

DATA SHEET

Cavity Input Coupler

DESY-MHFe, Vers. 1.3

December 2011

Type: PETRA
 Manufacturer: DESY

Technical Data:

	unit	min.	nom.	max.	remarks
Power transmission	kW	65 @r=100%	150 @r=30%	250 @r<10%	r: load reflection coefficient
Frequency	MHz		500		
Window air cooling flow rate	m ³ /h	15	25		
Window power dissipation (air cooled surfaces)	W/kW	0.5	1	2	Power dissipation divided by transmitted power
Window air cooling pressure drop	hPa	30			(mbar)
Window air cooling temperature rise	°C			50	To be on safe side set the interlock threshold to $\Delta T < 35^{\circ}\text{C}$
Coupler water cooling flow rate	l/h	150	300		
Coupler power dissipation (water cooled surfaces)	kW		0.4	1.5	
Coupler water cooling pressure drop	hPa		not measured		Cooling circuits in series connection. Inlet: neck, outlet: centre connector.
Weight	kg		25		

Required Interlocks:

- A vacuum interlock **must** be provided in order to switch of the rf power within 100ms in case the pressure exceeds 10^{-6} hPa.
- An arc detector should be provided in order to switch of the rf power within 2ms in case of an flashover on vacuum side.
- The minimum limits of the cooling flow rates and the maximum difference temperature of the cooling air **must** be interlocked in order to switch off the rf within 500ms.

Coupler preparation before installation:

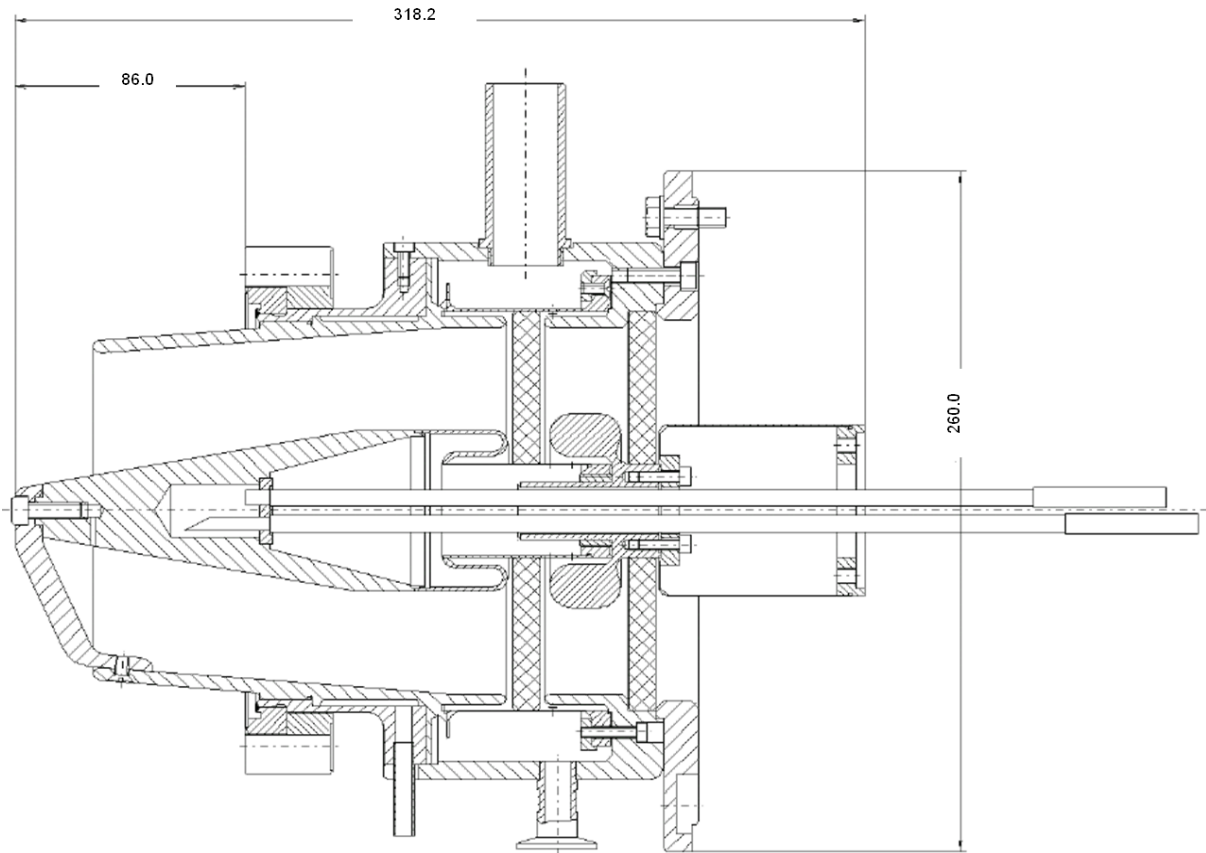
- If necessary etch the ceramic window on vacuum side by using of ammonium persulphate in order to remove copper depositions.
- Flush the coupler on vacuum side first with demineralised water and afterwards with alcohol or isopropanol.
- Install the coupler on a vacuum chamber and exhaust it for two days at about 200°C. The pressure should be $<10^{-6}$ hPa.
- Vent the vacuum chamber with dry nitrogen after cooling down.
- The coupler is ready to be installed in a cavity.

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Sectional view of the PETRA-Coupler



Coupler loop and vacuum window



6 1/8 inch 50Ω coaxial connection to waveguide transition