

# RS-170 MONOCHROME FRAME TRANSFER CCD CAMERA

## 4800 SERIES

**High Resolution,  
High Sensitivity**

Cohu's 4800 Series RS-170 Monochrome Frame Transfer CCD cameras are ideal for applications that require both high resolution and high sensitivity. Currently installed in thousands of sites around the world, they support a wide range of security/surveillance and electronic imaging applications.

4800 Series CCD cameras are available in three different housings. The 4810 Series housing is designed for non-environmental security/surveillance, image processing, and other scientific or industrial applications. The 4830 Series and 4860 Series Environmental CCD Cameras are designed for harsh environment applications. They consist of a 4810 Series camera and lens installed in either a three-inch-diameter or six-inch-diameter sealed and pressurized environment-resistant housing. The six-inch housing will accommodate virtually any size zoom lens. An explosion-proof housing is also available as an option.

4800 Series cameras provide high resolution pictures without geometric distortion, lag, or image retention. They provide sensitivity comparable to that of standard silicon target image tube cameras, and very low contrast



*Cohu 4800 Series Frame Transfer CCD Cameras*

variation. These capabilities, along with their reliable, rugged design and low maintenance, make 4800 Series cameras the ideal solution for high performance video requirements.

4800 Series cameras are designed and manufactured in U.S.A., and are backed by a full two-year warranty.

Cohu is uniquely positioned to respond quickly to special engineering requests for custom or modified products. We also offer complete system engineering services.

A leading U.S. manufacturer of video cameras and systems for over 40 years, Cohu is based in San Diego, California.

### FEATURES AND BENEFITS

- **Sealed, Pressurized Environmental Models** withstand exposure to extreme temperatures, sand, dust, fungus, and salt atmosphere.
- **High Resolution** with 2/3-inch format frame transfer image sensor for sharper images.
- **High Sensitivity** improves image in low light levels.
- **Zero Geometric Distortion** for consistent corner-to-corner linearity.
- **No Lag or Image Retention** for fast, clean, precise images.
- **Wide Range of Options** for flexible system integration.
- **Two-Year Warranty**
- **AGC with Peak-Average Adjustment** for clear images in varying light conditions.
- **High Signal-to-Noise Ratio** provides better dynamic range
- **Auto Black** for contrast enhancement.
- **Quality, State-of-the-Art Design and Construction** for total, solid-state reliability and long life.
- **IR Sensitive** for use in IR applications.
- **Over 367,000 Picture Elements**
- **Made in U.S.A.** — direct factory support, parts availability.
- **Adjustable "C" Mount** for maximum lens adaptability.

### APPLICATIONS

- **Security/Surveillance**
  - Perimeter Security
  - Government and Military Facilities
  - Unmanned Storage Facilities
  - Nuclear Power Plants
  - Hazardous Waste Management
  - Correctional Facilities
- **EMI Environments**
  - Subways
  - High Voltage Areas
  - Linear Accelerators
  - NMR Units
- **Transportation Management**
  - Traffic Safety and Control
  - Bridges and Tunnels
  - Mass Transit
  - Airports and Train Stations
  - Fare Collection Points
- **Image Processing**

# 4800 SERIES MONOCHROME CCD CAMERAS

## ELECTRICAL

### Imager

Single CCD using frame transfer method

### Pickup Area

8.8 x 6.6mm (2/3-inch format)

### Active Picture Elements

754(H) x 488 (V) (frame transfer)

### Cell Size

11.5µm(H) x 27µm(V)

### Resolution

Horizontal 565 TV lines

Vertical >350 TV lines

### Sensitivity

2850 K faceplate illumination.

See Table 1 on back page.

### Contrast Variation @25°C

<5% overall

### Video Output

1.0 V p-p @75 ohms, unbalanced

### Gamma

0.5 or 1.0 jumper selectable

### Gray Scale

Renders all shades of gray on EIA TV resolution chart, 1956

### AGC

6 dB, variable gain (peak-average adjustable)

Jumper selectable, On/Off

### Auto Black

Maintain set-up level at  $7.5 \pm 5$  IRE units if picture contains at least 10% black

### Signal-to-Noise Ratio

50 dB at gamma 1, 0 dB gain

8 MHz bandwidth, unweighted

55 dB at gamma 1, 0 dB gain, weighted

### Auto Lens Drive Signal

Peak-average characteristic tracks

AGC adjustment to eliminate

AGC/auto lens interaction

### Synchronization

EIA RS-170 crystal, 14.31818 clock output (standard)

