



FR-1 MKIII

(#33004)



The FR-1 provides superb close-focus performance from 3ft (91cm) to Infinity. It delivers the telescopic performance for which Questar is famed. The FR-1 is designed for accuracy and performance. It utilizes the Questar MKIII precision tube assembly design. There are no spacers, extenders, or diopters required. The FR-1 tube design allows for extended internal focus travel to accommodate this wide focus range. Focus is smooth and stable. The MKIII barrel design allows for integration of additional options such as motorized focus and future upgrade to SZ 83000 series. The improved boresight accuracy of this instrument provides greater accuracy in alignment applications. Equipped with a C-mount adapter and camera coupling set, this unit is ready to attach to any CCD camera with a standard C-thread, and flexibility to be useful in virtually any situation.

SPECIFICATIONS

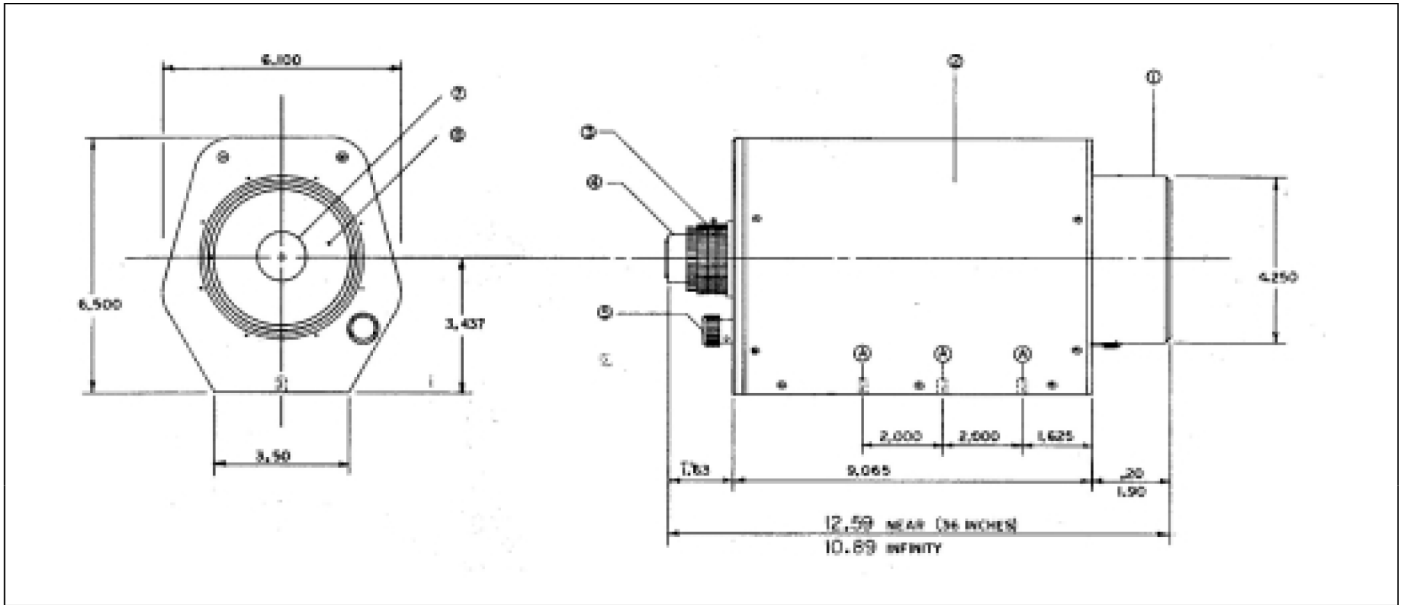
Type	Maksutov Cassegrain Catadioptric
Working range	91cm (36 inches)
Resolution	6 microns at 91cm (36 inches)
Focal length	visual: 1400mm at 2.75 BFD at f/16 photographic: 3200mm at f/32
Magnification	Variable depending on BFD, Auxiliary Lens & Imaging Device
Format	Diffraction limited field 18mm

OPTICS

Corrector Lens	BK7, MgF ₂ coated, 89mm (3.5 inch) diameter
Primary Mirror	Pyrex, Aluminum coated, SiO overcoated, 96mm (3.8 inch) diameter
Secondary Mirror	Aluminum coated, R-II surface of corrector, 29mm (1.14 inch) diameter
Baffling	Helix in central tube, black anti-reflection coated.

MECHANICAL

Barrel	Aluminum plate, machined & black anodized, modular fabricated construction
Lens Cell	Hollow bar, machined & black anodized, precision turned mounting surface & pilot flange
Focus Mechanism	Corrector focus 6 point bearing structure, 6 precision pressed & loaded bearing & matched stainless steel slide rods, direct drive lead screw focuser & matching anti-backlash ball nut & bronze support bearings
Mirror Mounting	Fixed position, 3" diameter stainless steel mounting plate, matched & fitted to barrel assembly, mirror thimble precision thread to match plate
Knobs	Aluminum
Hardware	Stainless steel



Magnification Chart for the FR-1

Working Distance	FR-1 Objective	Auxiliary Lens to 16mm Eyepiece					With 2/3" Format Camera & 14" Monitor
		0.9x	Open	1.5x	2.0x	3.0x	
1 meter	1.332x	9.5x	10.5x	15.8x	21.0x	31.5x	21.8x
2 meters	0.674x	18.7x	20.8x	31.2x	41.6x	62.4x	43.1x

** The above magnifications other than the "OPEN" column are extrapolated data.

** when comparing video and eyepiece magnifications, use the "OPEN" column. Much of the difference here occurs in the artificial magnification from the CCD to the monitor. This sometimes results in "empty" or "useless" magnification. We recommend that overall resolution and field of view be compared for exacting calculations.

** Although eyepiece magnifications are significantly less than CCD magnifications, comparable resolution is achievable due to the resolution limitations of CCD technology and the exceptional physiology of the human eye.

** 1" = 25.4mm

Format/Field Width	6.9mm (at 36") to 15mm (at 96") for video 19.5mm (at 36") to 44.5 (at 96") for 35mm SLR 32mm eyepiece – 17.8mm (at 36") to 41mm (at 96") visual 24mm eyepiece – 15mm (at 36") to 36mm (at 96") visual 16mm eyepiece – 10mm (at 36") to 23mm (at 96") visual 12mm eyepiece – 7.6mm (at 36") to 15mm (at 96") visual
Magnification	32mm eyepiece – 9X (at 36") to 4X (at 96") 24mm eyepiece – 13X (at 36") to 5X (at 96") 16mm eyepiece – 17X (at 36") to 7X (at 96") 12mm eyepiece – 25X (at 36") to 9X (at 96")

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