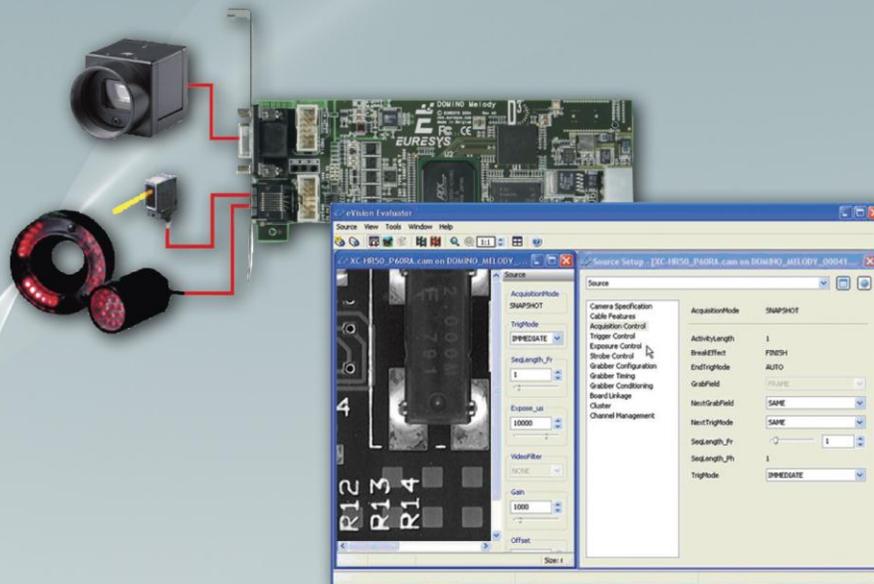


MultiCamTM

Release Notes for MultiCam 6.8.1
September 9, 2013



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MultiCam Version Details

Windows	Linux
6.8.1.2010	6.8.1.2011

New Feature

GRABLINK series

White Balance Operator available on Grablink Base, Grablink DualBase, Grablink Full and Grablink Full XR

A White Balance Operator providing automatic (*WBO_Mode=ONCE*) and manual (*WBO_Mode=MANUAL*) calibration methods is now available for Bayer CFA and RGB color cameras on Grablink Base, Grablink DualBase, Grablink Full and Grablink Full XR boards.

Refer to the *MultiCam Boards Documentation* for detailed information.

This new feature is available since MultiCam 6.8.1.1986.

Improvement

MultiCam Studio

Automatic White Balance ROI available in the White Balance Panel when using cropping

On Grablink boards providing the Automatic White Balance feature (i.e. *WBO_Mode=ONCE* or *WBO_Mode=CONTINUOUS*), the AWB ROI is now also displayed in the image when cropping is enabled (i.e. *GrabWindow=MAN*) and when it is fully included inside the cropped window.

This allows selecting the AWB Area more easily.

This improvement is available since MultiCam 6.8.1.2010.

Important Notices

MultiCam Installer

Due to a recent change in the Windows Certificate Chain used for signing MultiCam drivers, a Windows update (KB931125) is required to be able to install MultiCam 6.8.1.2010 and later under Windows XP. Without this update, the MultiCam driver installation will fail with the following error:

DriverPackageInstaller returned status 0x800b0100 – No signature was present in the subject.

You can download this Windows update using the following URL:

<http://www.microsoft.com/en-us/download/details.aspx?id=35945>

PCI and PCI Express bus compatibility note for Picolo, Picolo PCIe, Picolo Junior 4, Picolo Pro 2, Picolo Pro 2 PCIe, Picolo Tetra, Picolo Tymo

To ensure correct operation, when using one of the Picolo cards listed above, the response time (also called latency) of the PCI or PCIe bus on the motherboard where the card is plugged must be low enough. If this is not the case, randomly distributed black lines may appear on the image acquired. They are caused by the long response time of the PCI or PCIe bus, leading to a condition known as "FIFO overrun".

