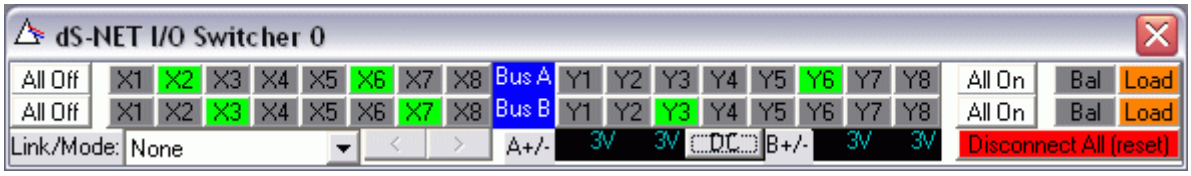
dS-NET I/O Switcher Controller

BETA Documentation

Overview

The dS-NET I/O Switcher Controller for dScope is a PC control interface for the Prism Sound dS-NET I/O switcher. It is intended to present a straight-forward visual intuitive interface for controlling one or more switchers.



Requirements

dScope III hardware with software version 1.01r or later installed and running.
dS-NET I/O switcher connected to dScope dS-NET connection

What it is and what it's not

dS-NET I/O Switcher Controller for dScope is not part of dScope. It is a separate program, however, it relies on dScope being present and running as it controls the switcher via the dScope hardware dS-NET interface. It acts as both a remote control for the switcher and a display for the switcher settings and readings.

How it works

You don't need to read this to be able to use Switcher Controller for dScope, but it will probably help you to understand why it behaves the way it does. Switcher Controller for dScope is a stand-alone program written in Visual Basic that uses the Active-X controls of the dScope software to get information from dScope about a connected switcher and to control it. When measuring DC levels it updates itself periodically by asking the dScope for switcher readings and displaying them. When a button is pressed on the Switcher Controller, a command is sent to the dScope which is relayed to the switcher. The Switcher Controller's status will not change until the switcher itself has changed.

Installation

Switcher Controller for dScope consists of a single executable file "dS-NET IO Switcher Control.exe". This can be run from anywhere on your PC. The only requirement is that the Visual Basic Runtime environment be installed. This is often included on many new PCs or can be downloaded for free from the Microsoft web site.

Un-installation

To un-install this program, simply remove the executable file "dS-NET IO Switcher Control.exe" - the program makes no changes to your computer registry or settings.

Operation

To run the program, just run the executable "dS-NET IO Switcher Control.exe" by double clicking on it. You can also make a shortcut to it on your desktop or task bar and run it in this way. The program itself is very simple. It has no menu or tool bar, and only has the graphic of the Switcher Controller with its display and buttons. The functionality of these are described on the pages that follow. Since this is only an interface, the details of the actual dS-NET IO Switcher functionality are not documented here, instead, you are referred to the dScope dS-NET documentation.

Upon starting the program, you are asked for the address of the switcher you wish to control. This refers to the DIP switches on the back of the switcher. Both the dScope and the switcher should be turned on at this stage. All being well, the interface will start and it's title bar will say which switcher is being controlled. With multiple switchers on the bus, you will need to start another copy of the program for each switcher you wish to control.

To end the program, simply close the window. This will reset the switcher and leave it with all relays open.

Turning off the dScope will stop communication to the switcher and the interface will no longer be able to control it. In this event, an error message will be generated and the Switcher Controller will close.

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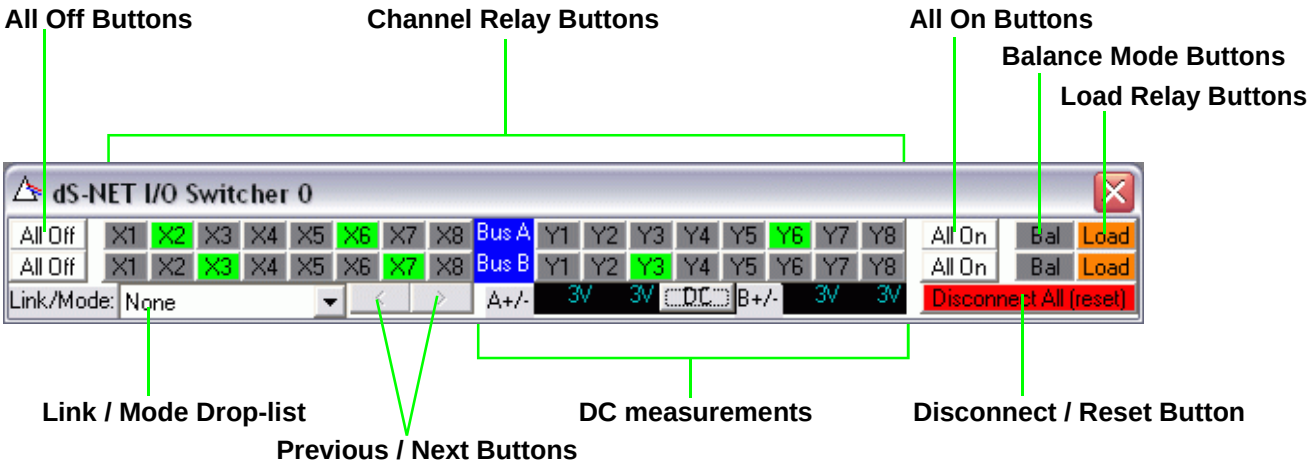
INTERFACE DESCRIPTION

The layout of the Switcher Controller interface is intended to resemble the layout of the front panel of the switcher hardware. The switches on the interface are in the same position and order as the corresponding LEDs on the switcher. They are grey when not enabled, and green or orange when enabled.

