Volume

1

NEURALYNX INC

Data Analysis Hardware Solutions

Amp Select Switchbox Users Manual

DATA ANALYSIS HARDWARE SOLUTIONS

Amp Select Switchbox Users Manual

2434 N. Pantano Rd. Tucson AZ
Phone 520.722.8144 • Fax 520.722.8163
www.Neuralynx.com
support@Neuralynx.com

Introduction

Neuralynx Customer Appreciation

Thank you for using Neuralynx Inc. Software Analysis Solutions. Neuralynx Inc appreciates your business and looks forward to serving you in the future.

Neuralynx Version Number

Version 1.0.0

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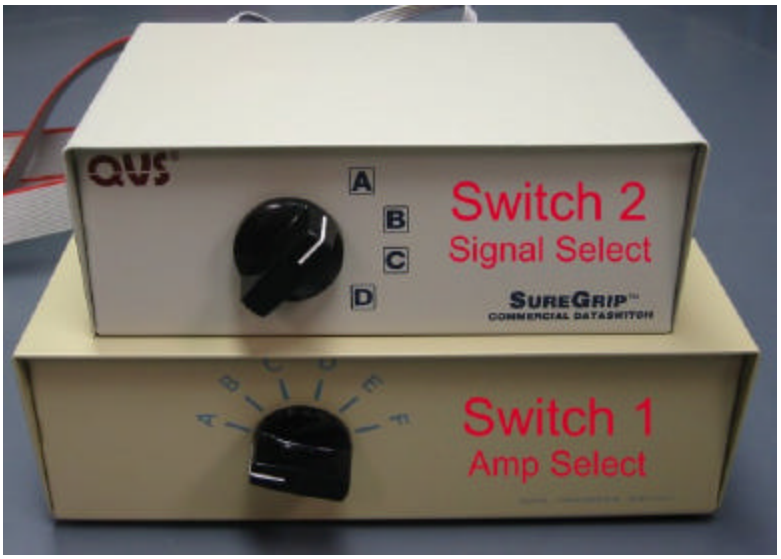
Amp Select Switchbox Description

The Amp Select Switchbox allows a Neuralynx customer to selectively monitor any of up to 48 signal channels using either a 4-input, 2-input or single input Oscilloscope.

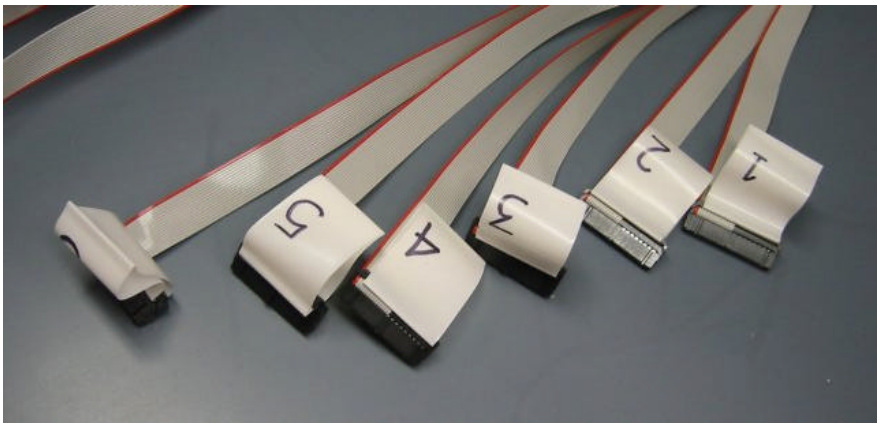
The switchbox has 6 ribbon cable inputs which each attach to the "Monitor" port of a Lynx-8 amplifier, and 4 BNC outputs which attach to the Oscilloscope.



