

# 7700 Series 1004 x 1004 Pixel CCD Camera

Camera Link  
or FireWire

COHU

*High performance video specifications and features*

*Compact size, light weight*

*Partial readout for faster frame rate*

*Rugged construction*

*Offset and gain adjustment via serial control*

*Sync operation compatible to most standard frame grabber manufacturers*

*Quality, reliability, and responsiveness of Cohu Electronics*

*Competitively priced*

*Optional sensor modification enables UV response to 240nm, ideal for biomed and laser profiling applications*

## APPLICATIONS

- Precision machine vision
- Inspection
- Sorting and gauging
- Dot code reading
- Calibration & Test
- Medical Imaging

*The Cohu 7700 Series is a competitively priced megapixel camera designed for high precision imaging. Its exceptionally small package and rugged construction make it ideal for machine vision integration.*



## High Performance 1/2" Progressive Scan Megapixel Sensor

The Cohu 7700 Series camera delivers what today's vision system needs: precision, speed, and flexibility. This high performance imager is progressive scan, megapixel, 10 bit resolution, and operates at 30 frames per second. Output is available in two different serial digital outputs. These essentials, combined with an extensive feature set, make the 7700 Series an ideal solution for many automated imaging applications.

The camera employs great flexibility within its design for integration into a vision system. The imager can be operated in different modes, including continuous, snap shot, full resolution, partial scan, and a variety of different exposure modes. To further add to its flexibility, the camera can be purchased with a color imager using a Bayer pattern filter. Or you can order the camera as monochrome with the option to remove the sensor glass for improved UV response.

The serial digital output options are Camera Link and IEEE 1394A (FireWire).

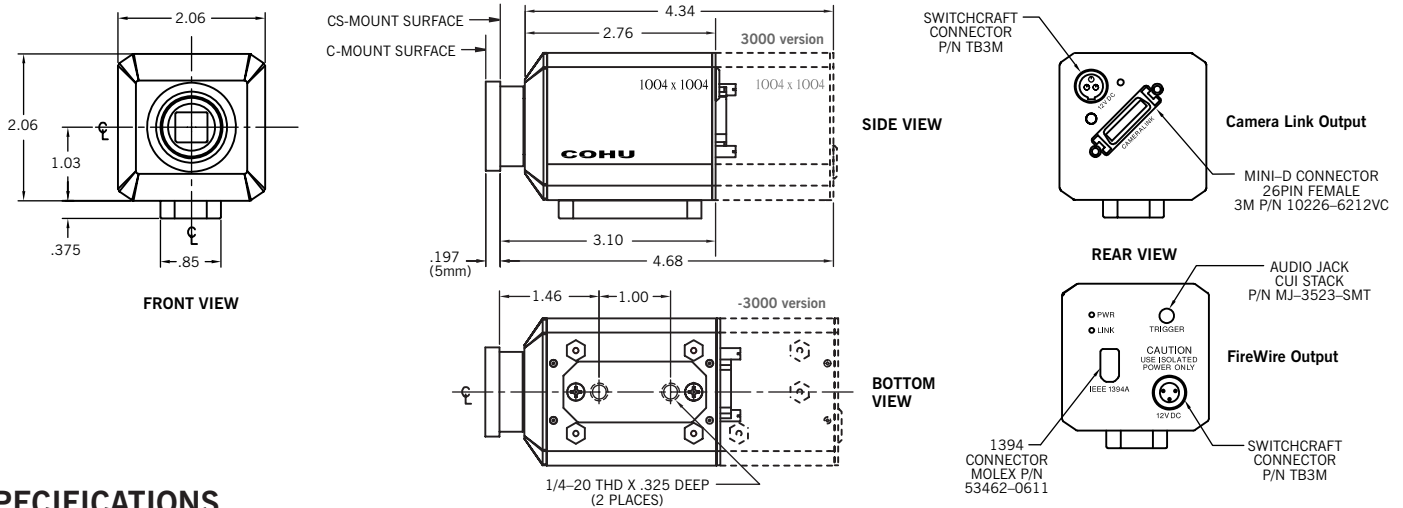
Camera Link is an interface specification developed by the machine vision industry that defines the cable, connector, and protocol standard that simplifies connectivity between cameras and frame grabbers. It has no effect on performance while providing a far less expensive cable solution. The wide bandwidth (243 Mbytes/sec) afforded by the Camera Link standard allows the 7700-2000 (Camera Link model) to be operated at 30 fps, full resolution, at 10 bits per pixel. The 7700-2000 is the clear choice for high speed, high-resolution applications.

