



### BlueCure Mini UV LED Controller

BlueCure mini spot curing system is for curing BlueGrip workholding adhesive.

Part # 65440 UV LED Controller, 4 Channel

#### Features

- 1-4 individual UV LED heads, interchangeable to any channel.
- 2.4 inches color display with main control, input configurations, system maintenance and LED information.
- "Ent" – control start or stop of the LED emission.
- Alarm icon on screen in the event of an error or fault.
- External control via optional foot pedal.

#### Packing List

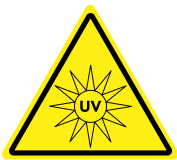
No.	Item	Qty.
1.	Ultraviolet (UV) LED Controller	1
2.	Power Cord	1
3.	Keys	1
4.	UV LED Heads	1-4
5.	Gripper Adapters	1-4
6.	User & Operating Guide	1
7.	UV Safety Glasses	1
8.	Foot Pedal	1



#### CAUTION

This guide as well as additional manuals provide a description of the function, application and safety considerations of the Blue Photon system. These manuals must be read and understood before any attempt is made to install or use this system. Improper use could result in damage to the product or unsafe conditions for the user. Follow these safeguards to prevent serious injury or property damage. Consult the factory on turning applications.

Please read the user and operating guide carefully before using the controller. After reading, please keep this manual handy so that you can refer to it at any time.



## IMPORTANT

Before using the UV LED equipment read and understand all manufacturer's documentation for proper setup, safety and necessary maintenance. **\*\*Caution\*\*** Do not stare directly at the light emitted from the LED head. This may be harmful, resulting in eye injury. **Always use UV protective eyewear.**



## WARNING

Please do not insert or pull plug out with wet hands due to causing an electric shock.



Please do not touch the controller after running for a long period of time, the unit may be hot at touch. The device runs at high temperatures.

This user guide was written for the users of **Blue Photon’s BlueCure Mini 4** controller. Before you use, read this manual carefully. In particular, pay attention to the warnings and cautions that appear in the safety and design sections at the front of the manual. Before you begin, you should also read the maintenance instructions. For more information, see Maintenance, page 12. Visit our website for the most up-to-date product and safety information: [www.BluePhotonGrip.com](http://www.BluePhotonGrip.com).



## Table of Contents

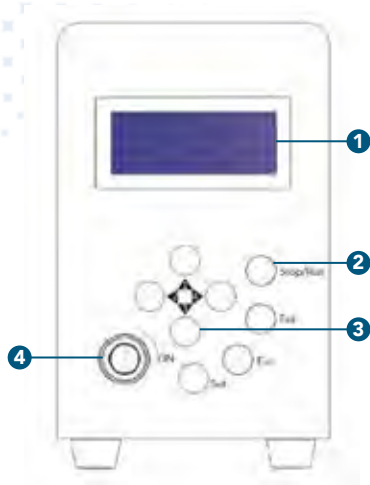
1. Structure and Functions	
1.1 Controller Front Panel .....	4
1.2 Controller Back Panel .....	4
1.3 UV LED Head .....	4
2. Installation and Troubleshooting	
2.1 Safety Cautions.....	5
2.2 Personal Protection Equipment (PPE) .....	5
2.3 Troubleshooting.....	5
2.4 Controller Location.....	5
2.5 Emergency Stop Instructions .....	5
3. External Control	
3.1 Signal Ports.....	6
3.2 External Signal Connections.....	7
3.3 RS232 Ports .....	7
3.4 Serial Communication Protocol.....	8-9
3.5 Command and Response .....	9
4. System Operating Instructions	
4.1 Operating Parameters.....	9
4.2 Operating Parameters Setup .....	10
4.3 System Parameters .....	10
4.4 System Parameters Setup .....	11
4.5 Blue Photon Factory Settings.....	11
5. Maintenance	
5.1 Safety Cautions.....	12
5.2 Maintenance and Cleaning.....	12

Sales and Engineering Support  
 Blue Photon Technology & Workholding Systems LLC  
 1002 Industrial Park Dr., Shelby, MI 49455  
 855-777-2040 • [sales@BluePhotonGrip.com](mailto:sales@BluePhotonGrip.com)