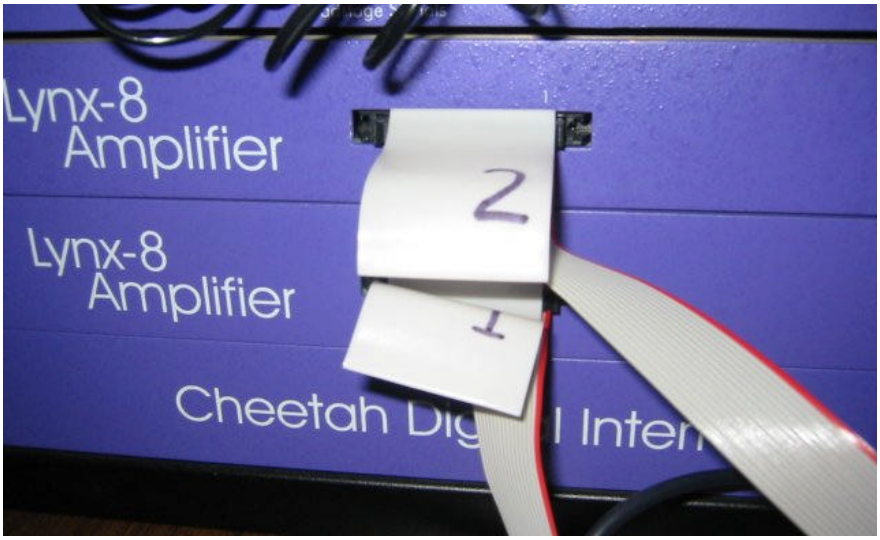
Setup

Input

Six ribbon cables serve as inputs from the Lynx-8 amplifiers. Each cable is numbered 1 through 6, and includes a red stripe along one edge to indicate on which side of the connector pin 1 is located.

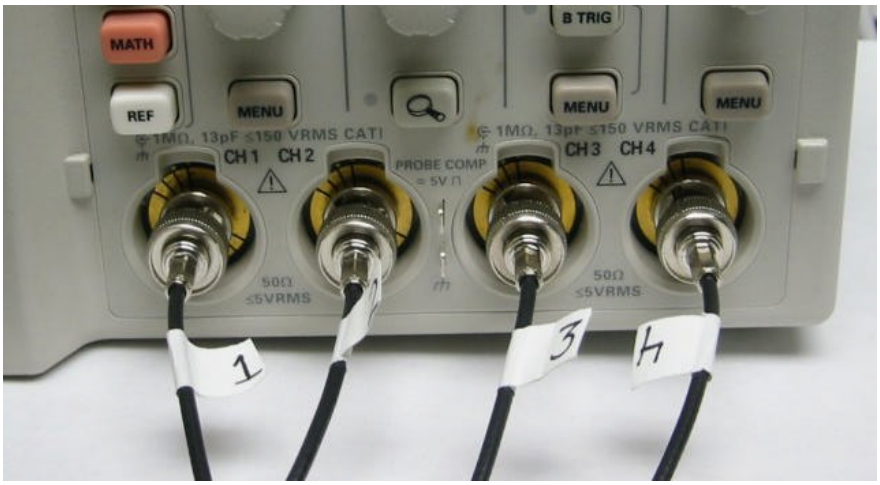


Starting with cable 1, insert the connector into the "Monitor" port of the corresponding Lynx-8 amplifier. In a typical rack setup the bottom amplifier is numbered 1 while the top amplifier – located immediately below the ERP – is the highest number.