Genlock, external sync with crystal or line lock back-up (jumper selectable)

Phase adjustable line lock (4830/4860 Series only)

External H & V drive

### Power Requirements

AC/DC 12V  $\pm 10\%$

AC/DC 24V  $\pm 5\%$

AC 115/230V  $\pm 10\%$ , 50/60 Hz with wall transformer for 4810

### Power Consumption

4.2W

4830 Heater: 35W

4860 Heater: 50W

## 4810 SPECIFICATIONS

### ENVIRONMENTAL

#### Ambient Temperature Limits

Operating: -10° to 50°C  
(14° to 122°F)

Storage: -30° to 70°C  
(-22° to 157°F)

#### Humidity

Up to 95% relative humidity

#### Vibration (less lens)

5 to 60 Hz with 0.082 inch total excursion (15 g's @ 60 Hz). From 60 to 1000 Hz, 5 g's rms random vibration without damage

#### Shock (less lens)

Up to 30 g's in any axis under nonoperating conditions, MIL-E-5400T, paragraph 3.2.24.6

#### Altitude

Sea level to equivalent of 3,000m/10,000 feet (500mm/20 inches of mercury)

### MECHANICAL

#### Weight (less lens)

450 grams (15 ounces)

#### Dimensions

Please see dimensional drawings

#### Camera Mount

1/4 - 20 threaded holes

#### Lens Mount

"C" mount, 16mm format

#### Connectors

BNC connector - Video Out  
Switchcraft TB4M - Lens Drive  
Switchcraft TB3M - Power In  
Hirose SR30-10R-6S - Auxiliary

## 4830 & 4860 SPECIFICATIONS

### ENVIRONMENTAL

#### Ambient Temperature Limits

Operating: -10° to 60°C (14° to 140°F)  
-40° to 60°C (-40° to 140°F)  
with optional heater

Storage: -30° to 70°C (-22° to 157°F)

#### Ambient Air Pressure

Two atmospheres (sea level) to equivalent of 100,000 feet (3,000 meters), exceeding MIL-E-5400T paragraph 3.2.24.2, Class 3

#### Humidity

Up to 100% relative humidity, MIL-E-5400T paragraph 3.2.24.4. Equipped with standard Schrader tank valve (purge fitting) on camera housing to allow camera to be purged with dry nitrogen or other moisture eliminators, and to maintain housing interior at approximately 5 psi.

#### Vibration – 4830

50 to 60 Hz with 0.020 inches total excursion (3.5 g's @ 60 Hz). From 60 to 1000 Hz, 3 g's rms random vibration without damage

#### Vibration – 4860

0.03 inches total excursion from 5 to 30 Hz; peak random vibrations of 5 g's from 30 to 1000 HZ without damage or degradation

#### Shock

30 g's in any axis under non-operating conditions per MIL-E-5400T, paragraph 3.2.24.6

### Air Contaminants

Withstands exposure to sand, dust, fungus, and salt atmosphere, per MIL-E-5400T, paragraph 3.2.24.7, 3.2.24.8, and 3.2.24.9

### Explosion

MIL-E-5400T, paragraph 3.2.24.10

### Acoustic Noise

Operates in extremely high acoustic noise environment (150 dB), e.g., close proximity to high thrust rocket engine

### Underwater Operation

Camera operates to 60 feet in depth (18 meters) with factory installed connector option

### MECHANICAL

#### Weight (less lens)

4832 – 3 lbs.

4835 – 4 lbs.

4860 – 14 lbs.

#### Type of Lens

A full range of C-mount fixed, auto-iris, and zoom lenses is available

#### Purge/Relief Fitting

Pressure relief valve (4860 only)

