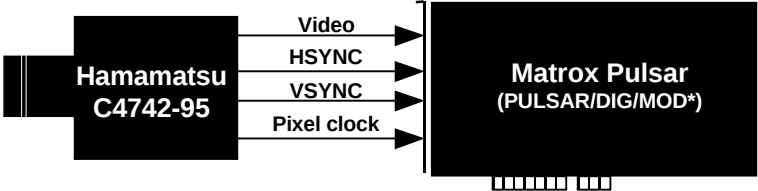
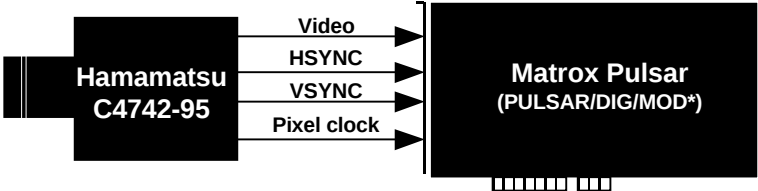


Application Note:
Interfacing non-standard cameras to Matrox Pulsar



Hamamatsu C4742-95

April 04, 1997

Camera Descriptions	• 1280 (H) x 1024 (V). • Digital video output (10-bit, RS-422). • Non-interlaced. • Internal or external exposure control.
Interface Modes	• Continuous mode (Full resolution, Binning)
Camera Interface Briefs	Mode 1: Continuous mode (Full resolution)  * Matrox Pulsar Digital Module Board • 1280 (H) x 1024 (V). • Digital video output (10-bit, RS-422). • Non-interlaced. • Matrox Pulsar receiving RS-422 HSYNC, RS-422 VSYNC, RS-422 Pixel clock, RS-422 Video output. • Pixel clock: 14.75 MHz. • DCF used: P4742DN.DCF Mode 2: Continuous mode (Binning)  * Matrox Pulsar Digital Module Board • 640 (H) x 512 (V). • Digital video output (10-bit, RS-422). • Non-interlaced. • Matrox Pulsar receiving RS-422 HSYNC, RS-422 VSYNC, RS-422 Pixel clock, RS-422 Video output. • Pixel clock: 7.35 MHz. • DCF used: P4742DNB.DCF

Application Note:

