Operating instructions for point source

Q3 and Q5 and connector

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UHV equipment

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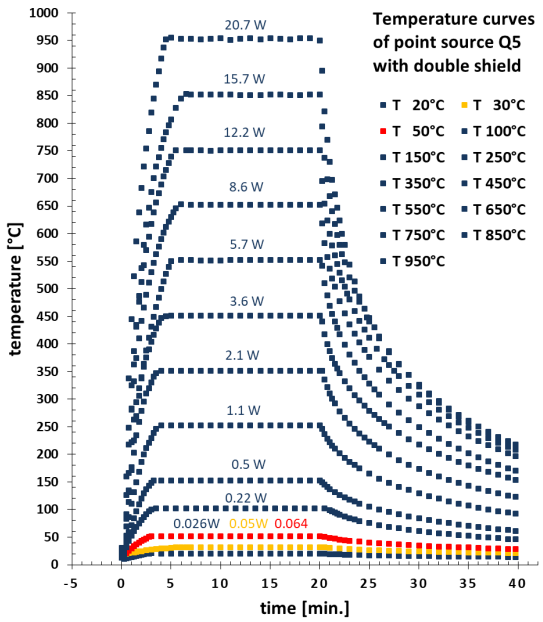
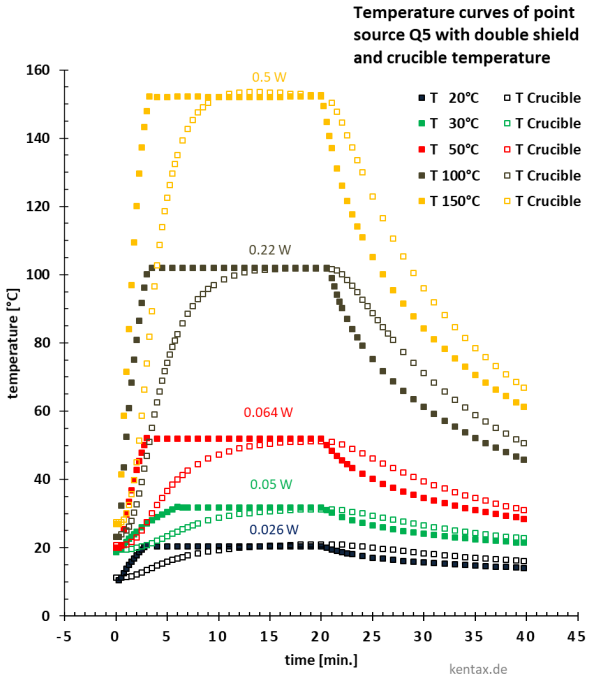
UHV point source Q3 and Q5 with shield

