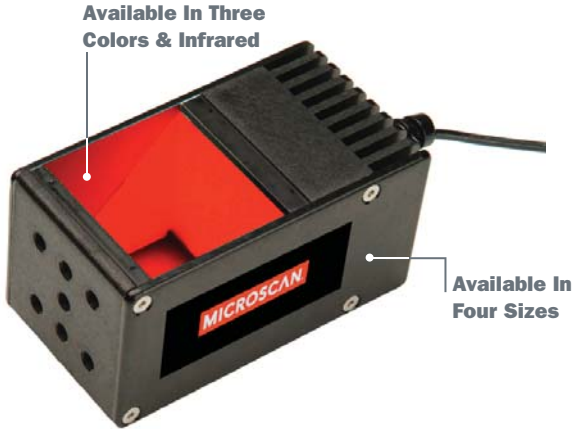


# NERLITE® DOAL®



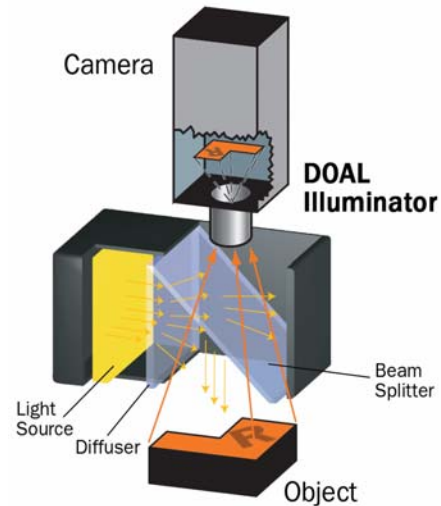
## Diffuse On-Axis Lighting (DOAL)

Microscan's wide range of NERLITE products can illuminate any part or mark for successful machine vision and auto ID applications.

DOAL illuminators provide the best contrast for images of features marked or embossed on a flat specular surface with diffuse and uniform on-axis illumination. With the coaxial lighting approach, specular surfaces perpendicular to the camera appear bright, while surfaces which are marked or embossed absorb light and appear dark.

### DOAL: At a Glance

- Provides superior uniformity throughout the illumination envelope
- Improves the accuracy and repeatability of machine vision performance on specular surfaces
- Compact, lightweight package can be used on moving camera modules
- Reliable, solid state LED illumination
- Passively cooled models are available (DOAL 25 & DOAL 50)



### Illumination Example:

Object



Resulting Image



**Stamped characters on a metal plate:** High contrast image allows inspection or reading.

### Application Examples

- Evenly illuminate flat, shiny surfaces
- Enhance scribed, indented, or embossed features
- Create contrast between specular, diffuse, or absorptive surfaces
- Diminish visibility of clear overcoats or coverings
- Electronic component inspection
- Fiducial location

For more information on this product, visit [www.microscan.com](http://www.microscan.com).

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# NERLITE® DOAL® SPECIFICATIONS AND OPTIONS

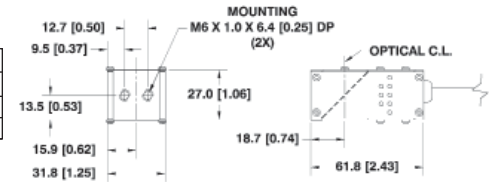
## DOAL 25

DESCRIPTION	nm/K	CONT. CURRENT	STROBE CURRENT	mcd/cm <sup>2</sup>	mw/cm <sup>2</sup>
DOAL-25, Red Continuous	636 nm	40 mA		691	
DOAL-25, Red Strobe	636 nm		800 mA pk	854	
DOAL-25, White Continuous	6500 K	64 mA		6910	

**Light Aperture:** 1" x 1" (25 mm x 25 mm) **Field of View:** 0.50" (13 mm)

**Stand Off:** 0.50" (13 mm) **Weight:** 4 oz. (113 g)

**Dimensions:** H 1.06" (27 mm) x W 1.25" (31.8 mm) x D 2.43" (61.8 mm)



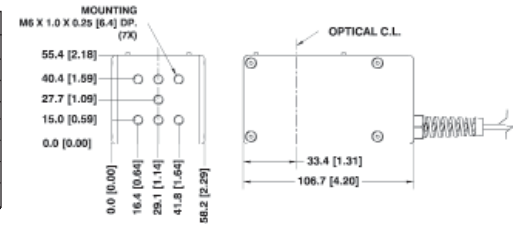
## DOAL 50

DESCRIPTION	nm/K	CONT. CURRENT	STROBE CURRENT	mcd/cm <sup>2</sup>	mw/cm <sup>2</sup>
DOAL-50, Red Continuous	640 nm	200 mA		7776	
DOAL-50, Red Strobe	640 nm		4 A pk	77760	
DOAL-50, White Continuous	6500 K	200 mA		801	
DOAL-50, White Strobe	6500 K		4 A pk	8010	
DOAL-50, Blue Continuous	470 nm	200 mA		1153	
DOAL-50, Blue Strobe	470 nm		4 A pk	11534	
DOAL-50, Infrared Continuous	880 nm	100 mA			13
DOAL-50, Infrared Strobe	880 nm		2.1 A pk		136

