

Matrox Meteor-II/Digital (PCI and PC/104-Plus)

Camera Interface Application Note

DALSTAR DS-1x-01M30

November 26, 2002

*Basics about the
camera*

Camera Descriptions

- $1024 \times 1024 \times 12\text{-bit}$ @ 30 fps.
- Single channel LVDS digital video output.
- Progressive scan.
- Internal (separate) sync.
- Internal and external exposure control.
- 40 MHz pixel clock rate.

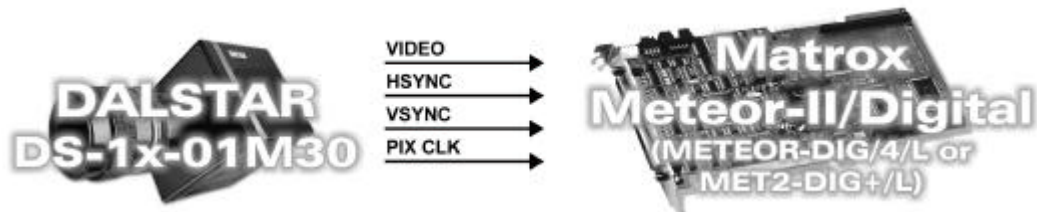
Interface Modes

- Continuous (no binning, binning)
- Asynchronous reset (no binning, binning)

Camera Interface Briefs

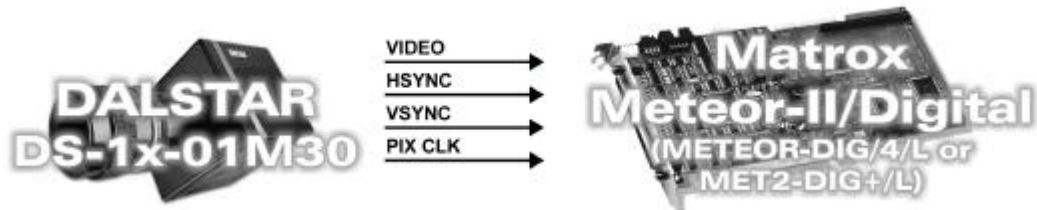
Mode 1: Continuous (no binning)

- $1024 \times 1024 \times 12\text{-bit}$ @ 30 fps.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Meteor-II/Digital receiving HSYNC, VSYNC, PIXEL CLOCK (@ 40 MHz) and video signals from camera.
- DCF: [1M30C1.DCF](#)



Mode 2: Continuous (Binning)

- Up to $512 \times 512 \times 12\text{-bit}$ @ 60 fps.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Meteor-II/Digital receiving HSYNC, VSYNC, PIXEL CLOCK (@ 20 MHz) and video signals from camera.
- DCF used: [1M30C2.DCF](#)



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

*Basics about the
interface modes*

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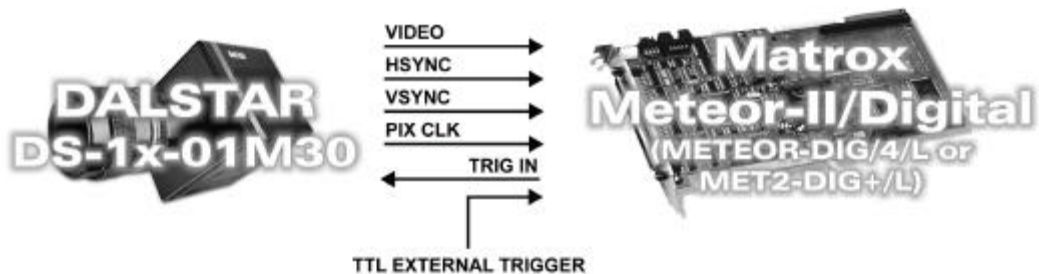
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*Basics about the
interface modes*

Camera Interface Briefs (cont.)

