



FlashBus[®] Spectrim

Software Developers Kit

Overview

The FlashBus Spectrim SDK (Software Developers Kit) provides a high-level application programming interface (API) for accessing the features of the FlashBus Spectrim board. Using the SDK, a developer can display, control and capture video in a custom application with little or no knowledge of the underlying hardware.

Hardware control is accomplished by a set of libraries provided as DLLs for Windows users. The API is identical between Windows 98, NT 4.0, 2000, and XP. This consistency allows for easy cross development and porting of applications across a variety of operating systems.

Example code and prototype files are included for C/C++ and Visual BASIC, although the DLLs can be utilized by any language that supports the DLL calling interface.

The true value of the FlashBus Spectrim libraries lies in their ease of use. For instance, an application needs to make only four simple calls to enable continuous capture video data to system memory. They are:

- FB_Init() /* Init to EEPROM stored values */
- FB_SetVideoConfig() /* Specify video parameters */
- FB_AsyncGrab() /* Enable continuous capture */
- FB_VideoLive() /* Start capture */

Of course, the library provides a much richer interface with far greater functionality.

FlashBus Spectrim Software Developer Toolkit Components

FlashBus Spectrim Windows Developer Tools

The Windows developer tools consist of the FBPRISM. DLL and import library along with the necessary .h files to link and include with your application. Source for the Windows FBG application and several other samples are included to demonstrate library usage under Windows. Also included are the DLLs needed to support JPEG and TIF load and save.

FBG™ Capture Application

FBG is a Windows-based application designed to control all aspects of the FlashBus videographic boards. Using standard Windows interface menus and commands, FBG provides the following features: Display live video in a resizable video window; Select the input video source -- Composite, S-Video, component; Select video standard -- NTSC or PAL; Adjust video input levels; Flash grab control; Save file in TIFF, BMP, JPEG or TGA; and Print captured images to any Windows print device. FBG includes both On Screen and Off Screen capture routines. Source code is included.

FlashBus Spectrim Video Capture Operation

Capturing Video Directly to System Memory

FlashBus Spectrim products are designed with the capability to transfer full resolution video over the PCI bus directly to system memory in real time. This is referred to as **Off Screen** capture. Off Screen capture is an ideal solution for applications (machine vision, inspection, etc...) that require high speed capture of images directly into system memory for immediate processing by the host CPU. This is the highest performance, lowest cost method of capturing high quality RGB and gray scale images directly into system memory.

Capturing Video to VGA Display Memory

FlashBus Spectrim boards are capable of capturing video directly into the VGA memory of your VGA card. This is referred to as **On Screen** capture. With On-Screen capture, video is displayed by the VGA card at full frame rate and full resolution. On Screen capture is an ideal method of viewing and capturing video on high resolution, high performance VGA cards.

FlashBus Spectrim Software Developers Toolkit Functions

Initialization and Shutdown

FB_Cleanup
 FB_GetVersionInfo
 FB_Init
 FB_Locate

Video

FB_AsyncGrab
 FB_EnableVideoMask
 FB_GetFieldType
 FB_GetLiveStatus
 FB_GetMiscParm
 FB_GetMiscReg
 FB_GetSTVideoAdjustments
 FB_GetVideoAdjustments
 FB_GetVideoRect
 FB_GetVideoSource
 FB_GetVideoStandard
 FB_GetVideoType
 FB_GetXDelay
 FB_GetYDelay
 FB_MaskDraw
 FB_SetAcqRect
 FB_SetInputOffset
 FB_SetInputWindow
 FB_SetMiscParm
 FB_SetMiscReg
 FB_SetPalette
 FB_SetVideoAdjustments
 FB_SetVideoConfig
 FB_SetVideoMask
 FB_SetVideoWindow
 FB_SetVidFreeq
 FB_SetXYDelay
 FB_VGAREctToMask
 FB_VideoCaptureMem
 FB_VideoGrab
 FB_VideoLive
 FB_VideoOffscreen
 FB_VideoOutput
 FB_VideoSurface
 FB_WaitFieldType
 FB_WaitHSync
 FB_WaitMS
 FB_WaitVSync

