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Find the *JAI / Pulnix CV-M10BX* at our website: *Click HERE*

CV-M10 BX/RS

Progressive Scan Monochrome Camera



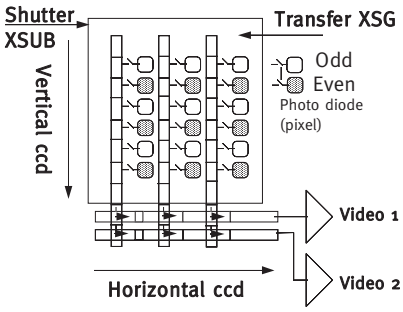
- *CCIR and EIA versions. EIA versions meet VGA format*
- *1/2" Hyper HAD CCD with square pixels*
- *High resolution – horizontal 600 TV lines, vertical 575 TV lines*
- *Full frame read-out from a single frame shutter pulse*
- *Single channel progressive full frame in 1/25 sec. or 1/30 sec.*
- *2-channel 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

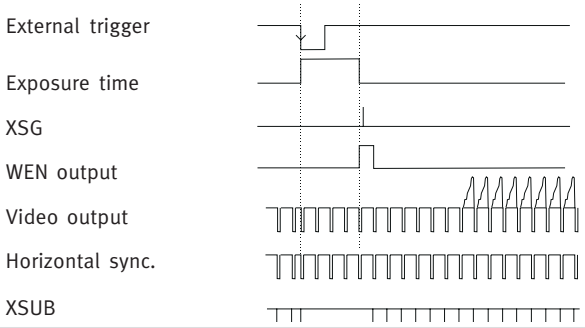
Progressive scan CCD sensor

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.

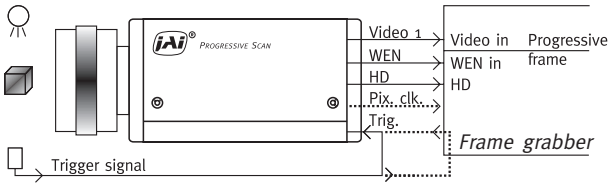


Frame grabber interface – single channel mode

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.

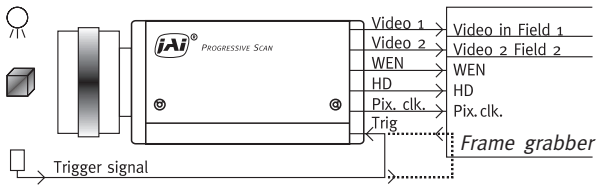


Frame grabber interface – dual channel mode

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 aquisition.
For applications with sub-pixel accuracy.

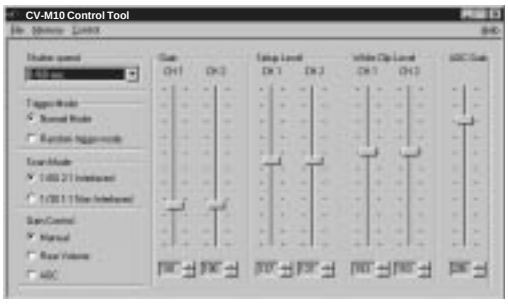


Software control for CV-M10 RS Camera

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)

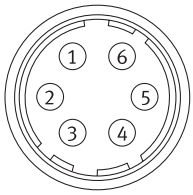
CAMERA 6 PIN	COM PORT ON PC 9 PIN	25 PIN D
	1 CD	8
	4 DTR	20
	6 DSR	6
1 TXD	2 RXD	3
2 RXD	3 TXD	2
3 GND	5 GND	7
4	7 RTS	4
5	8 CTS	5
6	9 CI	22

Connection description

Male Hirose HR10-7P-6P

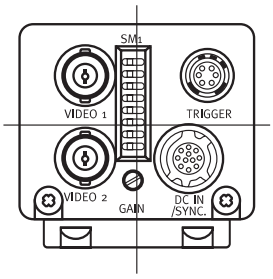
Pin 1 TXD (RS only)
2 RXD (RS only)
3 Ground
4 N.C.
5 Trigger input
6 WEN pulse output

RS 232C

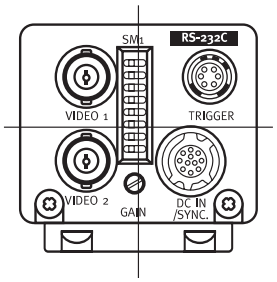


TRIGGER

Back view



CV-M10 BX



CV-M10 RS

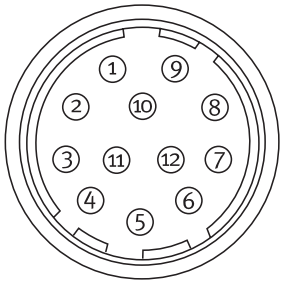
Connection description

Male Hirose HR10A-10P-12P

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

** Option*

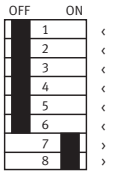
DC-IN/SYNC.