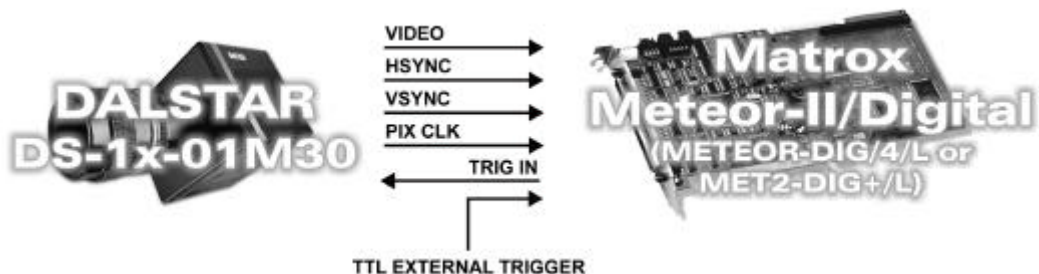
Mode 3: Asynchronous reset (no binning)

- $1024 \times 1024 \times 12$ -bit.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Meteor-II/Digital receiving TTL external trigger signal.
- Matrox Meteor-II/Digital sending EXPOSURE2 (TRIGGER IN) signal to camera to initiate and control exposure time.
- Matrox Meteor-II/Digital receiving HSYNC, VSYNC, PIXEL CLOCK (@ 40 MHz) and video signals from camera.
- DCF used: [1M30A1.DCF](#)



Mode 4: Asynchronous reset (binning)

- $512 \times 512 \times 12$ -bit.
- Single channel LVDS digital video.
- Progressive scan.
- Matrox Meteor-II/Digital receiving TTL external trigger signal.
- Matrox Meteor-II/Digital sending EXPOSURE2 (TRIGGER IN) signal to camera to initiate and control exposure time.
- Matrox Meteor-II/Digital receiving HSYNC, VSYNC, PIXEL CLOCK (@ 20 MHz) and video signals from camera.
- DCF used: [1M30A2.DCF](#)



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*Specifics about the
interface modes*

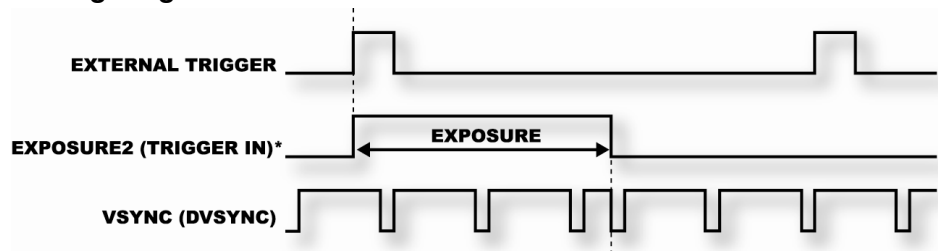
Camera Interface Details

Modes 1 and 2: Continuous

- **Frame Rate:** Matrox Meteor-II/Digital receives the continuous video from the camera at 30/60 frames per second (no binning/binning).
- **Exposure time:** Exposure time is inversely proportionate to the frame rate or determined by the shutter setting. Refer to the camera manual for more information.
- **Camera Control:** Camera control settings are made using DALSA's control software. Contact DALSA for more information.

Modes 3 and 4: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The width (rising edge to falling edge) of the EXPOSURE2 (TRIGGER IN)* signal is the exposure time. The default exposure time is equal to **60 ms** (no binning) or **32 ms** (binning). The exposure time can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Camera Control:** External Trigger Mode/Integrate checkbox must be checked in DALSA's control software. Refer to the camera manual for more information.
- **Timing diagram:**



*SMA Connector

Matrox Meteor-II/Digital (PCI and PC/104-Plus)

Camera Interface Application Note

DALSTAR DS-1x-01M30

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*Cabling details for this
interface mode*

Cabling Requirements – PCI Version

Modes 1 and 2: Continuous

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections between the 60-pin quad row connectors (**DATA1**) of the camera and the 100-pin connector of the Matrox Meteor-II/Digital are as follows:

