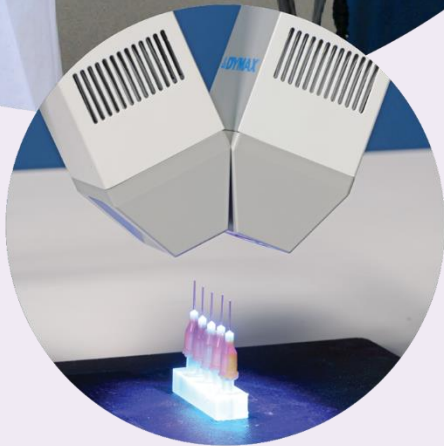


ECE Flood Lamp System PLC

User Guide





About Dymax

UV/Visible light-curable adhesives. Systems for light curing, fluid dispensing, and fluid packaging.

Dymax manufactures industrial, light-curable, epoxy, and activator-cured adhesives. We also manufacture a complete line of manual fluid dispensing systems, automatic fluid dispensing systems, and light-curing systems. Light-curing systems include LED light sources, spot, flood, and conveyor systems designed for compatibility and high performance with Dymax adhesives.

Dymax adhesives and light-curing systems optimize the speed of automated assembly, allow for in-line inspection, and increase throughput. System designs enable stand-alone configuration or integration into your existing assembly line.

Please note that most dispensing and curing system applications are unique. Dymax does not warrant the fitness of the product for the intended application. Any warranty applicable to the product, its application, and use is strictly limited to that contained in the Dymax standard Conditions of Sale. Dymax recommends that any intended application be evaluated and tested by the user to ensure that desired performance criteria are satisfied. Dymax is willing to assist users in their performance testing and evaluation by offering equipment trial rental and leasing programs to assist in such testing and evaluations. Data sheets are available for valve controllers or pressure pots upon request.

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Introduction

The Dymax ECE Series Flood Lamp System has been modified for use with a programmable logic controller (PLC). This guide describes how to operate the Dymax ECE Series Flood Lamp System with PLC control. Please read the original User Guide for reference.

Intended Audience

Dymax prepared this user guide for experienced process engineers, technicians, and manufacturing personnel. If you are new to light-curing equipment and do not understand the instructions, contact Dymax Application Engineering to answer your questions before using the equipment.

Where to Get Help

Customer Support and Application Engineering teams are available by phone and email in the United States, Monday through Friday, from 8:00 a.m. to 5:30 p.m. Eastern Standard Time. You can also email Dymax at info@dymax.com. See the back cover for worldwide contact information.

Additional resources are available to ensure a trouble-free experience with our products:

- Detailed product information on <https://www.dymax.com>
- Dymax adhesive Product Data Sheets (PDS) on our website
- Material Safety Data Sheets (SDS) provided with shipments of Dymax adhesives

New Features

- Use a PLC to turn on the UV lamp instead of push the Igniter/Fault Indicator button.
- Use a PLC to control ZIP Shutter instead of using Foot Switch.
- Optionally use a PLC to control the UV lamp on and off.

System Modifications

The Controller/Interlock circuit inside the Power Supply box has been updated, and a 6-pin connector has been added on the rear panel of the Power Supply box.

