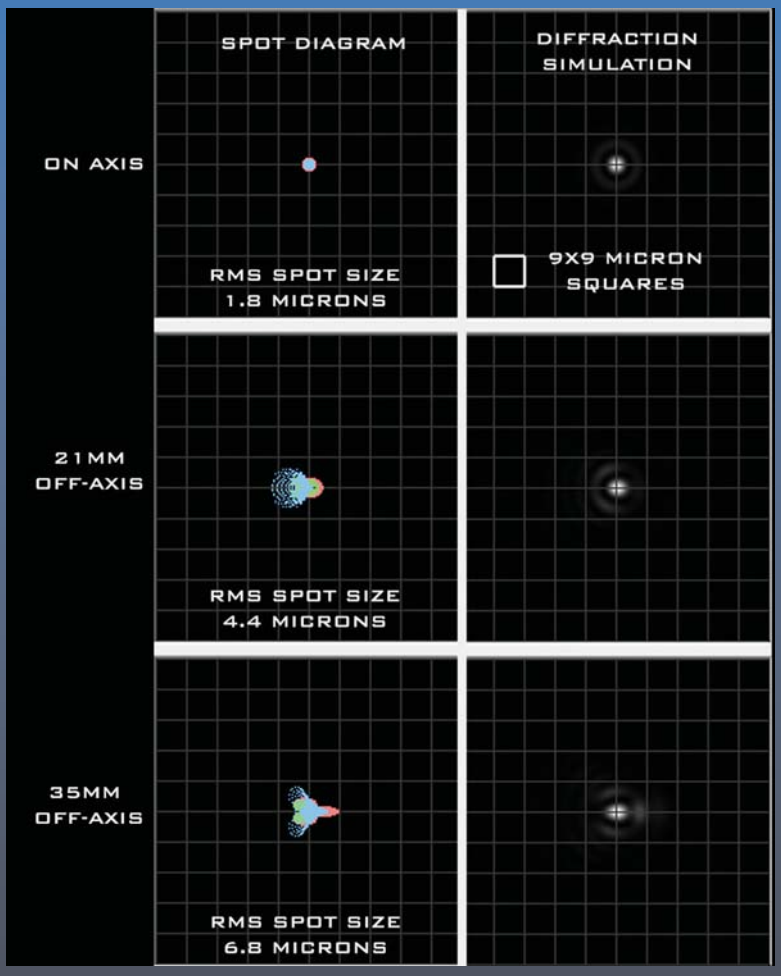
PlaneWave INSTRUMENTS

PlaneWave CDK700 - 0.7 Meter Observatory Telescope System

The CDK700 (28-Inch primary mirror) is a complete observatory class telescope and alt-azimuth mounting system designed and engineered by PlaneWave. The CDK700 utilizes the same revolutionary new telescope optical system for which PlaneWave is well known. With a 70mm image circle, the CDK700 is designed to excel at imaging on large format CCD cameras while remaining an excellent instrument for visual use. The optical system utilizes a Nasmyth focus which exits through the altitude bearings on either side of the side of the fork mount. With this system, instruments or eyepieces do not need to move up and down with the telescope but instead remain at a fixed height. Heavy instruments can be installed on the fork without rebalancing the optical tube assembly. A rotating tertiary mirror allows instruments or eyepieces to be installed on either side or both sides of the telescope fork arms. The fork and pier assemblies are made of rigid powder-coated stainless steel in an alt-azimuth configuration and incorporates direct-drive motors and high-resolution encoders on each axis. The result is a stiff reactive mount with ultra smooth tracking, zero backlash, zero periodic error and near zero non-periodic error. The included PlaneWave focuser features a field rotator / de-rotator as part of the system.

Optical System

Optical Design	Corrected Dall-Kirkham (CDK)
Aperture	700mm (27.56")
Focal Length	4638mm
Focal Ratio	f/6.6
Central Obstruction	42%
Back Focus	305mm (12") from mtg surface
Focus Position	Nasmyth Focus
Image Circle	70mm usable field (0.86 deg)
Image Scale	22 microns per arcsecond
Spot Size, 25mm off-axis	4.3 micron rms spot
Spot Size, 35mm off-axis	7.5 micron rms spot



