

# Costar SI-M410E

## Compact EIA Progressive Scan Camera



Costar's SI-M410E is a 1/2" compact progressive scan monochrome CCD camera that supports standard and double speed EIA. With full resolution at 60 frames per second, the SI-M410E provides exceptional imaging for direct digital output to computer-based processing systems. Advanced features such as programmable exposure, frame-delay readout, flexible trigger mode, V binning support and Windows-based set-up software give the user maximum flexibility for a variety of applications.

### Product Features

- Standard EIA supported, Double speed supported
- Compact size 29 (H) x 29 (V) x 45 (D) mm  
1/2" progressive scan monochrome CCD camera
- 659 (H) x 494 (V) 9.9  $\mu\text{m}$  square pixels
- 60 frames per second with full resolution
- V binning supported
- Internal, external HD/VD or random trigger synchronization
- Edge pre-select, pulse width control and start/stop trigger modes
- Shutter speeds from 1 to 1/400,000 second continuous
- Programmable exposure
- Frame-delay readout in combination with pulse width controlled shutter
- Exposure enable EEN, write enable WEN and pixel clock output
- Short ASCII commands for fast mode setup via serial port
- Setup by Windows 98/NT/2000 software via RS232C
- RS232C supports 9600, 19,200, 38,400 bps
- Support flexible trigger mode for customer defines



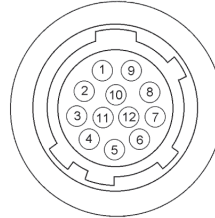
## SI-M410E Specifications

### Specifications

Scanning system	Progressive scan
Pixel clock	24.5454Mhz
Line frequency	31.625Khz
Frame rate (full)	60 frames/sec.
Effective pixel	659 x 494
Chip size	7.48 (H) x 6.15 (V) mm
Cell size	9.9 (H) x 9.9 (V) $\mu$ m
Pixels in video	
Full	60 frames/sec.
V binning	120 frames/sec.
Sensitivity	0.1 Lux
S/N ratio	>56db
Video output	Composite VS signal 1Vpp 75 $\Omega$ Video signal 0.7 Vpp
Gamma	0.45 / 1
HD/VD sync input/ output	4V, 75 $\Omega$
WEN output	4V, 75 $\Omega$
EEN output	4V, 75 $\Omega$
Pixel clock out.	4V, 75 $\Omega$
Trigger mode	Continuous, single trigger, Pulse width control, Start/stop Frame delay readout mode
Shutter	Continuous by software (1/40k sec. to $\infty$ frames)
RS232C control function	Trigger mode, Shutter speed, HD input/output, VD input/output, HD/VD input termination, Trigger input termination, WEN/EEN/PCLK output enable, Gamma/AGC/Manual Gain, Setup level, White clip level, Async/Sync trigger select, Double/Normal Speed, Read out mode
Operating temperature	- 5° C to + 45° C (23° F to 113° F)
Storage temperature	- 25° C to + 60° C (- 13° F to +140° F)
Humidity	20 % to 80 %, non-condensing
Power	12V $\pm$ 1.8W
Lens mount	C-mount
Dimensions	29 (H) x 29 (V) x 45 (D) mm
Weight	70g

### Connection Description

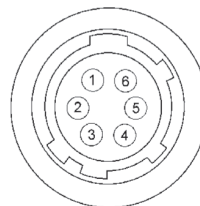
#### DC-IN/SYNC/Video out



HIROSE HR10A-10R-12PB-01

- Pin 1 Ground  
2 +12V DC  
3 Ground  
4 Video out  
5 Ground  
6 HD/EEN/VD/WEN in/out, Trigger in  
7 HD/VD/WEN in/out, Trigger in  
8 Ground  
9 Trigger in/Pixel clock Out  
10 WEN out  
11 Trigger in/Pixel clock Out  
12 Ground

#### RS232C/Trigger IN



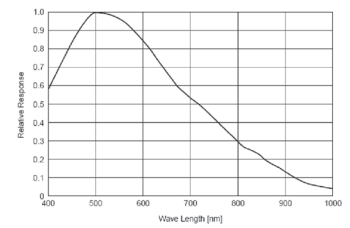
HIROSE HR 10A-7R-6PB

- Pin 1 TXD  
2 RXD  
3 Ground  
4 NC  
5 Trigger in  
6 EEN/WEN/SYNC

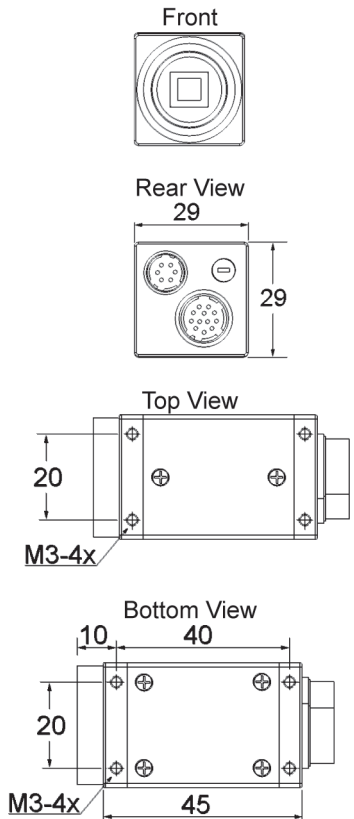
Plugs for cable

- 12 pin: Hirose HR 10A-10P-12S  
6 pin: Hirose HR10A-7P-6S

### Spectral Sensitivity



### Dimensions



Design and specifications subject to change without notice. Conversion: 1" = 25.4mm  
Measurement conversions are approximate.

Form SI-M410E 4/07