COBRA™ Slim
Linescan Illuminator

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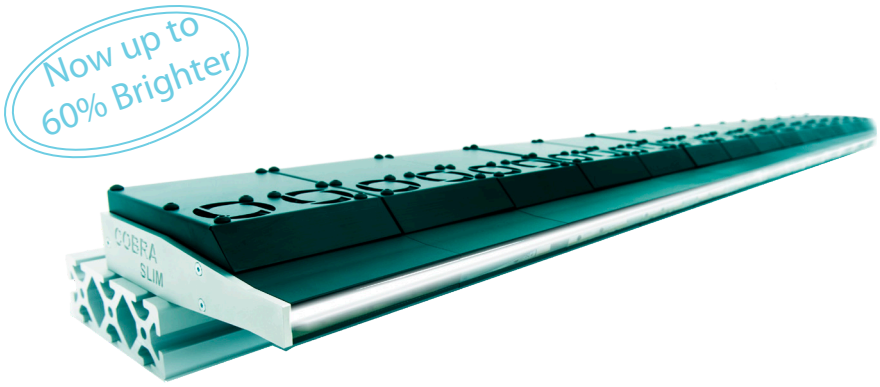

Crystal Clear Linescan Images

COBRA Slim Linescan Illuminator utilizes the latest in Chip-on-Board technology to deliver extreme brightness and excellent uniformity, ideally suited to the requirements of high-speed linescan and web inspection. Its slim and compact design is modular and is available in any length up to 5 meters. Cobra Slim's unique design allows for the lens to be adjusted in the field to the ideal focussing distance for your application.

ProPhotonix have recently enhanced the Chip-on-Board technology in COBRA Slim and the product now delivers up to 60% more intensity than the previous version (up to1500kLux).

COBRA Slim is available in wavelengths from 365 – 1500nm and with optional strobing function delivering up to 5 times the intensity. Ethernet control is also available as an option.

For even higher intensity requirements, ProPhotonix offer COBRA Max, delivering intensities up to 2600kLux.

For applications where space is restricted COBRA Slim is available in the compact COBRA Flex configuration, which provides a wide range of mounting options.

PRO PHOTONIX
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Key Features

- Intensity: Now up to 60% Brighter (1500kLux)
- Design: Slim and compact
- Field adjustable: focusing distance and diffusers
- Chip-On-Board: Extreme brightness and high uniformity
- Modular: available in any length
- Current monitoring & error detection
- Wavelengths: from UV to Visible and IR

Options Available

- Strobing function (Potential for 5 times brighter)
- Onboard Ethernet control

Key Applications

Web and linescan inspection of:

- Foil
- Paper
- Plastic film
- Currency
- PCBs
- Glass
- Semiconductors
- Flat panel displays

Spectral Characteristics

Colour		UV_{365}	UV_{395}	$Blue_{470}$	RED_{630}	IR_{870}	IR_{1050}	WHITE
Peak Wavelength(1)	nm	365±5	395±5	470±10	625±5	870±10	1050±20	n/a
Spectral Width FWHM	mm	12	14	27	15	47	75	n/a
Colour Temperature	K	n/a	n/a	n/a	n/a	n/a	n/a	5000-6000

(1) Nominal wavelengths and tolerance include thermal shifting

Maximum Irradiance & Illuminance (Measured in S9 For 300 mm Units)

		UV_{365}	UV_{395}	$Blue_{470}$	RED_{630}	IR_{870}	IR_{1050}	WHITE
Convection Cooled								
Irradiance	Wm^{-2}	290	696	1353	1164	1024	923	3068
Illuminance	kLux	n/a	n/a	87	273	n/a	n/a	853
Fan Cooled								
Irradiance(2)	Wm^{-2}	805	2320	3200	3520	2275	2250	5396
Illuminance	kLux	n/a	n/a	206	826	n/a	n/a	1500

