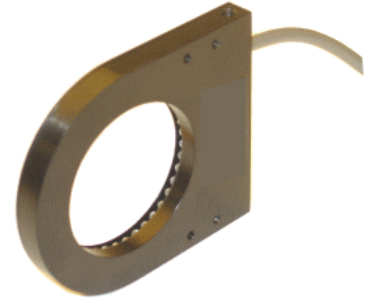


NERLITE® DF-50 Dark-Field Illuminators

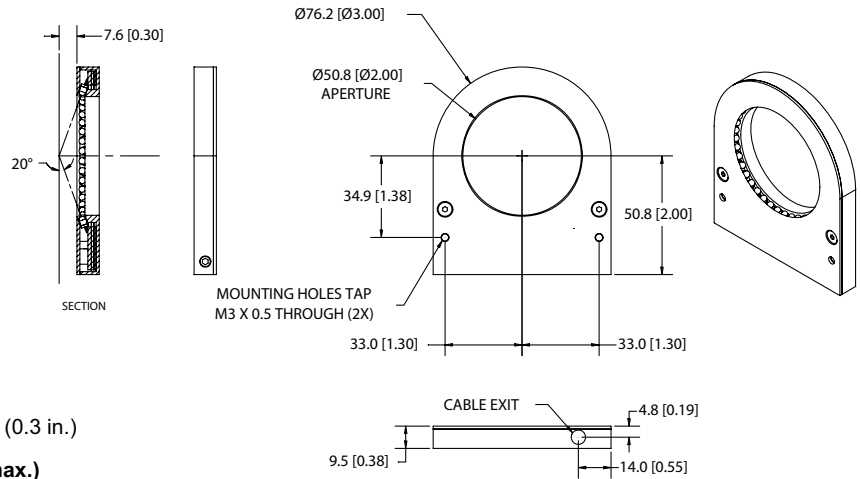
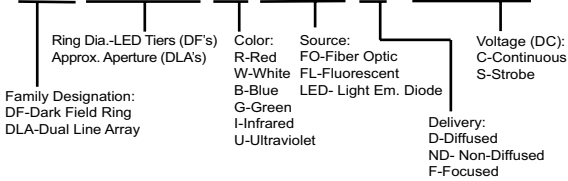
The **DF-50 Series** of dark-field illuminators provides low-angle illumination to the region of interest. The unit uses a single tier of LEDs mounted 70° to the optical axis. The light enhances the contrast of surface features such as laser, embossed or engraved marks or surface defects. The light is particularly suited for applications such as BGA ball placement, laser-etched symbologies and surfaces with geometric contours.



Model #	Description
RVA:010609310	DF-50, R LED-ND, 12V-C
RVA:010609311	DF-50, R LED-ND, 24V-C
RVA:010609312	DF-50, R LED-ND, 24V-S
RVA:010609320	DF-50, W LED-ND, 12V-C
RVA:010609321	DF-50, W LED-ND, 24V-C
RVA:010609322	DF-50, W LED-ND, 24V-S
RVA:010609330	DF-50, B LED-ND, 12V-C
RVA:010609331	DF-50, B LED-ND, 24V-C
RVA:010609332	DF-50, B LED-ND, 24V-S

Description Key Example

Dx-xxx-x, R LED-D, 12V-C



Illumination & Electrical:

Lighting Technique: Dark-field
Light Aperture: 50.8 mm (2.0 in.)
Field Of View x Stand-Off ¹: 17.8 mm (0.7 in.) x 7.6 mm (0.3 in.)
Light Characteristics:

Source	Color (nm)	Exp. Life	Voltage/Current (max.)		
			12V-C	24V-C	24V-S ²
LED	Red plus (660)	50k hrs.	126 mA	69 mA	1.2 A pk. ²
LED	White – 6500 Kelvin	10k hrs.	240 mA	120 mA	2.4 A pk. ²
LED	Blue (470)	10k hrs.	240 mA	120 mA	2.4 A pk. ²

¹ Suggested

² Maximum strobe pulse width = 1.3ms

CE Conformity: Yes

Mechanical:

L x W x H (mm/in.): 88.9 mm x 76.2 mm x 9.5 mm
 (3.5 in. x 3.0 in. x 0.38 in.)
Mounting: (2) M3 x 0.5 through holes
Housing Material: Black Anodized Aluminum
Weight: 136 grams (4.8 oz.)

