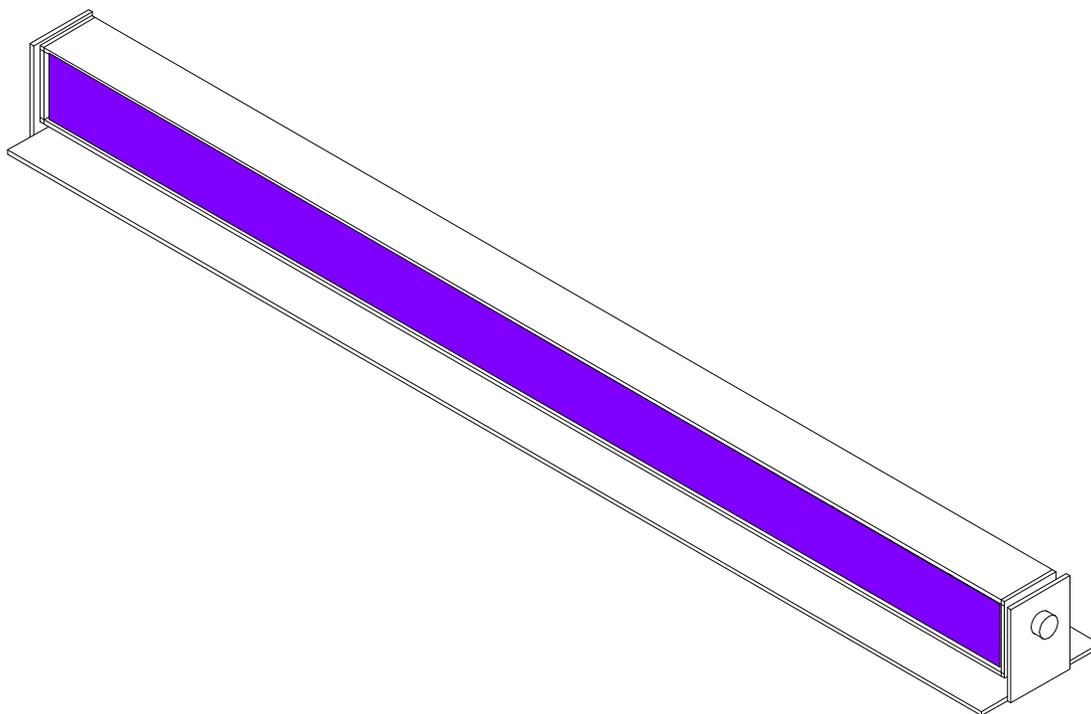




## BL-90 Ultraviolet LED Panel

### General Description

The BL-90 is an ultraviolet lighting instrument based on an LED array. The LED devices do not require replacement, produce little or no heat, and are available in a range of UV or near-UV wavelengths and in several levels of intensity and dispersion angles. This unit permits placement of lighting effects in confined or limited access spaces without concern for heat generation, or lamp replacement considerations. Unlike conventional UV illumination sources, the LED sources can be dimmed or strobed without adverse effects on the fixture lifetime.



The units are designed for operation from a 24 volt DC power source. Each unit requires less than .50 amperes of current at full intensity. Limiting the supply current will reduce the fixture output in a nearly linear manner. Reducing the supply voltage will also reduce the fixture output, but the response will not be proportional to the voltage reduction. The unit may be operated from any DC power source of up to 24 volts maximum. Do not operate the fixture with power supply voltages in excess of 24 volts, as this may cause overcurrent and failure of the LED emitters. BL-90 units may be operated from lighting ballasts, DC power sources, or DMX controlled DC output dimmer channels using either current limiting or PWM (Pulse Width Modulation) techniques to produce dimming or strobing effects under the control of a master lighting system.

## Precautions For Use

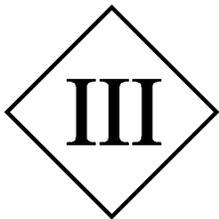
This device is intended for indoor use only, in dry locations free of excessive moisture or condensation. The unit is intended for permanent installations in areas where the ambient temperature is an average of 70 degrees Fahrenheit (F), and remains within the range of 40°F to 90°F at all times the unit is operational. Safe operation of the unit depends upon installation and operation according to the following guidelines.

