Flex Link Relay & Sensor Cable Tech Guide

Version beta

1.0 INTRODUCTION

The Flex Link Relay & Sensor Cable is an input/output cable for use with the iTach Flex. It provides relay outputs and sensor inputs which allow control and monitoring of a variety of devices. Configuration is accomplished through hardware jumpers and software API. External devices are connected via push release terminal blocks. The enclosure can be mounted directly on a DIN rail, allowing for simple integration with external relays.

The relay outputs are fully-configurable to operate as a number of different standard relay types, and are capable of controlling a wide range of devices.

The sensor inputs are configurable to allow detection of contact closure, as well as AC and DC voltage.

See Sections 3.1 and 4.1 for detailed specifications and ratings.

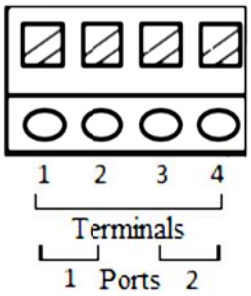

Figure 1 - Connector Block

2.0 INPUT AND OUTPUT CONNECTOR BLOCKS

The board provides terminal connector blocks for connecting external devices. These connector blocks are physically grouped as relay outputs, and sensor inputs. Each distinct **port** within the relay outputs or sensor inputs uses 2 terminals. For example, in Figure 1 above, Port 1 uses terminals 1 and 2, and Port 2 uses terminals 3 and 4.

Relay ports can be configured as individual SPST relays, but can also be logically grouped with other ports to create other common relay type configurations. Input ports are all individually configurable and support either voltage sensing or contact closure modes.

3.0 RELAY OUTPUTS

The relay outputs can be configured (via hardware jumpers and software API) to operate as various common relay types. These supported relay types and associated jumper settings are shown in the following illustrations.

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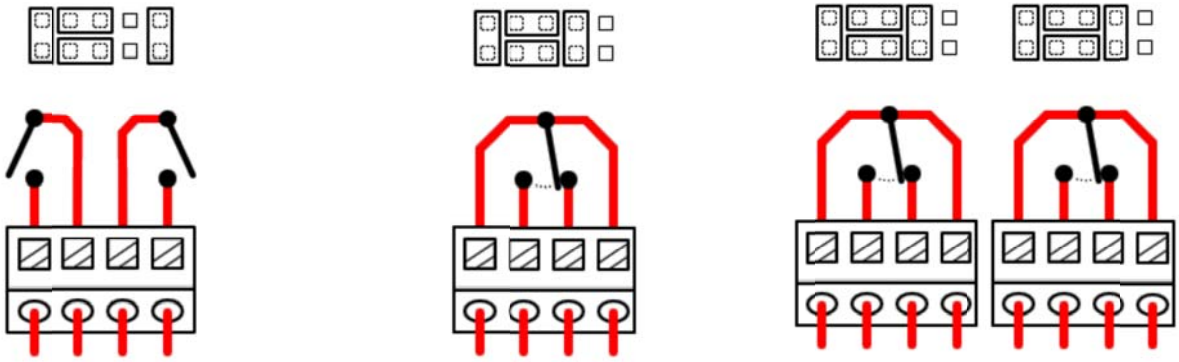

(2) SPST Relays
(Single Pole, Single-Throw)

SPDT Relay
(Single Pole, Double-Throw)

DPDT Relay
(Double Pole, Double-Throw)

Figure 2. Supported Relay Types and Jumper Settings

Each relay configuration has a configurable default state. This allows relays to be set up as either normally open or normally closed. The above illustrations depict the relays in an open state with a default state of open.

Single Pole, Single-Throw

Each physical port functions as an individual relay, and each relay uses a single port. For example, Port 1 uses terminals 1 & 2, Port 2 uses terminals 3 & 4.

Single Pole, Double-Throw

Two physical relay output ports are grouped such that pins 1 and 4 are connected as the common pole, with double (2) throws (positions), to terminal 3 and terminal 2. This mode is useful for applications where two separate outputs are needed, rather than simply turning a device on or off.

Double Pole, Double-Throw

Four ports (two relay blocks) are configured as a pair of SPDT relays. In this mode, the two SPDT relays are linked, so that both throw simultaneously.

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3.1 RELAYS ELECTRICAL SPECIFICATIONS

Relay Rating	Minimum Value	Maximum Value
Voltage	--	24 Volts
Current	--	500mA

4.0 SENSORS

Sensor inputs are versatile and allow for sensing contact-closure, as well as presence of voltages between ±3v and ±24v rms value. Each terminal block provides 2 input ports (a port used 2 terminal pins). Each input port on an input block can be configured independently.

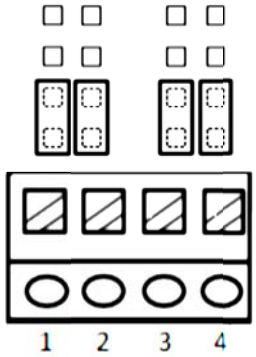

Figure 3: Input Block: Voltage-Sense Configuration

To configure a port for voltage input, disconnect all jumpers, or store jumpers vertically in the bottom two positions of the jumper pins. In Figure 3, a block of 2 input ports is configured with both ports set for voltage-sense. In this state the inputs are read as open ('0') until a voltage is applied at which point the indicator LEDs turn on and the inputs are read as closed ('1').

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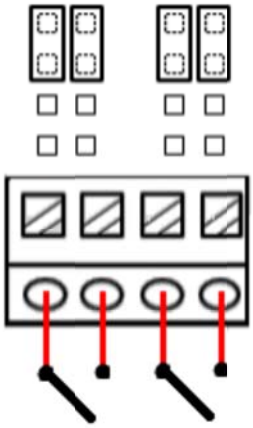

Illustration 4: Input Block: Contact Closure Configuration

To configure input ports for contact closure, the jumpers should be placed vertically on the top two pins of each column of jumper pins, as shown for the two ports in Figure 4. In this configuration, the state of the inputs will be closed ('1') until contact-closure occurs, at which point the input state will be open ('0').

4.1 SENSOR INPUT CHARACTERISTICS

Characteristics	Minimum Value	Maximum Value
Input Voltage AC/DC	±3v (RMS)*	±24v (RMS)
Input Current	200µA	--
Input Low to High Response	1.5ms**	3ms**
Input High to Low Response	110ms**	250ms**
Contact Closure Detection Source Current	--	2mA

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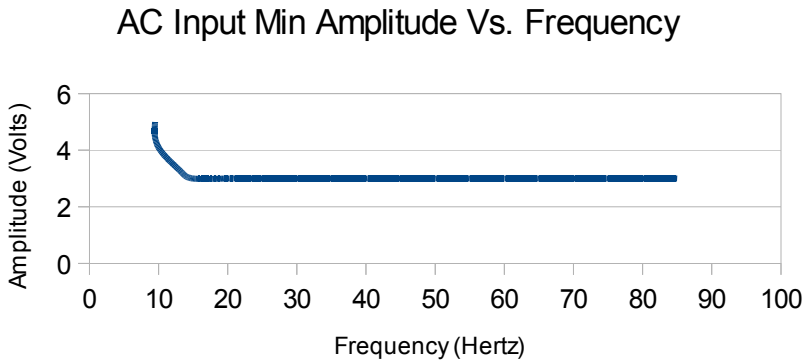

*****For AC signals at low frequencies the minimum input voltage becomes a function of frequency. The following graph depicts this relationship.

**These times are for the relay and sensor board hardware detection only and do not include network and processing delays.

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