DALSTAR DS-1x-01M30 (60-pin quad row connector- DATA 1)			METEOR2-DIG/4/L (100-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
D1A0+	01	→	DATA, INPUT, 0+	01
D1A0-	02	→	DATA, INPUT, 0-	02
D1A1+	03	→	DATA, INPUT, 1+	03
D1A1-	04	→	DATA, INPUT, 1-	04
D1A2+	05	→	DATA, INPUT, 2+	05
D1A2-	06	→	DATA, INPUT, 2-	06
D1A3+	07	→	DATA, INPUT, 3+	07
D1A3-	08	→	DATA, INPUT, 3-	08
D1A4+	09	→	DATA, INPUT, 4+	09
D1A4-	10	→	DATA, INPUT, 4-	10
D1A5+	11	→	DATA, INPUT, 5+	11
D1A5-	12	→	DATA, INPUT, 5-	12
D1A6+	13	→	DATA, INPUT, 6+	13
D1A6-	14	→	DATA, INPUT, 6-	14
D1A7+	17	→	DATA, INPUT, 7+	15
D1A7-	18	→	DATA, INPUT, 7-	16
D1A8+	19	→	DATA, INPUT, 8+	17
D1A8-	20	→	DATA, INPUT, 8-	18
D1A9+	21	→	DATA, INPUT, 9+	19
D1A9-	22	→	DATA, INPUT, 9-	20
D1A10+	23	→	DATA, INPUT, 10+	21
D1A10-	24	→	DATA, INPUT, 10-	22
D1A11+	25	→	DATA, INPUT, 11+	23
D1A11-	26	→	DATA, INPUT, 11-	24
D1HSYNC+	58	→	HSYNC, INPUT, +	33
D1HSYNC -	57	→	HSYNC, INPUT, -	34
D1VSYNC+	56	→	VSYNC, INPUT, +	35
D1VSYNC -	55	→	VSYNC, INPUT, -	36
D1GND	45	→	GROUND	37
D1GND	46	→	GROUND	38
D1PCLK-	59	→	CLOCK, INPUT, +	39
D1PCLK +	60	→	CLOCK, INPUT, -	40

Continued...

Matrox Meteor-II/Digital (PCI and PC/104-Plus)

Camera Interface Application Note

DALSTAR DS-1x-01M30

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Cabling details for this
interface mode

Cabling Requirements – PCI version (cont.)

Modes 3 and 4: Asynchronous Reset

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **External Trigger:** TTL external trigger source should be connected to the pin 2 and 7 (OPTO TRIG+/-) of the 9-pin Trigger Input connector located on secondary RS-232/Trigger Input bracket.
- **Connection:** Connections between the SMA/BNC connector of the camera and the 100-pin connector of the Matrox Meteor-II/Digital are as in Modes 1 and 2: *Continuous* including the following:

DALSTAR DS-1x-01M30 (SMA/BNC connector)			METEOR2-DIG/4/L (100-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
SMA or BNC	--	←	EXPOSURE2, OUTPUT, TTL	88
GND	--	--	GROUND	38

Cabling Requirements – PC/104-PLUS version

Modes 1 and 2: Continuous

- **Cable:** (A)* For a Matrox Meteor-II/Digital PC/104-PLUS frame grabber installed in a Matrox 4Sight-II, the VHDCI-TO-OPEN (open ended) cable is required to connect to the Matrox 4Sight-II's expanded video input connectors. (B)* For connecting directly to a Matrox Meteor-II/Digital PC/104-PLUS frame grabber, a custom ribbon cable can be built using the included low profile IDC mating connectors included with the board.
- **Connections:** Connections between the 60-pin quad row connectors (DATA1) of the camera and the 68-pin connector of the Matrox Meteor-II/Digital are as follows.

DALSTAR DS-1x-01M30 (60-pin quad row connector- DATA 1)			MET2-DIG+/L (68-pin connector)		
Pin name	Pin no.		Pin name	(A)*	(B)*
				Pin no.	Pin no.
D1A0+	01	→	DATA, INPUT, 0+	34	01
D1A0-	02	→	DATA, INPUT, 0-	68	02
D1A1+	03	→	DATA, INPUT, 1+	33	03
D1A1-	04	→	DATA, INPUT, 1-	67	04
D1A2+	05	→	DATA, INPUT, 2+	32	05
D1A2-	06	→	DATA, INPUT, 2-	66	06
D1A3+	07	→	DATA, INPUT, 3+	31	07
D1A3-	08	→	DATA, INPUT, 3-	65	08
D1A4+	09	→	DATA, INPUT, 4+	30	09
D1A4-	10	→	DATA, INPUT, 4-	64	10

Continued...