### Rated Operating Voltage

24 Volts DC 

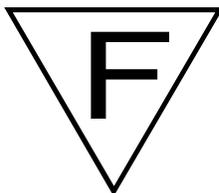
The BL-90 unit is rated for operation from DC voltage sources of 24 volts maximum at a minimum current of .5 ampere. Application of power supply voltages in excess of the maximum rating may result in damage to the unit electronics, and possible hazards including fire and the risk of electrical shock.

### Class III Product



The BL-90 unit provides protection meeting the requirements for Class III electrical products. The unit is intended for operation with external power supplies which comply with the SELV (Safety Extra Low Voltage) requirements. Operation of the unit from power sources which do not meet the SELV standard is not recommended, and may result in an increased risk of electrical shock .

### Suitable Mounting Surfaces



The BL-90 unit may be mounted to any suitable surface, including those consisting of normally flammable materials such as wood or plastic. Mounting may be accomplished using the attachment holes along the mounting yoke of the unit, or by drilling holes as necessary into the mounting yoke, and then securing it to the support structure with appropriate fasteners. The unit may be mounted in any orientation.

### Product Compliance



The BL-90 unit has been tested for compliance with the General and Particular Standards for Luminaires, under EN 60598-1 (2004), and EN 60598-2-1 (1989). and is certified to comply with these standards.

## **Recommended Use**

The BL-90 unit is intended for use in applications where controllable levels of ultraviolet light must be delivered to a display or inspection area. The output pattern of the unit will vary depending upon the type of LED emitters installed, but will generally resolve to a circular pattern over a short distance, with a dispersion angle of from 10 to 30 degrees. The output of the unit is very directional, and quite uniform over the illuminated area.

### **CAUTION**

**The fixture is intended only for indoor use in dry locations. The unit is not intended for outdoor use, or for indoor use in close proximity to water. The fixture is not rated for, nor protected against water splash, droplets, or mist.**

Although the primary output from the unit is in the ultraviolet range, most LED emitters produce some visible light as well. This emission can appear as a fairly strong blue-violet output similar to a “Black Light Blue” fluorescent tube, or as a pale white or pale blue emission, depending upon the type of LED emitters installed. If this emission is objectionable, external filters may be required to reduce or eliminate these visible light emissions.

## **Installation**

The BL-90 incorporates a mounting yoke with holes along the edges for mounting the instrument. The unit is normally attached to a flat surface or other stable means of support using the unit using small screws or hardware. The unit can be mounted in any orientation.

Once installed, the unit may be aimed as necessary using the two pivot fasteners on the mounting bracket to direct the unit output to the desired location. The fasteners should be secured to lock the unit in place when it is aimed properly. The user is responsible for mounting the instrument in a safe and secure manner. Please consult with local public or workplace safety authorities to determine if any additional safety restraints, such as safety wires or cables, may be required for overhead installations. Wiring connections to or from the unit should be secured nearby to insure that they are not under excessive tension, and cannot be disconnected or pull the unit from the desired alignment.

The unit is rated for installation onto any material, including normally flammable surfaces. The small size of the unit will allow it to be mounted in confined areas, and the long lifetime of the LED light sources will permit installation in areas with little or no maintenance access, or in unventilated areas, as there very little heat generated by the unit in normal operation.

## **Operation**

The unit will operate immediately upon application of 24 volt DC power to the fixture. The fixture is rated for continuous operation, and in normal use the unit will continue to produce UV output until power is removed. The visible emissions from the unit may be very slight, and the output should be directed at a fluorescent surface to confirm normal ultraviolet emissions.

## Testing and Troubleshooting

Check the operation of each unit by connecting it to the power supply or driver. The unit should illuminate immediately when the power supply is active. If a unit fails to illuminate, check for open circuits or reversed polarity in the power connections. If a unit fails to operate and disables other units which were operating normally from the same power supply, there is a short circuit in the power connections of that unit.

Any problems affecting a portion of the LED array in a unit are typically caused by failures of individual LED emitters. Although the remainder of the array may function normally, the unit should be returned for repair as soon as possible to prevent damage to the remaining emitters.

## Power Connection Instructions

Standard units are provided with two 2.1 mm coaxial DC power sockets which can be used as inputs from the DC power supply, or as outputs to other fixtures. Power connections should be made to each unit either from individual power supplies, or “daisy chained” from a larger power supply, remaining within the maximum current rating of the power supply. .

