



# FlashBus<sup>MX</sup><sup>®</sup>

PCI Video Frame Grabbers

## High-performance frame grabber with non-standard camera support

The FlashBus MX line of high-speed, low-cost, PCI bus-mastering video frame grabbers is designed to capture high-resolution RGB and monochrome images to system or display memory in real time. The boards support progressive scan cameras with 60 frames per second image capture. FlashBus MX-132 offers one RS-170 input. The FlashBus MX-132R accepts RGB. And the powerful FlashBus MX-332 accommodates RGB or three simultaneous high-resolution monochrome video inputs.

### FlashBus MX Family Key Features



- **Bus-Mastering Performance**

Taking advantage of its high-speed PCI bus-mastering capabilities, FlashBus MX delivers consecutive frames of video in real time into system or display memory without intervention from the host CPU. FlashBus MX can sustain PCI bus transfers at 100 MB/sec to system memory.

- **Simultaneous Capture**

FlashBus MX was designed around a flexible FPGA architecture allowing up to three video DMA channels. FlashBus MX-332 utilizes all three video channels, allowing for the display and capture of a single RGB or three simultaneous high-resolution monochrome inputs. FlashBus MX-132 and 132R are single-channel, high-resolution monochrome and RGB versions.

- **High-Resolution Camera Support**

Each video channel on FlashBus MX is fully programmable for support of non-standard video at resolutions up to

4K x 4K. With video channel sampling rates up to 30 MHz, FlashBus MX also supports a wide variety of progressive scan cameras. Each video channel contains a 10-bit A/D converter, a programmable LUT, and video signal conditioning to provide clean and accurate acquisition. Each channel can be set to capture at different resolutions and can capture an area of interest or the full image.

- **Programmable Intelligence**

FlashBus MX incorporates on-board intelligence to ensure robust triggering and accurate timing. Its camera control interface provides support for asynchronous trigger and long-term exposure functions. FlashBus MX also adds RS-232 support, a programmable sync generator, a 0V-10V programmable DAC output, and a 12V DC fused output. These on-board features can be used to provide easy integration of specific camera functions without the need for separate control or power supplies.

## FlashBus MX-332

FlashBus MX-332 utilizes all three video channels for simultaneous capture of three high-resolution monochrome inputs or a single RGB input. By using two channels, FlashBus MX-332 can support higher-speed dual-tap cameras. The planar mode transfer capability of FlashBus MX-332 separates each R, G, and B input into its own memory space. These features and non-destructive overlay make FlashBus MX-332 well suited for machine vision applications.

## FlashBus MX-132

FlashBus MX-132 is a low-cost, single-channel, high-resolution monochrome version of the FlashBus MX family with all the features to make a high-speed, high-quality image acquisition application.

## FlashBus MX-132R

FlashBus MX-132R is a single-channel version that adds RGB input support. As with all FlashBus MX frame grabbers, on-board color space conversion of the RGB data allows for non-destructive overlay using a DirectDraw compatible display card. FlashBus MX-132R was designed with scientific and medical imaging applications in mind.

## Summary of Features

Feature	MX-332	MX-132R	MX-132
Video DMA Channels	3	1	1
RGB Inputs (total)	1 [2]	1 [2]	None
RS-170 Inputs (total)	3 [6]	1 [2]	1 [2]
General Purpose I/O	8	8	8
High-Resolution Support	Yes	Yes	Yes
Planar Mode Capture Support	Yes	No	No
Progressive Scan Support	Yes	Yes	Yes
Dual-Tap Camera Support	Yes	No	No
H, V, and PCLK Inputs	Yes	Yes	Yes
Asynchronous Trigger Support	Yes	Yes	Yes
Flash Interface	Yes	Yes	Yes
On-board DSP	Yes	Yes	Yes
RS-232 Support	Yes	Yes	Yes
Programmable DAC Output	Yes	Yes	Yes
12-Volt Fused Output	Yes	Yes	Yes

## Specifications

### Video Inputs

- Up to 2 sets of 3 RS-170 inputs or up to 2 RGB inputs
- High-resolution camera support up to 4K x 4K
- 10-bit video input A/D converters
- Programmable PLL with up to 30 MHz digitization per channel
- Signal to noise ratio of 60 dB
- ±2.5 ns jitter
- Video low pass anti-aliasing filter (5 or 10 MHz)
- Progressive scan camera support
- Dual-tap camera support (MX-332)
- Programmable digital control of offset and gain
- EEPROM for storing configuration and calibration settings

### Video Transfer and Display

- PCI 2.1 compliant with bus-mastering support
- 100 MB sustained PCI throughput
- 32/24/16/15/8-bit RGB
- YUV 4:2:2
- Non-destructive overlay support

### External Camera Control

- Asynchronous trigger support
- External H, V, and pixel clock support
- Long-term integration support
- 12-volt DC fused output at 750 mA
- Optically isolated output trigger for flash control

### External I/O Control

- General-purpose I/O control
- RS-232 serial support
- On-board DSP
- Programmable DAC output software
- Windows 9x/ME/NT 4.0/2000/XP dlls
- Camera configuration software
- FBG video capture application
- DirectDraw support
- Media Cybernetics Image-Pro Plus drivers
- VisionBlox drivers
- HALCON drivers
- TWAIN drivers
- Video for Windows drivers
- Available Developers Kit with sample code

### Ordering Information

- #3140 FlashBus MX 132
- #3144 FlashBus MX 132R
- #3142 FlashBus MX 332
- #3470 FlashBus MX SDK



FlashBus MX comes with a Windows-based camera configuration application allowing the setup of specific board parameters and camera functions.