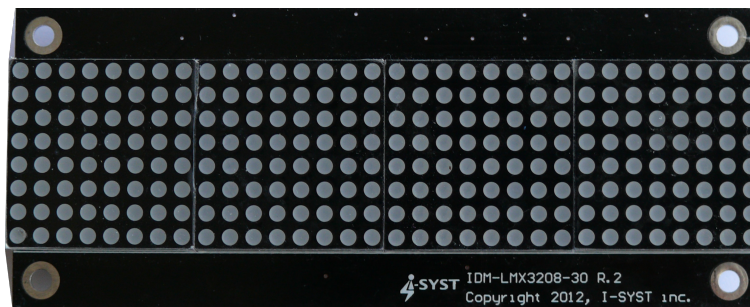


HARDWARE REFERENCE

IDM-LMX3208 Series LED Matrix Display



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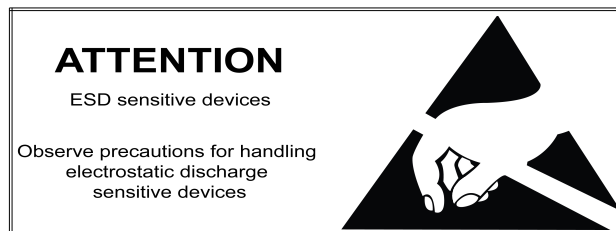


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Introduction

The IDM-LMX3208 series are 32 x 8 single color LED matrix display boards. The display boards are available in various LED dot size and color. See table 1 for model number description. The matrix is controller by the HT1632C controller by Holtek Semiconductor inc. www.holtek.com.

Features :

- HT1632C controller
- 16 levels PWM brightness control
- Up to 4 boards can be daisy chained together for a total of 128x8
- Serial interface to microcontroller requires only 3 GPIOs
- Dimension (see table): 128x52mm (5.04" x 2.05"), 241x80mm (9.5"x3.15")
- Operating voltage 5V

IDM-LMX3208-30R	Red 625-640nm, 3mm dot size	128x52mm (5.04"x2.05")
IDM-LMX3208-30G	Green 565-575nm, 3mm dot size	128x52mm (5.04"x2.05")
IDM-LMX3208-50R	Red 629-635nm, 5mm dot size	241x80mm (9.5"x3.15")
IDM-LMX3208-50G	Green 565-575nm, 5mm dot size	241x80mm (9.5"x3.15")

Table 1: Display board models

Specifications :

- LED wavelength : 625-640 nm Red, 565-575 nm Green
- LED power dissipation 60 mW
- LED Forward current : 20 mA
- LED module dimension : 32x32x8 mm (3mm), 60.2x60.2x9.2 (5mm)
- Full on ~ 159mA for 3mm model, ~ 185mA for 5mm model

DIP Switch Settings

SW1 – Board Chip Select

The display board has an on board DIP to connect the CS pin of the HT3216C 1 of 4 CS pins of the 16 pins interface connector. This selection allows daisy chaining up to 4 boards together to form a higher resolution display, 128 x 8. Set the switch to ON position to select the corresponding CS. Only one switch can be set to ON position, all others must be at OFF position.

SW1-1	CS1
SW1-2	CS2
SW1-3	CS3
SW1-4	CS4

Table 2: CS selections

Connectors

P1 & P2 – Board Interface

The connectors P1 & P2 are the same. It is used connect to microcontroller board using a 16 pins (8x2) ribbon cable. It is also used to daisy chain boards together.