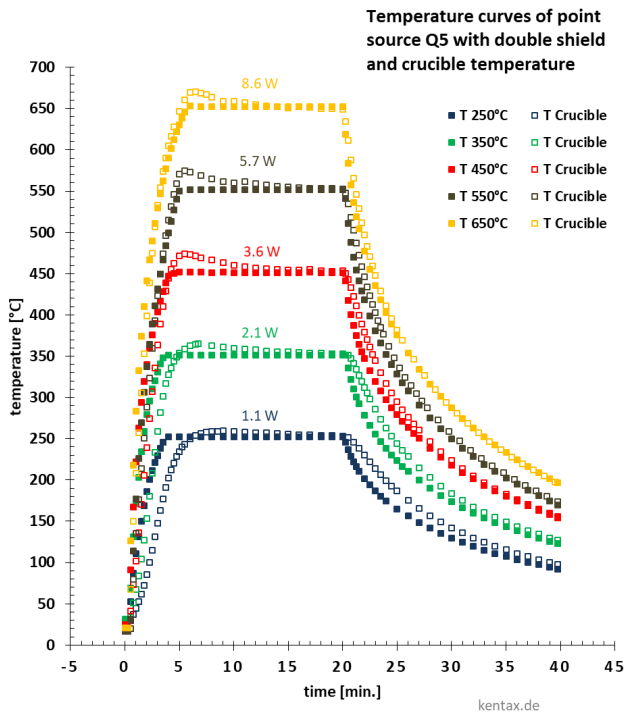
Head made of quartz glass

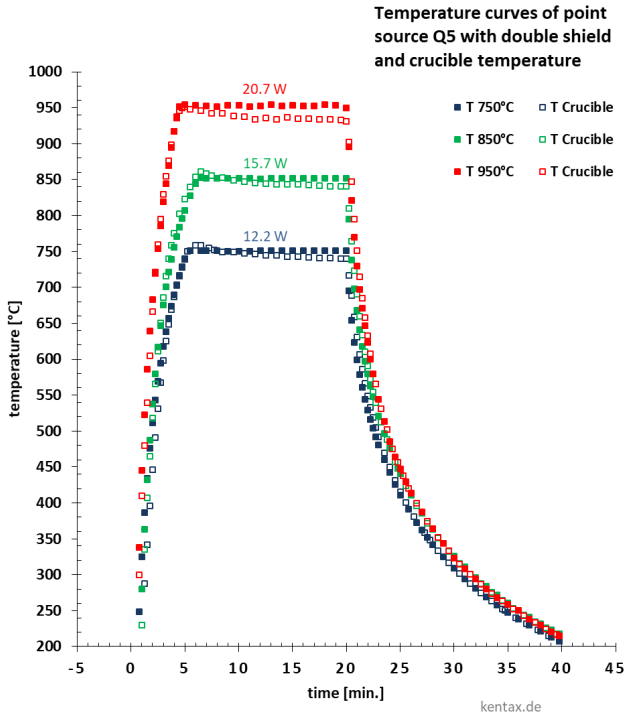
The temperature range from 20°C to 1000°C enables the preparation of organic molecules and other materials. The Q5 (Q3) point source uses crucibles of quartz glass, sapphire or Al_2O_3 with an outer diameter of 5 mm (3 mm). Heater head consisting only of quartz glass and tungsten (apart from a very small ceramic fixing of the thermocouple).

This element allows an ultimately clean preparation.









Driving the double shielded point sources (Q5) with power supply

Attention! To start the heating, increase the current slowly to the current/start of the chart below!

The power consumption of Q3 is round about 20% lower.

Temp. [°C]	Potentio -meter L	Start current [A]	Start voltage [V]	Start power [W]	Equilibrium power [W]	P	I	D	output level [%]
20*	0.16	0.25	0.31	0.077	0.024	2	226	38	52
30	0.25	0.35	0.49	0.17	0.048	3	148	25	50,5
50	0.4	0.5	0.73	0.37	0.06	8	140	20	60
100	0.6	0.6	1.15	0.69	0.25	9	122	18	62,2
150	0.8	0.65	1.5	0.9	0.45	10	103	17	68
250	1.3	0.8	2.46	1.9	1.0	16	81	14	70
350	1.9	1.0	3.82	3.82	2.12	16	63	10	74
450	2.5	1.1	4.71	5.1	3.1	10	34	6	78
550	3.2	1.25	6.51	8.14	5.25	12	30	5	80,6
650	4.2	1.35	8.6	11.61	7.74	14	20	4	78,3
750	5.0	1.5	9.54	14.0	10.2	16	14	2	85
850	6.0	1.6	10	16	15.7	20	12	2	
950	7.0	1.7	13.4	22.7	18.9	26.2	11	2	91
1050	8.1	1.85	15.6	28.0	26.0	25	12	2	97

