



# MODEL SI-M330 SI-M331

## MONOCHROME CCD CAMERA

Providing high-resolution monochrome images, these remote head cameras from Costar are star performers.



## FEATURES

- High resolution monochrome 1/2" Hyper HAD IT CCD sensor
- EIA: 768 (h) x 494 (v) pixels  
CCIR: 752 (h) x 582 (v) pixels.
- Remote head  $\varnothing 28$ , C-mount. 0.5 m or 2 m cable lengths
- Improved dynamic range and smear performance
- Extreme sensitivity. High S/N ratio >56 dB
- Interlaced or non-interlaced scanning
- Field or frame integration mode
- Electronic shutter or asynchronous trigger shutter
- Continuous variable shutter in trigger mode 2
- *flex trig* Extensive range of customized trigger modes for OEM applications
- Long time integration with external VD pulses
- HD/VD synchronization input or output – 75 Ohm or TTL level
- Exposure Enable (EEN) and Write Enable (WEN) output
- Sub-pixel accuracy possible
- Frame grabber friendly interface
- Camera functions and housing identical with SI-M350

*Our people make a difference.*

# Choice. Value. Service.

# MODEL SI-M330, M331

## Specifications for SI-M330/M331

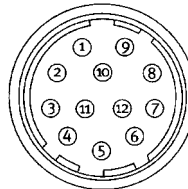
### Specifications

	SI-M330C/M331C	SI-M330E/M331E
TV Standard	EIA	CCIR
CCD sensor	1/2" Hyper HAD Interline transfer CCD	
Effective no. of pixel	EIA: 768(H) x 494(V) 380,000 approx.	CCIR: 752(H) x 582) 440,000 approx.
Scanning area	6.45mm (H) x 4.84mm(V)	
Scanning system	EIA: 2:1 Interface Non-interlace (1/60 sec.)	CCIR: 2:1 Interlace Non-interlace (1/50 sec.)
Scanning freq.	EIA H: 15.734kHz V 59.94Hz	CCIR H: 15.625kHz V: 50Hz
Sync. system	1. Ext. HD/VD Input: 4.0Vp-p $\pm 2.0V$ at 75 $\Omega$ terminated (For TTL input 2.0V $\pm 5.0V$ set SW2 at OFF position) 2. Ext. trigger input: 4.0V $\pm 2.0V$ p-p non-terminated 3. Int. HD/VD output: 4.0Vp-p at 75 $\Omega$ non-terminated 4. Pixel Clock output (User option): 4.0V	
Resolution	H: 570 TV lines, V: 480 TV lines (at frame accumulation mode)	H: 570 TV lines, V: 480 TV lines (at frame accumulation mode)
S/N ratio	56dB or more (AGC off, Gamma = 1.0), 100kHz - 4.2MHz	
Sensitivity	500lux (FB, AGC off)	
Min. illumination on CCD sensor	0.05lux (F1.4, AGC on, Video level - 5dB)	
Normal Shutter	Off, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4500, 1/10,000 sec.	
High Speed Shutter	1/20,000, 1/40,000, 1/60,000, 1/80,000, 1/100,000, 1/200,000, 1/400,000, 1/800,000 sec.	
Ext. Trigger Shutter	Mode-1	1/60 - 1/800,000 sec.
	Mode-2	1/77 - 1/10,000 sec.
	Mode-3*	2 - 1/10,000 sec.
	Long Term Exposure	2 FLD - 120 FLD
Video Output	VS 1.0Vp-p at 75 $\Omega$ terminated	
Gamma Correction	1.0 or 0.45	
Gain	Manual (GAIN VR: 0 - +15db) or AGC	
Operating temperature	-5°C to +45°C	
Humidity	20 - 80% non-condensing	
Storage temp./humidity	-25°C to 60°C/20 to 90%	
Power	12V DC $\pm 10\%$ , 3.5W (M330), 3.7W (M331)	
Dimensions (control unit)	40 x 50 x 80 mm (HxWxD)	
Weight (control unit)	210g	
Dimensions (camera head)	$\phi 28$ x 49 mm	
Connector for camera head	$\phi 17$ mm	
Lens Mount	C-mount	
Weight (camera head)	50 g	

\* ) HD sync. VD sync. / (Trigger) input or output by internal straps. Inputs TTL or 75 Ohm terminated by internal straps.

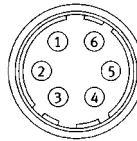
### Connection Description

#### DC-IN/SYNC.



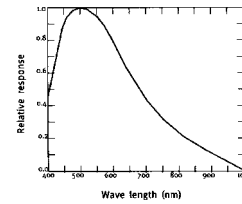
- Pin 1 Ground  
 2 +12V DC  
 3 Ground  
 4 Video output  
 5 Ground  
 6 HD in/(HD out)  
 7 VD in/VD out  
 8 Ground  
 9 N.C./Pixel clock out  
 10 Ground  
 11 +12V DC  
 12 Ground

#### TRIGGER



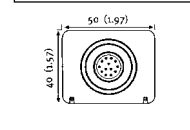
- Pin 1 N.C.  
 2 EEN output  
 3 Ground  
 4 N.C.  
 5 Trig. input  
 6 WEN pulse output

### Spectral Sensitivity

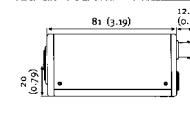


### Dimensions

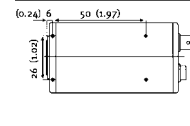
#### Front view



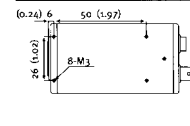
#### Side view



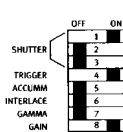
#### Bottom view



#### Top view

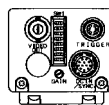


### Switch Setting



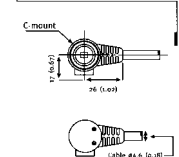
SW1-1 ED2	SW1-2 ED1	SW1-3 ED0	Shutter speed (sec.)		Shutter speed (sec.)	
			Elect. Shutter	Ext. trigger shutter	Elect. Shutter	Ext. trigger shutter
OFF	OFF	OFF	OFF	1/80	1/20,000	
OFF	OFF	ON	1/100	1/125	1/80,000	
OFF	ON	OFF	1/250		1/80,000	
OFF	ON	ON	1/500		1/80,000	
ON	OFF	OFF	1/1000		1/100,000	
ON	OFF	ON	1/2000		1/200,000	
ON	ON	OFF	1/4500		1/400,000	
ON	ON	ON	1/10,000		1/800,000	

Normal Speed High Speed



### Camera Head Dimensions

#### SI-M330/M331



### Ordering Information

- SI-M330C 1/2" Monochrome Remote Head Camera CCIR 0.5 m Cable
- SI-M330E 1/2" Monochrome Remote Head Camera EIA 0.5 m Cable
- SI-M331C 1/2" Monochrome Remote Head Camera CCIR 2 m Cable
- SI-M331E 1/2" Monochrome Remote Head Camera EIA 2 m Cable

Design and specifications subject to change without notice.

Conversion: 1" = 25.4mm  
 Measurement conversions are approximate



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