

Motorized Step Zoom 180 Surveillance System



The Questar Motorized StepZoom 180 is a powerful 8 to 1 variable focal length lens with the longest focal length available in an optic of its size. Fully motorized with microprocessor control, the lens offers parfocal selection of five effective focal lengths, four selectable filters, and a four line back lit display of focal length, filter position, focus range, and operating status. Weatherized construction is featured throughout, with protective optical flats at each end of the lens system. Remote control is possible at a distance of 4,000 feet from the hand terminal, PC or other RS-422 communication source, and the system is ready for integration with other related functions such as position and video control. Accessories include an integrated automatic light control filter, a dual port motorized camera switcher, and PC control software.

Performance:

Working Range	75 Meters (250 feet) to infinity
Resolution	0.7 arc second Resolution is defined as the measurable separation of a space between two bars on a resolution target each instrument is tested to meet these figures.
Format	Diffraction limited field 18mm at 2400 EFL
Clear Aperture	178mm (7 inches)

Optical:

Design Type	Maksutov Cassegrain Catadioptric
Corrector	BK7, magnesium fluoride AR coated, 178mm (7 inches) diameter
Primary Mirror	Pyrex substrate, aluminum coated, SiO overcoat; 194mm (7.64 inches) diameter
Secondary Mirror	Aluminum coating on R2 surface of corrector; 46mm diameter
Protective Flats	BK7 plane/parallel, magnesium fluoride AR coated. Diameters: front 178mm, rear 36mm Does not affect system performance.
Baffling	Helix in main baffle tube, all internal surfaces anti-reflection coated
Image Sensor	For use with video cameras of any type, C-mount standard

Available Effective Focal Lengths:

635mm	f/3.6	T4.4
1000mm	f/5.6	T6.9
1800mm	f/10.1	T12.3
2400mm	f/13.5	T16.6 *
3600mm	f/20	T24.3
4800mm	f/27.0	T33.2

Available filter Selections: (Standard filters are in bold)

N.D.	0.1
N.D.	0.3
N.D.	0.8
N.D.	1.0
N.D.	1.5
N.D.	2.0
N.D.	2.5

Full wratten series available.
 All ND filters evaporated chrome.
Special applications on request.

*(System Focal Length – required)

Electromechanical:

