



COBRA CURE FX1

Standard and Max Operations Manual 1.0
10th Dec. 2019



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Photobiological Safety

Important Safety Message for COBRA Cure™ FX1 users:

Your COBRA Cure™ FX1 Lamp is a LED-based radiation source, intended to be used as an OEM component. It must only be used inside a system such as, for example, a printing machine, and must never be used as a stand-alone product outside of the intended OEM system without proper safety precautions.

ProPhotonix light sources include protective guards to fully enclose electrical mechanisms that may cause operator harm during normal use. These fixed guards adhere to the appropriate international safety standards.

Caution: Do not operate the light sources or the machine in which they are installed while any safety guards are open, loose, damaged, or missing.

Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ProPhotonix light sources are classified as Risk Group 3 under IEC 62471 at a distance of 200mm.

Risk groups defined in IEC 62471:

Exempt means there is no photo-biological hazard for the end points in this standard.

Risk Group 1 – Low Risk. Does not pose a hazard due to normal behavioral limitations on exposure.

Risk Group 2 – Moderate Risk. Does not pose a hazard due to aversion response to very bright light sources or due to thermal discomfort.

Risk Group 3 – High Risk. May pose a hazard even for momentary or brief exposure.

Warning: DO NOT LOOK DIRECTLY AT THE UV LIGHT SOURCE. ALWAYS WEAR GOGGLES WHEN USING THIS PRODUCT.

ProPhotonix recommends safety goggles with a minimum optical density value of 6 within the wavelength range 200-532nm.

Note: ProPhotonix UV LED products emit 90% or more of the total UV light energy in a narrow wavelength band.

Wavelength	Band
365nm	350-390nm
385nm	370-410nm
395nm	380-420nm
405nm	390-430nm

Caution: Only a portion of the UV light output is visible to the human eye. A light that appears dim can actually be operating at very high intensity.

For the FX1 395 nm divergent product, the hazard distance is 1.0 meter and the power output is 159% of the Risk Group 2 limit. Specifically the UV-A hazard is Risk Group 3, the Actinic UV hazard is Risk Group 2, and the Blue Light hazard is Risk Group 1.

For the FX1 365nm divergent product, the hazard distance is 0.65 meters and the power output is 84% of the Risk Group 2 limit. Specifically the UV-A hazard is Risk Group 2, the Actinic UV hazard is Risk Group 1, and the Blue Light hazard is Risk Group 1.

Warning Labels

Below are the contents of warning labels that must be affixed to COBRA Cure™ FX1 Lamp devices.

UV Safety Standards
IEC Class

ANSI Risk Group 2
3B

ANSI Risk Group 3
3B

The FX1 product range is CE and UL certified to EN/UL 61010 (UL file E504220).

Warning: UV radiation emitted from this lamp. Skin or eye damage could result. Avoid exposure of eyes and skin to unshielded lamp.



Symbol	Description
	Obey all safety messages that follow this symbol to avoid possible injury or death
	Warning indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury
	Wear protective gloves and use appropriate shielding
	Wear approved ultraviolet resistant eyewear and use appropriate shielding
	ULTRAVIOLET LIGHT hazard
	Hot surface hazard
	Must not be disposed of in the trash

Electrical Specifications

UV LED Module Input Voltage	48±2	V
UV LED Module Maximum Input Current	2.5	A
Thermal Safety Switch	Thermal safety sensor is mounted on the substrate. The LED junction is never exposed to over temperature	
Maximum Power Consumption	100	W
Typical Power Consumption	80	W

Control Interface Specifications

The illumination power of UV LED module will be controlled in continuous mode.

Illumination Flux Level Control	Analog Voltage 1-10	V	Illumination flux level control 10%-100% of full power. 1V = 10% of full power, 10V = 100% of full power. The response time of power adjustments is less than 2 msec
UV LED Fault Signal	0 - 4 V = 0 (Fault) 16 - 24 V = 1 (Ok)	0/1	The signal signifies : Critical temperature of LED unit reached
UV LED Enable Signal	0 - 4 V = 0 (Off/Disabled) 16 - 24 V = 1 (On/Enabled)	0/1	Switch On/Off, with response time better than 2.5 msec

General Characteristics

Weight	0.26	Kg
Noise Sound Pressure Level at 0m	84*	dBA
Noise Sound Pressure Level at 1m	54*	dBA
Maximum Ambient Temperature	35	°C

*For every subsequent module add 3dBA.