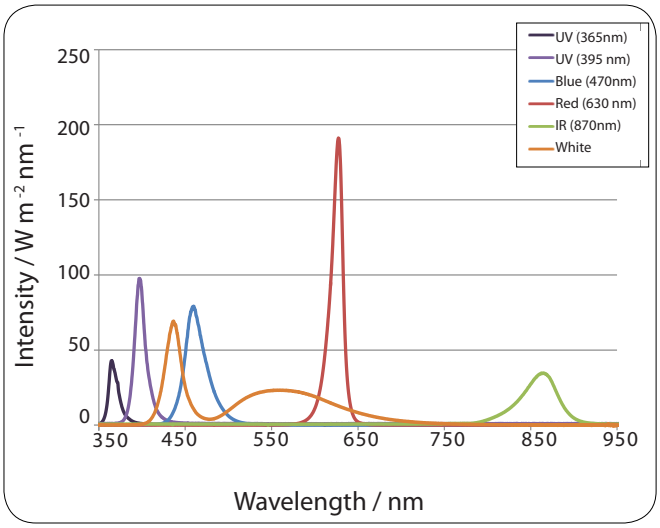
(2) Values for active cooling presented here correlate to the integrals of the graphs shown on page 3.

Focus & Illumination Field - RED COBRA Slim

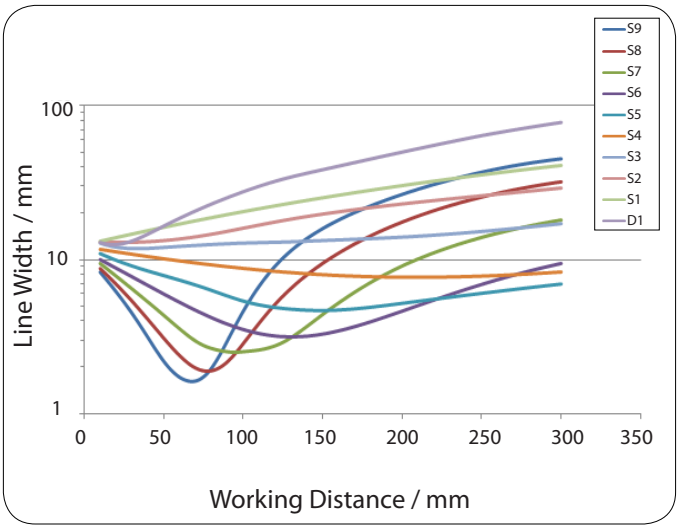
Lens Position[3]	Working Distance (WD) Range For Illuminance[4] (mm)		Working Distance (WD) At Peak Intensity(mm)		Line Width (FWHM) For WD Range (mm)		Focal Distance (mm)	Line Width[5] mm (FWHM) At Focal Distance
	100mm	300mm	100mm	300mm	100mm	300mm	All Lengths	All Lengths
S1	10-66	10-125	divergent	divergent	14.2-18.7	13.2-22.8	divergent	divergent
S2	10-77	10-140	divergent	divergent	13.8-16.3	12.9-19.1	divergent	divergent
S3	10-95	10-181	divergent	divergent	12.0-13.2	11.8-13.7	divergent	divergent
S4	10-122	10-265	collimated	collimated	8.8-11.8	7.7-11.7	collimated	collimated
S5	10-47	10-120	10	29	8.0-10.9	4.9-11	149	4.7
S6	10-108	27-122	81	89	2.9-10.1	3.2-8.1	131	3.1
S7	44-87	50-94	68	74	4.5-2.2	2.5-4.4	95	2.5
S8	40-75	43-76	59	61	1.9-4.0	1.9-3.8	77	1.9
S9	33-60	41-65	47	54	1.5-3.9	1.6-3	68	1.6
D1	10-52	10-58	divergent	divergent	9.9-13.8	12.5-22.8	divergent	divergent

(3) Positions S1, S2 and S3 are divergent i.e. no focus, beam width increases with working distance. Position S4 produces the most collimated beam
(4) For S5 - S9 positions, working distance range is the range over which intensity is ≥ 90% of maximum intensity. For S1-S4 positions, working distance range is the range over which intensity is ≥ 50% of maximum intensity.
(5) For more details on beam width and intensities, see graphs.