***Note:** column **A** represents connections via the Matrox 4Sight-II's expanded video input connector and column **B** represents connections directly to the Matrox Meteor-II/Digital PC/104-Plus low profile IDC video input connector.

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*Cabling details for this
interface mode*

Cabling Requirements – PC/104-PLUS version (cont.)

Modes 1 and 2: Continuous

DALSTAR DS-1x-01M30

(60-pin quad row connector- DATA 1)

MET2-DIG+/L

(68-pin connector)

<i>Pin name</i>	<i>Pin no.</i>		<i>Pin name</i>	(A)*	(B)*
				<i>Pin no.</i>	<i>Pin no.</i>
D1A5+	11	→	DATA, INPUT, 5+	29	11
D1A5-	12	→	DATA, INPUT, 5-	63	12
D1A6+	13	→	DATA, INPUT, 6+	28	13
D1A6-	14	→	DATA, INPUT, 6-	62	14
D1A7+	17	→	DATA, INPUT, 7+	27	15
D1A7-	18	→	DATA, INPUT, 7-	61	16
D1A8+	19	→	DATA, INPUT, 8+	08	53
D1A8-	20	→	DATA, INPUT, 8-	42	54
D1A9+	21	→	DATA, INPUT, 9+	07	55
D1A9-	22	→	DATA, INPUT, 9-	41	56
D1A10+	23	→	DATA, INPUT, 10+	06	57
D1A10-	24	→	DATA, INPUT, 10-	40	58
D1A11+	25	→	DATA, INPUT, 11+	05	59
D1A11-	26	→	DATA, INPUT, 11-	39	60
D1HSYNC+	58	→	HSYNC, INPUT, +	26	17
D1HSYNC -	57	→	HSYNC, INPUT, -	60	18
D1VSYNC+	56	→	VSYNC, INPUT, +	24	21
D1VSYNC -	55	→	VSYNC, INPUT, -	58	22
D1GND	45	→	GROUND	43	52
D1GND	46	→	GROUND	43	52
D1PCLK-	59	→	CLOCK, INPUT, +	22	25
D1PCLK +	60	→	CLOCK, INPUT, -	56	26

***Note:** column **A** represents connections via the Matrox 4Sight-II's expanded video input connector and column **B** represents connections directly to the Matrox Meteor-II/Digital PC/104-Plus low profile IDC video input connector.

Modes 3 and 4: Asynchronous Reset

- **Cable: (A)*** For a Matrox Meteor-II/Digital PC/104-PLUS frame grabber installed in a Matrox 4Sight-II, the VHDCI-TO-OPEN (open ended) cable is required to connect to the Matrox 4Sight-II's expanded video input connectors. **(B)*** For connecting directly to a Matrox Meteor-II/Digital PC/104-PLUS frame grabber, a custom ribbon cable can be built using the included low profile IDC mating connectors included with the board.
- **External Trigger:** TTL external trigger source should be connected to OPTOTRIG, INPUT pin 11 **(A)*** or pin 47 **(B)*** and OPTOTRIG COM (Ground) pin 10 **(A)*** or pin 49 **(B)***.

Continued...

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Camera Interface Application Note

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*Cabling details for this
interface mode*

Cabling Requirements – PC/104-PLUS version (cont.)

Modes 3 and 4: Asynchronous Reset

- **Connection:** Connections between the two 60-pin quad row connectors (**DATA1**) of the camera and the 68-pin connector of the Matrox Meteor-II/Digital are as in Modes 1 and 2: *Continuous* (PC/104-PLUS version) including the following:

DALSTAR DS-1x-01M30
(SMA connector)

MET2-DIG+/L
(68-pin connector)

<i>Pin name</i>	<i>Pin no.</i>		<i>Pin name</i>	(A)*	(B)*
				<i>Pin no.</i>	<i>Pin no.</i>
SMA or BNC	--	←	EXPOSURE2, OUTPUT, TTL	46	88
GND	--	--	GROUND	43	38

***Note:** column **A** represents connections via the Matrox 4Sight-II's expanded video input connector and column **B** represents connections directly to the Matrox Meteor-II/Digital PC/104-Plus low profile IDC video input connector.

The DCF(s) mentioned in this application note can be found on the MIL 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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MET2-CID-087