Connector Pin Functions

PIN #	Color	Type	Functionality
1.	White	Intensity control	Input: 1V = 10% from the max power, 10V = 100% from the max power, pin internal resistivity 12K Ω
2.	Green	Input power	Input: Ground
3.	Yellow	Lamp Fault	Output: 0 - 4 V = Fault 16 - 24 V = Ok external load must be greater
4.	Blue	ON / OFF	Input: 0-4V = OFF 16-24V = ON
5.	Red	Input power	Input: +48V DC
6.	Black	Input power	Input: Ground
7.	Red	Input power	Input: +48V DC
8.	Black	Input power	Input: Ground
9.	Red	Input power	Input: +48V DC
10.	Black	Input power	Input: Ground
11.	Red	Input power	Input: +48V DC
12.	Black	Input power	Input: Ground
13.	N/C	-	Not Connected
14.	Black	Input power	Input: Ground

The data & DC power connector on LED Lamp is an FCI PN (type 98417-G61-14LF).

Choosing the Correct ProPhotonix Power Supply

All wiring and connections must be implemented before plugging the power supply into the wall. Power supply choice depends on the number of modules required to run simultaneously. Power supplies can be purchased using product code PSU-48V-120W-XX, where XX is the country code. Wall plug power supplies can be ordered with part number PSA-48V-120W-XX where XX is the country code.

DIN Rail Mounting of Power Supplies

ProPhotonix offers power supplies that can be mounted on DIN rails, for example TS35/7.5 or 15.

Connecting the Wall Plug Leads to the Power Supplies

The flying leads of the power supply cable must be connected to the 3-pole screw terminal block on the power supply. Use a Philips or Pozi head screwdriver. The correct connections are shown in the tables below.

Function	Label on PSU
Live	L
Neutral	N
GND	

Mains or Wall Plug Connection

Power Supply connection
GND (-V)
48 V DC supply (+V)

Power Supply Output Connection

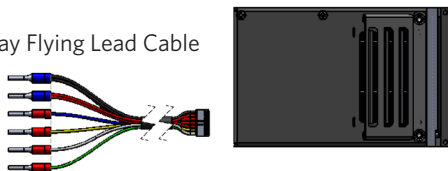
Connection Schemes

COBRA Cure™ FX1 lamps can be used in two basic configurations. All configurations allow the user to control the intensity of the modules.

FX1 Connected to Flying Lead Cables

FX1-CAB-F-A-LLL

14 PIN Ribbon Cable to 6-way Flying Lead Cable



This connection scheme allows the user to configure their own power and control scheme. These cables allow the FX1 module interface to be connected to external power supplies and controllers via flying leads. The intensity is adjusted by varying the voltage using a 1-10V control signal on the control wire. Activation/Enable is achieved by applying a 16-24V signal on the enable wire. This connection configuration also allows the user to monitor the operating status through the status wire.

Note: 2000mm are the normal stocked lengths for these cables.

FX1 Connected to Flying Lead Power Cables and Intensity Controller with or without PSU



PSA-48V-120-XX
Wall-plug Power Supply
OR

FX-CTL-A
Intensity Controller

FX1-CAB-A-A-LLL
14 PIN Ribbon Cable

CAB0053-LLL

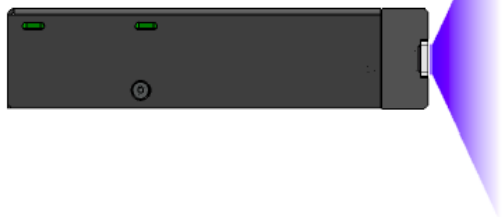
2-way Flying Lead to Circular Power Cable

This Connection scheme allows the user to configure their own power scheme while utilizing ProPhotonix' Intensity Controller to control the intensity of the lamp. The Intensity Controller has 2 manual inputs. The slider switch is used to activate/enable the unit and there is a rotary potentiometer to adjust the intensity. The controller also incorporates a LED light that illuminates a fault when detected. The controller can be powered by a wall plug power supply (ProPhotonix Part Number: PSA-48V-120 -XX, where XX is the country).