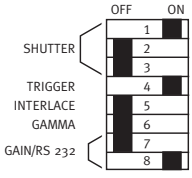
Setting switch

CV-M10 RS **CV-M10 BX**

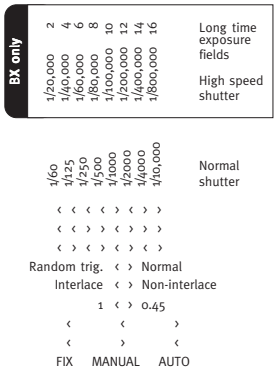
SW 1 on rear panel



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



Switch setting for manual set-up



Mode setting SW1 inside BX

SW 1
inside BX only



Shutter off
Normal speed
High speed
Long time exposure

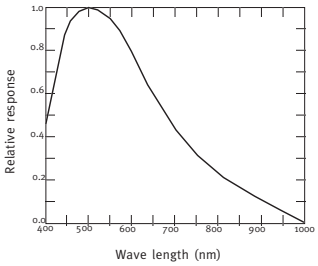
Specifications for CV-M10

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 µm	9.9 x 9.9 µm
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 µsec. <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**	**RS232**		
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 ±10%. 0.5 Amp.				
Lens mount	C-mount				
Dimensions	40 x 50 x 80 mm (HxWxD)				
Weight	245 g				

Ordering Information

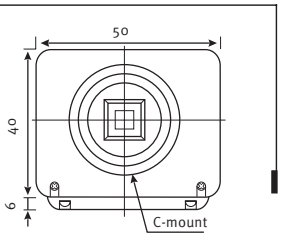
CV-M10BX 1/2" Monochrome Progressive Scan Camera. CCIR.
CV-M10BX 1/2" Monochrome Progressive Scan Camera. EIA.
CV-M10RS 1/2" Monochrome Progressive Scan Camera. CCIR. RS 232C.
CV-M10RS 1/2" Monochrome Progressive Scan Camera. EIA. RS 232C.
Cable for RS 232C Interface.

Spectral Sensitivity

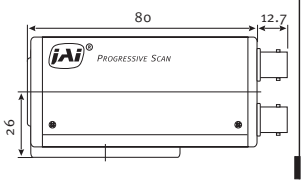


Dimensions

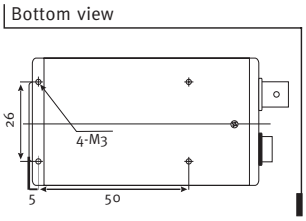
Front view



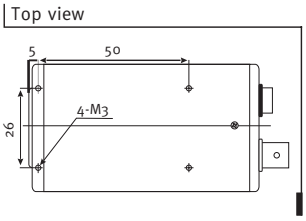
Side view



Bottom view



Top view



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CV-M10 SX

Progressive Scan Monochrome Camera



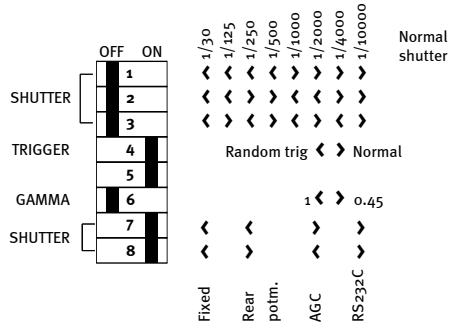
- *1/2" progressive scan monochrome CCIR (SVGA) and EIA (VGA) camera*
- *Successor of the popular CV-M10BX/RS series*
- *Improved sensitivity and smear performance*
- *782 (h) x 582 (v) square pixels for CCIR (SVGA) version*
- *659 (h) x 494 (v) square pixels for EIA (VGA) version*
- *Single channel video output*
- *Extremely short shutter speed, down to 1/917,000 sec. for CCIR (SVGA)*
- *Internal, external HD/VD or random trigger synchronization*
- *Edge pre-select (EPS) and pulse width control (PWC) trigger modes*
- *Frame-delay readout*
- *H reset and H non-reset trigger*
- *Long time integration modes*
- *WEN and pixel clock output for easy interfacing*
- *Setup by Windows NT/2000/XP setup software via RS 232C*