Mechanical Structure

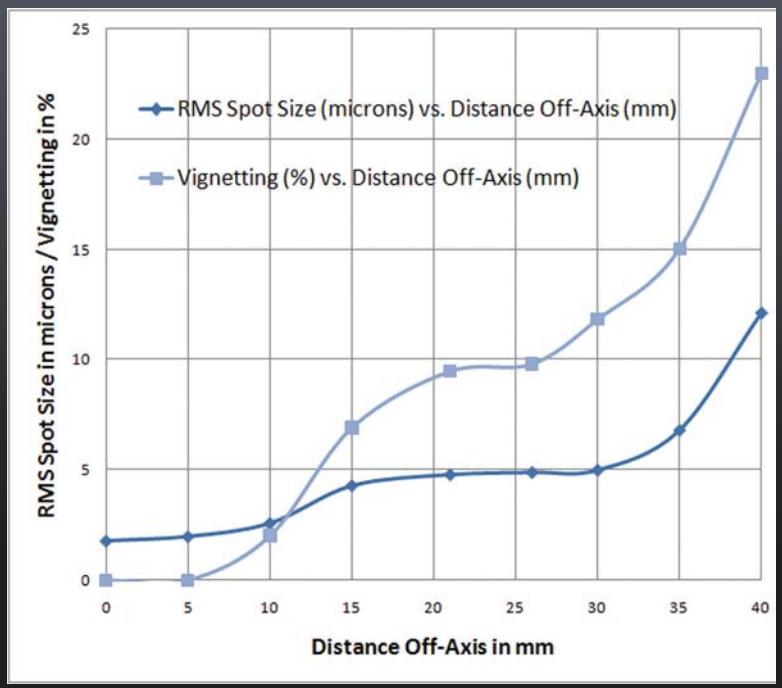
Fork Assembly	Single piece U shaped fork arm assembly for maximum stiffness
Azimuth Bearing	20" diameter trust bearing
Altitude Bearing	2 x 8.5" O.D. ball bearings
Optical Tube	Dual Truss structure with Nasmyth focus

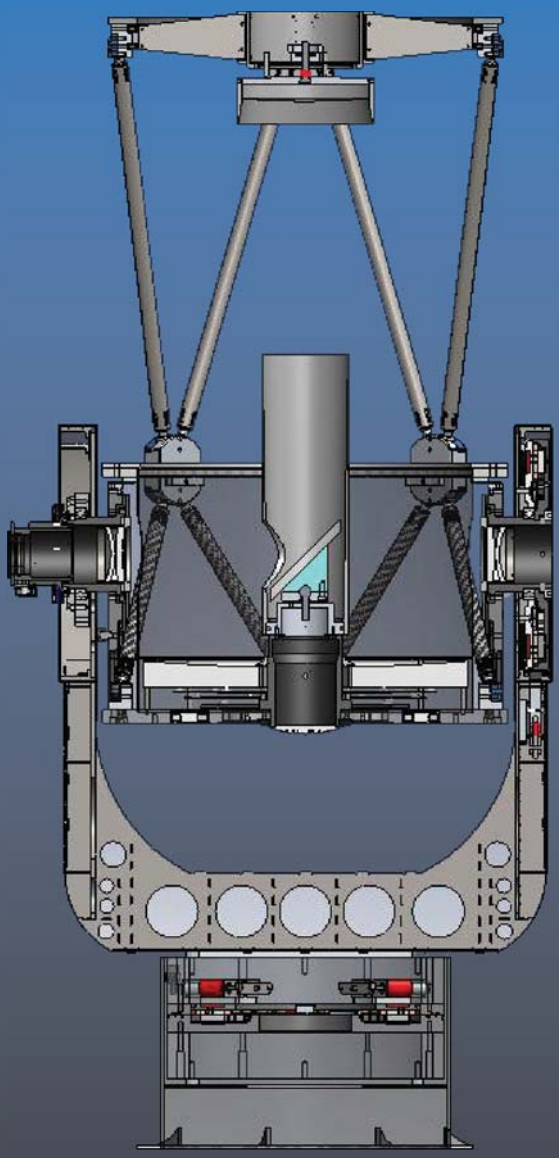
Telescope Motion Control

SiTech EXE Control Software with Integrated PointXP Modeling	Telescope mount modeling included for optimal pointing and tracking accuracy
Sidereal Technology Brushless Motor Control	Controls the altitude and azimuth motors, the focuser and the field de-rotator
Focuser/Rotator	Large aperture, heavy-duty focuser can handle large payloads and will not add vignetting

