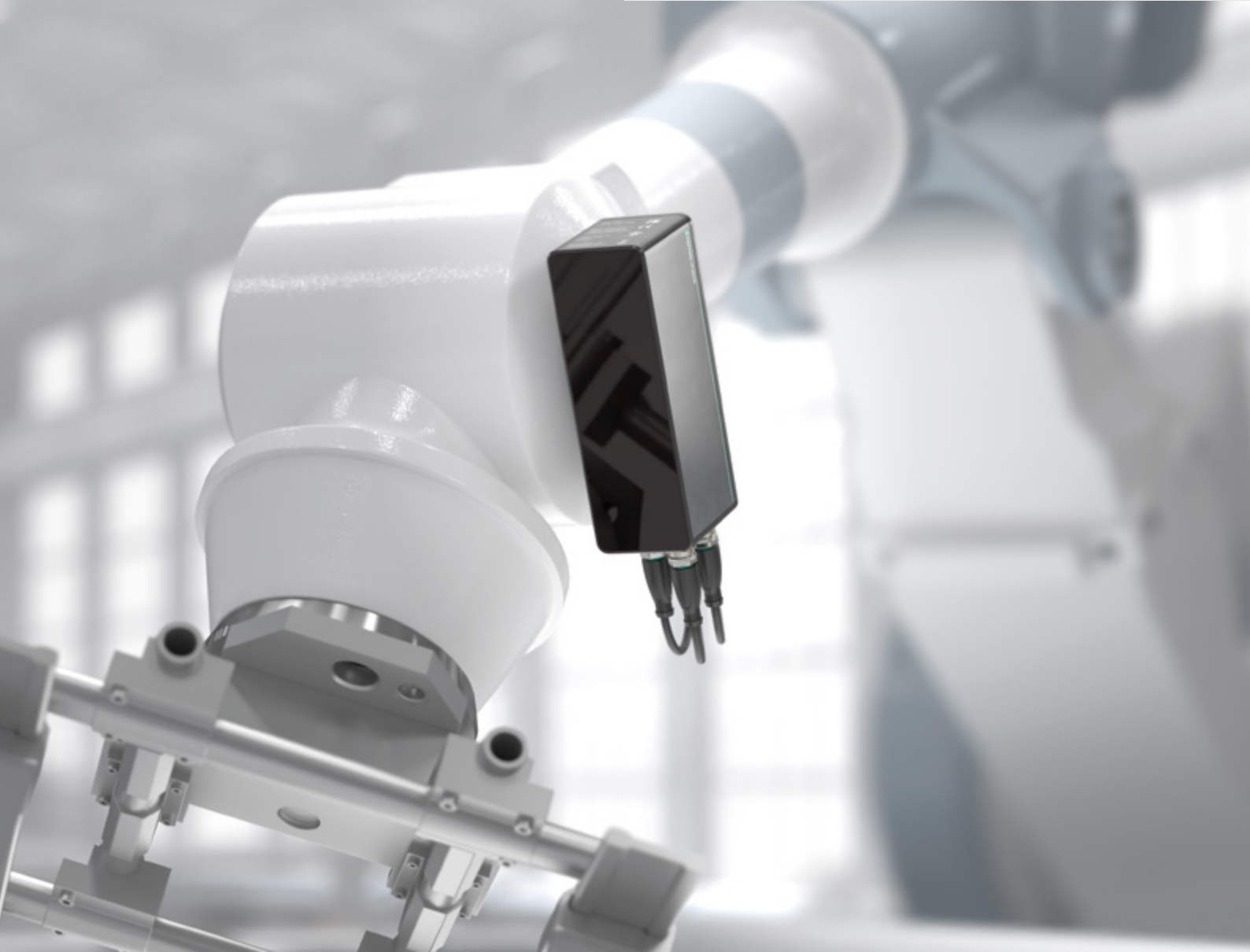# Infinite Possibilities.

At the speed of light into the third dimension of automation.

SmartRunner Explorer 3-D

Your automation, our passion.

3-D Vision Sensor

One Platform. Two Technologies. Infinite Possibilities.

Whether you need maximum precision at close range or the highest immunity to ambient light in outdoor applications—with individualized hardware and software, the SmartRunner Explorer 3-D raw data sensor is ready for any vision application.

The Appropriate Technology for Your Application

Precise object measurement on conveyor belts, reliable navigation of automated guided vehicles, or exact positioning of robots— the range of applications for 3-D vision sensors is versatile and therefore requires flexible sensor technology. The SmartRunner Explorer 3-D is not limited to one application. The open platform allows flexible adaptation to your requirements. With stereo vision and Time-of-Flight (ToF), there are two high-performance technologies to choose from, which can leverage their advantages depending on the application.