#### Pressurized Fitting

Standard Schrader Valve

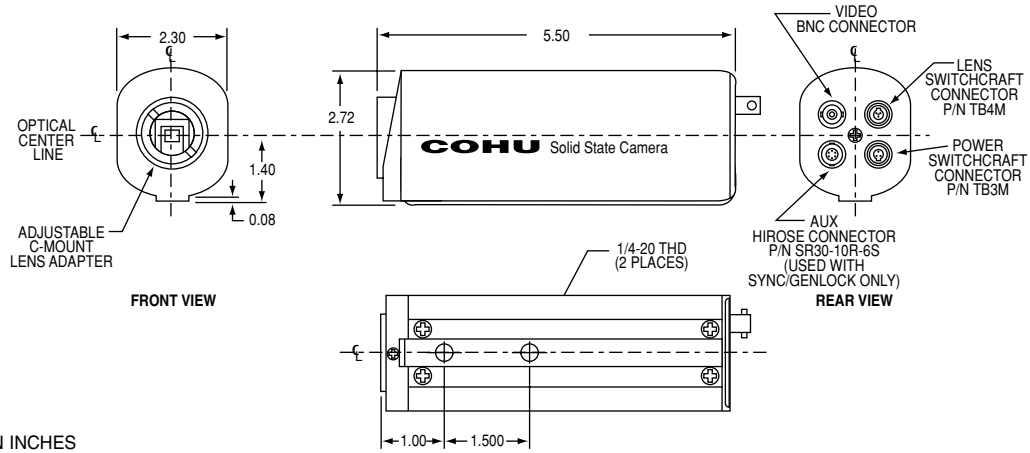
#### Rear Plate Connectors

4830 – Bendix PT07C-14-18P

4860 – Bendix PT07C-20-39P

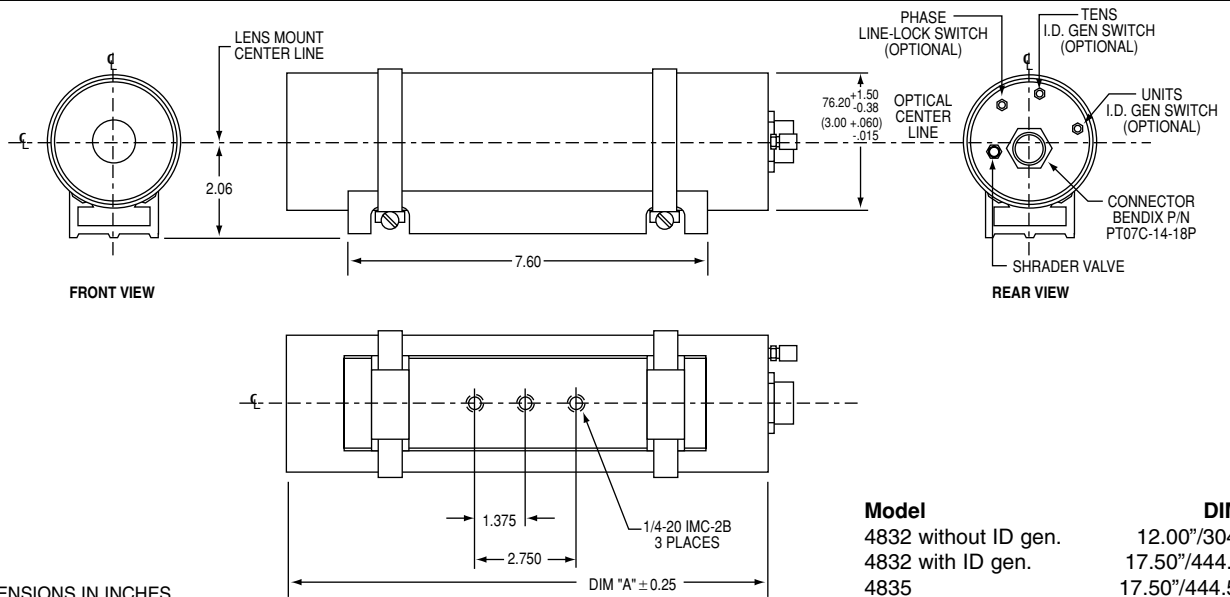
(Mating Connector Supplied. All functions controlled through single connector.)

