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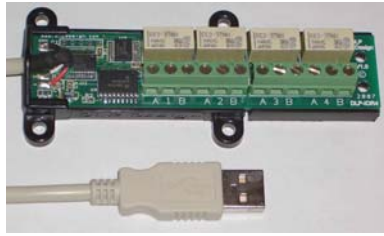
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# DLP-IOR4

LEAD-FREE

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## USB-BASED LATCHING RELAY MODULE

### Applications:

- Data-Acquisition Control
- Industrial/Process Control
- Home Automation
- Robotics

### Features:

- 4 Latching Relays
- USB Port Powered
- USB 1.1 and 2.0 Compatible Interface
- Small Footprint: 4.1 x 0.96 Inch PCB
- Easy to Use with Single-Byte Commands; Can Utilize a Simple Terminal Emulator to Control All Functions

## 1.0 INTRODUCTION

The DLP-IOR4 is a low-cost, easy-to-use relay module utilized for computer control of electrical or electronic equipment.

Note: The relays used on the DLP-IOR4 are latching type relays. As such, the state of the relay will not change when power is removed from the module.

All operational power is taken from the host PC via the USB port.

## 2.0 SPECIFICATIONS

Each of the four relays on the DLP-IOR4 has the following specifications:

- Contact Ratings: 60W, 125VA
- Max Switching Voltage: 220VDC, 250 VAC
- Max Switching Current: 2A
- Max Carrying Current: 2A

Note: The two sets of contacts for each relay are connected in parallel.

### 3.0 ABSOLUTE MAXIMUM RATINGS

Stresses above those listed here may cause permanent damage to the DLP-IOR4:

- Operating Temperature: 0-70°C
- Current on Any I/O Pin: 2A

### 4.0 WARNINGS

- Unplug from the host PC before connecting to the DLP-IOR4.
- Observe static precautions to prevent damage to the DLP-IOR4 module.

### 5.0 USB DRIVERS

USB drivers for the following operating systems are available for download from the DLP Design website (<http://www.dlpdesign.com>):

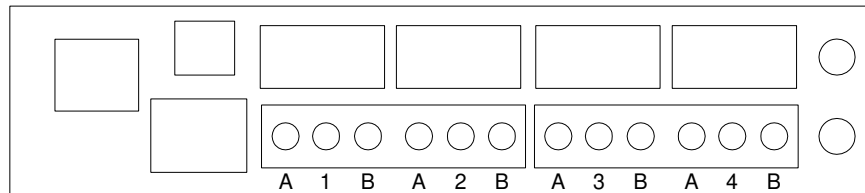
<b>Windows 8</b>	<b>Windows 7</b>
<b>Windows Server 2008 R2</b>	<b>Windows Vista</b>
<b>Windows XP x64</b>	<b>Mac OSX</b>
<b>Windows Server 2003</b>	<b>Mac OS9</b>
<b>Windows 2000</b>	<b>Mac OS8</b>
<b>Windows 98, ME</b>	<b>Linux</b>

**Note:** If you are using the dual-mode drivers from FTDI (CDM2.02.04) and wish to use the Virtual COM Port (VCP) mode, then it may be necessary to disable the D2XX drivers first via Device Manager. To do so, right click on the entry under USB Controllers that appears when the DLP-IOR4 is connected, select Properties, select the Advanced tab, check the option for Load VCP and click OK. Once you unplug and then replug the DLP-IOR4 module, a COM port should appear in Device Manager under Ports (COM & LPT).

### 6.0 USING THE DLP-IOR4

Simply connect the DLP-IOR4 to the PC to initiate the loading of drivers. Once the drivers are loaded, the DLP-IOR4 is ready for use. All commands are single-byte commands. Please note that the Ping command is the only command that results in data being returned to the host from the DLP-IOR4.

