

APM Professional Telescopes

SBIG® ALUMA® AC4040-SERIES
ADVANCED sCMOS APS DETECTOR
A HIGHER STANDARD IN SCIENTIFIC CMOS CAMERAS

 **DIFFRACTION**
BY THE UNIVERSITY OF CALIFORNIA, SANTA BARBARA

 **APM**

APM Professional Telescopes: Your partner
for schools, science and research



The new generation!



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DOME SPECIFICATION



Rotation performance of the dome :

- Max. speed $\geq 5^\circ/\text{s}$
- Min. speed $\leq 4 \times 10^{-3}$ degree/s
- Max. acceleration $\geq 2.5^\circ/\text{s}^2$

The motors of the shutter shall be able to open or close the shutter in less than 30 sec.

The shutter shall allow the visibility of the Image Acquisition System (telescope) in the range of telescope elevation position from -2° to 120° .

The Dome shall be CE Marked according to the following directives:

- Directive 2014/30/EU - Electromagnetic compatibility
- Machine Directive 2006/42/CE
- Regulation (CE) n. 1907/2006 (REACH)
- Low Voltage Directive (LVD) 2014/35/EU

The dome shall be equipped with an electronic board where the following signals will be accessible :

- Motors power
- Brake lock command
- Shutter command (open/close)
- Shutter open status
- Shutter closed status

The dome shall guarantee an IP 34 protection degree for the internal equipment when the shutter is closed.



Design Process Management

In the case of structural design by the Company, Astro Alliance use the Factory Production Control manual according to UNI EN 1090-1 aims to ensure the compliance of the project with the input data, identifying the procedures for controlling the calculations and the design managers.

The results for this purpose shall be sufficiently detailed and accurate to demonstrate compliance with design procedures. The relevant records are kept available for a period defined in Factory Production Control (FPC).

- Design procedure;
- Input elements and requirements (review of requirements according to the skills, phases, tasks and responsibilities of the design);
- Specifications of the component provided by the buyer;
- Specifications of the component provided by the manufacturer;
- Output elements (control of results and accurate reporting);
- Management of design changes;
- Archiving and traceability of records (define times);
- Bill of Components according to UNI 8188
- Design validation;



Procurement process management

Component products are evaluated by verifying that the inspection documents for used products comply with the requirements of the component specification, including the correctness of the product geometry.

The semi-finished products and basic products used for the construction of structural components are chosen from those provided for by the UNI EN 1090-2 standard, but otherwise the characteristics are specified and adequately verified.

For the component products subject to a harmonized European standard, the company in the order requires the CE marking or other suitable documentation to verify compliance with the required requirements or declared performance.

Compliance with the required specifications is checked in acceptance of arrivals (AA) at each arrival of semi-finished products and/or basic products.



Construction Process Requirements

The construction of structural components is defined and contains all specifications, including the technical requirements necessary for their manufacture (see appendix "A" UNI EN 1090-1). Those specifications shall indicate at least the following:

- Execution class, in accordance with the requirements of par. 4.1.2 of the UNI EN 1090-2 standard or the UNI EN 1090-3 standard, depending on the type of material (see table);
- Surface treatments for corrosion resistance (see par. 10 of the UNI EN 1090-2 standard or the UN EN 1090-3, depending on the type of material);
- Dimensions and dimensional tolerances in accordance with par. 11 of the UNI EN 1090-2 standard or the UNI EN 1090-3 standard, depending on the type of material.
- Compliance of the construction site with safety standards (POS, safety plan, etc.);
- Compliance of the method of assembly of the work with safety standards;
- Conformity of the method of assembly of the work to the design of the work;



Technical specification

Outside diameter about 8.5 meters

Internal diameter 8.2 meters

Dome Frame: Structural steel with Corrosion protection painting (TBD)

External cover: Aluminium sheet 1.2 mm thick prepainted

Shutter width: 2.4 meters

Structural fixing technique: Welding and rivets

External Color: White RAL 9010

Internal color: RAL 9005 Black matt or Gray

Operating temperature: -10° to 50°

Humidity range during operation: 5% to 95%

Wind resistance with closed Dome: 130 km/h proved with FEM analysis

Wind resistance with open Dome: 50 km/h proved with FEM analysis

Azimuthal rotation speed: 5° /sec



OHB Technical specification

Azimuth rotation acceleration: $2.5^{\circ} / \text{sec}^2$

Azimuth motor: 3 or 6 Brushless motor 380V or 220V TBD

Opening / Closing Shutter: 2 Brushless motor 220V with manual mode closing

Limit Switch Open – Close: 4 pcs total witch 2 NO + 2NC contact for shutter drive

Total time of opening / closing Shutter: 30 to 60 Sec TBD

Structural calculation report: Wind snow and Earthquakes included TBD

Thermal insulation: Rock Wool thick 70-100mm

CE Marking with EN 1090-1 Metal structure