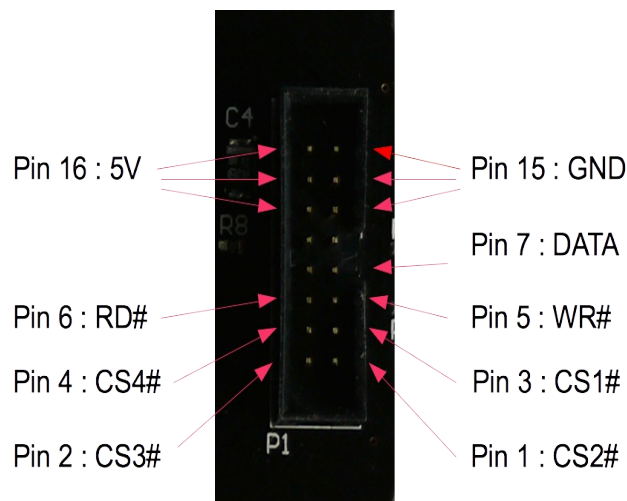


Fig. 1: P1 & P2 Pin locations

CS2#	1	2	CS3#
CS1#	3	4	CS4#
WR#	5	6	RD#
DATA	7	8	GND
OSC	9	10	SYNC
GND	11	12	5V
GND	13	14	5V
GND	15	16	5V

Table 3: P1 & P2 Connector pin out

CS1#-CS4# : Active low. These are Chip Enable pin connected to DIP switch 1. This allows the daisychain of up to 4 display board. Each display board in the chain must be switch to one of the CS id.

WR# : Active low. Write enable pin.

RD#: Active low. Read enable pin.

DATA: Serial data line

OSC: Not used. For eternal clock source

SYNC: Clock signal to generated by the master display board to other slaves in the daisychained mode.