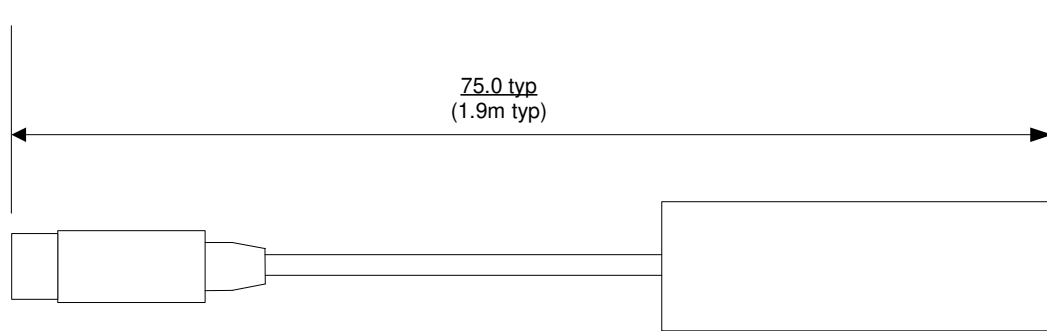
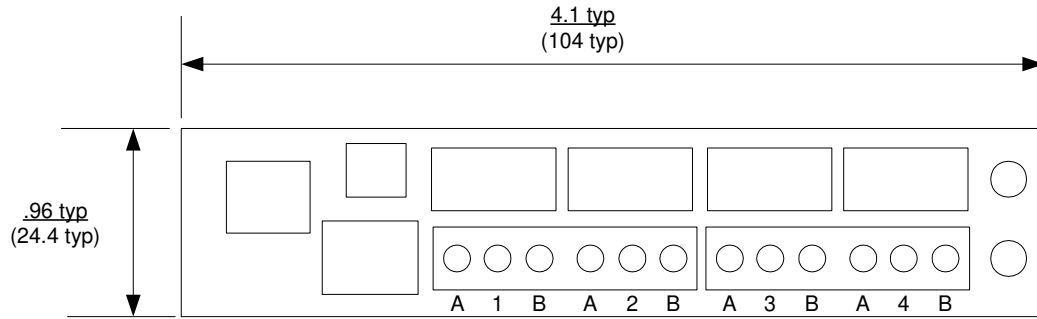
You can either utilize a simple terminal emulator program or write your own program using your language of choice. Begin by opening the COM port, set the Baud Rate to 9600 (1 start bit, no parity, 8 data bits, 1 stop bit, no flow control), and send single-byte commands as shown in Table 1. The Ping command can be used to locate the correct COM port used for communicating with the DLP-IOR4, or you can look in Device Manager to see which port Windows has assigned to the DLP-IOR4.



**TABLE 1**

<b>Relay 1 Commands</b>			
<b>ASCII Character</b>	<b>Hex Value</b>	<b>Description</b>	<b>Return / Comments</b>
<b>1</b>	0x31	Connect common terminal '1' to 'A'	
<b>Q</b>	0x51	Connect common terminal '1' to 'B'	
<b>Relay 2 Commands</b>			
<b>2</b>	0x32	Connect common terminal '2' to 'A'	
<b>W</b>	0x57	Connect common terminal '2' to 'B'	
<b>Relay 3 Commands</b>			
<b>3</b>	0x33	Connect common terminal '3' to 'A'	
<b>E</b>	0x45	Connect common terminal '3' to 'B'	
<b>Relay 4 Commands</b>			
<b>4</b>	0x34	Connect common terminal '4' to 'A'	
<b>R</b>	0x52	Connect common terminal '4' to 'B'	
<b>Ping Command</b>			
<b>'</b>	0x27	Issue Ping (the Apostrophe character just to the right of the ; key)	R (0x52) will be returned if the DLP-IOR4 is found on the selected port.

## 7.0 MECHANICAL DIMENSIONS IN INCHES (MM)



## 8.0 DISCLAIMER

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