COHU|HD

Series 3960^{HD}
H.264 High Definition
IP67 Camera Positioning System

Profile S

ONVIF

- Superior HD Image Quality
- Powerful 30x Optical Zoom
- Electronic Image Stabilization
- Defog/Dehaze Analytics
- H.264/MJPEG Codecs
- Web Server Configuration, Operation and Viewing
- Variable Speed, Smooth Positioning Movements
- Presets, Tours, Sectors and Privacy Zones
- Automated Event Actions

- Faceplate Wiper System Option
- Pressurized IP67 Protection
- Temperature Range of -40°C to 75°C
- NTCIP 1205 over IP Communication Support
- 120Vac or 24Vac Power
- Single Connector Simplicity
- Pendent, Wall, Pole and Corner Mounting Options
- ONVIF Profile S Compliant

CohuHD's 3960^{HD} camera positioning system combines crystal clear HD image quality, bandwidth efficient H.264 compression, smooth variable speed positioning and IP66/IP67 protection delivering the CohuHD quality and performance you expect!

The 3960^{HD} includes a 720p30 HD camera with up to 30x optical zoom, delivering full frame rate HD images over the entire zoom range.

The built-in zoom capability enables up to 30x optical magnification in high definition, and achieves quick subject tracking through its high speed auto focusing system.

True day/night technology using a removable IR cut filter produces exceptional low light sensitivity down to 0.005 lx.

For installations subject to wind or vibration, electronic image stabilization assures steady, clear images and enables the system designer to utilize existing bridge sign and traffic light poles for camera mounting.

The 3960^{HD} includes defog/dehaze image processing, enhancing video performance in foggy and hazy conditions encountered in surveillance and traffic monitoring applications.

The 3960^{HD} includes variable hi-speed pan and tilt drive, with 360° continuous pan and +90 to -90° tilt. Fast positioning speeds result in 180° movements in less than 2.5 seconds.

Providing multiple video stream capability, the 3960^{HD} 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 systems today while providing a smooth transition to HD Video over IP tomorrow.

The 3960^{HD} 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, configuring camera imaging properties, defining presets and tours, and assigning camera ID labels.

The 3960^{HD} is designed to operate in harsh weather with its IP67 enclosure protection. This eliminates the effects of water intrusion, pollutants and corrosives.

CohuHD delivers years of clean, reliable images and backs it with a world class two year warranty.

COHU HD COSTAR

CAMERA

	18x CAMERA	20x CAMERA	30x CAMERA
Sensor Type	1/3" CCD	1/3" CMOS	1/3" CCD
Scanning System	Progressive	Progressive	Progressive
Pixel Array	1296 x 966	2096 x 1097	1296 x 966
Active Resolution	1280 x 720	1920 x 1080	1280 x 720
Frame Rate	30 fps	30 fps	30 fps
Camera Type	Day/Night (IR Cut Filter)	Day/Night (IR Cut Filter)	Day/Night (IR Cut Filter)
Day/Night Modes	Auto, Color, B/W	Auto, Color, B/W	Auto, Color, B/W

SENSITIVITY

	18x CAMERA	20x CAMERA	30x CAMERA
Color, 1/30, f1.6, 50 IRE	1.8 lux (0.18 fc)	1.7 lux (0.17 fc)	0.5 lux (0.05 fc)
Color, 1/30, f1.6, 30 IRE	0.74 lux (0.074 fc)	0.8 lux (0.08 fc)	0.3 lux (0.03 fc)
Monochrome, 1/30, f1.6, 50 IRE	0.18 lux (0.018 fc)	0.3 lux (0.03 fc)	0.05 lux (0.005 fc)
Monochrome, 1/4, f1.6, 30 IRE	0.02 lux (0.002 fc)	0.04 lux (0.004 fc)	0.005 lux (0.0005 fc)

LENS/OPTICS

	18x CAMERA	20x CAMERA	30x CAMERA
Zoom Lens	18x, 4.7 to 84.6mm	20x, 4.7 to 94mm	30x, 4.4 to 132mm
Aperture (f stop)	1.6 -> 2.8	1.6 -> 3.5	1.4 -> 4.6
HAFOV	55.2° to 3.2°	55° to 2.9°	62.9° to 2.2°
Focus	Auto / Manual [Near, Far]	Auto / Manual [Near, Far]	Auto / Manual [Near, Far]
Iris	Auto / Manual [Open, Close]	Auto / Manual [Open, Close]	Auto / Manual [Open, Close]
Digital Zoom	Not Available	Not Available	2x

IMAGE PROCESSING

	18x CAMERA	20x CAMERA	30x CAMERA
Image Stabilization	Not Available	Not Available	Off/On [5 Hz or 10 Hz]
Dynamic Range Mode	On/Off	On/Off	On/Off
Back Light Comp Mode	On/Off	On/Off	On/Off
Shutter/Integration	1/4 -> 1/10,000	1/2 -> 1/30,000	1/4 -> 1/10,000
Defog Mode	Not Available	Not Available	Off/On [3 Levels + Color Saturation]
S/N Ratio	> 50db	> 50db	> 50db