The controller can also be controlled using the customers own power supply by circular connector to flying lead cables or circular connector to M4 ring cables (not pictured). The circular connector to flying lead cable ProPhotonix part number is CAB0053-LLL. The circular connector to M4 ring cable ProPhotonix part number is CAB0053-4R-LLL. LLL is the length of the cable. The controller can also be controlled using the customers own power supply by circular connector to flying lead cables (ProPhotonix part number: CAB0053-LLL) or circular connector to M4 ring cables (ProPhotonix part number: CAB0053-4R-LLL). LLL refers to the length of the cable.

Note: The Wall Plug Power Supply, 14-pin to DB15 Connector cables and ribbon cables are normally stocked in 500mm lengths. 2000mm are the normal stocked lengths for Flying Lead or M4 to Power Connector cables.

DW (110°)



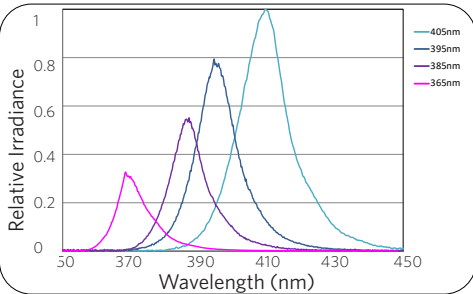
D4 (40°)



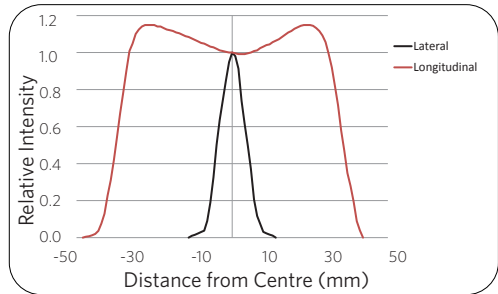
C1 (10°)



Relative Irradiance versus Wavelength

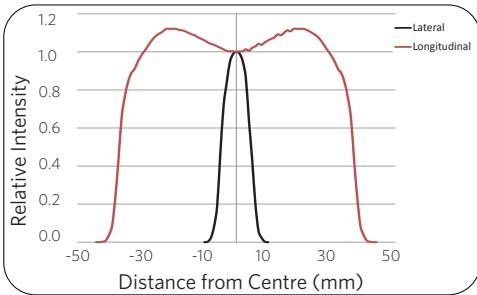


Lateral & Longitudinal Intensity Profiles - Divergent Wide DW



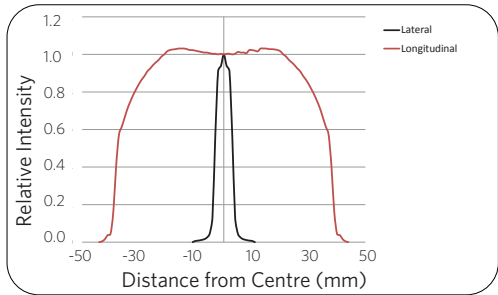
Measured at 3.5mm Linewidth (FWHM) approx. - 7 mm

Lateral & Longitudinal Intensity Profiles - Divergent D4



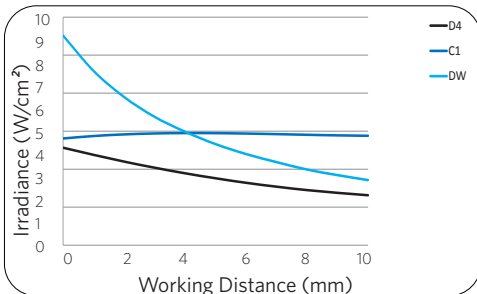
Measured at 2mm Linewidth (FWHM) approx. -10mm

Lateral & Longitudinal Intensity Profiles - Collimated C1



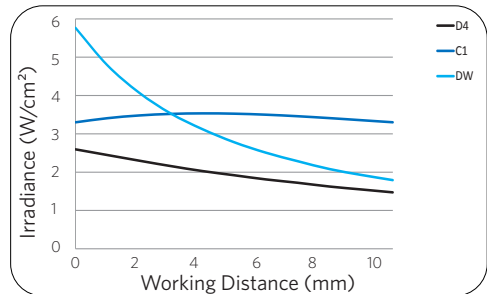
Measured at 3.5mm Linewidth (FWHM) approx. - 7 mm

Intensity versus Working Distance - 395nm DW



Measured on the central axis of the unit.