Maximum Precision is the New Standard

Precise measurement data enables optimal processes. Standardized data structure simplifies integration. Due to the high chip resolution, the raw data sensor converts objects and environments into highly accurate 3-D point clouds. Ex-factory calibration and the temperature-regulating aluminum housing guarantee reliable data acquisition. The standardized data structure and the uniform ViSolution user software facilitate integration into your systems—no matter which technology you have chosen.

Universal interfaces for simple application implementation

The output of raw data opens up endless possibilities for implementing individual applications. For the quick and easy use of this data, the SmartRunner Explorer 3-D offers the GenICam and ROS interfaces. They enable universal access to data and parameters as well as an almost infinite variety of available programming modules.

Highlights

- 3-D raw data sensor tailored to your application— with individualized hardware and software

- Stereo vision or Time-of-Flight—the right technology for every application

- Maximum precision through high chip resolution and temperature-regulating aluminum housing

- Intuitive commissioning with live data in the ViSolution user software

For more information, visit
pepperl-fuchs.com/pf-smartrunner3d

GEN<i>CAM

:::ROS industrial
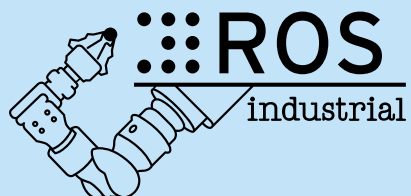
Maximum Precision in Short-Range Applications

Data Preprocessing Directly in the Sensor

Equipped with an integrated FPGA, the measurement data is processed directly in the sensor. This means that the 3-D data is provided immediately and does not have to be calculated externally at great expense. The images from two offset cameras are automatically superimposed and merged into a 3-D point cloud using a semiglobal block-matching process. An infrared pattern of 72,000 points points enables both images to be exactly superimposed and therefore guarantees maximum precision.

In addition, the operator can access live images and use them for quick and easy commissioning as well as error analysis. If required, these can also be recorded with integrated lighting.

Optimized for Inspection

With a resolution of 1.4 megapixels and a range of one meter, the SmartRunner Explorer 3-D with stereo vision technology is optimized for high-precision detection of objects at close range. Applications such as bottle inspection and counting or volume detection of amorphous masses are typical for this technology.

