

# Matrox Genesis

## Camera Interface Application Note

### HITACHI KP-F110

February 14, 2002

Basics about the  
camera

#### Camera Descriptions

- Effective resolution:  $1024 \times 1024 \times 8$  or 10-bit @ 30 fps.
- Single tap analog or dual tap RS-422 digital video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 48.6/24.3 MHz pixel clock rate (analog/digital respectively).

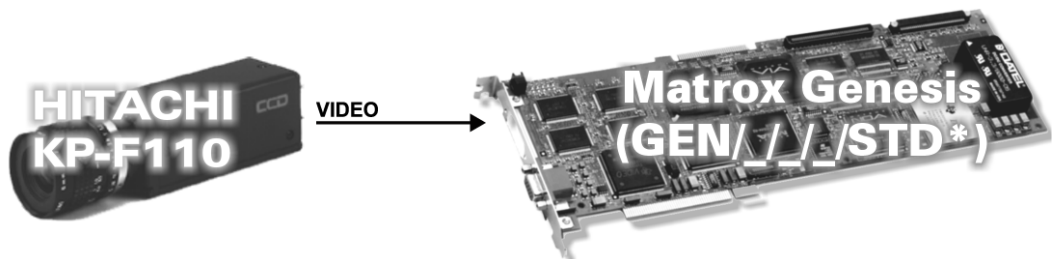
#### Interface Modes

- Continuous

#### Camera Interface Briefs

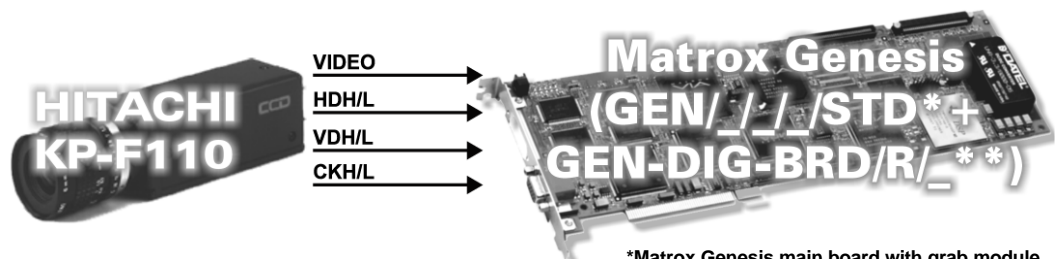
##### Mode 1: Continuous (analog)

- $1024 \times 1024 \times 8$ -bit @ 30 fps.
- Single tap analog video.
- Progressive scan.
- Matrox Genesis receiving video signals from camera.
- DCF used: [HTKP110A.DCF](#)



##### Mode 2: Continuous (digital)

- $1024 \times 1024 \times 10$ -bit @ 30 fps.
- Dual tap RS-422 digital video.
- Progressive scan.
- Matrox Genesis receiving HSYNC (HDH/L), VSYNC (VDH/L), PIXEL CLOCK (CKH/L @ 48.6 MHz) and video signals from camera.
- DCF used: [HTKP110D.DCF](#)



\*Matrox Genesis main board with grab module  
\*\*Matrox digital RS-422 input board

Mode of operations as  
per Matrox Imaging (in  
parentheses as per  
camera manufacturer)  
Basics about the  
interface modes

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Specifics about the  
interface modes

### Camera Interface Details

#### *Mode 1 and 2: Continuous (analog/digital)*

- **Frame Rate:** Matrox Genesis receives the continuous video from the camera at 30 frames per second.
- **Exposure time:** Exposure time is determined by the rear panel switch settings. Refer to the camera manual for more information.
- **Camera switch settings:** Refer to the camera manual for more information. External switch settings should be set as follows:

Switch	Setting
Frame on Demand Mode	1T
Frame on Demand (ON/OFF)	OFF
Shutter Speed	As Desired

### Cabling Requirements

#### *Mode 1: Continuous (analog)*

- **Cable:** IMG-7W2-TO-5BNC cable required for video signals.
- **Connection:** Video Input (Red BNC) of the IMG-7W2-TO-5BNC cable should be connected to the VIDEO OUT BNC of the camera.