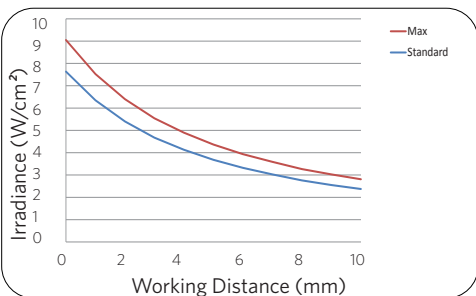
Intensity versus Working Distance - 395nm D4



Measured on the Central Axis of the unit.

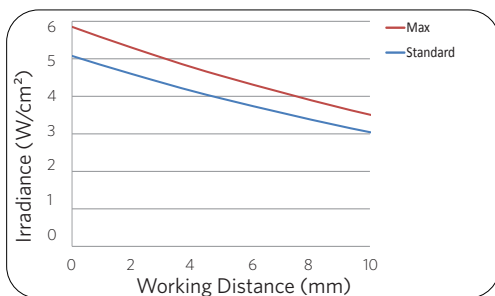
Optical Characteristics - Standard and Max

Intensity versus Working Distance - 395nm DW



Measured on the central axis of the unit.

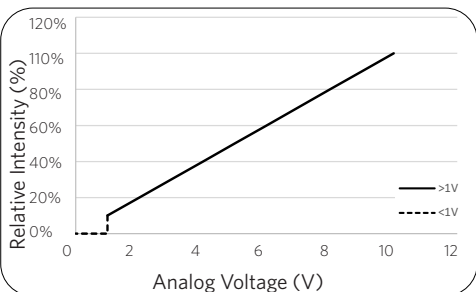
Intensity versus Working Distance - 395nm D4



Measured on the Central Axis of the unit.

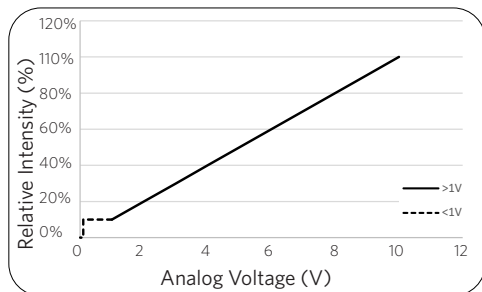
Intensity Response to Analog Control

Analog Mode (A)



Turns off at 1V

Sustain Mode (S)



Turns off at 1V. From 300mV to 1V, lamps operate at 10% intensity.

Procedure for Replacing Glass Window

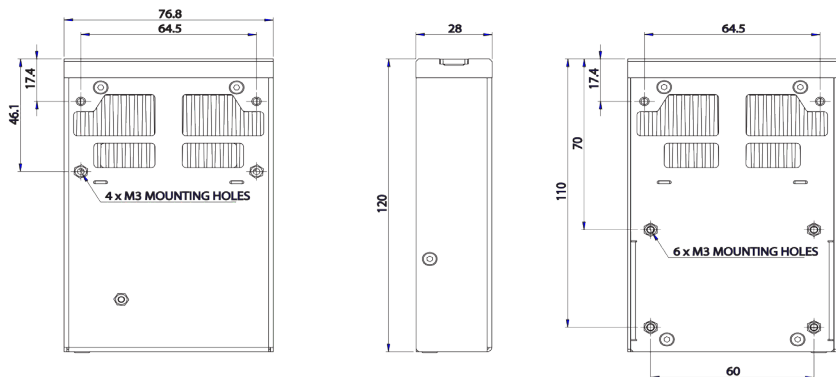
1. Insert screwdriver into opening provided on the top-side of the hinge and tilt the hinge backwards.



