

## BlueWave® 200 Version 3.1 Light-Curing Spot Lamp

### The Process Control You Need Without Added Cost

- Patented intensity adjustment feature
- >17,000 mW/cm<sup>2</sup> initial intensity
- Simple to operate and adjust
- Up to 2,000 hours useful bulb life
- Integral shutter with digital timer
- Foot switch or PLC integration
- Proprietary "Cool Blue™" filter virtually eliminates liquid lightguide degradation
- Wide range of lightguides available (liquid/fiber, single/multi-pole, various lengths)
- Easy-to-read, lighted front panel LCD display with enhanced unit status and notification displays
- Controlled power-up sequence ensures proper temperature
- Improved user interface for easier operation
- Smooth front panel surface that is easier to clean
- Extended exposure time settings to 9,999.9 seconds
- Fast bulb replacement

BlueWave® 200 3.1 is a high-intensity, light-curing spot-lamp system. This spot-curing lamp emits energy in the UVA and visible portion of the spectrum (300-450 nm) for light curing of adhesives, coatings, and encapsulants. Ideally suited for either manual or automated processes, the unit contains an integral shutter which can be actuated by a foot pedal or PLC and a universal power input that provides consistent performance at any voltage. A wide range of lightguides in various materials and configurations are available for use with this unit, providing application flexibility.

The system's faceplate design features an improved operator interface with an easy-to-read LCD display. Also located on the faceplate is the unit's patented intensity adjustment control. This feature is important for validating an appropriate intensity range and maintaining that range during production. Users can manually adjust the unit's intensity to accommodate for bulb degradation and other factors that may affect intensity.

Version 3.1's design includes:

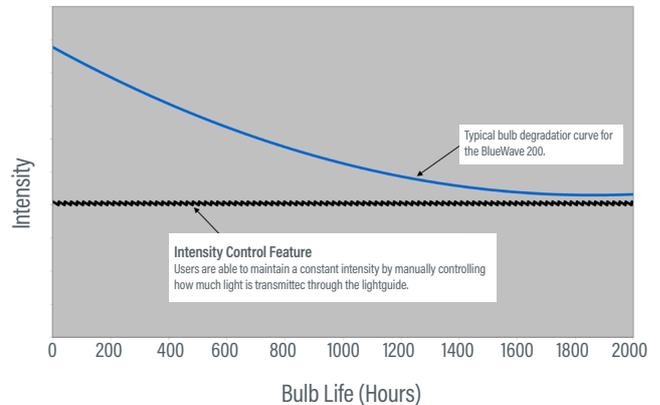
- Updated front panel and large color LCD display
- Smooth, easy-to-clean front faceplate
- Improved operator interface
- Controlled warm-up sequence
- Extended exposure timer setting to 9,999.9 seconds
- No light leakage from enclosure



## How Does the BlueWave® 200's Patented Intensity Adjustment Feature Work?

All bulbs used to power high-intensity light-curing spot lamps degrade over time from normal use. This typically results in a gradual decrease in total intensity as the bulb ages (shown in Chart 1). For this reason, UV light-curing processes are usually validated using the lowest acceptable intensity level to maximize bulb life. However, this means that for the majority of the production process, curing is being done with a higher intensity level than is actually necessary, therefore, it can be expected that the intensity will decrease over time. With the BlueWave® 200's patented intensity adjustment feature, users can maintain the qualified intensity range by manually increasing intensity output to offset this degradation. The adjustment is easily accomplished with the provided adjusting tool or by using the removable knob as shown in the photograph below. This feature is useful for both process validation and subsequent process control during production.

Chart 1. BlueWave® 200 Intensity Control Feature



## Validation

Prior to production, Dymax advises customers to conduct testing to determine the exposure time and intensity required to achieve full cure. Validating a UV light-curing process can be accomplished in one of two ways:

### Set Exposure Time, Determine Intensity

Users can specify a cure time and, through empirical testing, determine the intensity required to achieve full cure.

### Set Intensity, Determine Exposure Time

Users can specify intensity (perhaps one that maximizes bulb life) through empirical testing to determine the exposure time required to achieve full cure. Note: As with any manufacturing process, it is advisable to incorporate a safety factor.

## Control

UV process validation identifies a minimum acceptable intensity range that ensures complete cure in an acceptable cycle time. Users can choose to operate at full intensity (intensity adjusted to 100%) or maintain a constant intensity (at some lower level) through periodic manual adjustments. The average BlueWave 200 bulb will typically degrade <1% per eight hours of normal use. The good manufacturing practice of routine intensity measurement with a calibrated radiometer will determine when and if any adjustments are required.

Intensity Adjustment Options



The unit includes an intensity adjustment knob for fingertip adjustment or the adjustment can be performed with a flat-head screwdriver when the knob is removed.