The requirements for correct operation depend on the color format and the buffer pitch used. Both are set by the application using the Picolo through MultiCam parameters.

- 1) When the color format is RGB24 (this is default setting in MultiCam Studio), the allowed bus latency is 11 us. (*This is the least favorable case.*)
- 2) When the color format is RGB24 and the MultiCam buffer pitch is set to 4096, the allowed bus latency is 17 us.
- 3) When the color format is YUV422 (packed) or RGB16 and the MultiCam buffer pitch is set to 4096, the allowed bus latency is 29 us.
- 4) When the color format is YUV411 (packed) and the MultiCam buffer pitch is set to 4096, the allowed bus latency is 37 us. (*This is the most favorable case.*)

If you experience this problem, try changing the application parameters towards a more favorable case.

BoardTopology value change for cameras with a pixel clock below 30 MHz on Grablink Base, Grablink DualBase and Grablink Full boards

Since MultiCam 6.7.2.1677, to be able to use cameras with a pixel clock below 30 MHz on Grablink Base, Grablink DualBase and Grablink Full, an application must set the *BoardTopology* board parameter to the *MONO_SLOW* (Grablink Base and Grablink Full) or *DUO_SLOW* (Grablink DualBase) value.

Allowed values for the Camera and CamConfig parameters

On Grablink Base, Grablink DualBase and Grablink Full, the allowed value for the *Camera* parameter is *MyCameraLink* and the allowed values for the *CamConfig* parameters are *PxxSC*, *PxxRC*, *PxxRG*, *LxxxxSC*, *LxxxxSP*, *LxxxxRC*, *LxxxxRP*, *LxxxxRG* and *LxxxxRG2*. All CamFiles have been adapted accordingly and can be downloaded from the Euresys website using the following URL: <http://www.euresys.com/CamFiles/CamFile.asp>. Other boards are not concerned but it is however recommended to use the latest available CamFiles in each case.

Buffer size limits for MultiCam surfaces

Under Windows, the maximum buffer size allowed per MultiCam surface depends on the Windows version:

- about 64MB under Windows XP x86;
- about 32MB under Windows XP x64;
- about 2GB under Windows Vista and Windows Server 2008;
- about 4GB under Windows 7 and Windows Server 2008 R2.

If a MultiCam surface exceeds those limits, MultiCam returns *MC_IO_ERROR* at channel activation.

Memory allocation

The recommended method allocating memory to the surfaces of MultiCam is the "Automatic method" since this is the only method that is always applicable.

The usage of the "manual" memory allocation method" is restricted to the following cases:

- On "Windows 32-bit without PAE" systems, without any further restrictions
- On boards having 64-bit DMA addressing capability, without any further restrictions
- On Linux operating systems, without any further restrictions: The Linux kernel provides a buffering system ensuring that the DMA operates always in the lowest 4 GB of physical addressing space.

The "manual" method is prohibited when:

- The board has no 64-bit DMA capability and...
- The system has physical memory beyond the 4 GB address boundary and...
- The operating systems is "Windows x86 with PAE" or "Windows x86-64"

Since MultiCam 6.5.1, MultiCam returns the "MC_INVALID_SURFACE" error on channel activation if the manual memory allocation method is used in a prohibited case.

Environments

Supported OS

Windows

OS Version	Additional Information	
Microsoft Windows XP	x86 (32-bit)	Service Pack 3
	x86-64 (64-bit)	Service Pack 2
Microsoft Windows Vista	x86 (32-bit)	Service Pack 2
	x86-64 (64-bit)	
Microsoft Windows Server 2008	x86 (32-bit)	Service Pack 2
	x86-64 (64-bit)	
Microsoft Windows 7	x86 (32-bit)	Service Pack 1
	x86-64 (64-bit)	
Microsoft Windows Server 2008 R2	x86-64 (64-bit)	Service Pack 1

Linux

MultiCam is designed to be more distribution-independent on x86 and x64 platforms. It is expected to work with a wide range of distributions and has been additionally tested on the 2.6.36 kernels in this release. Support will only be provided under Red Hat Enterprise Linux 5.2, which is the validated distribution.