File I/O

FB_ClosePrivateProfileString
 FB_FileResInfo
 FB_GetPrivateProfileString
 FB_LoadFile
 FB_OpenPrivateProfileString
 FB_SaveFile
 FB_WritePrivateProfileString

VGA

FB_AutoBlit
 FB_ConvertPixel
 FB_CopyVGAREct
 FB_GetVGA Mode
 FB_ScreenToDIB
 FB_SetVGAPixel
 FB_SetVGAREct

Low Level and Register Access

FB_ClearIRQ
 FB_EnableIRQ
 FB_GetI²CReg
 FB_GetIRQNumber
 FB_SetI²CReg

Miscellaneous

FB_AutoWindow
 FB_AutoWindowInfo
 FB_CheckSwitch
 FB_MultiBoard
 FB_ReadSerialBytes
 FB_SetIrisLevel
 FB_SetupSerial
 FB_WriteSerialBytes

Description

Shuts down FlashBus Spectrim in preparation for exiting an application.
 Return information about the FlashBus Spectrim configuration and library version.
 Initialize FlashBus Spectrim to the currently loaded configuration values.
 Locates the FlashBus Spectrim and determines correct method of register access.

Controls asynchronous (continuous) grabbing mode.
 Enables or disables use of 1-bit video mask.
 Returns the field type currently coming from the input video source.
 Returns the current video status.
 Get a miscellaneous value and return the first found video input.
 Used to read miscellaneous chip-level registers
 Return brightness, contrast, other adjustments for a particular standard and video type.
 Return the current setting for brightness, contrast or other adjustments.
 Return the current acquisition, input (source) or destination rectangles.
 Returns the currently selected video source.
 Returns the currently selected video standard.
 Returns the currently selected video type.
 Return the current X delay value.
 Return the current Y delay value.
 Draws into a mask buffer.
 Set XDelay and YDelay along with the video input extents.
 Set X and Y offsets into input video to begin capture..
 Set the input video window for a non-standard video sources.
 Set a miscellaneous value, including off-screen capture parameters.
 Used to write miscellaneous chip-level registers
 Set a VGA palette or input lookup table.
 Set brightness, contrast, sharpness, color/mono, and other video adjustments.
 Set FlashBus Spectrim video input configuration.
 Sets the video mask RAM.
 Sets the size and location of the FlashBus Spectrim window on the VGA display.
 Sets the video frequency on programmable frequency boards.
 Set the X and Y video delay values to align the input video capture window.
 Sets a mask buffer based on a key color.
 Gets information about the internal buffer allocated for capture.
 Freeze a video frame with or without flash control.
 Start or stop incoming video.
 Set the video capture area to System memory.
 Sets up video output.
 Sets up video surfaces.
 Wait for the start of a specified field type.
 Wait a specified number of video horizontal syncs.
 Wait the requested number of milliseconds.
 Wait a specified number of video vertical syncs.

Close a currently open Windows format INI file.
 Returns information about the resolution of a file.
 Read the value for a given section and key from a Windows INI format text file.
 Load an image file from disk. The file type is determined from the file extension.
 Open a Windows format INI file for reading or writing.
 Save image bitmap from memory to disk. File type is determined from file extension.
 Write the value for a given section and key to a Windows INI format text file.

Allows the library to periodically copy the off screen video to the specified window.
 Convert a pixel or line of pixels to a new pixel depth.
 Copy a rectangle of pixel data to or from the VGA frame buffer.
 Returns the current VGA mode and pixel depth.
 Create a DIB from a screen rectangle.
 Sets a pixel in the VGA frame buffer to the specified value.
 Set a rectangle in the VGA frame buffer to the specified value.

Clears a pending interrupt at the source and at the DSP.
 Enables or disables handling of the video VSYNC interrupt.
 Directly reads a device register on the I²C bus.
 Returns the IRQ used by FlashBus Spectrim .
 Directly writes a device register on the I²C bus.

Allows the library to directly control specified video window based on DCI messages.
 Return information about the current state of AutoWindow control.
 Check the state of the external trip switch.
 Allows the use of multiple FlashBus Spectrim boards in a single system.
 Read one or more bytes of data from the on-board serial port.
 Set the iris level of a connected auto iris camera lens.
 Prepare to read or write bytes through the on-board serial port.
 Write one or more bytes of data to the on-board serial port.



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