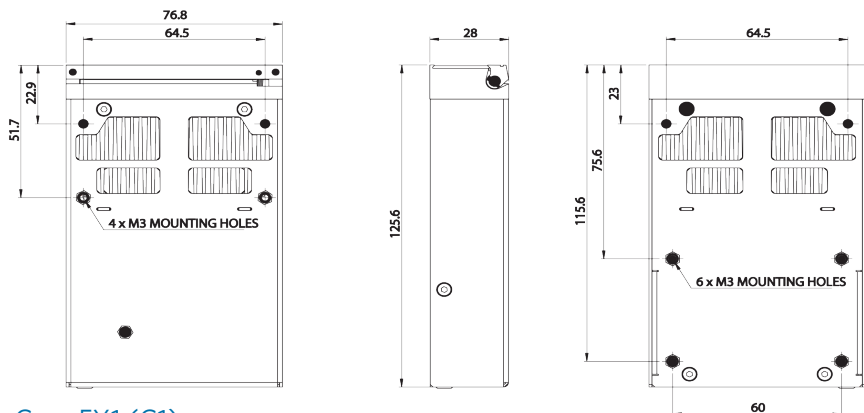
2. Slide the quartz window out and replace with a new window.



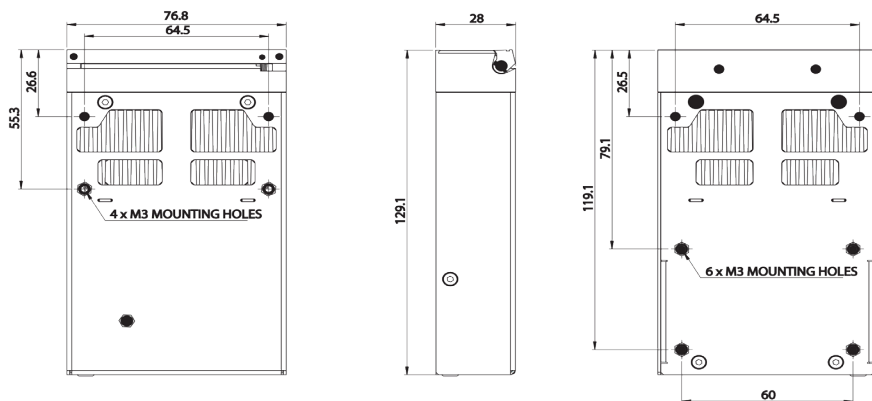
COBRA Cure FX1/ FX1 Max (DW)



COBRA Cure FX1/ FX1 Max (D4)



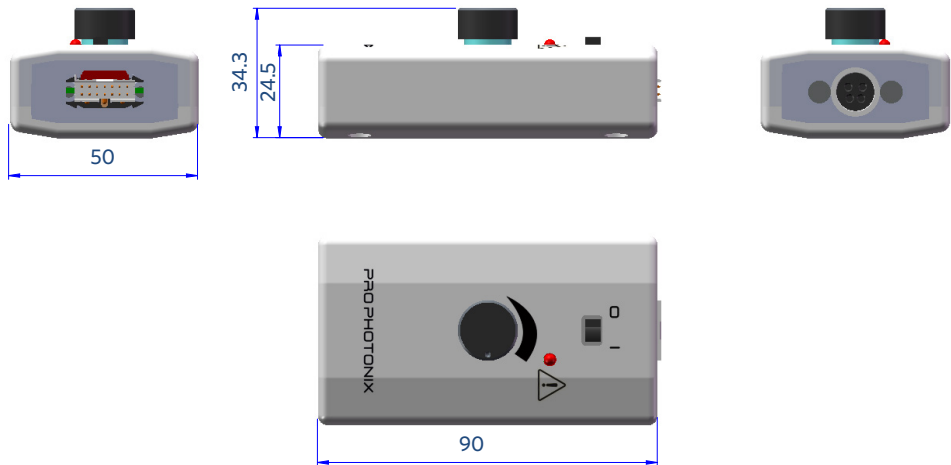
COBRA Cure FX1 (C1)



