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TWO-YEAR WARRANTY!

SOLID-STATE CCD MONOCHROME CAMERA

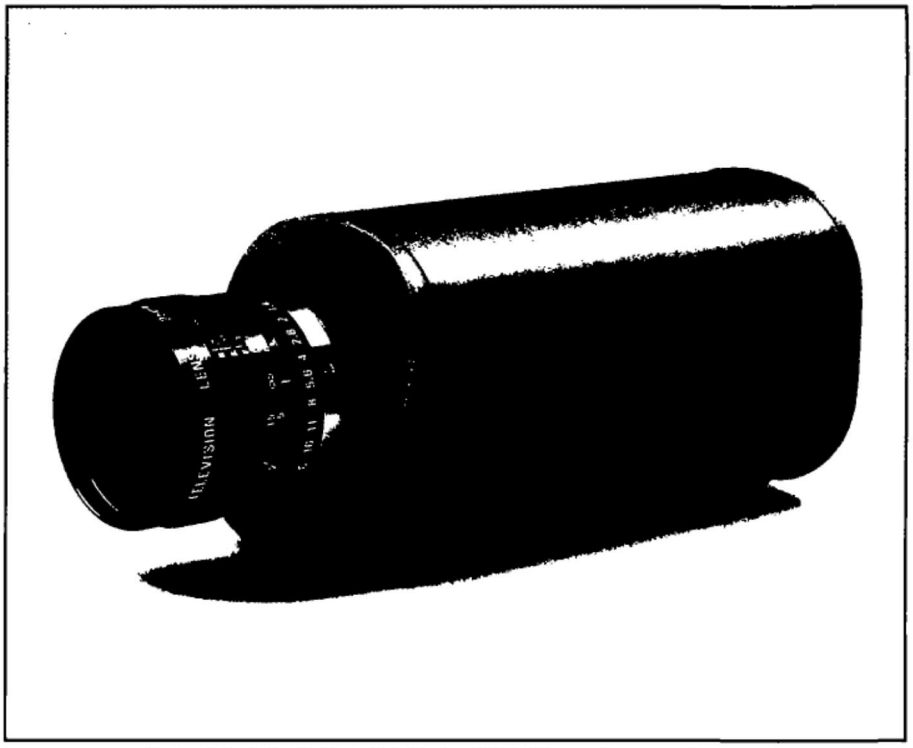
MODEL 4810

High Resolution and High Sensitivity

The Model 4810 solid-state cameras are ideal for applications that require both high resolution and high sensitivity. High resolution pictures are attainable without geometric distortion, lag or image retention. The 2/3-inch format CCD (Charge Coupled Device) image sensor of the Model 4810 generates sensitivity that closely matches standard silicon target imaging tubes. These capabilities, along with its inherent rugged design and minimal maintenance, make Cohu's Model 4810 superior to existing CCD or tube cameras.

Weighing just 15.5 ounces, the Model 4810 is suited for numerous applications including machine vision, image processing, robotics, process control and microscopy.

Automatic gain control (AGC) is incorporated in Cohu's Model 4810 to provide high sensitivity for use in low-light areas. The 4810 utilizes the frame transfer method and over 365,000 picture elements to generate a high resolution image with a contrast variation of <5%. Low power consumption allows flexible system integration and easy operation.



Cohu Model 4810 Solid-State CCD Monochrome Camera

OPTIONS

- **Synchronization**
  Genlock/Crystal
  Genlock/Line Lock
  Phase Adjust Line Lock
  RS-170 Crystal
  External H & V Drive
- **IR Filter**

FEATURES

- **High Resolution**
  754(H) x 488 (V) Picture Elements
- **High Sensitivity**
  (to .007fc/.07 Lux)
- **Auto Black for Wide Dynamic Range or Manual Adjustable**
- **AGC with Peak-Average Adjustment or Fixed Gain with Manual Adjustment**
- **Zero Geometric Distortion**
- **Selectable Gamma**
- **No Lag or Image Retention**
- **Low Power Consumption**
- **Blemish-Free Sensor**
- **Over 365,000 Picture Elements**
- **Adjustable C Mount**

APPLICATIONS

- **Machine Vision**
  Pattern Recognition
  Non-Contact Measurement and Inspection
  Bar Code Reading
  Image Processing
- **Robotics**
  Automated Visual Control
- **EMI Environments**
  Subways
  High Voltage Areas
  Linear Accelerators
  NMR Units
- **Remote Piloted Vehicles**
  Land Based, Aircraft, Submersibles
- **Microscopy**
- **Medical Imaging**
- **Security/Surveillance**

Designed and manufactured in U.S.A.