Interfacing non-standard cameras to Matrox Pulsar



Hamamatsu C4742-95

April 04, 1997

Camera Interface Details	Mode 1: Continuous mode (Full resolution) • Matrox Pulsar is SLAVE in this mode, in other words the camera sends the RS-422 (10-bit) Video, RS-422 HSYNC, RS-422 VSYNC and RS-422 Pixel clock in continuous mode to Matrox Pulsar. • The frame scan rate equals 9 fps. • The camera’s parameters are set using the C4742-95 controller software. The correct commands for this mode should be set to: ▪ AMD N (Free run) ▪ SHA F (1280 x 1024 mode) ▪ SMD N (Normal read) ▪ NMD N (Normal exposure) Mode 2: Continuous mode (Binning) • Matrox Pulsar is SLAVE in this mode, in other words the camera sends the RS-422 (10-bit) Video, RS-422 HSYNC, RS-422 VSYNC and RS-422 Pixel clock in continuous mode to the Matrox Pulsar. • The frame scan rate equals 18 fps. • The camera’s parameters are set using the C4742-95 controller software. The correct commands for this mode should be set to: ▪ AMD N (Free run) ▪ SHA F (1280 x 1024 mode) ▪ SMD S (Binning read) ▪ NMD N (Normal exposure)																																																		
Cabling Requirements	Mode 1: Continuous mode (Full resolution) • PULSAR/DIG/MOD board required for digital data, syncs and control signals in RS-422 format. • The connections between the PULSAR/DIG/MOD and the 68-pin connector of the camera are as follows: <table><tr><th colspan="3">PULSAR/DIG/MOD (PLS/CBL/OPEN connector)</th><th colspan="2">Hamamatsu C4742-95 (68-pin connector)</th></tr><tr><th><i>Pin name</i></th><th><i>Pin no</i></th><th></th><th><i>Pin name</i></th><th><i>Pin no.</i></th></tr><tr><td>CLOCK, INPUT, -</td><td>63</td><td>←</td><td>PIXCLK -</td><td>1</td></tr><tr><td>CLOCK, INPUT, +</td><td>29</td><td>←</td><td>PIXCLK +</td><td>35</td></tr><tr><td>HSYNC, INPUT, -</td><td>60</td><td>←</td><td>HVALID -</td><td>2</td></tr><tr><td>HSYNC, INPUT, +</td><td>26</td><td>←</td><td>HVALID +</td><td>36</td></tr><tr><td>VSYNC, INPUT, -</td><td>59</td><td>←</td><td>VVALID -</td><td>3</td></tr><tr><td>VSYNC, INPUT, +</td><td>25</td><td>←</td><td>VVALID +</td><td>37</td></tr><tr><td>DATA, INPUT, 0 -</td><td>54</td><td>←</td><td>DB0 -</td><td>4</td></tr><tr><td>DATA, INPUT, 0 +</td><td>20</td><td>←</td><td>DB0 +</td><td>38</td></tr></table> (Pin-out continued)	PULSAR/DIG/MOD (PLS/CBL/OPEN connector)			Hamamatsu C4742-95 (68-pin connector)		<i>Pin name</i>	<i>Pin no</i>		<i>Pin name</i>	<i>Pin no.</i>	CLOCK, INPUT, -	63	←	PIXCLK -	1	CLOCK, INPUT, +	29	←	PIXCLK +	35	HSYNC, INPUT, -	60	←	HVALID -	2	HSYNC, INPUT, +	26	←	HVALID +	36	VSYNC, INPUT, -	59	←	VVALID -	3	VSYNC, INPUT, +	25	←	VVALID +	37	DATA, INPUT, 0 -	54	←	DB0 -	4	DATA, INPUT, 0 +	20	←	DB0 +	38
PULSAR/DIG/MOD (PLS/CBL/OPEN connector)			Hamamatsu C4742-95 (68-pin connector)																																																
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CLOCK, INPUT, -	63	←	PIXCLK -	1																																															
CLOCK, INPUT, +	29	←	PIXCLK +	35																																															
HSYNC, INPUT, -	60	←	HVALID -	2																																															
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Application Note:

Interfacing non-standard cameras to Matrox Pulsar



Hamamatsu C4742-95

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Cabling Requirements (continued)	DATA, INPUT, 1 -	53	←	DB1 -	5
	DATA, INPUT, 1 +	19	←	DB1 +	39
	DATA, INPUT, 2 -	50	←	DB2 -	6
	DATA, INPUT, 2 +	16	←	DB2 +	40
	DATA, INPUT, 3-	49	←	DB3 -	7
	DATA, INPUT, 3 +	15	←	DB3 +	41
	DATA, INPUT, 4	48	←	DB4 -	8
	DATA, INPUT, 4 +	14	←	DB4 +	42
	DATA, INPUT, 5-	47	←	DB5 -	9
	DATA, INPUT, 5 +	13	←	DB5 +	43
	DATA, INPUT, 6-	45	←	DB6 -	10
	DATA, INPUT, 6 +	11	←	DB6 +	44
	DATA, INPUT, 7-	44	←	DB7 -	11
	DATA, INPUT, 7 +	10	←	DB7 +	45
	DATA, INPUT, 8-	43	←	DB8 -	12
	DATA, INPUT, 8 +	9	←	DB8 +	46
	DATA, INPUT, 9-	42	←	DB9 -	13
	DATA, INPUT, 9 +	8	←	DB9 +	47
	USER, INPUT, 0 -	56	←	A/D OVF -	20
	USER, INPUT, 0 +	22	←	A/D OVF +	54
	Mode 2: Continuous mode (Binning)				
	All connections are the same as in Mode 1 : <i>Continuous mode (Full resolution)</i>				

The DCF(s) mentioned in this application note can be found on the MIL and MIL-Lite CD, or our FTP site ([ftp.matrox.com](ftp: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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