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.

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

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
DOAL 25

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CONT. CURRENT</th>
<th>STROBE CURRENT</th>
<th>mcd</th>
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<tbody>
<tr>
<td>DOAL-25, Smart Series, Red</td>
<td>628 nm</td>
<td>110 mA</td>
<td>400 mA</td>
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<tr>
<td>DOAL-25, Smart Series, Blue</td>
<td>470 nm</td>
<td>83 mA</td>
<td>200 mA</td>
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<tr>
<td>DOAL-25, Smart Series, White</td>
<td>5500 K</td>
<td>83 mA</td>
<td>200 mA</td>
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</table>

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

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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

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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

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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 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
Light Output: Millicandelas
Radiant Output: Millicalories
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:
1  +24 VDC
2  Trigger (–)
3  DC Ground
4  Trigger (+)
5  Dimmer

QMS CERTIFICATION

www.microscan.com/quality

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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.