

# Industrial Stroboscopes for Machine Vision

## System Description

The machine vision stroboscopes BVS are designed for industrial vision applications. The BVS series strobes provide a source of short duration, high intensity light pulses. When combined with a CCD camera and suitable fiberoptic components, the strobes freeze motion and generate bright images full of contrast.

The main component of the strobe is an ultrastable xenon flashlamp whose light output is focused on a port configured to accept a fiberoptic component by an ellipsoidal reflector. The fiber bundle has to be fixed with the set screw. The efficiency of the light coupling can be optimized by adjusting the z position.

The standard version is equipped with an adapter for FOSTEC ferrules. If a different diameter is needed, then additional adapters are available.



## Fiberoptic Components

The fiberoptic components used with the BVS series strobes have to be adapted to the desired application. A large variety of standard components (fiber bundles, goosenecks, ringlights, lightlines, backlights etc.) from the FOSTEC product line provide economical solutions for numerous lighting problems. If an illumination system falling outside standard applications is required, then custom designed solutions are available on request.

## Applications

Whenever white light of high intensity is needed in machine vision the BVS series strobes are the best choice. In the following, several examples of the versatility of the BVS series strobes in industrial robotic applications are listed:

- part recognition
- package integrity verification
- component orientation
- surface detection
- counting
- contaminant detection
- label reading
- fluorescence detection etc.

## Optical Specifications

	BVS-020	BVS-060	BVS-200
Spectral Range	300 - 1100 nm	300 - 1100 nm	300 - 1100 nm
Input Energy per Flash	max. 2.16 J	max. 0.72 J	max. 0.2 J
Broadband Light Output	ca. 25 mJ/cm <sup>2</sup>	ca. 12.5 mJ/cm <sup>2</sup>	ca. 5 mJ/cm <sup>2</sup>
Flash Repetition Rate	max. 20 Hz	max. 60 Hz	max. 200 Hz
Light Output Pulse Width	< 25 μs	< 15 μs	< 7 μs
Lifetime Flashlamp	> 10 <sup>8</sup> (while maintaining more than 70% of initial intensity (estimated))		

Fig.1 Light Output Waveform

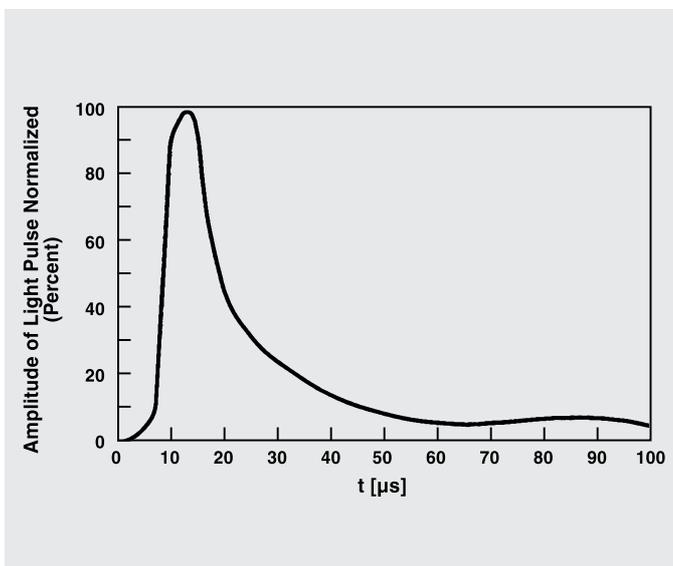
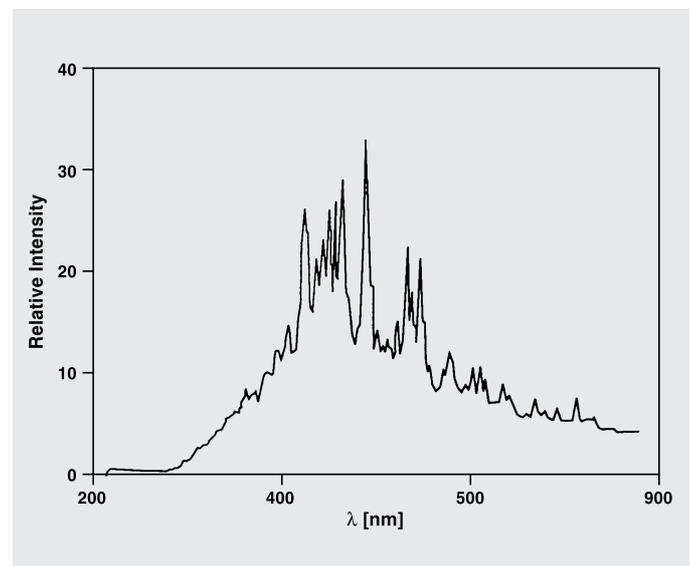


