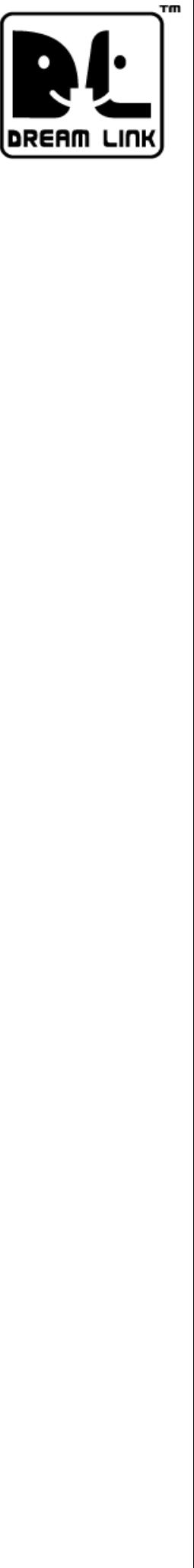
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|  | USB LED Message Board - Developer Manual v1.0 |
| Dream Link Ltd. | 12 Nov, 2008 |
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Dream Link Ltd.

USB LED Message Board

Developer Manual v1.0

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| --- | --- | --- |
| Created by | : | Alvin Wong |
| Create Date | : | 12 Nov, 2008 |
| Last modified by | : | Alvin Wong |
| Last modified date | : | 12 Nov, 2008 |

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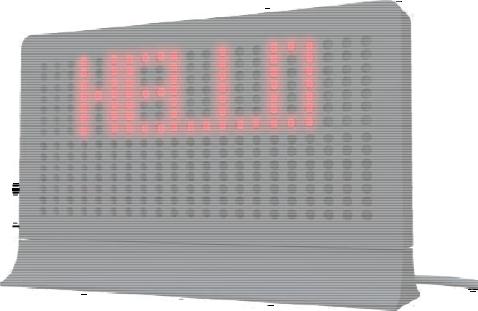
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|  |  |  | USB LED Message Board - Developer Manual v1.0 | |
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|  |  |  | Change Notes | |
|  |  |  |  |  |
|  | Version | Dates | Descriptions |  |
|  |  |  |  |  |
|  | v1.0 | 12 Nov, 2008 | First Release |  |
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* INTRODUCTION

This product consists of a USB Device with a 21x7 LED Matrix.



* TECHNICAL INFORMATION

1. USB Descriptor Information

The product is accessed through USB Human Interface Device (HID). To use the device, simply enumerate the USB device and find the device with the following VID and PID.

|  |  |
| --- | --- |
| Name | Value |
|  |  |
| Vendor ID | 0x1D34 |
|  |  |
| Product ID | 0x0013 |
|  |  |
| Manufacturer String | Dream Link |
|  |  |
| Product String | USB LED Message Board v1.0 |
|  |  |
| Version | 0x01 |
|  |  |
| Serial Number | 1 |
|  |  |

1. LED Configuration

There are 21x7 LEDs on the message board. We configure the LED as follows:

Column A B C D E F G H I J K L M N O P Q R S T U

Row 1

Row 2

Row 3

Row 4

Row 5

Row 6

Row 7

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1. USB Packets

The USB report has the size of 8 bytes. The packets are defined in the following format.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  |  |  |  |  |  |  |  |  |
| Description | Brightness | Row | 1st row | 1st row | 1st row | 2nd row | 2nd row | 2nd row |
|  |  | # | Data | Data | Data | Data | Data | Data |
|  |  |  |  |  |  |  |  |  |

Remarks:

* 1. The value of brightness ranged from 0 to 2. 0 is the maximum brightness.
  2. The row number should be 0, 2, 4, 6.
  3. As each packet contains two rows’ data, so the packet with Row # = 0 includes the data from Row 1 and Row 2.
  4. The LED will turn on shortly after receiving the packet. So the software should keep refreshing the device.
  5. For row data, 1=off and 0=on.

1. Row Data

For each two rows, the data are stored as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LED | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |  | 19 |  | 20 | 21 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| row\bit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 |  | 2 |  | 3 | 4 | 5 | 6 | 7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 |  |  |  | byte 4 | |  |  |  |  |  |  | byte 3 | |  |  |  |  |  | byte 2 | | |  |  | 1 | 1 | 1 |
|  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  | | |  |  |  |  |  |
| 2 |  |  |  | byte 7 | |  |  |  |  |  |  | byte 6 | |  |  |  |  |  | byte 5 | | |  |  | 1 | 1 | 1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Examples

Assume the following pattern is to be displayed:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Column | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 1 |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 2 |  |  |  |  |  |  |  | x |  | x |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 3 |  |  |  |  |  |  | x |  |  |  | x |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 4 |  |  |  |  |  | x |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 5 |  |  |  |  |  |  | x |  |  |  | x |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 6 |  |  |  |  |  |  |  | x |  | x |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Row 7 |  |  |  |  |  |  |  |  | x |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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We need to send the following packets to the device:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Packet\Byte | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 0 | 0x00 | 0x00 | 0xFF | 0xFE | 0xFF | 0xFF | 0xFD | 0x7F |
|  |  |  |  |  |  |  |  |  |
| 1 | 0x00 | 0x02 | 0xFF | 0xFB | 0xBF | 0xFF | 0xF7 | 0xDF |
|  |  |  |  |  |  |  |  |  |
| 2 | 0x00 | 0x04 | 0xFF | 0xFB | 0xBF | 0xFF | 0xFD | 0x7F |
|  |  |  |  |  |  |  |  |  |
| 3 | 0x00 | 0x06 | 0xFF | 0xFE | 0xFF | / | / | / |

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