NAME

bd – SunButtons and SunDials STREAMS module

SYNOPSIS

open("/dev/bd", O_RDWR)

DESCRIPTION

The **bd** STREAMS module processes the byte streams generated by the SunButtons buttonbox and SunDials dialbox. The buttonbox generates a stream of bytes that encode the identity and state transition of the buttons. The dialbox generates a stream of bytes that encode the identity of the dials and the amount by which they are turned. Both of these streams are merged together when a host has both a buttonbox and a dialbox in use at the same time.

SunButtons reports the button number and up/down status encoded into a one byte message. Byte values from 0xc0 to 0xdf indicate a transition to button down. To obtain the button number, subtract 0xc0 from the byte value. Byte values from 0xe0 to 0xff indicate a transition to button up. To obtain the button number, subtract 0xe0 from the byte value.

Each dial sample in the byte stream consists of three bytes. The first byte identifies which dial was turned and the next two bytes return the delta in signed binary format. When bound to an application using the window system, Virtual User Input Device events are generated. An event from a dial is constrained to lie between 0x80 and 0x87.

A stream with the **bd** pushed streams module configured in it can emit firm_events as specified by the protocol of a VUID. **bd** understands the VUIDSFORMAT and VUIDGFORMAT ioctls (see reference below), as defined in **/usr/include/sys/bdio.h** and **$OPENWINHOME/include/xview/win_event.h.** All other ioctl() requests are passed downstream.

The **bd** streams module sets the parameters of the serial port when it is first opened. No **termio**(7I) **ioctl ()** requests should be performed on a **bd** STREAMS module, as **bd** expects the device parameters to remain as it set them.

IOCTLS

VUIDSFORMAT
VUIDGFORMAT
These are standard *Virtual User Input Device* ioctls.

BDIOBUTLITE
The **bd** streams module implements this ioctl to enable processes to manipulate the lights on the buttonbox. The **BDIOBUTLITE** ioctl must be carried by an I_STR ioctl to the **bd** module. For an explanation of I_STR see **streamio**(7I). The data for the BDIOBUTLITE ioctl is an unsigned integer in which each bit represents the lamp on one button. The macro LED_MAP in **<sys/bdio.h>** maps button numbers to appropriate bits. Source code for the demo program x_buttontest is provided with the buttons and dials package, and may be found in the directory **/usr/demo/BUTTONBOX**. Look at **x_buttontest.c** for an example of how to manipulate the lights on the buttonbox.

FILES

/usr/include/sys/bdio.h
/usr/include/sys/stropts.h
$OPENWINHOME/share/include/xview/win_event.h

SEE ALSO

bdconfig(1M), **ioctl**(2), **x_dialtest**(6), **x_buttontest**(6), **streamio**(7I), **termio**(7I)

SunDials Installation and Programmers Guide
SunButtons Installation and Programmers Guide

WARNINGS

The SunDials dial box must be used with a serial port.