

# MULE (Multi-Use Light Engine)

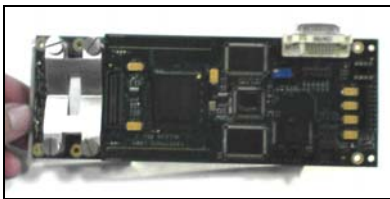
## A High Speed DVI Interface for Discovery - Easy to Use

### Features

High speed 1024 x 768 DLP interface using DVI (Digital Video Interface)  
Interfaces to PC, MAC, LINUX or embedded systems over single channel DVI  
Output is synchronized exactly to the input video, no dropped frames etc.  
Novel Patterns can be generated and sustained indefinitely from software  
Software drivers not required  
Draw and create patterns or images in real time with OpenGL or DirectX, etc.  
Hardware signals are available for camera sync, motion control, LED color control, etc.

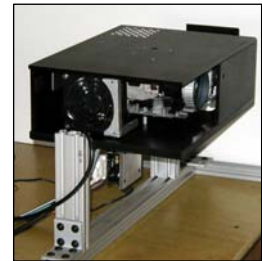
### MULE2A Hardware

The MULE2A attaches as a daughter card to the Discovery 1100.



### MULE Based Projector

The image on the right illustrates integration of Discovery 1100 and MULE2A DVI Interface Hardware into a high brightness projector.



### Binary Frames at High Rates

The MULE2A delivers patterns or images at thousands of frames per second. Each individual frame is binary in nature – pixels are either on or off. To create bright images, a projector with a Xenon lamp may be used. Using Red, Green, and Blue LEDs creates color imagery.

### Software Interface

The Mule displays 24 binary frames per input video frame. The MULE supports two drawing modes. In bit-plane mode, each binary frame is drawn in a single bit plane. In low-latency mode, images are spatially encoded. OpenGL software examples are available in source code form. The resulting binary frame rate on the DLP chip is 24 times faster than the incoming video rate, as shown below:

Incoming Frame Rate	Binary Frames Per Second Displayed
60Hz	1,440 frames per second
85Hz	2,040 frames per second
120Hz	2,880 frames per second
150Hz	3,600 frames per second
180Hz	4,320 frames per second

Rates are manipulated by adjusting the video timing on the computer.

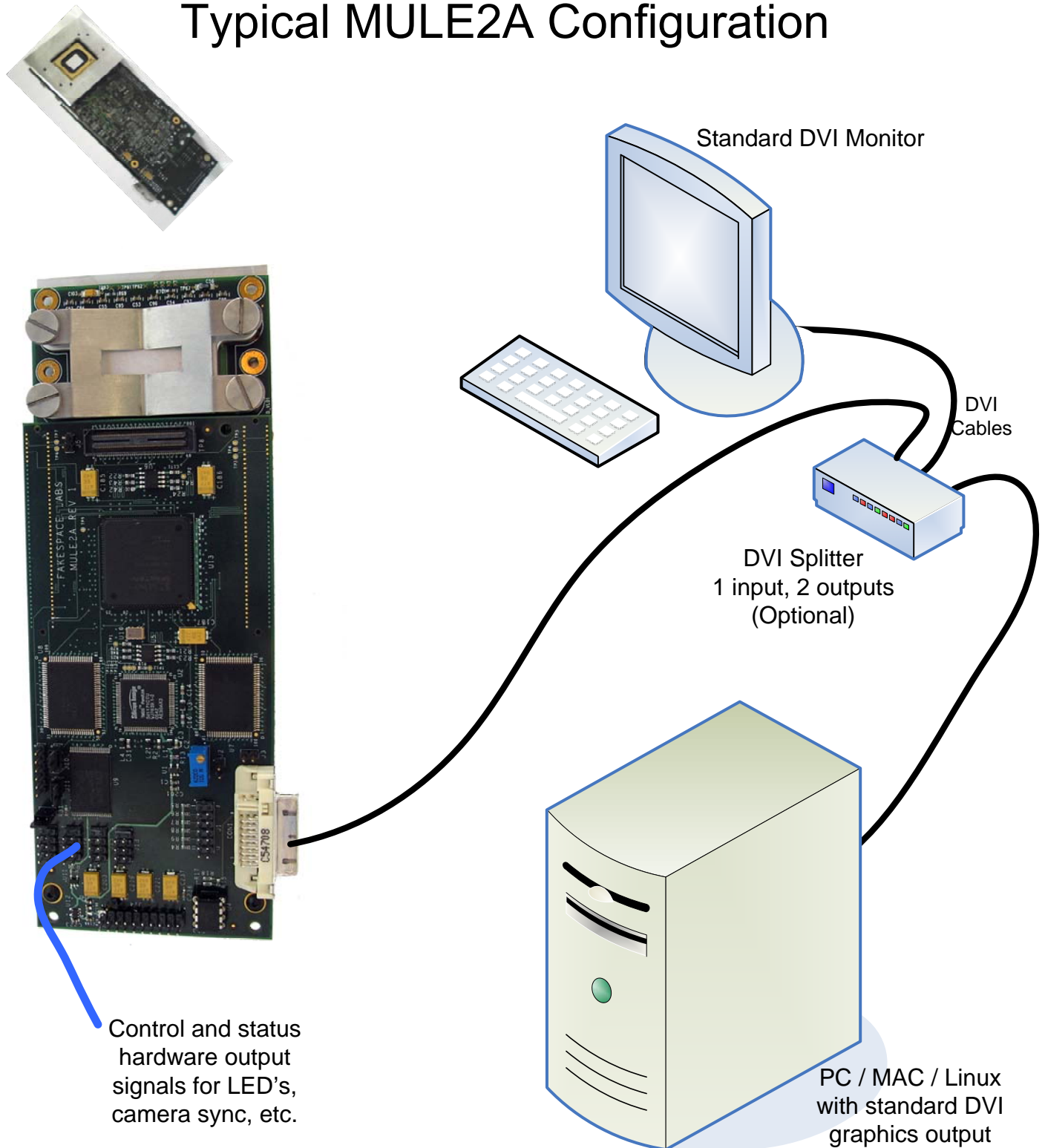
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# Typical MULE2A Configuration



**Note:** When using the MULE2A frame rates greater than about 2,000 frames per second, connect the MULE2A directly to the computer. The computer is used over the network using a utility such as VNC or remote desktop.

Please make contact by email or phone for additional technical details or derivative designs.

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