# User Guide

## Structure and Functions

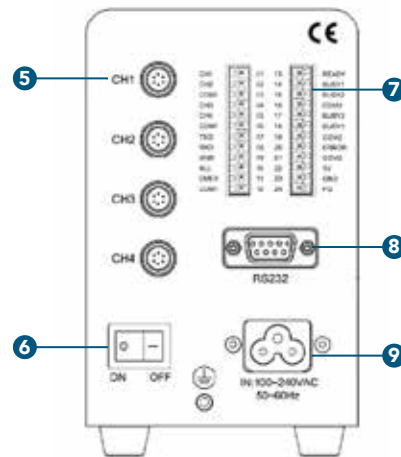
### 1.1 Controller Front Panel



#### Front Panel

No.	Modules	Functions
1.	LCD	Display Running Parameters
2.	Set / Esc / Ent / Stop / Run	Setting Buttons
3.	Arrow Buttons	Setting Buttons and UV LED Head Control Buttons
4.	Key Switch	Turn On the Switch Before Setting Turn Off the Switch After Setting

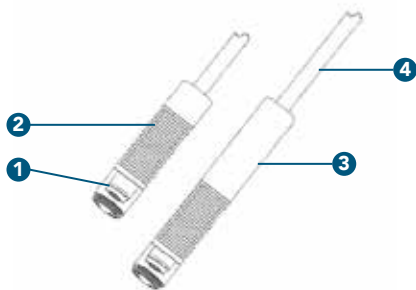
### 1.2 Controller Back Panel



#### Back Panel

No.	Modules	Functions
5.	UV Output Channels	Connect the UV LED Heads
6.	Power Switch	Turn On / Off the Controller
7.	Signal Ports	Input and Output Signal
8.	RS232	Input and Output Signal
9.	A/C Input Socket	Power Input: 100~240V AC 50~60Hz

### 1.3 UV LED Head



No.	Modules	Functions
1.	UV LED	UV Light Source
2.	UV LED Head	Air Cooling Type
3.	Extended Head	Extension
4.	Flexible Cable	2 M Cable Length

## Installation and Troubleshooting



**Important:** Before using the UV LED equipment, read and understand all documentation for proper setup, safety, and necessary maintenance.

### 2.1 Safety Cautions

- Incorrect installation and troubleshooting could result in danger.
- Please lay out the cables properly. Do not allow cables to become tangled. Avoid sharp edges.
- Please note that the bending radius of the UV LED head cable should be over 50 mm (2 inches).
- Avoid pulling on the UV LED head cable.
- The ambient temperature of the work space should be less than 40°C (104°F).
- Do not plug or unplug UV LED heads with the controller on.
- Do not turn UV LED heads on without first inserting into a fixture.

### 2.2 Personal Protection Equipment (PPE)

Before you start, make sure the following PPE is in place:

- UV light blocking goggles, glasses, or shield for anyone within 6 ft of the adhesive curing area.
- Wear leather gloves or similar light blocking gloves if the UV LED heads are not inserted into a fixture when turned on.
- Wear long sleeves if the UV LED heads are not inserted into a fixture when turned on.
- Rubber gloves when handling alcohol or uncured adhesive.

Use a handheld radiometer (Blue Photon P/N 62020) to verify that no stray UV is escaping from the work area where people are present.

### 2.3 Troubleshooting

- A/C input power supply: 100~240V, 50-60HZ.
- Confirm that the power cord is connected.
- Check the connection to the "EMER" and "COM1" jumper.
- Verify that all UV LED heads are connected to the controller.
- After turning on the controller power switch, confirm that the switch indicator light is on and that the LCD is displaying correctly.
- Be sure to check that the external foot pedal, PLC or other devices are connected as well.

### 2.4 Controller Location

- Store controller on a flat workbench.
- Install the UV LED heads on the back of the controller.
- Keep the UV LED controller and heads away from liquid, dust, dirt, oil, grease or other pollutants.

### 2.5 Emergency Stop Instructions

There are two signal ports on the back panel of the controller for emergency stopping. One signal port is number 11, "EMER", and the other number is 12, "COM1". They are used to stop the machine in case of emergency. When the two signal ports are disconnected, the controller will not work. When the two signal ports are connected, the controller works accordingly to the instructions.

If you are using the UV LED controller for automatic production lines, just connect the emergency stop signal ports to "emergency stop" switch or an emergency stop system.