Figure 1.
New Controller/Interlock Board in the Power Supply Box

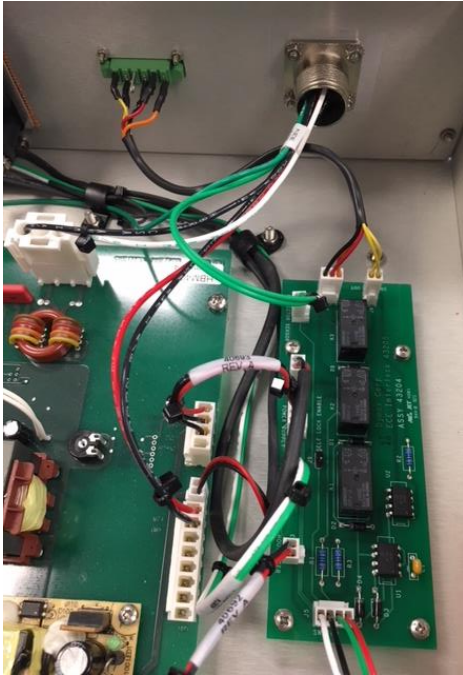


Figure 2.
Additional 6-Pin Connector on the Rear Panel of the Power Supply Box

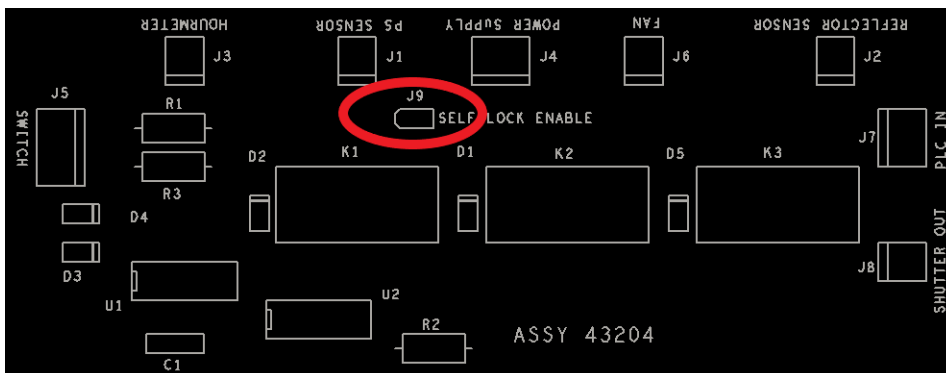


Self-Lock Configuration

The self-lock of the Power Supply is enabled by default. That means once the UV lamp is ignited, it will remain on until the system powers off.

An optional feature is using PLC to control the UV lamp on and off. To use this feature, the self-lock should be disabled by remove the jumper J9 on the Control/Interlock board.

Figure 3.
Interlock Enable Jumper



System Interconnection



WARNING! Always observe safety requirements when working with electrical equipment! Electrical hazard is present!

Ensure that the power supply AC cord is unplugged before starting system interconnect.

NOTE: The only tool required for this procedure is a Philips-head screwdriver.

Set-up and operation of your ECE system should be in a location that allows free air circulation around the sides and top of the Power Supply and Reflector Housing. 12 inches (30.5 cm) of space is recommended. Once an appropriate location has been determined, follow the instructions below to connect all system components.

ZIP™ Shutter Control Cable

1. Find the modified Foot Switch cable in the package, which has a 3-pin round connector on one end and a 6-pin green connector on the other end.
2. Plug and lock the round connector to the Foot Switch Jack on the ECE ZIP™ Shutter box.
3. Plug the 6-pin connector to the 6-pin connector on the rear panel of the Power Supply box. And secure the connector using the attached screws.

Connect to a PLC

1. Connect the Ground (Black wire in Figure 4) to the GND of PLC controller.
2. Connect the Shutter Control signal (Orange wire in Figure 4) to a 24V Source Output of PLC controller.
3. Connect the Lamp Control signal (Red wire in Figure 4) to a 24V Source Output of PLC controller.

Figure 4.

Connection on the 6-Pin Connector



Operation

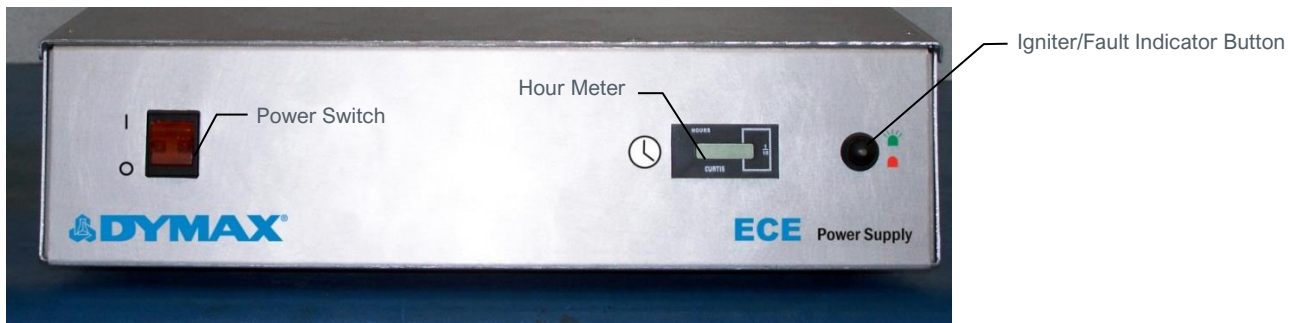
Starting the ECE Flood Lamp with Self-lock Enabled (Default)

1. Turn the unit on by pressing on the Power Switch (Figure 5) on the Power Supply. The Power Switch will light up to indicate that the power is on, the Fans will run, but the Flood Lamp will remain off.
2. Send 24V from PLC to Lamp Control (Red wire in Figure 4) to turn on the lamp. The 24V can be kept or removed. The lamp will keep on until the Power Switch is turn off.
3. Turn the unit off by pressing on Power Switch.