COHU
Cohu, Inc./Electronics Division

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4810 SERIES MONOCHROME CCD CAMERAS

SPECIFICATIONS

ELECTRICAL

Imager
Single CCD using frame transfer method

Pickup Area
8.8 x 6.6 mm (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 below.

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 @25°C
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)
External H & V drive

Power Requirements
AC/DC 12V ±10%
AC/DC 24V ±5%
AC 115/230V ±10%, 50/60 Hz with wall transformer

Power Consumption
4.2W

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

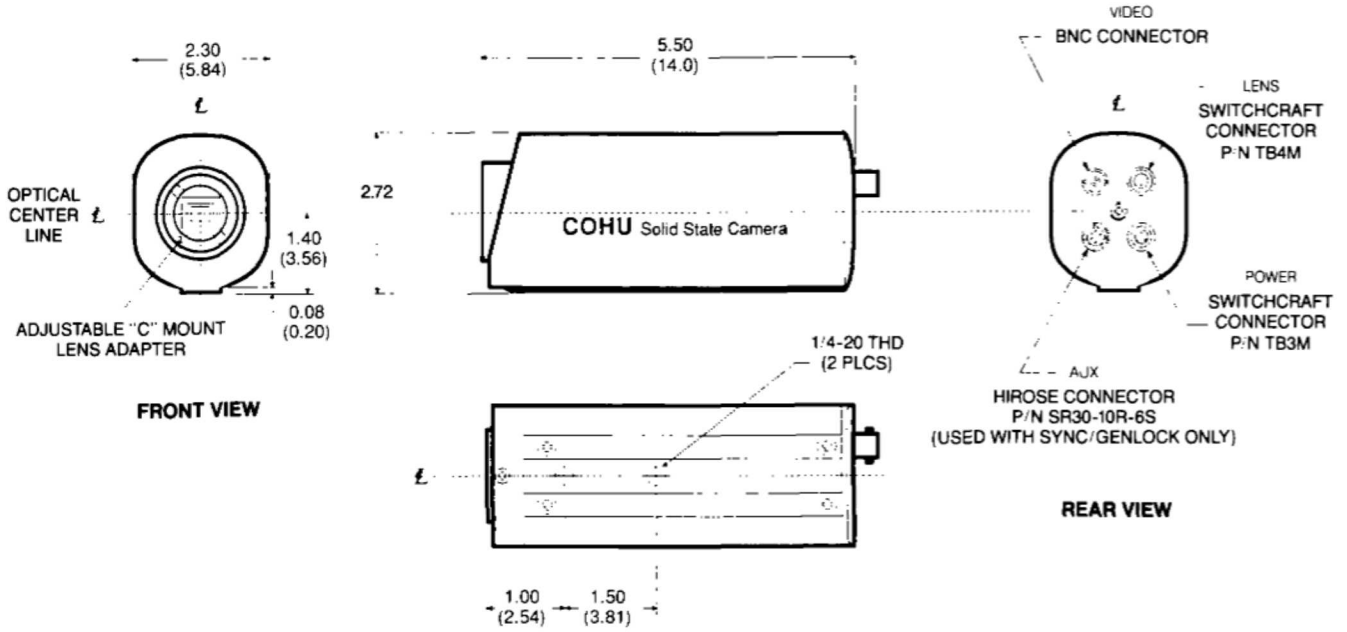
SENSITIVITY

	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

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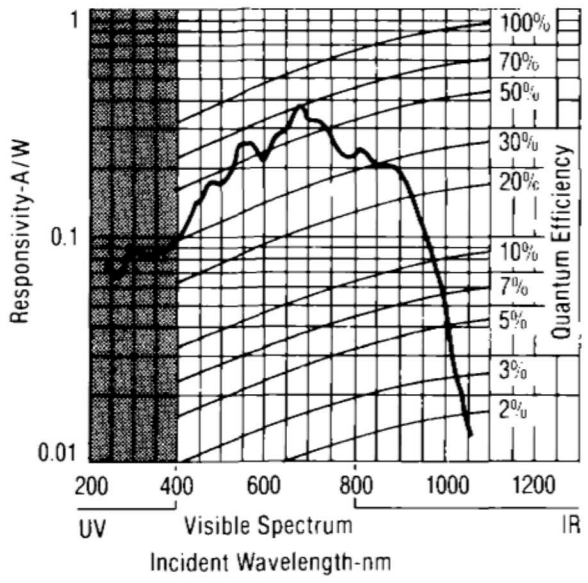
DIMENSIONS



NOTE: ALL DIMENSIONS IN INCHES AND (CM).

