

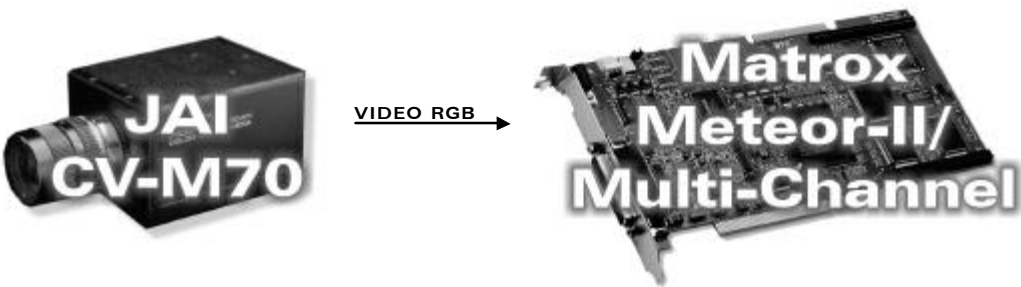
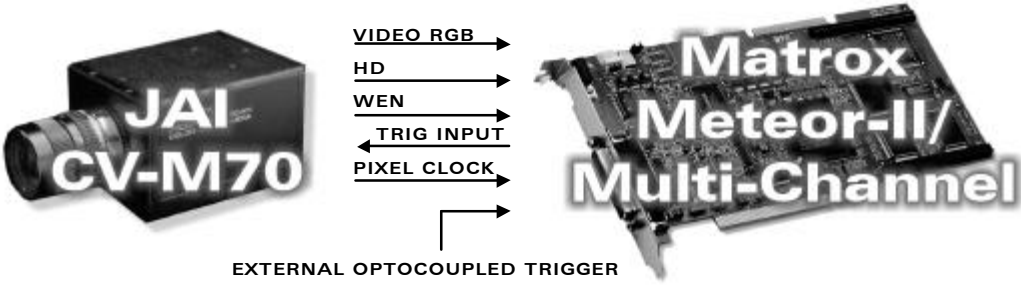
Application Note:

Interfacing non-standard cameras to Matrox Meteor-II



JAI CV-M70

March 22, 2000

Camera Descriptions	• 640 x 480 x 8-bit @ 30 fps. • Single channel analog RGB video output. • Progressive scan. • External sync. • Internal exposure control. • Pixel clock: 12.5984 MHz
Interface modes	• Continuous, asynchronous Reset (Random Trigger)
Camera Interface Briefs	Mode 1: Continuous  • 640 x 480 x 8-bit @ 30 fps. • Single channel analog RGB video. • Progressive scan. • Matrox Meteor-II receiving RGB video signals from camera. • DCF used: CVM70AC.DCF Mode 2: Asynchronous Reset (Random Trigger)  • 640 x 480 x 8-bit. • Single channel analog RGB video. • Progressive scan. • Matrox Meteor-II receiving external optocoupled trigger. • Matrox Meteor-II sending EXPOSURE1 (TRIGGER INPUT) signal to camera. • Matrox Meteor-II receiving HSYNC (HD), VSYNC (WEN), Pixel Clock and RGB video signals from camera. • DCF used: CVM70AT.DCF

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Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Meteor-II receives the continuous video from the camera at 30 frames per second.
- **Exposure time:** Exposure time is inversely proportionate to the frame rate (no shutter) or determined by the shutter setting. Refer to the camera manual for more information.
- **Camera switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

Switches	Settings
1: shutter data 2SB	OFF
2: shutter data 1SB	OFF
3: shutter data LSB	OFF
4: electronic shutter	ON
5: scanning system	ON
6: gamma correction	OFF
7: master gain	OFF
8: local/remote	OFF

Mode 2: Asynchronous Reset (Random Trigger)

- Once it has received the external trigger signal, Matrox Meteor-II sends the EXPOSURE1 (TRIGGER INPUT) signal to the camera with a width equal to the desired exposure.
- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The active and inactive periods of the EXPOSURE1 (TRIGGER INPUT) signal is the exposure time. The default exposure time for this DCF is equal to **576.5 μ s**. In order to change the width and deployment time of EXPOSURE1 (TRIGGER INPUT) use the Exposure Settings menu tab in Matrox Intellicam. Consult the Matrox Intellicam User Guide for more information.
- **Camera switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

