	Subject:	Basler L304kc with mvTITAN-CL	Created	Last change
			17.01.05	17.01.05
Application Note	Project:	Camera adaption	Version 1.0	

Overview

Camera Basler L304kc

Running modes

Freerunning
 ExSync mode

Resolution

Horizontal 3 x 4080 pixel
 Bits per Pixel 3x8 bpp

Timings

Pixel clock 30 MHz
 Horizontal up to 7.2 kHz

MATRIX VISION GmbH Frame Grabber

Typ	mvTITAN-CL				
Line Enable by	camera	<input checked="" type="checkbox"/>	Frame Grabber	<input checked="" type="checkbox"/>	external <input checked="" type="checkbox"/>
Frame Enable by	camera	<input type="checkbox"/>	Frame Grabber	<input type="checkbox"/>	external <input type="checkbox"/>
Trigger by	external	<input type="checkbox"/>	Frame Grabber	<input type="checkbox"/>	

Software

mvAcquireControl
 mvIMPACT Go!
 Other [e.g. LabView™, Halcon, etc.]

Imprint

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This document requires the general knowledge of the usage and the technical data of the used frame grabber, camera and application.

Information in this document is subject to change without notice and does not represent a commitment on the part of MATRIX VISION GmbH.

Email: info@matrix-vision.de.

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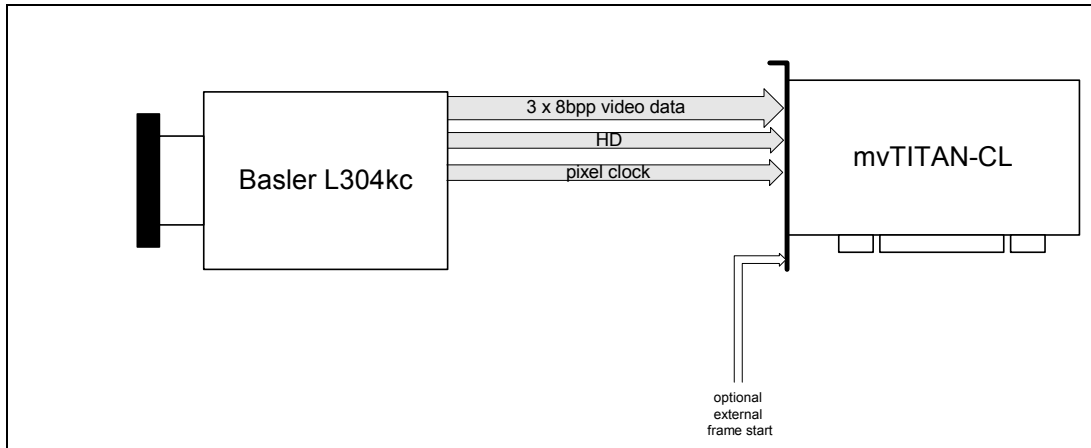
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Freerunning Mode

Camera generates its own pixel clock and line start signal and sends the lines with its synchronization signals to the mvTITAN-CL.


Signal map



Pin connection (CameraLink™ base standard)

MDR 26 pin		MDR 26 pin
Pin 1	inner Shield	Pin 26
Pin 2	Tx Data 0-	Pin 25
Pin 3	Tx Data 1-	Pin 24
Pin 4	Tx Data 2-	Pin 23
Pin 5	XCLK-	Pin 22
Pin 6	Tx Data 3-	Pin 21
Pin 7	SerTC+	Pin 20
Pin 8	SerTFG-	Pin 19
Pin 9	CC1-	Pin 18
Pin 10	CC2+	Pin 17
Pin 11	CC3-	Pin 16
Pin 12	CC4+	Pin 15
Pin 13	inner Shield	Pin 14
Pin 14	inner Shield	Pin 13
Pin 15	Tx Data 0+	Pin 12
Pin 16	Tx Data 1+	Pin 11
Pin 17	Tx Data 2+	Pin 10
Pin 18	XCLK+	Pin 9
Pin 19	Tx Data 3+	Pin 8
Pin 20	SerTC-	Pin 7
Pin 21	SerTFG+	Pin 6
Pin 22	CC1+	Pin 5
Pin 23	CC2-	Pin 4
Pin 24	CC3+	Pin 3
Pin 25	CC4-	Pin 2
Pin 26	inner Shield	Pin 1

