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MRLDX.5 USER MANUAL



- INTERNAL DRIVER – PLUG & PLAY
- 500 MICROSECOND AUTO BURST TECHNOLOGY
- POWERED BY 24VDC INDUSTRY STANDARD
- M12 CONNECTOR FOR QUICK DISCONNECT
- PNP AND NPN INPUTS
- ANALOG 0-10VDC INPUT INTENSITY CONTROL
- POTENTIOMETER INTENSITY CONTROL
- COGNEX SERIES 7000 & 9000 (CTL) CAMERA TO LIGHT COMPATIBLE
- HIGH OUTPUT LED'S

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Section 1 – Thank You

First, thank you for your interest in our product. Here at Spectrum Illumination, we are always striving to bring you the best Vision Lighting products on the market at the best price. The Monster series with internal driver is our latest top of the line vision product to make vision integration easier for everyone.

We always knew that if we wanted to succeed in the Vision Lighting business, we needed to be different. Not only different, we needed to be better than everyone else. We needed to offer better lighting products, for more applications, at lower prices. We now are going into our twenty first year of operation, and getting better and more enthusiastic everyday. We are coming out with new products all the time and are designing custom lighting fixtures whenever we can.

We hope this manual helps with any questions you might have about this product. If you have any further questions that are not covered, or you can't find the answers, please call us at our main office. Phone # 231-894-4590

Section 2 - Installation

Mounting 3.5” Ring Light Only:

Mounting holes accept M4 screw size. 14mm screws are included as well as aluminum spacers to mount directly to Cognex 5000 and 9000 series cameras. Steel spacer available upon request.



Hardware included



Optional Steel Spacer

Dimensions:

Model	Length	Width	Height (w/screws)	Weight	Mounting Holes
MRLD3.5	5.04" 128.1mm	4.38" 111.1mm	1.44" 36.6mm	13.6 oz 385g	1.42" x 1.18" 36.0mm x 30.0mm
MRLD5.5	7.75" 196.9mm	6.75" 171.5mm	1.35" 34.4mm	19.9oz 563g	2.874" x 1.339" 73mm x 34mm Tapped for 8-32 screws

*Note: For additional dimensional information, see model web page or contact us.

Wiring:

	Pin #	Wire Color	Function
<p>M12</p>	1	Brown	+21.6 to +26.4VDC (+23.5 to +26.4VDC for UV)
	2	White	NPN Strobe Input: GND for "ON", Open or >Vin-1V for "OFF"
	3	Blue	0VDC (DC GND)
	4	Black	PNP Strobe Input: < 1 VDC for "OFF", >3 ≤30 VDC for "ON"
	5	Grey or Green/Yellow	0-10VDC analog intensity control – 0V = 100%, 10V = 0%

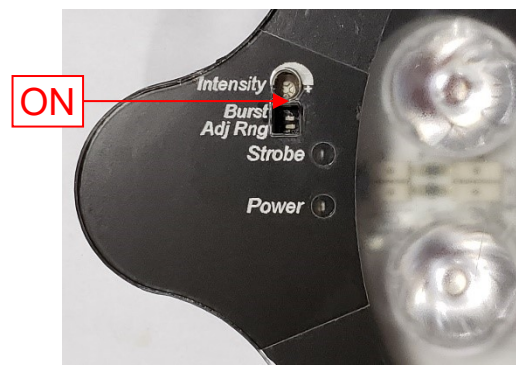
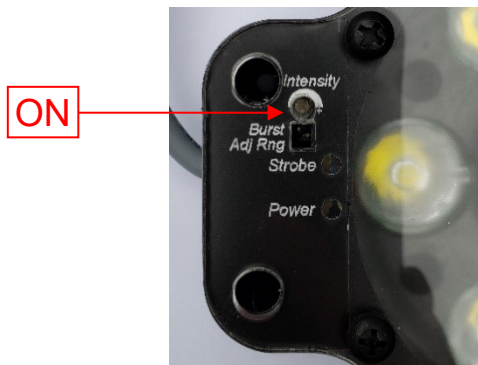
Standard cable length is 3m with 18AWG wires, 5m cable optional. It may be extended but blue and brown wires should be ≥16 AWG wire other wires can be extended with ≥22AWG wire, this is necessary for burst to drive LED's to max current. If burst is disabled, any 5 wire M12 cable up to 30m may be used.

Section 3 - Configuration

The MRLDX.5 can be configured for burst mode or disabled via dip switch. Two switches can be changed to control the behavior of burst and LED intensity dimming.

- “Burst” switch enables/disables the burst feature.
- “Adj. Range” switch sets the adjustment range of the potentiometer and 0-10VDC input.