OS Version	Additional Information	
Red Hat Enterprise Linux 5.2	x86 (32-bit)	Kernel 2.6.18-92
	x86-64 (64-bit)	

Supported Programming Interfaces

MultiCam 6.8.1 is supplied as:

- A **32-bit binary library** (Windows and Linux) designed to be used with ISO-compliant C/C++ compilers for the development of 32-bit (x86) applications.
- A **64-bit binary library** (Windows and Linux) designed to be used with ISO-compliant C/C++ compilers for the development of 64-bit (x86-64) applications.
- **DirectShow filters** (Windows only) designed to be used with 32-bit (x86) Microsoft Visual C++ compilers for the development of 32-bit (x86) applications.

MultiCam 6.8.1 should be usable with any development tool that supports at least one of these interfaces.

Please note that these programming interfaces also cover most of the available development tools used with other languages.

The previously available **ActiveX controls library** is not recommended anymore on Windows. It is only available for backwards compatibility purposes. The recommended way of using MultiCam with Microsoft Visual Basic 6 is to call the C API directly. A sample program demonstrating it is available beside the driver on the MultiCam download area of the Euresys website.

The previously available **.NET API** is not recommended anymore on Windows. It is only available for backwards compatibility purposes and is not available for 64-bit development. The recommended way of using MultiCam with a .NET language is to call the C API directly. A sample program demonstrating it is available beside the driver on the MultiCam download area of the Euresys website.

Supported Boards

All boards support 32-bit operating systems as well as 32-bit DMA. The following table lists the support of 64-bit operating systems as well as the support of 64-bit DMA for each board.

PICOLO series	64-bit	64-bit DMA	DOMINO series	64-bit	64-bit DMA	GRABLINK series	64-bit	64-bit DMA
Picolo	✓	-	Domino Iota	-	-	Grablink Value	✓	-
Picolo PCIe	✓	-	Domino Alpha 2	-	-	Grablink Value cPCI	✓	-
Picolo Junior 4	✓	-	Domino Melody	✓	-	Grablink Expert 2	✓	-
Picolo Pro 2	✓	-	Domino Harmony	✓	-	Grablink Expert 2 cPCI	✓	-
Picolo Pro 2 PCIe	✓	-	Domino Symphony	✓	-	Grablink Avenue	✓	-
Picolo Pro 3	✓	-	Domino Symphony PCIe	✓	-	Grablink Express	✓	-
Picolo Tetra	✓	-				Grablink Quickpack ColorScan	✓	-
Picolo Tymo	✓	-				Grablink Quickpack CFA	✓	-
Picolo Alert	✓	-				Grablink Quickpack CFA PCIe	✓	-
Picolo Alert PCIe	✓	-				Grablink Full	✓	✓
Picolo Alert Compact	✓	-				Grablink DualBase	✓	✓
Picolo Alert Compact PCIe	✓	-				Grablink Base	✓	✓
Picolo Alert RC	✓	-				Grablink Full XR	✓	✓
Picolo Alert RCRB	✓	-						
Picolo Alert RCRB PCIe	✓	-						
Picolo Diligent	✓	-						
Picolo Diligent Plus	✓	-						

Solved Issues

GRABLINK series

WBO_Mode parameter value set back to default after changing ColorFormat on Bayer CFA cameras

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When *WBO_Mode* is set to *ONCE* or *MANUAL*, its value is automatically set back to the default value (i.e. *NONE*) when Bayer decoding is enabled or disabled afterwards (through the *ColorFormat* parameter).

This malfunction is solved since MultiCam 6.8.1.2010.

