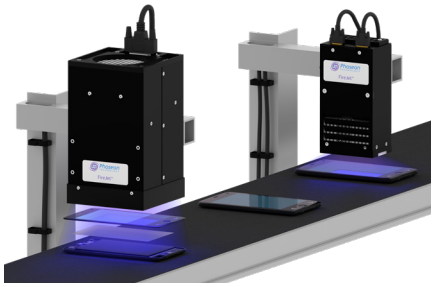
UV LED Curing Solutions

Product Overview

Phoseon Technology provides patented and proprietary LED curing solutions that offer high-performance and long lifetime. The Company is 100% focused on LED technology and provides worldwide sales and support capabilities.



Company

In-house R&D

Internal Manufacturing

Thermal Management

Custom Optics

Products

Optimized Performance

Rugged & Reliable

Extensive Portfolio

Long Lifetime

Solutions

Patented Technologies

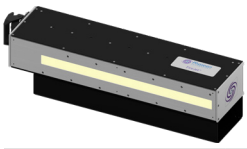
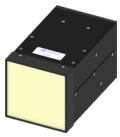
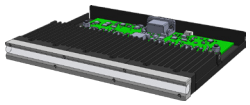
Application Specific

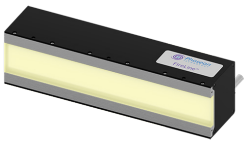
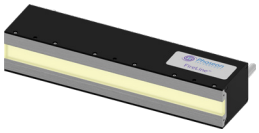
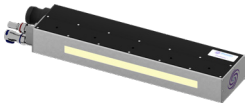
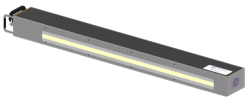
Engineering & Maintenance Services

Scalable Lengths

Phoseon LED Curing Technology

Phoseon utilizes its semiconductor, solid-state background to develop solutions. Our products combine LED arrays, advanced optics, thermal management, and electronic control to provide simple integration and trouble-free operation. Phoseon is an ISO 9001 certified corporation with over 2 million hours of internal LED lifetime testing.

Product Name	Emitting Window (mm)	Peak Irradiance (W/cm²) @ Wavelength (nm): 365	Peak Irradiance (W/cm²) @ Wavelength (nm): 385/395/405	UV Power (Per 25mm Length)	Key Features
FireJet™					Air-cooled
FireJet ONE 	75 150 225 300 375 x 20	12	20	70W	TargetCure™ technology WhisperCure™ technology • Scalable • High irradiance • Small form factor
FJ100 	75 150 225 300 375 x 20	8	16	53W	TargetCure™ technology WhisperCure™ technology • Scalable • High irradiance • Digital/analog control
FJ240 	75 150 225 300 x 40	8	16	130W	TargetCure™ technology • Scalable • High dose • Digital/analog control
FJ605 	300 375 450 525 600 675 x 20	N/A	20	100W	TargetCure™ technology • High irradiance • Modbus/Analog Control • Flexographic applications
FJ801 	100 x 100	1.0	1.7	42W	TargetCure™ technology • Scalable • Exceptional Uniformity • Separate controller • Area curing applications
FireEdge™					Air-cooled
FE410 	80 120 160 180 240 x 10	6	10	20W	TargetCure™ technology WhisperCure™ technology • Full cure • Optics Options • Analog control • Small form factor
FE100 	80 120 180 240 x 10	N/A	2	3W	WhisperCure™ technology • Natural Convection Cooling • Thin Form Factor • Analog Control • Pinning and Gelling

Product Name	Emitting Window (mm)			Peak Irradiance (W/cm²) @ Wavelength (nm): 365	385/395/405	UV Power (Per 25mm Length)	Key Features
FireLine™							**Water-cooled**
FL440 	125 150 225 250 300	x	40	12	16	150W	• Scalable • High dose • High irradiance • Digital/analog control • High performance curing applications
FL400 	125 150 225 250 300	x	20	12	24	100W	• Scalable • Digital/analog control • High performance curing applications
FL200 	75 125	x	10	8	25	30W	• Scalable • Separate controller • Ethernet control • Small form factor
FirePower™							**Water-cooled**
FP601 	300 350 375 450 525 600 675	x	20	N/A	24*	100W	• High irradiance • Modbus/analog control • Flexographic applications *24W/cm² not available on 600, 675mm sizes
FP401 	750 900 1000 1050 1200 1350 1500	x	20	N/A	24	100W	• High Irradiance • Flexographic applications • Longer lengths for wide-web printing

Phoseon products are available in custom configurations for unique applications.
Emitting window specifications refer to the dimensions (L x W).
Irradiance measurements are taken at the emitting window.
Phoseon systems are CE, RoHS, and REACH compliant.

FireFly™ 25x10

Product Specifications

PHOSEON UV LED SLM™ TECHNOLOGY

Phoseon Technology is the world leader in providing UV LED solutions for commercial and industrial applications. Phoseon's products deliver superior performance and real-world reliability for UV curing of adhesives, coatings and inks.

Phoseon's patented Semiconductor Light Matrix (SLM)™ technology encapsulates LEDs, arrays, optics and cooling to maximize UV LED curing performance. The FireFly product is ideal for small area and spot cure applictions in the UV curing of adhesives, inks, electronic materials and biomedical materials.