**Light Aperture:** 2" x 1.9" (51 mm x 48 mm) **Field of View:** 1" (25 mm)

**Stand Off:** 1" (25 mm) **Weight:** 14 oz. (388 g)

**Dimensions:** H 2.18" (55.4 mm) x W 2.29" (58.2 mm) x D 4.2" (106.7 mm)



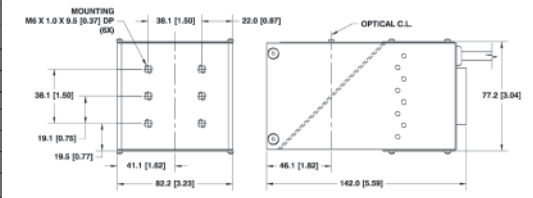
## DOAL 75

DESCRIPTION	nm/K	CONT. CURRENT		STROBE CURRENT	mcd/cm <sup>2</sup>	mw/cm <sup>2</sup>
		LIGHTING	FAN			
DOAL-75, Red Continuous	636 nm	240 mA	62 mA		691	
DOAL-75, Red Strobe	636 nm			4.8 A pk	6910	
DOAL-75, White Continuous	6500 K	480 mA	62 mA		854	
DOAL-75, White Strobe	6500 K			9.41 A pk	8372	
DOAL-75, Blue Continuous	470 nm	480 mA	62 mA		1230	
DOAL-75, Blue Strobe	470 nm			9.41 A pk	12057	
DOAL-75, Infrared Continuous	880 nm	240 mA	62 mA			14
DOAL-75, Infrared Strobe	880 nm			5.04 A pk		145

**Light Aperture:** 3" x 2.9" (75 mm x 73 mm) **Field of View:** 1.5" (38 mm)

**Stand Off:** 1" (25 mm) **Weight:** 16 oz. (454 g)

**Dimensions:** H 3.04" (77.2 mm) x W 3.23" (82.2 mm) x D 5.59" (142 mm)



## DOAL 100

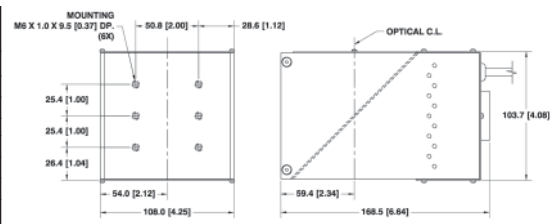
DESCRIPTION	nm/K	CONT. CURRENT		STROBE CURRENT		mcd/cm <sup>2</sup>	mw/cm <sup>2</sup>
		LIGHTING	FAN	CHANNEL 1	CHANNEL 2		
DOAL-100, Red Continuous	636 nm	427 mA	62 mA			680	
DOAL-100, Red Strobe	636 nm			8.4 A pk		6688	
DOAL-100, White Continuous	6500 K	823 mA	62 mA			841	
DOAL-100, White Strobe*	6500 K			8.62 A pk	7.84 A pk	8410	
DOAL-100, Blue Continuous	470 nm	823 mA	62 mA			1211	
DOAL-100, Blue Strobe*	470 nm			8.62 A pk	7.84 A pk	12110	
DOAL-100, Infrared Continuous	880 nm	418 mA	62 mA				14
DOAL-100, Infrared Strobe	880 nm			8.82 A pk			143

\* These products have two separate circuits.

**Light Aperture:** 4" x 3.9" (102 mm x 100 mm) **Field of View:** 2" (51 mm)

**Stand Off:** 1" (25 mm) **Weight:** 30 oz. (700 g)

**Dimensions:** H 4.08" (103.7 mm) x W 4.25" (108 mm) x D 6.64" (168.5 mm)



## ENVIRONMENTAL

**Operating Temperature:** 0° to 40° C (32° to 104° F)

**Storage Temperature:** 0° to 50° C (32° to 122° F)

**Humidity:** up to 95% (non-condensing)

## LIGHTING PARAMETERS

**Light Aperture Defined:** Area of light output from the coaxial illuminator.

**Field of View Defined:** Largest recommended evenly illuminated area as seen from the camera (also know as Area of Interest [AOI]).

**Stand Off Defined:** Recommended distance between the bottom of the light and the surface of the object being illuminated.

