

COHU INC. Electronics Division

Installation and Operation Manual for 2100 RS-170 and CCIR 1/3 and 1/2 inch Monochrome Cameras

EQUIPMENT SUPPLIED

The following list does not include any optional or special request items.

1. Camera, 2100 RS-170 or CCIR, 1/3 or 1/2 inch
2. CS mount (type 8359208-001) and CS/C mount adapter (type 2010695-001 5 mm extender)
3. Lens mount opening cap (if lens not mounted)
4. Setscrew, lens mount, 4-40 x 5/32, nylon tipped
5. Wrench, hex key, L-type 0.050 inch across flats
6. Plug, Cable, Aux (Sync)
7. Plug, Cable, Power
8. Manual, Installation and Operation (this manual)

EQUIPMENT REQUIRED BUT NOT SUPPLIED

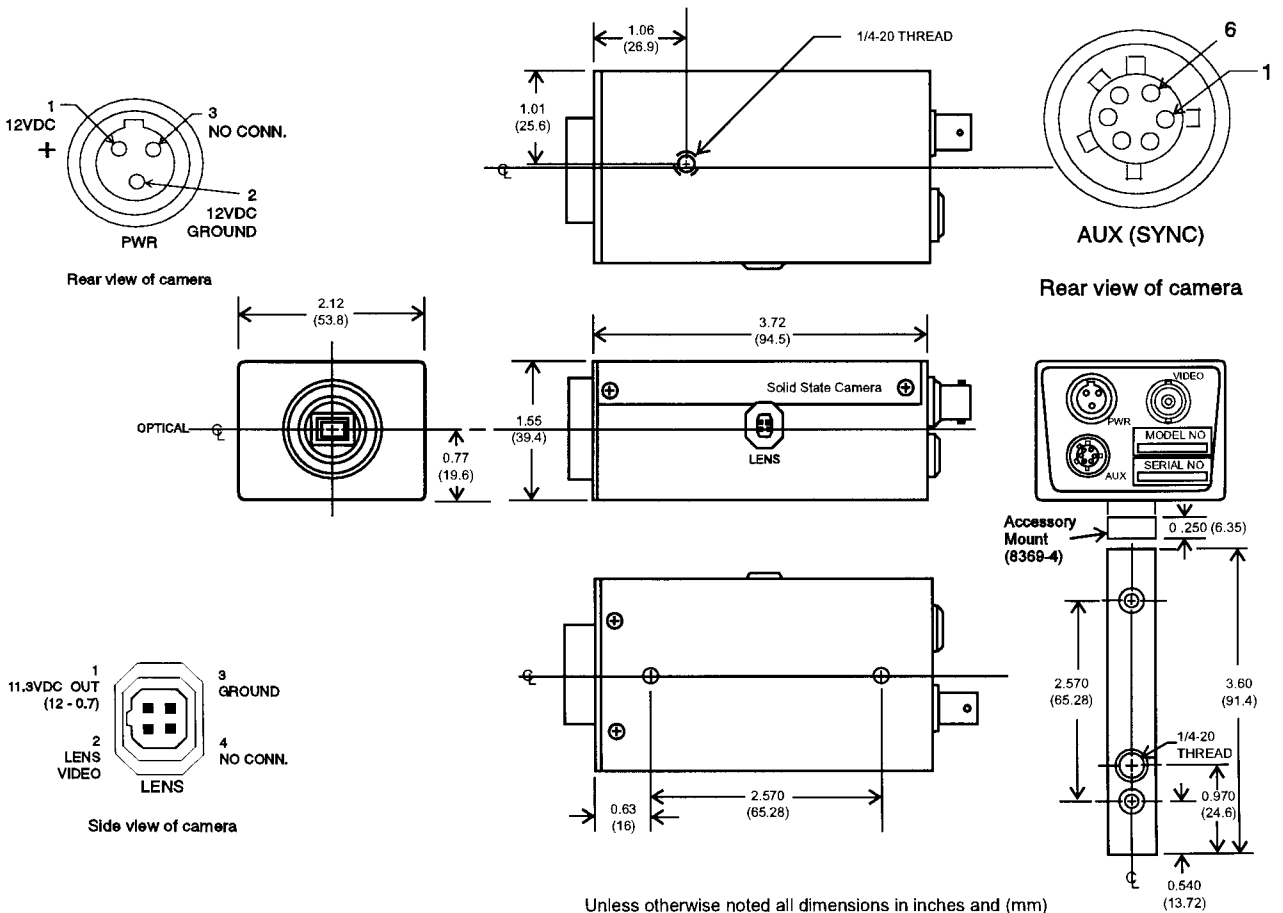
1. Power supply, 115 Vac to 12 V dc, 300 mA (type 8368-4)
2. Lens, tv type, CS- or C-mount
3. Monitor, RS-170 or CCIR, as required
4. Cables (video, power input, external sync, as required)

