

# 4910 Series High Performance Monochrome CCD Camera

**COHU**

*On-chip-microlens Interline Transfer Imager virtually eliminates overload streaking, improves dynamic range*

*High sensitivity permits operation over a broad range of light levels*

*Convenient, precision adjustments from side panel*

*Eight-speed Electronic Shutter*

*Adjustable field or frame integration*

*Asynchronous reset provides random vertical reset capability for production line operations*

*Optional designs for remote head and outdoor applications*

**A full-featured, rugged, precision camera with 1/2" CCD sensor, C/CS lens mount**



## **APPLICATIONS**

- **Security/Surveillance** - Military Installations
  - Nuclear Power Plants • Hazardous Waste Management • Traffic Management Airports • Mass Transit Systems • Radar Tracking Systems
- **Image Processing**
- **Machine Vision**
- **Process Control**
- **Quality Control**
- **Image Analysis**

# 4910 Series

## High Performance Monochrome CCD Camera

**T**he 4910 Series High Performance Monochrome 1/2" CCD cameras from Cohu offer high resolution and high sensitivity for use in a broad range of security/surveillance, scientific, and industrial video applicants.

The 4910 Series cameras feature a 1/2"-format on-chip microlens sensor, which reduces dark current, lag, and blooming, while improving dynamic range and spectral characteristics.

For video applications prone to streaking problems, a 1000:1 overload capability allows transmission of clear video signals even when bright incidental light is present in the scene.

The 4910 Series design also incorporates a removable trim plate for side panel access to controls such as gamma, electronic shutter, and gain.

Available in RS-170 and CCIR models, the 4910 Series cameras

feature 26 dB of AGC for high sensitivity in low light-level applications. They are rugged, yet lightweight and compact, making them ideal for easy system integration. And 4910 Series cameras are backed by a full two-year warranty.

A leading U.S. manufacturer of closed circuit video cameras and systems for more than 40 years, we welcome requests for special products and complete CCTV systems.

***Choice of synchronization options for greater versatility***

***26 dB AGC for increased sensitivity at low light levels***

***1000:1 overload capability permits incidental light overloads up to ten times that of other CCD cameras***

***No lag or image retention — provides fast, clean, precise images***

***Zero geometric distortion for consistent corner-to-corner linearity***

***"C" or "CS" lens mount expands your choice of lenses***

***Choice of RS-170 or CCIR models***

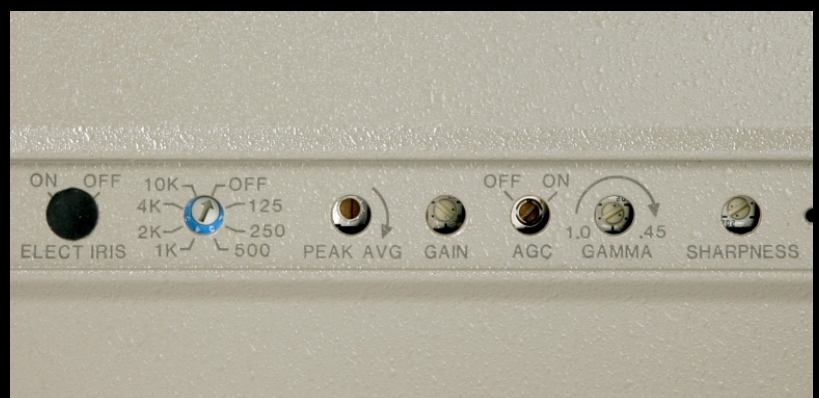
***Optional Electronic Iris automatically controls exposure from 1/60 sec. to 1/15,000 sec.***

***Optional IR Filter***

***State-of-the-art design and construction for total, solid-state reliability and long life***

***Made in U.S.A. — direct factory support***

***Two-year Warranty***



*An easily removable trim plate allows access to the following side-panel controls: Electronic Iris ON/OFF, Eight-Step Shutter Timing, ACG Peak/Average, Gain, AGC ON/OFF, Gamma, Black Level.*

# 4910 Series Specifications

## ELECTRICAL

### Image Area

6.4 x 4.8mm (corresponding to 1/2" format tube)

### Active Picture Elements

RS-170: 768 (H) x 494 (V)  
CCIR: 752 (H) x 582 (V)

