USB INTERFACE SYSTEM

DIG-703A / DIG-703B

PRODUCT MANUAL

DOC-114
Rev 1.7

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CHAPTER 1 | INTRODUCTION

The DIG-703 series of USB Interface Systems was designed to be compact and easy to use. Unlike other interface packages, the DIG-703 series does not require a direct current external power supply, it simply plugs into a standard wall outlet. The DIG-703A provides four inputs and eight outputs and the DIG-703B provides eight inputs and sixteen outputs. Both systems provide timed interrupts as required by the MED-PC IV software.

NOTE: It is important to read this manual before connecting any devices to the Interface System. Certain devices operate on a short pulse and may be damaged if held on for any extended period of time. Care should be taken so that the output is not inadvertently left on for prolonged periods of time.

System Overview

Although MED-PC interprets ports and bit values automatically, a basic understanding of these concepts is helpful. Ports allow the DIG-703 USB Interface to communicate with a computer via a specific address in memory. The port numbers are factory set to port 780 for inputs and port 792 for outputs. Inputs and outputs are coded via the binary numbering systems. The offset for inputs is -1 and for outputs is 0.

It is not necessary to be proficient in the binary numbering system. Simply keep in mind that each input or output is assigned a bit value of 1, 2, 4, 8, 16, 32, 64, or 128 and a port value of 780 for inputs, and 792 for outputs.

Figure 1.1 Dig-703B USB Interface System

CHAPTER 2 | INSTALLATION INSTRUCTIONS

1. Insert installation CD into CD-ROM drive, close CD-ROM drive.

2. Choose to run AutoRun.exe, if prompted.

3. Click "Install the DIG-703 Driver" link in installation program.

Figure 2.1- Install the DIG-703 Driver Screen

4. Click "Install" on the subsequent "Welcome to the install wizard for the DIG-703" dialog.

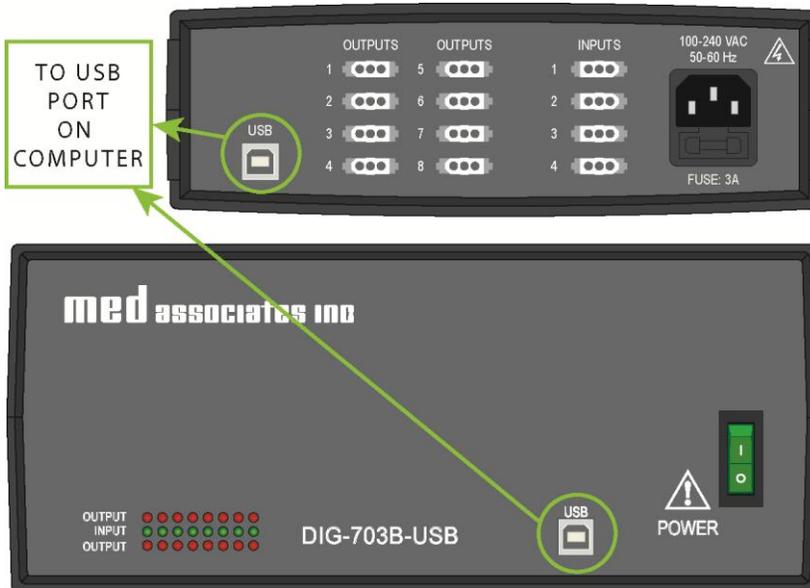*Figure 2.2 - Welcome to the Install Wizard Screen*

5. Click "Install" on the Windows Security dialog.

6. Click "Finish" button in installation program to exit the installation wizard.

Figure 2.3 - Install Wizard Complete Screen

7. Connect DIG-703 device to the computer via the included USB cable.

Figure 2.4 - Connect Device to Computer

8. Connect DIG-703 device to AC power via the included AC power cord, turn power switch to ON.

NOTE: The fuse box is located directly under the power. To access the fuse box, use a small flat head screwdriver and place it in the notch located in the power receptacle, above the fuse box, gently pop the fuse box out. Included is a spare fuse housed within.