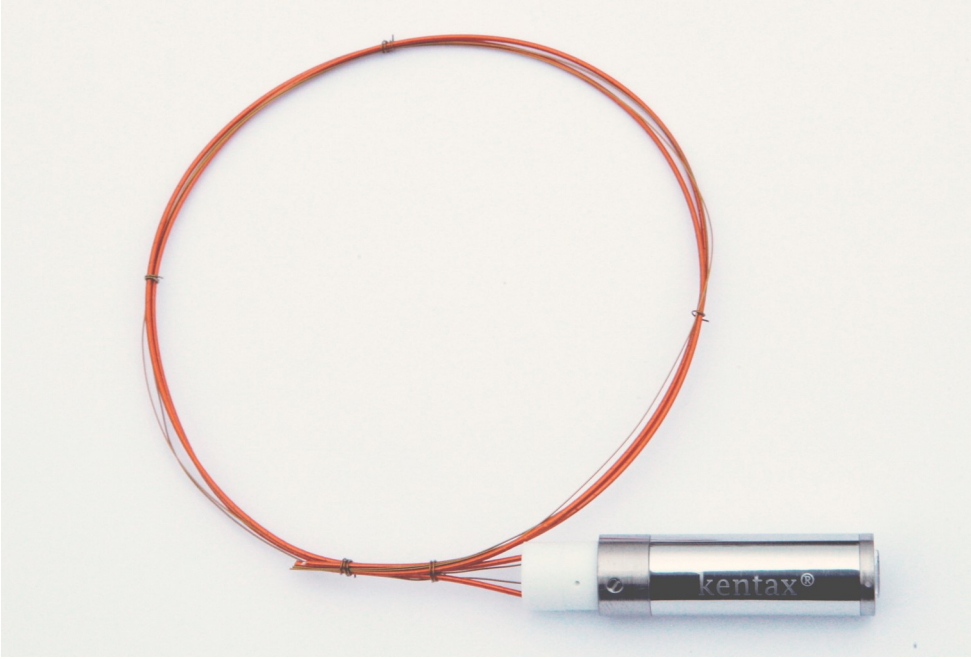
* from 10°C

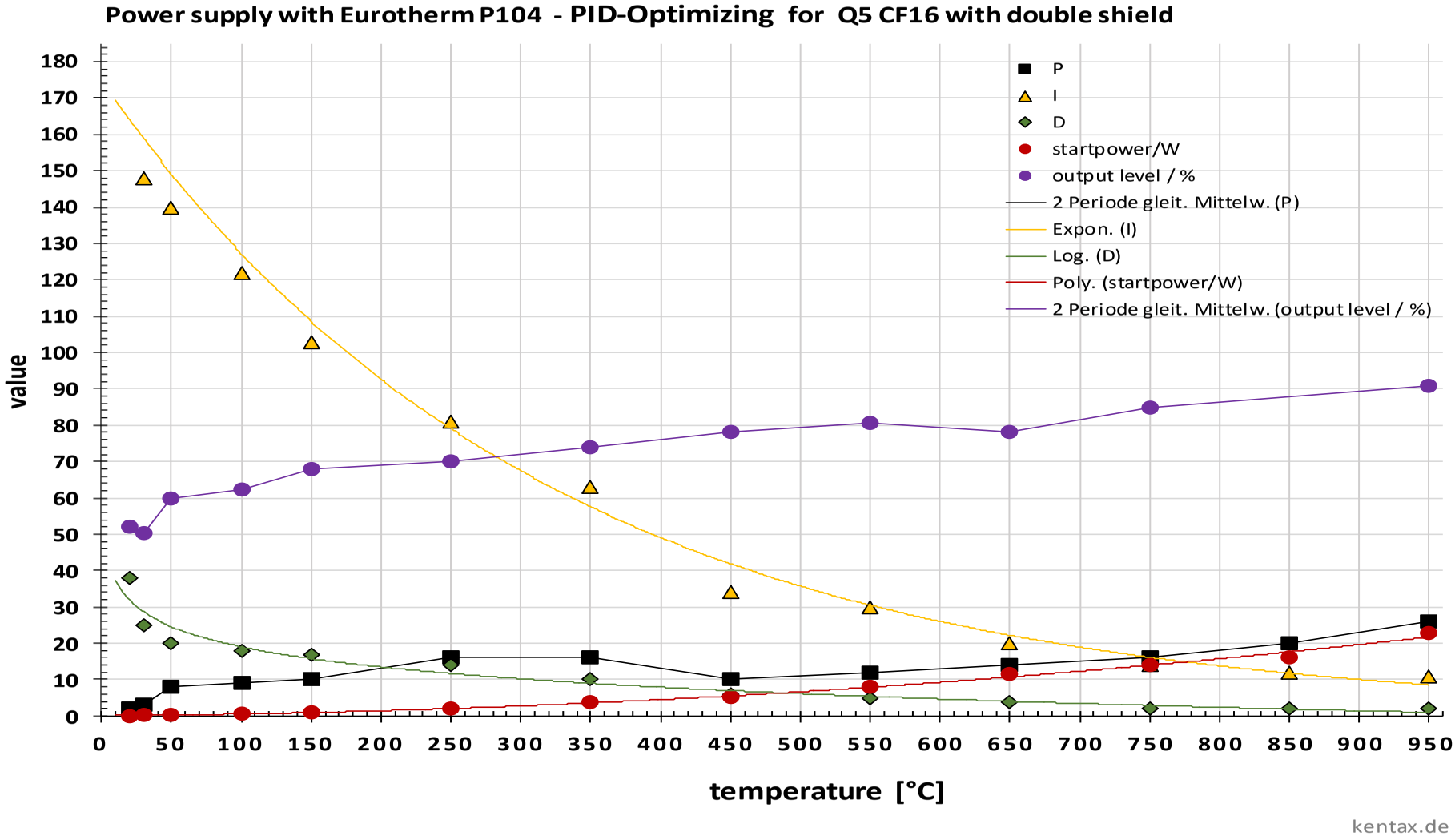
released up to 1000°C

Data from 2022 partially interpolated

Connector

Socket for connecting the point source with a power supply and cabling.




Power supply with Eurotherm P104 - PID-Optimizing for Q5 CF16 with double shield
value
temperature [°C]
P
I
D
startpower/W
output level / %
2 Periode gleit. Mittelw. (P)
Expon. (I)
Log. (D)
