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



Cohu 4800 Series Frame Transfer CCD Cameras

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±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 ±10%
AC/DC 24V ±5%
AC 115/230V ±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.

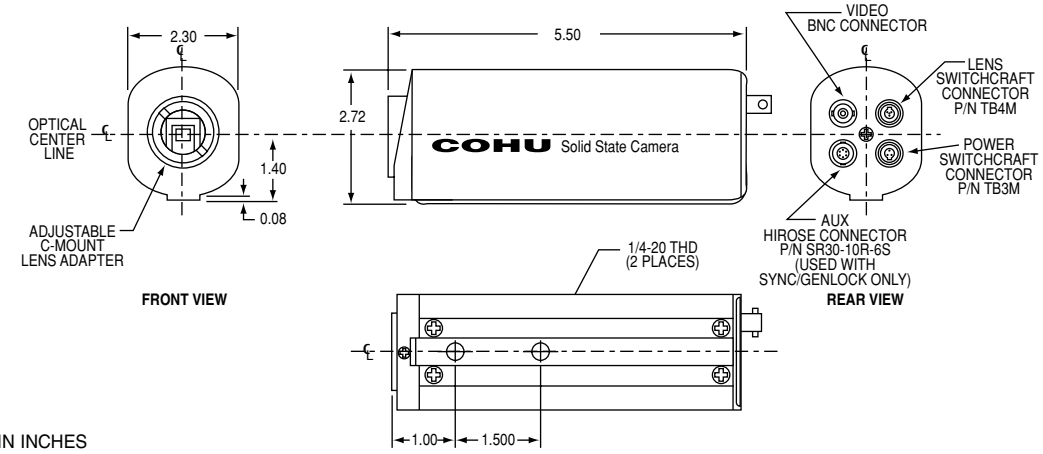
Type of Lens
A full range of C-mount fixed, auto-iris, and zoom lenses is available

Purge/Relief Fitting
Pressure relief valve (4860 only)

Pressurized Fitting
Standard Schrader Valve

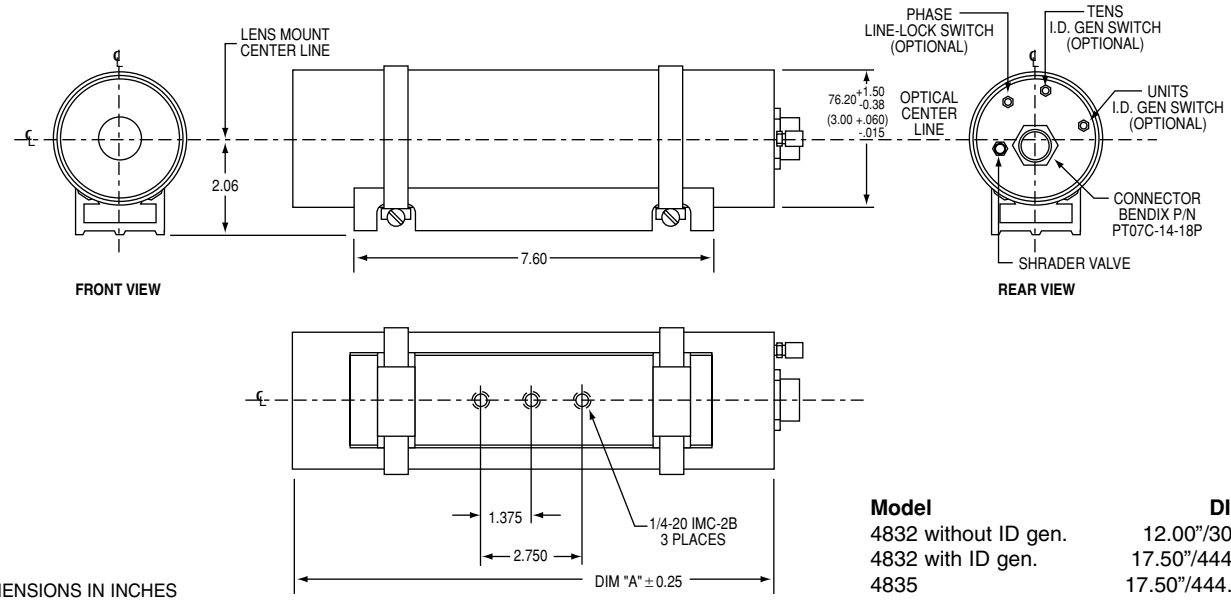
Rear Plate Connectors
4830 – Bendix PT07C-14-18P
4860 – Bendix PT07C-20-39P
(Mating Connector Supplied. All functions controlled through single connector.)

