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@
@
@                                     display.inc
@                               Contains definitions used by display.s
@
@
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@ Description: Defines register values used by the NHDC12832 Display driver code
@
@ Revision History:
@ Name           Comment           Date
@ Will Werst     Initial version   Some lonely night around 6/10/17
@ Will Werst     Comment           October 2017

@Pin definitions
.equ    DISP_MOSI,    1              @MOSI pin is A1
.equ    DISP_SPCK,    2              @Clock pin is A2
.equ    DISP_CS,      3              @Chip Select pin is A3
.equ    DISP_A0,      4              @Mode select pin is A4
.equ    DISP_BCKLIGHT, 5            @Backlight pin is A5
.equ    DISP_RST,     6              @Reset pins is A6

@SPI Status register bit definitions
.equ    SPI_SR_TXBUFE, 0x80

@SPI Handler definitions
.equ    COM_QUEUE_LENGTH, 16

@Register definitions

@ 0000 0000 0000 0000 0000 0000 ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- 1--- ---- SWRST
@ ---- ---- ---- ---- ---- ---- -000 00--
@ ---- ---- ---- ---- ---- ---- ---- --10 Disable
@ 0000 0000 0000 0000 0000 0000 1000 0010
.equ    SPI_CR_RESET, 0x00000082

@ 0000 0000 0000 0000 0000 0000 ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- 0--- ---- SWRST
@ ---- ---- ---- ---- ---- ---- -000 00--
@ ---- ---- ---- ---- ---- ---- ---- --01 Enable
@ 0000 0000 0000 0000 0000 0000 0000 0001
.equ    SPI_CR_EN, 0x00000001

@ 0000 0000 0000 0000 0000 0000 ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- 0--- ---- SWRST
@ ---- ---- ---- ---- ---- ---- -000 00--
@ ---- ---- ---- ---- ---- ---- ---- --10 Disable
@ 0000 0000 0000 0000 0000 0000 0000 0010
.equ    SPI_CR_DIS, 0x00000002

@ 0000 0000 ---- ---- ---- ---- ---- ---- DLYBCS: 0
@ ---- ---- 0000 ---- ---- ---- ---- ---- Reserved
@ ---- ---- ---- 1110 ---- ---- ---- ---- PCS: NPCS0 is where display is
@ ---- ---- ---- ---- 0000 0000 ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- 0--- ---- Local Loopback: Disabled
@ ---- ---- ---- ---- ---- ---- -00- ---- Reserved
@ ---- ---- ---- ---- ---- ---- ---1 ---- Mode fault detection: Disabled
@ ---- ---- ---- ---- ---- ---- 1--- ---- DIV32: SPI clocks at MCK/32
@ ---- ---- ---- ---- ---- ---- -0-- ---- PCSDEC: Chip selects directly connected
@ ---- ---- ---- ---- ---- ---- --0- ---- PS: Fixed Peripheral select
@ ---- ---- ---- ---- ---- ---- ---1 ---- MSTR: SPI is in Master mode

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```

@ 0000 0000 0000 1110 0000 0000 0001 1001
.equ    SPI_MR_VAL, 0x000E0019

@ 0000 0000 ---- ---- ---- ---- ---- DLYBCT: 0
@ ---- ---- 0000 0000 ---- ---- ---- DLYBS: 0
@ ---- ---- ---- ---- 0000 0100 ---- ---- SCBR: SPCK Baudrate = MCK/(2*4) = 5.5 MHz. Device
max is 20 MHz
@ ---- ---- ---- ---- ---- ---- 0000 ---- BITS: 8 bits
@ ---- ---- ---- ---- ---- ---- 00-- Reserved
@ ---- ---- ---- ---- ---- ---- --0- NCPHA: 1
@ ---- ---- ---- ---- ---- ---- ---1 CPOL: 1
@ 0000 0000 0000 0000 1111 0100 0000 0001
.equ    SPI_CSR0_VAL, 0x00000401

@ 0000 0000 0000 0000 0000 0000 ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- 1000 0000 Only enable ENDTX
@ 0000 0000 0000 0000 0000 0000 0010 0000
.equ    SPI_IER_VAL, 0x00000080

@ 0000 0000 0000 0000 0000 00-- ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- --01 ---- Enable Transmit
@ ---- ---- ---- ---- ---- ---- 0000 00-- Reserved
@ ---- ---- ---- ---- ---- ---- --10 Disable Receive (no receiving for display)
@ 0000 0000 0000 0000 0000 0001 0000 0010

.equ    SPI_DMA_ENABLE, 0x00000101

@ 0000 0000 0000 0000 0000 00-- ---- ---- Reserved
@ ---- ---- ---- ---- ---- ---- --10 ---- Disable Transmit
@ ---- ---- ---- ---- ---- ---- 0000 00-- Reserved
@ ---- ---- ---- ---- ---- ---- --10 Disable Receive
@ 0000 0000 0000 0000 0000 0001 0000 0010

.equ    SPI_DMA_DISABLE, 0x00000202

@ 0000 0000 0000 0000 0000 0000 0--- ---- Reserved
@ ---- ---- ---- ---- ---- ---- -11- ---- SCRTYPE: Positive edge
@ ---- ---- ---- ---- ---- ---- ---0 0--- Reserved
@ ---- ---- ---- ---- ---- ---- -010 Priority: 2
@ 0000 0000 0000 0000 0000 0000 0110 0010
.equ    AIC_SMR13_VAL, 0x00000062

@ ---- ---- ---- ---- ---- ---- ---- ----

```

@State definitions for the display redrawing

```

.equ    STATE_COMMANDS, 0
.equ    STATE_DATA, 1

```

@NHD-C12832 Definitions

```

.equ    NUM_PAGES,      4
.equ    NUM_COLS,       128
.equ    NHD_ON,          0xAF      @Enable display command
.equ    NHD_OFF,         0xAE      @Disable display command
.equ    NHD_RMW,         0xE0      @Read-modify-write command
.equ    NHD_RESET,       0xE2      @Reset command
.equ    NHD_PAGE_PREF,   0xB0      @Prefix for page address set command
.equ    NHD_COLU_PREF,   0x10      @Prefix for upper column address set command
.equ    NHD_COLL_PREF,   0x00      @Prefix for lower column address set command

```

@ASCII Definitions

```
.equ    ASCII_DOT,      0x2E      @ '.' character
.equ    ASCII_NULL,     0x00      @ ASCII null termination
```

@Miscellaneous definitions

```
.equ    NUM_OCTETS_IP,  4
```