

La scheda elettronica DDS1139-01 è sostanzialmente un pannello a matrice di LED RGB 16x16 (256 LED): le dimensioni nominali sono 247 x 247mm mentre il passo dei LED è di 15,94mm.

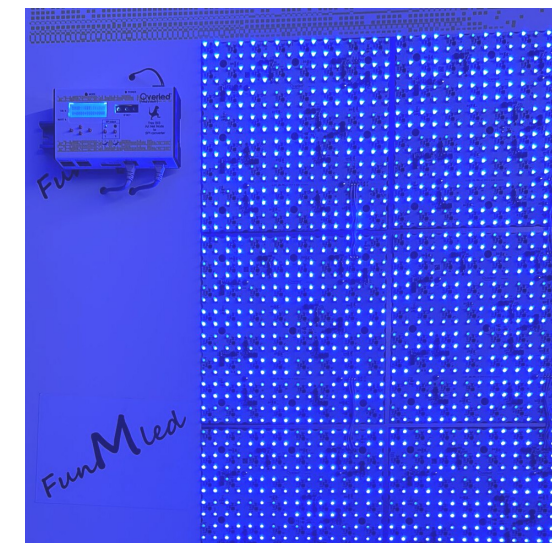
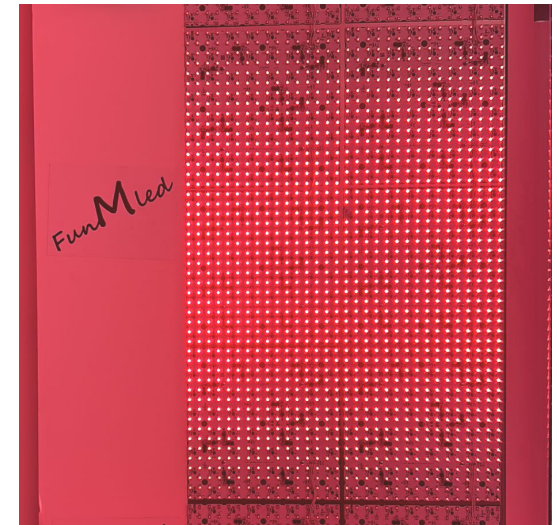
L'implementazione è basata sul chip MBI6023: in totale sono presenti 64 MBI ciascuno dei quali pilota 4 LED RGB (ovvero 12 emettitori primari R+G+B).

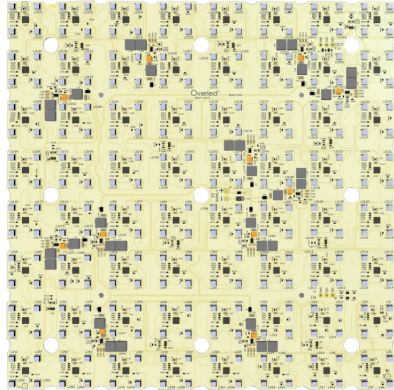
Il pixel dell'immagine è in corrispondenza 1:1 con un LED RGB.

L'interfaccia di comunicazione dati è basata su un unico bus SPI dove ogni MBI riceve i segnali di clock e dati e li ripete rigenerati per l'MBI successivo: al termine della catena i segnali sono disponibili eventualmente per collegare in sequenza più schede DDS1139-01. Il protocollo di trasmissione è proprietario MBI.

The DDS1139-01 electronic board is essentially a 16x16 RGB LED matrix panel (256 LEDs): the nominal dimensions are 247 x 247mm while the pitch of the LEDs is 15.94mm. The implementation is based on the MBI6023 chip: in total there are 64 MBI each of which drives 4 RGB LEDs (i.e. 12 R+G+B primary emitters).

The image pixel is in 1:1 correspondence with an RGB LED. The data communication interface is based on a single SPI bus where each MBI receives the clock and data signals and repeats them regenerated for the following MBI: at the end of the chain, the signals are eventually available to connect several DDS1139-cards in sequence 01. The transmission protocol is MBI proprietary.





## General Specifications

<b>Materials:</b>	FR4
<b>Size:</b>	247,04 mm x 247,04 mm
<b>PCB Thickness:</b>	1,60 mm
<b>Layer:</b>	2
<b>Copper Thickness:</b>	34 um
<b>Solder Color:</b>	White
<b>Screen Printing Color:</b>	Black
<b>Copper finish:</b>	OSP
<b>Numer of Led and layout:</b>	16 x 16 = 256 1 led RGB = 1 Pixel RGB _ 3 primary emitters ( R+G+B )
<b>Pitch:</b>	15,94 mm
<b>Mechanical fixing:</b>	4 holes diameter 3.2 mm for centering + 3M-8810 thermally conductive double-sided tape
<b>Protection Rating:</b>	IP20

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## Electrical Specifications

