



CV-M10 BX/RS

Progressive Scan Monochrome Camera



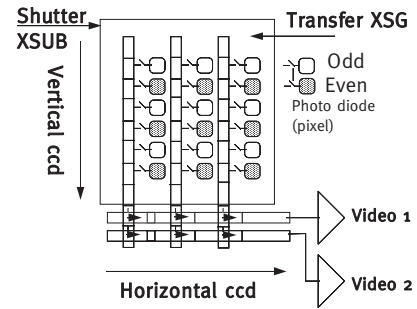
- *CCIR and EIA versions. EIA versions meet VGA format*
- *1/2" Hyper HAD CCD with square pixels*
- *High resolution – horizontal 600 TV lines, vertical 575 TV lines*
- *Full frame read-out from a single frame shutter pulse*
- *Single channel progressive full frame in 1/25 sec. or 1/30 sec.*
- *2-channel interlaced or 2-channel non-interlaced in 1/50 sec. or 1/60 sec.*
- *Fast asynchronous reset – frame or field shutter*
- *Shutter 1/60 to 1/10,000 or 1/20,000 to 1/800,000 sec.*
- *Long-time integration 2 to 16 fields*
- *Internal, external, HD, VD or random synchronization*
- *Set-up by RS 232C (RS version) or switches (BX version)*
- *RS 232C interface*
- *Windows 95/NT set-up software*
- *Software includes DLL and LIB files for easy integration*

The leading manufacturer in high performance camera solutions

CV-M10 BX/RS CAMERA SERIES

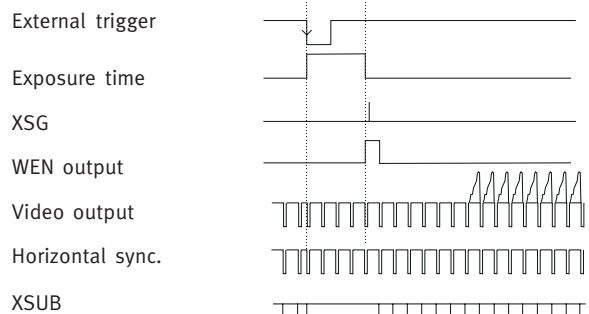
Progressive scan CCD sensor

In the progressive scan CCD sensor the number of vertical transfer cells are equal to the total number of sensing photo diodes. The integrated charge in the diodes for both odd and even fields is at time XSG transferred as a full frame to the vertical register. From here the frame is read out with the double vertical speed to two horizontal registers. A full frame as a result of the same shutter pulse can be read out as two fields, each through its own output. By combining the two fields from output 1 and 2 in a frame grabber 50 or 60 frames are achieved. In non-interlaced scan mode, output 1 will be a progressive full frame (Line 1 - 2 - 3 - 4 etc.). It will take 1/25 or 1/30 second.



Asynchronous triggered shutter

The shutter function in the CCD sensor is done by draining all photo diodes in parallel with the XSUB pulse synchronized to HD. A last XSUB is generated from the negative external trigger pulse. This pulse will reset and synchronize HD in the camera. The selected exposure time will then start, and an image will be charged in the photo diodes. The selected shutter time will stop with a XSG and video enable pulse out 1 HD long (WEN). The WEN pulse indicates the beginning of the video read-out. The composite video signal is without V-sync. The WEN pulse indicates the start and top of the image. The video frame or field has to be read out prior to supplying a new trigger pulse.

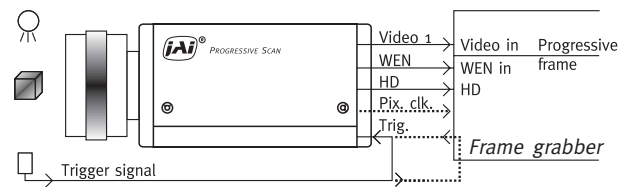


Frame grabber interface – single channel mode

This application shows a typical set-up for capturing a fast moving object and transfer it to a frame grabber as a full progressive scanned frame. It will take 1/25 or 1/30 second. The frame grabber needs an input for the WEN pulse for vertical sync. The horizontal sync. is taken from the HD out or separated from the composite video signal from the camera. A trigger sensor will detect the arrival of an object in the field of view and start the selected shutter time. By using the pixel clock (user option) to synchronize the frame grabber total jitter-free operation is achieved.

Set-up
Asynchronous trigger shutter.
Non-interlaced scan.
Video 1 output.

Result
1 full progressive scanned frame in frame grabber in 1/25 sec. or 1/30 sec.

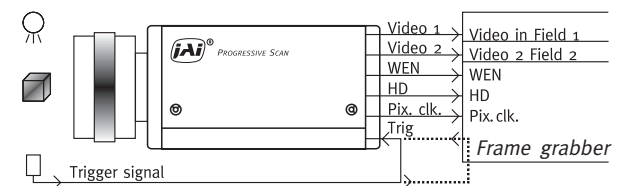


Frame grabber interface – dual channel mode

This set-up shows an application where a progressive scanned frame consisting of 2 interlaced fields as a result of one shutter pulse is transferred to 2 field stores. The 2 fields need to be combined in the computer. This set-up makes use of the optional pixel clock output from the camera for a jitter-free image digitizing. With this set-up a full progressive scanned frame is transferred to the computer in 1/50 second.