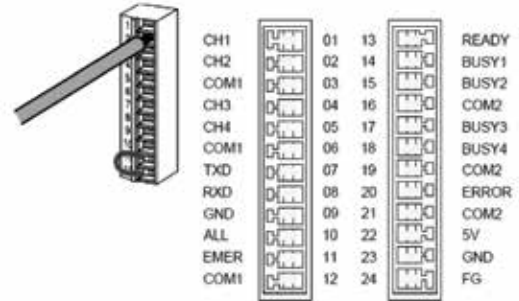
# User Guide

## External Control

### 3.1 Signal Ports

Connector ion for external control (12 pin x 2)

- Tightening torque: 0.2N\*M ~ 0.3N\*M
- When peeling off the coating, be careful to not damage the wires core.
- Do not twist the wires when connecting them.
- Do not put pull on the wires after connecting.



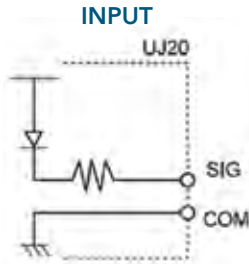
#### Pin No. Signal Port Functions

Pin No.	Signal Port	Functions
1.	CH1	Channel 1 Stop / Run
2.	CH2	Channel 2 Stop / Run
3.	COM1	Grounded Common Input Terminal
4.	CH3	Channel 3 Stop / Run
5.	CH4	Channel 4 Stop / Run
6.	COM1	Grounded Common Input Terminal
7.	TXD	RS232 Data Transmission Terminal
8.	RXD	RS232 Data Receiving Terminal
9.	GND	RS232 Grounded Terminal
10.	ALL	All Channels Stop / Run
11.	EMER	Emergency Stop the Controller
12.	COM1	Grounded Common Input Terminal
13.	READY	Ready for Running Signal Feedback
14.	BUSY1	Channel 1 Running Signal Feedback
15.	BUSY2	Channel 2 Running Signal Feedback
16.	COM2	Grounded Common Output Terminal
17.	BUSY3	Channel 3 Running Signal Feedback
18.	BUSY4	Channel 4 Running Signal Feedback
19.	COM2	Grounded Common Output Terminal
20.	ERROR	Fault Signal Feedback
21.	COM2	Grounded Common Output Terminal
22.	5V	DC5V Output, Max. 100mA
23.	GND	DC5V Grounded Terminal
24.	FG	Forced Grounding Terminal

### 3.2 External Signal Connections

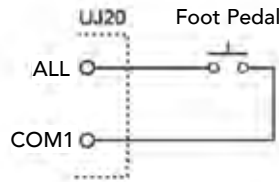
#### Output Specifications:

- Output Capacity: 10mA.
- Rated Load Voltage: DC 5~24V.
- Maximum Load Current: 10mA (for each output).
- When using the internal 5V power, the maximum load current should be less than 100mA.
- Maximum Voltage Drop: below 0.9V at "ON" status.

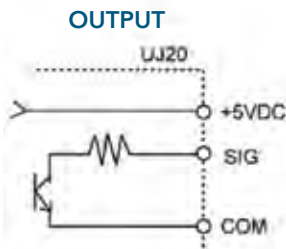
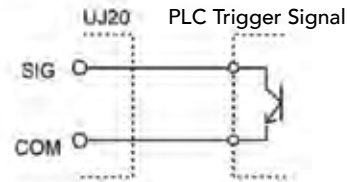


No-voltage input from open collectors or relays.

#### CONTACT INPUT

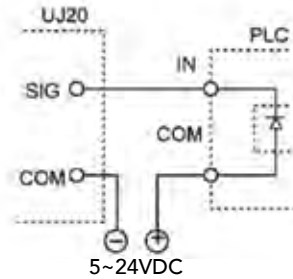


#### NO CONTACT INPUT

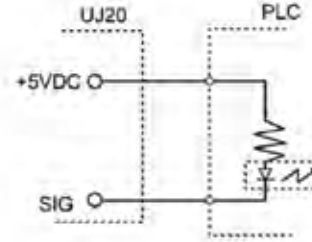


Rated Voltage: 5~24VDC  
Output Capacity: 100mA (max)

