Basler blaze

BASLER 3D CAMERAS

GigE VISION

DepthSense™

- Top-class precision by Sony DepthSense™ IMX556 sensor and advanced laser technology (VCSEL)
- Precise, almost millimeter-accurate optical measurement with the time-of-flight method
- Real-time streaming of 3D point clouds and grayscale images
- Broad measuring range
- Daylight capability and IP67 protection for stable results under difficult conditions
- Low system requirements and costs

BASLER
the power of sight

OVERVIEW

Basler blaze Generates 3D Point Clouds of a Moment

The biggest benefit of time-of-flight cameras such as the Basler blaze is that they are compact and affordable, yet less complex than other 3D cameras. This makes it very easy to distinguish between objects within a scene - a key step to interpreting them. Beyond this, a time-of-flight camera requires neither contrast nor additional light to work, and can be used on the fly, as objects move past.

The Basler blaze camera with standard machine vision interface and high resolution records point clouds quickly and easily. This data is used to determine the shape, position and orientation of objects.

The measurement principle is based on the time the light needs to travel from the light source to the object and back to the camera. The further the distance, the longer the time. Both light source and image acquisition are synchronized in such a way that the distances can be extracted and calculated from the image data.

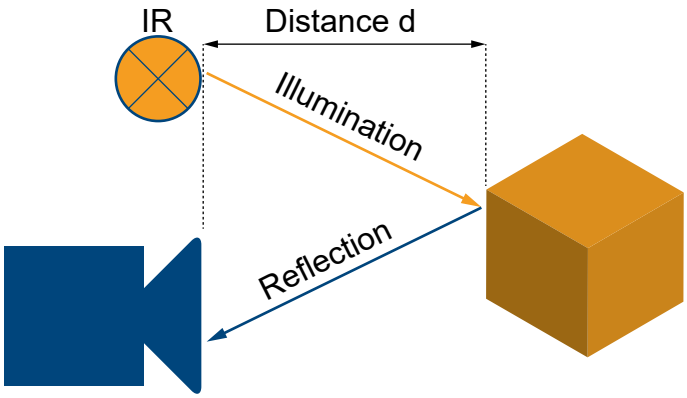
This measurement principle can also be found in the animal world. There, bats use ultrasound reflections for orientation. Our camera works the same way, but it uses light, not sound.

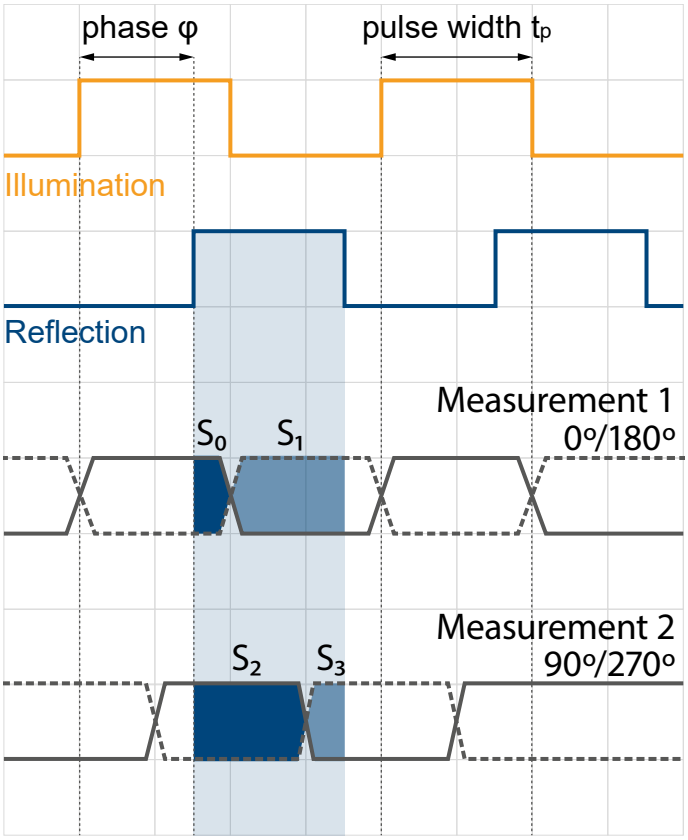
Powered by unique, cutting-edge Sony DepthSense™ sensor technology, this system achieves best in-class resolution while maintaining over nine million points per second, the XYZ coordinates and intensities of the light-reflecting surface for each pixel.

The combination of this geometrical and appearance data in one shot from one camera makes 3D imaging easy without sacrificing the 2D image potential. The camera is a compact and self-contained unit. This also makes the camera setup and integration process elementary for system manufacturers while reducing total system costs.

The integrated infrared light source is invisible and makes the camera independent of ambient light.

Over a broad range of 0 to 10 m, the Basler blaze camera delivers depth data for each of the 640 × 480 pixels, 30 times a second. It can achieve a depth accuracy of less than a few millimeters within a working range of 0.3 to 6 m. The opening angle of the lens is 60° horizontal and 45° vertical.





Distance d

$$\varphi = \arctan\left(\frac{S_1 - S_0}{S_3 - S_2}\right) \qquad d = c \cdot t_p \cdot \frac{\varphi}{2\pi}$$

Amplitude A

$$A = \tfrac{1}{2}\sqrt{(S_0 - S_1)^2 + (S_2 - S_3)^2}$$

Intensity I

$$I = S_0 + S_1$$

WHY BASLER BLAZE?