Starting the ECE Flood Lamp with Self-lock Disabled

1. Turn the unit on by pressing on the Power Switch (Figure 5) on the Power Supply. The Power Switch will light up to indicate that the power is on, the Fans will run, but the Flood Lamp will remain off.
2. Send 24V from PLC to Lamp Control (Red wire in Figure 4) to turn on the lamp.
3. Remove the 24V on the Lamp Control, the lamp will be turn off.
4. Send 24V to the Lamp Control after the lamp was cool down (approximately 5 minutes), the lamp will be turn on again.
5. Turn the unit off by pressing on Power Switch.

Figure 5.
Power Supply Front Panel



After the lamp has ignited, allow five minutes for the lamp to reach its maximum output intensity.

These UV flood lamps are designed for continuous operation.

Lamp life is reduced approximately one hour each time it is started. To avoid premature lamp deterioration, leave the lamp on for short breaks.

Operating the Shutter by PLC

1. Send 24V from PLC to the Shutter Control (Orange wire in Figure 4) to open the shutter.
2. Remove the 24V to the Shutter Control will close the shutter.

Definition of Terms

Dose - irradiance integrated over time, or Irradiance (W/cm^2) x Time (s) = Dose (Joules/cm²).

NOTE: Watt is the power that gives rise to the production of energy at the rate of 1-joule (J) per second (s).

Flood-Lamp System - set of components arranged to generate, collect, condition and direct UV radiant energy to perform curing of engineering adhesives, coatings, and inks within a safe and controlled process. It includes a lamp housing and power supply and may also include a shutter, workstation, UV enclosure, Dymax light shield, and/or accessories.

Intensity - a measure of light energy over the unit of surface area (usually the surface at the specified working distance from the bottom of the reflector housing) in W/cm^2 or mW/cm^2 .

Lamp - light source (bulb or burner) generating ultraviolet, visible, and infrared radiant energy from burning matter stimulated by electrical power conditioned by a proper power supply which is an integral part of a lamp. A light source is usually placed into a reflector (of various geometry) to increase light source efficiency by collecting and directing radiant energy of selected spectra (for a given curing process).

Ozone - oxidizing agent (O_3) produced by the action of ultraviolet radiant energy (below 185 nm) or electrical corona discharge of oxygen on air.

Ultraviolet (UV) - The invisible region of the spectrum just beyond the violet end of the visible region. Wavelength ranges in general from 1.0 to 400 nm. Dymax lamps (bulbs) do not radiate energy in deep ultraviolet; there are very minute amounts below 220 nm and practically nothing can be sensed below 200 nm. This is due to the use of ozone-blocking quartz bulb envelope (See Ozone).

Ultraviolet is used beneficially in various fields of industry and medicine. In order to standardize light sources used in medicine, the International Congress on Light, in Copenhagen in 1932, recommended dividing the ultraviolet spectrum into three spectral parts:

- **Ultraviolet A (UV-A)** - UV of long wavelength from within approximately 400 to 320 nm of the spectral band (4000 to 3200 \AA) - predominately produced by Dymax flood lamps.
- **Ultraviolet B (UV-B)** - UV of medium wavelength from within approximately 320 to 280 nm - Dymax flood lamps produce some amount of their energy within this bandwidth.
- **Ultraviolet C (UV-C)** - UV of short wavelength below 280 nm (we say from 280 to 200 nm) - a large amount of this energy is present in the sunlight.

Cautionary Statements Are Defined As:

- **Warning** - is used when there is a hazardous situation that has some probability of severe injury.
- **Caution** - is used to indicate a hazardous situation that may result in minor or moderate injury.
- **Notice** - is used to convey a message related directly or indirectly to the safety of personnel, or protection of property.

Warranty

From date of purchase, Dymax Corporation offers a one-year warranty against defects in material and workmanship on all system components (excluding lamp/bulb) with proof of purchase and purchase date.

Unauthorized repair, modification, or improper use of equipment may void your warranty benefits. The use of aftermarket replacement parts not supplied or approved by Dymax Corporation will void any effective warranties and may result in damage to the equipment.

IMPORTANT NOTE: DYMAX CORPORATION RESERVES THE RIGHT TO INVALIDATE ANY WARRANTIES, EXPRESSED OR IMPLIED, DUE TO ANY REPAIRS PERFORMED OR ATTEMPTED ON DYMAX EQUIPMENT WITHOUT WRITTEN AUTHORIZATION FROM DYMAX. THOSE CORRECTIVE ACTIONS LISTED ABOVE ARE LIMITED TO THIS AUTHORIZATION.



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