OPTIONS

1. Accessory base mount (type 8369-4)

AUX (SYNC) CONNECTOR PIN FUNCTIONS H & V TRIG. & ASYN RESET (SEE NOTE FOR GENLOCK CAMERA PIN FUNCTIONS)			
PIN NO.	NAME	INPUT/OUTPUT	FUNCTION
1	Vertical Trigger	Input	The input for a vertical trigger pulse when the camera is being synchronized to externally applied horizontal (pin 2) and vertical pulses
2	Horizontal Trigger	Input	An input for horizontal trigger pulses when the camera is being synchronized to externally applied horizontal and vertical (pin 1) pulses
3	—	—	No connection
4	Ground	—	A grounded pin for signals
5	Async Reset	Input	The input for asynchronously resetting the camera sync generator.
6	—	—	No connection

*NOTE: All signals 0 to 5 V active low.
For genlock cameras pin 1 is signal input, pin 4 is ground. All others not used.
A high-impedance / 75-ohm repositionable jumper is on genlock board.*



REF DESIG	NAME	FUNCTION
JB1	ARESET/NOR	Selects whether camera operates in asynchronous reset mode or normal mode
JB2	Lens Video Sync	Jumper is installed to provide sync on the auto-iris signal
R74	Manual Gain	Sets gain of camera through a 20 dB range when the Agc On/Off switch (S2) is in Off position
R105	Gamma	Sets gamma through a range of 0.45 to 1.0 (fully ccw=1.0)
R110	Sharpness	Rotating clockwise increases apparent contrast of scene by enhancing black/white and white/black transitions
R114	Black Level	Sets the level of blacks in the video, typically to 7.5 IRE units above blanking level
S1	DIP Switch Bank	Five DIP switches to select shutter speed or (in field mode) integration. Switch 6 selects field or frame mode. See table below for a listing of switch positions.
S2	Agc On/Off	Selects whether agc controls camera gain or whether the Manual Gain potentiometer (R74) sets a fixed gain for the camera (ccw=agc off; cw=agc on)

Note: These adjustments might require changes in the field due to the intended camera application. Making any change not listed could render the camera inoperable until a complete test-bench setup is performed with instruments. This would require use of the Maintenance Manual (6X-975(A)) where the complete step-by-step procedures are given. Use care when making any change in this table so that nothing else is accidentally changed.

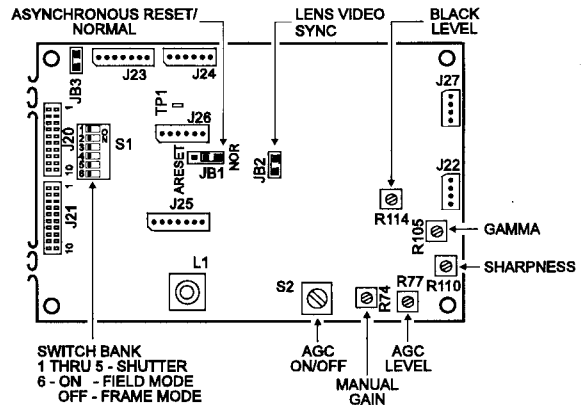
MATING PLUGS FOR CAMERA INTERFACE CONNECTORS		
PLUG	COHU P/N	MFG P/N
POWER	1310356-103	Switchcraft TA3F
AUX/SYNC	1310349-006	Hirose SR-30-10PE-6P
LENS	1310419-004	Chuomusen E4-191J-100
VIDEO	—	Standard BNC Plug

SHUTTER SPEED	S1-1	S1-2	S1-3	S1-4	S1-5
OFF					
1/100 RS170				*	*
1/120 CCIR		Flickerless mode			
1/125			*		*
1/250		*			*
1/500		*	*		*
1/1000	*				*
1/2000	*		*		*
1/4000	*	*	*		*
1/10,000	*	*	*		*
FIELDS	S1-1	S1-2	S1-3	S1-4	S1-5
(Settings from 2 to 16 available in field mode only)					
2				*	
4			*	*	
6		*	*	*	
8	*	*	*	*	
10	*		*	*	
12	*	*	*	*	
14	*	*	*	*	
16	*	*	*	*	

NOTES: * = ON (low state)
 For S1-6, ON = FIELD MODE; OFF = FRAME MODE
 Flickerless mode eliminates interference with ac power line lighting when a 60 Hz camera is used with 50 Hz lighting or a 50 Hz camera with 60 Hz lighting.

CAUTION

Be sure to maintain the correct pin to pin connections when plugging in the flexible jumper cables between the sensor board and the main board. Failure to do so will damage the camera. Also, replace the cable in the same orientation as it was when it was removed.