4810 SERIES DIMENSIONS



ALL DIMENSIONS IN INCHES

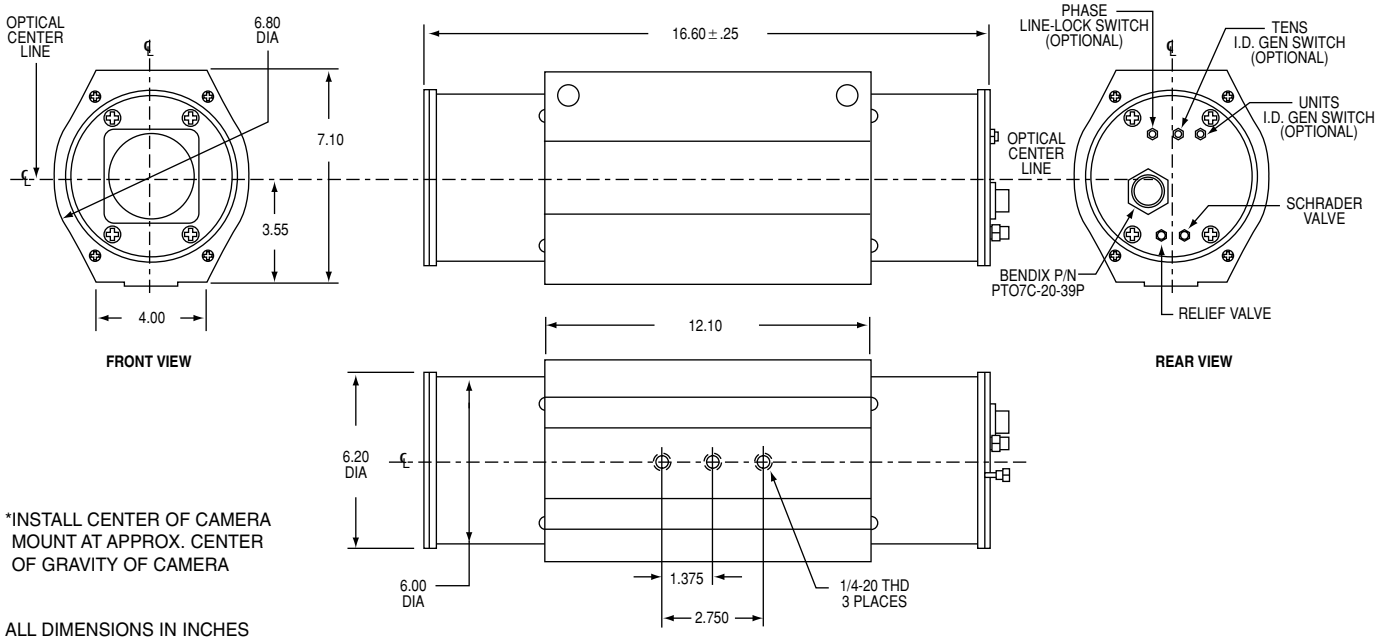
4830 SERIES DIMENSIONS



Model	DIM. "A"
4832 without ID gen.	12.00"/304.8mm
4832 with ID gen.	17.50"/444.50mm
4835	17.50"/444.50.mm

ALL DIMENSIONS IN INCHES

4860 SERIES DIMENSIONS



*INSTALL CENTER OF CAMERA MOUNT AT APPROX. CENTER OF GRAVITY OF CAMERA

ALL DIMENSIONS IN INCHES

4800 SERIES MONOCHROME CCD CAMERAS

ORDERING INFORMATION

48X X — X X XX / XXXX X

Housing Options

1 General Purpose
3 3" Environmental
6 6" Environmental
7 UL Classified Explosion Proof CHX

Power Options

2 12V ac/dc
4 24V ac/dc
5 115V ac, 60 Hz, (4810 Series supplied with ac wall adapter)