### Imager Type

On-chip microlens sensor interline transfer CCD

### Cell Size

RS-170: 8.4 x 9.8 microns  
CCIR: 8.6 x 8.3 microns

### Resolution

RS-170: 580 (H) x 350 (V) TVL  
CCIR: 560 (H) x 450 (V) TVL

### Sensitivity (faceplate) @ 2850 K

Please see Table 1

### Electronic Shutter

Eight steps from 1/50 or 1/60 to 1/10,000 second (1/50 or 1/60, 1/125, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000 second)

### Integration

Integration period controllable through external input pulse  
Grab pulse output  
Field (1/60 or 1/50 second) or Frame (1/30 or 1/25 second) integration selected by internal jumper

### Video Output

1.0 V p-p @ 75 ohms, unbalanced

### Gamma

Variable 0.45 to 1.0

### AGC

26 dB, variable gain

### Signal To Noise

≥ 56 dB at gamma 1, gain 0  
38 dB at gamma 1, AGC On

### Auto Lens

Separate lens video ratio tracks AGC peak/average adjustment to eliminate AGC/auto lens interaction  
Power: +15V, 35mA maximum

### Synchronization

Genlock, revert to variable phase line lock with zero crossing detector  
Genlock, revert to crystal  
Crystal Lock  
H & V Drive  
Asynchronous Reset  
Internal Clock Speeds  
RS-170: 28.6363 MHz  
CCIR: 28.375 MHz

### Power Requirements

12V AC or DC (standard)  
24V AC or DC (optional)  
115V AC (optional on RS-170 models, includes wall transformer and connector)  
230V AC (optional on CCIR models, includes wall transformer and connector)  
4.2 Watts DC power consumption  
LED Power Indicator, Green

*This model has been tested and found to comply within the FCC limits for Class "B."*

## MECHANICAL

### Dimensions

(See illustration)

### Weight

18.5 oz (0.52 kg)

### Lens Mount

"CS" mount, 16mm format  
"C" mount with adapter (furnished)

### Camera Mounts

1/4 - 20 threaded holes, top and bottom

### Connectors

Video (BNC)  
Power (2 circuit screw terminal)  
Lens (3 pin mini-DIN)  
External Sync (8 pin DIN)

## ENVIRONMENTAL

### Ambient Temperature Limits

Operating: -20° to +60°C (-4° to +158°F)  
Storage: -30° to +70°C (-22° to +187°F)

### Humidity

Up to 95% relative humidity

### Vibration (less lens)

Sine vibration from 10 to 2,000 Hz, 5g peak, all 3-axis, 1/2 hour per axis per MIL-E 54007, para. 3.2.24.5.1.2, fig. 2, curve IIIA  
Random vibration from 10 to 2,000 Hz, 11g, RMS, all 3-axis, 1/2 hour per axis, meets MIL-E 54007, para. 3.2.24.5.1.2A, category 6

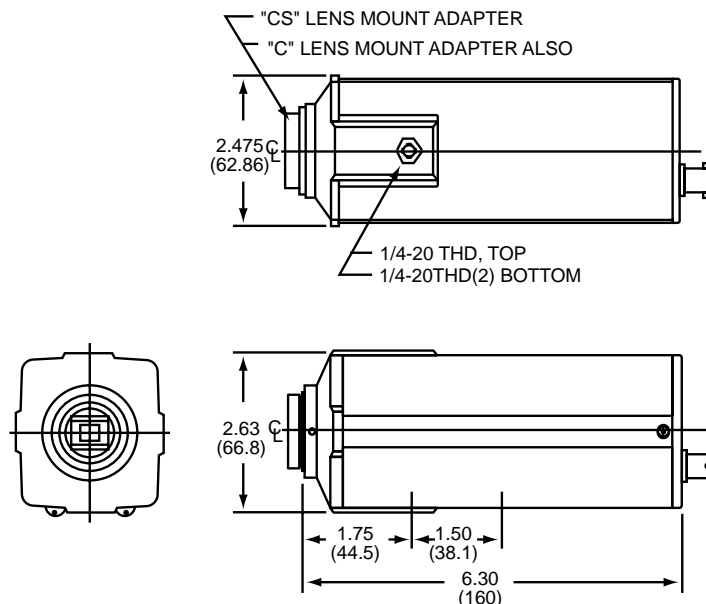
### Shock (less lens)