Complies with VDE, 0871, Class B Requirements

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Complies with CE CISPR-22, Class B, EN 55022, Class B, EN 50081-1; EN 50082-1

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARRANTY: Cohu, Inc., Electronics Division, warrants equipment manufactured to be free from defects of material and workmanship. Any part or parts will be repaired or replaced when proven by Cohu examination to have been defective within two years from date of shipment to the original purchaser for standard CCD cameras and one year from date of shipment to the original purchaser for intensified CCD cameras and all other Cohu manufactured products. All warranty repairs will be performed at the factory or as otherwise authorized by Cohu in writing. Transportation charges to Cohu shall be prepaid by purchaser. This warranty does not extend to Cohu equipment subjected to misuse, accident, neglect, or improper application, nor repaired or altered by other than Cohu or those authorized by Cohu in writing. Television image pickup tubes, image intensifiers, lenses, and products manufactured by companies other than Cohu are warranted by the original manufacturer. This warranty is in lieu of all other warranties expressed or implied. Cohu shall not be liable for collateral or consequential damages. A Return Authorization (RA) number must be obtained from Cohu prior to returning any item for warranty repairs or replacement.

IMPORTANT SAFEGUARDS

Read Instructions — All the safety and operating instructions should be read before the equipment is operated.

Retain Instructions — The safety and operating instructions should be retained for future reference.

Heed Warnings — All warnings on the equipment and in the operating instructions should be followed.

Water and Moisture — Do not use this equipment near water—for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

Overloading — Do not overload wall outlets and extension cords, as this can result in a fire or electrical shock.

Damage Requiring Service — Unplug this equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power supply cord or plug is damaged.
- b. If liquid has been spilled or objects have fallen into the equipment.

c. If the equipment has been exposed to rain or water.

d. If the equipment does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. An improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the equipment to its normal operation.

e. If the equipment has been dropped or the cabinet has been damaged.

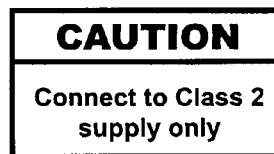
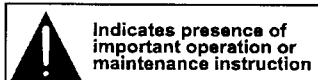
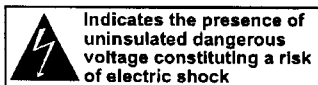
f. When the equipment exhibits a distinct change in performance, a need for service is indicated.

Replacement Parts — When replacement parts are required, be sure the service technician uses only replacement parts specified by the manufacturer or those parts have the same characteristics as the original part. Unauthorized substitutions may result in fire, shock, or other hazards.

Safety Checks — Upon completion of any service or repairs to this equipment, ask the service technician to perform safety checks to determine that the equipment is in proper operating condition.

UL Listed to Standard 1409, Video Equipment, UL File Number E117248(S)

NOTE: Throughout the manual interpret the following two graphic symbols as indicated:



ORDERING INFORMATION

21 X	2 -	X	X	0	X /	XXXX
Format	Power	Sync Option	Optical Filter	Unassigned	Options	Lenses
2 1/2" RS-170 5 1/2" CCIR	2 12 VDC	1 Crystal 2 Genlock (revert to crystal)	0 None 1 IR		0 None 3 Elec Iris (RS-170) 4 DC Iris 5 Elec. Iris (CCIR)	The versatility of this camera allows for a wide selection of lenses. Consult your Cohu representative for the lens that best suits your application.

Accessories:

8364-4: 12 VDC power supply

SPECIFICATIONS

Pick up Device

1/2" Interline transfer, enhanced sensitivity with microlens sensor

Resolution

RS-170: 580 HTVL
CCIR: 560 HTVL

Picture Elements

RS-170: 768 (H) x 494 (V)
CCIR: 752 (H) x 582 (V)

Synchronization

Internal: Crystal
External: H&V, async reset, optional external genlock

Electronic Shutter

1/60 to 1/10,000 switch selectable

Signal-to-Noise

55 dB (gain 0, gamma 1)
38 dB (gain 20 dB, gamma 1)

Gamma

.45 to 1.0 continually variable

AGC

20 dB range, auto or manual control

Integration

2-16 fields

Auto Lens Output

Reference video or DC drive (per lens)

Lens Voltage

11 VDC

Input Power Requirement

12 VDC, 3.6 W
115 VAC, 50/60 Hz

Lens Mount

C/CS

Auto Lens Output

Reference video or DC drive (per lens)

Lens Voltage

11 VDC

Sensitivity

Full Spectrum IR Filter

Full video, no AGC:

.065 fc (.65 lux) .25 fc (2.5 lux)

80% video, AGC on:

.005 fc (.05 lux) .018 fc (.18 lux)

30% video, AGC on:

.002 fc (.02 lux) .01 fc (.1 lux)

Ambient Temperature Limits

-4° F (-20° C) to 140° F (60° C)

Relative Humidity

to 95% non-condensing

Shock

30 g's, 11 ms duration, 3 axes

Mounts

1/4-20 female, top and bottom, with accessory mounting base (option)

Weight

<8 oz (230 g) without lens

