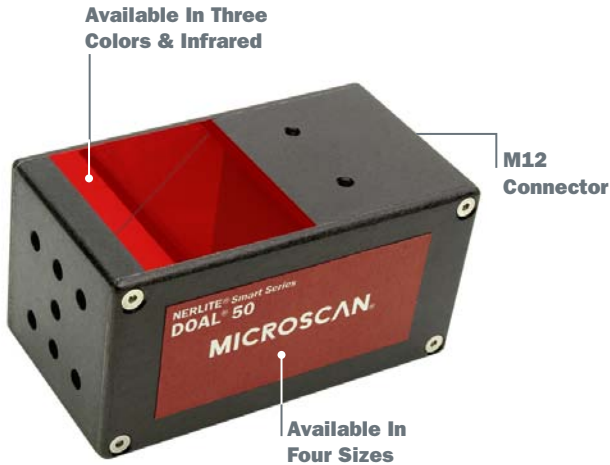


NERLITE® DOAL®



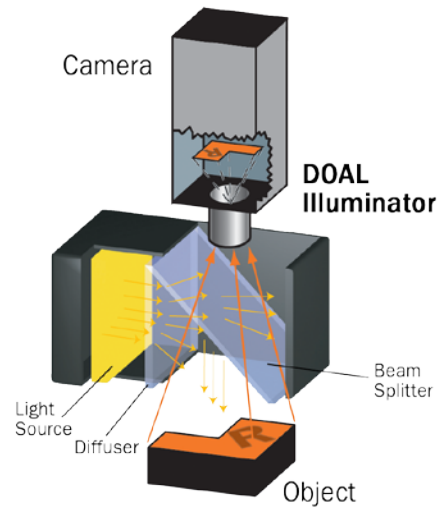
Diffuse On-Axis Lighting (DOAL)

Microscan's Smart Series NERLITE products feature built-in controllers for a complete and easily integrated solution.

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

- Smart Series: Built-in controller with adjustable intensity continuous mode and high output strobe mode
- Integrated Pulse Width Modulation (PWM) feature for dimming and on-off control
- Provides high intensity diffuse illumination with superior uniformity throughout the envelope
- Compact, lightweight package can be used on moving camera modules
- Passively cooled design for efficient and reliable operation



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

NERLITE® DOAL® SPECIFICATIONS AND OPTIONS

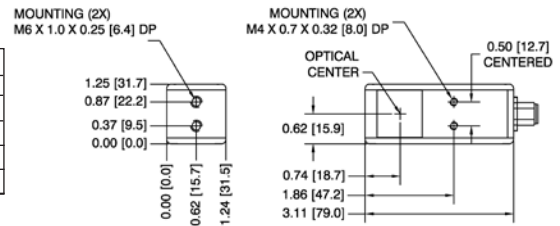
DOAL 25

DESCRIPTION	nm/K	CURRENT		mcd		mw	
		DRAW 24VDC	CONT.	STROBE	CONT.	STROBE	CONT.
DOAL-25, Smart Series, Red	628 nm	400 mA	4173	23369			
DOAL-25, Smart Series, Blue	470 nm	200 mA	2522	11096			
DOAL-25, Smart Series, White	5500 K	200 mA	5443	23406			
DOAL-25, Smart Series, Infrared	880 nm	450 mA					15 134

Light Aperture: 1.00" x 0.95" (25.4 mm x 24.1 mm) **Field of View:** 0.50" (13 mm)

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

Dimensions: H 1.24" (31.5 mm) x W 1.25" (31.8 mm) x D 3.11" (79 mm)



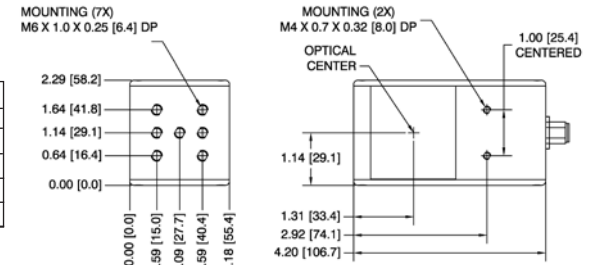
DOAL 50

DESCRIPTION	nm/K	CURRENT		mcd		mw	
		DRAW 24VDC	CONT.	STROBE	CONT.	STROBE	CONT.
DOAL-50, Smart Series, Red	628 nm	1.3 A	15967	76640			
DOAL-50, Smart Series, Blue	470 nm	1.0 A	9684	41156			
DOAL-50, Smart Series, White	5500 K	1.0 A	20902	89878			
DOAL-50, Smart Series, Infrared	880 nm	1.7 A					62 444

