



# **Cheetah Digital Interface User Manual**

Document Revision 1.20  
Last Revised: August 8, 2008

© Neuralynx, Inc.  
105 Commercial, Bozeman, MT 59715  
Phone 406.585.4542 • Fax 406.585.9034  
[www.Neuralynx.com](http://www.Neuralynx.com)  
[support@Neuralynx.com](mailto:support@Neuralynx.com)

## Table of Contents

1	Document Overview .....	3
2	Cheetah Digital Interface Overview .....	3
3	The Cheetah Digital Interface: .....	4
4	Digital Interface Box.....	4
5	Board 1 Digital I/O Port.....	4
6	DT3010 Board 1 connector.....	5
7	DT3010 Board 2 Connector.....	5
8	Board 2 Digital I/O Port.....	5
9	BNC Connectors .....	5

## List of Figures and Tables

Figure 3-1	Backplane .....	4
Figure 4-1	Backplane with Output Labels .....	4
Table 1	Digital I/O Port #1 .....	4
Table 2	Digital I/O Port #2 .....	5

# **1 Document Overview**

This manual explains the operation of the Neuralynx Cheetah-32/64 Digital Interface Box. Included are instructions for connecting the digital interface cable. Also discussed are the various input and output signal capabilities. Also discussed is the function of the signal configuration switch S1.

# **2 Cheetah Digital Interface Overview**

The Cheetah Digital Interface provides a way of accessing the Cheetah 32/64 digital inputs and outputs. It provides access to system clock signals to allow the user to synchronize external equipment to the Cheetah System. The user can also synchronize the Cheetah system to a custom System. The Digital Interface also functions to synchronize the operation of 2 DT3010 A/D boards in a 64 channel system

### 3 The Cheetah Digital Interface:



Figure 3-1 Backplane

### 4 Digital Interface Box

This interface supports one or two Cheetah 32 (DT3010) A/D boards. This box contains the signal connections to synchronize the two boards and signals that are used from various features of the A/D board(s) (such as the board’s clock inputs/outputs and subsystem triggers) so that the DT3010 board will function properly as designed into the Cheetah-32/64 system design.

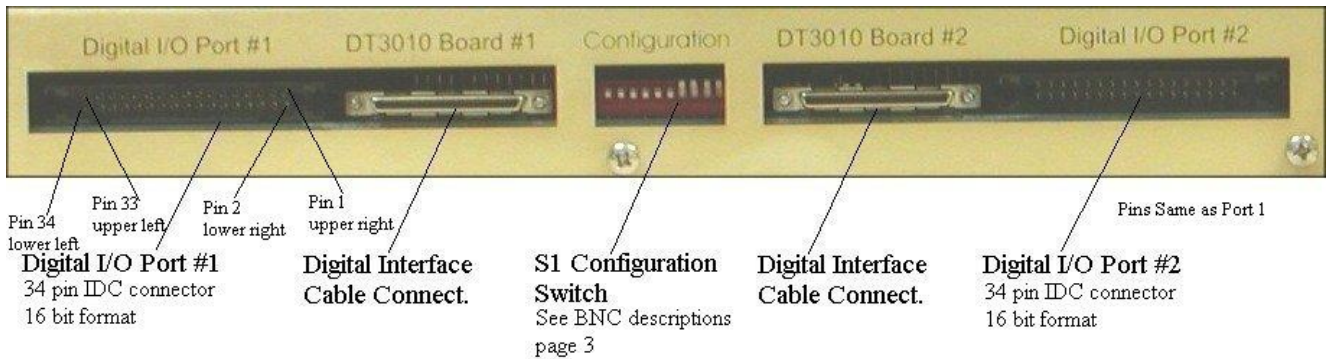


Figure 4-1 Backplane with Output Labels

### 5 Board 1 Digital I/O Port

This is a 34 pin connector which is the 16 bit digital I/O port for the first DT3010 board . The pin-out of this connector follows the standard Neuralynx 34 pin parallel I/O port pin-out. The pin-out is as follows:

Table 1 Digital I/O Port #1

Odd Pins 1-31	TTL Signals (Bit 0 – 15 respectively)
Even Pins 2 – 34	Ground Connections
Pin 33	Ground

Note: The Neuralynx PIO-34 (TTL-Led) board plugs into this connector for easy monitoring of digital port signals (input & output).

## 6 DT3010 Board 1 connector

This is a 68 pin Amp connector that connects to the first DT3010 A/D board digital connector. It contains all the digital and clock signals for this board.

## 7 DT3010 Board 2 Connector

This is a 68 pin Amp connector that connects to the second DT3010 A/D board digital connector. It contains all the digital and clock signals for this board.

## 8 Board 2 Digital I/O Port

This is a 34 pin connector which is the 16 bit digital I/O port for the first DT3010 board. The pin-out of this connector follows the standard Neuralynx 34 pin parallel I/O port pin-out. The pin-out is as follows:

**Table 2 Digital I/O Port #2**

Odd Pins 1-31	TTL Signals (Bit 0 – 15 respectively)
Even Pins 2 – 34	Ground Connections
Pin 33	Ground

Note: The Neuralynx PIO-34 (TTL-Led) board plugs into this connector for easy monitoring of digital port signals (input & output).

## 9 BNC Connectors

There are 6 BNC connectors on the rear panel. The first 5 BNC connectors function as either inputs or outputs depending on the position of the first 5 positions of DIP switch (S1) in the back panel configuration opening. These signals are driven by clock ports on the first A/D board and they drive the Timestamp, A/D & D/A clock and trigger inputs. Normally, A/D board clock signals are used to drive the input clock timing. This is done by having the switch in the closed (down) position. These signals can be monitored on the BNCs and used for other purposes.

The output buffers driving the switch (and BNCs) are high current (32ma) 74244 ICs.

The following is chart of DIP switches and associated BNCs:

SW1-1	TS Clock BNC		
SW1-2	A/D Clock BNC		
SW1-3	A/D Trigger BNC		
SW1-4	D/A Clock BNC		
SW1-5	D/A Trigger BNC		

To use an external signal as a clock or signal input, set the appropriate switch to the open (up) position to disconnect the A/D board clock source signal. Then, connect an external control signal to the appropriate BNC.

The 6<sup>th</sup> BNC is an output for one of the many DT3010 signals that can be used as a sync source. This signal is selected by switching closed (down) **only** one of the dip switch SW1 positions 6-10.

The following is a chart of dip switch selections and the signal that will appear on BNC 6– Sync Out:

- SW1-6 A/D Sample Clock
- SW1-7 A/D Trigger Out
- SW1-8 Board 1 Counter 0 Output
- SW1-9 Board 1 Counter 1 Output
- SW1-10 Internally selectable by connecting JP2 pin 5 to any of the digital signals available on connector JCFG0 or JCFG1 labeled DT3010 Board #0 and Board # 1 respectively.

**Remember:** Switching more than one of SW1 6-10 switches to the on (down) time will cause improper operation of your system.

Note: Board 0 and 1 are also the designations used in the ASCII setup files.

On the back panel the connectors are labeled Board #1 and Board #2

**Default Switch Configuration:** SW1 1-6 ON (down)  
SW1 7 -10 OFF (off)