## LIGHT SOURCE

**Type:** High output LEDs

**Light Output:** Millicandelas per square centimeter (mcd/cm<sup>2</sup>)

**Radiant Output:** Milliwatts per square centimeter (mw/cm<sup>2</sup>)

**Expected Life:** 50,000 hours (Red, Infrared LEDs)

**Expected Life:** 10,000 hours (Blue, White LEDs)

**Eye Safety:** EN 60825-1: Class 1 (Red, White, Infrared LEDs); Class 2 (Blue LEDs)

## CONNECTOR

**Type:** 15 ft. (4.5 m) integrated cable with flying leads

## ELECTRICAL

**Power (Continuous Models):** 24 VDC +/- 1%

**Power (Strobe Models):** 1 ms max. pulse width, 6% max duty cycle, use of NERLITE NL-200 Series Lighting Controller is required.

## CE COMPLIANT

## ISO CERTIFICATION

Certified ISO 9001:2008 Quality Management System

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Microscan Applications Engineering is available to assist with evaluations. Results may vary depending on symbol quality. **Warranty**—One year limited warranty on parts and labor. Free extended 3 year warranty upon online product registration.

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# NERLITE® OAL SPECIFICATIONS AND OPTIONS

## OAL 50

DESCRIPTION	nm/K	CONT. CURRENT	STROBE CURRENT	mw/cm <sup>2</sup>
OAL-50, Ultraviolet Continuous	375 nm	104 mA		1.3
OAL-50, Ultraviolet Strobe	375 nm		620 mA	4

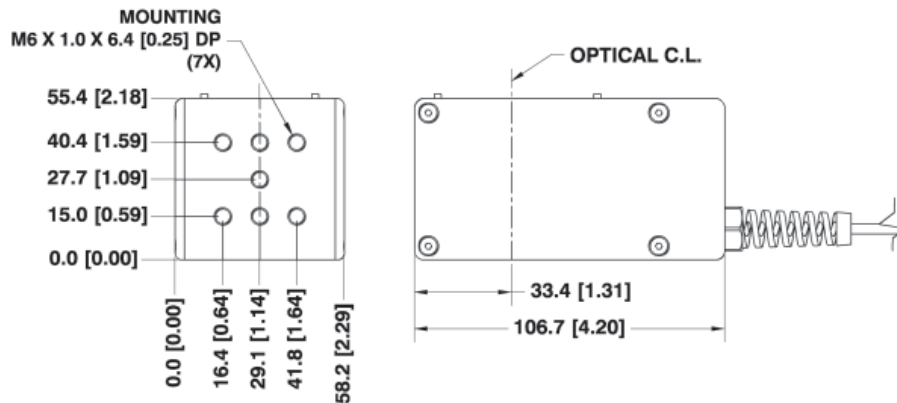
**Light Aperture:** 2" x 1.9" (51 mm x 48 mm)

**Field of View:** 1" (25 mm)

**Stand Off:** 1" (25 mm)

**Weight:** 14 oz. (388 g)

**Dimensions:** H 2.18" (55.4mm) x W 2.29" (58.2mm) x D 4.2" (106.7mm)



## NOTE:

OAL (on-axis lighting) illuminators are available for NON-DIFFUSE lighting requirements. All other functions are identical to the DOAL features described on previous pages.

## ENVIRONMENTAL

**Operating Temperature:** 0° to 40° C (32° to 104° F)

**Storage Temperature:** 0° to 50° C (32° to 122° F)

**Humidity:** up to 95% (non-condensing)

## LIGHTING PARAMETERS

**Light Aperture Defined:** Area of light output from the coaxial illuminator.

**Field of View Defined:** Largest recommended evenly illuminated area as seen from the camera (also known as Area of Interest [AOI]).

**Stand Off Defined:** Recommended distance between the bottom of the light and the surface of the object being illuminated.

## LIGHT SOURCE

**Type:** High output LEDs

**Radiant Output:** Milliwatts per square centimeter (mw/cm<sup>2</sup>)

**Expected Life:** 10,000 hours

**Eye Safety:** EN 60825-1: Class 1M

## CONNECTOR

**Type:** 15 ft. (4.5 m) integrated cable with flying leads

## ELECTRICAL

**Power (Continuous Models):** 24 VDC +/- 1%

**Power (Strobe Models):** 1 ms max. pulse width, 6% max duty cycle, use of NERLITE NL-200 Series Lighting Controller is required.

## CE COMPLIANT

## ISO CERTIFICATION

Certified ISO 9001:2008 Quality Management System

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Microscan Applications Engineering is available to assist with evaluations. Results may vary depending on symbol quality. **Warranty**—One year limited warranty on parts and labor. Free extended 3 year warranty upon online product registration.

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