Spectral Distribution

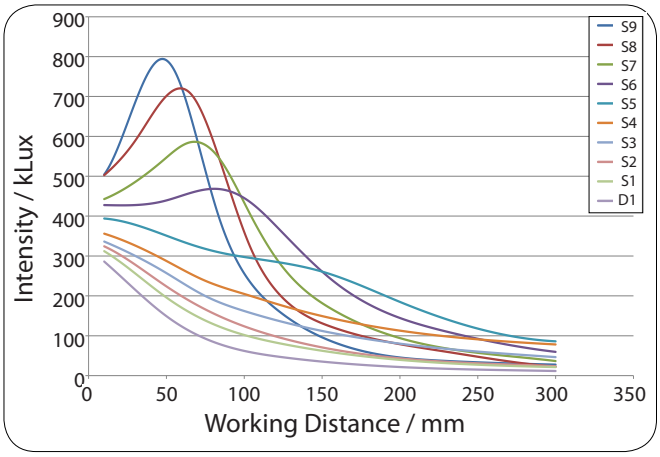


Line Width Versus Working Distance - Red

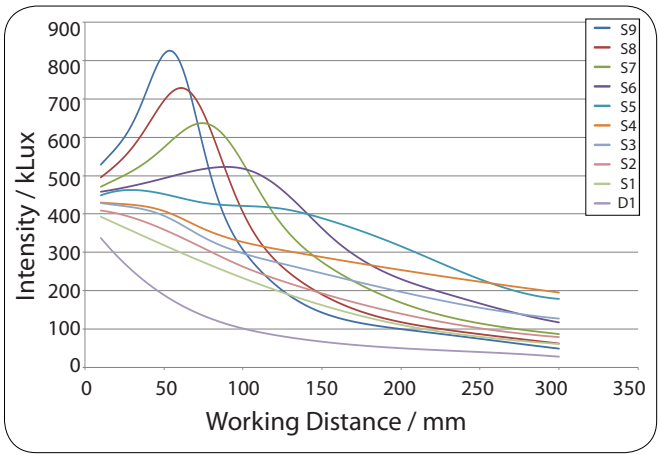


Note: 'Values presented for the active cooling option in the maximum irradiance and illumination table correlate to the integrals of the spectra presented here.

Intensity Versus WD (100 mm Unit) - Red

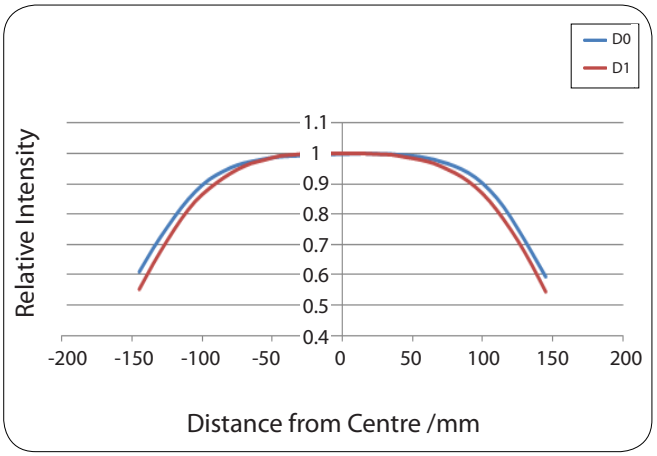


Intensity Versus WD (300 mm Unit) - Red



Note: The behavior of Intensity with Working Distance will be similar for units with 3 or more modules

Uniformity: 300mm Unit, S5, WD=100mm - Red



RED COBRA Slim D0	300mm Unit
Length with > 95% Intensity	165 mm
Length with > 90% Intensity	200 mm

RED COBRA Slim D1	300mm Unit
Length with > 95% Intensity	150 mm
Length with > 90% Intensity	180 mm