IEEE 1394A technology allows connectivity between the 7700-3000 (FireWire model) camera and a host PC using a simple, inexpensive interface card and software. Its isochronous transmission method dedicates bandwidth between the imager and the host PC. FireWire bandwidth is 32 Mbytes/sec, which allows the 7700-3000 to operate with full resolution at 30 fps, 8 bits per pixel, or 15 fps, at 10 bits per pixel. Cohu's 7700-3000 is DCAM compliant 1.30 (format 7) which is a FireWire standard for megapixel uncompressed data. It is a standard that defines operating modes, resolution, and other camera parameters. The camera uses a software viewer to acquire and save images. These saved images can later be used for processing.

Board sets and customization are available and welcome. See the product page at [www.cohu-cameras.com](http://www.cohu-cameras.com).

CAMERA  
Link





## SPECIFICATIONS

### ELECTRICAL

**Format:** 1/2" color or monochrome (Model -3000 monochrome only)  
**Pixels:** 1004 x 1004  
**Total Pixels:** >1.008 million  
**Pixel Cell Size:** 7.4 μm x 7.4 μm  
**Output Characteristics:**  
 Camera Link: 10-bit depth @ 30 FPS (full resolution)  
 FireWire: 8-bit depth @ 30 FPS (full resolution), or 10-bit depth @ 15 FPS (full resolution).

Frame rate is defined by exposure time, partial readout, data width, and network traffic

**Synchronization:** Internal sync crystal, external trigger

#### Shutter Control:

Camera Link: Fixed shutter: exposure time preset by camera setting  
 • Implicit lines: 1–512 line interval in 10 steps  
 • Explicit lines: 1–65,000 line interval (line interval = 33.2 μsec.)  
 Multiple frames: 1–65,000 frame intervals (frame rate = 33.3 msec.)

FireWire: 1/25,000 sec. to 870 sec. in 1999 nonlinear steps.

Camera Link & FireWire: Pulse width shutter (Snapshot mode only): Exposure determined by pulse width of externally applied trigger

**Integration:** Externally controlled

**Sensitivity:** 4.0 lux (no shutter, 1/30 sec.)

**Gamma:** 1.0, fixed

**Gain:** 0 to 34 dB

**SNR:** >58 dB

#### Spectral Response:

See illustration at right. Consult factory for extended UV sensitivity

**Power Input:** 12 VDC, 8.4W

**Power Consumption:** <700 mA

### MECHANICAL

**Dimensions:** see illustration

#### Weight:

< 12 oz./340 g (less lens)

**Camera Mount:** two each 1/4-20

#### Lens Mount:

C/CS mount, integral to case

#### Connectors:

Power: 3-pin power

CameraLink: 26-pin MDR

### MODES OF OPERATION

#### Video Mode:

Free running, asynchronous

#### Snapshot Modes:

Captures single image, 1/25,000 sec to infinity, initiated externally by applied trigger signal or via serial command. Exposure determined by pulse width of external trigger.

#### Full Resolution:

Camera Link: 10-bit depth @ 30 FPS.

FireWire: 8-bit depth @ 30 FPS, or 10-bit depth @ 15 FPS

Partial Readout: Define single position for start of active readout in groups of four lines

#### Gain & Offset Control:

Gain: Video amplifier gain setting of 320 values

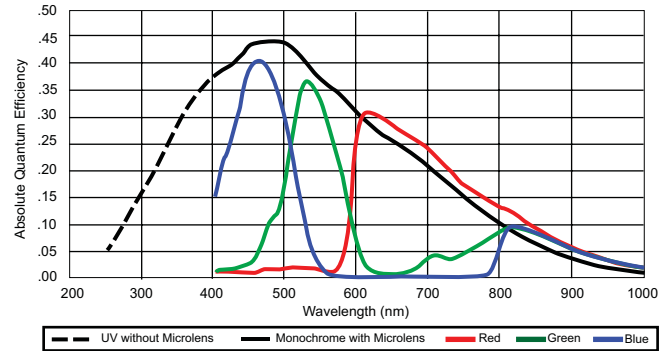
Offset: Video black level setting of 1024 values

#### Shutter Control:

Fixed: Exposure time preset by camera setting

Variable: Software controlled, 1/25,000 sec. to 870 sec.

### SPECTRAL RESPONSE



Note: Operation in UV region requires camera having sensor with faceplate glass removed

## ORDERING INFORMATION

### 77 X 2- X000 /XXXX

77 - 1/2" 1004 x 1004 pixel camera

#### Format

- 1 - 1/2" monochrome
- 2 - 1/2" color
- 3 - 1/2" monochrome uv-enhanced

#### Power

- 2 - 12 Vdc

#### Output

- 2 - Camera Link
- 3 - FireWire (monochrome format only)

#### Lenses

Your Cohu representative offers a wide selection of lenses to meet your imaging criteria.

#### Accessories

- 8368-4 CameraLink power supply
- 8385-5 FireWire power supply
- 8430-0 CameraLink accessory kit: mounting block with 1/4"-20 thread, power connector, and hex key
- 8469-7 FireWire accessory kit: mounting block with 1/4"-20 thread, power connector, trigger connector and hex key