Fig.2 Spectral Distribution of Emitted Light



## Electrical Specifications

Power Line Requirement	230 VAC (115 VAC on request)
Power Consumption	max. 0.5 A
Trigger Signal	+ 5 V at 20 mA
Trigger Pulse Width	10 - 100 $\mu$ s
Non-Synchronizing Time Before Pulse	min. 200 $\mu$ s
Turn-On Delay Command To Flash	typ. 10 $\mu$ s
Discharge Capacity	BVS-020: 12 $\mu$ F BVS-060: 4 $\mu$ F BVS-200: 1 $\mu$ F
External Reference Input	0 - 6 VDC (1.7 VDC min. to keep lamp flashing)

## Electrical Connectors

Power	VDE - 3 pin socket
Reference Input	Cable receptacle T3361/10 (Amphenol)

## Optical Connector

Outer fiber cable diameter	18.25 mm (0.72 in) FOSTEC Ferrule
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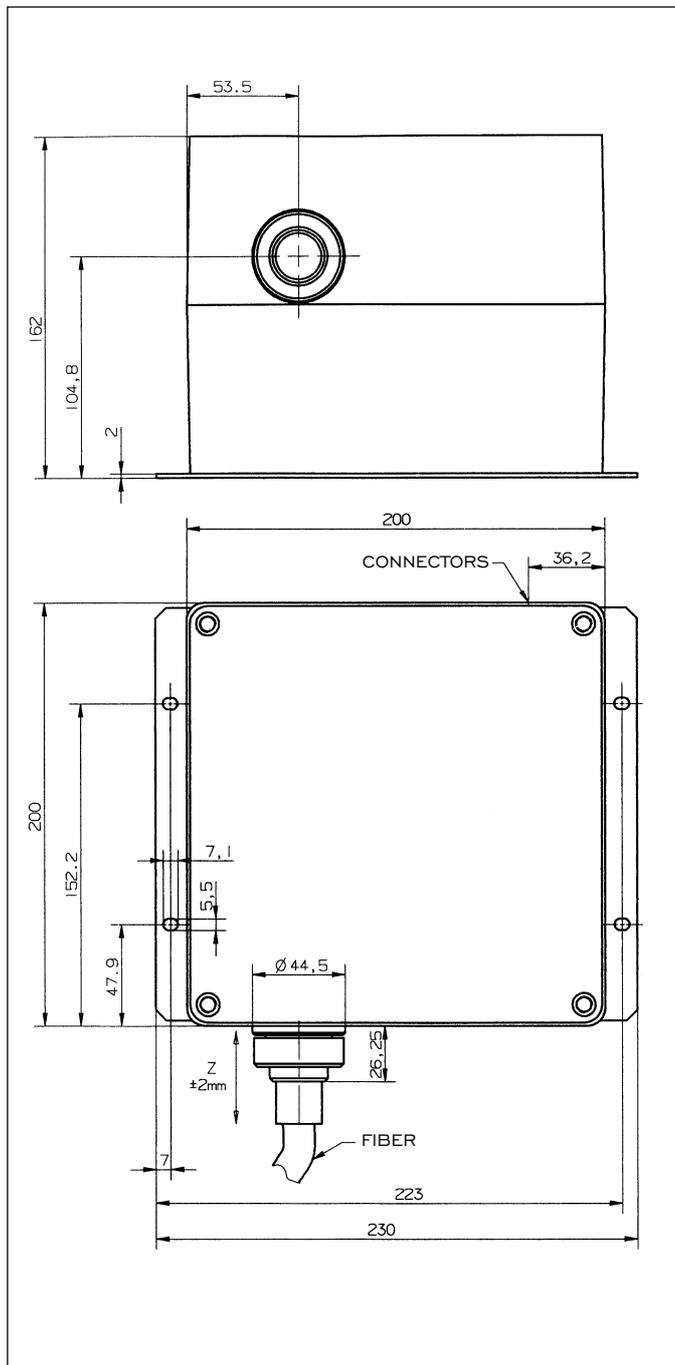
Z-position of fiber cable adjustable for optimized light coupling.

Note:

Adapters for different ferrule diameters are available on request.

## Dimensions / Environmental Specifications

Dimensions Enclosure	200 mm x 200 mm x 162 mm
Weight	ca. 5.3 kg
Operating Temperature	-23 °C to 43 °C
Storage Temperature	-40 °C to 90 °C
Operating Humidity	0 to 90% Non-condensing
Operating Altitude	Sea Level to 3000 m



## Ordering Information

### BVS - XXX - YYY - ZZZ

BVS: Machine Vision Strobe

XXX: Max. flash frequency in Hz  
Standard versions: 020, 060, 200

YYY: Fiber bundle adapter  
Standard versions: FOS (FOSTEC)  
BLA (blank adapter)  
other adapters on request

ZZZ: Further options (custom designed models)

Polytec was founded in 1967 originally as a distribution company for lasers and electro-optics. Today Polytec's product range includes lasers, laser-based systems, laser diagnostics, vibration analysis, laser velocimeters, electro-optical components, fiber optics technology and machine vision components.

Polytec was awarded the international quality standard ISO 9001 in May 1994 for all company operations; distribution, development, production, customer service and order processing.

The foundations for Polytec's success are the professional competent advice and the customer-orientated service support provided by a qualified team of physicists and engineers.

Subject to changes without notice.