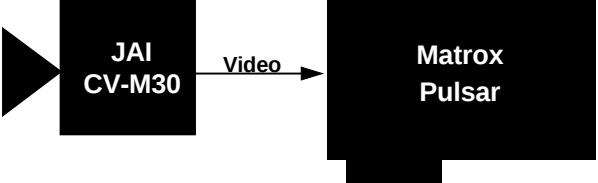
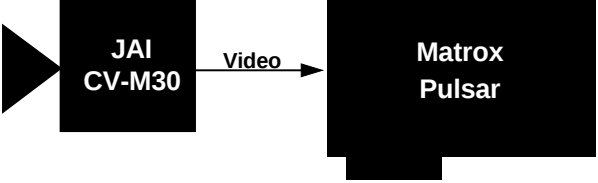
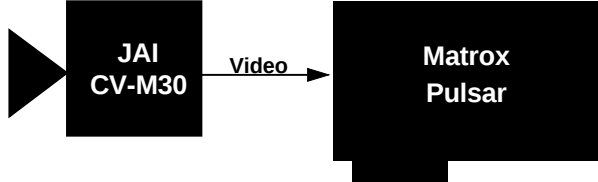


Application Note:

Interfacing non-standard cameras to Matrox Pulsar

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Camera Interface Overview	• 768 x 494 x 8-bit • Analog video output • Interlaced or non-interlaced • Internal composite sync • Internal exposure control • Modes of operations: continuous mode (normal or double speed), continuous partial scanning mode (1/2 and 1/3 both at normal or double speed) and asynchronous mode
Camera Interface Details	1. Continuous mode (Double speed, interlaced)  2. Continuous mode (Double speed, non-interlaced)  3. Continuous mode (Normal speed, interlaced)  1. Continuous mode (Double speed, interlaced) • 752 x 484 x 8-bit @60 fps • Interlaced • Analog (composite) video output • Internal exposure control (normal shutter mode) • Double speed mode • Continuous video • DCF used: CVM30S.DCF 2. Continuous mode (Double speed, non-interlaced) • 752 x 240 x 8-bit @120 fps • Non-interlaced • Analog (composite) video output • Internal exposure control (normal shutter mode) • Double speed mode • Continuous video • DCF used: CVM30NS.DCF 3. Continuous mode (Normal speed, interlaced) • 752 x 484 x 8-bit @30 fps • Interlaced • Analog (composite) video output • Internal exposure control (normal shutter mode) • Normal speed mode • Continuous video • DCF used: CVM30.DCF

Application Note:

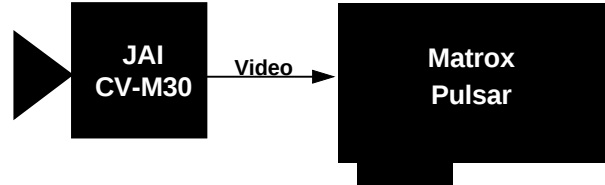
Interfacing non-standard cameras to Matrox Pulsar

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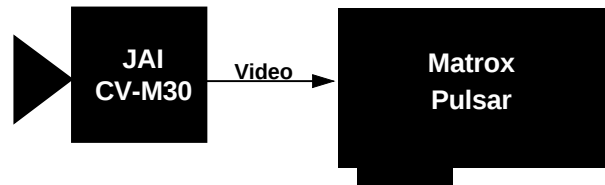
4. Continuous mode (Normal speed, non-interlaced)

- 752 x 240 x 8-bit @60 fps
- Analog (composite) video output
- Non-interlaced
- Internal exposure control (normal shutter mode)
- Normal speed mode
- Continuous video
- DCF used: [CVM30N.DCF](#)



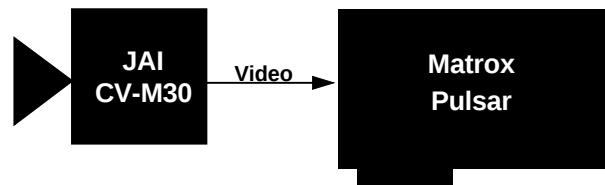
5. Continuous partial scanning (1/2) mode (Normal speed)