Different OffsetX_Px values lead to different Automatic White Balance gains when using cropping

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When using the Automatic White Balance with a cropped window (i.e. *WBO_Mode=ONCE* and *GrabWindow=MAN* at the same time), the *WBO_GainR*, *WBO_GainG* and *WBO_GainB* gains computed by the Automatic White Balance change when the *OffsetX_Px* value is changed.

This malfunction is solved since MultiCam 6.8.1.2010.

Crash using Automatic White Balance and Cropping with AWB area outside of the cropped window

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When using the Automatic White Balance with a cropped window (i.e. *WBO_Mode=ONCE* and *GrabWindow=MAN* at the same time), an application crash may occur if the AWB area is not located inside the cropped window.

This malfunction is solved since MultiCam 6.8.1.2010.

Last column of acquired images may contain invalid data using Bayer CFA to RGB conversion

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When using Bayer CFA to RGB conversion, the last column of acquired images may contain invalid data, depending on the resolution of the Bayer camera used.

This malfunction is solved since MultiCam 6.8.1.1986.

Cropping wrongly available for cameras using the 2XE-2YE tap geometry

Affected boards: Grablink Full, Grablink Full XR

The cropping feature (i.e. *GrabWindow=MAN*), which is incompatible with the 2XE-2YE tap geometry, is wrongly available for this configuration.

This malfunction is solved since MultiCam 6.8.1.1986.

Channel sometimes blocked in the ACTIVE state when Camera Link® clock disappears then reappears

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When the Camera Link® clock of a camera is lost and then reappears for some reason, the MultiCam channel can sometimes remain indefinitely blocked in the *ACTIVE* state. When this happens, it has to be manually set to *IDLE*.

This malfunction is solved since MultiCam 6.8.1.1986.

WBO_GainR, WBO_GainG and WBO_GainB values not updated when WBO_Mode=ONCE**Affected board:** Grablink Quickpack CFA (PCIe)

When using the Automatic White Balance with *WBO_Mode=ONCE*, the values of the *WBO_GainR*, *WBO_GainG* and *WBO_GainB* parameters are not updated. Nevertheless, gains computed by the Automatic White Balance are applied by the White Balance Operator.

This malfunction is solved since MultiCam 6.8.1.1986.

Known Issues

GRABLINK series

Color planes permutations using horizontal flipping with 3 x 10-bit and 3 x 12-bit RGB color cameras**Affected boards:** Grablink Full, Grablink Full XR

When enabling horizontal flipping (i.e. *ImageFlipX=ON*) with 3 x 10-bit and 3 x 12-bit RGB color cameras, a permutation between R, G and B color planes occurs for some values of the *Hactive_Px* parameter.

As a workaround, the value of the Hactive_Px parameter must be decreased until the problem disappears.

Invalid image borders when using Cropping with a Bayer CFA camera**Affected boards:** Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When using a cropped window with a Bayer CFA camera, the 4 borders of acquired images (i.e. the first and last lines as well as the first and last columns) contain invalid data.

Line-scan acquisitions with PageLength_Ln=1 may lead to segmentation fault or kernel panic under Linux**Affected boards:** Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When performing line-scan acquisitions with *PageLength_Ln* set to 1, some segmentation fault or kernel panic issues have been observed in rare cases, depending on the Linux distribution used.

As a workaround, if the problem occurs, setting PageLength_Ln to a value greater than 1 will make it disappear.

MC_SIG_END_ACQUISITION_SEQUENCE signal is generated twice when EndTrigEffect=FOLLOWINGLINE**Affected boards:** Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

When using the *LONGPAGE* acquisition mode with *EndTrigMode=HARD* and *EndTrigEffect=FOLLOWINGLINE*, the *MC_SIG_END_ACQUISITION_SEQUENCE* signal is generated twice when enabled.

As a workaround, you can either use EndTrigEffect=PRECEDINGLINE or handle the MC_SIG_END_ACQUISITION_SEQUENCE signal twice.

