

OFF-AXIS PARABOLIC MIRROR WITH MOUNT

Title:

Off- axis parabolic (OAP) mirror with mount for Visible Emission Line Coronagraph (VELC).

I. Physical dimensions and quantity of Off Axis Parabolic (OAP) mirror and mount

Table below gives the physical dimensions and required quantity OAP mirror and mount

Table 1: OAP mirror and mount, dimensions and quantity required.

S.No	Name	Diameter (mm)	Thickness (mm)	Quantity
1	Off-axis parabola	200	40mm to 45mm	1
2	Mount	250 - 275 mm	≤60mm	1

II. Technical specifications of Off-axis parabolic mirror and mount

This section gives the technical specifications OAP mirror and mount in detail.

Table 2: Technical specifications of OAP

Specifications of Off-axis parabolic mirror				
S.No	Parameter	Nominal Value	Tolerance	
1	Type of optics	Off-axis parabola		
2	Parent focal length	2000mm	+2mm	-2mm
3	Off-axis distance	150mm	+0.5mm	-0.5mm
4	Physical diameter	200mm	+1mm	- 1mm
5	Clear aperture	>190mm	--	--
6	Surface figure (mounted mirror)	RMS: $< \lambda/80$ ($\lambda=632.8\text{nm}$) measured over the clear aperture for spatial scale lengths $>1\text{mm}$		
7	Micro roughness	$<10 \text{ \AA}$ over spatial scales upto 1.5mm (After coating)		
8	Substrate	Zerodur	--	--
9	Thickness	40mm to 45mm	--	--
10	Coating	Aluminium + MgF2 (Protective coating)	--	--
11	Average reflectivity	$\geq 90\%$ (over 400nm to 1100nm)	--	--
12	Cosmetic quality	40/20		

Table 3: Technical specifications of OAP mount

Specifications of Off-axis parabolic mirror mount				
S.No	Parameter	Nominal Value	Tolerance	
1	Diameter of optics	200mm	+0mm	- 1mm
2	Thickness of optics	40mm to 45 mm	--	--
3	Clear aperture of optics	≥ 190 mm	--	--
4	Material of mount	Aluminium (Al6061T6)	--	--
5	Physical envelope of mount	$\leq 300 \times 300 \times 170$ mm	--	--
6	Optical axis height	≤ 150 mm	--	--
7	Surface coating on mount	Black anodized (10^{-6} mbar Vacuum compatible)	--	--
8	Tilt adjustability	Tip/ Tilt and Rotation (Range: $\pm 3^{\circ}$, Resolution: ≤ 2 arcsec)		
9	Decentre adjustability	2 axis (Range: ± 12.5 mm) (Resolution : $\leq 10 \mu\text{m}$)	--	--
10	Pre-aligned alignment flat	Required	--	--
11	Vacuum compatibility	10^{-6} mbar to 10^{-7} mbar	--	--

Additional details:

1. Mounted OAP will be used for experiments both in class 10 clean room and vacuum.
2. Mounting of the OAP should be stable and stress free.
3. All the materials like substrate, coatings, mount material and black anodization should be vacuum (1×10^{-6} mbar) compatible.
4. Back side of the OAP should be polished to a reflective finish to be able to use in auto-collimation mode.
5. Etched mark should be provided on the back surface of the OAP showing the geometrical centre ($\leq 50 \mu\text{m}$ accuracy) and vertex direction (≤ 1 arc min accuracy).

Deliverables:

1. Mounted OAP mirror listed in Table1, Meeting all the specifications given in Table2 and Table3.
2. Conformance certificates for the specifications in Table 2 and Table 3.
3. Certificates of substrate glass material should be provided.
4. Surface figure measurements data and results under final mounting conditions should be provided.
5. Surface roughness measurements data and results before and after coating should be provided.
6. Reflectivity test results of the coating over the specified band should be provided

Acceptance criteria:

All the test data and results should be submitted to IIA before the shipment of the actual product for acceptance. IIA may participate in the tests at the vendor's facility at its own costs.

Shelf Life:

Supplied mounted OAP should have a shelf life of >5 years with < 5% degradation in reflectivity. Storage details should be provided by the vendor.

Packaging:

1. Mounted off-axis parabola shall be packed in ISO-4/5(ISO 14644-1) clean room compatible containers that do not make contact with optical surfaces.
2. Packing should be done under clean room conditions.
3. Shock watch should be provided on the outer packing with details of maximum allowed shock level.

Expected delivery schedule:

Three months from the date of issue of purchase order.

For any information/clarifications contact the following

Technical: "*venkata@iiap.res.in*" or "*brp@iiap.res.in*".

Administrative matters : "*purchase_import@iiap.res.in*" or "*vishnu.vardhan@iiap.res.in*"