Set-up
Asynchronous trigger shutter.
If necessary through the frame grabber.
Interlaced scan.
Video 1 and video 2 output.

Result
2 interlaced fields in 2 field grabbers in 1/50 second.
The pixel clock provides jitter-free image acquisition.
For applications with sub-pixel accuracy.

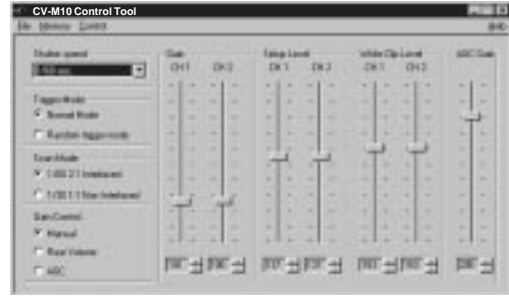


Software control for CV-M10 RS Camera

The unique Windows NT based camera control tool makes it easy to control the M10 RS camera from a standard PC. The program includes an on-screen help function. Supplied DLL and LIB files with documentation allow easy integration of the camera control in custom application.

System requirements:

- 486 processor
- 1 MB free disk space
- Windows 95/NT (incl. DLL)
- Windows 3.1 (excl. DLL)
- Up to 9 com ports available
- 9600 bps



Interface cable (PC to camera)

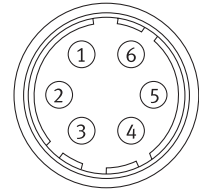
CAMERA	COM PORT ON PC	
6 PIN	9 PIN	25 PIN D
	1 CD	8
	4 DTR	20
	6 DSR	6
1 TXD	2 RXD	3
2 RXD	3 TXD	2
3 GND	5 GND	7
4	7 RTS	4
5	8 CTS	5
6	9 CI	22

Connection description

Male Hirose HR10-7P-6P

Pin 1 TXD (RS only)
 Pin 2 RXD (RS only)
 Pin 3 Ground
 Pin 4 N.C.
 Pin 5 Trigger input
 Pin 6 WEN pulse output

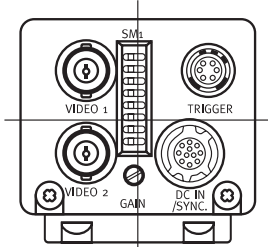
RS 232C



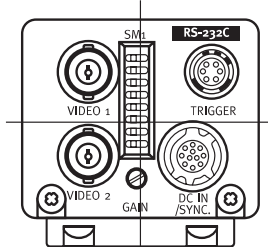
TRIGGER

Back view

Connection description



CV-M10 BX

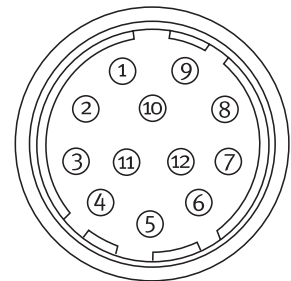


CV-M10 RS

Male Hirose HR10A-10P-12P

Pin 1 Ground
 Pin 2 +12V DC power
 Pin 3 Ground
 Pin 4 Video 1 output
 Pin 5 Ground
 Pin 6 Ext. HD (HD output)*
 Pin 7 Ext. VD (VD/output)*
 Pin 8 Ground
 Pin 9 Video-2 output (pixel clock output)*
 Pin 10 Ground
 Pin 11 +12V DC power
 Pin 12 Ground

DC-IN/SYNC.



* Option

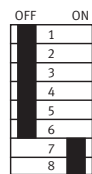
Setting switch

Mode setting SW1 inside BX

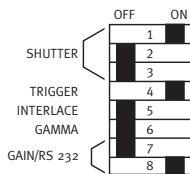
CV-M10 RS

CV-M10 BX

SW 1 on rear panel



Switch setting for RS 232C serial set-up
 (NB! Set switches before power on)



Switch setting for manual set-up

BX only	Long time exposure fields	High speed shutter	Normal shutter
1/20,000	2		
1/40,000	4		
1/60,000	6		
1/80,000	8		
1/100,000	10		
1/120,000	12		
1/140,000	14		
1/160,000	16		
1/60			
1/125			
1/250			
1/500			
1/1000			
1/2000			
1/4000			
1/8000			
1/16000			

Random trig. <> Normal
 Interlace <> Non-interlace
 1 <> 0.45
 < > < >
 < > < >
 FIX MANUAL AUTO

SW 1 inside BX only



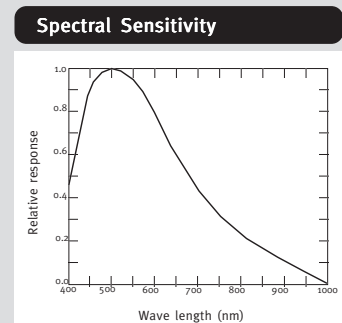
< < < < < Shutter off
 < < < < < Normal speed
 > > > > > High speed
 > > > > > Long time exposure