Poly. (startpower/W)
2 Periode gleit. Mittelw. (output level / %)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950

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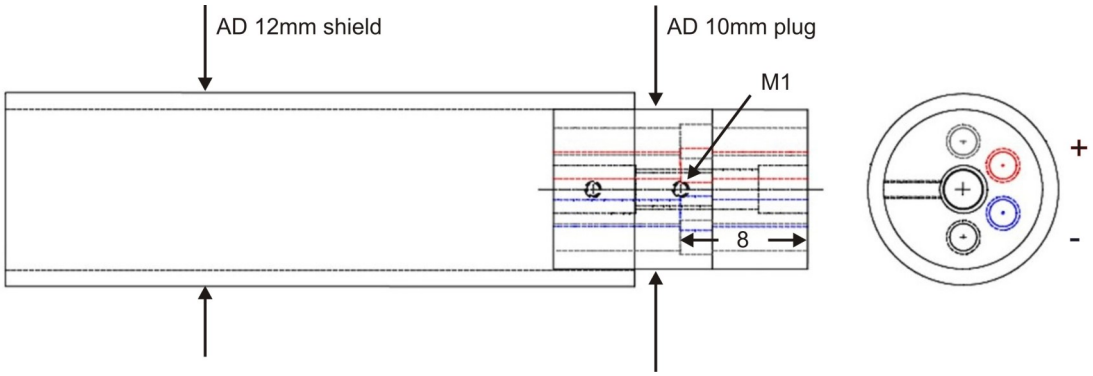
Drawing of the point sources with shield

The drawing shows the dimension of the shield (length 39.5mm) and plug.

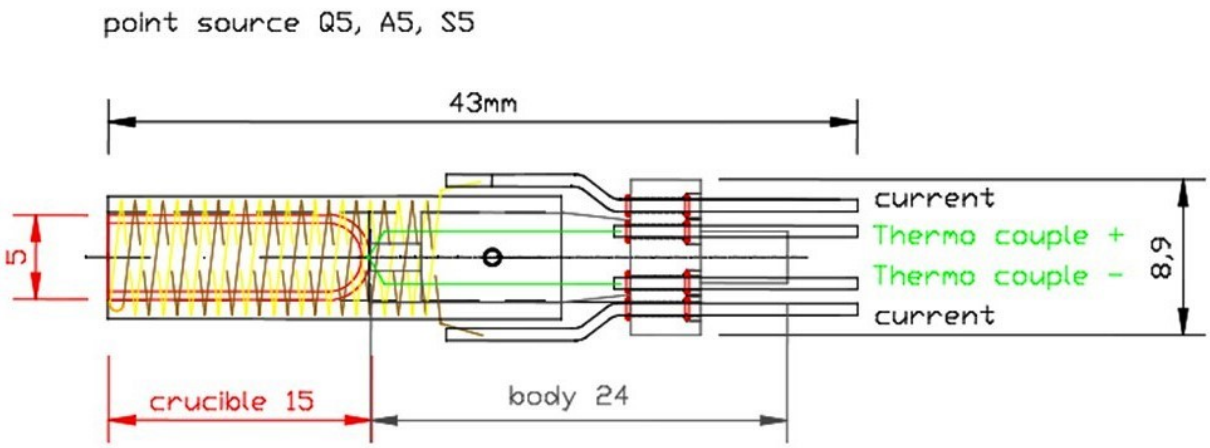
Clamping can be done by the 10mm plug or by the M1 thread.

