



- Superior SD Image Quality
- Powerful 35x Optical Zoom
- Electronic Image Stabilization
- H.264/MJPEG Codecs
- Web Server Configuration, Operation and Viewing
- Variable Speed, Smooth Positioning Movements
- Presets, Tours, Sectors and Privacy Zones
- Automated Event Actions
- Pressurized IP67 Protection
- NEMA TS2 Temperature Range, -40°C to 74°C
- NTCIP 1205 over IP Communication Support
- 120Vac or 24Vac Power
- Single Connector Simplicity
- Pendant, Wall, Pole and Corner Mounting Options
- ONVIF Profile S Compliant

CohuHD's 3960<sup>SD</sup> series combines the advantages of SDTV imaging, efficient H.264 compression, a proven variable speed positioner and advanced environment protection standards for delivering a best of class camera positioning system.

The 3960<sup>SD</sup> offers a 480p30 with 35x imaging for delivering SDTV video quality from wide to narrow angle zoom settings. True day/night technology using a removable IR cut filter produces exceptional low light sensitivity to as low as 0.0018 lx.

The 3960<sup>SD</sup> includes a variable hi-speed pan and tilt drive, with 360° continuous pan and +90 to -90° tilt movements. Fast positioning speeds result in 180° movements in less than 2.5 seconds.

Providing dual output stream capability, the 3960<sup>SD</sup> delivers two independently configured H.264 streams or an H.264 with MJPEG or an H.264 with analog output.

Use of the IP and analog output allows integrating with analog based systems today while providing a smooth transition to SDTV Video over IP tomorrow.

The 3960<sup>SD</sup> provides a full function web server, allowing complete administrative and operator control capabilities. Administrative features include configuring network settings, user password assignments, setting video streaming properties, defining camera positioning presets/tours, assigning camera ID labels.

The 3960<sup>SD</sup> provides comprehensive ID labeling, allowing precise descriptors to be inserted onto the video for operator use. Camera location, presets and sector zones are defined using up to 24 characters.

For direct positioning indications, the camera system can display its azimuth and elevation position in degrees as well as use compass directions.

The 3960<sup>SD</sup> is designed to operate in extreme weather with its IP67 sealed and pressurized camera enclosure protection. This eliminates the effects of water intrusion, pollutants and corrosives.

As well, the 3960<sup>SD</sup> withstands the effects elevated temperature, electrical and mechanical environments complying with NEMA TS 2 standards.

CohuHD guarantees years of clean, reliable images and backs it with a world-class warranty.

### CAMERA

Sensor	1/4" CCD
Scanning	2:1 Interlace
Pixel Array	811 x 508
Resolution	720 x 480
Frame Rate	30 fps
Camera Format	Day/Night (IR Cut Filter)
Day/Night Modes	Auto, Color, B/W

### SENSITIVITY @ 50 IRE

Color, 1/30, f1.6	1.0 lux (0.1 fc)
B/W, 1/30, f1.6	0.1 lux (0.01 fc)

### SENSITIVITY @ 35 IRE

Color, 1/30, f1.6	0.55 lux (0.05 fc)
B/W, 1/4, f1.6	0.00018 lux (0.000018fc)

### OPTICS

Zoom Lens	35 x, 3.4 to 119mm
Aperture	f1.4 -> f4.2
HAFOV	55° to 1.7°
Focus	Auto / Manual [Near, Far]
Iris	Auto / Manual [Open, Close]
Digital Zoom	12 x

### IMAGE PROCESSING

Defog Mode	Not Available
Image Stabilization	Off/On [5 Hz or 10 Hz]
Dynamic Range	On/Off
Back Light Comp	On/Off
Shutter/Integration	1/4 -> 1/30,000
S/N Ratio	> 50db

### IP VIDEO

Streams	Two (2) Individually configurable streams
Codecs	H.264 and MJPEG
Configurations	H.264 + H.264, H.264 + MJPEG, H.264 + Analog, MJPEG + Analog
Resolutions	Stream 1 [D1] Stream 2 [D1, CIF]
Frame Rates	30, 15, 7.5, 6, 5, 3.75, 3, 2, 1.875, 1
Data Rates	Stream 1 (4 Mb to 256 Kb) Stream 2 (2 Mb to 256 Kb)
Camera Latency	Four (4) Frames (0.133 sec.)