Recommended cable for this mode from MATRIX VISION GmbH:
 KSCL 03.0, length 3 meters
 KSCL 05.0, length 5 meters
 KSCL 10.0, length 10 meters

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Camera definition

```

/* ----- L304kc -----
DefCamType           "L304kc"  VM_DIG24 NONINTERLACED 25 8000 30000 PCLK_EXTERN
DefCamAcquireSetup   "L304kc"  STANDARD NOT_INV NEXT_FIELD
DefCamAnalogParam    "L304kc"  AC 1 0 0 1200
DefHorizontalUnit    "L304kc"  PIXEL
DefVerticalUnit      "L304kc"  LINES
DefCamHorizontalAcquire "L304kc"  1L 4080L 1
DefCamVerticalAcquire "L304kc"  0L 255L 1
DefCamClamp          "L304kc"  100L 5L
DefCamZero           "L304kc"  130L 5L
DefCamFieldGate      "L304kc"  300L 400L
DefCamGenerateVSync  "L304kc"  0L 1L

```

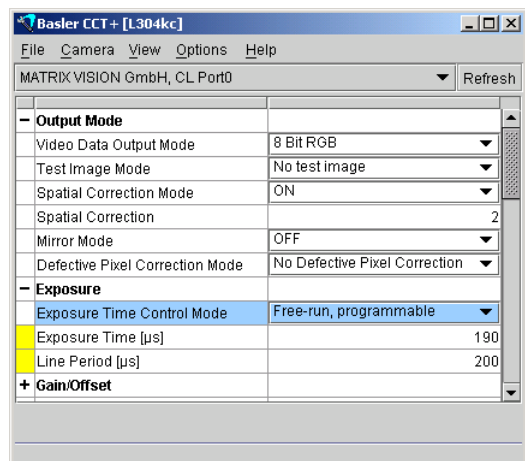
Camera settings set by software

To set up the camera it is necessary to install the Basler CameraControl Tool supported by Basler-VC. You will find the latest version on the homepage www.baslerweb.de of Basler-VC.

Please be sure that the mvTITAN-CL is currently open before starting the CCT+ so that the serial communication port of the CameraLink™ interface is available. If you are using one mvTITAN board in the system and connect the camera to the first input choose *clserMV, Port 0* for communication port.

The camera must be set to the following:

- Video Data Output must be set to *8Bit RGB* to send the 3 color components to parallel output. So the mvTITAN-CL will acquire 24bpp images.
- Test image must be *No test image*
- Exposure mode must be *Free-run, programmable*



To set the Spatial Correction use CCT+ and set the *Spatial Correction* value matching to your current system speed. No processing function on PC side is needed.

General Remarks


Use the camera only in 3x8bit RGB mode with colormode COL_RGB24. It is not possible to use this camera with COL_RGB32 because this will exceed the PCI's bandwidth (4x30MB/s = 120MB/s which no motherboard can handle).

It is needed to optimize the internal memory management of mvTITAN-CL. To do this change the used INI-file like the following:

```

...
[TITAN]
...
SetInputBuffer 40 120000
SetOutputBuffer 1 0
...
InitBoard
...


```

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Remarks to mvConfig, mvAcquireControl and mvIMPACT

mvConfig is always using 32bpp for color images. Because of the bandwidth fact described above you cannot acquire complete images with mvConfig in the 3x8bit RGB mode and COL_RGB32. In general It is possible to acquire images which are enough to get an impression of the images the camera takes but the images won't be complete. In this case remark the memory optimization as described above. If you need the complete image data it is necessary to use a program which uses the COL_RGB24 colormode.

