

- Multi-instance (can handle multiple video ports simultaneously)
- Capture driver supports the following modes:
 - Single-channel 8-bit BT.656 mode with embedded or external sync
 - Dual-channel 8-bit BT.656 mode with embedded sync
 - Single-channel 8-bit Y/C mode (16-bit data) with embedded or external sync for output formats such as high-definition 720p and 1080i
 - Single-channel 8-bit or 16-bit raw capture
 - Dual channel 8-bit raw capture
- Display driver supports the following modes:
 - 8-bit BT.656 mode with embedded or external sync
 - 8-bit Y/C mode (16-bit data) with embedded or external sync for output formats such as high-definition 720p and 1080i
 - 8/16-bit raw mode for output formats such as 8/16-bit RGB (VESA display)
- Supports enable/disable of video port global interrupt on all defined video port events
- Drivers allocate video frame buffers at initialization time based on configuration parameters passed in by the application
- External Control Interface for seamless integration with different video encoder or decoder devices

Description

Details about the tools and the BIOS version that the driver is compatible with can be found in the system Release Notes.



Capabilities

The VPORT BIOS device driver adopts a scalable architecture that eases customization/extension

- Supports Multiple Instances
- Supports SDTV, HDTV and VESA display
- Supports SDTV, HDTV and RAW capture

The driver is constituted of following sub components:

- VPORT device driver for video port on DM648 SOC
- EDC drivers for the video encoders and decoders present on DM648 EVM

The following table gives a quick overview of the supported API services.

FVID_create	Allocate buffers (optional) and initialize an FVID channel object
FVID_delete	De-allocate buffers (optional) and FVID channel object
FVID_alloc	Get a pointer for allocated buffer from driver to application (used only in Legacy Mode)
FVID_free	Relinquish a video buffer back to the driver (used only in Legacy Mode)
FVID_control	Send a control command to the mini-driver
FVID_exchange	Exchange an application-owned buffer for a driver-owned buffer
FVID_dequeue	Get a pointer for allocated buffer from driver to application (used only in Normal Mode)
FVID_queue	Relinquish a video buffer back to the driver (used only in Normal Mode)
FVID_allocBuffer	Allocate a frame buffer using the driver's memory allocation routines
FVID_freeBuffer	Free the buffer allocated via FVID_allocBuffer()



Driver Performance Characteristics

VPORT DEVICE DRIVER SUB-COMPONENT	PROGRAM MEMORY (IN BYTES)	DATA MEMORY (IN BYTES)			
		MEMO	TOTAL		
		INITIALIZED	UN INITIALIZED		
Vport device driver	39232	2502	15028	56762	
EDC device driver	13888	1876	685	16449	
Total	53120	4378	15713	73211	

System Components Total Memory (Code & Data): 73211 Bytes

Note 1: Each instance of channel (Capture/Display) requires a minimum of 3 frame buffers. This is allocated dynamically during channel creation for legacy mode (DM642) or is queued into the driver for normal mode (DM64LC).

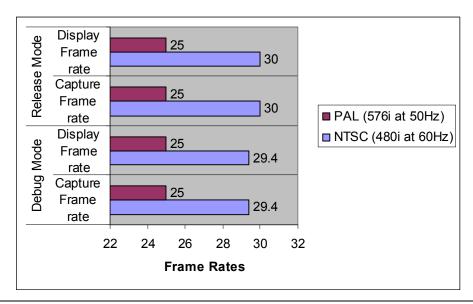
- ❖ Typical size of one frame buffer for NTSC D1 format is 691,200 bytes
 - For eight channel simultaneous NTSC D1 capture and single channel NTSC D1 display operation, the amount of external memory required is around 19 MB (691,200 * 3 * (8+1) bytes)
- ❖ Typical size of one frame buffer for 1080i display/capture format is 4,147,200 bytes and for one CIF (only horizontal ½ scaling done) frame buffer is 337,920 bytes.
 - For eight channel simultaneous CIF capture and single channel 1080i display operation, the amount of external memory required is around 22 MB = 337,920 * 3 * 8 + 4,147,200 * 3 bytes
- Typical size of one frame buffer for SXGA (1280x1024) 16-bit RGB display format is 2,621,440 bytes.

Note 2: If application requires more frame buffer per driver instance, then the memory requirement increases by

- 691,200 bytes per frame buffer for NTSC
- 829,440 bytes per frame buffer for PAL
- ❖ 4,147,200 bytes per frame buffer for 1080i 60/50 Hz
- 1,843,200 bytes per frame buffer for 720p 60 Hz
- 2,621,440 bytes per frame buffer for SXGA 60Hz



Driver Performance Characteristics



Frame Rates									
	Interface	Resolution	Debug Mode		Release Mode				
Test Setup Information			Capture Frame rate (fps)	Display Frame rate (fps)	Capture Frame rate (fps)	Display Frame rate (fps)			
DVD Input in the respective format connected through Composite interface to the Kailash EVM. The S-Video output interface is connected to the LCD TV	Composite in & Svideo out	NTSC (480i at 60Hz)	29.4	29.4	30	30			
	Composite in & Svideo out	PAL (576i at 50Hz)	25	25	25	25			

Comments

NTSC and PAL results were calculated while running the capture and display loopback application.



RELEASE VERSION 1.10.00.



References

[1] VPORT Module Hardware Specifications

[2] BIOS Documentation from TI

[3] External Video Encoder and Decoder Specifications

Glossary

EDC TI Terminology, External Device Control

EVM Evaluation Module SOC System on Chip

VPORT TI Terminology, Video Port

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