USB Interface Box RS-232 Interface Specifications

RS-232 communication with the box's Atmel MCU is enabled by a Sci-Labs USB-Serial bridge chip. Drivers on the Windows PC establish a virtual COM port that allows access to the MCU.

Serial Port Connection Parameters:

Baud Rate: 250,000

Data Bits: 8

Stop Bits: 1

Handshaking: None

Encoding: US-ASCII

Data Transmission Bit Pattern

The state of all inputs on the interface box is transmitted in the form of 2 bytes with the following bit pattern:

X O N M L K J I H G F E D C B A

Least Significant Bit

High Byte

Low Byte

Arm Flag

Socket III

Socket II

Socket I

Bits A - O in the bit pattern represent the state of the input pins for each socket on the device. Each bit shall be set to 1 if a circuit (seat pad) connected to the corresponding input pin is open. Each bit shall be set to 0 if a circuit connected to the corresponding input pin is closed.

Bit X shall be set to 1 if the bit pattern is the result of a state change on any one pin, following the receipt of an 'arm' command. Bit X shall be set to 0 in all other cases.

8-Pin Octal Socket Pin Diagram

2

1

3

4

5

6

7

8

Socket Pins to Data Transmission Bit Pattern Mapping

Socket I Socket II Socket III

I

J

H

G

F

Common

Not Used

Not Used

N

O

M

L

K

Common

Not Used

Not Used

B

A

C

D

E

Common

Not Used

Not Used

Seat Pads to Data Transmission Bit Pattern Mapping

(This mapping assumes that the seat pad closest to the plug end of the string is wired to connect to pin 1 on the socket and the pad furthest from the plug is wired to pin 5 on the socket. Pads in between connect to pins 2 - 4 on the socket, in sequential order with the end pads.)

Socket I Socket II Socket III

E

D

C

B

A

N

M

L

K

O

I

H

G

F

J

Software Interface:

Acceptable Command Format:

Input:

The device shall accept commands in the form of ASCII characters. All commands must be followed by a newline character and/or a carriage return character. A command string is any string of characters preceding a newline or carriage return. Any command strings that do not match the list of acceptable commands shall be ignored.

Command List:

**Command Name:** Arm **Command String:** a

**Action:** Upon receiving a 'Arm' command the device shall report the next instance of state change on any of the 15 input pins. When any input pin changes its state the device shall transmit the data bit pattern reflecting the state change that triggered the report. The most significant bit, bit 'X' in the transmission data bits pattern shall be set to 1 to signify that this transmission was triggered by a state change following the receipt of an arm command.

**Command Name:** Report **Command String:** r

**Action:** Upon receiving a 'Report' command the device shall report the most recent state of the 15 input pins via the transmission bit pattern followed by a carriage return and newline character.