Figure 2.5 - Attach AC Power
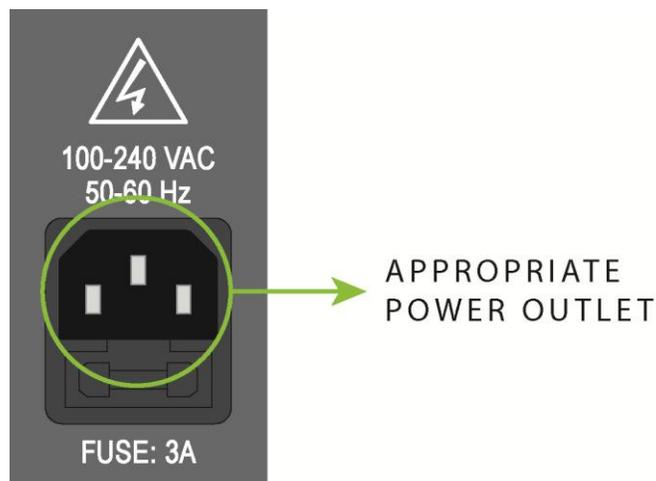
After the "Installing device driver software" toolbar popup completes, the DIG-703 device is now ready to use.
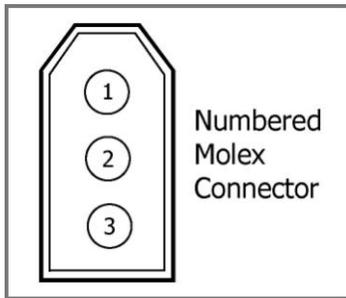
Figure 2.6 - Installing Device Driver Toolbar Popup
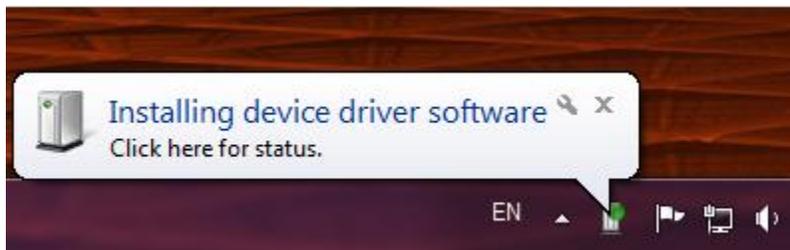
CHAPTER 3 | INPUT/OUTPUT PINOUTS

The Inputs and Outputs on both DIG-703 USB Interface Systems utilize 3-pin mini-molex connectors. The pins are numbered as follows:

Figure 3.1 - Pin Numbers on DIG-703 Inputs and Outputs

The three-pin **Input** connectors are wired as shown in Table 3.1.

Table 3.1 - Input Connector

Input Connector	Function
Pin 1	Ground (GND or "-")
Pin 2	Input Data Line
Pin 3	+ 28 Volts DC *******

NOTE: The 28 Volts DC is present at the input connector to power such devices as photobeam controls, contact lickometers, head entry detectors, etc. When wiring input switches make certain that +28 V is not connected to the input data line. Please contact MED Associates with questions regarding device compatibility.

The three-pin **Output** connectors are wired as shown in Table 3.2 .

Table 3.2 - Output Connector

Output Connector	Function
Pin 1	Ground (GND or "-")
Pin 2	Output Control Line
Pin 3	+ 28 Volts DC

CHAPTER 4 | INPUT SETTINGS

The input settings are selected using SW1 and SW2, which are accessed by removing the four Philips screws from the bottom of the DIG-703 USB Interface System and removing the cover. The switches and their default positions are shown in Figure 4.1. Be sure to securely replace the cover when finished.