ACCURACY

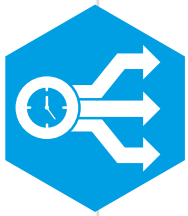
- 640 × 480 pixels
- Field of view 60° × 45°
- Working range from 0 to 10 m (30 m, non-ambiguity)
- 5 mm accuracy in 0.3 to 6 m, typical
- 2 mm temporal noise in 1.5 m, typical

ROBUST IP67 HOUSING

- Water and dust proof
- M12 connectors
- Shock and vibration proof
- No moving parts

AMBIENT LIGHT INDEPENDENT

- 940 nm Laser Diodes
- Invisible
- Daylight robust



MULTI-CAMERA OPERATION AND SYNCHRONIZATION

- No camera interference
- 4 ms exposure time
- Single software trigger or periodic
- PTP IEEE1588 synchronization

REAL-TIME CAPABLE

- 30 frames per second
- Low latency
- Low system requirements

COMPLIANT WITH INDUSTRY STANDARD

- GigE Vision
- GenICam

TYPICAL APPLICATIONS

Basler blaze can be used in a variety of applications. Predestined for these cameras are freight dimensioning, control of palletizing and mobile robots and counting objects.

Freight Dimensioning

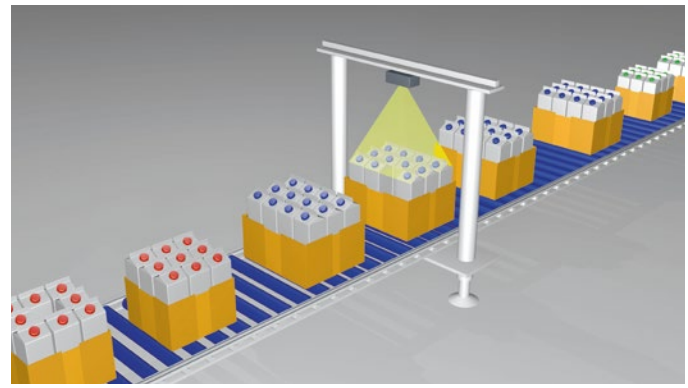
To plan and optimize the space and costs in a warehouse or transport vehicle, it is essential to know the weight but also the exact size of the pallets and parcels. The Basler blaze camera is ideal for size measurement tasks. Its precision, speed, robustness, compact size and Gigabit Ethernet interface are suitable for accurate, flexible, on-the-fly measurements wherever needed in your facility. If color is needed as well, you can combine and synchronize it with any of Basler's 2D cameras.

Autonomous Vehicles and Mobile Robots

Navigation, obstacle detection, docking and pick-up require a complete and detailed overview of the environment. The blaze camera captures the entire scene in real-time, at daylight or in darkness. Its compact and robust design facilitates an easy integration. The built-in, powerful processor minimizes the CPU load on the vehicle's embedded controller.

Palletizing

Next day delivery and mixed pallets require fast and versatile robots to stake any article tightly onto a pallet. Therefore, machine vision is required to guide the robot. The camera data is used to determine the shape, position and orientation of the pickable object and to find its best lifting point. Robustness, compact size and light weight allow its assembly on the robot arm.



Object Counting

Counting objects in a package for completeness can save you from an unsatisfied customer. For example, one shoe is not sufficient, three shoes are too many. For handy sized objects the blaze camera delivers perfect data to count them, independent of color and contrast. No additional light source is needed.

TECHNICAL DETAILS

Basler blaze	blaze-101
Sensor & Illumination	
Measuring Method	Time-of-Flight
Sensor	Sony DepthSense™ IMX556
Sensor Resolution	640 × 480 pixels
Field of View	60° × 45°
Working Range	0 – 10 m (30 m non-ambiguity)
Accuracy	5 mm in 0.3 – 6 m; typical
Temporal Noise	2 mm in 0.5 – 1.5 m; typical
Streaming Format	point cloud (XYZ); range map; intensity; amplitude
Frame Rate	30 fps
Latency	< 150 ms
Trigger	Over Ethernet; PTP IEEE1588 sync
Illumination	VCSEL; 940 nm; Laser Class 1
Sunlight Robustness	TBD
Software Development Kit	
Components	Viewer, driver, API, samples, user manual
Standards	GigE Vision, GenICam, GenTL
Operating System	Windows; Linux
Programming Language	C/C++ .Net
Electrical Interface	
Data Connector	IEC 61076-2-109; M12; 8-pin; x-coded; female
Power Connector	IEC 61076-2-101; M12; 8-pin; female
Power Supply	24 VDC ±10%; < 24 W mean; < 48 W peak
Housing	
Protection Class	IP67
Dimensions	100 × 81 × 68 mm (width × height × depth)
Weight	650 g
Mounting Points	tripod thread ; multiple M4 threads
Operating Temperature	0 – 50 °C
Conformity	
Emission & Immunity	CE; FCC; EN61000-6-4; EN55022; EN61000-6-2
Shock & Vibration	EN60068-2-27; EN60068-2-6; EN60068-2-64
Eye Safety	EN62471: low risk group; EN60825: laser class 1

Specifications are subject to change without prior notice.
Latest specifications and availability can be found on our website *baslerweb.com/blaze*.

OTHER INFORMATION

Dimensions (in mm)