

Plasma USB Module

ADDENDUM A: BOARD REV 2.11

DOC No. : 16411-A
Rev. : A7-211
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Firmware Rev. : 600-220

The Plasma (Rev. A7-211) **Firmware Rev. 2.20** module you have received conforms functionally to the Plasma (Rev A7-211) **Document No. (16411)**, except for the difference described below.

Plasma Configuration

The Plasma module has several user-adjustable DIP switches that allow the configuration of various onboard systems, features and device modes.

Configuration Selection DIP Switches

Configuration selection DIP switches (Figure 1) can be used to activate additional features and affect all modes of operation.

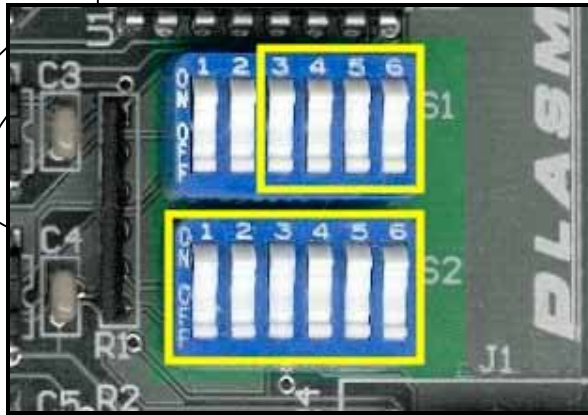


Figure 1

DIP Switch S1:

- Switch 3 – **Level 1 Analog Axis Filter**, Device 1
- Switch 4 – **Level 2 Analog Axis Filter**, Device 1 (Level 1 must be active)
- Switch 5 – **Level 1 Analog Axis Filter**, Device 2
- Switch 6 – **Level 2 Analog Axis Filter**, Device 2 (Level 1 must be active)

DIP Switch S2:

- Switch 1 – **ACE Expansion Port**
- Switch 2 – **ACE Rotaries**
- Switch 3 – **Axis Synchronization**, Device 1
- Switch 4 – **2 / 4 Axis Synchronization**, Device 1
- Switch 5 – **Analog Axis Resolution LSB** (Least Significant Bit)
- Switch 6 – **Analog Axis Resolution MSB** (Most Significant Bit)

Configuration Options

ACE Expansion Port – If you have connected an ACE add-on board to your Plasma unit you can activate the unit by toggling ON switch 1 on S2.

ACE Rotaries – Toggling ON switch 2 on S2, ACE rotary digital data will be used for the X, Y, Z & Rx axis inputs. The X, Y, Z & Rx analog axis ports on Device 1 will no longer be active and ACE digital data will be used instead.

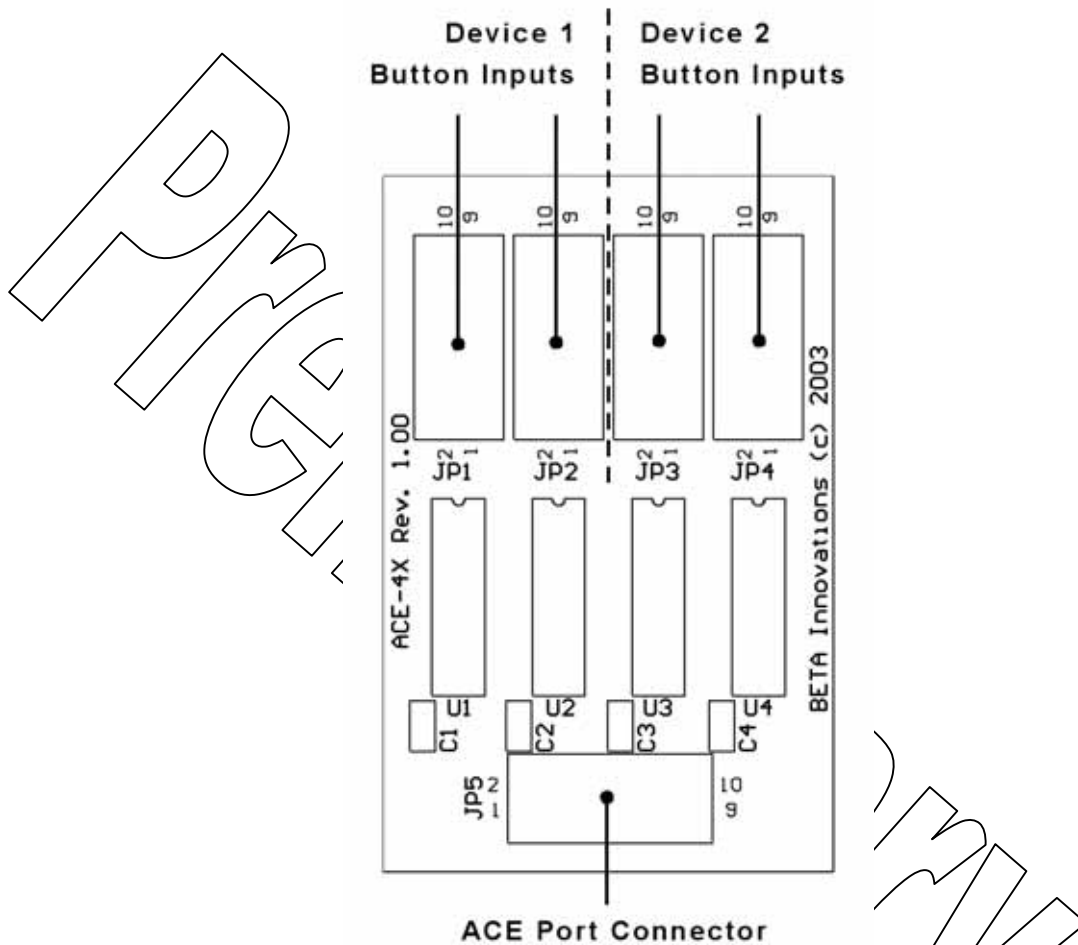
Leaving switch 2 on S2 in the OFF position will default all inputs of the ACE Expansion modules to button inputs increasing the button input count by 16 to each device in all modes.