### POSITIONING DRIVE

Pan Range	360° continuous rotation
Tilt Range	+90° to -90°
Pan Speed	0.1° to 80°/second
Tilt Speed	0.1° to 34°/second
Preset Speed	< 3 seconds for 180° movement
Repeatibility	+/- 0.25°
Resolution	+/- 0.1°

Presets	64, Includes pan, tilt, zoom, focus and preset ID
Tours	8, Includes 32 presets with individual dwell times
Patterns	Not Available
Auto Park	Returns to a preset or tour after timer expires, Timer Value [ Off, 1 Minute to 999 Hours]
Sector Zones	8, Includes left/right boundary, enable/disable state, 24 character title
Privacy Zones	8, Includes left/right boundary, enable/disable state, blanks out video
Inverted Mounting	Field Configurable. If wiper option is used, contact factory for details on inverted mounting.

### VIDEO CONNECTIONS

RTP/RTSP	Eight (8) H.264, Eight (8) MJPEG
RTSP/Interleave	Eight (8) H.264, Eight (8) MJPEG
RTSP Multicast	Eight (8) H.264, Eight (8) MJPEG
HTTP Multicast	Unlimited, H.264 and MJPEG
HTTP Tunneling	Two (2) H.264, Ten (10) MJPEG
MPEG2 TS	Unlimited, H.264 and MJPEG

Note: When streaming at 1080p resolution, the number of connections is reduced by 1/2.

### NETWORK INTERFACE

Network Format	Ethernet 802.3 (100BaseT-TX)
Network Protocol	TCP, UDP, IPv4, IGMP, ICMP, DNS, DHCP, RTP, RTSP, NTP, HTTP, ARP, ONVIF Profile S
Media Players	VLC, Quick Time or any media player compliant with RFC 2326, 3984, 3550, 2435, ISO/IEC 13818-1
ONVIF Support	Profile S
Camera Protocols	Cohu T, Profile S, NTCIP 1205
Security	Yes, 4 Levels

### ANALOG INTERFACE

Video	NTSC or PAL, using full 16:9 image compressed into 4:3 aspect ratio. Stream 2 must be configured for analog video.
Serial PTZ	RS422, 4 wire half duplex, 9600 baud
Camera Protocols	Cohu, Pelco D, NTCIP 1205

### ON SCREEN DISPLAY (OSD)

#### IP VIDEO OSD

Up to four OSD elements are selectable for inclusion in the camera's two IP video streams. (Note: Three elements maximum on a single stream. The OSD elements display on top or bottom of image, on right side of video. The logo element displays on top or bottom of image on left side.

#### Standard Font Size

Camera Title	24 characters
Preset ID	24 characters
Sector Zone	24 characters
Position	3 characters, absolute or compass reading
Time/Date	24 Hour Format, Time Zone
Logo Display	xxx.bmp format, 96 x 96 pixels maximum, in multiples of 32 pixels

#### Large Font Size

Camera Title	15 characters
Position	3 characters (pan absolute or compass reading)

#### ANALOG VIDEO OSD

Camera Title	24 Characters
Preset ID	24 Characters
Sector Zone	24 Characters
Position	24 Characters



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CohuHD reserves the right to change specifications without notice

### EVENT MANAGEMENT

#### DIGITAL I/O

Digital Inputs	Two (2) Sensor Inputs, Dry contact, N.O or N.C
Digital Outputs	One (1) Control Output, Open collector

### TRIGGERS

Internal Timer	Interval [Off, 1 Second to 999 hours], Duration [ Off, 1 Second to Indefinite]
Digital Inputs	Active Input Triggers Action

### ACTIONS

Presets	Activates a Camera Preset
FTP Snapshot	Captures Image and sends to FTP site folder
Digital Output EMAIL	Activates a Digital Output Sends message to EMAIL address

### MECHANICAL

Construction	Powder coated aluminum. External parts corrosion protected with stainless steel fasteners.
Weight	18 lbs [13.5 Kg]
Dimensions	11.53"H x 9.75"D x 13.52"W [293 mm x 248 x 344]
Connector Type	18 Pin MS or 16 Pin AMP, Model Dependent
Shipping Dims	29 lbs [13.5 Kg], 23" x 18" x 13" [584mm x 457 mm x 330 mm]

### ELECTRICAL

Input Voltage	120 Vac or 24 Vac (Model dependent)
Power	40 W, 160 W with P/T Heater Option
Line Variation	120Vac Complies with Nema TS2 para 2.1.2

### ENVIRONMENTAL

Protection Rating	Camera - IP67, Pressurized with Dry Nitrogen, 3.5 psi Positioner Body - IP66
Operating Temp	-40°F to 165°F (-40°C to 74°C) Per NEMA TS2, para. 2.2.7.3 - 2.2.7.7 Note: Minimum operating temperatures are with a 2 hour warm-up.