Environmental:

Max. Operating Humidity: 95% non-condensing
Operating Temp. 40°C (104°F)
Storage Temp. 50°C (122°F)

Accessories:

Part #	Description	Models Used On
RVA:010500301	CPS-12 3.5A, 12VDC, US Cord	12V-C
RVA:010500303	CPS-12 3.5A, 12VDC, EU Cord	12V-C
RVA:010501402	CPS-24, 24VDC, US cord	24V-S ¹
RVA:010501401	CPS-24, 24VDC, EU cord	24V-S ¹
RVA:010502601	CPS-24T, 24VDC US w/9-pin D-sub	24V-C & 24V-S ¹
RVA:010502602	CPS-24T, 24VDC EU w/9-pin D-sub	24V-C & 24V-S ¹
RVA:010502700	ICM-1, M/D Intensity Cntrl, 12V-C	12V-C
RVA:010502701	ICM-1, M/D Intensity Cntrl, 24V-C	24V-C ²
RVA:010502702	SCM-1, 1 Channel M/D Strobe Cntrl.	24V-S
RVA:010901900	SCM-2, 2 Channel Strobe Cntrl.	24V-S
RVA:010503500	VPS-II, 2 Ch. Variable PS, US Cord	12V-C
RVA:010503501	VPS-II, 2 Ch. Variable PS, EU Cord	12V-C
RVA:030003702	Ext. Cable, Cont., 1.8 M (6 ft.)	12V-C & 24V-C
RVA:030003703	Ext. Cable, Cont., 3.0 M (10 ft.)	12V-C & 24V-C
RVA:030003601	Y cable, 2 Lights, 9 pin D-sub Cont.	12V-C & 24V-C
RVA:030007006	Ext. Cable, Strobe, 1.8 M (6 ft.)	24V-S
RVA:030007010	Ext. Cable, Strobe, 3.0 M (10 ft.)	24V-S
RVA:030006900	Y cable, 2 Lights, 9 pin D-sub Strb.	24V-S

¹ RVA:01050140x used only with RVA:010901900;

RVA:01050260x used with either RVA:010502702 or 24V-C lights with DB-9 connectors

Cables/Connectors:

	Connector	Length	Pin#	1	2	3	4	5	6	7	8	9
12V-C Models	9 pin D-sub Male	2.0 M (6.6 ft.)		n/a	n/a	GND	+12VDC	n/a	n/a	n/a	n/a	n/a
24V-S Models	9 pin D-sub Male	2.0 M (6.6 ft.)		V-	n/a	n/a	+24VDC	n/a	n/a	n/a	n/a	n/a
24V-C Models	9 pin D-sub Male	2.0 M (6.6 ft.)		n/a	n/a	n/a	n/a	n/a	n/a	+24VDC	n/a	GND