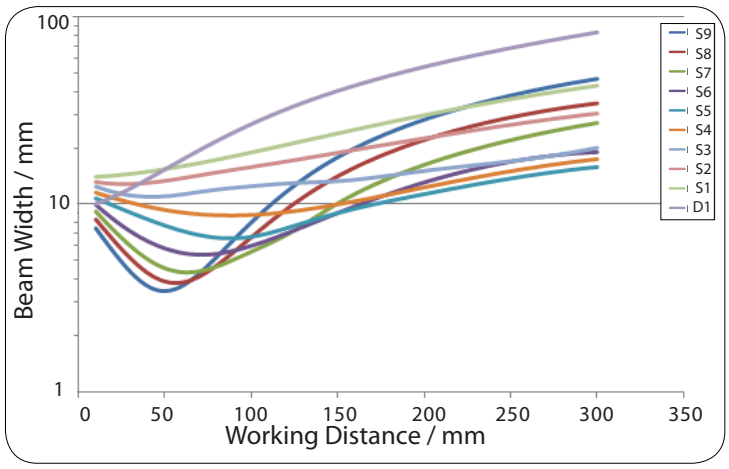
Note: Uniformity will vary with lens position and working distance.

Focus & Illumination Field - White COBRA Slim

Lens Position[3]	Working Distance (WD) for Range Illuminance[(4)] (mm)		Working Distance at Peak Intensity (mm)		Line Width (FWHM) at WD (mm)		Focal Distance (mm)	Line Width at Focal Distance (mm) [5]
	100mm	300mm	100mm	300mm	100mm	300mm	All Lengths	All Lengths
S1	10-53	10-105	divergent	divergent	14.0-15.6	14.0-19.4	divergent	divergent
S2	10-61	10-112	divergent	divergent	12.8-13.8	12.8-16.5	divergent	divergent
S3	10-68	10-132	collimated	collimated	11.0-12.5	11.0-13.1	collimated	collimated
S4	10-85	10-150	10	10	8.7-11.5	8.7-11.5	88	8.7
S5	10-103	10-142	10	10	6.6-10.8	6.6-10.8	88	6.6
S6	10-108	10-130	10	10	5.4-9.9	5.4-9.9	71	5.4
S7	10-61	10-67	15	55	4.3-9.2	4.3-9.2	63	43
S8	10-55	10-57	42	46	3.8-8.3	8.3-3.8	56	3.8
S9	10-49	10-52	41	42	3.4-7.5	3.4-7.5	50	3.4
D1	10-46	10-51	divergent	divergent	10.1-14.7	10.1-15.6	divergent	divergent

(3) Positions S1 and S2 are divergent i.e. no focus, beam width increases with working distance. Position S3 produces the most collimated beam
(4) For S4 - S9 positions, working distance range is the range over which intensity is ≥ 90% of maximum intensity. For S1-S3 positions, working distance range is the range over which intensity is ≥ 50% of maximum intensity.
(5) For more details on beam width and intensities, see graphs.

