Interfacing an Analog Camera with a DOMINO Board

JAI CV-M50C

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Main characteristics

Sensor	Area-scan, monochrome
Image size	736 (H) x 287 (V) Pixels
Line rate	1000 Line per second
Frame rate	50 frames per second
Last update	16 Nov 2011

Configurations

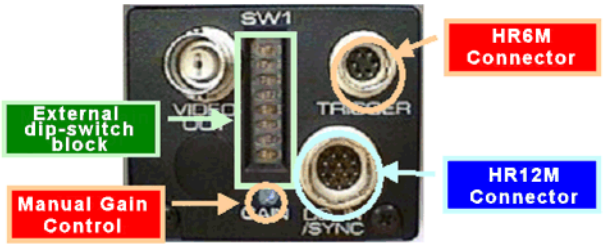
Configuration	CAM file	Description
I25SA	CV-M50C_I25SA.cam	Interlaced Free-Run Scanning, Analog synchronization.
I50SA	CV-M50C_I50SA.cam	Interlaced Free-Run Scanning, Analog synchronization.
P50RA	CV-M50C_P50RA.cam	Asynchronous reset, Grabber controls exposure, Analog synchronization + WEN.
P50RD	CV-M50C_P50RD.cam	Asynchronous reset, Grabber controls exposure, Digital synchronization.
P50SA	CV-M50C_P50SA.cam	Progressive Free-Run Scanning, Analog synchronization.
P50SD	CV-M50C_P50SD.cam	Progressive Free-Run Scanning, Digital synchronization.

Compatible Cables

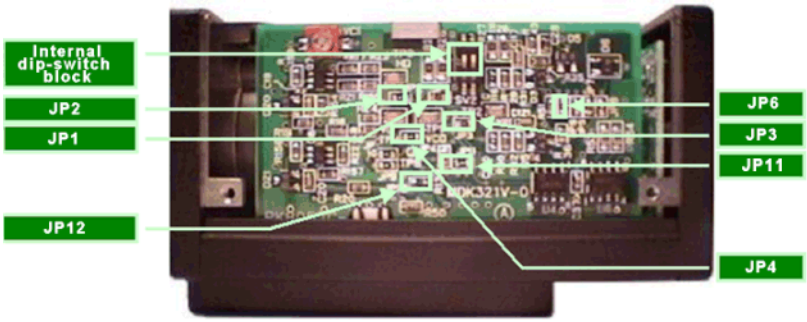
Configuration	Cable name	Designator	Usage
I50SA P50SA P50SD I50RA P50RA P50RD	Single Channel RGC/2	A15-C06-xx	Asynchronous reset Pixel clock HR12M and HR6M connectors

Refer to the MultiCam release notes for supported camera configurations.

Locating Items



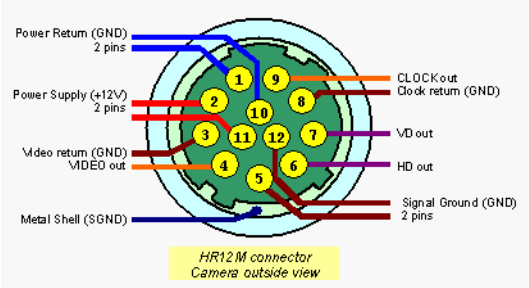
Camera rear view



Camera internal view

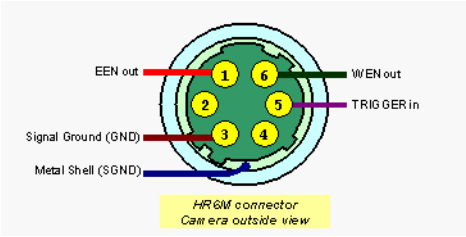
Connection Information

HR12M Pin-out



Valid for all configurations

HR6M Pin-out



Valid for all configurations

Signal Mapping

Cable "Single Channel RGC/2"