DISCONTINUED

IP VIDEO

Streams	Two (2) Individually configurable streams		
Codecs	H.264 and MJPEG		
Configurations	720p 18x, 30x Cameras - H.264 + H.264 - H.264 + MJPEG - H.264 + Analog - MJPEG+ Analog 1080p 20x Camera - H.264 (1080p) - MJPEG (1080p) - H.264 (720p) + MJPEG - H264 (720p) + Analog		
Resolutions	720p 18x, 30x Cameras - Stream 1 [720p, D1] - Stream 2 [D1, CIF]] 1080p 20x Camera - Stream 1 [1080p, 720p] - Stream 2 [D1, CIF]		

Frame Rates	30, 15, 7.5, 6, 5, 3.75, 3, 2, 1.875, 1 [Note: Stream 2 must be <= to Stream 1 frame rate]
Data Rates	Stream 1 [8 Mb to 256Kb] Stream 2 [2 Mb to 256Kb]
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
Repeatability	+/- 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	Model dependent

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

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

EVENT MANAGEMENT
DIGITAL I/O

Digital Inputs	One (1) Sensor Input, 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

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 13.52W [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 167°F (-40°C to 75°C) Per NEMA TS2, para. 2.2.7.3 - 2.2.7.7, Profile 2-1 using CohuHD specified temperatures
	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	Compliant to NEMA TS2 Para 2.1.9, 2.2.3, 2.2.8
Shock	Compliant to NEMA TS2 Para 2.1.10, 2.2.4, 2.2.9
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)

COHU HD COSTAR

ORDERING MODEL NUMBERS

PRODUCT MODEL STRUCTURE		
HD3 X - X X X X	OPTIONS	OPTION DESCRIPTION
PRODUCT SERIES		
	HD3	HELIOS IP67/IP66 HIGH DEFINITION POSITONING SYSTEM
OPERATING POWER		
	4	24VAC OPERATING POWER, MS CONNECTOR, NO PT HEATER
	5	120VAC OPERATING POWER, MS CONNECTOR, NO PT HEATER
	6	120VAC OPERATING POWER, MS CONNECTOR, WITH PT HEATER
	7	24VAC OPERATING POWER, AMP CONNECTOR, NO PT HEATER
	8	120VAC OPERATING POWER, AMP CONNECTOR, NO PT HEATER
	9	120VAC OPERATING POWER, AMP CONNECTOR, WITH PT HEATER
CAMERA OPTIONS		
	1	HDTV 720P 18X CAMERA
	2	HDTV 720P 18X CAMERA WITH FACEPLATE WIPER
	3	HDTV 720P 18X CAMERA (INVERTED)
	4	HDTV 720P 18X CAMERA WITH FACEPLATE WIPER (INVERTED)
	5	HDTV 1080P 20X CAMERA
	6	HDTV 1080P 20X CAMERA WITH FACEPLATE WIPER
	7	HDTV 720P 30X CAMERA WITH EIS AND DEFOG
	8	HDTV 720P 30X CAMERA WITH EIS AND DEFOG AND FACEPLATE WIPER
SOFTWARE OPTIONS		
	0	STANDARD SUITE / NTCIP 1205 OVER IP
UNASSIGNED		
	0	NONE
UNASSIGNED		
	0	NONE

DISCONTINUED (options 1–6)

DIMENSIONS

R10.5 (266.7)
Clearance radius from center of base mount

6.44 (163.58)

4.69 (119.12)

11.53 (292.86)

4.75 (120.65)

6.00 (152.40)

9.75 (247.65)

2.56 (65.02)
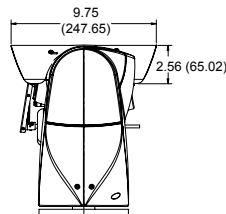
CONNECTOR PINOUT OPTIONS

Pin	MS Connector Pinouts 120Vac	24Vac	Pin	AMP Connector Pinouts 120Vac	24Vac
L	Video Out		1	Video Out	
A	Video Ground		2	Video Ground	
U	115 VAC High	Spare	3	Spare	
G	AC Ground		4	RS-422 TX -	
T	115 VAC Low	24 VAC Low	5	RS-422 TX +	
B	Spare	24 VAC High	6	RS-422 RX +	
P	Alarm Common		7	RS-422 RX -	
C	Alarm In		8	Ethernet TX +	
J	Relay Out		9	Ethernet TX -	
K	Relay In		10	RS-422 RX +	
M	RS-422 RX +		11	RS-422 RX -	
N	RS-422 RX -		12	115 V AC High	SPARE
S	RS-422 TX +		13	115 V AC Low	24 V AC Low
R	RS-422 TX -		14	SPARE	SPARE
D	Ethernet TX +		15	115 V AC Ground	24 V AC Ground
E	Ethernet TX -		16	SPARE	24 V AC High
F	Ethernet RX +				
H	Ethernet RX -				

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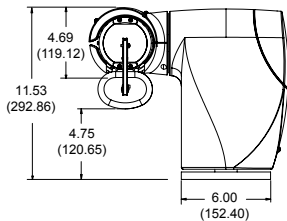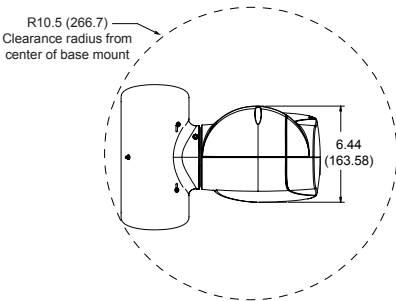CohuHD reserves the right to change specifications without notice

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