



CV-M7⁺/M7⁺CL

Digital Double Speed Color Megapixel Progressive Scan Camera



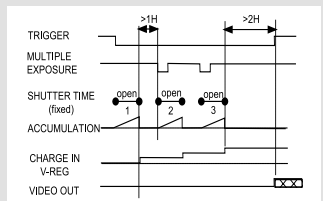
- **Digital 2/3" color progressive scan CCD camera**
- **RGB primary color mosaic filter (Bayer) for host based RGB decoding**
- **1392 (h) x 1040 (v) 6.45 μ m square pixels**
- **Extended sensitivity compared with CV-M7**
- **8 bit video output as LVDS (EIA 644) using 10 bit internal processing**
- **Camera Link version with 10 bit video output**
- **Full 1380 (h) x 1030 (v) frame readout in 1/24 second**
- **Partial scan to 1/2, 1/4 and 1/8 for higher frame rate**
- **Edge pre-select and pulse width external trigger modes**
- **Frame-delay and smearless readout modes**
- **Multiple exposure with up to 6 exposures within a single frame**
- **Shutter speeds from 1/24 to 1/10,000 second in 10 steps**
- **Trigger and timing signals as LVDS or via Camera Link**
- **Setup by switches or serial control (short ASCII commands)**
- **Windows 98/NT/2000 setup software**

The leading manufacturer of high performance camera solutions

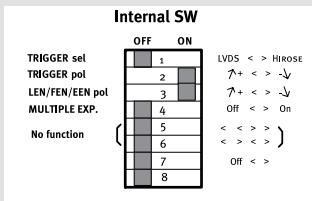
Specifications for CV-M7+/CV-M7+CL

Specifications	CV-M7+/CV-M7+CL
Scanning system	Progressive 1060 lines 24 frames/sec.
Pixel clock	40.49 MHz
Line frequency	25.43 kHz (1592 pixel clock/line)
Frame rate for full frame	24 frames/sec. (1060 lines/frame)
CCD sensor	2/3" progressive scan IT CCD with RGB primary color mosaic filter (Bayer)
Sensing area	8.9 (h) x 6.6 (v) mm
Cell size	6.45 (h) x 6.45 (v) (μm)
Effective pixels	1392 (h) x 1040 (v)
Pixels in video output	
Full	1380 (h) x 1030 (v) 24 frames/sec.
1/2 partial	1380 (h) x 512 (v) 44 frames/sec.
1/4 partial	1380 (h) x 256 (v) 70 frames/sec.
1/8 partial	1380 (h) x 128 (v) 102 frames/sec.
Sensitivity on sensor	0.1 Lux (Max. gain, 50% video)
S/N ratio	>57 dB
Video A/D conversion	10 bit
Video output digital (RGB in Bayer mosaic sequence for external RGB decoding)	8 bit LVDS (EIA 644) 10 bit in Camera Link
Video out (analogue for test)	0.7 Vpp, 75 Ω
Gamma	1.0
Gain	Manual - Automatic
Gain range	-3 to +12 dB
Synchronization	Int. X-tal. Ext. random trigger
Sync. output	Composite 4 Vpp from 75 Ω
Trigger input TTL	4 V ± 2 V
EEN output	4 Vpp from 75 Ω
Pixel clock output	LVDS or Camera Link
LEN/FEN output	LVDS or Camera Link
Trigger input LVDS	LVDS or Camera Link
Multiple exposure	LVDS or Camera Link
Trigger modes	Continuous, Edge pre-select, Pulse width control
Trigger in (Edge pre-select)	>2 H
Shutter speed (fixed)	1/24 through 1/10,000 second
Pulse width control	2 H to 3 frames. (80 μsec. to 72 msec.)
Frame-delay readout	Fixed shutter speeds. Delay ≤ 3 frames
Smearless readout	Edge pre-select, PWC and frame-delay
Multiple exposure Interval	≤6 fixed exposures in frame-delay readout. Fixed shutter time + 1H (80 μsec.)
Camera setup by switches on rear	Shutter, Trigger, Scanning, Smearless, RS 232C control
Functions controlled by RS 232C	Shutter, Trigger, Scanning, Readout, Trigger input, Select/polarity, LEN/FEN/EEN polarity, Set-up level and Gain
Operating temperature	-5°C to +45°C
Humidity	20 - 80% non-condensing
Storage temp./humidity	-25°C to 60°C/ 20% - 90%
Power	12V DC ± 10%. 3.3 W
Lens mount	C-mount
Dimensions	40 x 50 x 90 mm (HxWxD)
Weight	250g