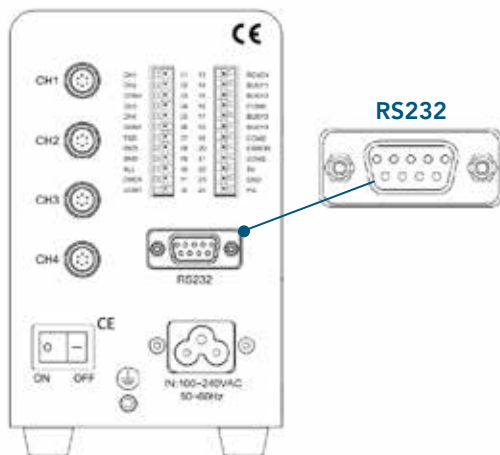
#### EXTERNAL POWER SUPPLY



#### INTERNAL POWER SUPPLY



### 3.3 RS232 Ports



#### DSUB Connector 9 Pin

Pin No.	Signal Port	Abbreviation
1.	Not Connected	—
2.	Send Data	SD
3.	Receive Data	RD
4.	Not Connected	—
5.	Signal Grounded	SG
6.	Not Connected	—
7.	Not Connected	—
8.	Not Connected	—
9.	Not Connected	—

# User Guide

## 3.4 Serial Communication Protocol

<b>Signal Port</b>	<b>RS232</b>
Communication Mode	Half Duplex Mode
Synchronous Mode	Start and Stop Synchronization Mode
Transmission Cable	3 Core Shield Wire
Transmission Distance	≤15M
Transmission Speed	9600 DPS
Transmission Code	ASCII
Transfer Format	Data Length: 8 BIT Check Bit: None Stop Bit: 1 BIT

### (1) Connected to the Controller

Connect a "UV LED" head to the controller, the controller returns ":" (Hex 0x3A) means the connection is successful.

### (2) Instructions Format

0x23 + Command + Address + Data (High 8 BIT) + Data (Low 8 BIT)

### ADDRESS

"00" Represents UV Channel 1

"01" Represents UV Channel 2

"02" Represents UV Channel 3

"03" Represents UV Channel 4

### \*\*\*\*Control Command\*\*\*\*

- **Stop / Run One UV Channel:** "0x23 + 0x0E + address + 0xff + 0x01". Data low bit "1" represents UV channel run, "0" represents UV channel stop. "0x0E" is the command of UV channel Stop / Run.
- **PULSE or LOW Mode Setting:** "0x23 + 0x0F + address + 0xff + 0x01". Data low bit "1" represents LOW mode, "0" represents PULSE mode. "0x0F" is the command of PULSE or LOW mode setting.
- **UV Power Setting:** "0x23 + 0x00~0x0D + address + 0xff + 0xff". Data low bit represents standard brightness value, 0-100%. "0x00~0x0D" in turn represents the brightness value of the A/M/ST1~ST12, a total of 14 brightness values.
- **Running Mode Setting:** "0x23 + 0x1E + address + 0xff + 0x01". Data low bit "1" represents A mode, "2" represents ST mode, "3" represents M mode, "4" represents CLOSE mode. "0x1E" is the command of running mode setting.
- **ST Mode Step Number Setting:** "0x23 + 0x1F + address + 0xff + 0x01" "0x1F" is the command of step number setting. The total step number is 12.
- **Irradiation Time Setting:** "0x23 + 0x10~0x1C + address + 0xff + 0xff". High or low data bytes represents working time, 0-9999, unit 0.1s. "0x10~0x1C" in turn represents the brightness value of the A/ST1~ST12, a total of 13 brightness values.

The high data bytes represents the high byte of time, the low data bytes represents the time of the low byte, making up an integer data.

After all commands are correctly received, it will return "0x24" at the beginning of a total of five bytes data.

### \*\*\*\*Check Command\*\*\*\*

"Command + 0x40" represents check command.

- **Check Running Status:** "0x23 + (0x0E + 0x40) + address + 0xff + 0x01"> Response: "0x24 + (0x0E + 0x40) + address + 0xff + 0x01". Data low bit "1", represents UV channel run, "0", represents UV channel stop.
- **Check PULSE or LOW Mode:** "0x23 + (0x0F + 0x40) + address + 0xff + 0x01". Response: "0x24 + (0x0F + 0x40) + address + 0xff + 0x01". Data low bit "1", represents LOW mode, "0", represents PULSE mode.
- **Check UV Power Setting:** "0x23 + (0x00~0x0D + 0x40) + address + 0xff + 0xff". Response: "0x24 + (0x00~0x0D + 0x40) + address + 0xff + 0xff". Data low bit represents standard brightness value, 0-100%. "0x00~0x0D" in turn represents the brightness value of the A/M/ST1~ST12, a total of 14 brightness values.
- **Check Running Mode:** "0x23 + (0x1E + 0x40) + address + 0xff + 0x01". Response: "0x24 + (0x1E + 0x40) + address + 0xff + 0x01". Data low bit "1" represents A mode, "2" represents ST mode, "3" represents M mode, "4" represents CLOSE mode.



