MVF Framebuffer & LCD Driver

Release notes

The framebuffer, LCD driver supports the following features:

- Display configuration
- Configuring layer features
    - Position
    - Alpha Blending
    - Double buffering
    - Enable/Disable
    - Pixel formats: RGB565, RGB888, ARGB8888
- Fb Operations
    - Panning - fb_pan_display
    - Setting parameters - fb_set_par
    - Checking var - fb_check_var
    - Memory map - fb_mmap
    - Blank/unblank - fb_blank
    - IOCTL support - fb_ioctl
- IOCTL Support
    - Wait for VSync - MVFFB_WAIT_FOR_VSYNC
    - Setting alpha for each layer - MVFFB_SET_LAYER_ALPHA
    - Get Blank / Unblank state of the LCD - MVFFB_GET_FB_BLANK
    - Setup position of each layer - > pos x, pos y - MVFFB_SETUP_LAYER
    - Allocate / Deallocate memory - FBIO_ALLOC, FBIO_FREE
- Interrupt Support
    - DCU_IRQ_DMA_TRANS_FINISH Interrupt.
- Sysfs Interface
    - Blank / Unblank display

    - Show display Configuration - Pixel clock, hsync, vsync, resolution.
- Bootup Linux Logo
- Mapping / unmapping Video Memory
- Bootargs - video=mvffb0:dev=lcd,if=RGB32,dcu=0,NEC-WQVGA

Kernel Driver Configuration

Include the Framebuffer / LCD Driver by selecting the following in the Kernel configuration:
Device Drivers -> Graphics Support -> MVF Framebuffer Support
Device Drivers -> Graphics Support -> MVF Framebuffer Support -> Number of Framebuffers

(Choose the number of framebuffers depending on the desired number of layers. By default this is 1)

Framebuffer & LCD Driver Files

$Kernel/drivers/video/mvf->mvf_dcu4_fb.c
$Kernel/drivers/video/mvf->mvf_dispdrv.c
$Kernel/drivers/video/mvf->mvf_dispdrv.h
$Kernel/drivers/video/mvf->mvffb_nec_wqvga.c

Limitations

- The Framebuffer Driver has the following limitations:
- Currently only supports 32 layers for 1 DCU.
- Framebuffer does not support color keying, CLUT, gamma correction.
- Pixel formats are limited to the ones mentioned in the release notes

Known issues

Kernel Boot hang observed when enabling the FB Console Driver in the configuration.

Prerequisites

Hardware:
-TWR-VF600
-TWR-ELEV
  Connect A41 to A43, and A42 to A44 on the primary (white connectors) elevator.
-TWR-SER2
  10/100 Dual RMII (open J8 and J9, SW1 11000000, SW2 10100000)
  Serial-to-USB (short 1 and 2 of J7, short 3 and 4 of J7)
  RS232 DB9 (short 2 and 3 od J1, short 2 and 3 of J2, short 1 and 2 of J13)
-TWR-RGB
Software:
Commit: ec9e7b555c1fe8565f3fc5c6f9d41c4cb230bba5
Branch: fb_development

Framebuffer Driver Test

Introduction

mvf_fb_test application tests the framebuffer driver for MVF platform. Following are the test elements:

void fb_test_bpp(int fd, unsigned short * fb)
void fb_test_layer_alpha(void)
void fb_test_pan(int fd_fb, unsigned short * fb, struct fb_var_screeninfo * var)
void fb_test_doublebuffer(int fb_fd, unsigned short *fb, struct fb_var_screeninfo *var)
set_layer_position(int fd_fb, int posx, int posy)
static void copy_image_to_buffer(int left, int top, int width, int height, uint *img_ptr,
uint target_buf, struct fb_var_screeninfo *screen_info)
Open, close framebuffer, memory mapping for all framebuffers
Multiple FB Support

Running the test

./mvf_fb_test.c