Matrox Meteor-II/Camera Link

Camera Interface Application Note

TOSHIBA IK-SX1 February 25, 2003

Basics about the camera

Camera Descriptions

- Effective resolution: 1380 × 1040 × 8-bit @ 15 fps.
- Camera Link BASE interface (Single channel).
- Progressive scan.
- Partial scanning.
- Internal sync.
- Internal or external exposure control.
- 28.6363 MHz pixel clock rate.

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

Interface Mode

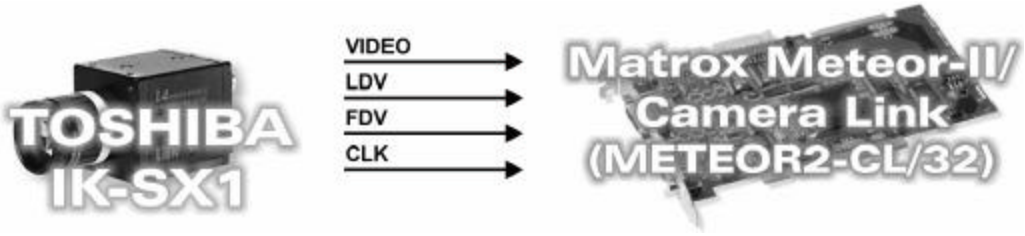
- Continuous (Int. sync. partial readout/draft mode)
- Asynchronous reset (Pulse width trigger)

Basics about the interface modes

Camera Interface Briefs

Mode 1: Continuous

- Up to 1380 × 1040 × 8-bit.
- Camera Link BASE interface (Single tap).
- Matrox Meteor-II/Camera Link receiving LDV, FDV, CLK and video signal from camera.
- DCF used: IKSX1C.DCF (Int. Sync.: 1380 × 1040 × 8-bit @ 15 fps)
- DCF used: IKSX1C7C.DCF (Int. Sync. Partial: 1380 × 700 × 8-bit @ 20 fps)
- DCF used: IKSX1C56.DCF (Int. Sync. Partial: 1380 × 560 × 8-bit @ 24 fps)
- DCF used: IKSX1C40.DCF (Int. Sync. Partial: 1380 × 400 × 8-bit @ 30 fps)
- DCF used: IKSX1C7.DCF (Int. Sync. Partial: 1380 × 70 × 8-bit @ 58 fps)
- DCF used: IKSX1DFT.DCF (Int. Sync. Draft: 1380 × 259 × 8-bit @ 60 fps)



Mode 2: Asynchronous reset

- 1380 × 1040 × 8-bit.
- Camera Link BASE interface (Single tap).
- Matrox Meteor-II/Camera Link receiving external trigger signal.
- Matrox Meteor-II/Camera Link sending EXPOSURE1 (CC1) signal to camera to initiate and control exposure time.
- Matrox Meteor-II/Camera Link receiving LDV, FDV, CLK and video signal from camera.

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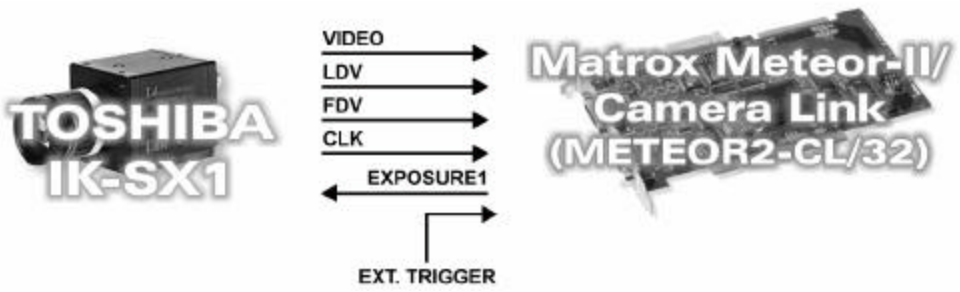
Matrox Meteor-II/Camera Link
Camera Interface Application Note
TOSHIBA IK-SX1 February 25, 2003

Basics about the interface modes

Camera Interface Briefs (cont.)

Mode 2: Asynchronous reset

- DCF used: IKSX1A.DCF



Specifics about the interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame Rate:** Matrox Meteor-II/Camera Link receives the continuous video from the camera at **15** frames per second (Full resolution). Frame rate will be higher when using a partial scanning mode. Refer to the camera manual for additional information.
- **Exposure time:** Exposure time is determined by the camera's shutter setting. Refer to the camera manual for more information.
- **Camera settings:** Refer to the camera manual for additional information. Mode Select switch (camera rear) should be set as follows for this mode:

DCF/Switch	1	2	3	4	5	6	7	8	9	0
IKSX1C.DCF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
IKSX1C700.DCF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	ON	ON
IKSX1C560.DCF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	ON	OFF
IKSX1C400.DCF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON
IKSX1C70.DCF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
IKSX1DFT.DCF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF

Mode 2: Asynchronous reset

- **Frame Rate:** The frame rate is determined by the frequency of the external trigger signal and the exposure time period.
- **Exposure time:** The width (falling edge to rising edge) of the EXPOSURE1 (CC1) signal and a fixed internal (camera) delay is the exposure time. The default exposure time is equal to **63 ms**, with a minimum of **20 ms**. 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.

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Matrox Meteor-II/Camera Link
Camera Interface Application Note
TOSHIBA IK-SX1 February 25, 2003

Specifics about the interface modes

Camera Interface Details (cont.)

Mode 2: Asynchronous reset

- **NOTE:** For this mode, it will be necessary to capture (grab) using on-board double-buffered grabs (as per the standard MIL example MMET2DIG.C) with a copy to host and a copy to VGA display. For more information, contact Matrox Imaging Technical Support
- **Camera settings:** Refer to the camera manual for additional information. Mode Select switch (camera rear) should be set as follows for this mode:

DCF/Switch	1	2	3	4	5	6	7	8	9	0
IKSX1A.DCF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Cabling details for the interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable and Connection:** Standard Camera Link cable.

Mode 2: Asynchronous reset

- **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/). 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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