These switches can be set using a small jeweler’s screwdriver or toothpick. *Units are shipped with a default of both switches “on” (both to right in image below).*



Switch Settings	Result
Adj.Range OFF Burst OFF	0-10VDC input (or potentiometer has 1 turn of adjustment) adjusts LED intensity from 100 - 0% with burst disabled
Adj.Range ON Burst OFF	0-4.5VDC input (or potentiometer has ~1/2 turn of adjustment) adjusts LED intensity from 100 - 0% with burst disabled
Adj.Range OFF Burst ON	0-10VDC input (or potentiometer has 1 turn of adjustment) adjusts LED burst intensity from 100 - ~50% with burst enabled
Adj.Range ON Burst ON <i>Default setting</i>	0-10VDC input (or potentiometer has 1 turn of adjustment) adjusts LED burst intensity from 100 - 0% with burst enabled

The potentiometer for LED intensity control is a 3/4-turn potentiometer for adjustment. Fully counter clockwise (CCW) sets the LED current to 0% and fully clockwise (CW) sets the LED current to 100%. Units are shipped in the fully CW position.



Section 4 - Specifications

ELECTRICAL:

Input Voltage: 24VDC \pm 10%

Input Current: MRLD3.5 150 to 350mA typical (1.5A max for burst) @24VDC
 MRLD5.5 300 to 600mA typical (2.75A max for burst) @24VDC

Note: Power supply must be capable of max for burst above per light for burst feature to work correctly with supplied cable.

Strobe Input Impedance: 10K Ω – PNP typical, 9.1K Ω – NPN typical

Strobe Timing: <20 microseconds from strobe to LED on

0-10V Input Impedance: 15K Ω typical

0-10V Input Control: 0V = 100%, 10V = 0% LED current. (Can be left disconnected for 100% LED intensity)

Variable Intensity: Adjustable via trim potentiometer from 0% (CCW) to 100% (CW).

Wiring:	Pin #	Wire Color	Function
<p>M12</p>	1	Brown	+21.6 to +26.4VDC (+23.5 to +26.4VDC for UV)
	2	White	NPN Strobe Input: GND for "ON", Open or >Vin-1V for "OFF"
	3	Blue	0VDC (DC GND)
	4	Black	PNP Strobe Input: < 1 VDC for "OFF", >3 \leq 30 VDC for "ON"
	5	Grey or Green/Yellow	0-10VDC analog intensity control – 0V = 100%, 10V = 0%

ENVIRONMENTAL:

Operating Temperature: 0 to 50°C

Relative Humidity: 5 to 85% non-condensing

Ingress Protection Rating: IP50

ILLUMINATION:

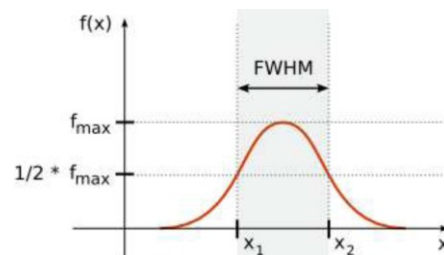
Light Source: LED – currently available in 8 colors, Ultra Violet or Infrared. Other colors available on request, contact us for further information.

Quantity HB LED's: 6 for MRLD3.5; 12 for MRLD5.5

LED Life: up to 100,000 hours*.

*Contact us for LED life information

- LED Lens: 12° FWHM Standard
- 16° FWHM Frosted Optional
- 23° FWHM Frosted Optional
- 30° FWHM Optional
- 39° FWHM Frosted Optional
- 50° FWHM Optional
- 60° FWHM Reflector Optional
- 90° FWHM Reflector Optional
- 44x15° FWHM Line Optional



INDICATOR LEDs:

- Red = Strobe – This illuminates when a strobe input is present
Green = Power – This illuminates when power is connected

TIMING:

Strobe Frequency: DC (continuous on) to 100 μ s period (10KHz Pulse Rate Frequency) Max
Strobe to LED ON: 20 μ s typical

Burst enabled:

- Duty Cycle: On time \geq 500 μ s, Off time must be 2.0ms minimum
On time < 500 μ s, Off time must be 4 x On time minimum
- *This is to guarantee following burst pulse the same as previous.*

Burst Duration: 500 μ s typical

Burst Current: 1.3A per LED typical, 0.7A for UV (variable with trim pot and/or 0-10VDC input)

Burst disabled:

Duty Cycle: 0% to 100%



Section 5 - Troubleshooting

Problem	Possible Cause	Possible Solution
Light doesn't turn on	Is "Power" indicator LED on	<ul style="list-style-type: none"> • Ensure a +24 VDC signal on brown wire in reference to blue wire.
	Is "Strobe" indicator LED on	<ul style="list-style-type: none"> • Verify correct signal on strobe input – see section 2 - Wiring
	Are "Power" and "Strobe" indicator LEDs on	<ul style="list-style-type: none"> • Potentiometer turned CCW to 0% intensity, turn CW • 0-10V input at $\geq 9.0\text{VDC}$, reduce 0-10V input voltage
Intensity changing between inspections	<ul style="list-style-type: none"> • 24V power supply insufficient • Maximum duty cycle exceeded 	<ul style="list-style-type: none"> • Verify 24V PS output capable of current listed in Section 4 - Electrical per light connected • Verify duty cycle is not being exceeded – see Section 4 - Timing