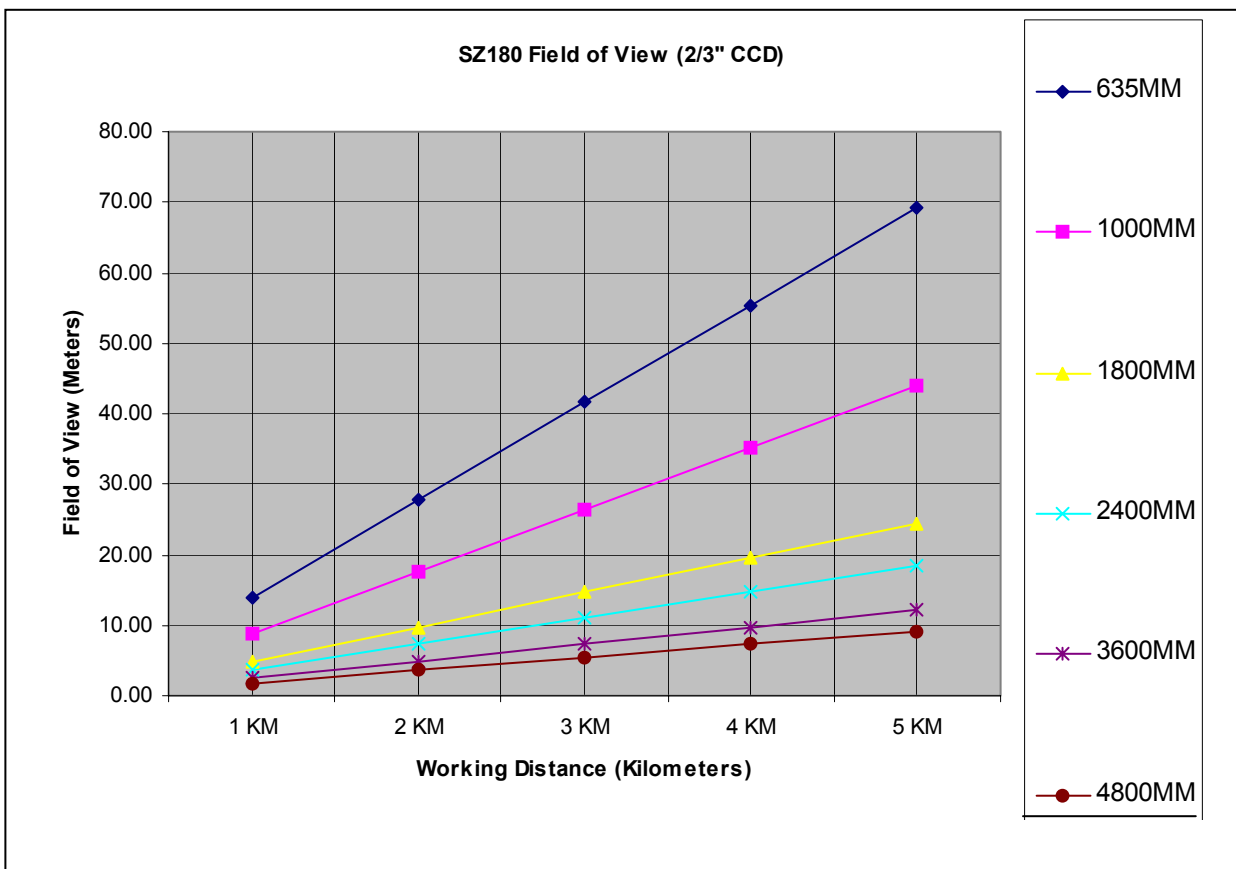
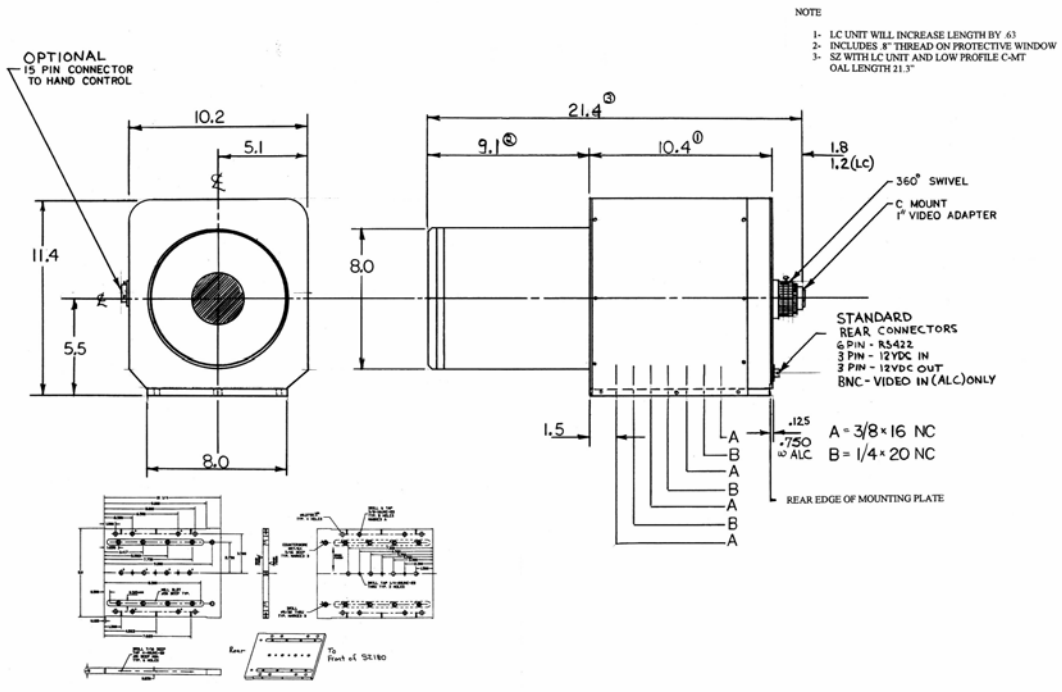
Drive	1.8 degree step motor open loop drive for all functions, with microprocessor control. Opto interrupter end of travel and home position sensing.
Control	Morotola M6811C11 onboard microcontroller with remote hand terminal. Selection of focal length by direct access buttons or sequential up/down. Selection of filter by direct address. Bidirectional intelligent turret drives move in direction of shortest distance to next chosen focal length/filter position. Parfocalization software maintains focus for all focal length changes, selectable
Terminal	30 key hand control unit, with 4 x 20 character display; backlit supertwist type. Keypress audible beep, user switchable on/off. Communications RS-422 standard, 9600 baud. Maximum distance terminal to instrument 1220 meters (4000 feet). 6 wire connecting cable with modular end connectors 10 feet coiled cable standard length, longer options available.
System Power	12VDC operation. Auto-ranging switchmode desktop power supply: 90-250 VAC/47-63Hz is supplied to connect and convert A/C to 12 VDC. Power entry at instrument supplies instrument and hand terminal. 6 foot cord from supply to instrument. IEC power input for worldwide use.

Mechanical:

Barrel Section	Machined from seamless aluminum tubing. Threaded corrector cell and back plate. Front protective flat in cell.
Focus	Transiting mirror design. Mirror nut with linear ball bearing slides on centerless ground stainless steel maintube. Precision lead screw mechanism. Variable speed step motor drive.
Turret Section	Modular design two piece aluminum housing and cover, machined. "P" thread camera port with integrated protective flat; removable. Mating surfaces O-ring sealed. Two turrets: lens/filter, aluminum, 140mm (5.5 inch) diameter, direct tooth belt drive. Bronze bushing/roller thrust bearings on 3/4" stainless steel shaft. Five positions. Adjustable auxiliary lens cells. 25.4mm (1") or 35mm (1.42") filter cells. See optical section for selection of filters and focal lengths.
Mirror Mounting	Threaded mirror mounting flange with nut and support washers. Spring loaded.
Finish/Hardware	All exterior surfaces polane paint finish; either black or white. Special colors by quotation. All hardware stainless steel. Includes hardshell case, lens covers, swivel coupling, C-mount adapter, cables, manuals.
Mounting:	1/4" -20 and 3/8" - 16 mounting holes on bottom housing plate.
Dimensions:	55 cm (22") long 29.2 cm (11.5") tall 26 cm (10.25") wide
Weights:	Instrument: 16 kg (35 pounds) Terminal: .4 kg (1 pound) Power Supply: .5 kg (1.1 pound)

OPTIONAL LINEAR NEUTAL DENSITY FILTER

Modular design, .625" thick, mounts directly to telescope turret rear housing. Motorized control, either from hand terminal, or automatic light control with option light control unit.



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