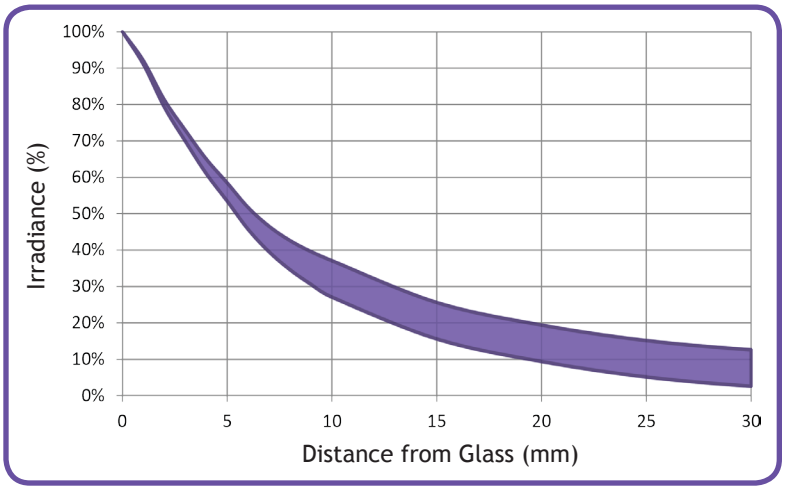
Air Cooled

PERFORMANCE

	395nm	
Peak Irradiance	**4W/cm²**	**2W/cm²**
Emitting Window (mm)	25x10	
DC Power (Typical)	55W 1.1A	35W 0.7A
DC Power (Max)	60W 1.25A	40W 0.83A

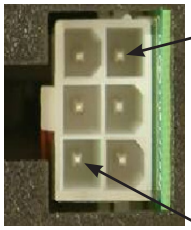
PEAK IRRADIANCE VS DISTANCE

The UV emission from the FireFly UV light source diverges with distance away from the window glass. However it is important to note that as the distance between the media and the emitting window increases, the total energy (dose) delivered by the light source remains constant. Peak irradiance decreases as the working distance increases, but it is offset by an increase in the exposure area (light footprint), keeping the dose constant.



PLC INTERFACE

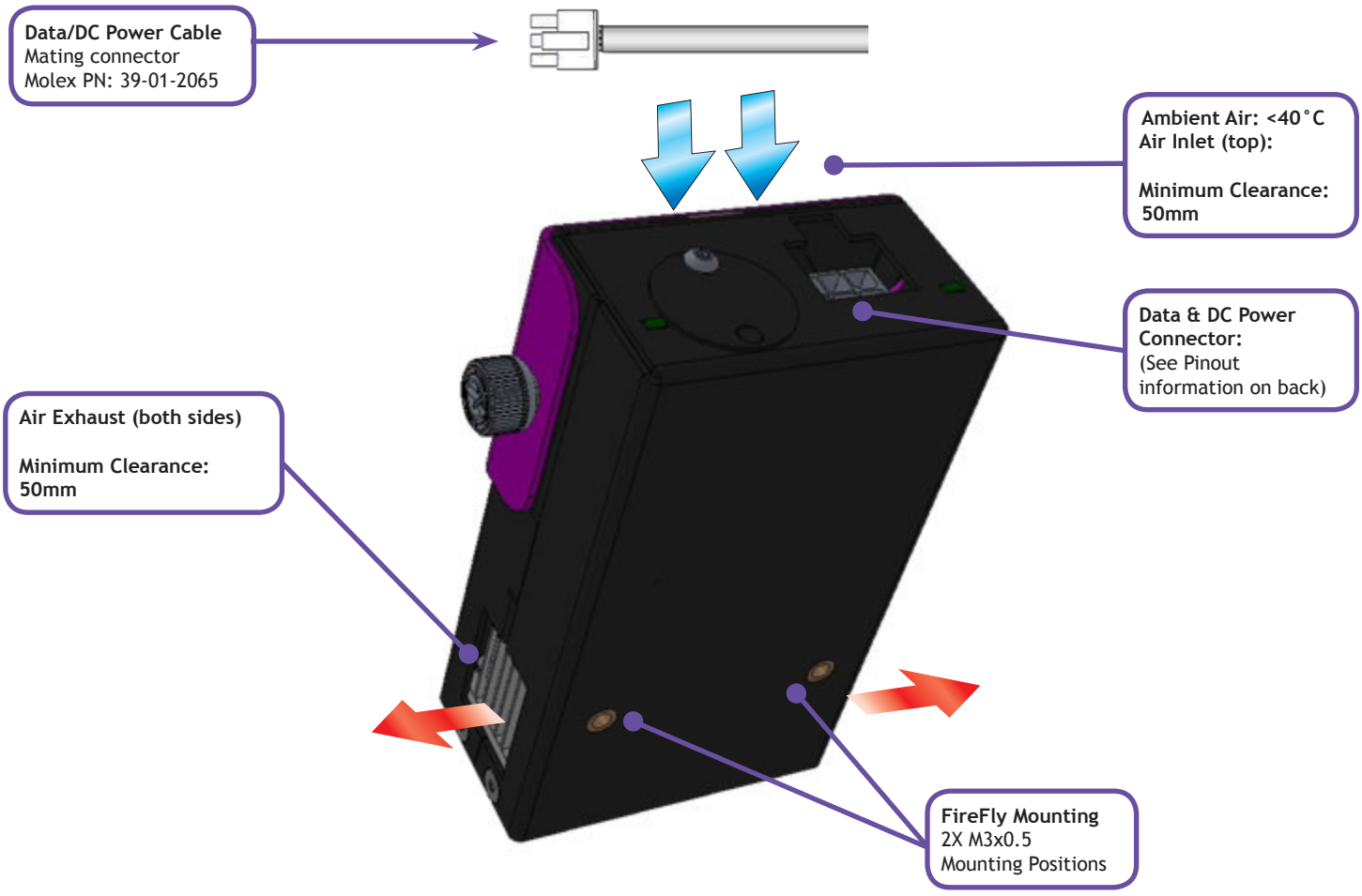
The connector on the light source is used to provide power and control of the light source via a PLC, the connector Pin assignments are described below:



Power & Data Connector

1. **No Connection required:** For testing connect to Pin 1 to Pin 2 to enable light source.
2. **Enable High:** (TTL Input) 0V to +0.4V (ground/open input) = OFF or +3.5V to +5.0V = ON
   Internal resistive load on this Pin is 110kohms.
3. **Thermal Fault Feedback:** (TTL Output)
   0V to +0.4V (ground) = Fault or +3.5V to +5.0V (open) = No Fault
   Maximum sink current on this Pin is 5mA.
4. **Ground**
5. **Ground**
6. **+48Vdc**

LIGHT SOURCE SETUP

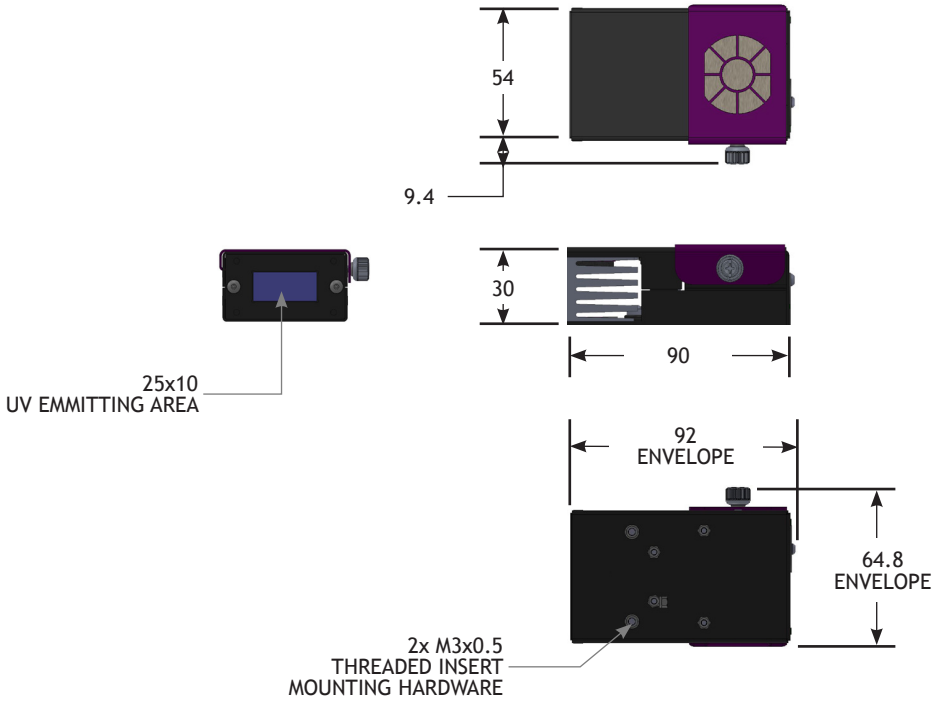


DIMENSIONS

Units of measurement: mm

FireFly	
UV Emitting Window	25x10
L	65
W	30
H	92
Weight (kg)	0.23

See 27365 Control Drawing, FireFly 25x10 for details.



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PN 26872 Rev 4.1
December 2015

FireFly™ 25x25
Product Specifications

PHOSEON UV LED SLM™ TECHNOLOGY

Air Cooled

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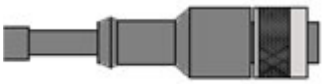
Phoseon's patented Semiconductor Light Matrix (SLM)™ technology encapsulates LEDs, arrays, optics and cooling to maximize UV LED curing performance. The FireFly product is ideal for small area and spot cure applictions in the UV curing of adhesives, inks, electronic materials and biomedical materials.