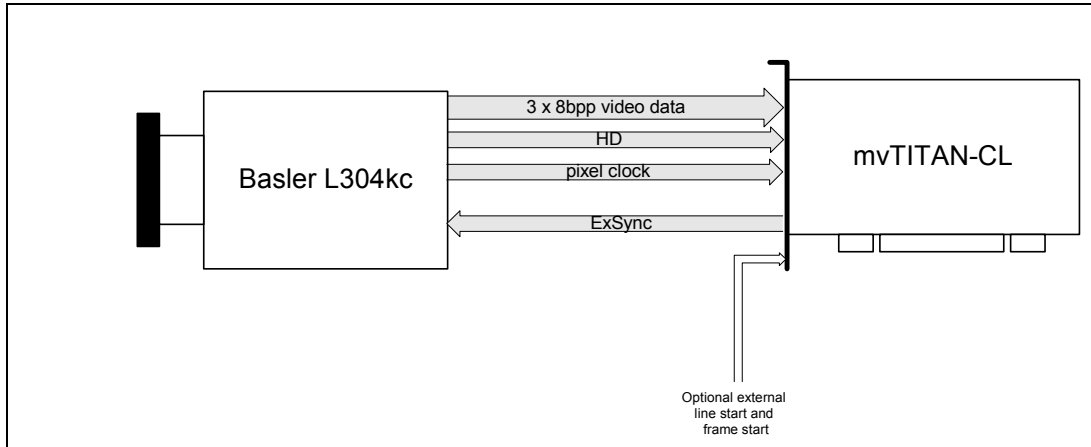
The mvAcquireControl SDK and mvIMPACT SDK can work with COL_RGB24 so that you can build applications based on mvAcquireControl SDK or mvIMPACT SDK with acquiring complete images.

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ExSync mode

The mvTITAN-CL generates the line sync signal (ExSync) with which the camera is synchronized. The camera acquires one line and sends the video data, the pixel clock and the HD to the mvTITAN-CL. The line sync signal can either be generated by the mvTITAN-CL or an external line start signal can be passed through to the camera with or without modification.


Signal map



Pin connection (CameraLink™ base standard)

MDR 26 pin			MDR 26 pin	
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Pin 3		Tx Data 1-	Pin 24	
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Pin 26		inner Shield	Pin 1	

Recommended cable for this mode from MATRIX VISION GmbH:
KSCL 03.0, length 3 meters

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KSCL 05.0, length 5 meters
KSCL 10.0, length 10 meters

Camera definition

```

/* ----- L304kc -----
DefCamType "L304kc" VM_DIG24 NONINTERLACED 25 8000 30000 PCLK_EXTERN
DefCamAcquireSetup "L304kc" STANDARD NOT_INV NEXT_FIELD
DefCamAnalogParam "L304kc" AC 1 0 0 1200
DefHorizontalUnit "L304kc" PIXEL
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```

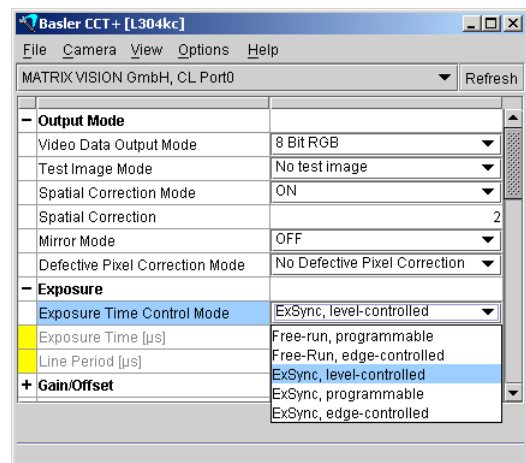
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The camera must be set to the following:

- Video Data Output must be set to *8Bit RGB* to send the 3 color components to parallel output. So the mvTITAN-CL will acquire 24bpp images.
- Test image must be *No test image*
- Exposure mode must be either *ExSync, level-controlled, ExSync-programmable* or *ExSync, edge-controlled*. What kind of ExSync mode is useful for you is defined by your application.



To set the Spatial Correction use CCT+ and set the *Spatial Correction* value matching to your current system speed. No processing function on PC side is needed.

Setup line start signal


The line start signal can either be generated by the mvTITAN-CL itself or can be used from an external signal which must be supplied to the Sync-In pins of connector J8.

To control the line start signal you have to use the function `mvSetExpose()` of the Standard-SDK or the `Expose` register of `mvAcquireControl`.

More about connections and programming you will find in manual of mvTITAN-CL.

General Remarks

Use the camera only in 3x8bit RGB mode with colormode `COL_RGB24`. It is not possible to use this camera with `COL_RGB32` because this will exceed the PCI's bandwidth ($4 \times 30 \text{ MB/s} = 120 \text{ MB/s}$ which no motherboard can handle).

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