System Performance

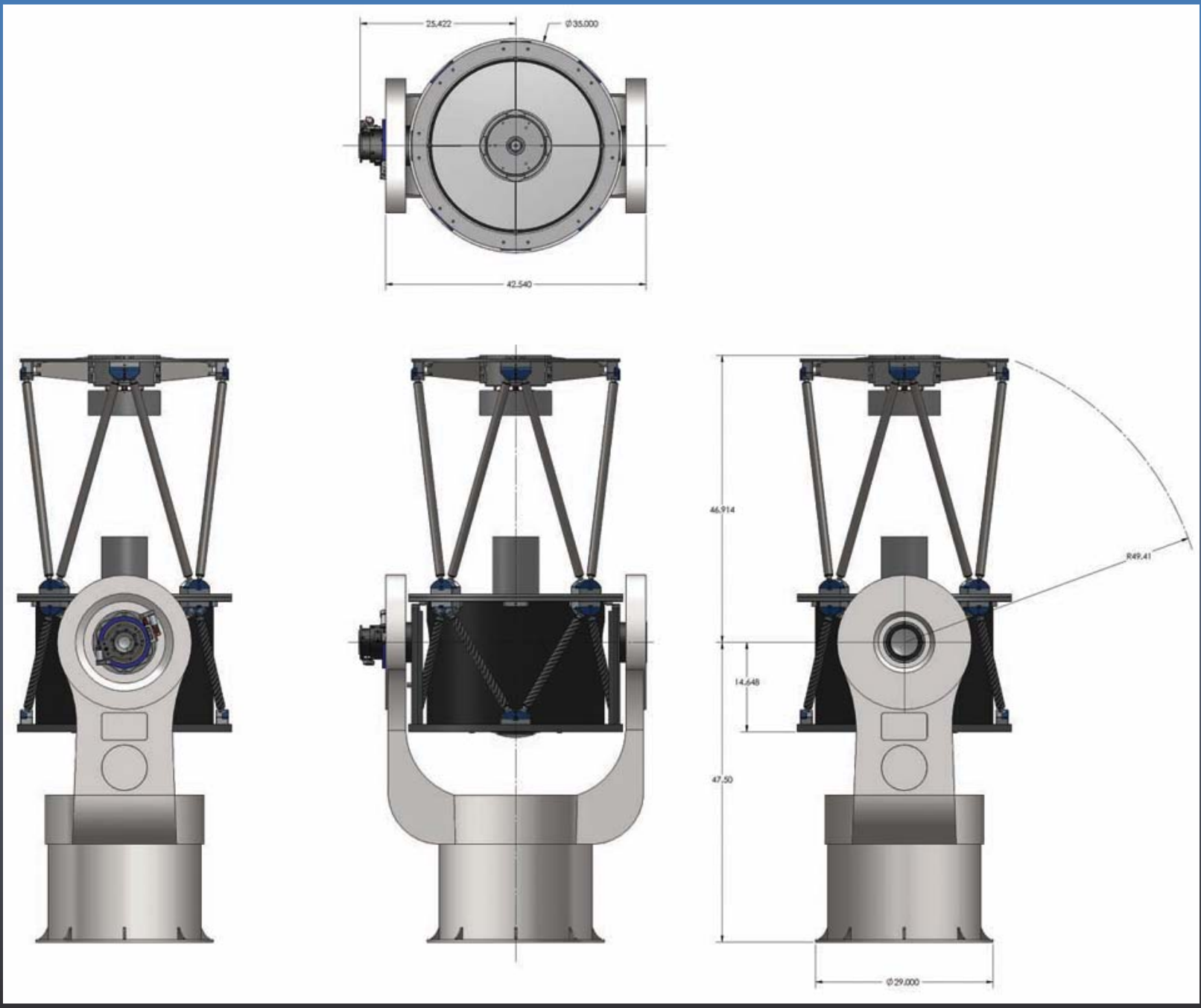
Pointing Accuracy with PointXP Model	< 10 arcsecond rms
Pointing Precision	< 1 arcsecond
Tracking Accuracy	1 arcsecond over 5 minutes
System Natural Frequency	10 Hz or greater
Field De-Rotator Tracking Accuracy	3 microns of peak to peak error 35mm off-axis over one hour of tracking (18 arcsec)
Field De-Rotator Framing Accuracy	3 microns of error, 35mm off-axis (18 arcsec)





STANDARD FEATURES

POINTXP MODELING SOFTWARE	Telescope mount modeling software included for optical pointing and tracking accuracy
SIDEREAL TECHNOLOGY CONTROL ELECTRONICS	Controls the motion of the telscope, the field de-rotator and the focuser
DUAL TRUSS DESIGN	The upper and lower truss materials are choosen to cancel out thermal focus shift of the optical system.
MOUNTING PLATE EXPANSION JOINT	Allows the truss poles to expanding and contract independantly of the side mounting plates on the CDK700 optical tube.
FOCUSER / ROTATOR	3.5" inner diameter focuser / rotator is a standard feature. Handles large payloads and will not add vignetting. Both the focuser and the rotator are motor controlled and are ASCOM compatible.
COOLING FANS	Controlled manually or via the control computer, the fans help the primary mirror to equilibrate quickly.
FORK MOUNT AND PIER	Rigid powder coated welded steel construction. Direct drive axial flux torque motors on each axis along with high resolution position encoders together yields zero backlash, zero periodic error, and near zero non periodic error.
DRIVE ELECTRONICS	Capable of controlling up to 4 high speed encoders, limit switch inputs, homing switch inputs, controls two additional motors for accessories, two brake outputs and 16 digital and 2 analog inputs.



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