- 752 x 110 x 8-bit @120 fps
- Analog (composite) video output
- Non-interlaced
- Internal exposure control (normal shutter mode)
- Normal speed mode
- Partial scan $\frac{1}{2}$
- Continuous video
- DCF used: [CVM30P1.DCF](#)



6. Continuous partial scanning (1/3) mode (Normal speed)

- 752 x 66 x 8-bit @180 fps
- Analog (composite) video output
- Non-interlaced
- Internal exposure control (normal shutter mode)
- Normal speed mode
- Partial scan $\frac{1}{3}$
- Continuous video
- DCF used: [CVM30P2.DCF](#)



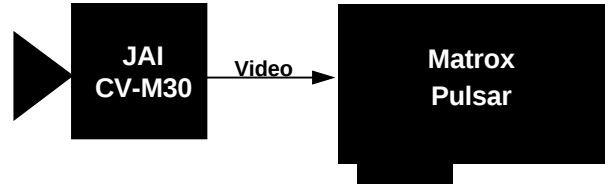
Application Note: Interfacing non-standard cameras to Matrox Pulsar

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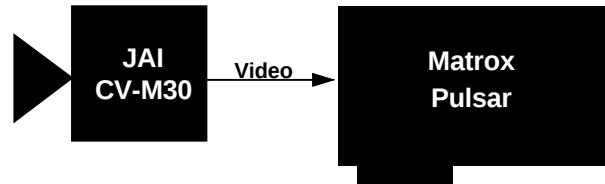
7. Continuous partial scanning (1/2) mode (Double speed)

- 752 x 110 x 8-bit @240 fps
- Non-interlaced
- Analog (composite) video output
- Internal exposure control (normal shutter mode)
- Double speed mode
- Partial scan $\frac{1}{2}$
- Continuous video
- DCF used: [CVM30P3.DCF](#)



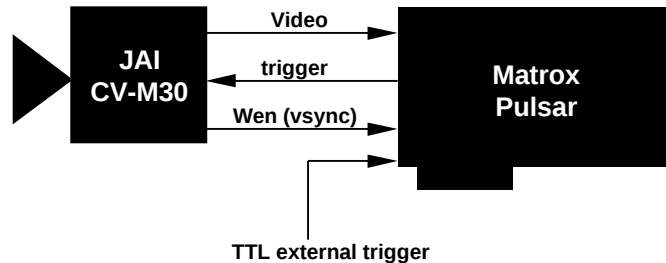
8. Continuous partial scanning (1/3) mode (Double speed)

- 752 x 66 x 8-bit @360 fps
- Non-interlaced
- Analog (composite) video output
- Internal exposure control (normal shutter mode)
- Double speed mode
- Partial scan $\frac{1}{3}$
- Continuous video
- DCF used: [CVM30P4.DCF](#)



9. Asynchronous reset mode (trigger mode)

- 752 x 240 x 8-bit
- Analog video output
- Non-interlaced
- Internal exposure control with times ranging from 1/60 second to 1/1000 second
- Asynchronous reset mode
- Normal speed mode
- DCF used: [CVM30A.DCF](#)