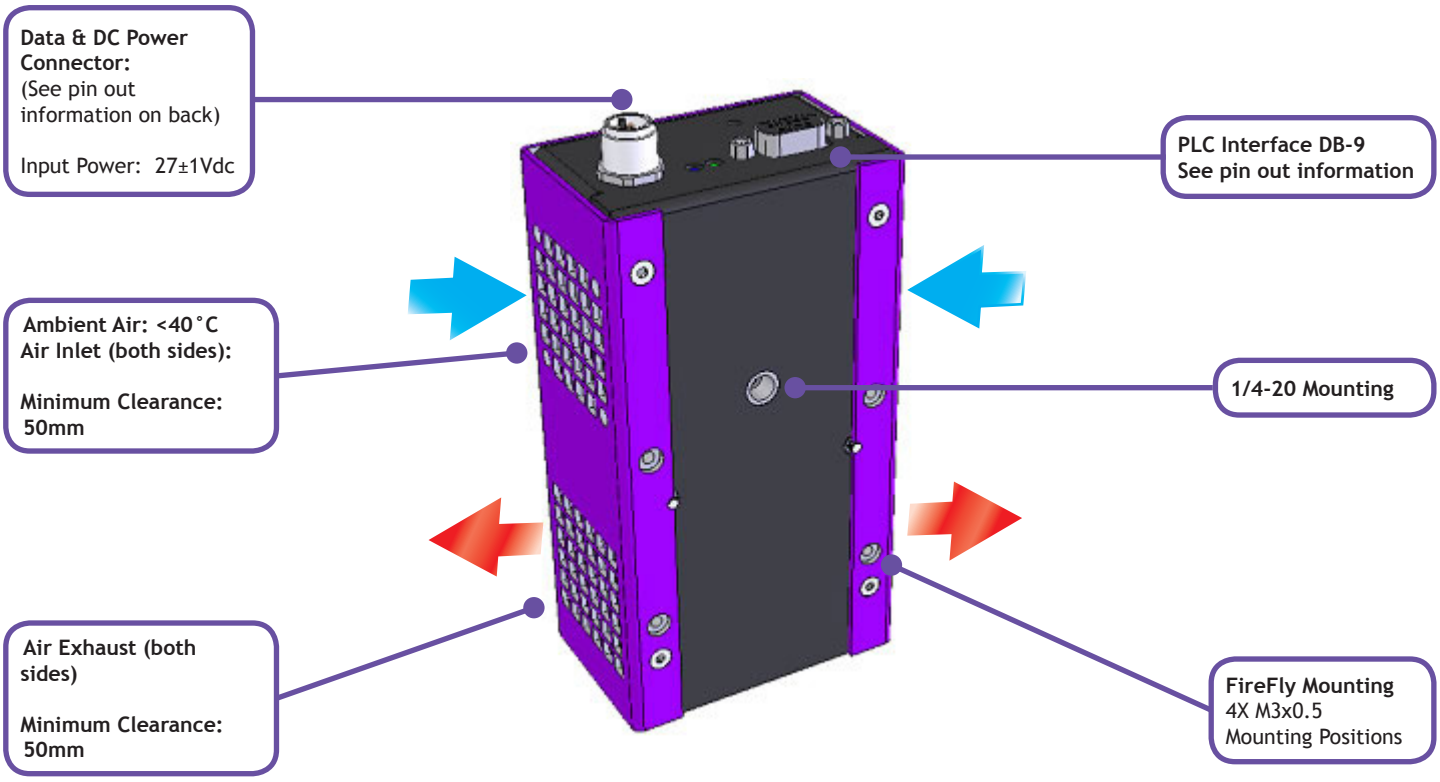
PERFORMANCE

	395nm
Peak Irradiance	**1.5W/cm²**
Emitting Window (mm)	25x25
27V Power In (Typical)	45W 1.7A
27V Power In (Max)	62W 2.3A

LIGHT SOURCE SETUP

Data/DC Power Cable
Mating connector





PLC INTERFACE

The female DB-9 connector is used to control the light source via a PLC, the connector pin assignments are described below.

1 **Enable High**: (TTL Input)
0V to +0.4V (ground/open input) = OFF or +3.5V to +5.0V = ON
Internal resistive load on this Pin is 11kohms.

2 **Do Not Use**: Except to connect directly to Pin 1 for testing

3,4 **Interlock A/B**
Use with external customer defined interlock circuit.
If no interlock is present, connect Pin 3 to Pin 4.

5 **Current Monitor**: (Voltage = Current)
Maximum current load on this Pin is 10mA.

6 **Ground**

7 **Thermal Fault Feedback (TTL Output)**:
0V to +0.4V (ground) = Fault or
+3.5V to +5.0V (open) = No Fault
Maximum sink current on this Pin is 5mA.

