

Versalent

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SMART-Y PS2 Wedge/Keyboard Combiner Manual

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General Description

SmartY is a small module (2.6" x 1.7" x 0.8") that allows multiple keyboards or keyboard-like devices to communicate with a single PS2 host port, so acts as a *wedge* for POS or barcode scanners. Standard PS2 hardware and protocol do not normally allow this since it was designed for a point-to-point (one to one) connection. If two keyboards/devices are simply connected with a Y cable the two signals (clock and data) will interfere between the two keyboards and neither will be able to communicate.

SmartY overcomes this by providing auto-switching circuits which detect when one keyboard device wants to communicate with the host and effectively isolates the clock and data signals from the other device. The result is no interference and each keyboard can (almost) freely communicate with the host. 'Almost freely' because the switching between keyboards does not happen instantly. After a keyboard sends data to the host the switch keeps that device connected for up to 10 milliseconds to give the host enough time to respond to the associated device if it wants to. The host may for instance, command a keyboard to change its LED status when the CAPS Lock key is pressed. The 10 ms wait-period ensures that any host response is returned to the device which last 'talked'. And therefore the alternate device cannot communicate with the host during this 10 ms period. So almost-freely means that there must be a 10ms 'quiet' time between when a key or character arrives from one device, and a key/character is sent from the alternate device. Typical wedge applications work well because generally only the scanner, or the keyboard is activated at any time and the other device is idle.

Power Requirement:

Smart-Y derives its power from the PS2 host port and therefore needs no external power source. The single PS2 host port also provides power for the two keyboards. Several typical keyboards can be powered from one host port since a typical keyboard requires typically less than 50mA of +5VDC current which is about 20% of the full PS2 keyboard power spec.

Detailed Description:

Smart-Y is simply a smart switch which connects only one pair of keyboard signals to the host port at any time. In addition to providing the switching function, a 'delay' is included to force that device to remain connected for 10 milliseconds after it has finished its message. This provides the host plenty of time to respond and ensure that the response is returned to the most recent 'talker'. Even if an alternate keyboard attempts to talk during this period, Smart-Y will not switch until the delay period has timed out. As a result communication with the alternate device can be blocked for this very short period. This is a limitation imposed by any PS2 host – it cannot 'address' a specific PS2 device since all PS2 hosts assume that there is only one device there.

Some systems require both a keyboard as well as another PS2 keyboard-like device to talk to one PS2 port. An example is a PS2 POS (Point Of Sale) system. These are typically credit card swipers and although they are usually reliable, the card's magnetic strip can be scratched and damaged to the point where it will not swipe successfully. The backup procedure is for the operator to type-in the credit card number manually so a keyboard is needed. In this case the swiper and keyboard do not need to communicate simultaneously and Smart-Y offers the wedge feature needed to attach the two PS2 devices. Operation is identical for a barcode scanner and keyboard.

Other uses include the connection of two keyboards to one computer when the physical position of a single keyboard would normally have to be shifted frequently – simply connect two keyboards and use the one which is most conveniently located at the moment.

The keyboard/device connected to Port 1 must be able to respond properly to the PS2 power-up sequence to notify the host that a keyboard is connected. Port 1 is connected to the host by default so during power-up, this is the port/device which must send a notification to the host indicating 'keyboard connected'. If one of your devices is a standard keyboard, then plugging it into Port 1 will ensure that the Port 1 device is capable of performing this power-up notification sequence. And if only one keyboard device is plugged into the Smart-Y it should be connected to Port 1 to ensure that the host will receive the correct power-up notification.

Physical:

Smart-Y provides two standard PS2 female connectors identical to the ones on the back of a PC. Any devices that act like a PS2 keyboards can be connected. A 3-foot cable extends out of the Smart-Y and ends in a connector identical to that of a standard PS2 keyboard. This can be connected to any host PS2 keyboard port.

Revision #	Revision Date	Description
V1.00	Aug 23, 2008	Initial Manual Release
V1.01	May 23, 2009	Add description of Port 1 being the primary port
V1.02	Mar 30, 2012	Add description as keyboard wedge