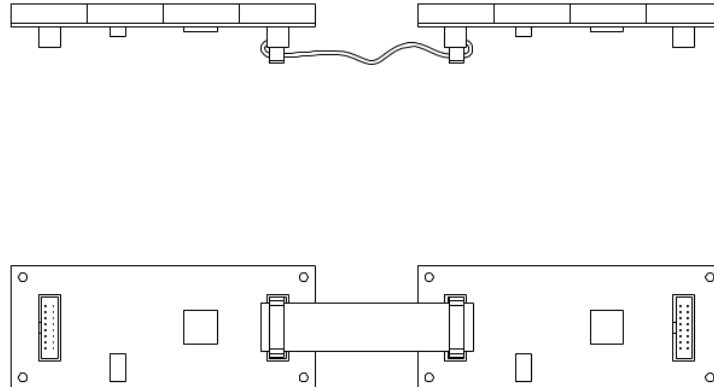


Fig. 2: Daisy-chaining display boards

Interface schematic

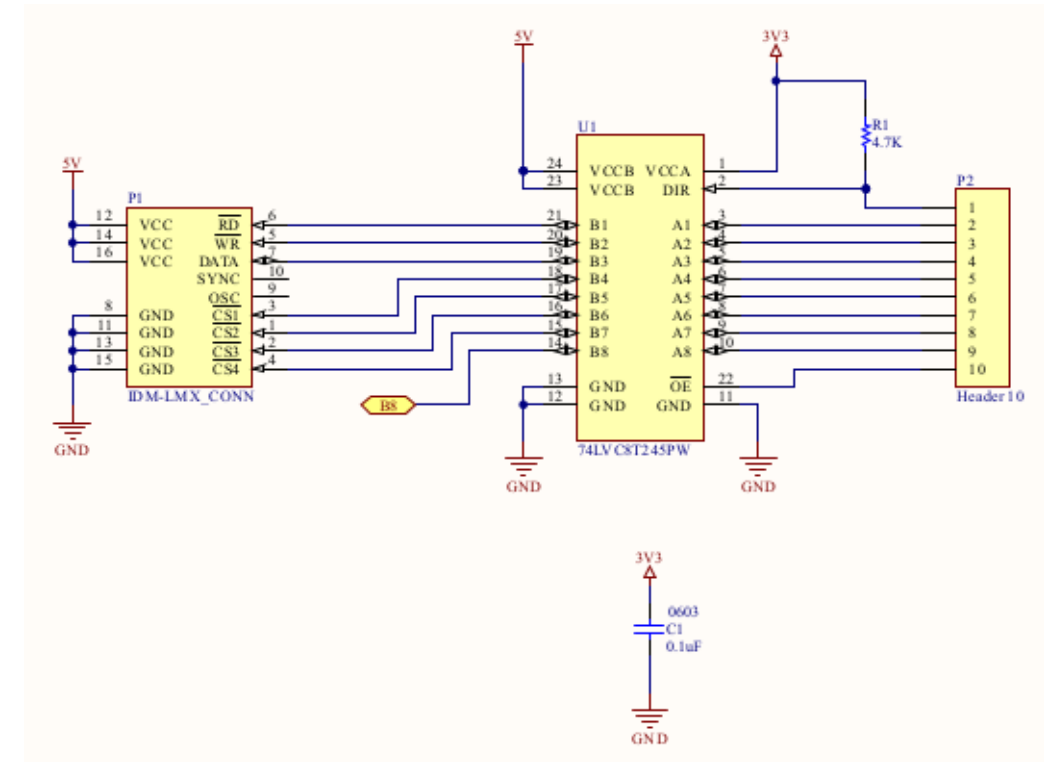


Fig. 3: Microcontroller interface up to 4 displays

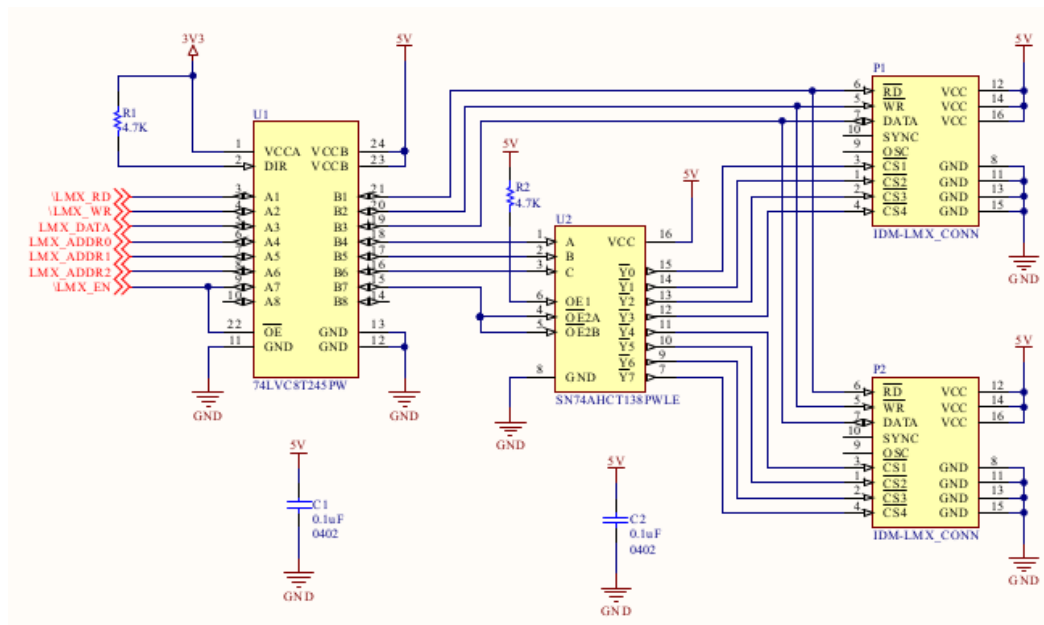


Fig. 4: Microcontroller interface up to 8 displays

Interface Boards

The LMXSHIELD is an Arduino display interface shield capable of controlling up to 8 IDM-LMX3208 series displays. The displays can be arranged by software to form a multi-display

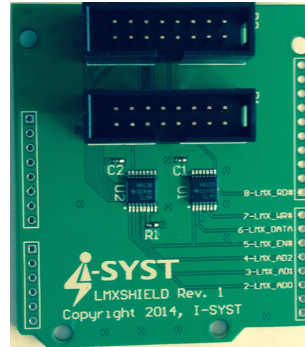


Fig. 5: LMXSHIELD

The IBB-LMXBLUE is a dual hosts interface capable of controlling up to 16 IDM-LMX3208 series displays. It has onboard high power DC converter to provide power for the display and Arduino. The host interface is selected via a series of jumper for Arduino or IMM-NRF51x22 Bluetooth. Source code is provided to send text display with iPad via Bluetooth when the IMM-NRF51x22 is being used as host.