8 **Do Not Use**

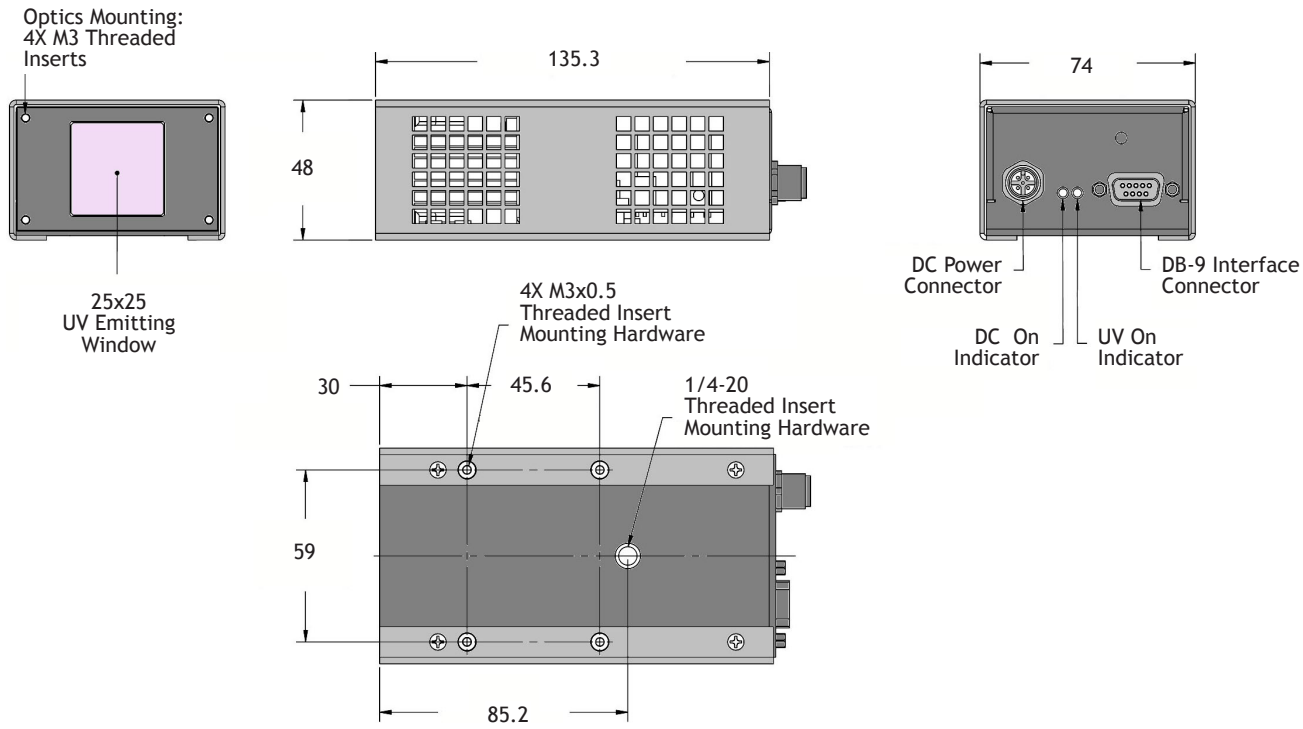
9 **Do Not Use**

DIMENSIONS

Units of measurement: mm

FireFly	
UV Emitting Window	**25x25**
L	74
W	48
H	135
Weight (kg)	0.4

See 18840 Control Drawing, FireFly 25x25 for details.



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PN 19730 Rev 3.0
May 2015

FireFly 4W/cm² & 8W/cm²

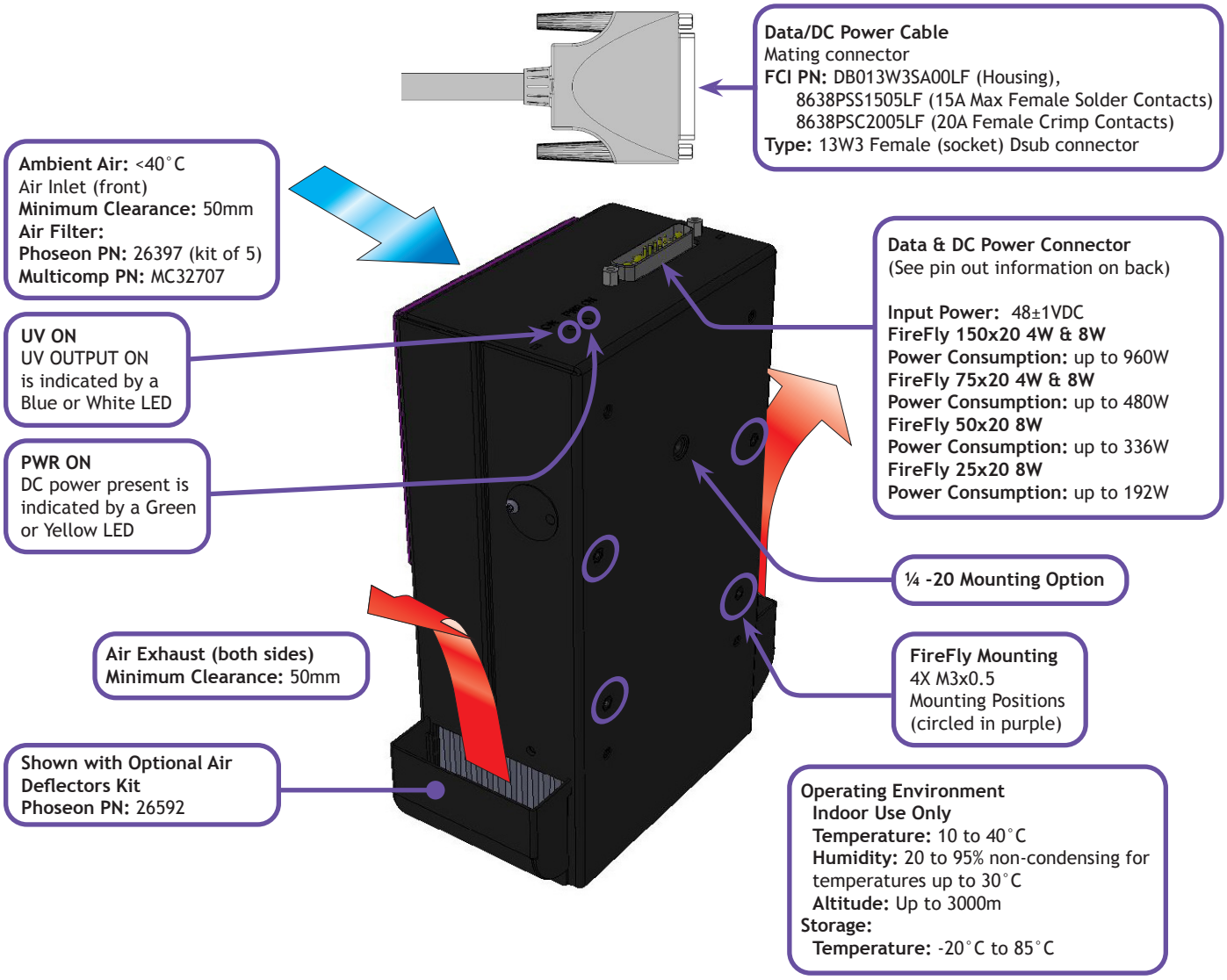
Product Specifications

Phoseon UV LED SLM™ Technology

Phoseon Technology is the world leader in providing UV LED solutions for commercial and industrial applications. Phoseon's products deliver superior performance and real-world reliability for UV curing of adhesives, coatings and inks.

Phoseon's patented Semiconductor Light Matrix (SLM)™ technology encapsulates LEDs, arrays, optics and cooling to maximize UV LED curing performance. The FireFly is for use in small area, spot, and high intensity curing.