Beam Width Versus Working Distance - White

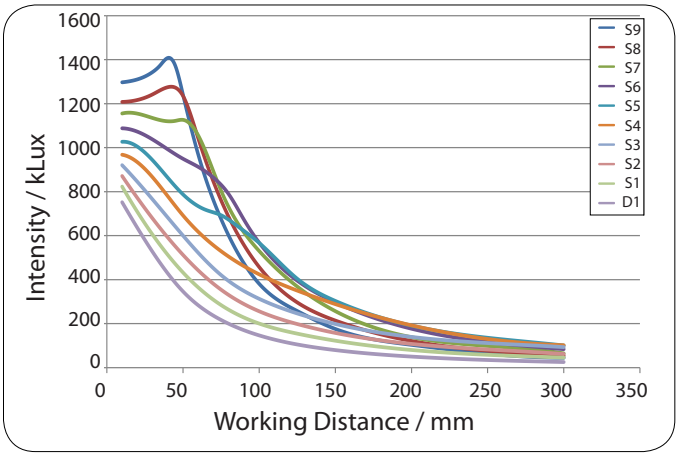


Custom Solutions

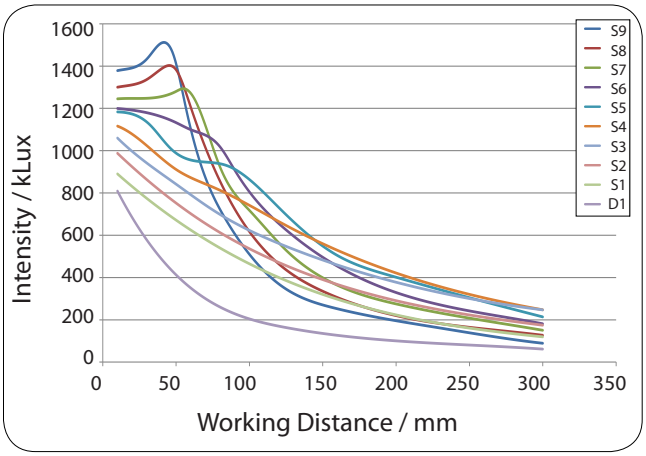
ProPhotonix specializes in providing customized solutions. Please enquire for other wavelengths, powers, optics, or mechanics.

White COBRA Slim

Intensity Versus WD (100mm Unit) - White



Intensity Versus WD (300mm Unit) - White

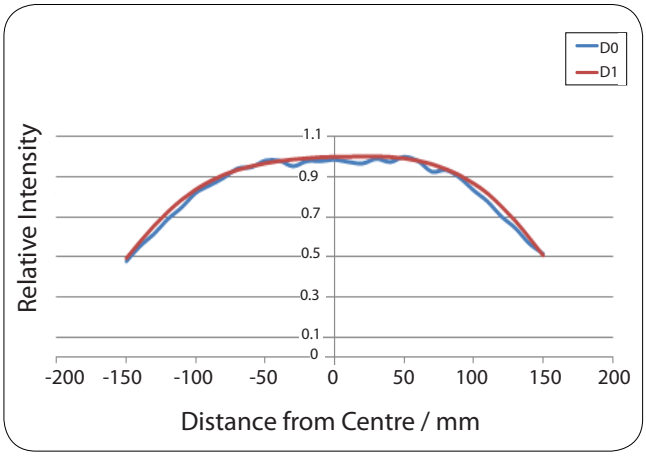


WHITE COBRA Slim D0	300mm Unit	
Length with > 95% Intensity	mm	125
Length with > 90% Intensity	mm	168

WHITE COBRA Slim D1	300mm Unit	
Length with > 95% Intensity	mm	138
Length with > 90% Intensity	mm	175

Note: Uniformity will vary with lens position and working distance.

Uniformity: 300mm Unit, S5, WD=100mm

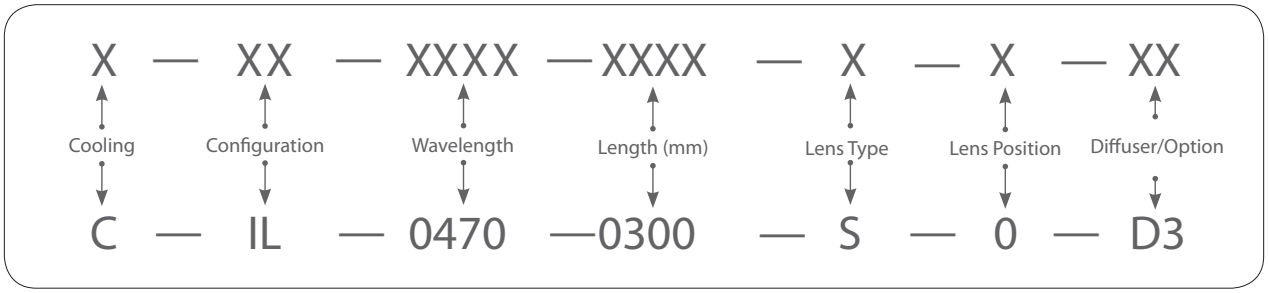


Part Numbers

Cooling		Configuration		Standard Wavelengths (nm)		Length (mm)	Lens Type [6]		Lens Postion		Diffuser or Options	
C	Convection	IL	Error output & analogue control	0365	UV[7]	0100	S	Standard	0	No Lens	D0	No Diffuser
T	Fan	EL	IL Options + Ethernet Connector	0395	UV [7]	↓	R	Custom Optics for Broad Illumination	1	Closest to LEDs ↓	D1	60:10 (Backlight)
		AL	EL Options + Strobe Capability	0470	Blue	0900	M	Extra Internal Micro-lens	↓	Furthest from LEDs	D2	30:1
				0630	Red	1000			9		D3	To Be Defined
				0870	Near-IR	1100					↓	
				0000	White	↓					D9	
				0RGB	Red, Green & Blue	↓					F1-9	Additional Focusing Lens Option
						6000						
365-1500 nm custom wavelengths available												