- **Check Step Number:** "0x23 + ( 0x1F + 0x40) + address + 0xff + 0x01". Response: "0x24 + (0x1F + 0x40) + address + 0xff + 0x01". Data low bit represents step number. The total step number is 12.
- **Check Irradiation Time:** "0x23 + (0x10~0x1C + 0x40)+ address + 0xff + 0xff". Response: "0x24 + (0x10~0x1C + 0x40) + address + 0xff + 0xff". Two lowest bytes corresponds to high or low bytes of time. 0-9999, Unit: 0.1s. 0x10~0x1C in turn represents the brightness value of the A/ST1~ST12, a total of 13 time values.
- **Check the Total Running Time:** "0x23 + 0x25 + address + 0xff + 0xff ". Response: "0x24 + 0x25 + address + 0xff + 0xff ". Two lowest bytes corresponding to the cumulative time of the high, low byte, unit: H.

**\*\*\*\* Fault Feedback \*\*\*\***

**Feedback:** "0x24 + 0x00 + address + 0x0E + 0x20". Two lowest bytes are corresponding to the error code. "E20" represents open circuit fault; "E30" represents short circuit fault; "E40" represents overheat fault.

**\*\*\*\*Save Settings\*\*\*\***

**Command:** "0x23 + 0xEE + 0xAA + 0xff + 0xff"      **Response:** "0x24 + 0xEE + 0xAA + 0xff + 0xff"

**\*\*\*\*Setting Examples\*\*\*\***

**Run UV Channel 1:** 0x23 0x00 0x00 0x00 0x01      **Stop UV Channel 1:** 0x23 0x00 0x00 0x00 0x00

**Set UV Channel 1 A Mode and 100% UV Power:** 100% 0x23 0x00 0x00 0xFF 0x64

**Set UV Channel 1 M Mode and 80% UV Power:** 0x23 0x01 0x00 0xFF 0x50

**Set UV Channel 1 A Mode and 25.6 S Irradiation Time:** 0x23 0x10 0x00 0x01 0x00

**Set UV Channel 1 M Mode:** 0x23 0x1E 0x00 0xFF 0x03

**Set UV Channel 1 A Mode:** 0x23 0x1E 0x00 0xFF 0x01

**Set UV Channel 1 LOW Mode:** 0x23 0x0F 0x00 0xFF 0x01

### 3.5 Command and Response

- The commands sent to the controller are called "command".
- The codes returned by the controller are called "response".
- After the command is sent, it will return a response.
- Send ASCII code.

If there is no response, there might be a problem with transmission format and command not being received. Please confirm the communication speed, data length, odd-even check, and so on are correct.

The controller indicates that the command is not properly handled when the response doesn't include "\$", but includes "!", please refer to the default settings.

## System Operating Instructions

### 4.1 Operating Parameters

No.	Parameters	Description
1.	A	Automatic Irradiation Mode
2.	M	Manual Irradiation Mode
3.	CLOSE	Close the UV Channel
4.	16ST	Step Irradiation: 1~16 Step Number
5.	PS	Cycle the Step Irradiation: 1~99 Times
6.	100%	UV Power: 0~100% Adjustable
7.	999.9 S	Irradiation Time: 0~999.9 S

# User Guide

## 4.2 Operating Parameters Setup

1. Turn the controller power switch on.
2. Turn the key switch on, located on front of control panel.
3. Press the "Run / Stop" button.  
*See below for example:*

CH1	80% A	STOP
CH2	80% M	STOP
CH3	CLOSE	STOP
CH4	16ST	STOP
4. Press the "Set" button to enter into parameters setup mode.  
*See below for example:*

CH1	80% A	010.0 S
CH2	80% M	
CH3	CLOSE	
CH4	16ST	
5. Press "←" and "→" button to move the cursor to the item needing modifications.
6. Press "↑" and "↓" button to set the parameters.
7. For the 16ST mode setting, press "Set" button after the step number is confirmed. Repeat 5. and 6. for UV power and irradiation time setup. If the step number is over 4, press "Ent" button to display the next page. Repeat it until all is setup and finished.