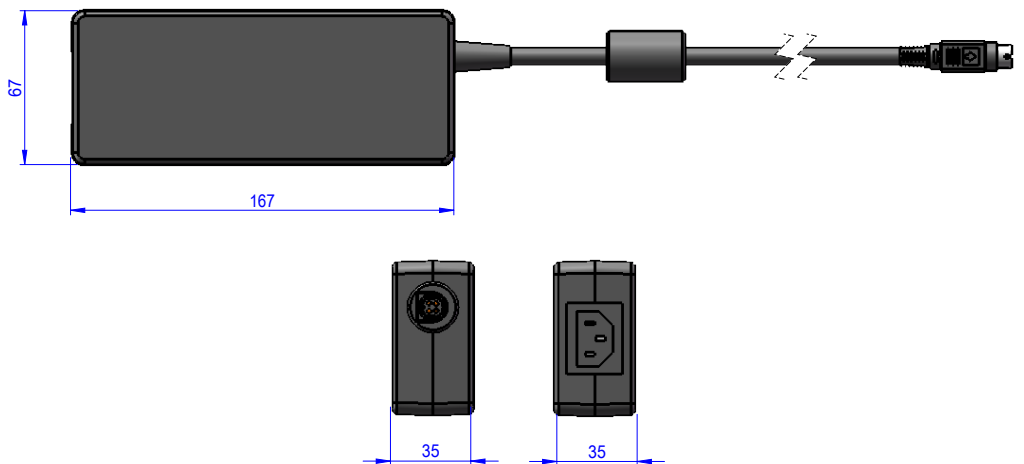
Note: The D4 configuration is supplied with the Replaceable Window design. The DW configuration is available in a fixed window design only. Maximum tread depth is 6mm for all fasteners.

The COBRA Cure™ FX1 has two mounting hole options. It can be mounted using M3 x 0.5 metric threaded holes on one side or M3 x 0.5 metric threaded holes on the other side. The positions of these holes are shown in the drawings. There are different mounting hole position configurations on both sides of the units. One mounting hole configuration is positioned towards the front of the module head. The alternative mounting hole configuration is located on the opposite face toward the back end of the module. All dimensions are given in millimetres.

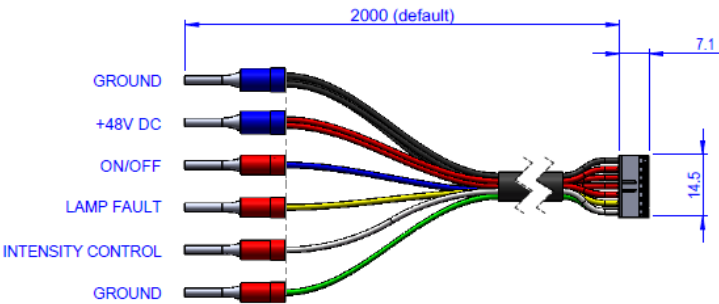
Intensity Controller (FX-CTL-A)



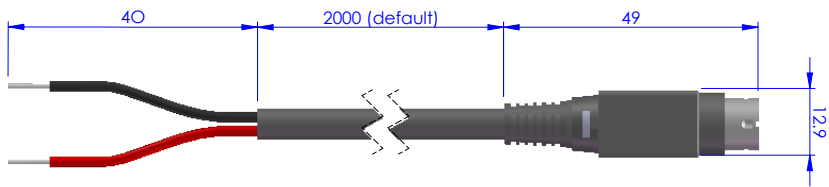
Wall Plug Power Supply (PSA-48V-120W-XX)



FX1-CAB-F-A-LL COBRA Cure FX1 Cable (Flying Leads)



2-way Flying Lead to Circular Connector (CAB0053-LLL)



14-pin Ribbon Cable (FX1-CAB-A-A-LLL)

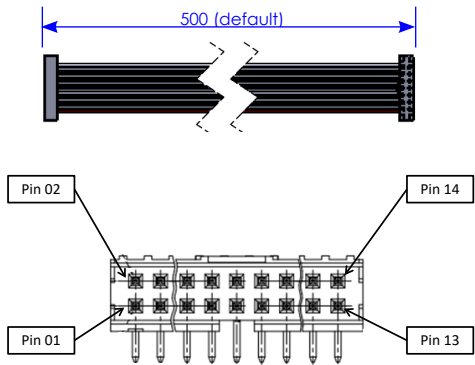


Figure. FCI PN layout.

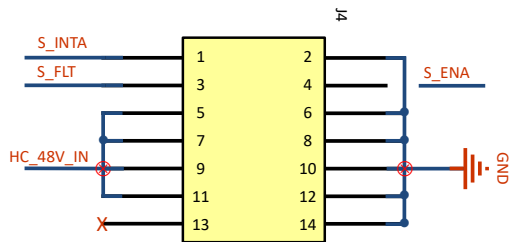


Figure. FCI PN configuration

LED Lifetime

The LED-based COBRA Cure™ FX1 Lamps are designed so that, if they are operated at an ambient temperature of 35°C. Running the units in environments having temperatures higher than 40°C will result in the accelerated aging of the LED sources.