(6) Non-standard lenses are also available on request
(7) For information on 365nm and 395nm refer to UV COBRA Slim Datasheet

To order your COBRA Slim – Select Cooling Option(X) – Select Configuration (XX) – Select Wavelength Length (XXX) - Select Length (XXXX) - Select Lens Type & Position (XX) - Select Diffuser Option (XX)



Power Requirements

Cobra Type	Power Rating Per 100mm Module	Cobra 100mm Modules Per Power Supply[9]
TXL	24 V ± 10%	5 max [8]
CXL	24 V ± 10%	8 max [9]

(8) PSU-24V-240W-XX.or comparable 24 V ± 10% standard power supply
(9) Single power input connection

COBRA Slim comes with a 2 metre power cable as standard. This is the only cable required to use the light at full intensity. This cable can be tailored to the specific application requirements. To order the power cable use the following part number C2-CAB-P-S-XXXX where XXXX is the length of the cable in cm.

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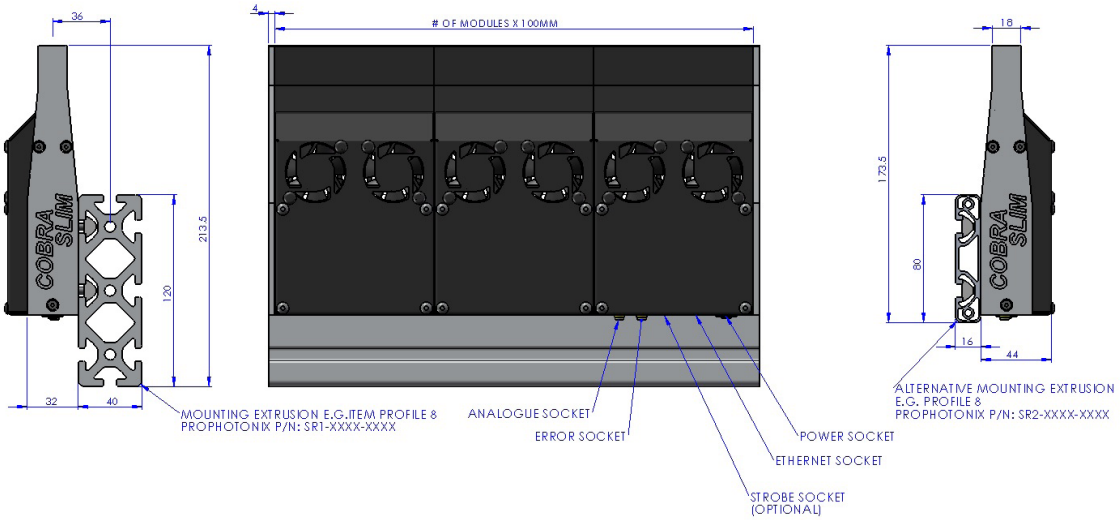
Dimensional Diagram



For all COBRA Slim longer than 100mm, standard Item brand aluminium extrusion Profile 8 is used for rigidly aligning and connecting the 100mm COBRA Slim modules together. The extrusion is also used for mounting the light in the machine. Two options are available (see dimensional specifications). To order your extrusion select the profile (SR1/SR2) - select the length of the COBRA Slim (XXXX) - Decide on the length of rail required (XXXX)

(Note: the overall length of the COBRA is 8mm longer than its illuminated width)

Note: Other extrusion profile forms and dimensions available on request. Custom back plates also available on request. 100mm units do not require a mounting extrusion.

050913
Rev 1.1 [CN0468]

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