ST01	100%	000.0 S
ST02	100%	000.0 S
ST03	100%	000.0 S
ST04	100%	000.0 S
8. Press the "Ent" button to save parameters.
9. If you don't need to change the parameters, press "Esc" button.
10. Turn off the key switch and remove the key. The setup can only be done when the key switch is turned on.
11. Control the controller via UV channel buttons, foot pedal, PLC, and other external signal. The controller will run accordingly to the settings.

## 4.3 System Parameters

No.	Parameters	Description
1.	START	START PULSE: Represents trigger signal. START LOW: Represents continuous signal.
2.	000000H00M00S	Register the total irradiation time of the UV channel.
3.	LINK	LINK ON: The UV channels can be controlled by an external signal. LINK OFF: The UV channels can be controlled by the independent signal.
4.	LOCK	LOCK ON: Under the automatic irradiation mode, the controller will not stop at the set time. LOCK OFF: Stop the controller at any time by control signal.
5.	BUZZ	BUZZ ON: Open the buzzer. BUZZ OFF: Close the buzzer.
6.	COPY	COPY ON: Copy the operator parameters of the first "COPY ON" setting channel. COPY OFF: Keeps the UV channels at default setting.

## 4.4 System Parameters Setup

1. Turn the controller power switch on.
2. Turn the key switch on, located on front of control panel.
3. Press the "Run / Stop" button.
4. Press the "Set" button for over three seconds to enter into parameters setup mode.  
*See below for example:*

CH1	START	PULSE
CH2	START	PULSE
CH3	START	PULSE
CH4	START	PULSE

5. Press "←" and "→" button to move the cursor to the item needing modifications.
6. Press "↑" and "↓" button to set the parameters.
7. Press the "Set" button for over three seconds to save parameters.
8. If you don't need to change the parameters, press "Esc" button.
9. Turn off the key switch and remove the key. The setup can only be done when the key switch is turned on.

## 4.5 Blue Photon Factory Settings

### Setup:

A Mode: UV Power 100%

Irradiation time 060.0s

CH1	100% A	060.0 S
CH2	100% A	060.0 S
CH3	100% A	060.0 S
CH4	100% A	060.0 S

**Left:** CH1~CH4 is the UV Channel Number

**Middle:** UV Power / Irradiation Mode

**Right:** Irradiation Time

1. Turn the controller power switch on.
2. Turn the key switch on, located on front of control panel.
3. Press the "Run / Stop" button.
4. Press the "Set" button to enter into parameters setup mode.
5. Press "←" and "→" button to move cursor "\_" to the irradiation mode.
6. Press "↑" and "↓" button to change it to A mode.
7. Press "←" and "→" button to move cursor "\_" to the UV power.
8. Press "↑" and "↓" button to change it to 100%.
9. Press "←" and "→" button to move cursor "\_" to the irradiation time.
10. Press "↑" and "↓" button to change it to 060.0s.
11. Press the "Ent" button to save parameters.

## Maintenance



### 5.1 Safety Cautions

- Only trained personal should attempt to repair.
- Turn off power supply before attempting to begin maintenance.
- Pull out the power plug before disassembling the equipment to avoid electric shock.
- Wear UV light blocking goggles, glasses or shield, leather gloves or similar light blocking gloves, and long sleeves during operations.

### 5.2 Maintenance and Cleaning

- Measure the UV intensity or UV energy with UV-A meter periodically. If it is not enough for curing, please replace it with a new UV LED head. The calibration period is related with the running frequency. Minimum UV output is 350 mW.
- During use, the UV LED head can be polluted by the volatile of UV adhesive and the environmental dust. It is necessary to clean the optical lens and tube to ensure the UV intensity and heat dissipation. Please use lens tissue, non-dust cloth and alcohol for cleaning. Please turn off the power and make sure it is completely cool before cleaning.



[www.BluePhotonGrip.com](http://www.BluePhotonGrip.com) • 855-777-2040  
1002 Industrial Park Dr., Shelby, MI 49455