### CAUTION

**Connection of the unit to 120 volt AC power sources, or to alternative power supplies other than the 24 volt, .5 amp DC power supplies recommended may result in damage to the unit. Do not attempt to operate the unit if you are unsure of the nature of the power source, or of the voltage, polarity, and current rating of any DC power supply. Any damage resulting from incorrect power supply voltages will not be covered by the unit warranty.**

For connection to alternative power supplies, the positive voltage should connect to the center pin of the coaxial DC connector, with the negative voltage connected to the sleeve. The same polarities should be used for any “Daisy Chain” connections between fixtures.

## Electrical Safety Considerations

The BL-90 fixture is designed as a UL Class II product. This classification applies to low voltage, low power devices, which do not require enough electrical power to be considered a shock or fire hazard. Products in this classification do not require electrical safety certification when operated with an approved Class II power supply, such as those normally provided.

When operating a number of units from a single power supply, the total current demand may be calculated by multiplying the number of units by the 250 milliamp (.5 ampere) current required by each unit. The total current should not exceed the maximum rating of the DC power supply, and it is good practice to keep the total load 10 or 20 percent below the power supply maximum. The user is responsible for the electrical safety of any power supplies intended for multiple units.

## Specialty Fixture Versions

Variations on the standard BL-90 fixture may be manufactured on request. Custom versions of the fixture may include variations in the number and type of LED emitters installed, LED emitters with unique wavelengths, dispersion angles, supply voltages, or other changes from the standard fixture specifications depending upon the customer requirements. Please contact the manufacturer if you have questions about the specifications for a specific fixture type.

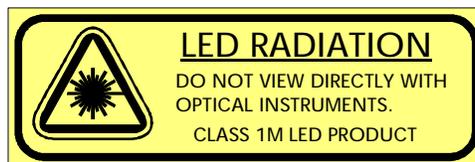
## Precautions For Ultraviolet Output

This unit is equipped with Ultraviolet light emitting diodes (LED's) with an output in the range of from 365 to 405 nanometers, which is either invisible, or just within the normal range of visible light. All LED emissions are long wavelength UV-A light, which is not considered a skin or an eye hazard under normal conditions. To avoid even the minimal hazard present in the output of the unit, some simple precautions in the use of the units are advisable.

- 1) Do not stare directly into the output of the unit for prolonged periods of time, or at very short distances.
- 2) Be aware that the primary output from the unit is invisible to the eye, and that the apparent intensity of the unit may not be representative of its invisible output, which can be much greater than the eye will perceive.
- 3) Because the eye does not sense the actual output from the unit, an individual's natural aversion reaction to bright light sources may not be present in response to the output from these units. Accordingly, the user must be actively aware of the hazard potential of the unit output, and avoid the unseen hazard whenever possible.
- 4) Optical systems such as lenses or curved reflectors may act to concentrate the output of the unit, and increase the hazard they present under certain circumstances. Consider this when using the unit in conjunction with any external optics.

### CAUTION

**This product contains Ultraviolet Light Emitting Diodes (LED's). During operation, the LED's emit intense ultraviolet light. Precautions should be taken to avoid looking directly into the UV output for prolonged periods with the unaided eye, viewing the UV output at close range, or viewing through optical systems which enhance or concentrate the UV light. The use of UV light protective glasses is recommended when the direct or reflected UV output must be viewed for extended periods, at close range, or through optics.**



## Warranty

Precision Projection Systems warrants the BL-90 to be free from defects in materials or workmanship for a period of one year from the date of purchase in normal operation. This warranty does not apply to units which have been subject to excessive voltage or other adverse conditions (including outdoor operation) for which the units were not intended. Any unit found to be defective will be repaired or replaced at no charge to the original purchaser. This warranty does not include any liability for indirect or consequential damages resulting from the failure of any unit covered by this warranty.

## Fixture Specifications

<b>Mechanical</b>	
Length with Yoke / Hardware:	17.25 In., 44 cm.
Height with Yoke:	2.0 In., 5 cm.
Depth with Yoke:	2.0 In., 5 cm.
Center Height at Pivot	1.25 In., 3.2 cm.
Weight	1 Lbs., ..5 Kg.
Mounting Orientation	Any
Intrusion Protection	IP20
<b>Electrical Requirements</b>	
Fixture Input Voltage	24 Volts DC
Maximum Current	.25 Ampere
Wattage at maximum output	6 Watts
Power Supply Input Voltage	100 – 240 Volts AC
Line Frequency	50 – 60 Hz.
Maximum Line Current	.2 Ampere
<b>Optical</b>	
UV Wavelength	365 nanometers
LED Emitters	150 as a 15 x 10 array
UV Light Output Power	100 Milliwatts Minimum
Beam Spread	10 degrees