Light Source Setup



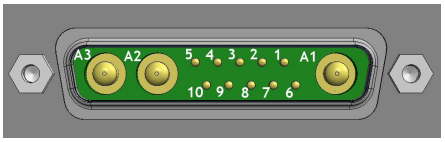
Performance

Wavelength	385, 395, 405nm						365nm			
Peak Irradiance	8W/cm²				4W/cm²		1.5W/cm²			
Emitting Window (mm)	25x20	50x20	75x20	150x20	75x20	150x20	25x20	50x20	75x20	150x20
48V Power In (Typical)	145W 3A	265W 5.5A	360W 7.5A	675W 14A	265W 5.5A	530W 11A	115W 2.4A	205W 4.3A	290W 6A	575W 12A
48V Power In (Max)	192W 4A	336W 7A	480W 10A	960W 20A	480W 10A	960W 20A	192W 4A	336W 7A	480W 10A	960W 20A

PLC Interface

The male DB-13 W3 connector on the light source is used to provide power and control the light source connection pin assignments are described below:

Power & Data Connector



1* **Do Not Use**

2 **Intensity Control:** (Voltage Input)
1V = 20% of full power
5V = 100% of full power
Internal resistive load on this pin is 10kΩ

3 **Enable High:** (5V TTL Input)
0.0V to 0.4V (or pin open) = OFF *or*
3.5V to 5.0V = ON

4 **Intensity Control:** (Voltage Input)
2V = 20% of full power
10V = 100% of full power
Internal resistive load on this pin is 10kΩ

5 **Thermal Fault:** (Open Collector TTL Output)
0.0V to 0.4V (ground) = Fault *or*
3.5V to 5.0V (open) = No Fault
Sink Current Maximum = 5mA

6* **Do Not Use:** Except to connect to Pin 2 for 100% intensity

7+ **Interlock A:** (5V TTL Input)
0.0V to 0.4V = UV Emission Allowed *or*
3.5V to 5.0V = UV Emission Stopped
For use with external customer defined interlock circuit. If no interlock is present, defeat this feature by connecting Pin 7 to Pin 8.
If interlock circuit is present, connect interlock to Pin 7 only.

8 **Ground**

9 **Temperature Monitor:** (Voltage Output)
Voltage proportional to SLM heat sink temperature 0.1V = 1°C
This value should not exceed approximately 8V

10 **Ground**

A1 **Power Input:**
47V to 49V to power light source

A2 **Ground**

A3 **Protective Earth (PE)**

Pins may be tied together to control multiple light sources from a single interface with the following exceptions:

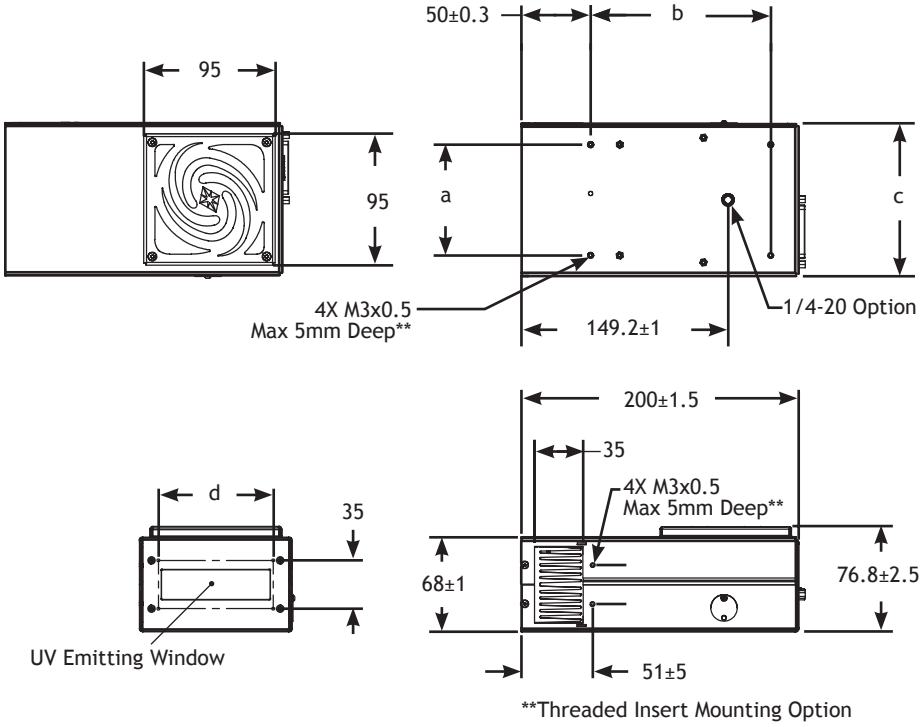
* Leave these pins open (unconnected).

\+ The interlock pins must not be tied together across multiple lamps. Each interlock must be connected to independent circuits.

Dimensions

Units of measurement: mm

FireFly		
UV Emitting Window (mm)	75x20, 50x20, 25x20	150x20
a	50±0.3	2x 159
b	130±0.3	2x 130
c	110±1	195.6
d	75 x 20	163.61
Overall Dimensions*	76.8 x 200 x 110	76 x 200 x 196
***with Optional Air Deflectors**	76.8 x 200 x 149	76 x 200 x 235
Weight in kg	1.0	1.8