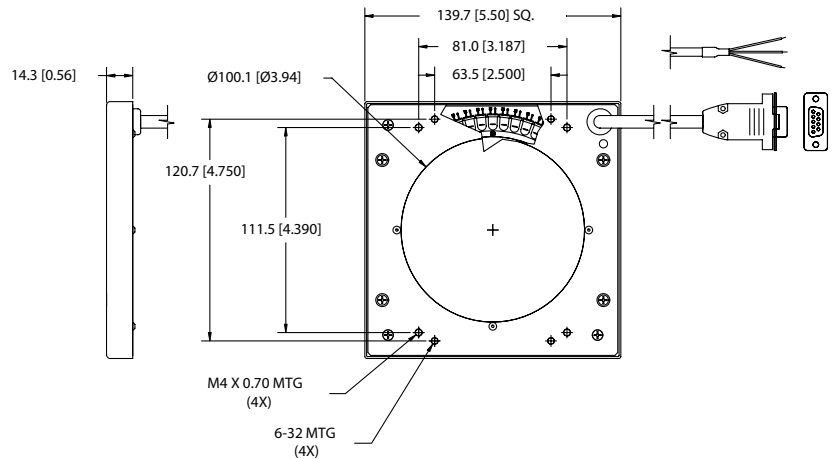
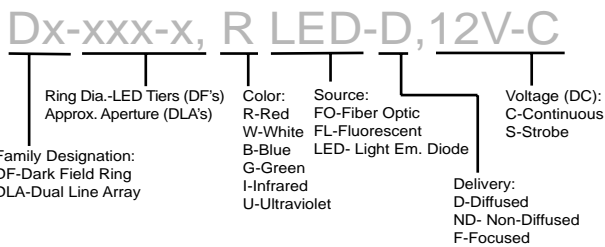
NERLITE® DF-100-1

The **DF-100-1 Series** provides low-angle illumination to the region of interest. The unit uses a single tier of LEDs mounted 90° to the optical axis. The light enhances the contrast of surface features such as laser, embossed or engraved marks or surface defects. The light is particularly suited for applications such as BGA ball placement, laser-etched symbologies and surfaces with geometric contours.



Model #	Description
RVA:010601501	DF-100-1, R LED-D, 12V-C
RVA:010601502	DF-100-1, R LED-D, 24V-S
RVA:010601503	DF-100-1, R LED-ND, 12V-C, 660nm
RVA:010601520	DF-100-1, R LED-ND, 24V-C w/"Flying Leads"
RVA:010601521	DF-100-1, R LED-D, 24V-C w/"Flying Leads"
RVA:010601522	DF-100-1, R LED-ND, 24V-C w/DB9

Description Key Example



Illumination & Electrical:

Lighting Technique:	Dark-field
Light Delivery:	1 tier, 90 deg.
Light Aperture:	100.1 mm (3.94 in.)
Field Of View x Stand-Off ¹	50.8 mm (2 in.) x 12.7 mm (0.5 in.)

Light Characteristics:

Source	Color (nm)	Exp. Life	Voltage/Current (max.)		
			12V-C	24V-C	24V-S ²
LED	Red (636)	60k hrs.	190 mA	100 mA	2.0 A pk.
LED	Red (660)	50k hrs.	190 mA	n/a	n/a

¹ Suggested

² Maximum pulse width 1.0 ms, maximum frequency 60 Hz, maximum duty cycle 6%

CE Conformity: Pending

Mechanical:

L x W x H (mm/in.):	139.7 mm x 139.7 mm x 14.3 mm (5.50 in. x 5.50 in. x 0.56 in.)
Mounting:	(4) M4 + (4) 6-32 on top of unit
Housing Material:	Black Anodized Aluminum
Weight:	256 grams (0.6 lbs.)

Environmental:

Max. Operating Humidity	95% non-condensing
Operating Temp.	40°C (104°F)
Storage Temp.	50°C (122°F)

Accessories:

Part #	Description	Models Used On
RVA:010901900	SCM-2, 2 Channel Strobe Cntrl.	24V-S
RVA:010501402	CPS-24, 24VDC, US cord	24V-S ¹
RVA:010501401	CPS-24, 24VDC, EU cord	24V-S ¹
RVA:010502601	CPS-24T, 24VDC US w/9-pin D-sub	24V-C & 24V-S ^{1,2}
RVA:010502602	CPS-24T, 24VDC EU w/9-pin D-sub	24V-C & 24V-S ^{1,2}
RVA:010500301	CPS-12 3.5A, 12VDC, US Cord	12V-C
RVA:010500303	CPS-12 3.5A, 12VDC, EU Cord	12V-C
RVA:010502700	ICM-1, M/D Intensity Cntrl, 12V-C	12V-C
RVA:010502701	ICM-1, M/D Intensity Cntrl, 24V-C	24V-C ²
RVA:010502702	SCM-1, 1 Channel M/D Strobe Cntrl.	24V-S
RVA:010503500	VPS-II, 2 Ch. Variable PS, US Cord	12V-C
RVA:010503501	VPS-II, 2 Ch. Variable PS, EU Cord	12V-C
RVA:030003702	Ext. Cable, Cont., 1.8 M (6 ft.)	12V-C & 24V-C ²
RVA:030003703	Ext. Cable, Cont., 3.0 M (10 ft.)	12V-C & 24V-C ²
RVA:030003601	Y cable, 2 Lights, 9 pin D-sub Cont.	12V-C & 24V-C ²
RVA:030007006	Ext. Cable, Strobe, 1.8 M (6 ft.)	24V-S
RVA:030007010	Ext. Cable, Strobe, 3.0 M (10 ft.)	24V-S
RVA:030006900	Y cable, 2 Lights, 9 pin D-sub Strb.	24V-S

¹ RVA:01050140x used only with RVA:010901900;

RVA:01050260x used with either RVA:010502702 or 24V-C lights with DB-9 connectors

² 24V-C accessories are not available for "Flying Leads" configurations

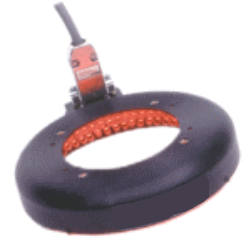
Cables/Connectors:

	Connector	Length	Pin#	1	2	3	4	5	6	7	8	9
12V-C Models	9 pin D-sub Male	2.0 M (6.6 ft.)		n/a	n/a	GND	+12VDC	n/a	n/a	n/a	n/a	n/a
24V-S Models	9 pin D-sub Male	2.0 M (6.6 ft.)		GND	n/a	n/a	+24VDC	n/a	n/a	n/a	n/a	n/a
24V-C Models ¹	9 pin D-sub Male ¹	2.0 M (6.6 ft.) ¹		n/a	n/a	n/a	n/a	n/a	n/a	+24VDC	n/a	GND

¹ Note: 24V-C Models w/"Flying Leads" have a 4.5 M (15 ft.) cable with two (2) tinned leads plus shield and no connector; leads are labeled GND and V+ (+24VDC)

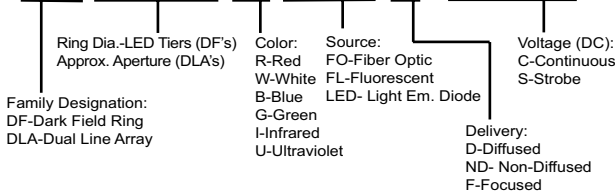
NERLITE® DF-150-3

The **DF-150-3** provides low-angle illumination to the region of interest. The unit uses three tiers of LEDs mounted 75° to the part surface. The lighting enhances contrast to surface perimeters that are of varying distances to the camera (e.g., embossed or engraved). The light is particularly suited for enhancing contrast on geometric contours.



Model #	Description
RVA:010600200	DF-150-3, R LED-ND, 12V-C
RVA:010600208	DF-150-3, R LED-ND, 24V-C, 4.5M (15') Cbl w/Flying Leads
RVA:010600212	DF-150-3, R LED-ND, 24V-C, 2M (6.6') Cbl w/DB9
RVA:010602100	DF-150-3, R LED-ND, 24V-S
RVA:010600206	DF-150-3, W LED-ND, 12V-C
RVA:010600207	DF-150-3, W LED-ND, 24V-S

Dx-xxx-x, R LED-D, 12V-C



Illumination & Electrical:

Lighting Technique: Dark-Field, 3 tier, 75°, non-diffuse
Light Aperture: 73.7 mm (2.9 in.)
Field Of View x Stand-Off ¹: 38 mm (1.5 in.) x 12 mm (0.47 in.)