Misbehaviour of the trigger decimation unit when using both software and hardware triggers together**Affected boards:** Grablink Quickpack CFA PCIe, Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

The trigger decimation unit does not take the occurrence of software triggers into account for the decimation counter. This may lead to misbehaviour especially when the first acquisition phase has been software triggered. In this case the trigger decimation unit is still continuing to consider the value of *TrigDelay_Pls* parameter instead of *NextTrigDelay_Pls* parameter. The *NextTrigDelay_Pls* parameter is only taken into account from the second hardware initiated trigger event.

As a workaround you can either avoid using software triggers with this feature or use the same value for both TrigDelay_Pls and NextTrigDelay_Pls parameters.

Synchronized acquisition broken on slave channels for *AcquisitionMode=LONGPAGE*, *BreakEffect=FINISH* and *EndTrigMode=HARD* when master channel is stopped before hardware end trigger

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

Synchronized acquisition using two or more line-scan cameras connected on several boards is broken on slaves when channels are restarted in the following conditions:

- *AcquisitionMode = LONGPAGE*;
- *BreakEffect = FINISH*;
- *EndTrigMode = HARD*;
- The master channel is set to the *IDLE* state before receiving the hardware end trigger and before setting the slave channels to the *IDLE* state.

As a workaround, this problem can be avoided by setting all slave channels to *IDLE* before setting the master channel to *IDLE*.

No acquisition failure event when *LineCaptureMode* is *PICK* or *ADR*

Affected boards: Grablink Avenue, Grablink Express, Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

No acquisition failure event is issued when needed if *LineCaptureMode* is *PICK*. Moreover, on Grablink Avenue and Grablink Express, no acquisition failure event is issued when needed if *LineCaptureMode* is *ADR*.

***LineTriggerViolation* wrongly incremented at channel (de)activation when using the rate converter**

Affected boards: Grablink Avenue, Grablink Express, Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

The *LineTriggerViolation* parameter is wrongly incremented when a channel is activated or deactivated if *LineRateMode* is set to *CONVERT*.

The upper limit of *Hactive_Px* is 65504 instead of 65535

Affected boards: Grablink Base, Grablink DualBase, Grablink Full, Grablink Full XR

The upper limit for the *Hactive_Px* parameter is currently 65504 instead of 65535 (this value depends on the *TapConfiguration* parameter value). When setting a value greater than 65504, MultiCam returns *MC_RANGE_ERROR*.

Cannot change connector for a camera without creating the channel again

Affected board: Grablink DualBase

If a channel is first created on the A connector, no acquisition will be performed by just setting the *Connector* parameter to the B value when changing the camera from the A connector to the B connector. In that case, the channel must be created again using the B connector.

Inoperative timeout for *clSerialRead* and *clSerialWrite* functions of the Camera Link® serial linux library

Affected boards: all Grablink boards

Under linux, the *clSerialRead* and *clSerialWrite* functions of the *libclseremc.so* library do not take the timeout passed as fourth argument into account. These functions simply return *CL_ERR_NO_ERR* immediately instead of *CL_ERR_TIMEOUT* when no data could be read or written within the specified timeout.

Inoperative VIDEO acquisition mode when *ActivityLength* is not equal to 1

Affected boards: Grablink Avenue, Grablink Express

If *ActivityLength* is not equal to 1 when *AcquisitionMode=VIDEO*, the frame grabber only acquires the first sequence of images (i.e. the number of images defined by the *SeqLength_Fr* parameter) then remains in the *ACTIVE* state without acquiring any additional image.

Bad behaviour of WindowX_Px

Affected boards: Grablink Avenue, Grablink Express

When changing the *WindowX_Px* parameter more than once, the system has to be rebooted to be able to activate the channel.

As a workaround, don't change the WindowX_Px parameter more than once.