Light Aperture: 2.04" x 1.88" (51.8 mm x 47.8 mm) **Field of View:** 1.00" (25.4 mm)

Stand Off: 1.00" (25.4 mm) **Weight:** 11.2 oz. (318 g)

Dimensions: H 2.18" (55.4 mm) x W 2.29" (58.2 mm) x D 4.20" (106.7 mm)



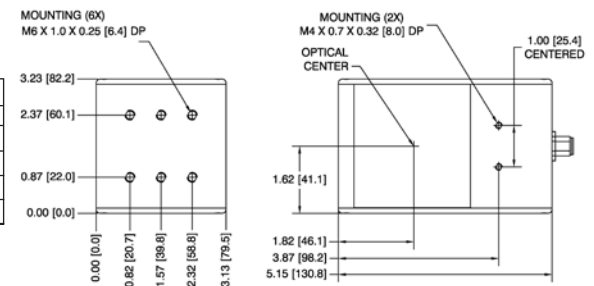
DOAL 75

DESCRIPTION	nm/K	CURRENT		mcd		mw	
		DRAW 24VDC	CONT.	STROBE	CONT.	STROBE	CONT.
DOAL-75, Smart Series, Red	628 nm	2.4 A	31026	148926			
DOAL-75, Smart Series, Blue	470 nm	1.5 A	22696	97594			
DOAL-75, Smart Series, White	5500 K	1.5 A	48989	210652			
DOAL-75, Smart Series, Infrared	880 nm	2.0 A					131 810

Light Aperture: 2.99" x 2.83" (75.8 mm x 71.9 mm) **Field of View:** 1.50" (38.1 mm)

Stand Off: 1.00" (25.4 mm) **Weight:** 22.4 oz. (635 g)

Dimensions: H 3.13" (79.5 mm) x W 3.23" (82.2 mm) x D 5.15" (130.8 mm)



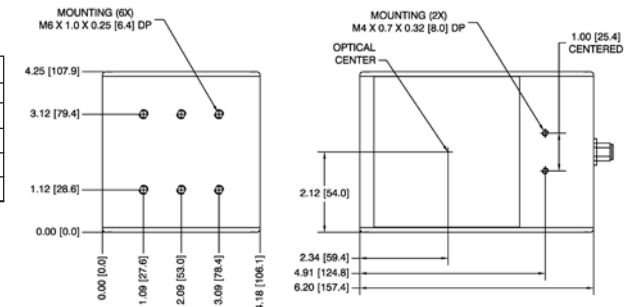
DOAL 100

DESCRIPTION	nm/K	CURRENT		mcd		mw	
		DRAW 24VDC	CONT.	STROBE	CONT.	STROBE	CONT.
DOAL-100, Smart Series, Red	628 nm	3.6 A	50803	219470			
DOAL-100, Smart Series, Blue	470 nm	1.6 A	30665	113461			
DOAL-100, Smart Series, White	5500 K	1.6 A	66189	244900			
DOAL-100, Smart Series, Infrared	880 nm	2.3 A					189 1076

Light Aperture: 4.00" x 3.88" (101.6 mm x 98.5 mm) **Field of View:** 2.00" (50.8 mm)

Stand Off: 1.00" (25.4 mm) **Weight:** 38.4 oz. (1089g)

Dimensions: H 4.18" (106.1 mm) x W 4.25" (107.9 mm) x D 6.20" (157.4 mm)



ENVIRONMENTAL

Enclosure: Black anodized aluminum, IP40 rated; **Operating Temperature:** 0° to 50° C (32° to 122° 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

Radiant Output: Milliwatts

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: M12 5-pin plug, A-code

ELECTRICAL

Power: 20.2–28.8 VDC

Continuous Operation: No additional signals required

Continuous Operation with Dimming: 0 VDC (LEDs off) to 3.1–3.5 VDC (LEDs on) PWM signal. < 1 mA, modulation frequency 2 KHz +/- 100 Hz. Note: LED duty cycle will equal duty cycle of dimming signal when using this mode.

Continuous Operation with On/Off Control: 0 VDC (LEDs off) to 3.1–3.5 VDC (LEDs on), < 1 mA

High Output Strobe Operation: Optoisolated. 0 VDC (LEDs off) to 3.1–28.8 VDC (LEDs on). 10 mA max, 5 µs min to 10 ms max pulse width. Note: High Output Strobe internally limits LED frequency and pulse width to maximum of 90 Hz and 1 ms respectively.

M12 5-pin plug:



Pin Assignment

- 1 +24 VDC
- 2 Trigger (-)
- 3 DC Ground
- 4 Trigger (+)
- 5 Dimmer

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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