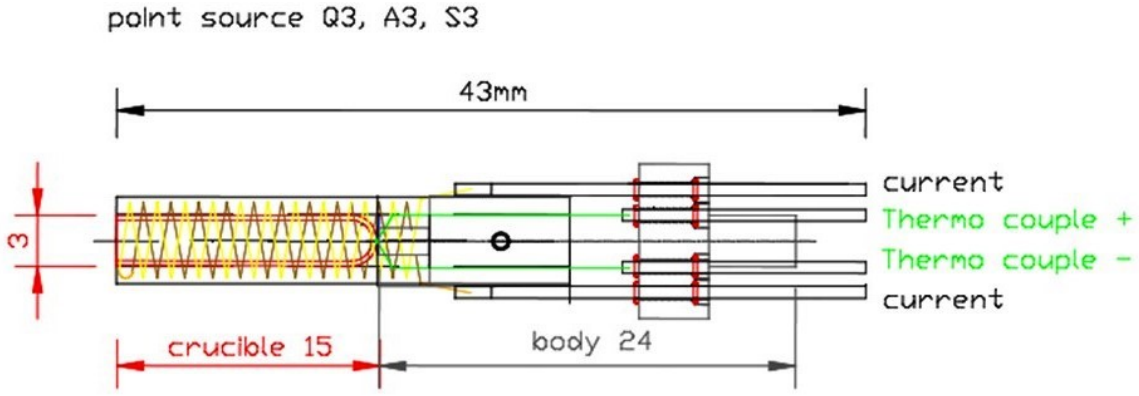


The point sources Q3 and Q5 uses crucibles with defined shape.

Thicker crucibles than 3.03mm respectively 5.03mm can damage the point sources.

The polyimide isolated litz wire supplies the filament and the thin (0.25mm) polyimide isolated wire are the thermocouples (Type K).