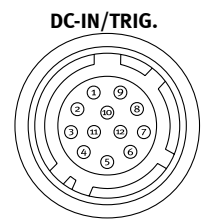
Multiple Exposure



Internal Switch

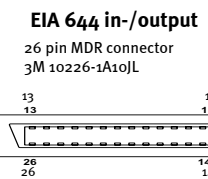


Connection Description



- HIROSE HR10A-10R-12P
- Pin 1 Ground
2 +12V DC
3 Ground
4 Video output (test)
5 Ground
6 RXD RS 232C
7 TXD RS 232C
8 Ground
9 Sync. output/EEN output*
10 Trigger input (TTL)*
11 +12V DC/Multiple exposure*
12 Ground

* Signals can be changed by internal switches and jumpers or via RS 232C.

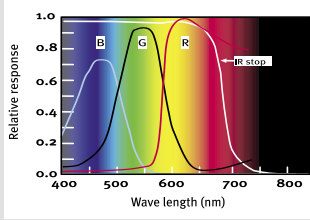


- EIA 644 in/output**
26 pin MDR connector
3M 10226-1A10L
- Digital I/O**
- | Pin | Signal |
|-----|-------------------------------|
| 1 | 14 +/- D0 Video output (LSB) |
| 2 | 15 +/- D1 Video output |
| 3 | 16 +/- D2 Video output |
| 4 | 17 +/- D3 Video output |
| 5 | 18 +/- D4 Video output |
| 6 | 19 +/- D5 Video output |
| 7 | 20 +/- D6 Video output |
| 8 | 21 +/- D7 Video output (MSB) |
| 9 | 22 +/- TRIG Trigger input |
| 10 | 23 +/- Mult Multiple exposure |
| 11 | 24 +/- LEN Line enable |
| 12 | 25 +/- FEN Frame enable |
| 13 | 26 +/- PCLK Pixel clock |

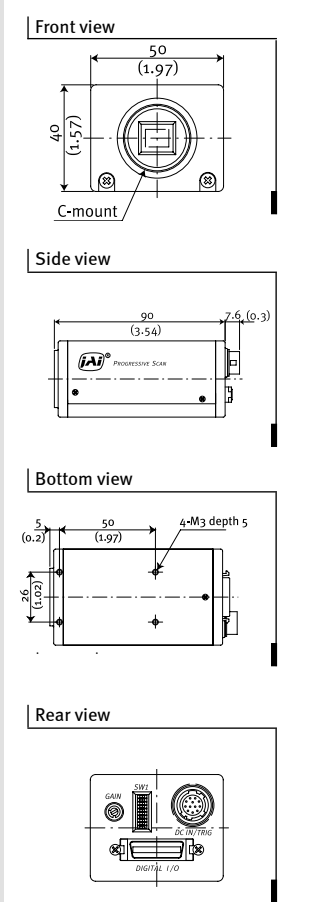
EIA 644 in and output circuits
NS. D590C031/D590C032

For Camera Link pin configuration, see user manual.

Spectral Sensitivity



Dimensions



Switch Setting

	OFF	ON	
SHUTTER		1	1/24
		2	1/50
		3	1/100
		4	1/200
EXT. TRIGGER		5	1/400
		6	1/800
		7	1/1500
		8	1/3000
SCANNING		9	1/5000
		10	1/10,000
			seconds
SMEAR-LESS	Normal	<>	Smear-less
	Local	<>	RS232C
CONTROL			

Ordering Information

CV-M7 2/3" Digital Double Speed Color Megapixel Progressive Scan Camera. LVDS
CV-M7+CL 2/3" Digital Double Speed Color Megapixel Progressive Scan Camera. Camera Link

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