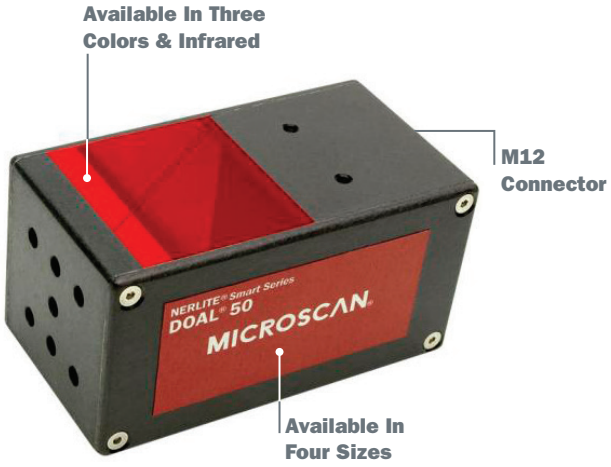
NERLITE® DOAL®



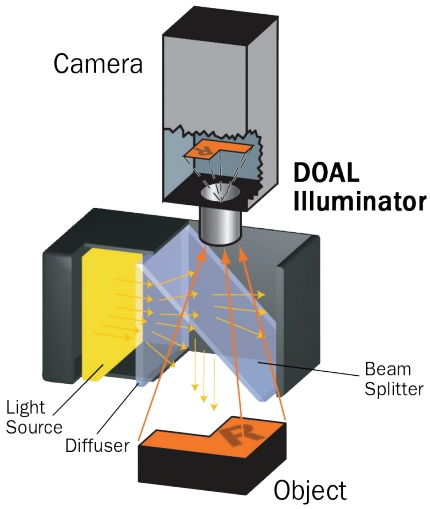
Diffuse On-Axis Lighting (DOAL)

Omron 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

For more information on this product, visit ***www.microscan.com.***

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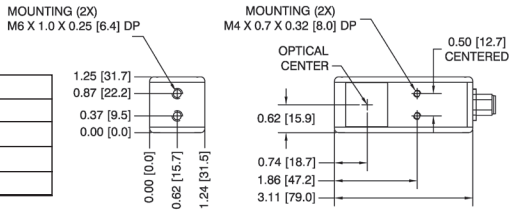
NERLITE® DOAL® Specifications and Options

DOAL 25

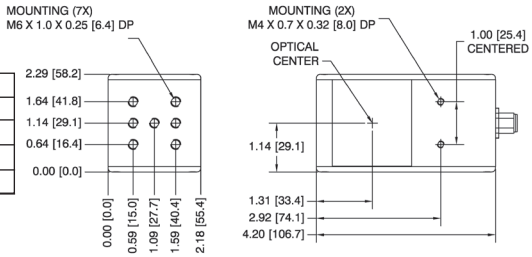
DESCRIPTION	nm/K	CONT. CURRENT	STROBE CURRENT	mcd CONT.	mcd STROBE
DOAL-25, Smart Series, Red	628 nm	110 mA	400 mA	4173	23369
DOAL-25, Smart Series, Blue	470 nm	83 mA	200 mA	2522	11096
DOAL-25, Smart Series, White	5500 K	83 mA	200 mA	5443	23406



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

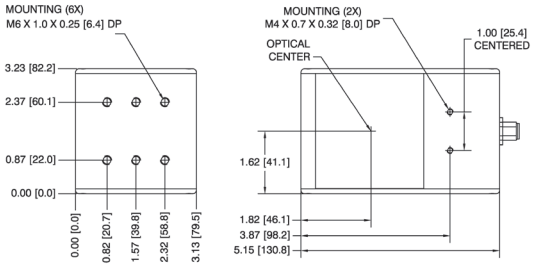
DESCRIPTION	nm/K	CONT. CURRENT	STROBE CURRENT	mcd CONT.	mcd STROBE
DOAL-50, Smart Series, Red	628 nm	345 mA	1.3 A	15967	76640
DOAL-50, Smart Series, Blue	470 nm	260 mA	1.0 A	9684	41156
DOAL-50, Smart Series, White	5500 K	260 mA	1.0 A	20902	89878



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

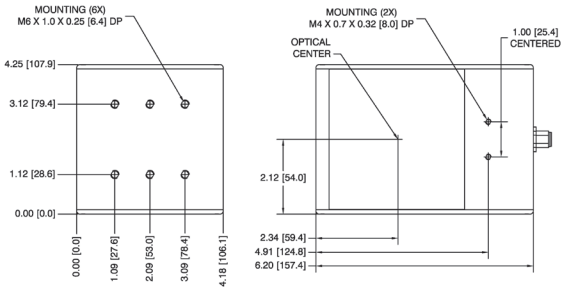
DESCRIPTION	nm/K	CONT. CURRENT	STROBE CURRENT	mcd CONT.	mcd STROBE
DOAL-75, Smart Series, Red	628 nm	650 mA	2.4 A	31026	148926
DOAL-75, Smart Series, Blue	470 nm	570 mA	1.5 A	22696	97594
DOAL-75, Smart Series, White	5500 K	570 mA	1.5 A	48989	210652



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	CONT. CURRENT	STROBE CURRENT	mcd CONT.	mcd STROBE
DOAL-100, Smart Series, Red	628 nm	1.05 A	3.6 A	50803	219470
DOAL-100, Smart Series, Blue	470 nm	740 mA	1.6 A	30665	113461
DOAL-100, Smart Series, White	5500 K	740 mA	1.6 A	66189	244900



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)

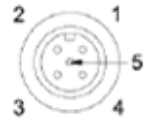
ENVIRONMENTAL
Enclosure: Black anodized aluminum, IP40 rated; **Operating Temperature:** 0° to 50° C (32° to 122° F)
Storage Temperature: 0° to 50° C (32° to 122° F); **Humidity:** up to 95% (non-condensing)

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 LEDs)
Expected Life: 10,000 hours (Blue, White LEDs)
Eye Safety: EN 60825-1: Class 1 (Red, White LEDs); Class 2 (Blue LEDs)

CONNECTOR
Type: M12 5-pin plug, A-code

M12 5-pin plug:



Pin Assignment

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

ELECTRICAL
Power: 20.2–28.8 VDC
Continous Operation: No additional signals required
Continous 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.
Continous 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.

QMS CERTIFICATION
www.microscan.com/quality

Read Range and other performance data is determined using high quality Grade A symbols per ISO/IEC 15415 and ISO/IEC 15416 in a 25° C environment. For application-specific Read Range results, testing should be performed with symbols used in the actual application. Omron Microscan Applications Engineering is available to assist with evaluations. Results may vary depending on symbol quality. **Warranty**–For current warranty information on this product, please visit www.microscan.com/warranty.

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