Warranty

Do not attempt to disassemble your COBRA Cure™ FX1 Lamp. Any such action will void the warranty.

COBRA Cure™ FX1 Lamps and accessories are guaranteed by ProPhotonix to be free from material and manufacturing defects for a period of 12 months from the date of shipment. Should a product fail during this period, ProPhotonix will, at its discretion, either repair or replace the damaged unit. Repaired units or replacement units will be covered for the remainder of the original warranty period. The warranty does not apply to units that have failed due to abuse, acts of God, mishandling, alteration, improper installation, or negligence.

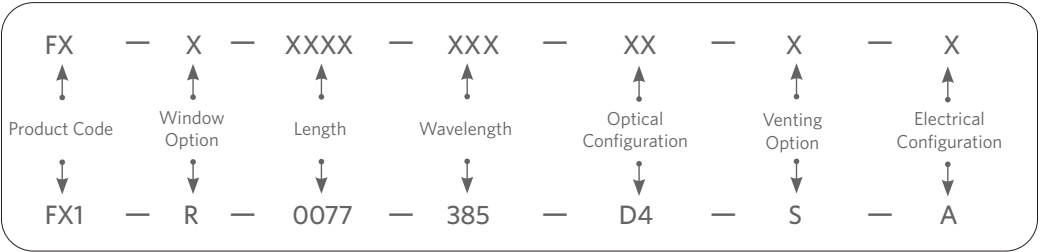
Declaration

All COBRA Cure™ FX lamps are shipped with a Declaration of Conformity and a test report.

Ordering Part Numbers COBRA Cure FX1

Product Code	Window Option	Length (mm)	Wavelength (nm)	Optical Configuration	Venting Option	Electrical Configuration
FX1	R - Replaceable	77	405	C1 - Collimated	S - Side Vented	A - Analog
	F - Fixed		395	D4 - Divergent		S- Sustain
			385	DW - Div. Wide		
			365			

To order your COBRA Cure FX1- Use product code (FX1) - Select Window Option (X) - Select Length (XXXX) - Select Wavelength (XXX) - Select Optical configuration (XX) - Select Venting Option (X) - Select Electrical Configuration (X)



Ordering Part Numbers COBRA Cure FX1 Max

Product Code	Window Option	Max	Length (mm)	Wavelength (nm)	Optical Configuration	Venting Option	Electrical Configuration
FX1	R - Replaceable	M	077	395	D4 - Divergent	S - Side Vented	A - Analog
	F - Fixed				DW - Div. Wide		S - Sustain

To order your COBRA Cure FX1 Max- Use product code (FX1) - Select Window Option (X) - Select Length (XXX) - Select Wavelength (XXX) - Select Optical configuration (XX) - Select Venting Option (X) - Select Electrical Configuration (X)

FX1	—	X	—	M	—	XXX	—	XXX	—	XX	—	X	—	X
↑ Product Code		↑ Window Option		↑ Max Option		↑ Length		↑ Wavelength		↑ Optical Configuration		↑ Venting Option		↑ Electrical Configuration
↓		↓		↓		↓		↓		↓		↓		↓
FX1	—	R	—	M	—	077	—	385	—	D4	—	S	—	A

Accessories Part Number

Accessory	Part Number
48V Power Supply	PSU-48V-120W-XX
Replaceable Window (pack of 5)	FX1-W-0077
Wall Plug Power Supply	PSA-48V-120W-XX
14 Pin Ribbon Cable	FX1-CAB-A-A-LLL
Intensity Controller	FX-CTL-A
14 Pin Ribbon Cable to 6 way Flying Lead Cable	FX1-CAB-F-A-LLL
2-way Flying Lead to Circular Power Cable	CAB0053-LLL

LLL represents length of cable. The standard length is 2m. Example 1: Require 2m cable, the product number is then FX1-CAB-F-A-020. Example 2: Require 0.5m cable, the product number is then FX1-CAB-F-A-0.5. XX represents Region Code: US, EU, UK.

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