. These ceramic versions can be used on the vacuum side as well. Ceramic plugs are available on request.



General Specification Sockets

Standard Type

Vacuum Air use only  
 TC type K, C, N, J or E  
 Temperature 125°C max.  
 Male connectors available on request

Ceramic Type

Vacuum UHV  
 TC type K, C, N  
 Temperature 650°C max.  
 Male connectors available on request



361-TCRIMP-CR

N.B. Thermocouple Feedthroughs include Air Side connectors. However, vacuum Side Crimps are not included and should be ordered separately.

See table on page 5.1.

General Specification Thermocouple Crimps

Vacuum UHV  
 Type Female Crimp Pins  
 Pin Diameter 1.4mm  
 Max. wire ø 1.25mm  
 Total length 33.5mm  
 Max. OD 3.2mm  
 Temperature 350°C max.

Standard Thermocouple Sockets

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
K	125°C	361-TC-CON-K	7,50
C	125°C	361-TC-CON-C	7,50
N	125°C	361-TC-CON-N	7,50
J	125°C	361-TC-CON-J	7,50
E	125°C	361-TC-CON-E	7,50

Plugs are available on request.

High Temperature Sockets - FEMALE 650°C

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
K	650°C	361-TC-CON-K-HT	25,00
C	650°C	361-TC-CON-C-HT	25,00
N	650°C	361-TC-CON-N-HT	25,00

Thermocouple Sockets - MALE UHV

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
K Air side	125°C	361-TC-CONM-K	5,00
N Air side	125°C	361-TC-CONM-N	5,00
C Air side	125°C	361-TC-CONM-C	7,00
K UHV	650°C	361-TC-CONM-K-HT	28,00

Screw and Nut sets - pack of 10 Size 3 - 48 fits Feedthroughs R, S and T

T/C TYPE	MAX. TEMP.	PART NUMBER	EURO
R/S/T	200°C	361-TC-SCREW	14,00

Thermocouple Crimps

MATERIAL	No PER PKT.	PART NUMBER	EURO
Chromel	5	361-TCRIMP-CR	70,00
Alumel	5	361-TCRIMP-AL	70,00
Iron	5	361-TCRIMP-FE	82,00
Constantan-J	5	361-TCRIMP-CONJ	82,00
Constantan-E-T	5	361-TCRIMP-CONET	82,00
Nickel	5	361-TCRIMP-NI	50,00