



## CV-M40

### Double Speed Progressive Scan Monochrome Camera

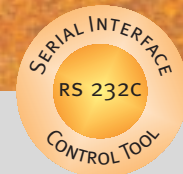


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- *1/2" Hyper HAD CCD with 659 (h) x 494 (v) square pixels*
- *60 full progressive frames every second*
- *120 frames readout every second with vertical binning*
- *Partial scan from frame rate up to 233 Hz*
- *Partial scan from 30 to 480 lines controlled by RS 232C*
- *Internal, external, HD, VD, or random synchronization*
- *Edge and pulse width external trigger modes*
- *Frame-delay readout*
- *Shutter speed 1/250 to 1/12,000 second*
- *24.5 MHz pixel frequency and 31.468 kHz line frequency*
- *Video output with or without synchronization*
- *Setup by RS 232C or switches*
- *Windows 95/98/NT setup software*

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# Specifications for CV-M40

Specifications	CV-M40
Scanning system	Progressive 525 lines, 60 frames/sec.
<b>Frame rate:</b>	
Normal	60 Hz, 648 (h) x 492 (v) pixels
Vertical binning	120 Hz, 648 (h) x 242 (v) pixels
Partial 1/2	106 Hz, 648 (h) x 240 (v) pixels
Partial 1/4	156 Hz, 648 (h) x 120 (v) pixels
Partial 1/8	200 Hz, 648 (h) x 60 (v) pixels
Partial 1/16	233 Hz, 648 (h) x 30 (v) pixels
Line frequency	31.468 kHz
Pixel frequency	24.54 MHz
CCD sensor	Monochrome 1/2" Hyper HAD IT progressive scan CCD
Sensing area	6.4 (h) x 4.8 (v) mm
Picture elements	659 (h) x 494 (v)
Effective pixels	648 (h) x 486 (v)
Cell size	9.9 x 9.9 μm
Resolution (horizontal)	480 TV lines
Resolution (vertical)	486 TV lines
Sensitivity on sensor	0.23 Lux, Max gain, 50% video
S/N ratio	>48 dB (AGC off, Gamma 1)
Gamma	0.45 or 1.0
Gain	Auto or manual (0 to +12 dB)
Video output	Composite VS signal 1.0 Vpp, 75 Ohm or Video without sync. 0.7 Vpp, 75 Ohm
<b>Readout system:</b>	
Normal	1 progr. frame 1/60 sec. 525 lines
Vertical binning	1 progr. frame 1/120 sec. 262 lines
Partial scan	Full, 1/2, 1/4, 1/8, 1/16
With RS 232C	From 30 to 480 lines
Synchronization	Int. X-tal. or Ext HD/VD or random trigger
HD/VD sync. input/output	4V, 75 Ohm or TTL
Trigger /readout modes	Normal, Edge, Pulse width, Frame-delay readout
Trigger input	>2 μsec. <1 msec. 4V, 75 Ohm or TTL
Shutter	Off, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/12,000 sec.
WEN output	TTL
Pixel clock output	TTL
Serial control	RS 232C
<b>Controls and functions:</b>	
Gamma	0.45 - 1.0
Gain	Fixed, Manual, Auto
Scanning format	Full, 1/2, 1/4, 1/8, 1/16
Readout mode	Normal, Vertical binning
Trigger/Readout modes	Normal, Edge, Pulse width, Frame-delay readout
Shutter	Off to 1/12,000 sec. in 8 steps
Manual gain	Potentiometer on rear plate
Gain	Relative 0 - 255
Setup	Relative 0 - 255
White clip	Relative 0 - 255
File	Load to and from file
Memory	Restore and store user setup
Memory	Restore factory setup
Operating temperature	-5°C to +45°C
Humidity	20 - 80% non-condensing
Power	12V DC ± 10%, 0.5 Amp.
Lens mount	C-mount
Dimensions	40 x 50 x 80 mm (HxWxD)
Weight	245 g

## Ordering Information

CV-M40 1/2" Double Speed Progressive Scan Monochrome Camera. EIA 6s Hirose Plug\*  
12s Hirose Plug\*  
Cable for RS 232C Interface\*

\* Must be ordered separately

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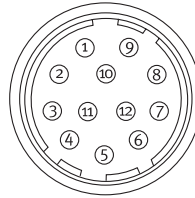
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## Connection Description

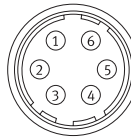
### DC-IN/SYNC.



Hirose HR 10A-10P-12P. Male

- Pin 1 Ground
- 2 +12V DC
- 3 Ground
- 4 Video output
- 5 Ground
- 6 HD in/output/  
Trigger input
- 7 VD in/output/  
WEN output
- 8 Ground
- 9 Pixel clock output \*\*
- 10 Ground
- 11 +12V DC
- 12 Ground

### RS 232C/TRIGGER

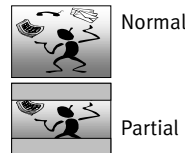


Hirose HR 10A-7P-6S. Male

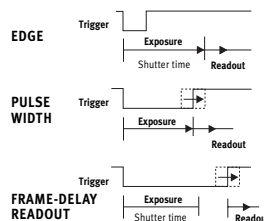
- Pin 1 TXD
- 2 RXD
- 3 Ground
- 4 Ground
- 5 Trigger input
- 6 WEN output

\*\* Pixel clock output by internal jumper setting.

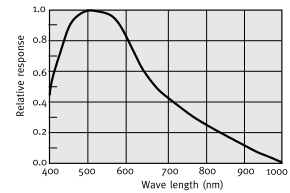
## Partial Scan Example



## Trigger/Readout Modes

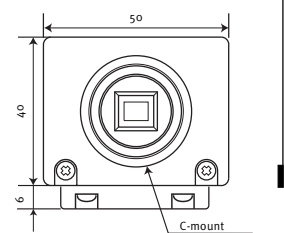


## Spectral Sensitivity

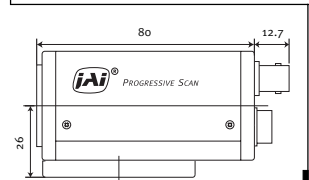


## Dimensions

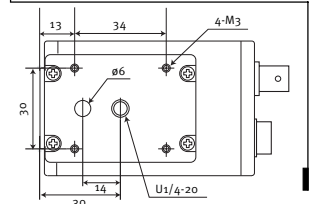
### Front view



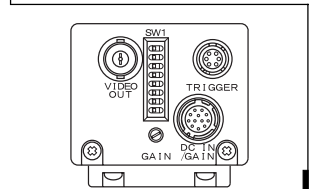
### Side view



### Bottom view



### Rear view



## Switch Setting

SWITCH	SETTING	FUNCTION
SHUTTER	1	OFF
	2	1/250
	3	1/500
READOUT	4	Normal
	5	Binning
TRIGGER	6	norm
	7	Local
FORMAT	7	Full
CONTROL	8	Partial
	8	RS 232C



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