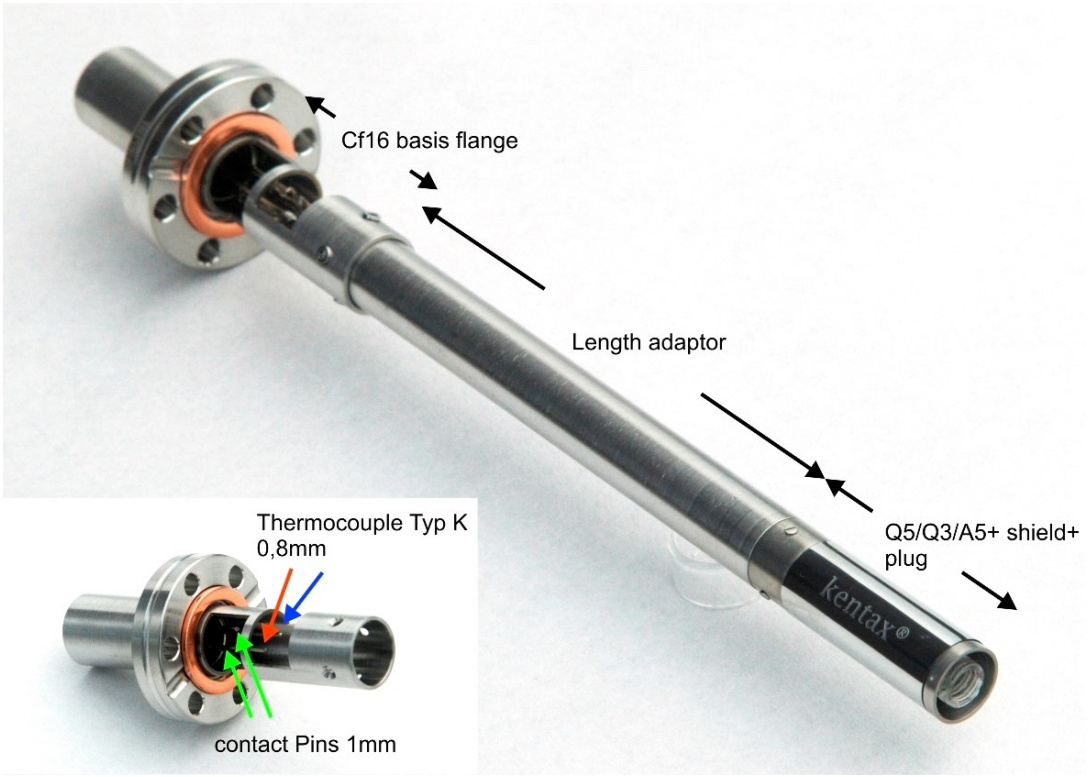


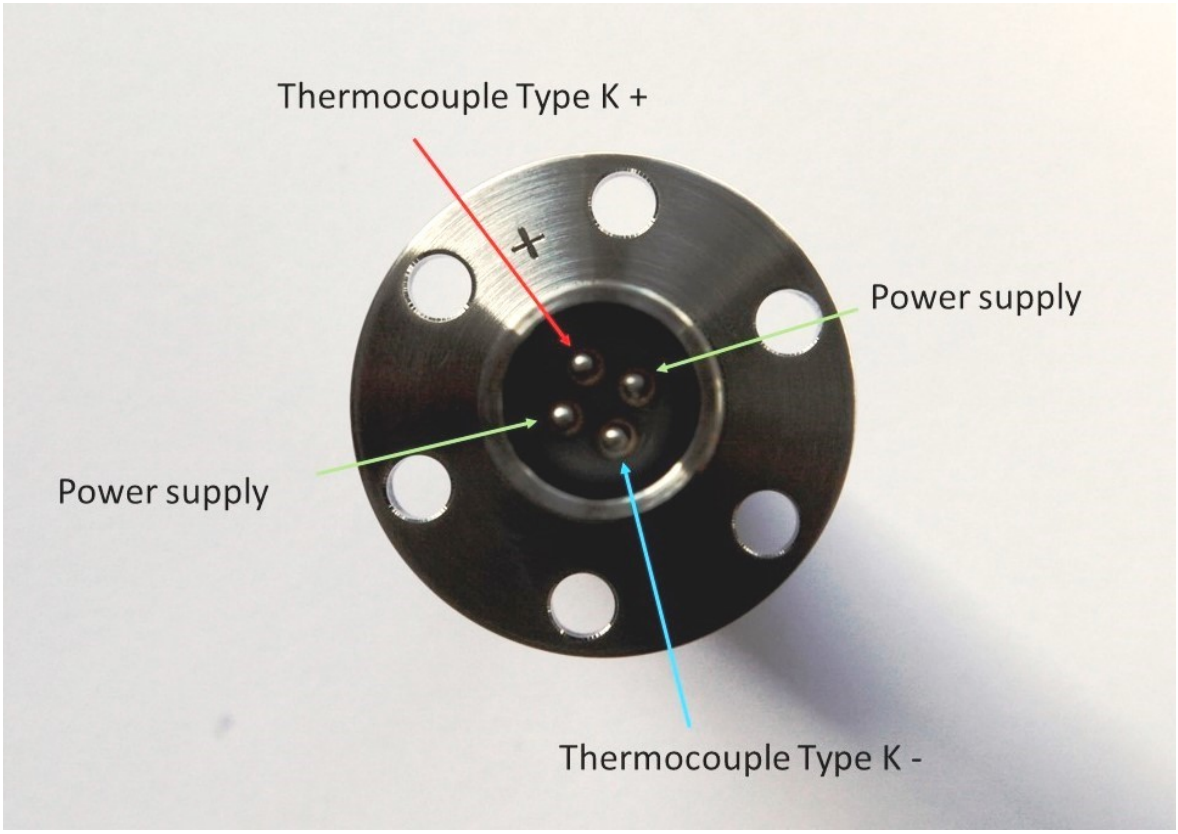
Example to install a point source on a CF16 flange

The image show a Q5 point source with double shield on a CF16 flange.

