



Artisan Scientific

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HIGH PERFORMANCE REMOTE-HEAD MONOCHROME CCD CAMERA

4990 SERIES

**High Sensitivity
On-Chip-Microlens Imager**

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

Available in RS-170 and CCIR models, these high resolution cameras employ a half-inch format interline transfer imager with on-chip microlenses for unparalleled sensitivity and minimal blooming. For additional sensitivity in low-light conditions, they provide 26 dB AGC and variable field/frame integration capabilities.

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

4990 Series cameras are backed by a two-year warranty. They're rugged, yet lightweight and compact — ideal for fast system integration. For easy access to camera controls, they have a removable trim plate on the camera control unit.

Cohu has been a leading U.S. manufacturer of closed circuit video cameras and systems for over 40 years. We welcome requests for special products and complete CCTV systems.

APPLICATIONS

- Image Processing
- Machine Vision
- Microscopy
- Endoscopy
- Process Control
- Quality Control
- Image Analysis
- Security/Surveillance



Cohu 4990 Series Monochrome High Performance Interline Transfer CCD Camera.

FEATURES AND BENEFITS

- **Compact, Lightweight Remote Head** - maximum flexibility for end users or OEMs
- **High Resolution** - for better definition, error-free results
- **On-Chip-Microlens Interline Transfer Imager** dramatically increases sensitivity and virtually eliminates streaking and blooming
- **Eight-Speed Electronic Shutter** reduces blurred images of fast-moving objects
- **High Sensitivity** permits operation over a broad range of light levels
- **Choice of Synchronization Options** for greater versatility
- **High Signal-to-Noise Ratio** for clear, noise-free video
- **Asynchronous Reset** provides random vertical reset capability for production line applications
- **Optional Electronic Iris** automatically controls exposure
- **Made In U.S.A.** - direct factory support
- **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 images
- **Zero Geometric Distortion** for consistent corner-to-corner linearity
- **26 dB AGC** for increased sensitivity at low light levels
- **Optional IR Filter**
- **Field or Frame Integration** - for added sensitivity in low-light-level imaging applications
- **State-of-the-Art Design and Construction** for total, solid-state

COHU

Cohu, Inc., Electronics Division

Designed and manufactured in U.S.A.

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4990 SERIES HIGH PERFORMANCE REMOTE-HEAD CCD CAMERA

SPECIFICATIONS

ELECTRICAL

Image Area

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

Active Picture Elements

RS-170: 768 H x 494 V

CCIR: 752 H x 582 V

Imager Type

Interline transfer CCD with on-chip microlenses

Cell Size

RS-170: 8.4 x 9.8 microns

CCIR: 8.6 x 8.3 microns

Resolution

RS-170: 580 horizontal TVL, 350 vertical TVL

CCIR: 560 horizontal TVL, 450 vertical TVL

Sensitivity (faceplate) @ 2850 K

0.65 lux at full video, AGC off

0.05 lux at 80% video, AGC on

Electronic Shutter

Eight steps from 1/50 or 1/60 to 1/10,000 second (1/50 or 1/60, 1/125, 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

AGC

26 dB, variable gain

Signal-to-Noise Ratio

≥56 dB at gamma 1, gain 0 dB

38 dB at gamma 1, AGC On

Auto Lens

Separate lens video signal tracks AGC peak/average adjustment to eliminate AGC/auto lens interaction

Power: +15V, 35 mA maximum

Gamma

Variable 0.45 to 1.0

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)

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

MECHANICAL

Dimensions (less lens)

Camera Head: 1.50" dia. x 2.00"

length (38.1 x 50.8 mm)

CCU: 1.7" (H) x 5.0" (W) x 6.9" (D)

(43.2 x 127 x 175.3 mm)

Weight

Camera Head (less lens and cable):

4 ounces (113 grams)

15' Remote Cable: 17 ounces

(483 grams)

CCU: 27.5 ounces (780 grams)

Lens Mount

Adjustable "C" mount

CCU Controls

Electronic Shutter

AGC peak/average

AGC On/Off

Manual Gain

Gamma

Sharpness

Connectors

Video (BNC)

Power (2 circuit screw terminal)

Lens (3 pin Mini-DIN)

External Sync (8 pin DIN)

Pin 1. External Vertical Trigger In

Pin 2. External Sync/Horizontal Trigger In

Pin 3. Grab Pulse Out (-)

Pin 4. Ground

Pin 5. Ground

Pin 6. Vertical Reset In

Pin 7. Grab Pulse Out (+)

Pin 8. Integrate Input

Camera Head (15 pin "D" subminiature)

ORDERING INFORMATION

499X - X

Power Options

- 2 12V ac or dc
- 3 230V ac, 50 Hz, with ac wall adapter (CCIR models)
- 4 24V ac, 24V-28 V dc
- 5 115 V ac, 60 Hz, with ac wall adapter (RS-170 models)

Sync Options

- 2 RS-170 Genlock/revert to crystal
 - 3 RS-170 Genlock/revert to phase adjust line lock
 - 4 RS-170 Async reset
 - 5 CCIR Genlock/revert to crystal
 - 6 CCIR Genlock/revert to phase adjust line lock
 - 7 CCIR Async Reset
- *Genlock can be composite sync or separate H&V drive.*

X

Optical Filters

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

X

Options

- 00 None (Standard TV Rate)
- 10 Frame Integration Mode
- 30 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.*

XXXX

Lens Options

- Manual Iris, C Mount**
- *AL04 4.5mm, f/2.0, 2/3"
- AL16 16mm, f/1.4, 2/3"
- AL25 25mm, f/1.4, 1"
- AL50 50mm, f/1.4, 1"
- *Wide Angle

Auto Iris, C Mount

- ES04 4.2mm, f/1.6, 1/2"
 - 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"
 - ES50 50mm, f/1.4, 1"
 - ES75 75mm, f/1.8, 1"
- Other lenses are available. Please consult factory.*

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ENVIRONMENTAL

Ambient Temperature Limits

Operating: -20 to 60°C (-4 to 140°F)

Storage: -30 to 70°C (-22 to 157°F)

Humidity

Up to 95% relative humidity

Vibration (less lens)

Sine vibration from 5 to 2,000 Hz, 5G peak, all 3-axis, 1/2 hour per axis per MIL-E-5400T, 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 5400T, para. 3.2.24.5.1.2, category 6.

Shock

Up to 15G in any axis under nonoperating conditions

ISO-9001 Certified

Cohu, Inc./Electronics Division

P.O. Box 85623 • San Diego, CA 92186

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