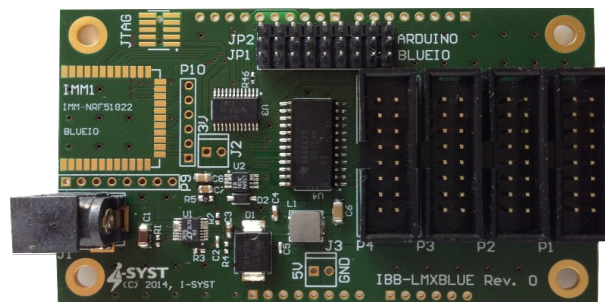


Fig. 6: IBB-LMXBLUE

Programming examples

Tutorial and examples code are available on blog site :

<http://embeddedsoftdev.blogspot.ca/p/arduino.html>

<http://embeddedsoftdev.blogspot.ca/p/ehal-nrf51.html>

Board Dimensions

3mm dot models

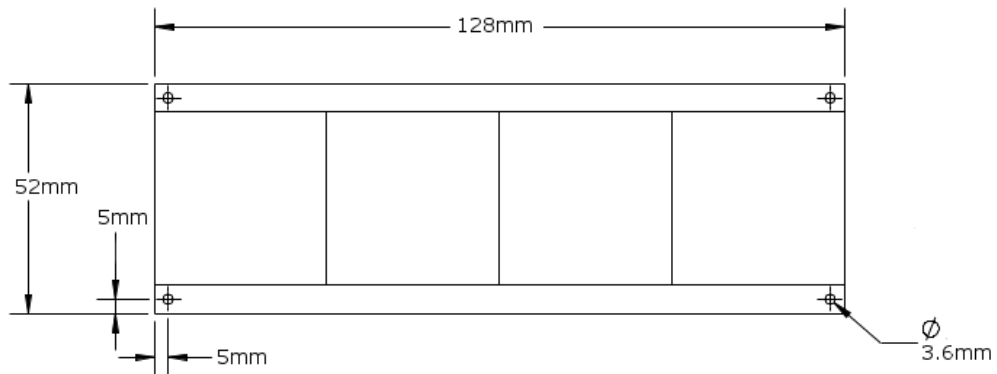


Fig. 7: DM-LMX3208-30 Dimensions

5mm dot models

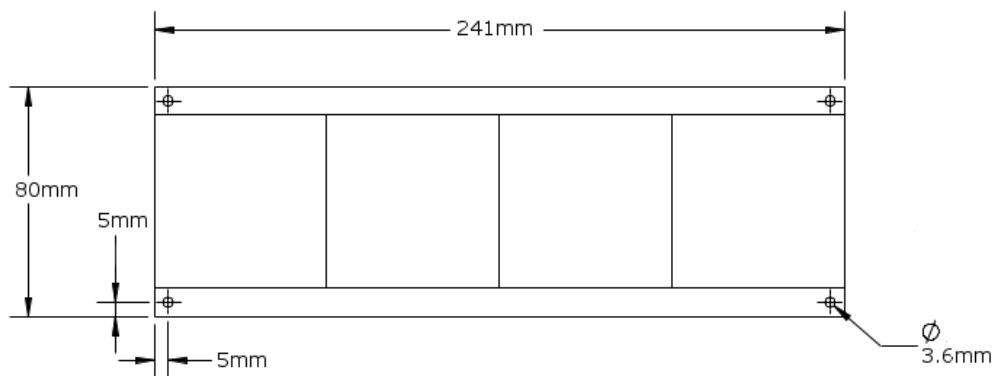


Fig. 8: IDM-LMX3208-50 Dimensions