Due to fast decay curve and low power consumption these arrangement works without shutter and cooling.

The length adapter allows adaptation to UHV systems of the user.

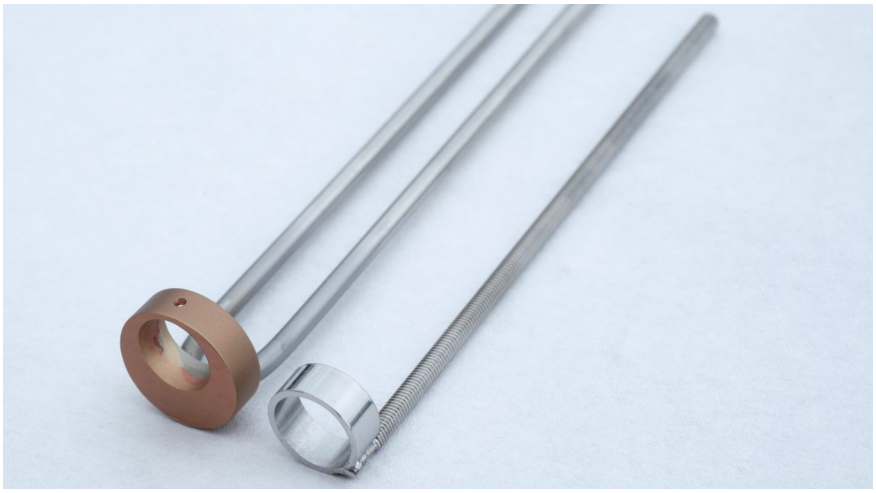




Example to install a point source on a CF40 flange

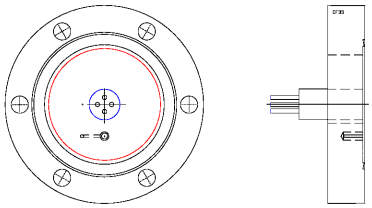
The pictures show four CF40 flanges that can be used to mount the point source with connector in a simple way.

The plug of the point source can be mounted in a cooling- or simple ring. This allows a setup of different lengths in vacuum and/or with cooling and shutter.

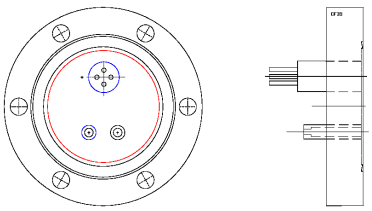


Cooling tank for water or N_2 (liquid/gas) on the left side

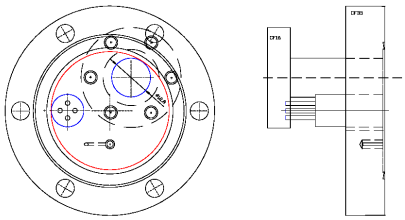
Simple ring on the right side



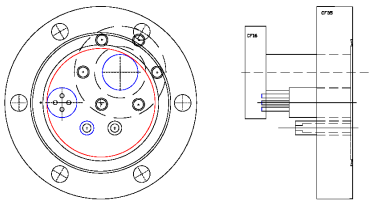
CF40 flange with electrical feed-through type K, 1mm pins for power supply and vented M3 thread



CF40 flange with electric feed-through type K and 1mm pins for power supply and holes for soldering the cooling feed-through



CF40 flange with electric feed-through type K and 1mm pins for power supply, vented M3 tread and CF16 flange for mounting a rotary feed-through for a shutter



CF40 flange with electrical feed-through type K and 1mm pins for power supply, holes for soldering the cooling feed-through and CF16 flange for mounting a rotating feed-through for a shutter

Example to install point sources on a CF40 and CF63 flange

The image one show the installation on flange PS-CF40/16S, exactly as we delivered it to the customer.

The second image show a combination of four point sources on a CF63 flange. They are mounted by a 10mm hole fixed by a M1 screw. All heated can be adjusted to a focus point (sample).

The recommended focus length is 80mm-150mm (end of the crucibles to the sample).

Thermocouple and supply cables uses one feed-through.

A turntable shutter in the center can be mounted additional.