

Help for User module: APAD Interface.umc

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Revision History  
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7-28-06 - Initial Release  
Created by: AL

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Firmware version  
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APAD LCD 6-button Panel [v1.00.12]

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Introduction:  
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This module provides 3 output options for each of the 6 buttons on the APADs, a pulsed output, a momentary output, and a Press & Hold output. It also provides a Press & Hold feedback signal. In addition it provides a number of different and configurable output options for the APAD knob, including:

1. Pulsed outputs for clockwise and counterclockwise rotation (8 or 16 PPR)
2. Analog outputs (non-accelerated) providing a signed digital output with 4 preset scaling options which allow you to easily select how many revolutions of the knob will be required to adjust the analog output from 0-100% (0-65535).
3. Analog outputs (accelerated) providing a signed digital output with 4 preset scaling options which allow you to easily select how the speed of Knob motion will effect the adjustment of the analog output from 0-100% (0-65535).

The module also provides a facility to automatically adjust the LCD Brightness and Button Backlight Brightness to a brighter level when the APAD is in use and then, after a specified idle time, readjust the LCD brightness and button backlight brightness to a dimmer level.

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Input Description  
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| From_Soft_Button_1 (Digital)<br>From_Soft_Button_2 (Digital)<br>From_Soft_Button_3 (Digital)<br>From_Soft_Button_4 (Digital)<br>From_Power_Button (Digital)<br>From_Enter_Button (Digital) | Connect these signals to the appropriate output on the APAD hardware symbol   |
| Pulses_Per_Rev_8 (Digital)<br>Pulses_Per_Rev_16 (Digital)  | Pulse these inputs to adjust the number of pulses per revolution from the Clockwise and Counter Clockwise Pulsed outputs.             |
| From_Clockwise_Pulse (Digital)<br>From_Counter_Clockwise_Pulse (Digital)<br>From_APAD_Knob(NoAcc) (Analog)<br>From_APAD_Knob(Acc) (Analog)   | Connect these signals to the appropriate output on the APAD hardware symbol   |
| Init_NoAcc_Scale_Factor_1 (Digital)<br>Init_NoAcc_Scale_Factor_2 (Digital)<br>Init_NoAcc_Scale_Factor_3 (Digital)<br>Init_NoAcc_Scale_Factor_4 (Digital)                                   | Pulse these inputs to adjust the non-accelerated scaling of the analog output as defined by the 'No ACC Scale Factor' parameter field |
| Init_Acc_Scale_Factor_1 (Digital)<br>Init_Acc_Scale_Factor_2 (Digital)<br>Init_Acc_Scale_Factor_3 (Digital)<br>Init_Acc_Scale_Factor_4 (Digital)   | Pulse these inputs to adjust the accelerated scaling of the analog output as defined by the 'Acc Scale Factor' parameter field        |