## 4810 SERIES DIMENSIONS



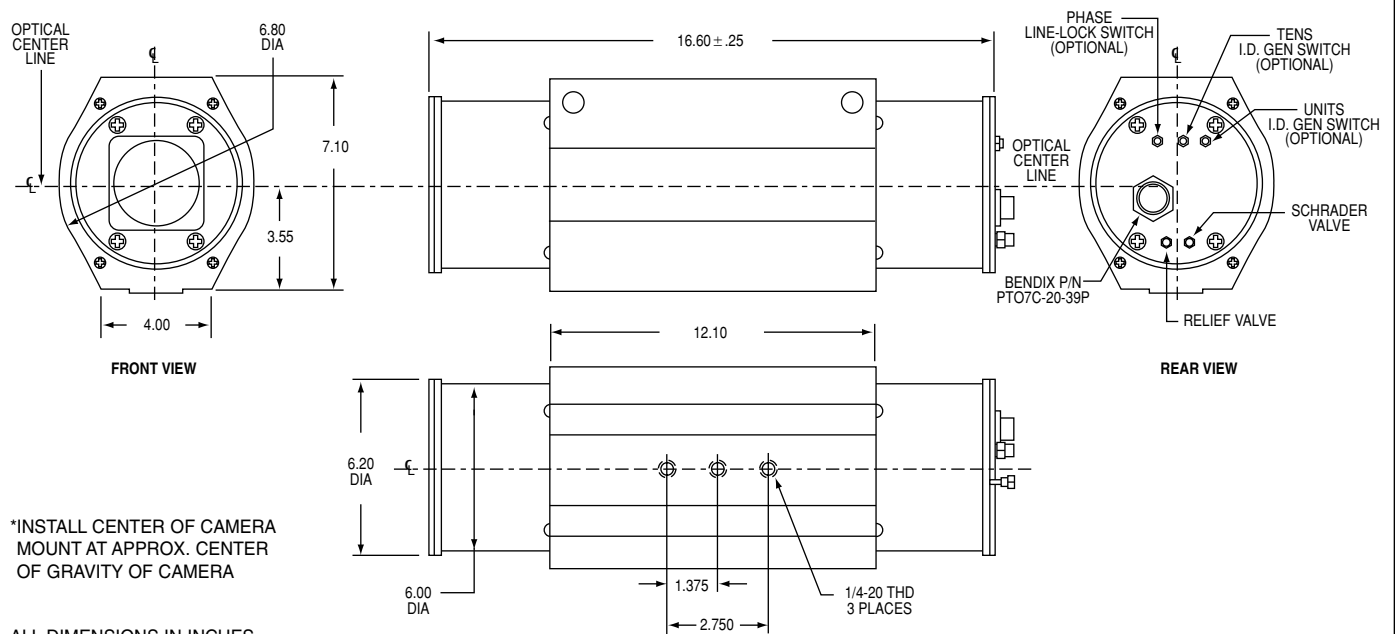
ALL DIMENSIONS IN INCHES

## 4830 SERIES DIMENSIONS



ALL DIMENSIONS IN INCHES

## 4860 SERIES DIMENSIONS



ALL DIMENSIONS IN INCHES

# 4800 SERIES MONOCHROME CCD CAMERAS

## ORDERING INFORMATION

48X	X —	X	X	XX /	XXXX	X
Housing Options	Power Options	Sync Options	Optical Filter	Option Boards	Lens Options	Other Options
<b>1</b> General Purpose <b>3</b> 3" Environmental <b>6</b> 6" Environmental <b>7</b> UL Classified Explosion Proof CHX	<b>2</b> 12V ac/dc <b>4</b> 24V ac/dc <b>5</b> 115V ac, 60 Hz, (4810 Series supplied with ac wall adapter)	<b>2</b> Genlock (revert to crystal) <b>3</b> Genlock (revert to linelock) <b>4</b> Phase Adjustable Line Lock (4830 and 4860 ac models only) <b>5</b> RS-170 Crystal <b>7</b> External H & V Drive	<b>000</b> None <b>100</b> IR Filter	<b>00</b> None <b>*40</b> Bright Light Limiter <b>*50</b> Source I.D. Generator <b>*54</b> Source I.D. Generator and Bright Light Limiter  <b>*4830/4860 only</b>	<b>000</b> None <b>Manual Iris Lens (4810 Series Only)</b> <b>AL09</b> 9mm, f/1.4, 2/3" <b>AL12</b> 12mm, f/1.4, 1" <b>AL16</b> 16mm, f/1.4, 2/3" <b>AL25</b> 25mm, f/1.4, 1" <b>AL50</b> 50mm, f/1.8, 1" <b>AL75</b> 75mm, f/1.8, 1"  <b>Auto Iris Lens</b> <b>ES05</b> 4.8mm, f/1.8, 2/3" <b>ES08</b> 8mm, f/1.4, 2/3" <b>ES12</b> 12.5mm, f/1.4, 1" <b>ES16</b> 16mm, f/1.4, 2/3" <b>ES25</b> 25mm, f/1.4, 1" <b>ES35</b> 35mm, f/1.4, 2/3" <b>ES50</b> 50mm, f/1.8, 1" <b>ES75</b> 75mm, f/1.8, 1"  <b>**Zoom Lenses (4860 Series Only)</b> <b>Z06J</b> 6:1, 11.5-10mm, f/1.4, 2/3" <b>P06J</b> 6:1 with presets, 10mm, f/1.4, 2/3" <b>Z10H</b> 10:1, 10-100mm, f/1.4, 2/3" <b>P10J</b> 10:1 with presets, f/1.4, 2/3"	<b>L</b> Low Temperature Operation <b>For Sunshields</b> 4830, use SS-300 4860, use SS-522 <b>For Remote Control</b> Use 2380-090 CA-246 (4830 cable) CA-294 (4860 cable)