#### *Mode 2: Continuous (digital)*

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **Connection:** Connections between the 50-pin connectors of the camera and the 100-pin connectors of the Matrox Genesis are as follows:

**MATROX GENESIS**  
(100-pin connector)  
*Pin name*

*Pin no.*

**HITACHI KP-F110**  
(50-pin connector)  
*Pin name*

*Pin no.*

DATA, INPUT, 0+	01	←	DA D0+	26
DATA, INPUT, 0-	02	←	DA D0-	27
DATA, INPUT, 1+	03	←	DA D1+	28
DATA, INPUT, 1-	04	←	DA D1-	29
DATA, INPUT, 2+	05	←	DA D2+	30
DATA, INPUT, 2-	06	←	DA D2-	31
DATA, INPUT, 3+	07	←	DA D3+	32
DATA, INPUT, 3-	08	←	DA D3-	33
DATA, INPUT, 4+	09	←	DA D4+	34
DATA, INPUT, 4-	10	←	DA D4-	35
DATA, INPUT, 5+	11	←	DA D5+	36
DATA, INPUT, 5-	12	←	DA D5-	37

Continued...

Cabling details for the  
interface modes

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Cabling details for the  
interface modes

#### Cabling Requirements (continued)

##### Mode 2: Continuous (digital)

- **Connection:** Connections between the 50-pin connectors of the camera and the 100-pin connectors of the Matrox Genesis are as follows:

MATROX GENESIS (100-pin connector)			HITACHI KP-F110 (50-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
DATA, INPUT, 4+	09	←	DA D4+	34
DATA, INPUT, 4-	10	←	DA D4-	35
DATA, INPUT, 5+	11	←	DA D5+	36
DATA, INPUT, 5-	12	←	DA D5-	37
DATA, INPUT, 6+	13	←	DA D6+	38
DATA, INPUT, 6-	14	←	DA D6-	39
DATA, INPUT, 7+	15	←	DA D7+	40
DATA, INPUT, 7-	16	←	DA D7-	41
DATA, INPUT, 8+	17	←	DA D8+	42
DATA, INPUT, 8-	18	←	DA D8-	43
DATA, INPUT, 9+	19	←	DA D9+	44
DATA, INPUT, 9-	20	←	DA D9-	45
HSYNC, INPUT, +	33	←	HDH	25
HSYNC, INPUT, -	34	←	HDL	50
VSYNC, INPUT, +	35	←	VDH	48
VSYNC, INPUT, -	36	←	VDL	49
GROUND	37	--	GND	23
GROUND	38	--	GND	24
CLOCK, INPUT, - (NEG)	39	←	CLK+	46
CLOCK, INPUT, + (POS)	40	←	CLK-	47
DATA, INPUT, 16+	51	←	DB D0+	01
DATA, INPUT, 16-	52	←	DB D0-	02
DATA, INPUT, 17+	53	←	DB D1+	03
DATA, INPUT, 17-	54	←	DB D1-	04
DATA, INPUT, 18+	55	←	DB D2+	05
DATA, INPUT, 18-	56	←	DB D2-	06
DATA, INPUT, 19+	57	←	DB D3+	07
DATA, INPUT, 19-	58	←	DB D3-	08
DATA, INPUT, 20+	59	←	DB D4+	09
DATA, INPUT, 20-	60	←	DB D4-	10
DATA, INPUT, 21+	61	←	DB D5+	11
DATA, INPUT, 21-	62	←	DB D5-	12
DATA, INPUT, 22+	63	←	DB D6+	13

Continued...

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*Cabling details for the  
interface modes*

#### Cabling Requirements (continued)

##### **Mode 2: Continuous (digital)**

- **Connection:** Connections between the 50-pin connectors of the camera and the 100-pin connectors of the Matrox Genesis are as follows:

<b>MATROX GENESIS (100-pin connector)</b>			<b>HITACHI KP-F110 (50-pin connector)</b>	
<i>Pin name</i>	<i>Pin no.</i>		<i>Pin name</i>	<i>Pin no.</i>
DATA, INPUT, 22-	64	←	DB D6-	14
DATA, INPUT, 23+	65	←	DB D7+	15
DATA, INPUT, 23-	66	←	DB D7-	16
DATA, INPUT, 24+	67	←	DB D8+	17
DATA, INPUT, 24-	68	←	DB D8-	18
DATA, INPUT, 25+	69	←	DB D9+	19
DATA, INPUT, 25-	70	←	DB D9-	20

The DCF(s) mentioned in this application note can be found on the MIL, Native Library CD or our FTP site ([ftp.matrox.com](ftp:matrox.com)). The information furnished by Matrox Electronic 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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