<b>Nominal supply voltage:</b>	24V
<b>Maximum power supply current:</b>	2,08A
<b>Maximum power supply:</b>	50W
<b>Operating temperature:</b>	-10 ÷ +55°C
<b>Protections:</b>	Fuse 5A - Reverse polarity - TVS on Power and Signals

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## Rear Side Connectors 1/2

<b>P1</b>	Power supply + 24 VDC		MSTBVA2,5/2-G-5,08 (fixed) + MSTB 2,5/ 2-ST-5,08 (free)
	<b>PIN</b>	<b>Name</b>	<b>Description</b>
	1	+ 24VDC	Power supply + 24V
	2	GND	Power Supply GND

<b>J1</b>	Input SPI		MCV1,5-3G-3.81 (fixed) + MC1,5/3-ST-3,81 (free)
	<b>PIN</b>	<b>Name</b>	<b>Description</b>
	1	SDI	Input SPI
	2	CKI	Input Clock SPI
3	GND	GND signal SPI	

## Rear Side Connectors 2/2

<b>J2</b>	Output SPI		MCV1,5-3G-3.81 (fixed) + MC1,5/3-ST-3,81 (free)
	<b>PIN</b>	<b>Name</b>	<b>Description</b>
	1	SDO	Output SPI
	2	CKO	Output Clock SPI
3	GND	GND signal SPI	

## Optical specifications

LedType	LED RGB DS242 Luxeon Multicolor Module
Led p/n	L1MC-RGB0035000MPO
Led bin	G10AR20BA30B

<b>Maximum Current</b>	<b>R</b>	15mA	<b>Total 45mA</b>
	<b>G</b>	15mA	
	<b>B</b>	15mA	

<b>Typical Brightness</b>	<b>R</b>	1000 mcd
	<b>G</b>	2300 mcd
	<b>B</b>	500 mcd

## Mapping

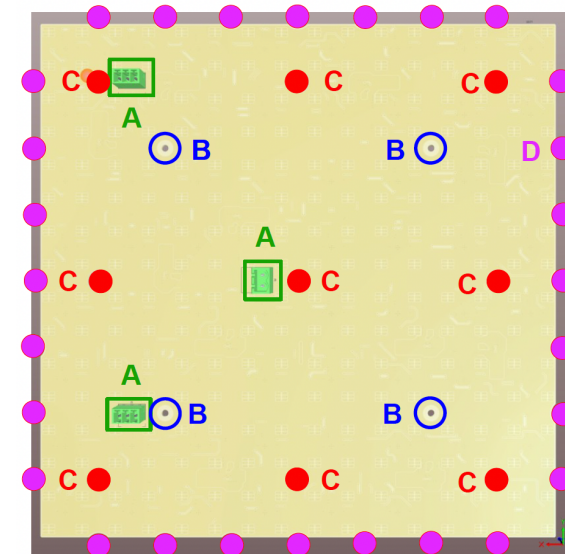
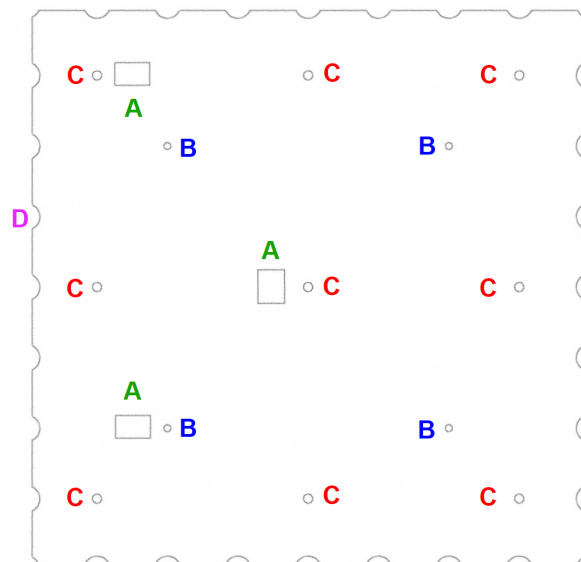
The mapping takes place in sequence according to the increasing screen numbering of the LEDs: that is the LED LD1 is the first of the sequence, LD2 the second, up to LD256 which is the last and also the primary color sequence is B-G-R. A physical map of the sequence is visible in Fig. below



## Thermal dissipation and mechanical fixing

For the operation of the board is necessary a correct thermal dissipation obtainable by a aluminum panel of the same board size and recommended thickness of at least 3mm

the aluminium panel must have openings A to allow the connectors and must have the holes at the holes B: these holes serve for the centering screws of the aluminum panel compared to the board because the mechanical seal is ensured by the thermal double-sided adhesive that must be interposed between board and panel.



Openings C of the PCB are used to allow the application of any fasteners that must be anchored exclusively to the aluminum panel.

The slots D instead are provided to allow the passage of screws fastening the structure (not the board and/or panel).

As an additional protection against overheating, electronic protection against preset over-temperature at 75 °C and reducing the current of the LEDs.