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Cabling Requirements	1. Continuous Modes 1 through 8 IMG-7W2-TO-1BNC required Video input BNC of IMG-7W2-TO 1BNC cable should be connected to VIDEO OUT BNC connector of camera The switches on the rear panel of the camera must be correctly configured, see SPECIAL CONSIDERATIONS for each mode’s switch configuration 2. Mode 9 Asynchronous reset mode (trigger mode) IMG-7W2-TO-5BNC cable and PLS-TTL-CABLE required Video input of BNC of IMG-7W2-TO-5BNC cable should be connected to VIDEO OUT BNC connector of camera The switches on the rear panel of the camera must be correctly configured, see SPECIAL CONSIDERATIONS for this mode’s switch configuration The connections between the DB-37 connector of the PLS-TTL-CABLE and the 6-pin male HIROSE connector of the camera are as follow: PLS-TTL-CABLE (DB-37 connector) connector) Pin name Pin no. TTL-EXPOSURE1 TTL-VSYNC GROUND Pin no. 9 11 6 → ← JAI CV-M30 (6-pin male HIROSE) Pin name TRIGGER VALID (WEN) GROUND 5 6 3 TTL external trigger source should be connected to the TTL trigger input of IMG-7W2-TO-5BNC cable																												
Special Considerations	Switch settings (switches on rear panel of camera) for all 9 modes 1. continuous mode (double speed, interlaced) <table><tr><th>OFF</th><th>ON</th></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table> 2. continuous mode (double speed, non-interlaced) <table><tr><th>OFF</th><th>ON</th></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>	OFF	ON													OFF	ON												
OFF	ON																												
OFF	ON																												

Application Note: Interfacing non-standard cameras to Matrox Pulsar

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3. continuous mode (normal speed, interlaced)

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
•		4	LM2	scanning mode
	•	5	RM1	scanning speed
•		6	LM1	scanning mode
•		7	TRSW	reset mode

4. continuous mode (normal speed, non-interlaced)

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
•		4	LM2	scanning mode
	•	5	RM1	scanning speed
	•	6	LM1	scanning mode
•		7	TRSW	reset mode

5. continuous partial scanning (1/2) mode (normal speed)

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
	•	4	LM2	scanning mode
	•	5	RM1	scanning speed
•		6	LM1	scanning mode
•		7	TRSW	reset mode

6. continuous partial scanning (1/3) mode (normal speed)

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
	•	4	LM2	scanning mode
	•	5	RM1	scanning speed
	•	6	LM1	scanning mode
•		7	TRSW	reset mode

7. continuous partial scanning (1/2) mode (double speed)

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
	•	4	LM2	scanning mode
•		5	RM1	scanning speed
•		6	LM1	scanning mode
•		7	TRSW	reset mode

8. continuous partial scanning (1/3) mode (double speed)

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
	•	4	LM2	scanning mode
•		5	RM1	scanning speed
	•	6	LM1	scanning mode
•		7	TRSW	reset mode

9. asynchronous reset mode

OFF	ON			
•		1	ED2	shutter speed
•		2	ED1	shutter speed
•		3	ED0	shutter speed
•		4	LM2	scanning mode
	•	5	RM1	scanning speed
	•	6	LM1	scanning mode
	•	7	TRSW	reset mode
•		8	AGC	AGC mode

The internal exposure control can be changed by the first 3 switches

Application Note:

Interfacing non-standard cameras to Matrox Pulsar

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Asynchronous reset mode (trigger mode)

- The shutter mode is selected by using the SW1 switches on the rear of the camera.
- In asynchronous reset mode, the switch RM1 should always be set to the ON position since this mode can only work in normal mode.
- Once in asynchronous reset mode (by setting the TRSW switch to ON), the exposure time is set using switches #1, #2 and #3 on the rear panel of the camera. In “normal speed” mode, exposure times range from (1/60)s to (1/10 000)s. In “double speed” mode, exposure times range from (1/120)s to (1/20 000)s. Consult the CV-M30 manual as to the positions of these three switches in addition to the corresponding exposure times
- Once it has received the external signal to trigger, the Pulsar sends a TTL exposure signal to the camera. The camera awaits the falling edge of the signal, at which point it initiates exposure. The minimum duration of the active low portion of an exposure pulse must be 2 μ s
- Contact your local sales representative or Matrox Sales Office, or contact Matrox Imaging Applications at 514-822-6061 for assistance (if required).

The DCF(s) mentioned in this application note can be found on the MIL and MIL-Lite CD, or our FTP site ([ftp.matrox.com](ftp:matrox.com)). The information furnished by Matrox Electronics System, Ltd. is believed to be accurate and reliable. Please verify all interface connections with camera documentation or manual. Contact your local sales representative or Matrox Sales office or Matrox Imaging Applications at 514-822-6061 for assistance.

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