Up to 15g any axis under non-operating conditions

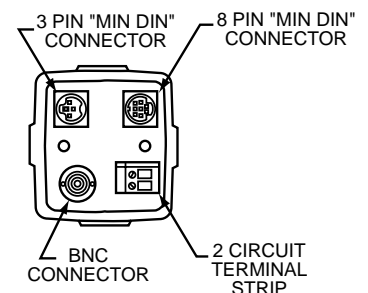
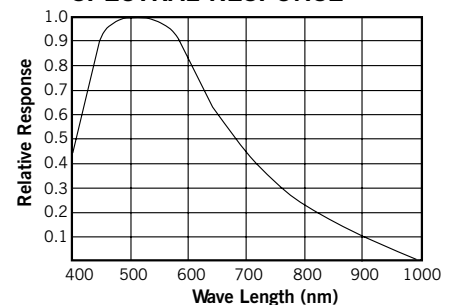
## SENSITIVITY

	Full Spectrum	With IR Filter
Full Video, No AGC	0.039 fc (0.39 lux)	0.15 fc (1.5 lux)
80% Video, AGC On	0.001 fc (0.01 lux)	0.006 fc (0.06 lux)
30% Video, AGC On	0.0002 fc (0.002 lux)	0.0009 fc (0.009 lux)

Dimensions in inches (mm)



## SPECTRAL RESPONSE



ORDERING INFORMATION

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**Power Options**

- 2 - 12V AC or DC
- 3 - 230V AC, 50 Hz, with AC wall adapter (CCIR Models)
- 4 - 24V AC or DC
- 5 - 115V AC, 60 Hz, with AC wall adapter (RS-170 Models)

**Sync Options**

- 2 - Genlock\* (revert to crystal) RS-170
- 3 - Genlock\* (revert to variable phase line lock) RS-170
- 4 - Asynchronous Reset RS-170
- 5 - Genlock\* (revert to crystal) CCIR
- 6 - Genlock\* (revert to variable phase line lock) CCIR
- 7 - Asynchronous Reset CCIR

**Optical Filters**

- 0 - None
- 1 - IR Filter (non-removable)

**Options**

- 0 - None (Standard TV Rate)
- 1 - Frame Mode
- 3 - Electronic Iris\*

\* Electronic Iris option is designed for use with manual iris lenses only. With this option, the camera operates in the field integration mode.

Use of the electronic iris defeats electronic shutter positions.

**Module Options**

- 0 - None

**Lens Options**

**Manual Iris, CS Mount**

- A003 - 3.7mm, f/1.6, 1/2"
- A006 - 6mm, f/1.4, 1/2"
- A013 - 12mm, f/1.4, 1/2"

**Manual Iris, C Mount**

- \*AL04 - 4.5mm, f/2.0, 2/3"
- \*AL08 - 8mm, f/1.4, 2/3"
- AL16 - 16mm, f/1.4, 2/3"
- AL25 - 25mm, f/1.4, 1"
- AL50 - 50mm, f/1.4, 1"
- AL75 - 75mm, f/1.8, 1"

\* Wide Angle

**Auto Iris, CS Mount**

- EH04 - 3.7mm, f/1.6, 1/2"
- EH06 - 6mm, f/1.4, 1/2"
- EH13 - 12mm, f/1.4, 1/2"

**Auto Iris, C Mount**

- ES04 - 4.2mm, f/1.8, 1/2"
- ES05 - 4.8mm, f/1.8, 2/3"
- ES08 - 8mm, f/1.4, 2/3"
- ES12 - 12.5mm, f/1.4, 2/3"
- ES16 - 16mm, f/1.4, 2/3"
- ES25 - 25mm, f/1.4, 1"
- ES35 - 35mm, f/1.4, 2/3"
- ES50 - 50mm, f/1.4, 1"
- ES75 - 75mm, f/1.8, 1"

Please consult factory for other lens selections.

**The same fine camera is available packaged for harsh environments...**

The 4940 Series high performance monochrome environmental CCD cameras from Cohu combine advanced video technology and rugged reliability for peak performance in harsh-environment security/surveillance applications.

The 4.5" dia. sealed and pressurized environmental housing provides maximum protection against rain, snow, dust, humidity, chemical pollutants, extreme temperatures, and other hazards.



**...or with a remote head for space-critical applications.**



Cohu's 4980 and 4990 Series High Performance Monochrome Remote-Head CCD cameras are the perfect solution for video applications requiring high performance in a compact package. The lightweight

mini-remote head is easily incorporated into microscopes, medical instruments, and machine vision systems, and is ideal for specialized security/surveillance applications.

The model 4990 has a fixed 15-ft remote cable, while the model 4980 is available with cables up to 100 feet between the head and the control unit.

For complete information on these cameras, check the website at [www.cohu-cameras.com/products/4900.htm](http://www.cohu-cameras.com/products/4900.htm) and request the data sheets for the models 4940, 4980 or 4990.



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