Sync Options

2 Genlock (revert to crystal)
3 Genlock (revert to linelock)
4 Phase Adjustable Line Lock (4830 and 4860 ac models only)
5 RS-170 Crystal
7 External H & V Drive

Optical Filter

000 None
100 IR Filter

Option Boards

00 None
***40** Bright Light Limiter
***50** Source I.D. Generator
***54** Source I.D. Generator and Bright Light Limiter

***4830/4860 only**

Lens Options

000 None

Manual Iris Lens (4810 Series Only)
AL09 9mm, f/1.4, 2/3"
AL12 12mm, f/1.4, 1"
AL16 16mm, f/1.4, 2/3"
AL25 25mm, f/1.4, 1"
AL50 50mm, f/1.8, 1"
AL75 75mm, f/1.8, 1"

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

****Zoom Lenses (4860 Series Only)**
Z06J 6:1, 11.5–10mm, f/1.4, 2/3"
P06J 6:1 with presets, 10mm, f/1.4, 2/3"
Z10H 10:1, 10-100mm, f/1.4, 2/3"
P10J 10:1 with presets, f/1.4, 2/3"

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

Other Options

L Low Temperature Operation
For Sunshields
4830, use SS-300
4860, use SS-522
For Remote Control
Use 2380-090
CA-246 (4830 cable)
CA-294 (4860 cable)

All models UL listed except 4835 and 4865

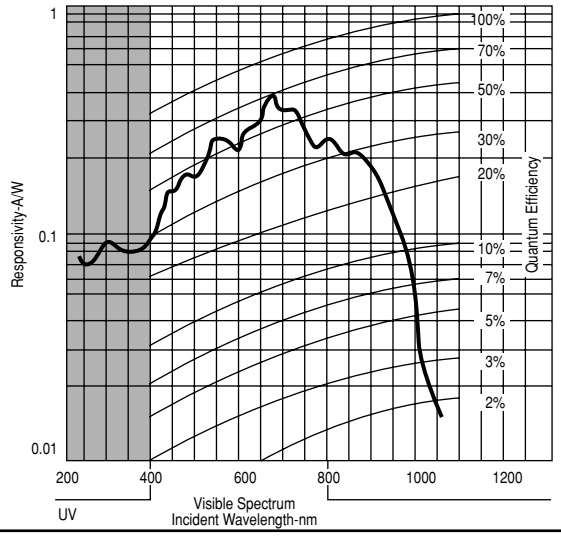
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SENSITIVITY

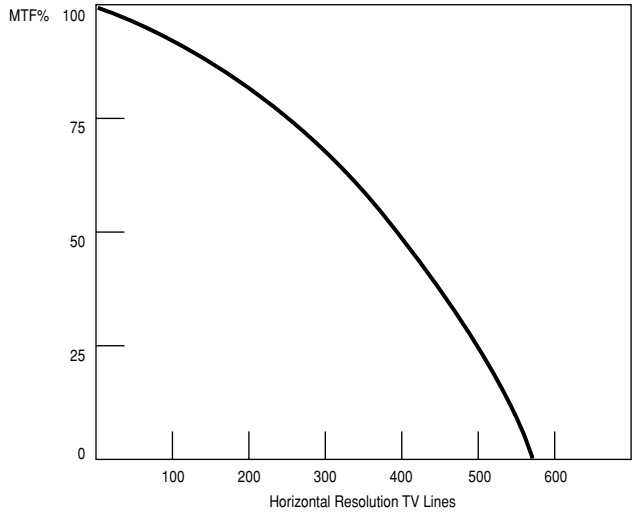
	With IR Filter	Without IR Filter
Full Video, AGC Off	0.2 fc (2 lux)	0.02 fc (0.2 lux)
80% Video, AGC On	0.07 fc (0.7 lux)	0.007 fc (0.07 lux)
30% Video, AGC On	0.02 fc (0.2 lux)	0.002 fc (0.02 lux)

Table 1

SPECTRAL RESPONSE



MODULATION TRANSFER FUNCTION



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

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