Matrox Genesis

Camera Interface Application Note

DALSA DS-2x-01M40 November 27, 2002

Basics about the camera

Camera Descriptions

- 1024 × 1024 × 8-bit @ up to 40 fps.
- Single or dual channel RS-422 digital video output.
- Progressive scan.
- Internal (separate) sync.
- Internal and external exposure control.
- 25 MHz pixel clock rate.

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

Basics about the interface modes

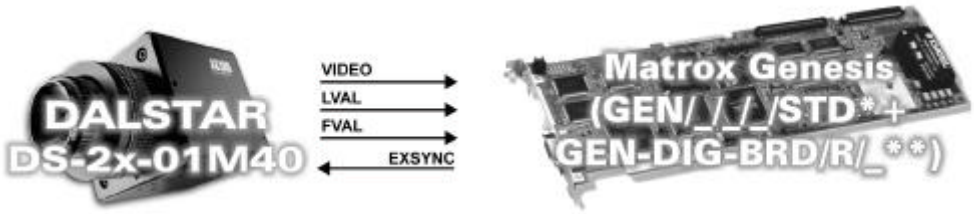
Interface Mode

- Continuous (Free-Run Mode)

Camera Interface Briefs

Mode: Continuous (Free-Run Mode)

- 1024 × 1024 × 12-bit @ 15 fps.
- Single channel RS-422 digital video.
- Progressive scan.
- Matrox Genesis sending periodic EXPOSURE1 (EXSYNC) signal to camera to initiate and control exposure time.
- Matrox Genesis receiving HSYNC (LVAL), VSYNC (FVAL) and video signals from camera.
- DCF: CAD41K1T.DCF (single channel @ 20 fps)
- DCF: CAD41K2T.DCF (dual channel @ 40 fps)



Specifics about the interface modes

Camera Interface Details

Mode: Continuous (Free-Run Mode)

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 20/40 frames per second (single/dual channel).
- **Exposure time:** The periodic EXPOSURE1 (EXSYNC) signal initiates and controls the exposure time, which can be modified in the DCF using Matrox Intellicam, Genesis Native Library (GNL) imCamControl() or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Inverted output:** When outputting data in dual-output mode, the camera simultaneously reads out columns 0-511 to OS1 and columns 1023-512 to OS2. This output effectively mirrors the right half of an image and requires additional processing to reverse mirrored tap output. For additional information, refer to the camera manual.

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Cabling details for this interface mode

Cabling Requirements

Mode: Continuous (Free-Run Mode)

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections between the 20-pin dual row connectors (**OS1**) of the camera and the 100-pin connector of the Matrox Genesis are as follows:

DALSTAR DS-2x-01M40 (20-pin dual row connector- OS1)			**Matrox Genesis (100-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
D7	01	→	DATA, INPUT, 7+	15
D7B	02	→	DATA, INPUT, 7-	16
D6	03	→	DATA, INPUT, 6+	13
D6B	04	→	DATA, INPUT, 6-	14
D5	05	→	DATA, INPUT, 5+	11
D5B	06	→	DATA, INPUT, 5-	12
D4	07	→	DATA, INPUT, 4+	09
D4B	08	→	DATA, INPUT, 4-	10
D3	09	→	DATA, INPUT, 3+	07
D3B	10	→	DATA, INPUT, 3-	08
D2	11	→	DATA, INPUT, 2+	05
D2B	12	→	DATA, INPUT, 2-	06
D1	13	→	DATA, INPUT, 1+	03
D1B	14	→	DATA, INPUT, 1-	04
D0	15	→	DATA, INPUT, 0+	01
D0B	16	→	DATA, INPUT, 0-	02
STROBE	17	→	CLOCK, INPUT, +	39
STROBEB	18	→	CLOCK, INPUT, -	40
LVAL	19	→	VSYNC, INPUT, +	33
LVALB	20	→	VSYNC, INPUT, -	34
DALSTAR DS-2x-01M40 (20-pin dual row connector- OS2)			**Matrox Genesis (100-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
D7	01	→	DATA, INPUT, 15+	31
D7B	02	→	DATA, INPUT, 15-	32
D6	03	→	DATA, INPUT, 14+	29
D6B	04	→	DATA, INPUT, 14-	30
D5	05	→	DATA, INPUT, 13+	27
D5B	06	→	DATA, INPUT, 13-	28

Continued…

Cabling details for this interface mode

Cabling Requirements (continued)

Mode: Continuous (Free-Run Mode)

- **Connection:** Connections between the SMA/BNC connector of the camera and the 100-pin connector of the Matrox Genesis are as follows:

DALSTAR DS-2x-01M40 (20-pin dual row connector- OS2)			**Matrox Genesis (100-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
D4	07	→	DATA, INPUT, 12+	25
D4B	08	→	DATA, INPUT, 12-	26
D3	09	→	DATA, INPUT, 11+	23
D3B	10	→	DATA, INPUT, 11-	24
D2	11	→	DATA, INPUT, 10+	21
D2B	12	→	DATA, INPUT, 10-	22
D1	13	→	DATA, INPUT, 9+	19
D1B	14	→	DATA, INPUT, 9-	20
D0	15	→	DATA, INPUT, 8+	17
D0B	16	→	DATA, INPUT, 8-	18
FVAL	17	→	VSYNC, INPUT, +	35
FVALB	18	→	VSYNC, INPUT, -	36

- **Connection:** Connections between the DB-25 connector of the camera and the 100-pin connector of the Matrox Genesis are as follows:

DALSTAR DS-2x-01M40 (25-pin connector)			**Matrox Genesis (100-pin connector)**	
Pin name	***Pin no.***		***Pin name***	***Pin no.***
EXSYNC	17	←	EXPOSURE, OUTPUT, 1+	95
EXSYNCB	04	←	EXPOSURE, OUTPUT, 1-	96
PRIN	05 to 8 (jumper)			
PRINB	18 to 24 (jumper)			
BIN	14 to 7 (jumper)			
BINB	1 to 13 (jumper)			

Continued…

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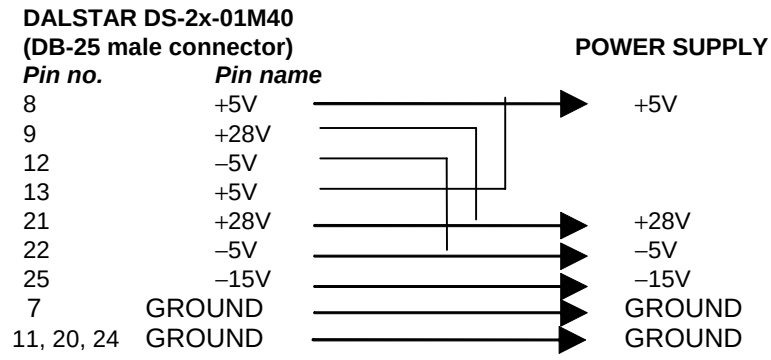
Cabling details for this interface mode

Cabling Requirements (continued)

Mode: Continuous (Free-Run Mode)

- **Connection:** Connections between the DB-25 connector on the rear panel of the camera and the power supply are as follows:



NOTE: it is important that all the GROUNDs of the camera be connected together to the POWER SUPPLY GROUND, and to the GROUND of the Matrox Genesis. Do not use the cable shield as a ground; instead always use the ground pin of the power supply.

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