**Threaded Insert Mounting Option

FireFly™ FF200
Product Specifications

PHOSEON UV LED SLM™ TECHNOLOGY

Air Cooled

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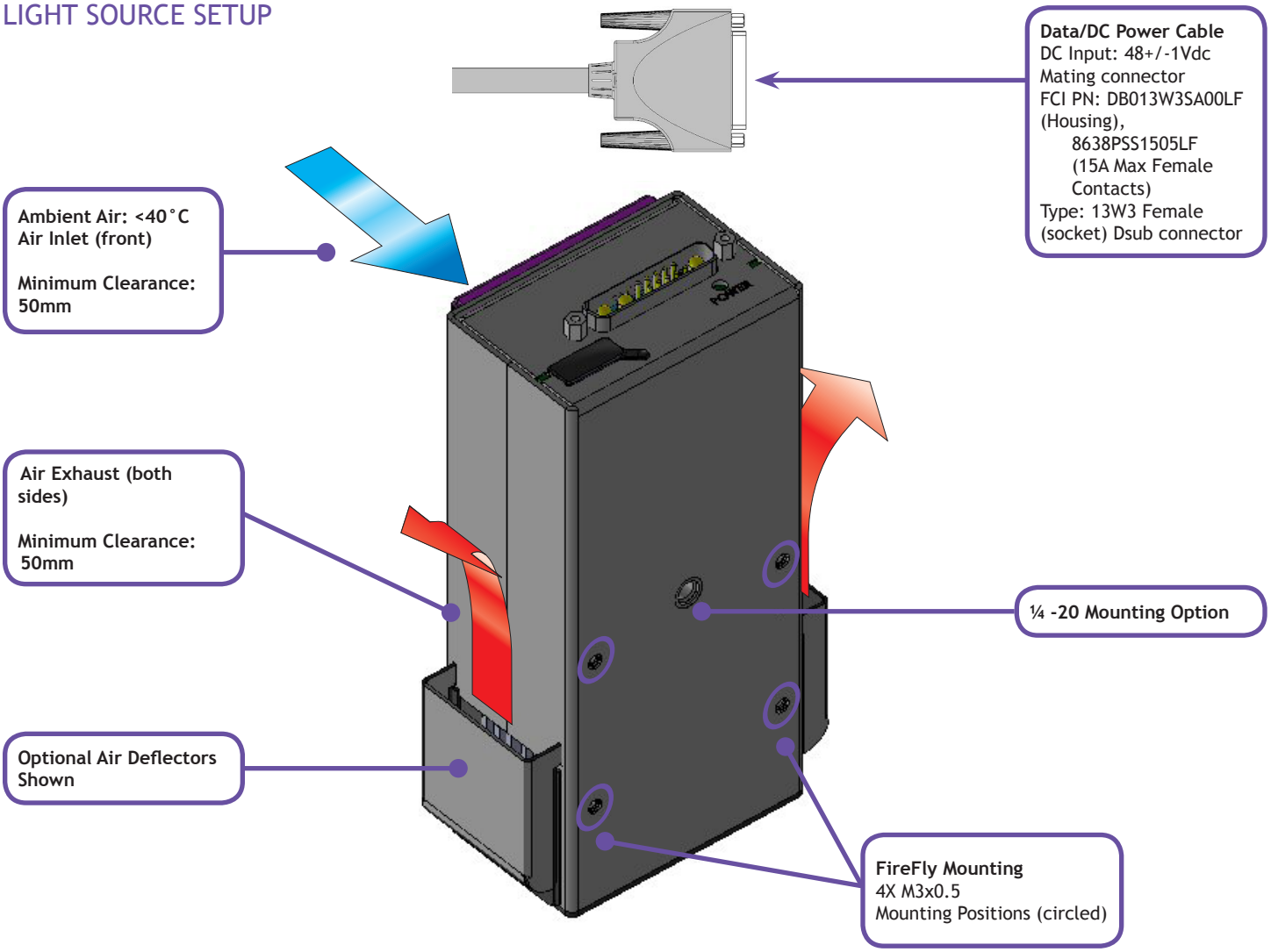
Phoseon's patented Semiconductor Light Matrix (SLM)™ technology encapsulates LEDs, arrays, optics and cooling to maximize UV LED curing performance. The small footprint of the FireFly FF200 is an ideal solution for curing applications with space constraints.

PERFORMANCE

	385, 395nm	
Peak Irradiance	**4W/cm²**	
Emitting Window (mm)	25x20	50x20
48V Power In (Typical)	96W / 2A	168W / 3.5A
48V Power In (Max)	192W / 4A	336W / 7A

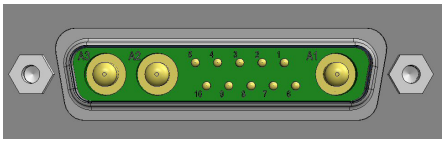
LIGHT SOURCE SETUP



PLC INTERFACE

The male DB-13W3 connector is used to provide power and control the light source. Pin assignments are described below:

Power & Data Connector



1 **Do Not Connect**

2 **Intensity Control**: 1-5V, 1V=20%
Internal resistive load on this Pin is 10kohms.

3 **Enable High**: (TTL Input) +3.5V to +5.0V = ON, or
0V to +0.4V (ground/open input) = OFF
Internal resistive load on this Pin is 30kohms.

4 **Intensity Control**: 2-10V, 2V=20%
Internal resistive load on this pin is 20kohms

5 **Thermal Fault Feedback**: (TTL Output)
0V to +0.4V (ground) = Fault, 5V = No Fault
Maximum sink current on this Pin is 5mA.

6 **Do not use**
(Except to connect directly to Pin 2 for 100% intensity)

7 **Interlock**: Use with external customer interlock circuit.
If no interlock is present, connect Pin 7 to Pin 8.

