Operating instructions for point source

Q3 and Q5 and connector



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Status: December 2024

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UHV point source Q3 and Q5 with double 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). The quartz glass heating element is mounted on a Macor base. Without a temperature plate, the heating element should only be used in the low temperature range (20°C-400°C).

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!

Temp.	Potentio -meter	Start current	Start voltage	Start power	Equilibrium power	Р	I	D	output level
[]	L	[A]	[V]	[W]	[W]				[%]
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

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

* 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.





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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 insulated polyamide stranded wire is for the heating wire and the thin (0.25 mm) insulated polyamide wire is for the thermocouple (type K).



point source Q5, A5, S5

Top down operation

For operation from top to bottom, an aperture crucible prevents the evaporation material from falling out. In this case, an additional tungsten spring ensures that the crucible does not fall out. Depending on the angle at which the evaporator is installed (not vertically, i.e. 90°), the crucible can be filled to different degrees.



Filling and cleaning the aperture crucibles is much more time-consuming than with open crucibles. As a rule, only very small quantities are used.

The crucible can be pulled out of the heating element using a small bent wire.

Wire stripper tweezers



A wire stripper tweezers with the smallest available size of 0.5 mm is included with the product. A coated wire with a diameter of 0.25 mm must be removed several times (at different angles) to ensure that the coating is completely removed.

Before removing the Kapton insulation of a stranded cable, the Kapton must be scored



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.



Four ways to mount the 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.





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

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 N₂ (liquid/gas) on the left side Simple ring on the right side

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.

