



- **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.

PRODUCT PREVIEW



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.

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



Driver Performance Characteristics

VPORT DEVICE DRIVER SUB-COMPONENT	PROGRAM MEMORY (IN BYTES)	DATA MEMORY (IN BYTES)		
		MEMORY TYPE		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 1/2 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.

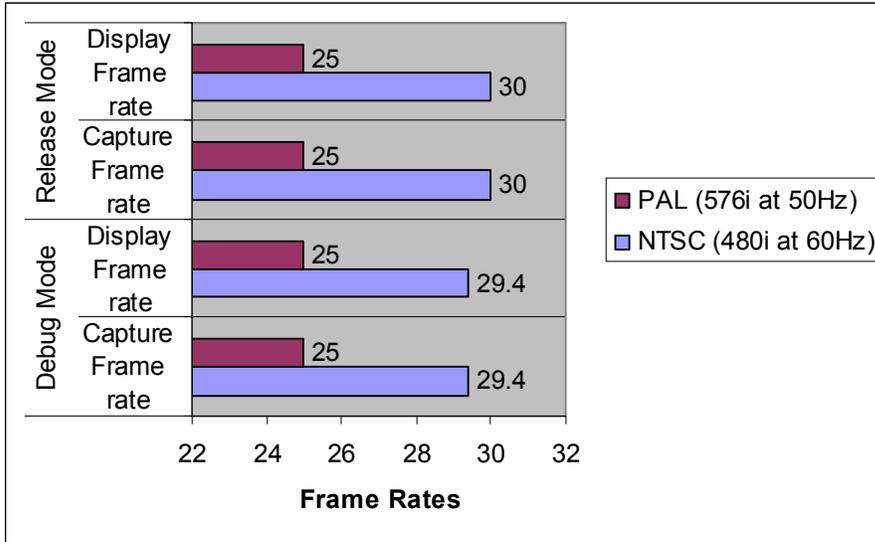
Note 2: If application requires more frame buffer per driver instance, then the memory requirement increases by

- ❖ 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

PRODUCT PREVIEW



Driver Performance Characteristics



Frame Rates						
Test Setup Information	Interface	Resolution	Debug Mode		Release Mode	
			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.

PRODUCT PREVIEW



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

PRODUCT PREVIEW

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Copyright © 2007 Texas Instruments Incorporated. All rights reserved.

Information in this document is subject to change without notice. Texas Instruments may have pending patent applications, trademarks, copyrights, or other intellectual property rights covering matter in this document. The furnishing of this documents is given for usage with Texas Instruments products only and does not give you any license to the intellectual property that might be contained within this document. Texas Instruments makes no implied or expressed warranties in this document and is not responsible for the products based from this document. This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Texas Instruments assumes no obligation regarding future manufacturing unless otherwise agreed to in writing.