

Matrox Meteor-II/Camera Link

Camera Interface Application Note

ATMEL AVIIVA C2 CL 4010

June 19, 2002

*Basics about the
camera*

*Mode of operations as
per Matrox Imaging (in
parentheses as per
camera manufacturer)*

*Basics about the
interface modes*

Camera Descriptions

- Effective resolution: up to 1365 (RGB) pixels/line $\times$ 8/12-bit.
- Camera Link BASE interface.
- Internal or external exposure control.
- 60 MHz pixel clock rate.

Interface Mode

- Fixed line scan (Free Running Mode)
- Variable line scan (Trigger and Integration Time Controlled)
- Variable line scan (Trigger and Integration Time Controlled by 2 Inputs)

Camera Interface Briefs

Mode 1: Fixed line scan (Free Running Mode)

- 1365 (RGB) $\times$ 8-bit @ 2000 LPS.
- Camera Link BASE interface.
- Matrox Meteor-II/Camera Link receiving LVAL, DVAL, CLK and video from camera.
- DCF used: [AVC2CLF.DCF](#)



Mode 2: Variable line scan (Trigger & Integration Time Controlled)

- 1365 (RGB) $\times$ 8-bit.
- Camera Link BASE interface.
- Matrox Meteor-II/Camera Link receiving external trigger signal.
- Matrox Meteor-II/Camera Link receiving LVAL, DVAL, CLK and video from camera.
- DCF used: [AVC2CLLT.DCF](#)



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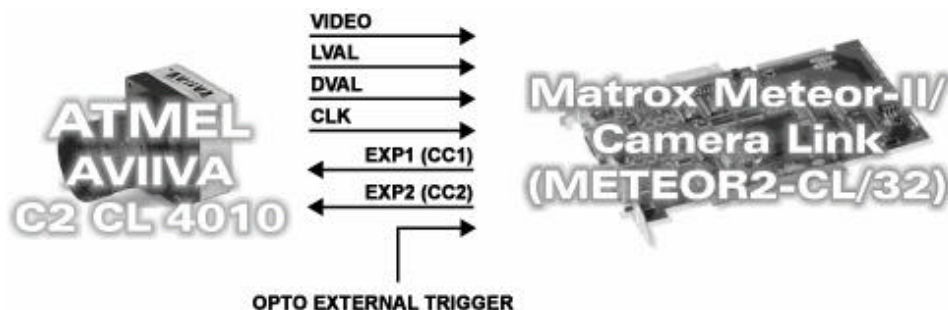
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Basics about the
interface modes

Camera Interface Briefs (cont.)

Mode 3: Variable line scan (Trigger & Integration Time Controlled by Two Inputs)

- 1365 (RGB) × 8-bit.
- Camera Link BASE interface.
- Matrox Meteor-II/Camera Link receiving external trigger signal.
- Matrox Meteor-II/Camera Link sending EXPOSURE1 (CC1) and EXPOSURE2 (CC2) signals to camera to initiate and control exposure time.
- Matrox Meteor-II/Camera Link receiving LVAL, DVAL, CLK and video from camera.
- DCF used: [AVC2CLCE.DCF](#)



Specifics about the
interface modes

Camera Interface Details

Mode 1: Fixed line scan (Free Running Mode)

- **Line rate:** Matrox Meteor-II/Camera Link receives the continuous video from the camera at **2000** lines per second for the default exposure time (**500 ms**). The line rate can be increased by decreasing the exposure time (e.g., up to **7376** lines per second for an exposure time of **125 ms**). Refer to the camera manual for more information on Camera Control and Commands.
- **Exposure time:** Exposure time determined by the camera setting and can be set using the serial interface. The default exposure time equals **500 ms**. Refer to the camera manual for more information on Camera Control and Commands.
- **Camera settings:** Refer to the camera manual for additional information. Camera settings are as follows:

External switch settings									
E	G	I	M	O	T	H	P	Y	S
0	384	500	1	8	0	5	8	1	2

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Specifics about the
interface modes

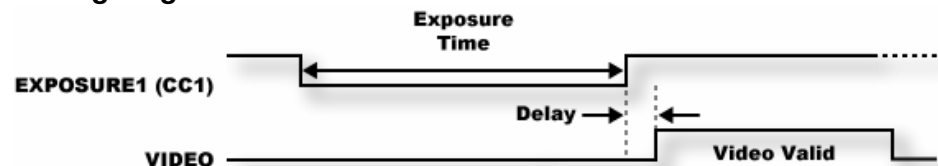
Camera Interface Details (cont.)

Mode 2: Variable line scan (Trigger & Integration Time Controlled)

- **Line rate:** The line rate is determined by the frequency and duration of the EXPOSURE1 (CC1) signal.
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (CC1) signal is the exposure time. An internal delay (introduced by the camera) of **2.3 ms** is present between the end of exposure and the start of the valid data. The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera settings:** Refer to the camera manual for additional information. Camera settings are as follows:

External switch settings									
E	G	I	M	O	T	H	P	Y	S
0	384	50	3	8	0	5	8	1	2

- **Timing diagram:**



Mode 3: Variable line scan (Trigger & Integration Time Controlled by Two Inputs)

- **Line rate:** The frame rate is determined by the frequency of the external trigger signal and the exposure time period.
- **Exposure time:** The width (rising edges) of the EXPOSURE1 (CC1) and EXPOSURE2 (CC2) signals equals the exposure time. An internal delay (introduced by the camera) of **2.3 ms** is present between the end of exposure and the start of the valid data. The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the respective manual for more information.
- **Camera settings:** Refer to the camera manual for additional information. Camera settings are as follows:

External switch settings									
E	G	I	M	O	T	H	P	Y	S
0	384	50	4	8	0	5	8	1	2

Continued...

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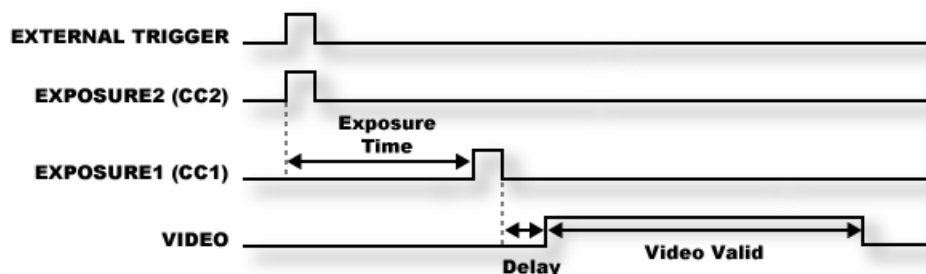
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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 3: Variable line scan (Trigger & Integration Time Controlled by Two Inputs)

■ Timing diagram:



Cabling details for the
interface modes

Cabling Requirements

Modes 1 and 2: Fixed line scan/Variable line scan

■ Cable and Connection: Standard Camera Link cable.

Mode 3: Variable line scan (Trigger & Integration Time Controlled by Two Inputs)

■ Cable and Connection: Standard Camera Link.

■ External trigger: External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) on the Expanded I/O adapter bracket.

EXPANDED I/O BRACKET (9-pin connector)

External Trigger Source

OPTOTRIG +	07	←	SIGNAL	--
OPTOTRIG -	02	←	GROUND	--

The DCF(s) mentioned in this application note can be found on our FTP site ([ftp.matrox.com/pub/imaging/](ftp://ftp.matrox.com/pub/imaging/)). 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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MET2-CID-117

