

# DE1 I/O Pins

## Clocks, Buttons, Switches, and Seven Segment Displays

The **Cyclone II EP2C20F484C7 FPGA** on the DE1 logic kit is connected to four seven segment displays, (Hex\_0, Hex\_1, Hex\_2, and Hex\_3), ten slide switches (Switch\_0 through Switch\_9), four push buttons (Key\_0 through Key\_3), ten red LEDs (Red\_LED\_0 through Red\_LED\_9), and eight green LEDs (Green\_LED\_0 through Green\_LED\_7).

The slide switches produce logic “1” when pushed away from the edge of the board, and the push buttons produce logic “0” when pressed. The segments of the seven segment displays light up when connected to logic “0,” and the LEDs light up when connected to logic “1”.

The following table shows which FPGA pin numbers are connected to these devices.

The segments of a seven-segment display are normally named A–G, starting at the top, going clockwise, and ending with the center segment. The array names in the table refer to the segments using subscript values 0–6 in the same order.

To make the process of pin assignment easier, the following table is in alphabetical order, which should match the order of the pins listed by the Quartus Pin Assignment Editor, provided you name your pins and pin groups alphabetically: Clock..., Green..., Hex\_0..., Hex\_1..., Hex\_2..., Hex\_3..., Key..., Red..., and Switch... in that order.

Connection	Pin Location
<i>Clocks</i>	
27 MHz Clock	PIN_D12 and PIN_E12
50 MHz Clock	PIN_L1
24 MHz Clock	PIN_A12 and PIN_B12
<i>Green LEDs</i>	
Green_LED_0	PIN_U22
Green_LED_1	PIN_U21
Green_LED_2	PIN_V22
Green_LED_3	PIN_V21
Green_LED_4	PIN_W22
Green_LED_5	PIN_W21
Green_LED_6	PIN_Y22
Green_LED_7	PIN_Y21
<i>Seven-segment Displays</i>	
Hex_0[0]	PIN_J2
Hex_0[1]	PIN_J1
Hex_0[2]	PIN_H2
Hex_0[3]	PIN_H1
Hex_0[4]	PIN_F2
Hex_0[5]	PIN_F1
Hex_0[6]	PIN_E2
Hex_0, Decimal Point	No Connection
Hex_1[0]	PIN_E1
Hex_1[1]	PIN_H6
Hex_1[2]	PIN_H5
Hex_1[3]	PIN_H4
Hex_1[4]	PIN_G3
Hex_1[5]	PIN_D2
Hex_1[6]	PIN_D1
Hex_1, Decimal Point	No Connection
Hex_2[0]	PIN_G5
Hex_2[1]	PIN_G6
Hex_2[2]	PIN_C2
Hex_2[3]	PIN_C1
Hex_2[4]	PIN_E3
Hex_2[5]	PIN_E4
Hex_2[6]	PIN_D3
Hex_2, Decimal Point	No Connection
Hex_3[0]	PIN_F4
Hex_3[1]	PIN_D5
Hex_3[2]	PIN_D6
Hex_3[3]	PIN_J4
Hex_3[4]	PIN_L8
Hex_3[5]	PIN_F3
Hex_3[6]	PIN_D4
Hex_3, Decimal Point	No Connection

<i>Push Buttons</i>	
Key_0	PIN_R22
Key_1	PIN_R21
Key_2	PIN_T22
Key_3	PIN_T21
<i>Red LEDs</i>	
Red_LED_0	PIN_R20
Red_LED_1	PIN_R19
Red_LED_2	PIN_U19
Red_LED_3	PIN_Y19
Red_LED_4	PIN_T18
Red_LED_5	PIN_V19
Red_LED_6	PIN_Y18
Red_LED_7	PIN_U18
Red_LED_8	PIN_R18
Red_LED_9	PIN_R17
<i>Slide Switches</i>	
Switch_0	PIN_L22
Switch_1	PIN_L21
Switch_2	PIN_M22
Switch_3	PIN_V12
Switch_4	PIN_W12
Switch_5	PIN_U12
Switch_6	PIN_U11
Switch_7	PIN_M2
Switch_8	PIN_M1
Switch_9	PIN_L2