The leading manufacturer of high performance camera solutions

Specifications for CV-M10 SX

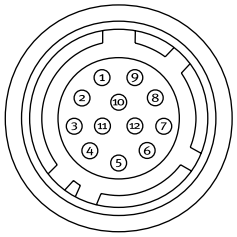
Specifications	CCIR	EIA
Scanning system	Progressive scan	
CCD sensor	Monochrome 1/2" IT CCD	
Sensing area	6.61 (h) x 4.97 (v) mm	
Frame rate (progressive)	25 frames/sec. (625 lines/frame)	29.97 frames/sec. (525 lines/frame)
Line frequency	15.625 kHz	15.734 kHz
Pixel frequency	14.75 MHz	12.2727 MHz
Effective pixels	782 (h) x 582 (v)	659 (h) x 494 (v)
Pixels in video output	737 (h) x 575 (v)	648 (h) x 486 (v)
Cell size	8.3 (h) x 8.3 (v) µm	9.9 (h) x 9.9 (v) µm
Sensitivity on sensor	0.05 Lux, Max gain, 50% video	
S/N ratio	>56 dB (AGC off, Gamma 1)	
Video output	Composite 1.0 Vpp, 75 Ohm	
Gamma	0.45 or 1.0	
Gain Gain range	Manual - automatic 0 to +15 dB	
Synchronization	Int. X-tal., Ext HD/VD or random trigger	
Scanning	Progressive	
HD/VD input	4V, TTL or 75 Ω terminated	
HD/VD output	4V from 75 Ω source	
Trigger input	4V, TTL or 75 Ω terminated	
WEN output	4V from 75 Ω source	
Pixel clock output	4V from 75 Ω source	
Trigger modes	Continuous, Edge pre-select (EPS), Pulse width control (PWC)	
Trigger	HD synchronous or H reset	
Shutter (EPS mode)	EIA: 16 steps 1/30 to 1/800,000 CCIR: 16 steps 1/25 to 1/917,000	
Shutter (PWC mode)	1 H to 625 H	
Long time exposure	8 steps, 2 to 16 fields	
Functions controlled by RS-232C	Shutter, Trigger, Black level, Gain AGC level, White clip	
Camera rear panel controls	Shutter, Trigger, Scan, Gamma, Gain	
Vibration	10 G (20 to 200 Hz in XYZ)	
Shock	70 G	
Regulations	CE (EN50081-1, EN50082-1), FCC part 15	
Operating temperature	-5°C to +45°C	
Humidity	20 – 80% non-condensing	
Power	12V DC ±10%. 5 W	
Lens mount	C-mount	
Dimensions	40 x 50 x 80 mm (HxWxD)	
Weight	245 g	

Switch Setting



Connection Description

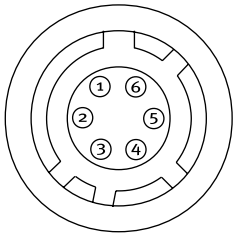
DC-IN/Sync.



HIROSE HR 10A-10R-12P. Male

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

RS 232C/TRIGGER

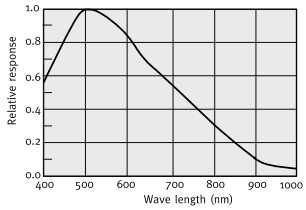


HIROSE HR 10A-7R-6P. Male

Pin		
	1	TXD
	2	RXD
	3	Ground
	4	N.C.
	5	Trigger input
	6	WEN output

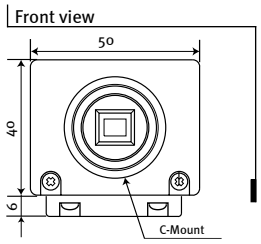
* Pixel clock output by internal jumper setting.

Spectral Sensitivity

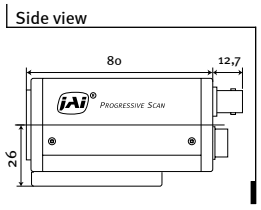


Dimensions

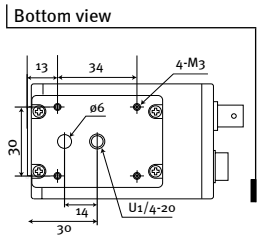
Front view



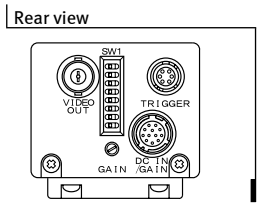
Side view



Bottom view



Rear view



Ordering Information

CV-M10SX C 1/2" Progressive Scan Monochrome Camera. CCIR (SVGA)

CV- M10SX E 1/2" Progressive Scan Monochrome Camera. EIA (VGA)

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