Light Characteristics:

Source	Color (nm)	Exp. Life	Voltage/Current (max.)		
			12V-C	24V-C	24V-S
LED	Red (636)	60k hrs.	1.2 A	300 mA	9.0 A pk.
LED	White – 6500 Kelvin	10k hrs.	900 mA	n/a	12.0 A pk.

¹ Suggested

CE Conformity: Yes

Mechanical:

L x W x H (mm/in.): 161.8 mm x 139.7 mm x 25.9 mm
(6.37 in. x 5.50 in. x 1.02 in.)
Mounting: (4) 6-32 on top of unit
Housing Material: Black Anodized Aluminum
Weight: 193 grams (7 oz.)

Environmental:

Max. Operating Humidity: 95% non-condensing
Operating Temp.: 40°C (104°F)
Storage Temp.: 50°C (122°F)

Cables/Connectors:

	Connector	Length	Pin#	1	2	3	4	5	6	7	8	9
12V-C Models	9 pin D-sub Male	1.8 M (6 ft.) ¹		n/a	n/a	GND	+12VDC	n/a	n/a	n/a	n/a	n/a
24V-S Models	9 pin D-sub Male	1.8 M (6 ft.) ²		V-	n/a	n/a	+24VDC	n/a	n/a	n/a	n/a	n/a
24V-C Models ³	9 pin D-sub Male ³	2.0 M (6.6 ft.) ³		n/a	n/a	n/a	n/a	n/a	n/a	+24VDC	n/a	GND

¹ 1.8 M (6 ft.) power cable included (RVA:030002700)

² 1.8 M (6 ft.) power cable included (RVA:030013300)

³ Note: 24V-C Models w/"Flying Leads" have a 4.5 M (15 ft.) cable with two (2) tinned leads and no connector; leads are labeled GND and V+ (+24VDC)

Accessories:

Part #	Description	Models Used On
RVA:090000100	Mounting Bracket	All
RVA:015011900	Diffuser Assembly, DF-150-3	24V-S ¹
RVA:010901900	SCM-2, 2 Channel Strobe Cntrl.	24V-S
RVA:010501402	CPS-24, 24VDC, US cord	24V-S ²
RVA:010501401	CPS-24, 24VDC, EU cord	24V-S ²
RVA:010502601	CPS-24T, 24VDC US w/9-pin D-sub	24V-C & 24V-S ^{2,3}
RVA:010502602	CPS-24T, 24VDC EU w/9-pin D-sub	24V-C & 24V-S ^{2,3}
RVA:010500301	CPS-12 3.5A, 12VDC, US Cord	12V-C
RVA:010500303	CPS-12 3.5A, 12VDC, EU Cord	12V-C
RVA:010502700	ICM-1, M/D Intensity Cntrl, 12V-C	12V-C
RVA:010502701	ICM-1, M/D Intensity Cntrl, 24V-C	24V-C ³
RVA:010502702	SCM-1, 1 Channel M/D Strobe Cntrl.	24V-S
RVA:010503500	VPS-II, 2 Ch. Variable PS, US Cord	12V-C
RVA:010503501	VPS-II, 2 Ch. Variable PS, EU Cord	12V-C
RVA:030003702	Ext. Cable, Cont., 1.8 M (6 ft.)	12V-C & 24V-C ³
RVA:030003703	Ext. Cable, Cont., 3.0 M (10 ft.)	12V-C & 24V-C ³
RVA:030003601	Y cable, 2 Lights, 9 pin D-sub Cont.	12V-C & 24V-C ³
RVA:030007006	Ext. Cable, Strobe, 1.8 M (6 ft.)	24V-S
RVA:030007010	Ext. Cable, Strobe, 3.0 M (10 ft.)	24V-S
RVA:030006900	Y cable, 2 Lights, 9 pin D-sub Strb.	24V-S ⁴