Signal @ Camera	Signal @ Board	Configuration		Usage
		P50SA	P50RA I50RA	
VIDEO out	**V1+**	✓	✓	Analog channel 1
VIDEO return GND	**V1-**	✓	✓	
TRIGGER	**RST**	-	✓	Asynchronous reset
WEN	**GATE**	-	✓	Vertical synchronization
+12 V	**+12 V**	✓	✓	Power supply
Power Return GND	**PGND**	✓	✓	
VD in	**VIO**	-	-	Vertical synchronization
HD in	**HIO**	-	-	Horizontal synchronization
Signal Return GND	**GND**	✓	✓	Signal return
Metal Shell SGND	**Metal Shell SGND**	✓	✓	EMC shield
CLOCK out	**CK+**	-	-	-
CLOCK return GND	**CK-**	-	-	-
EEN out	**No connect**	-	-	-

Refer to the camera cable A15-C06-xx for additional useful manufacturing information.

Cable "Single Channel RGC/2"

Signal @ Camera	Signal @ Board	Configuration			Usage
		I50SA	P50SD	P50RD	
VIDEO out	**V1+**	✓	✓	✓	Analog channel 1
VIDEO return GND	**V1-**	✓	✓	✓	
CLOCK out	**CK+**	-	✓	✓	Pixel Clock
CLOCK return GND	**CK-**	-	✓	✓	
VD out	**VIO**	-	✓	-	Vertical synchronization
HD out	**HIO**	-	✓	✓	Horizontal synchronization
TRIGGER	**RST**	-	-	✓	Asynchronous reset
WEN	**GATE**	-	-	✓	Vertical synchronization
+12 V	**+12 V**	✓	✓	✓	Power supply
Power Return GND	**PGND**	✓	✓	✓	
Signal Return GND	**GND**	✓	✓	✓	Signal return
Metal Shell SGND	**Metal Shell SGND**	✓	✓	✓	EMC shield
EEN out	**No connect**	-	-	-	-

Refer to the camera cable A15-C06-xx for additional useful manufacturing information.

Camera Setup

Internal DIP Switch Block

Valid for all configurations

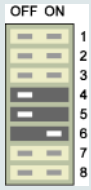
Look	Switch	Setting	Effect
	1	ON	HD is terminated at 75Ω
	2	ON	VD is terminated at 75Ω

External DIP Switch Block

Valid for configuration I50SA

Look	Switch	Setting	Effect
	1	ON/OFF	Select exposure time as indicated below
	2	ON/OFF	
	3	ON/OFF	
	4	OFF	Normal mode
	5	ON/OFF	Field/Frame accumulation as required by application
	6	OFF	Interlaced mode
	7	ON/OFF	Gamma compensation as required by application
	8	ON/OFF	Manual gain/automatic gain as required by application

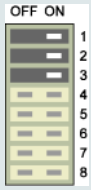
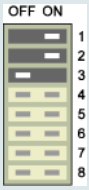
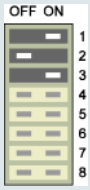
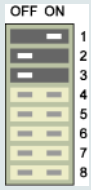
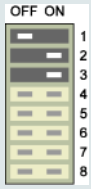
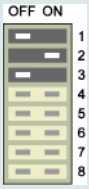
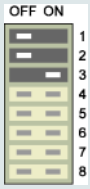
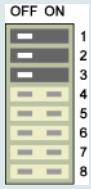
Valid for configurations P50SA, P50SD

Look	Switch	Setting	Effect
	1	ON/OFF	Select exposure time as indicated below
	2	ON/OFF	
	3	ON/OFF	
	4	OFF	Normal mode
	5	OFF	Field accumulation
	6	ON	Non-interlaced mode
	7	ON/OFF	Gamma compensation as required by application
	8	ON/OFF	Manual gain/automatic gain as required by application

Valid for configurations P50RA, P50RD

Look	Switch	Setting	Effect
	1	OFF	Exposure controlled by reset pulse width
	2	OFF	
	3	OFF	
	4	ON	External trigger mode
	5	OFF	Field accumulation
	6	ON	Non-interlaced mode
	7	ON/OFF	Gamma compensation as required by application
	8	OFF	Manual gain

Establishing exposure time for I25SA, P50SA, P50SD

			
1/10000 s 100 µs	1/4500 s 222.22 µs	1/2000 s 500 µs	1/1000 s 1 ms
			
1/500 s 2 ms	1/250 s 4 ms	1/100 s 10 ms	1/50 s 20 ms

Internal Jumpers

Valid for configurations I50SA, P50SA

Jumper	Required	Factory	Meaning
JP1	**Short**	Short	Enable HD as camera input
JP2	**Open**	Open	
JP3	**Short**	Short	Enable VD as camera input
JP4	**Open**	Open	
JP6	**Open**	Open	Long time integration is not enable
JP12	**Short**	Short	Normal mode
JP11	**Open**	Open	No Pixel Clock

JP6 have to be altered from the factory condition.