The channel relay control consists of two rows of 16 buttons. The rows correspond to the buses on the switcher. The columns of buttons correspond to the 16 channels that can be connected to either bus. When a relay is connecting a channel to a bus, it's associated button changes to green. In the screen-shot below, channel X2 is connected to Bus A whereas X1 is not.

When used as an input switcher, each bus may be switched into 'balance-test' mode for measuring the output balance of equipment under test. In this mode, the bus output is taken between signal ground and the centre tap of a 600R resistor connected between the two legs of the selected input. See the I/O Switcher documentation for details. On the Switcher Controllerl interface, this function is controlled by the Balance Mode Buttons (labeled "Bal") which turn orange when this function is enabled. Before the balance mode is enabled, the program checks for DC on the buses. If either leg of the appropriate bus has more than 6V DC on it, balance mode will not engage as this could cause damage to the balance resistors.

It is also possible to connect external loads to the two buses independently. See the switcher documentation for more information on this. The operation of this is controlled by the Load Relay Buttons (labeled "Load"). These will change to orange when the loads are connected, as in the screen-shot below.



Link / Mode Drop-List - The Switcher Controller is capable of operating in a number of modes which are described in more depth later. The mode is selected from this drop-list. Selecting a new mode re-sets the switcher, clearing all channels and settings.

Previous / Next Buttons - In most of the operating modes of the switcher, these buttons select the previous and next channels or channel pairs. In this context, previous means the adjacent channel to the left, and next means the adjacent channel to the right. In stereo mode, this will move the selection up or down in pairs. These buttons are disabled when the "none" mode is enabled. See later.

DC Measurements - the I/O Switcher is capable of measuring the DC voltage relative to ground on the two legs of each bus. These readings can be displayed on the Switcher Controller interface. There are two readings for each channel, the left one is for the positive or hot leg (pin 2 of the XLR) and the right one is for the negative or cold leg (pin 3 of the XLR). Hovering your mouse over the readings will also give a tool-tip indicating what each reading is. By default the Switcher Controller does not update the DC readings as this puts additional traffic on the dS-NET communication bus and slows down the operation of the switcher. Pressing the "DC" button will toggle the reading of the DC on and off. When it is switched on, the readings are updated 5 times per second. When turned off, the display reads "- - V".

Disconnect / Reset Button - it is surprisingly easy to make a connection through a switcher which leads to unexpected results or the potential of damage and it may not be obvious right away what has gone wrong. This button is to disconnect all the relays, including the balance mode and the load relay and to reset the switcher.

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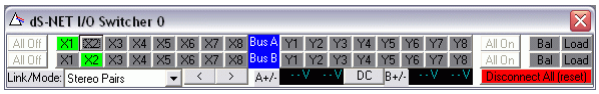
SWITCHER MODES

In order to make various connection scenarios easy to control, the Switcher Controller has a variety of “modes”. These appear in the Link / Mode drop-list on the bottom left of the interface. These are described below:

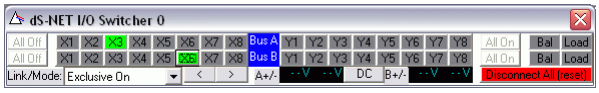
“None”: In this mode, there is no linking between channels or buses - you are free to select and deselect any channels on either bus at will. Any channel relay button that is pressed toggles the state of that relay only. In this mode, there are also available “All Off” and “All On” buttons which, as their names suggest, switch off or on all the channel relays on their associated buses. The “previous” and “next” buttons are disabled in this mode.

In - Out mode: This is for use where Bus A is used for inputs and Bus B for outputs. Channel Group X would then be used to connect to 8 inputs and Channel Group Y would be used to connect to 8 Outputs. When you select a channel on the inputs, the associated channel on the outputs is selected at the same time. In this mode, pressing the same button again does not turn it off, but simply re-selects it. Also in this mode, you can select the previous and next channel by using the “previous” and “next buttons”. This will wrap round at the end of the eight channels.



Stereo Mode: This is for use where Bus A is used for the left channel and Bus B is used for the right channel of a stereo pair. We can test 8 stereo pairs by connecting the left channels to the odd number channels, and the right channels to the even numbers. This can be used for input or outputs. Selecting any one of the four buttons that make up a stereo pair will select that pair. For example, in the screen-shot, clicking on X1, X2 on either Bus A or Bus B would select the stereo pair as shown. Also in this mode, you can select the previous and next channel by using the “previous” and “next buttons”. This will wrap round at the end of the eight channel pairs.

Termination Mode: This is used where bus A is connected to a source, and Bus B is terminated, typically with a short circuit. This could be used to connect up to 16 inputs and allow measurement one channel at a time with the remaining channels terminated. You can select the previous and next channel by using the “previous” and “next buttons”. This will wrap round at the end of the 16 channels.



Exclusive On Mode: In this mode, Bus A and Bus B are independent. On either bus, however, only one connection can be made. Selecting a new button will first disconnect the existing relay, then connect the newly selected one. Using the previous and next buttons will select the previous and next channels on the current bus. If the last button pressed was on Bus B, then using the previous and next buttons will move the selected relay on Bus B only.

Exclusive Off Mode: In this mode, Bus A and Bus B are independent. On either bus, however, only one connection can be open. Selecting a new button will first connect the existing relay, then disconnect the newly selected one. Using the previous and next buttons will deselect the previous and next relays on the current bus respectively. If the last button pressed was on Bus B, then using the previous and next buttons will move the deselected channel on Bus B only.

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