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Output Description  
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| Soft_Button_1_Pulse (Digital)<br>Soft_Button_2_Pulse (Digital)<br>Soft_Button_3_Pulse (Digital)<br>Soft_Button_4_Pulse (Digital)<br>Power_Button_Pulse (Digital)<br>Enter_Button_Pulse (Digital)   | Provides a pulsed output for each corresponding button press on the APAD. Pulse length as per the 'Press and Hold Output Pulse Time' parameter setting.   |
| Clockwise_Pulse_buf (Digital)<br>Counter_Clockwise_Pulse_buf (Digital)   | Provides either 8 or 16 pulses per revolution depending upon which of the pulses per revolution inputs were last triggered.   |
| Soft_Button_1_Momentary (Digital)<br>Soft_Button_2_Momentary (Digital)<br>Soft_Button_3_Momentary (Digital)<br>Soft_Button_4_Momentary (Digital)<br>Enter_Button_Momentary (Digital)<br>Power_Button_Momentary (Digital)   | Provides a momentary output for each of the corresponding button presses on the APAD (signal goes high when the button is pressed and remains high for as long as the button is pressed) use for ramping applications   |
| Soft_Button_1_Press_&_Hold (Digital)<br>Soft_Button_1_Press_&_Hold_FB_Blink (Digital)<br>Soft_Button_1_Press_&_Hold (Digital)<br>Soft_Button_1_Press_&_Hold_FB_Blink (Digital)<br>Soft_Button_1_Press_&_Hold (Digital)<br>Soft_Button_1_Press_&_Hold_FB_Blink (Digital)<br>Soft_Button_1_Press_&_Hold (Digital)<br>Soft_Button_1_Press_&_Hold_FB_Blink (Digital)<br>Enter_Button_Press_&_Hold (Digital)<br>Enter_Button_Press_&_Hold_FB_Blink (Digital)<br>Power_Button_Press_&_Hold (Digital)<br>Power_Button_Press_&_Hold_FB_Blink (Digital) | Provides a Press_&_Hold output for each of the corresponding button presses on the APAD based upon the 'Press and Hold Time' parameter setting.<br>The Soft_Button_Press_&_Hold_FB_Blink will pulse for the time as defined by the 'Press and Hold Feedback Blink Time' parameter as soon as the button is pressed and again when the 'Press and Hold Time' is reached. |
| From_APAD_Knob(NoAcc) (Analog)<br>From_APAD_Knob(Acc) (Analog)   | Provides Analog outputs scaled to the settings defined by the last initialized scale factor   |
| To_NoAcc_ScaleFactor (Analog)<br>To_Acc_ScaleFactor (Analog)<br>To_Backlight_Brightness (Analog)<br>To_LCD_Brightness (Analog)<br>To_SleepTimeout (Analog)<br>To_Less_Shaft_Clicks (Digital)   | 'Press and Hold Time'   |

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 Parameter Description  
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| Press and Hold Time<br>Press and Hold Output Pulse Time<br>Press and Hold Feedback Blink Time                       | Defines the setting to be used by the press and hold features   |
| Backlight Timeout<br>Backlight Brightness ON<br>LCD Brightness ON<br>Backlight Brightness OFF<br>LCD Brightness OFF | <p>Backlight time defines the number of seconds the backlight and LCD will remain at the bright value after the last button press or knob rotation on the APAD</p> <p>Backlight and LCD Brightness ON values are the brightness level the APAD will be adjusted to when a button is pressed and the interface is being used. (0 to 100%)</p> <p>Backlight and LCD Brightness OFF values are the brightness level the APAD will be adjusted to when Backlight Timeout expires and the interface is no longer being utilized. (0 to 100%)</p> |
| No Acc Scale Factor 1<br>No Acc Scale Factor 2<br>No Acc Scale Factor 3<br>No Acc Scale Factor 4                    | <p>Sets the scaling factor that will be initialized when each of the 'Init_NoAcc_Scale_Factor' inputs is pulsed.</p> <p>This value is used as the <i>Constant</i> for the &lt;Knob(Acc)&gt; and &lt;Delta(Acc)&gt; formulas. If this input is not used, <i>Constant</i> is set to 1024d. Larger values will cause the &lt;Delta(Acc)&gt; output to report larger values when the knob is turned faster, and cause &lt;Knob(Acc)&gt; to approach 0d or 65535d faster. For most applications the default value of 1024d can be used.</p>      |
| Acc Scale Factor 1<br>Acc Scale Factor 2<br>Acc Scale Factor 3<br>Acc Scale Factor 4                                | <p>Sets the scaling factor that will be initialized when each of the 'Init_Acc_Scale_Factor' inputs is pulsed. This value is used as the <i>Constant</i> for the &lt;Knob(Acc)&gt; and &lt;Delta(Acc)&gt; formulas. If this input is not used, <i>Constant</i> is set to 1024d.</p> <p>Larger values will cause the &lt;Delta(Acc)&gt; output to report larger values when the knob is turned faster, and cause &lt;Knob(Acc)&gt; to approach 0d or 65535d faster. For most applications the default value of 1024d can be used.</p>        |