Switches	Settings
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Camera Interface Details (continued)	Jumpers on PK8049 and PK8051 boards, located inside the camera, are set as follows: PK8051 <table><tr><td>Jumper</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td></tr><tr><td>Setting</td><td>S</td><td>O</td><td>NC</td><td>S</td><td>O</td><td>NC</td><td>O</td><td>S</td><td>O</td><td>S</td><td>O</td></tr></table> PK8049 <table><tr><td>Jumper</td><td>101</td></tr><tr><td>Setting</td><td>S</td></tr></table> For additional information, refer to pages 10-12 in the camera manual. Setting abbreviations: S: short O: Open NC: Not connected	Jumper	1	2	3	4	5	6	7	8	9	10	11	Setting	S	O	NC	S	O	NC	O	S	O	S	O	Jumper	101	Setting	S																																																	
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Cabling Requirements	Mode 1: Continuous - DBHD44-TO-8BNC cable required for video output of camera (DBHD44-TO-8BNC/O (open ended) cable recommended for use in all modes). - Connections between the 9-pin connector of the camera and the 44-pin connector of the Matrox Meteor-II/Multi-Channel are as follows: JAI CV-M70 (9-pin D-SUB connector) <table><tr><td>Pin name</td><td>Pin no.</td><td></td><td>Pin name</td><td>Pin no.</td></tr><tr><td>R OUTPUT</td><td>03</td><td>→</td><td>VID1_IN1</td><td>15</td></tr><tr><td>G OUTPUT</td><td>04</td><td>→</td><td>VID1_IN2</td><td>44</td></tr><tr><td>B OUTPUT</td><td>05</td><td>→</td><td>VID1_IN3</td><td>13</td></tr><tr><td>INT SYNC OUTPUT</td><td>07</td><td>→</td><td>SYNC_IN</td><td>43</td></tr></table> METEOR2-MC/2 (44-pin connector) <table><tr><td>Pin name</td><td>Pin no.</td></tr><tr><td>VID1_IN1</td><td>15</td></tr><tr><td>VID1_IN2</td><td>44</td></tr><tr><td>VID1_IN3</td><td>13</td></tr><tr><td>SYNC_IN</td><td>43</td></tr></table> Mode 2: Asynchronous Reset (Random Trigger) - DBHD44-TO-8BNC/O cable required for video output of camera. - Connections between the 9-pin connector of the camera and the 44-pin connector of the Matrox Meteor-II/Multi-Channel are as follows: JAI CV-M70 (9-pin D-SUB connector) <table><tr><td>Pin name</td><td>Pin no.</td><td></td><td>Pin name</td><td>Pin no.</td></tr><tr><td>R OUTPUT</td><td>03</td><td>→</td><td>VID1_IN1</td><td>15</td></tr><tr><td>G OUTPUT</td><td>04</td><td>→</td><td>VID1_IN2</td><td>44</td></tr><tr><td>B OUTPUT</td><td>05</td><td>→</td><td>VID1_IN3</td><td>13</td></tr><tr><td>INT SYNC OUTPUT</td><td>07</td><td>→</td><td>SYNC_IN</td><td>43</td></tr><tr><td>PIXEL CLOCK OUTPUT</td><td>09</td><td>→</td><td>CLK_IN_TTL</td><td>19</td></tr></table> METEOR2-MC/2 (44-pin connector) <table><tr><td>Pin name</td><td>Pin no.</td></tr><tr><td>VID1_IN1</td><td>15</td></tr><tr><td>VID1_IN2</td><td>44</td></tr><tr><td>VID1_IN3</td><td>13</td></tr><tr><td>SYNC_IN</td><td>43</td></tr><tr><td>CLK_IN_TTL</td><td>19</td></tr></table>	Pin name	Pin no.		Pin name	Pin no.	R OUTPUT	03	→	VID1_IN1	15	G OUTPUT	04	→	VID1_IN2	44	B OUTPUT	05	→	VID1_IN3	13	INT SYNC OUTPUT	07	→	SYNC_IN	43	Pin name	Pin no.	VID1_IN1	15	VID1_IN2	44	VID1_IN3	13	SYNC_IN	43	Pin name	Pin no.		Pin name	Pin no.	R OUTPUT	03	→	VID1_IN1	15	G OUTPUT	04	→	VID1_IN2	44	B OUTPUT	05	→	VID1_IN3	13	INT SYNC OUTPUT	07	→	SYNC_IN	43	PIXEL CLOCK OUTPUT	09	→	CLK_IN_TTL	19	Pin name	Pin no.	VID1_IN1	15	VID1_IN2	44	VID1_IN3	13	SYNC_IN	43	CLK_IN_TTL	19
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Cabling Requirements
(continued)

- Connections between the 6-pin multi connector (RS-232C) of the camera and the 44-pin connector of the Matrox Meteor-II/Multi-Channel are as follows:

JAI CV-M70 (6-pin multi connector)			METEOR2-MC/2 (44-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
TRIGGER INPUT	05	←	EXP(1)	38
WEN OUTPUT	06	→	VSYNC_TTL	32
- Connections between the 12-pin multi connector (DC/Ext. Sync) of the camera and the 44-pin connector of the Matrox Meteor-II/Multi-Channel are as follows:

JAI CV-M70 (12-pin multi connector)			METEOR2-MC/2 (44-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
EXTERNAL HD OUTPUT	06	→	HSYNC_TTL	02
- Connections between the H/W Trigger source and the 44-pin connector of the Matrox Meteor-II/Multi-Channel are as follows:

H/W Trigger Source			METEOR2-MC/2 (44-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
H/W TRIG Cable	--	→	OPTOTRIG+	35
GND	--		OPTOTRIG-	34

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 Electronic Systems, 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 Imaging Applications at 514-822-6061 for assistance.

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