Output

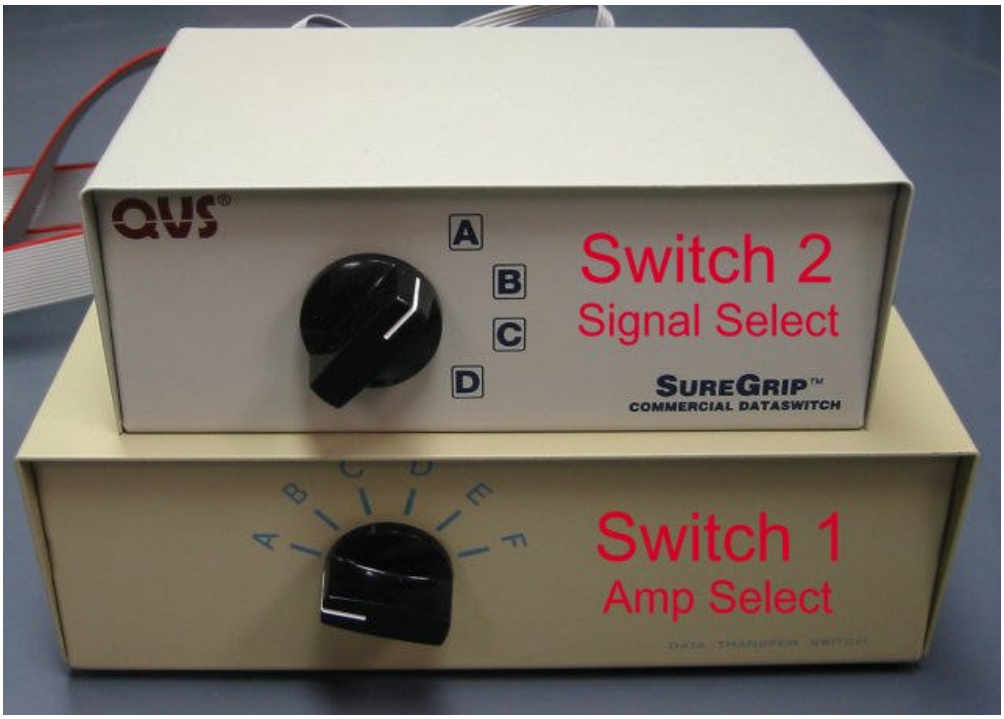
Four wires with BNC connectors serve as the switchbox outputs, delivering the specified signal channel to the oscilloscope or other monitoring device. Each output is labeled (1 through 4) and corresponds to an input channel on the oscilloscope.



For customers using a single channel oscilloscope it will be necessary to swap both BNC 1 and BNC 2 on the same input, depending on which signal is desired.

Switches

Two switches make up the Amp Select Switch. The bottom switch – known as Switch 1 – selects the signal's source amplifier. The top switch – Switch 2 – selects the individual or set of signals to monitor from that amplifier.



Operation

4-input Oscilloscope

This switchbox is best suited for use with a 4-input oscilloscope. Each of the 4 BNC output cables should be connected to the 4 inputs of the oscilloscope. The channel outputs are as follows:

Switch 1	Switch 2	BNC 1	BNC 2	BNC 3	BNC 4
A	A	1	2	3	4
	C	5	6	7	8
B	A	9	10	11	12
	C	13	14	15	16
C	A	17	18	19	20
	C	21	22	23	24
D	A	25	26	27	28
	C	29	30	31	32
E	A	33	34	35	36
	C	37	38	39	40
F	A	41	42	43	44
	C	45	46	47	48

Note that the B and D positions of Switch 2 are not used with the 4 channel oscilloscope.

The right portion of the table shows which channel will be monitored on each BNC output with the current switch configuration. For example, with Switch 1 in the 'D' position and Switch 2 in the 'C' position the four signals from channel 29, 30, 31 and 32 will pass through to BNC 1, 2, 3 and 4 respectively.

Single or 2-input Oscilloscope

To use the switchbox with a 2-input oscilloscope connect both BNC 1 and BNC 2 to the appropriate inputs. The specific signal channels can be selected as follows:

Switch 1	Switch 2	BNC 1	BNC 2
A	A	1	2
	B	3	4
	C	5	6
	D	7	8
B	A	9	10
	B	11	12
	C	13	14
	D	15	16
C	A	17	18
	B	19	20
	C	21	22
	D	23	24
D	A	25	26
	B	27	28
	C	29	30
	D	31	32
E	A	33	34
	B	35	36
	C	37	38
	D	39	40
F	A	41	42
	B	43	44
	C	45	46
	D	47	48

For a single input oscilloscope it will be necessary to swap between BNC 1 and BNC 2 on the input in order to monitor every channel. For example, if channel 20 is to be monitored Switch 1 should be set to ‘C’, Switch 2 to ‘B’ and BNC 2 should be connected to the oscilloscope.

Audio Monitoring

The neural signals can be monitored audibly by connecting a standard amplified speaker to one of the BNC outputs via the proper adaptor. Computer speakers with built in amplifiers and a $1/8^{th}$ inch headphone style jack are well suited for audio monitoring. A BNC T-connector can be used in order to monitor the signal audibly and visually (via the oscilloscope) simultaneously.

An adaptor can be constructed using two off-the-shelf adaptors available from most electronics supply stores. BNC to $1/8^{th}$ inch mono adaptors are not commonly available, therefore both a BNC to RCA adaptor and an RCA to $1/8^{th}$ inch mono adaptor should be used.