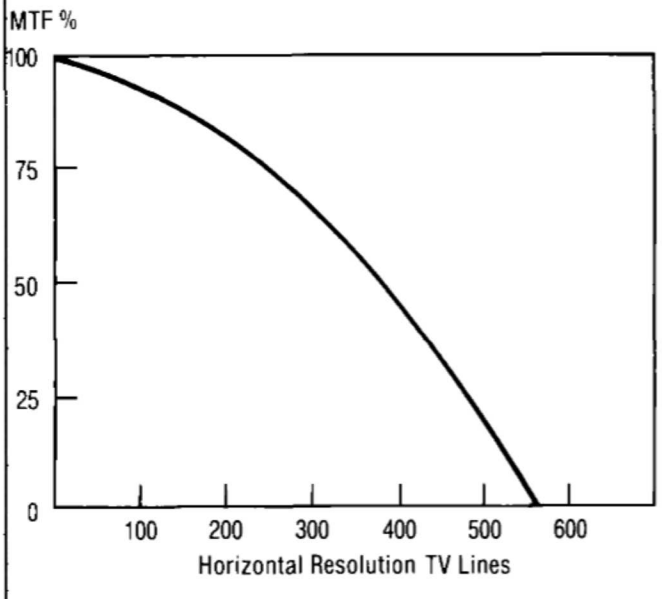
Figure 1

SPECTRAL RESPONSE



SHADED AREA INDICATES SPECTRAL RESPONSE WITH FACEPLATE REMOVED OR WITH A QUARTZ FACEPLATE INSTALLED. PLEASE CONSULT FACTORY FOR PRICES.

MODULATION TRANSFER FUNCTION



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MODEL 4810 SOLID-STATE MONOCHROME CCD CAMERA

ORDERING INFORMATION

481X — X XXX / XXXX

Power Options

2 12V ac/dc
4 24V ac/dc
5 115V ac, 60 Hz)

Note: 12V and 24V models include power mating connector. Model 4815 is the same as Model 4812 with an external 12V dc power pack.

Sync Options

***2** Genlock (Revert to crystal)
***3** Genlock (Revert to linelock)
5 RS-170 Crystal
***7** H & V Drive

* Includes Genlock, line lock, external H & V drive, and clock output

Optical Filter

000 None
100 IR Filter

Lens Options

0000 None

Manual Iris Lenses
AL09 9mm, f/1.4, 2/3"
AL12 12.5mm, f/1.4, 1"
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"

Auto Iris Lenses*
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"
ES50 50mm, f/1.8, 1"
EH75 75mm, f/1.8, 1"
* Auto iris lenses require lens connector P/N 1310356-104, which must be ordered separately when customer supplies own lens.

Warranty: Two years on CCD cameras; one year on lenses.

COHU RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

OPTIONAL FEATURES

POWER OPTIONS

The Model 4810 camera requires AC or DC 12V or 24V input power. For operation from a 115/230 VAC 50/60 Hz power source, an optional AC power pack is available.

OPTICAL FILTER

The Model 4810 is designed to be IR sensitive. For use in applications with undesirable IR conditions, the optional IR filter will cut off at 650nm.

LENS OPTIONS

In addition to the lenses listed above, Cohu provides a complete selection of lenses for specialized applications. Our applications engineers will help you determine the proper field-of-view, focal length, lens speed (f-stop), and size (image sensor format) for your application.

SYNC OPTIONS

The standard sync board contains a RS-170 crystal-controlled oscillator to generate a 14.31818 MHz reference frequency. A sync generator IC shapes the repetitive timing pulses used to control the movement of charge frames on the sensor board. This board also contains circuits to generate blanking, clamp, and sync pulses. These signals combine with the video signal on the video board to produce composite monochrome video.

The genlock board contains additional circuits to receive external input signals, including composite video, composite sync, and horizontal and vertical drive. These inputs are processed and supplied as reference signals to the genlock oscillator. In the absence of an externally applied signal, the camera is either crystal locked or line locked, depending on the position of the crystal/line lock jumper. In the Line-Lock Mode, the camera synchronizes to an external 60 Hz reference derived from the AC power line. In the RS-170 Crystal Mode, the internal crystal-controlled oscillator provides back-up. The H and V Drive Input option allows the camera to synchronize to externally supplied horizontal- and vertical-drive signals.

SPECIAL FEATURES

Cohu welcomes the opportunity to provide special features to better serve your particular application. Some examples of special features include a 10dB S/N increase for 60dB total signal-to-noise ratio; custom painting, silk screen and logo; remote head with 6' cable; imager faceplate removal for laser applications; imager tilt with customer-specified degree; and special connector pin configurations. Please contact Cohu for other special features.

ADVANCED VIDEO TECHNOLOGY Made in the U.S.A.

5755 Kearny Villa Road • San Diego, CA 92123
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