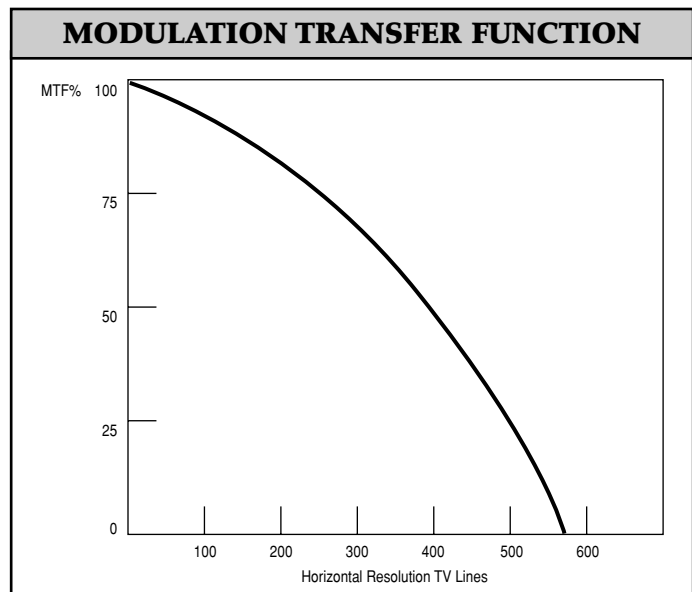
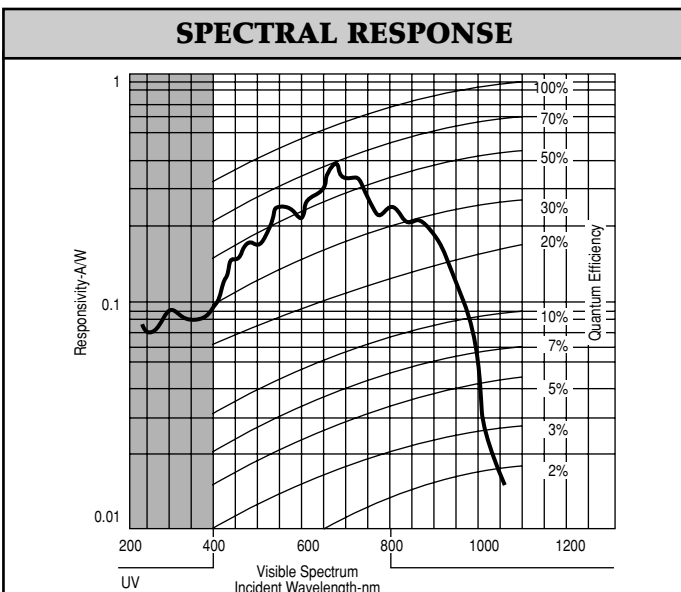
All models UL listed except 4835 and 4865

COHU RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

\*\*Available on 24V ac models only as an "ER". Please consult factory for other lens selections.

SENSITIVITY		
	With IR Filter	Without IR Filter
Full Video, AGC Off	0.2 fc (2 lux)	0.02 fc (0.2 lux)
80% Video, AGC On	0.07 fc (0.7 lux)	0.007 fc (0.07 lux)
30% Video, AGC On	0.02 fc (0.2 lux)	0.002 fc (0.02 lux)

Table 1



ISO-9001 Certified

Cohu, Inc./Electronics Division

P.O. Box 85623 • San Diego, CA 92186

Telephone: (858) 277-6700 • FAX: (858) 277-0221 • www.cohu-cameras.com



**COHU**

Cohu, Inc., Electronics Division