Automatic White Balance gains suffer from a 1/1000th error when multiple of 1000

Affected board: Grablink Quickpack CFA (PCIe)

The gains computed by the Automatic White Balance (i.e. when *WBO_Mode=ONCE* or *CONTINUOUS*) suffer from a systematic error of 1/1000th when they are a multiple of 1000. For instance, *WBO_GainR*, *WBO_GainG* and *WBO_GainB* will always be 1999 instead of 2000, 2999 instead of 3000, and so on.

There is no workaround.

Grablink Quickpack CFA may not be seen by MultiCam when there are many boards in the system

Affected board: Grablink Quickpack CFA (PCIe)

When Grablink Quickpack CFA (PCIe) is present beside other Grablink boards in the computer, it may not be seen by MultiCam after subsequent reboots following the installation. This occurs only with Linux operating systems.

There is no workaround.

Invalid strobe duration with ITTL

Affected board: Grablink Expert 2

The strobe signal provided by the ITTL I/O line is about 40-50 μ s larger than expected.

As a workaround, reduce the duration of the strobe by 50 μ s when using ITTL lines.

Wrong serial port ID returned by Camera Link® serial library

Affected board: Grablink Express

The "Grablink Avenue" port ID is returned instead of "Grablink Express" when calling the *clGetSerialPortIdentifier* function of the Camera Link® serial library with a Grablink Express.

There is no workaround.

Inoperative StartExposure signal for subsequent images in a sequence

Affected boards: all Grablink boards

When acquiring a sequence of 2 or more images, the *MC_SIG_START_EXPOSURE* signal is only issued for the first acquired image.

There is no workaround.

DOMINO series**Virtual COM port not removed when uninstalling MultiCam**

Affected board: Domino Symphony (PCIe)

A virtual COM port that has been set through the *SerialControl<A,B,C,D>* parameter is not removed when the MultiCam driver is uninstalled.

As a workaround, restart Windows after uninstalling MultiCam and the virtual COM port will be removed.

Invalid strobe pulse when using PreStrobe_us parameter

Affected boards: Domino Melody, Domino Harmony, Domino Symphony (PCIe)

The pre-strobe function is not functional.

There is no workaround.

PICOLO series

ImageSizeX is 702 instead of 704 when Standard=PAL and PixelTiming=BROADCAST

Affected boards: **Picolo, Picolo Pro 2, Picolo Pro 3, Picolo Junior 4, Picolo Tetra, Picolo Tymo**

When *Standard=PAL* and *PixelTiming=BROADCAST*, *ImageSizeX* is wrongly set to 702 pixels instead of 704. As a workaround, manually set *ImageSizeX* to the correct value.

InvalidCastException when retrieving Surface associated with SignalInfo instance

Affected board: **Picolo Alert (PCIe)**

When running a .NET application, an *InvalidCastException* exception can be raised while retrieving the MultiCam callback, the Surface associated to a *SignalInfo* instance. Thus, when executing the following statement:
`Surface currentSurface = signalInfo.Surf.`

There are two workarounds:

1. Check if the image can be discarded. This exception can be caught in the customer application and the image can be discarded.
2. Repeatedly call `Surface currentSurface = signalInfo.Surf` statement until no exception is raised.

Example:

```
bool ok = false;
while(!ok)
{
    try
    {
        surface = signalInfo.Surf;
        ok = true;
    }
    catch(InvalidCastException e)
    {
    }
}
```

MultiCam

Left-over binaries after uninstalling MultiCam from Windows 7

Since Windows 7, some MultiCam driver binaries located in `C:\Windows\system\leuresys\multicam` are left on the system after uninstalling MultiCam. Deleting them manually is allowed once MultiCam has been uninstalled.

Windows Security warning when installing MultiCam on Windows Vista or Windows Server 2008

Under undetermined circumstances, Windows Vista and Windows Server 2008 are unable to verify the publisher in the MultiCam driver signatures and display a Windows Security warning to the user.

If this occurs, just accept to install the driver anyway and the installation process will go on.