Water Spray	Per IEC 60529+A1, 1999, Para 14.2.6, Solid water stream delivered thru 12.5mm nozzle @ 25 gallons/minute @ 9ft for 3 minutes
Humidity	0-100%
Vibration	Per Nema-TS2 paragraphs 2.1.10, 2.2.4
Shock	Per Nema-TS2 paragraphs 2.1.10, 2.2.4
Corrosion Prot.	Per Nema 250-2003, paragraphs 5.10
External Icing	Per Nema-TS2 250-2003, paragraphs 5.6 (Note:requires P/T Heater Option, available on 120Vac models only)

### CERTIFICATIONS

FCC Class A  
ASTM-B117 Marine

### ACCESSORIES

#### Mounts

Pedestal	7411542-001
Wall	8425-7
Pole	8503-0
Corner	8503-1
Parapat	8503-2
7.0" BC Adapter	8481-9

#### Cables

CA252 Series, 120Vac, MS connector
CA255 Series, 24Vac, MS connector
CA272 Series, 120Vac, AMP connector
CA271 Series, 24Vac, AMP connector

#### Connectors

MS Type	1310230-011
AMP Type	8498-1

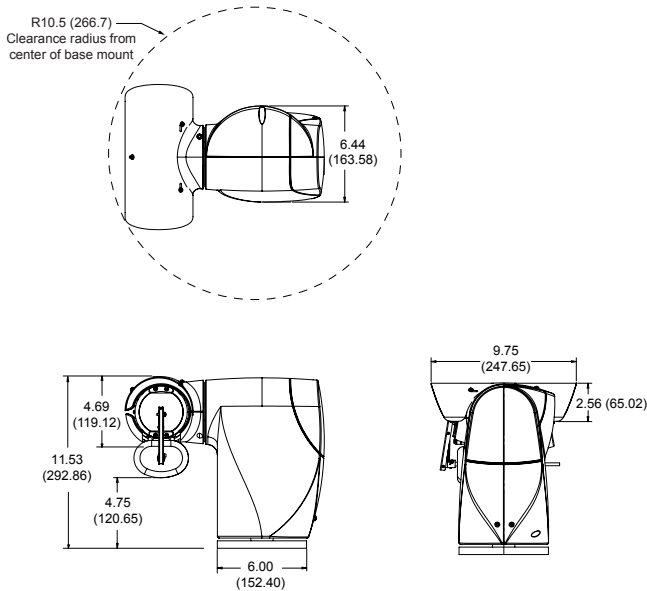
#### Power Supplies

24Vac (IP66)	7411543-010 (96 Watts, 115Vac or 220Vac Input)
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### ORDERING MODEL NUMBERS

SD34-1000	H.264 SDTV 35x Cam, 24VAC, MS Conn
SD34-2000	H.264 SDTV 35x Cam, Wiper, 24VAC, MS Conn
SD35-1000	H.264 SDTV 35x Cam, 120VAC Power, MS Conn
SD35-2000	H.264 SDTV 35x Cam, Wiper, 120VAC Power, MS Conn
SD36-1000	H.264 SDTV 35x Cam, 120VAC, MS Conn, PT Htr
SD36-2000	H.264 SDTV 35x Cam, Wiper, 120VAC, MS Conn, PT Htr
SD37-1000	H.264 SDTV 35x Cam, 24VAC, AMP Conn
SD37-2000	H.264 SDTV 35x Cam, Wiper, 24VAC, AMP Conn
SD38-1000	H.264 SDTV 35x Cam, 120VAC, AMP Conn
SD38-2000	H.264 SDTV 35x Cam, Wiper, 120VAC, AMP Conn
SD39-1000	H.264 SDTV 35x Cam, 120VAC, AMP Conn, PT Htr
SD39-2000	H.264 SDTV 35x Cam, Wiper, 120VAC, AMP Conn, PT Htr

### DIMENSIONS



### CONNECTOR PINOUT OPTIONS

Pin	MS Connector Pinouts	
	120Vac	24Vac
L	Video Out	
A	Video Ground	
U	115 VAC High	Spare
G	AC Ground	
T	115 VAC Low	24 VAC Low
B	Spare	24 VAC High
P	Alarm Common	
C	Alarm In	
J	Relay Out	
K	Relay In	
M	RS-422 RX +	
N	RS-422 RX -	
S	RS-422 TX +	
R	RS-422 TX -	
D	Ethernet TX +	
E	Ethernet TX -	
F	Ethernet RX +	
H	Ethernet RX -	

Pin	AMP Connector Pinouts	
	120Vac	24Vac
1	Video Out	
2	Video Ground	
3	Spare	
4	RS-422 TX -	
5	RS-422 TX +	
6	RS-422 RX +	
7	RS-422 RX -	
8	Ethernet TX +	
9	Ethernet TX -	
10	RS-422 RX +	
11	RS-422 RX -	
12	115 V AC High	SPARE
13	115 V AC Low	24 V AC Low
14	SPARE	SPARE
15	115 V AC Ground	24 V AC Ground
16	SPARE	24 V AC High