

## Arinae Fabry-Pérot Interferometer

Keo Scientific's *Arinae* Fabry-Pérot Interferometers (FPIs) use narrow, pointable field-of-views to determine lower thermospheric temperatures and wind vectors. The FPI is available in several different sizes, specified by the diameter of the etalon's aperture. Currently, we offer 70mm and 100mm versions although larger versions are possible if desired.

All systems include:

- ▶ SkyScan pointing head
- ▶ Stabilized HeNe laser calibration system
- ▶ Apochromatic optics
- ▶ Thermally stabilized etalon enclosure
- ▶ Control computer and FPI control system mounted in 12U portable shock case
- ▶ Cloud sensor
- ▶ Mounting frame



### Features

Razor Sharp Fringe Patterns

Automatic Calibration

Etalon Thermal Stability

Highly Sensitive CCDs

Automated Instrument Control

Unrestricted Pointing

### Advantages

Our custom apochromatic lens provides unparalleled flatness and sharpness to the fringe patterns.

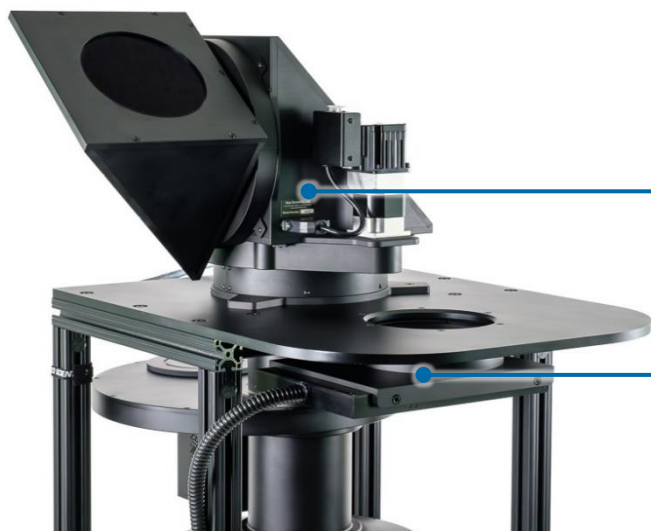
All FPI systems include a stabilized 632.8nm HeNe laser source and diffusing panel which is used for collection of laser calibration images during routine observations.

The etalon is thermally stabilized above ambient temperature to  $\pm 0.02$  C over 1 hour.

Standard FPI systems are provided with a back-thinned, deep-cooled 13.3mm CCD but can be customized with EMCCDs or larger CCDs to increase SNR.

Ephemerides-driven A3O instrument control & data acquisition software package is pre-installed and thoroughly tested on the provided computer system.

Field-of-view pointing is achieved using a Keo SkyScan articulated mirror assembly which allows for pointing the FPI's narrow field-of-view to any point in the sky.



## Keo SkyScan

Articulated mirror assembly for pointing to any location in the sky.

## Automatic Calibration

Laser diffusing panel fills instrument field-of-view.

## Filter Drawer or Filter Wheel

A single-filter drawer is standard or an optional 6- or 8-position thermally-stabilized filter wheel allows for observing multiple different emissions.

A 630.0nm filter comes standard, with others available upon request. 557.7, 732.0, and 892.0 are all common options used by our customers.

## Etalon

Our FPIs are offered in two distinct sizes: 70 or 100mm. This dimension refers to the diameter of the etalon's aperture and the rest of the instrument scales with this dimension.



## Apochromatic Optics

Our custom apochromatic lens provides unparalleled flatness and sharpness to the fringe patterns.

## Imaging Sensor

Sensor-head options include a range of "Scientific Grade" back-thinned EMCCDs and CCDs with quantum efficiencies better than 95% and maintenance-free thermoelectric cooling to  $-70^{\circ}\text{C}$  or better.



# Arinae Fabry-Pérot Interferometer Datasheet

## Stabilized HeNe Laser

Stabilized HeNe laser for calibration.

## Shock-mount Rack Case

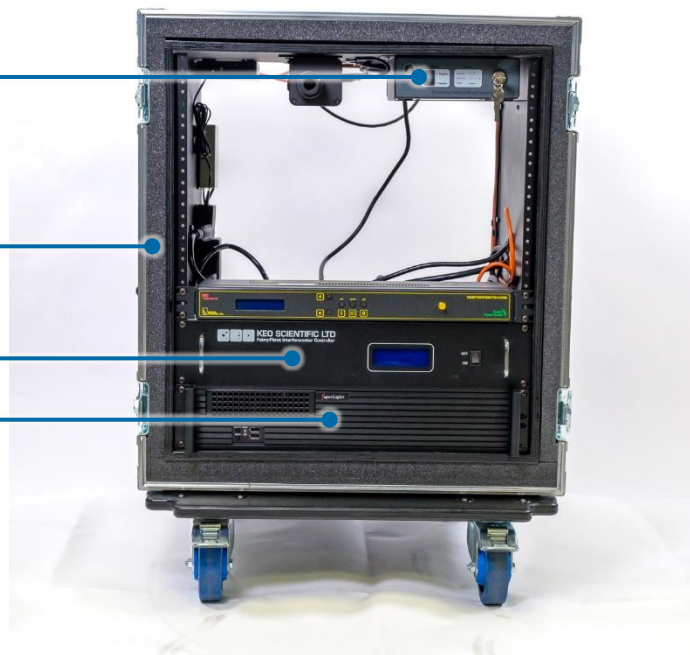
The entire set of control electronics is mounted and shipped in a shock-mount rack case.

## FPI Controller

FPI control system for providing power to the system and maintaining filter wheel and etalon thermal stability.

## Rackmount Computer

Control computer pre-configured and for the FPI system.



Specifications	Arinae-70	Arinae-100
Etalon Aperture Diameter	70 mm	100 mm
Wind Error	< 3-5 m/s	<2-4 m/s
Temperature Error	15-20 K	9-12 K
Field of View	2.5°	
Number of Rings on Sensor	9 to 11 (or more, depending on chosen sensor)	
Lens System	Custom apochromatic lens	
Calibration Laser Frequency Stability	± 2 MHz over 8 hours	
Filter Bandwidth	0.8 nm	
Filter Transmission	70-80% for 630nm filter	
Imaging Sensor	Andor iKon-M 934 CCD (13.3 x 13.3mm, 1024 x 1024 pixels, -80°C) Andor iXon U3 DU-888 EMCCD (13.3 x 13.3mm, 1024 x 1024 pixels, -80°C) Other sensors available upon request.	
FPI System Dimensions	140 x 60 x 42 cm	160 cm x 80 x 51 cm
Controller Rack Dimensions	80 x 60 x 68 cm	
Total System Weight (approx.)	95 kg	110 kg
Total System Shipping Weight	225 kg	240 kg
Power Requirements	110-240V AC	

Specifications in this datasheet are subject to change. Refer to the Keo Scientific website for most current specifications.