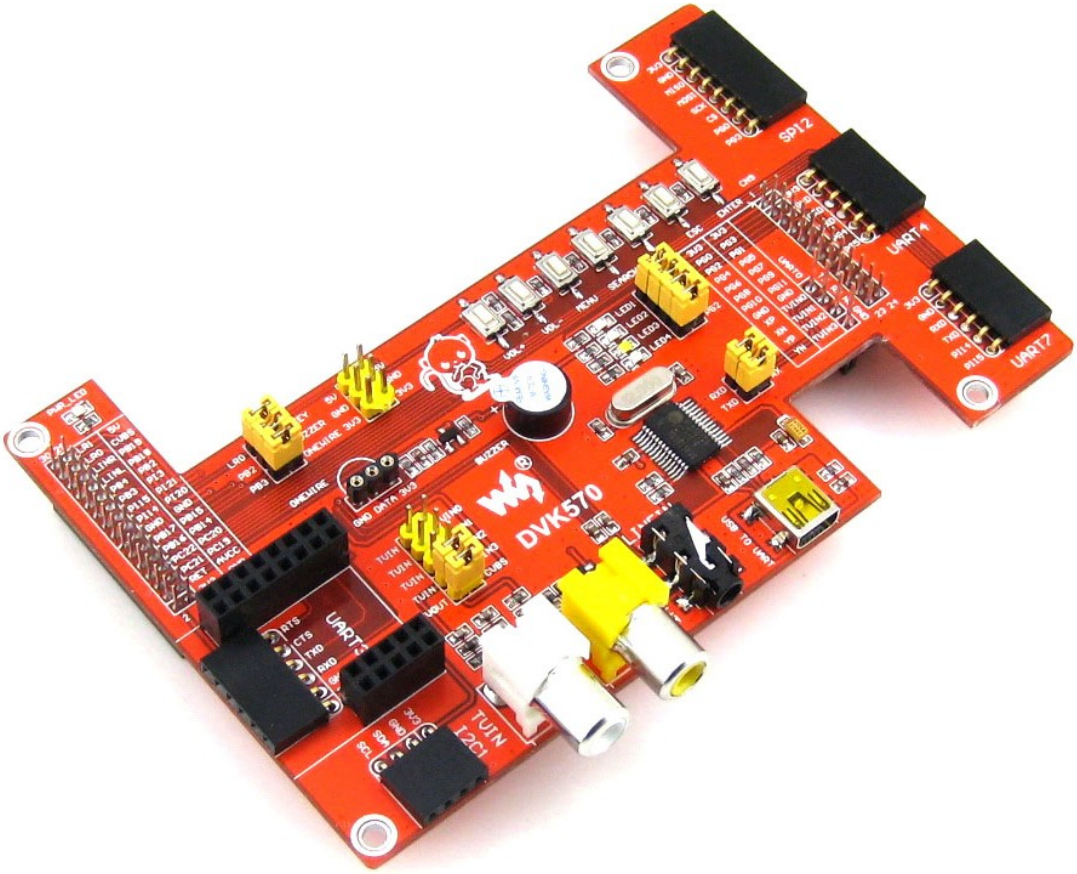
DVK570 Expansion Board

Driver porting manual

2014.04.12 V1.0



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Copyright Statement

Version update records

Version	Date	Description
V1.0	2014.04.12	Initial Release

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Document formatting convention

- Commands on PC ubuntu terminal: formatted in red, preceding with '#'
- Commands on SD card linaro terminal: formatted in red, preceding with '$'

1. LED driver porting

As the kernel already gets support from LED driver, just need to configure script.fex.
Add the following configuration in section [leds_para]：

```
[leds_para]
leds_used = 1
leds_num = 8

leds_pin_5 = port:PG03<1><default><default><0>
leds_name_5 = "led1"
leds_default_5 = 1
leds_trigger_5 = "led1"
leds_pin_6 = port:PG00<1><default><default><0>
leds_name_6 = "led2"
leds_default_6 = 1
leds_trigger_6 = "led2"
leds_pin_7 = port:PG01<1><default><default><0>
leds_name_7 = "led3"
leds_default_7 = 1
leds_trigger_7 = "led3"
leds_pin_8 = port:PG02<1><default><default><0>
leds_name_8 = "led4"
leds_default_8 = 1
leds_trigger_8 = "led4"
```

2.PWM driver porting

As the kernel already gets support from PWM driver, just need to configure script.fex.
Refer existing [pwm0_para] section, add [pwm1_para]：

```
[pwm0_para]
pwm_used = 1
pwm_period = 20
pwm_duty_percent = 50

[pwm1_para]
pwm_used = 1
pwm_period = 20
```

```
pwm_duty_percent = 50
```

3.Dallas's onewire driver porting

3.1 Kernel configuring

#make menuconfig

Note：When executing "make menuconfig", it is under top-level directory of the kernel.

```
Device Drivers  --->
    <*> Dallas's 1-wire support  --->
        <*>  1-wire sunxi support
            1-  wire Bus Masters  --->
            <*> GPIO 1-wire busmaster
            1-  wire Slaves  --->
            <*> Thermal family implementation
```

3.2 script.fex configuring

Add gpio_pin_3 to [gpio_para]，configuring as below：

```
[gpio_para]
gpio_used = 1
gpio_num                = 3
gpio_pin_1              = port:PH20<1><default><default><1>
gpio_pin_2              = port:PH10<0><default><default><0>
gpio_pin_3              = port:PB03<1><default><default><default>
```

Add section [w1_para], configuring as below:

```
[w1_para]
gpio = 3
```

4.AD key driver porting

4.1 Kernel configuring

#make menuconfig

```
Device Drivers  --->
    Input device support  --->
        [*]  Keyboards  --->
            <M>  sunxi tablet keys on adc0 support
```

[ ] sunxi tablet keys on adc0 controlled throuh fex

Here compiled it as modes of module.