# Specifications

Specifications	
<b>Part Numbers</b>	41013 BlueWave® 200* 38465 Replacement Bulb
<b>Initial Intensities</b>	Total (280-450 nm) 40+ W/cm <sup>2</sup> Visible (400-450 nm) 17+ W/cm <sup>2</sup> UVA** (320-395 nm) 17+ W/cm <sup>2</sup> UVB (280-320 nm) 7 W/cm <sup>2</sup>
<b>Intensity Adjustment</b>	Manual from 1% to 100% output
<b>Power Requirements</b>	100-240 VAC, 50-60 Hz, 2.5 Amps
<b>Power Supply</b>	Solid-state, 200 Watt
<b>Bulb</b>	200 Watt metal-halide bulb included; replacement in less than one minute
<b>Reflector</b>	Elliptical; glass with dichroic coating to reflect UV and minimize IR
<b>Shutter Timer</b>	Digital LCD timer up to 9,999.9 seconds; manual or timed shutter
<b>Shutter Activation</b>	Foot switch or PLC
<b>I/O Port</b>	15 pin D – sub-miniature connector
<b>Signals (PLC Integration)</b>	Inputs: Shutter activate, shutter deactivate, lamp control, PLC enable Outputs: Unit status, temperature fault, shutter fault, lamp status, power status, shutter status, lightguide status, bulb life warning, bulb life expired
<b>Cooling</b>	Filtered fan arrangement; thermally controlled to maintain proper lamp temperature
<b>Display</b>	LCD, monochromatic, 320 by 240 pixels
<b>Overall Dimensions (W x D x H)</b>	12.5" x 12" x 6.5" (31.8 cm x 30.5 cm x 16.5 cm)
<b>Weight</b>	12.75 lbs. (5.78 kg)
<b>System Warranty</b>	One year from purchase
<b>Bulb Warranty</b>	Ignition warranted for 2,000 hours

\* For customers in Europe, the appropriate power cord will be added.

\*\* As measured with a Dymax ACCU-CAL™ 50 Radiometer (320-395 nm) and lightguide simulator. Excessive on/off cycles and improper cooling may affect the bulb degradation and therefore no warranty is expressed or implied.

Recommended Lightguides (sold separately)				
Part Numbers	Lightguide Description		Typical Initial Intensity <sup>1</sup> (W/cm <sup>2</sup> )	Typical Intensity at 2,000 Hours <sup>1</sup> (W/cm <sup>2</sup> )
	(all noted are liquid filled, quartz fiber are also available)			
5720	Single pole	5 mm x 1 Meter	17.0	8.0
5721	Single pole	5 mm x 1.5 Meters	16.0	7.5
5722	Single pole	8 mm x 1 Meter	13.0	6.5
38476	Two pole	3 mm x 1 Meter	10.5	5.2
38477	Three pole	3 mm x 1 Meter	9.0	4.5
38478	Four pole	3 mm x 1 Meter	7.4	3.7

<sup>1</sup> As measured with a Dymax ACCU-CAL™ 50 radiometer (320-395 nm) and lightguide simulator. Excessive on/off cycles and improper cooling may affect bulb degradation and therefore no warranty is expressed or implied.

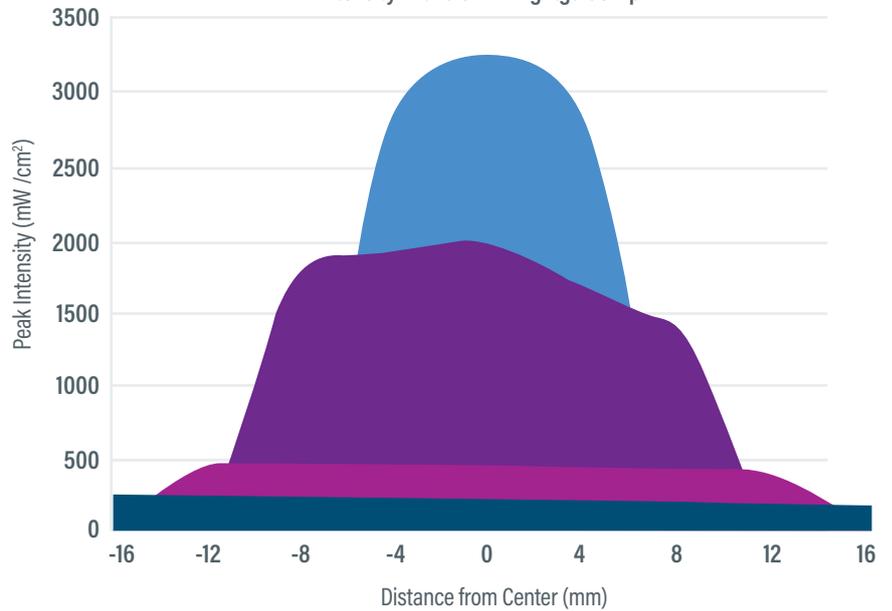


Lightguide End with Collimator Lens



Accessories	
<b>Rod Lenses</b> (rod lenses require an 8-mm lightguide)	38699 2" x 2" Area (~100 mW/cm <sup>2</sup> )
	38698 5" x 5" Area (~30 mW/cm <sup>2</sup> )
<b>Collimator Lenses</b> (40° focused output)	62649 3 mm Lightguide Tip
	62651 5 mm Lightguide Tip
<b>Angled Terminators for Lightguides</b>	39029 3 mm/60°
	39030 3 mm/90°
	38042 5 mm/60°
	38049 5 mm/90°
<b>Mounting Stand</b>	39700 Fits 3-mm, 5-mm and 8-mm lightguides
<b>Radiometer</b>	39560 ACCU-CAL™ 50 Radiometer for measuring the UV intensity of spot lamps, flood lamps, and conveyor systems
<b>UV-Blocking, Over-the-Glasses Eye Protection</b>	35285 Gray Tinted
	9162044 Green Tinted

Intensity with a 5 mm Lightguide Tip



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