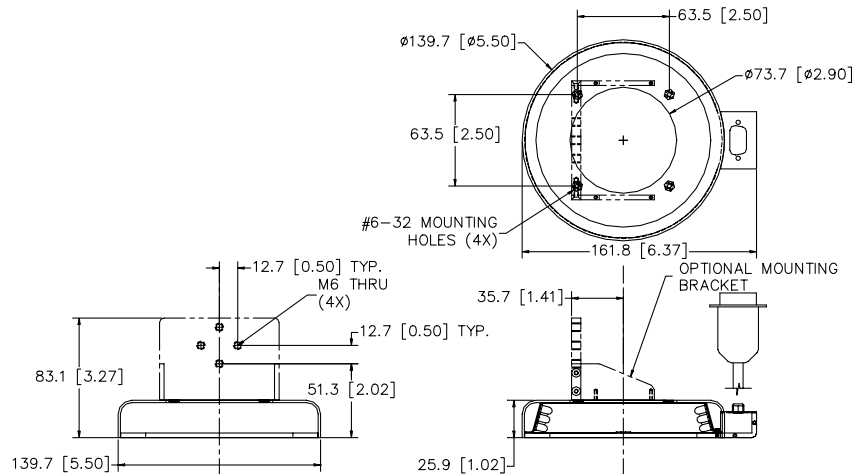
¹ Not recommended for continuous models due to reduction in cooling air flow

² RVA:01050140x used only with RVA:010901900;

RVA:01050260x used with either RVA:010502702 or 24V-C lights with DB-9 connectors

³ 24V-C accessories are not available for "Flying Leads" configurations

⁴ Not for use with model RVA:010600207 due to high current requirements



NERLITE® DF-200-1 Dark Field (Continuous)

Part Number: RVA:010603300

Product Description: The DF-200-1 provides low-angle continuous illumination to the region of interest. The unit uses a single tier of LEDs mounted 90° to the optical axis. The light enhances the contrast of surface features such as laser, embossed or engraved marks or surface defects. The light is particularly suited for applications such as BGA ball placement, laser-etched symbologies and surfaces with geometric contours.

Illumination:

Lighting Technique: Dark-field, diffuse
Source Type: Red LED
Spectrum: 636 nm
Expected Life: 60,000 hours
Light Delivery: 1 tier, 90 deg.
Light Aperture: 203.2 mm (8 in.)
Suggested Field Of View: 100 mm (3.93 in.)
Suggested Stand-Off: 6.35 mm (0.25 in.)

Electrical:

Input Voltage: 12VDC
Input Current: 400 mA
Cable Length: 1.8 M (6 ft.)
Connector: 9 pin D-sub male
CE Conformity: Yes

Accessories:

Part Number	Description
RVA:030003702	Extension Cable, Continuous, 1.8 M (6 ft.)
RVA:030003703	Extension Cable, Continuous, 3.0 M (10 ft.)
RVA:010500301	CPS-12, 12VDC, US Cord
RVA:010500303	CPS-12, 12VDC, EU Cord
RVA:010503500	VPS-II, 2 Ch. Variable PS, US Cord
RVA:010503501	VPS-II, 2 Ch. Variable PS, EU Cord

Mechanical:

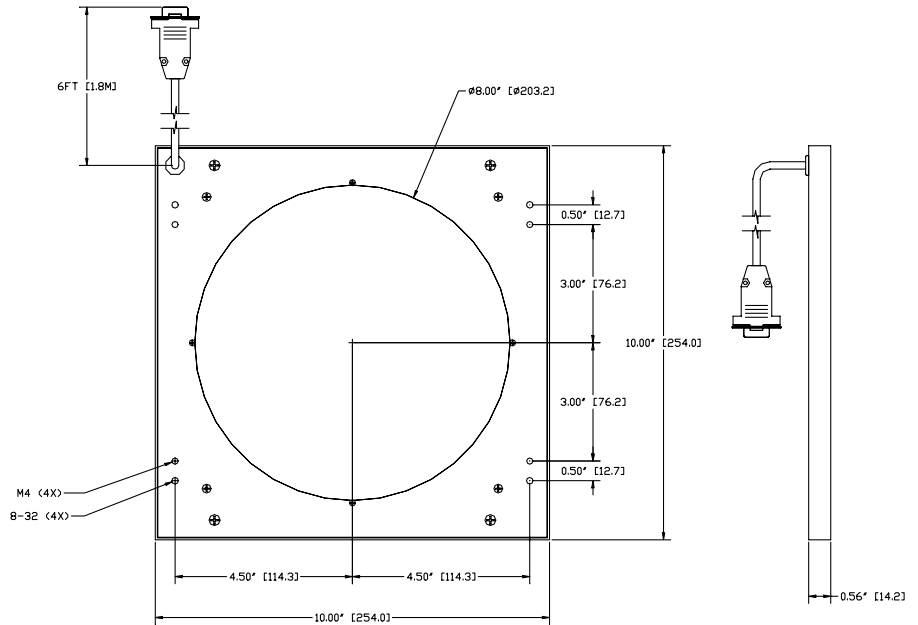
L x W x H: 254.0 mm x 254.0 mm x 14.2 mm
 (10.0 in. x 10.0 in. x 0.56 in.)
Mounting: (4) 8-32 and (4) M4 on top of unit
Housing Material: Black Epoxy Paint over Aluminum
Weight: 1.25 lbs.

Environmental:

Max. Operating Humidity: 95% non-condensing
Operating Temp.: 40°C (104°F)
Storage Temp.: 50°C (122°F)

Cable Pinout (9-pin D-subminiature, Male)

Pin #	Signal	Pin #	Signal
1	n/a	6	n/a
2	n/a	7	n/a
3	GND	8	n/a
4	+12VDC	9	n/a
5	n/a		



NERLITE® DF-200-1 Dark Field (Strobed)

Part Number: RVA:010603301

Product Description: The DF-200-1 provides low-angle strobed illumination to the region of interest. The unit uses a single tier of LEDs mounted 90° to the optical axis. The light enhances the contrast of surface features such as laser, embossed or engraved marks or surface defects. The light is particularly suited for applications such as BGA ball placement, laser-etched symbologies and surfaces with geometric contours.

Illumination:

Lighting Technique: Dark-field, diffuse
Source Type: Red LED
Spectrum: 636 nm
Expected Life: 60,000 hours
Light Delivery: 1 tier, 90 deg.
Light Aperture: 203.2 mm (8 in.)
Suggested Field Of View: 100 mm (3.93 in.)
Suggested Stand-Off: 6.35 mm (0.25 in.)

Electrical:

Input Voltage: 24VDC
Input Current: 4A pk.
Cable Length: 1.8 M (6 ft.)
Connector: 9 pin D-sub male
CE Conformity: No

Accessories:

Part Number	Description
RVA:010901900	SCM, Strobe Control Module
RVA:010501402	CPS-24, 12VDC, US cord
RVA:010501401	CPS-24 12VDC, EU cord
RVA:030006900	Y cable, 9 pin D-sub, strobe
RVA:030007006	Extension Cable, Strobe, 1.8 M (6 ft)
RVA:030007010	Extension Cable, Strobe, 3.0 M (10 ft)

Mechanical:

L x W x H: 254.0 mm x 254.0 mm x 14.2 mm
 (10.0 in. x 10.0 in. x 0.56 in.)
Mounting: (4) 8-32 and (4) M4 on top of unit
Housing Material: Black Epoxy Paint over Aluminum
Weight: 1.25 lbs.

Environmental:

Max. Operating Humidity: 95% non-condensing
Operating Temp.: 40°C (104°F)
Storage Temp.: 50°C (122°F)

Cable Pinout (9-pin D-subminiature, Male)

Pin #	Signal	Pin #	Signal
1	GND	6	n/a
2	n/a	7	n/a
3	n/a	8	n/a
4	+24VDC	9	n/a
5	n/a		