4.2 sript.fex configuring

Add section [tabletkeys_para], configuring as below:

```
[tabletkeys_para]
tabletkeys_used = 1
key0_code = 115
key1_code = 114
key2_code = 139
key3_code = 217
key4_code = 102
key5_code = 1
key6_code = 28
```

5.I2C driver porting

Kernel already supported I2C, just need to configure script.fex.

Configuring as below:

```
[twi0_para]
twi0_used = 1
twi0_scl = port:PB0<2><default><default><default>
twi0_sda = port:PB1<2><default><default><default>

[twi1_para]
twi1_used = 1
twi1_scl = port:PB18<2><default><default><default>
twi1_sda = port:PB19<2><default><default><default>

[twi2_para]
twi2_used = 1
twi2_scl = port:PB20<2><default><default><default>
twi2_sda = port:PB21<2><default><default><default>
```

6.SPI driver porting

6.1 Kernel configuring

Kernel has already got support from SPI driver. But to test SPI module it requests to control the CS pin, the driver file is ctl_io.c, copy it to directory /drivers/char and modifying Makefile and Kconfig under this directory：

Add below to Makefile：

```
obj-$(CONFIG_CTL_IO)                += ctl_io.o
```

Add below to Kconfig：

```
config CTL_IO
        tristate "CTL_IO Controller"
        depends on ARCH_SUN7I
        help
                Ctl_io controller,present on SUN7I chips.
```

Configure the kernel：

#make menuconfig

```
Device Drivers    --->
    [*] SPI support    --->
            <*>     SUN7I SPI Controller

Device Drivers    --->
    Character devices    --->
            <*> CTL_IO Controller
```

6.2 script.fex configuring

```
[spi2_para]
spi_used                = 1
spi_cs_bitmap           = 1
spi_cs0                 = port:PC19<3><default><default><default>
spi_cs1                 = port:PB13<2><default><default><default>
spi_sclk                = port:PC20<3><default><default><default>
spi_mosi                = port:PC21<3><default><default><default>
spi_miso                = port:PC22<3><default><default><default>

[spi_devices]
spi_dev_num = 1

[spi_board0]
modalias = "spidev"
max_speed_hz = 24000000
bus_num = 2
```

```
chip_select = 0
mode = 3
full_duplex = 0
manual_cs = 0
```

7.UART driver porting

The kernel already supported UART, only need to configure script.fex as below：

```
[uart_para3]
uart_used                = 1
uart_port                = 3
uart_type                = 4
uart_tx                  = port:PG06<4><1><default><default>
uart_rx                  = port:PG07<4><1><default><default>
uart_rts                 = port:PG08<4><1><default><default>
uart_cts                 = port:PG09<4><1><default><default>

[uart_para4]
uart_used                = 1
uart_port                = 4
uart_type                = 2
uart_tx                  = port:PG10<4><1><default><default>
uart_rx                  = port:PG11<4><1><default><default>

[uart_para7]
uart_used                = 1
uart_port                = 7
uart_type                = 2
uart_tx                  = port:PI20<3><1><default><default>
uart_rx                  = port:PI21<3><1><default><default>
```

8.USB Camera driver porting

Kernel already got support from the driver, detailed testing operations please refer to "User Manuel".

9. WIFI driver porting

Kernel already got support from the driver, detailed testing operations please refer to "User Manuel".

10. VGA driver porting

The kernel already has a VGA driver, just need to modify screen0_output_type and screen0_output_mode in [disp_init] of the script.fex.
Configure as below:

```
[disp_init]
screen0_output_type          = 4
screen0_output_mode          = 4
```

11. HDMI driver porting

The kernel already has a HDMI driver, only need to modify screen0_output_type and screen0_output_mode in [disp_init] of the script.fex.
Configure as below:

```
[disp_init]
screen0_output_type          = 3
screen0_output_mode          = 5
```

12. CVBS driver porting

The kernel already has a driver, only need to modify [disp_init] and [tvout_para] of the script.fex.
Configure as below：

```
[disp_init]
screen0_output_type          = 2
screen0_output_mode          = 14

[tvout_para]
tvout_used                   = 1
tvout_channel_num            = 3
```

13. System updating

1) Modified script.fex need to convert as script.bin via fex2bin. Details please refer to "Product Development Manuel".
2) Ported Kernel needs to be recompiled, the compiled ulmage and driver module needs to be updated to the system. Driver module can be automatically load when the development board connects to power, add corresponding modules to /etc/modules to make it done.

$ vi /etc/modules

```
# /etc/modules: kernel modules to load at boot time.
```

```
#
# This file contains the names of kernel modules that should be loaded
# at boot time, one per line. Lines beginning with "#" are ignored.

#For SATA Support
gpio_sunxi
pwm_sunxi
sunxi_gmac
disp
lcd
hdmi
ump
mali
sunxi_cedar_mod
bcmdhd
sun4i-keyboard
```

User can add driver modules to this list.

3) Reboot the system after updating!