Valid for configurations P50RA

Jumper	Required	Factory	Meaning
JP1	**Short**	Short	Enable HD as camera input
JP2	**Open**	Open	
JP3	**Short**	Short	Enable VD as camera input
JP4	**Open**	Open	
JP6	**Open**	Open	Long time integration is not enable
JP12	**Open**	Short	Pulse width control
JP11	**Open**	Open	No Pixel Clock

JP12 have to be altered from the factory condition.

Valid for configuration P50SD

Jumper	Required	Factory	Meaning
JP1	**Open**	Short	Enable HD as camera input
JP2	**Short**	Open	
JP3	**Open**	Short	Enable VD as camera input
JP4	**Short**	Open	
JP6	**Open**	Open	Long time integration is not enable
JP12	**Short**	Short	Normal mode
JP11	**Short**	Open	Enable Pixel Clock as camera output

JP1, JP2, JP3, JP4, JP11 have to be altered from the factory condition.

Valid for configuration P50RD

Jumper	Required	Factory	Meaning
JP1	**Open**	Short	Enable HD as camera input
JP2	**Short**	Open	
JP3	**Short**	Short	Enable VD as camera input
JP4	**Open**	Open	
JP6	**Open**	Open	Long time integration is not enable
JP12	**Open**	Short	Pulse width control
JP11	**Short**	Open	Enable Pixel Clock as camera output

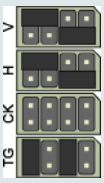
JP1, JP2, JP11, JP12 have to be altered from the factory condition.

Board Jumpers Setup

The Domino Iota and Domino Alpha 2 jumper blocks should be configured as follows.

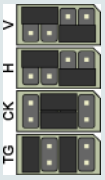
Valid for configurations I50SA, P50SA, P50RA, P50SM_L, I50RA

Settings for the jumper block facing the connector the camera is linked to

Jumper block	MultiCam parameter	Value	Meaning
	JumperV	TTL	The pin 4 (VIO) and pin 5 (EXP) of the connector feeding the channel can be used as input or output in TTL format.
	JumperH	TTL	The pin 14 (HIO) and pin 15 (GATE) of the connector feeding the channel can be used as input or output in TTL format.
	JumperCK	EMPTY	Camera clock: None. Pin 9 and pin 10 of the channel connector are unused.
	JumperL1	DT	The video lane 1 is sensed as a differential 75 W terminated analog signal applied at pin 1 (V1+) and pin 2 (V1-).
	JumperL2	DT	The video lane 2 is sensed as a differential 75 W terminated analog signal applied at pin 11 (V2+) and pin 12 (V2-).

Valid for configurations P50SD, P50RD

Settings for the jumper block facing the connector the camera is linked to

Jumper block	MultiCam parameter	Value	Meaning
	JumperV	TTL	The pin 4 (VIO) and pin 5 (EXP) of the connector feeding the channel can be used as input or output in TTL format.
	JumperH	TTL	The pin 14 (HIO) and pin 15 (GATE) of the connector feeding the channel can be used as input or output in TTL format.
	JumperCK	CKDPOS	The channel receives a non-inverted differential pixel clock from the camera through pin 9 (CK+) and pin 10 (CK-).
	JumperL1	DT	The video lane 1 is sensed as a differential 75 W terminated analog signal applied at pin 1 (V1+) and pin 2 (V1-).
	JumperL2	DT	The video lane 2 is sensed as a differential 75 W terminated analog signal applied at pin 11 (V2+) and pin 12 (V2-).