8 **Ground**

9 **Temperature Monitor**: Output = voltage porportional to SLM heat sink temperature 0.1V = 1°C

10 **Ground**

A1 **+48VDC**

A2 **Ground**

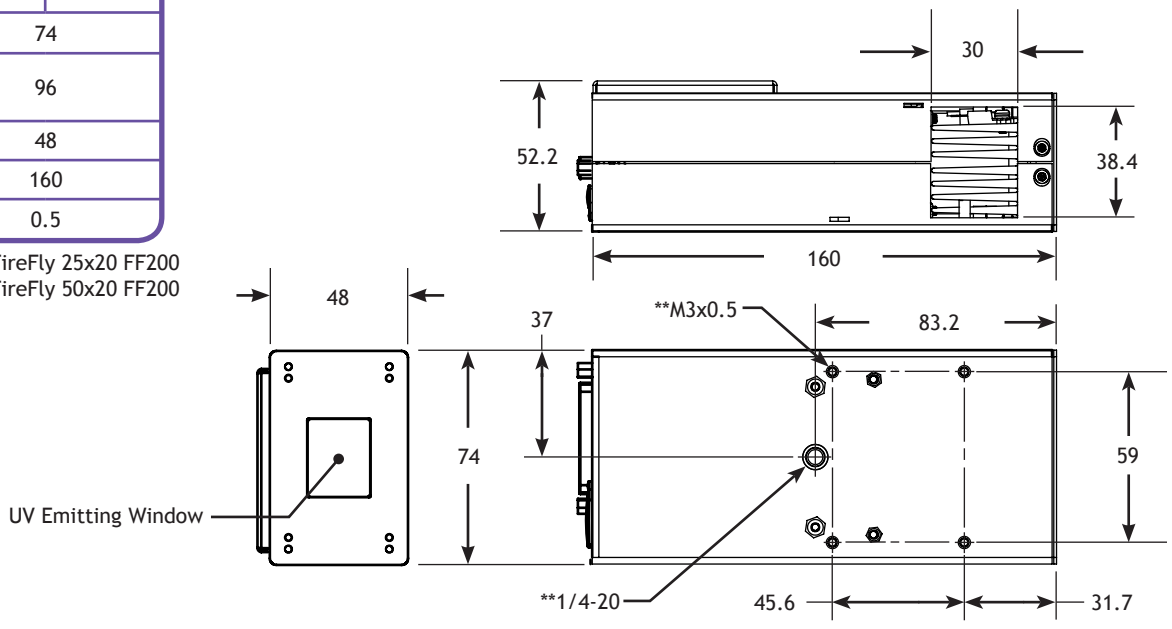
A3 **Protective Earth (PE)**

DIMENSIONS

Units of measurement: mm

FF200		
UV Emitting Window	**25x20**	**50x20**
L	74	
L (with Optional Air Deflectors)	96	
W	48	
H	160	
Weight (kg)	0.5	

See 27353 Control Drawing, FireFly 25x20 FF200
See 27352 Control Drawing, FireFly 50x20 FF200
for details.



** THREADED INSERT MOUNTING OPTION

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PN 27584 Rev 2.1
February 2016

Innovative Technology

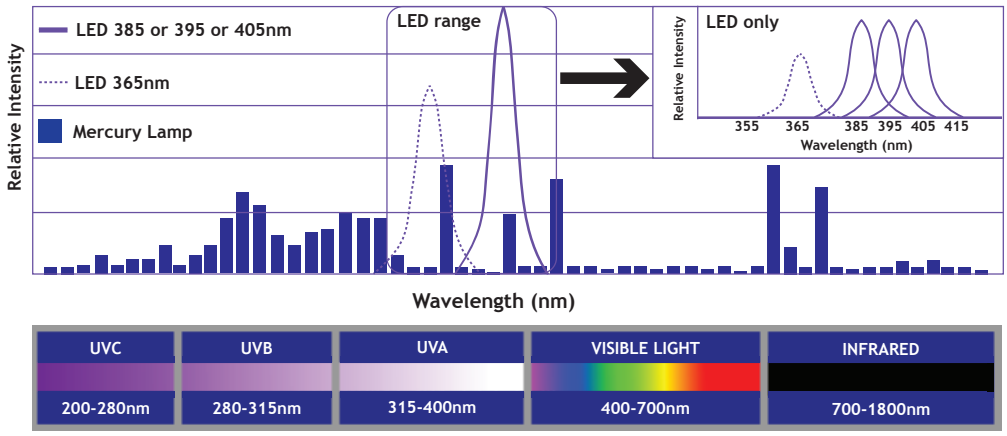
Phoseon pioneered and patented Semiconductor Light Matrix (SLM)™ technology driving high-power UV LED technology to manufacture environmentally clean, cool operating, and highly efficient ultraviolet curing products.

Our components are strictly engineered into a system that provides maximum UV energy, controlled curing intensity, and superior performance for demanding applications including those using heat-sensitive and thin substrates.

TargetCure™ WhisperCure™

Building on the SLM foundation are the patented TargetCure™ and WhisperCure™ technologies. TargetCure technology delivers precise, stable and consistent curing. WhisperCure offers a low-sound solution with increased UV output.

UV LED vs Mercury Wavelength



Stay Ahead with Phoseon

More than 300 patents and trademarks

Surpassing 70,000 hours of operational life

Shipped over 100,000 units worldwide

2 million hours of SLM lifetime testing

Thorough HALT testing process

ISO certified company

APPLICATIONS

Phoseon products are successfully curing adhesives, coatings, and inks in many demanding applications today.

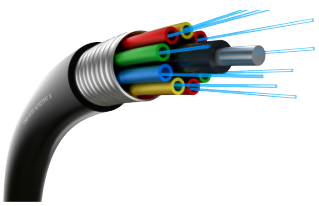
Electronics Manufacturing

Wood Coatings

Analog Printing

Digital Printing

3D / Additive Printing



Fiber & Wire

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