Specifications for CV-M10

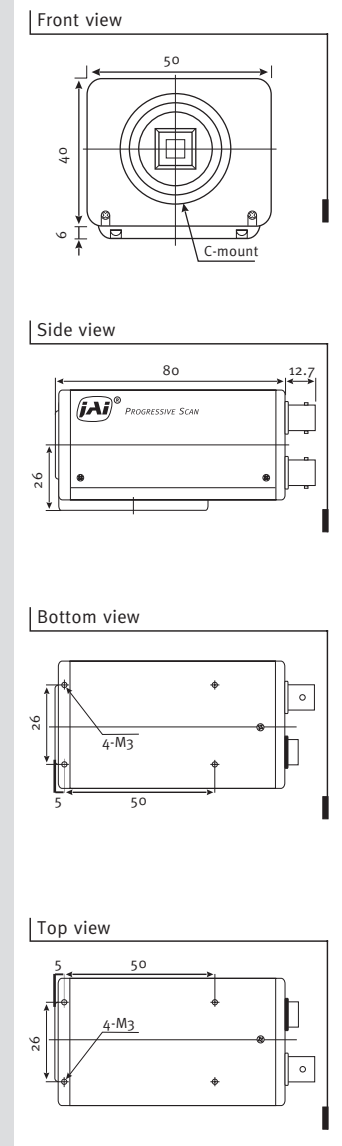
Specifications	Remarks	CV-M10C	CV-M10E	
Scanning system		625 lines 25 frames/sec.	525 lines 30 frames/sec.	
CCD sensor		Monochrome 1/2" Hyper HAD IT progressive scan CCD		
Sensing area		6.4 mm (h) x 4.8 mm (v)		
Picture elements		782 (h) x 582 (v)	659 (h) x 494 (v)	
Video output elements		767 (h) x 575 (v)	648 (h) x 486 (v)	
Cell size		8.3 x 8.3 μ m	9.9 x 9.9 μ m	
Resolution (horizontal)		600 TV lines	500 TV lines	
Resolution (vertical)		575 TV lines	486 TV lines	
Sensitivity		0.8 Lux, F1.4		
S/N ratio		>56 dB (AGC off, Gamma 1)		
Video output		Composite VBS signal 1.0 Vpp, 75 Ohm		
Video 1 interlaced O-E-O		1 frame 1/25 sec.	1 frame 1/30 sec.	
Video 2 interlaced E-O-E		1 frame 1/25 sec.	1 frame 1/30 sec.	
Video 1+2 interlaced		1 progr. fr. 1/50 sec.	1 progr. fr. 1/60 sec.	
Video 1 non-interlaced		1 progr. fr. 1/25 sec.	1 progr. fr. 1/30 sec.	
Synchronization		Int. X-tal. Ext HD/VD or random trig.		
HD/VD sync. input		4V, 75 Ohm		
Trigger input		>2 μ sec. <1 msec. 4V, 75 Ohm		
HD/VD or HD/WEN output	option	4V		
Pixel clock output	option	4V		
Controls and functions	BX	RS		
	sw	sw	RS 232	
Shutter mode - Full version only	•			Off - Normal - High - Long time exp.
Gamma	•	•		0.45 - 1
Gain	•	•	•	Fixed - Manual - Auto.
Scanning	•	•	•	Non-interlaced - Interlaced
Reset mode	•	•	•	Normal - Random trig.
Shutter normal	•	•	•	1/50 to 1/10,000 sec. in 8 steps
Shutter high	•		•	1/20,000 to 1/800,000 sec. in 8 steps
Long time integration	•		•	2 - 4 - 6 - 8 - 10 - 12 - 14 - 16 fields
Manual gain	•	•	•	Potmeter on rear plate
Gain 1			•	Relative 0 - 255
Gain 2			•	Relative 0 - 255
Set-up 1			•	Relative 0 - 255
Set-up 2			•	Relative 0 - 255
White clip 1			•	Relative 0 - 255
White clip 2			•	Relative 0 - 255
V sub (Full version only)			•	Relative 0 - 255
File			•	Load to and from file
Memory			•	Restore and store user set-up
Memory			•	Restore factory set-up
Operating temperature				-5°C to +45°C
Power				12V DC \pm 10%. 0.5 Amp.
Lens mount				C-mount
Dimensions				40 x 50 x 80 mm (HxWxD)
Weight				245 g

Ordering Information

CV-M10BX 1/2" Monochrome Progressive Scan Camera. CCIR.
 CV-M10BX 1/2" Monochrome Progressive Scan Camera. EIA.
 CV-M10RS 1/2" Monochrome Progressive Scan Camera. CCIR. RS 232C.
 CV-M10RS 1/2" Monochrome Progressive Scan Camera. EIA. RS 232C.
 Cable for RS 232C Interface.



Dimensions



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