NOTE: ACE axis data cannot be diverted to any other analog axis ports. ACE's are only available on device 1 of the Plasma unit in all modes of operation and are ideally suited for throttle levers.

Preliminary

Plasma Pin-Out

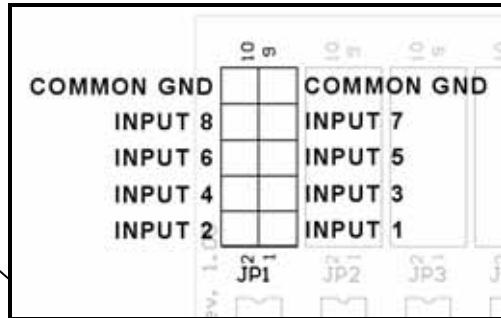
ACE Expansion Module (Button Inputs Mode)



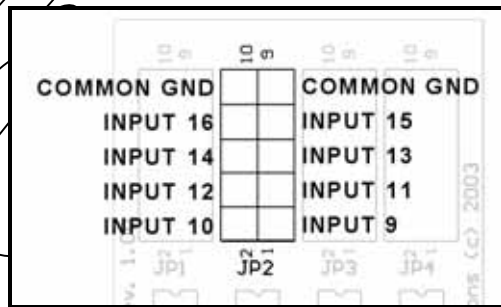
When the ACE expansion module is configured for button inputs, 16 additional inputs per device become available in all modes. In Modes A & B, the additional inputs appear as buttons 19 through 34 and in Modes C & D the additional inputs appear as buttons 33 through 48 on the Plasma device.

NOTE: Button inputs 33 & 34 in Modes A & B and button inputs 33 through 48 in Modes C & D will not be visible in the Windows Games Controller applet. These additional buttons are only available to applications that use DirectX Direct Input. If your application does not support these additional inputs through DirectX, you can assign keyboard key macros by using Keyboard Studio for complete keyboard emulation.

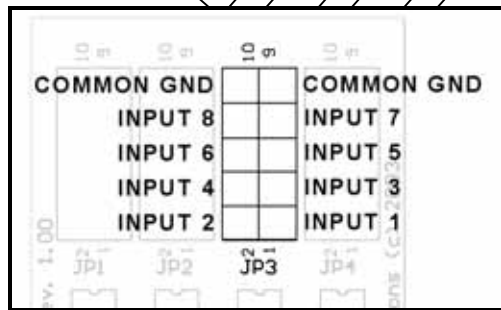
JP1 – Device 1 Inputs



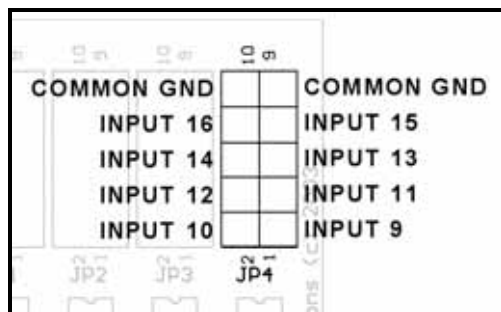
JP2 – Device 1 Inputs



JP3 – Device 2 Inputs



JP4 – Device 2 Inputs



Hardware Specifications

The firmware runs at 40 ms iteration rate in all Modes of operation. As such, any custom interface software should poll this device at least every 40 ms to prevent lost inputs. The 40 ms interval time is more than adequate to debounce switch contacts if any are used as inputs. Note that all inputs are active low, which means you must ground an input in order to register a high "ON" signal at the output.

Most operating systems will detect and load the appropriate HID driver for your device and do not require that a custom device driver be installed. On some operating systems, these default drivers may not support all features of the Plasma module.

Maximum power consumption is 500mW (100mA) and is powered by the USB bus. You do not need to use an external power supply for this device, even when connecting (and powering) several rotary decoder modules to the onboard power pins specifically added for this purpose.

NOTE: DO NOT CONNECT any of the Plasma Vcc pins to external power supplies or voltage sources. Although common grounds can be safely connected to external grounds, it is not recommended and should be avoid whenever possible. Doing so may adversely affect performance, possibly causing strange or erratic behavior under certain conditions.

Visit www.betainnovations.com for the availability of kits, fully assembled modules and accessories.