Figure 4.1 - Diagram of SW1 and SW2
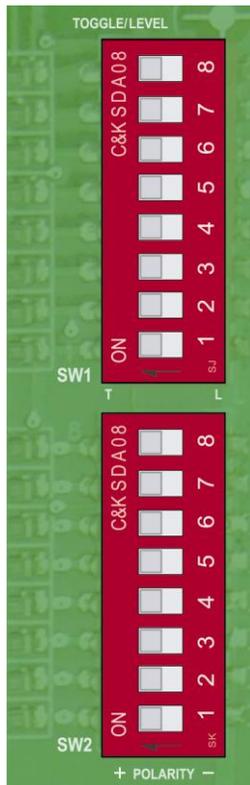
Toggle and Level Input Settings

The row of switches (SW1) used for this setting can be set to **L** for Level or **T** for Toggle. The default switch placement is Toggle as shown in Figure 4.1.

Toggle

This setting provides a single input, no matter how long the input is held.   When used with a response lever, for example, this requires the animal to both press and release the lever before another response could be detected. The input may occur on either the press or the release depending on the switch contact (normally open or normally closed) and the input setting (Normal or Invert). Because the input of the card is filtered against switch bounce and latched until polled by the computer, even the shortest contact (or contact break if in Invert mode) will not be missed.

Level

This setting results in an input being detected each time the card is polled for as long as the input is maintained. (In MED-PC® this occurs on each interrupt and is determined by the resolution setting when Med PC is installed. See the MED-PC® manual for details). This may be desirable when using photobeams, or when timing how long a response lever is held.

Normal and Inverted Input Settings

The row of switches (SW2) used for this setting are labeled **+** for Normal and **-** for Inverted. The default switch placement is Normal (+), as shown in Figure 4.1.

Normal

This setting is designed to work with a normally open contact, such as those found in response levers, and will cause an input to occur when the response lever is pressed or the switch contact is closed.

Invert

This setting is designed to work with normally closed contacts, such as those found in pigeon keys, and produces a response when the key is pressed. This setting should be used if an input should occur when a normally open response lever is released or a switch contact is opened. Also use with photobeam inputs if an input is desired when the beam is uninterrupted instead of broken.

CHAPTER 5 | DIG-703A CONNECTIONS

The DIG-703A USB Interface System consists of four input connectors and eight output connectors. Total combined output is capable of switching up to 1.5 amps at 28 Volts DC.

Figure 5.1 - Rear of DIG-703A

As with other input and output modules, each data line or control line is assigned a binary bit value. The following values apply:

Table 5.1- DIG-703A Port, Offset and Bit Values

Function	Port	Offset	Bit Value
Input 1	780	-1	1
Input 2	780	-1	2
Input 3	780	-1	4
Input 4	780	-1	8
Output 1	792	0	1
Output 2	792	0	2
Output 3	792	0	4
Output 4	792	0	8
Output 5	792	0	16
Output 6	792	0	32
Output 7	792	0	64
Output 8	792	0	128

CHAPTER 6 | DIG-703B CONNECTIONS

The DIG-703B functions identically to the DIG-703A. The only difference between the two systems is the number of inputs and outputs and Total combined output is capable of switching up to 3 amps at 28 Volts DC. The DIG-703B has eight input connectors and sixteen output connectors. The offset and bit values are shown in Table 6.1 .

Figure 6.1 – Rear of DIG-703B

Table 6.1 - DIG-703B Port, Offset and Bit Values

Function	Port	Offset	Bit Value
Input 1	780	-1	1
Input 2	780	-1	2
Input 3	780	-1	4
Input 4	780	-1	8
Input 5	780	-1	16
Input 6	780	-1	32
Input 7	780	-1	64
Input 8	780	-1	128
Output 1	792	0	1
Output 2	792	0	2
Output 3	792	0	4
Output 4	792	0	8
Output 5	792	0	16
Output 6	792	0	32
Output 7	792	0	64
Output 8	792	0	128
Output 9	792	1	1
Output 10	792	1	2
Output 11	792	1	4
Output 12	792	1	8
Output 13	792	1	16
Output 14	792	1	32
Output 15	792	1	64
Output 16	792	1	128

APPENDIX A | CONTACT INFORMATION

Please contact MED Associates, Inc. for information regarding any of our products.

Visit our website at www.med-associates.com for contact information.

For technical questions, email support@med-associates.com.