| Excerpt of Technical Data	SmartRunner Explorer 3-D Stereo
Type code	VSE*
Eye safety	Laser class 1
Operating frequency/object speed	Up to 10 Hz at full resolution/up to 1 m/s
Interface	Gigabit Ethernet TCP/IP
Dimensions	165 × 67 × 56 mm (W × H × D)
Ambient light suppression	> 20 klx
Raw image size	1,300 × 1,080 pixels
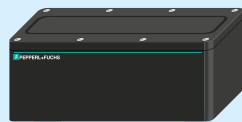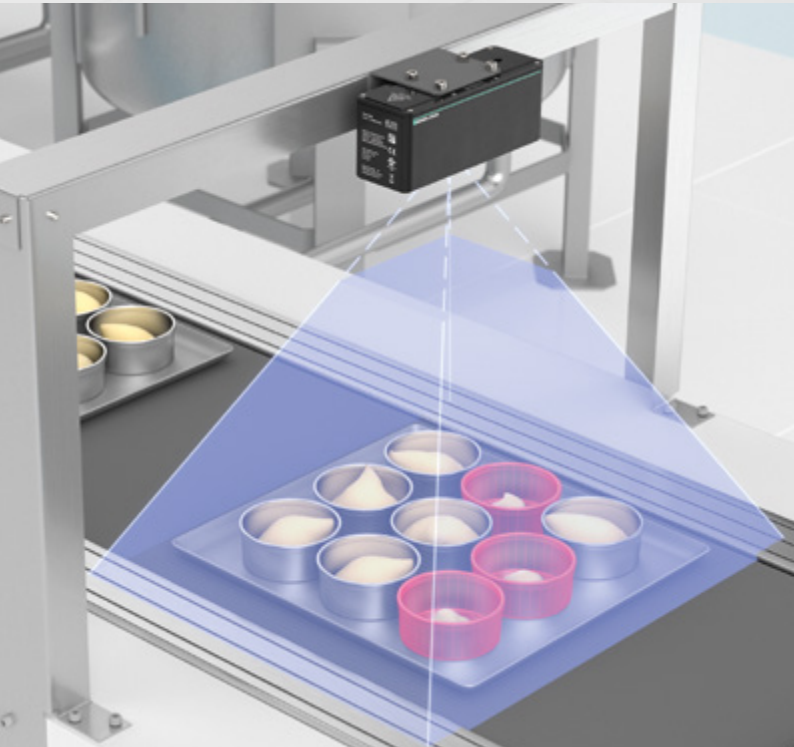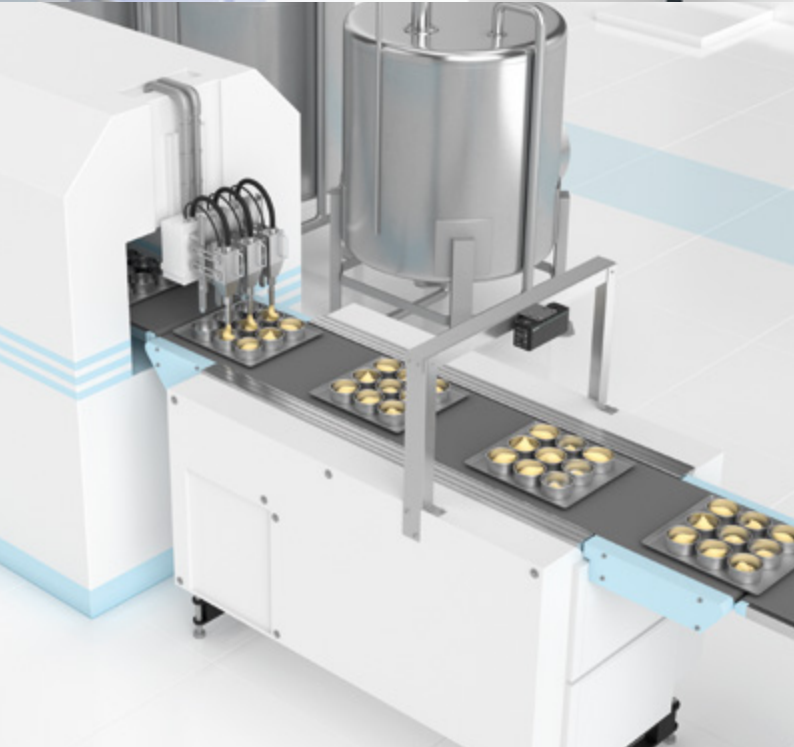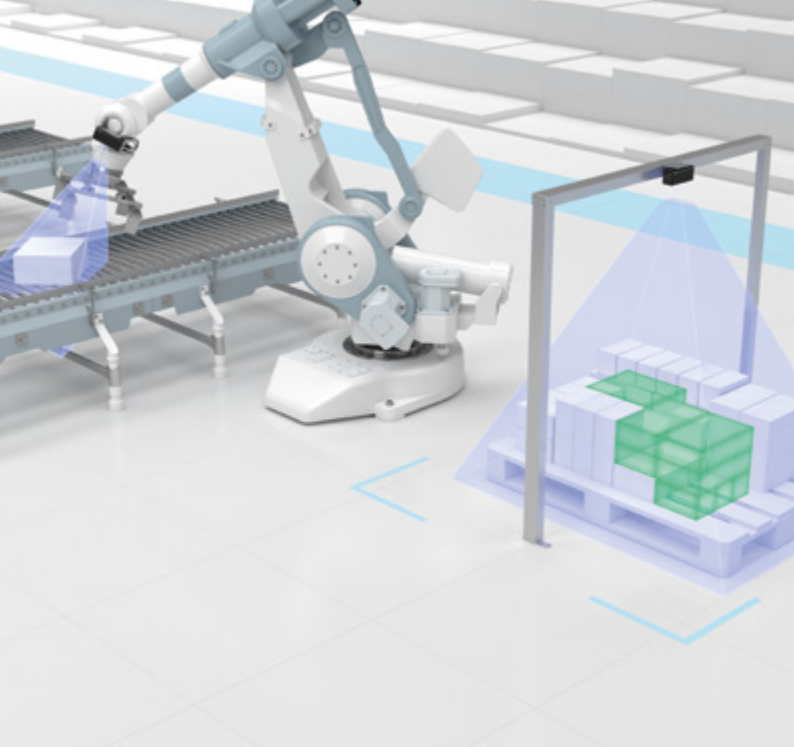
Typical values distance 600 mm
Reading window: X = 400 mm, Y = 350 mm
Resolution: X = 0.35 mm, Y = 0.35 mm, Z = 0.5 mm

600 mm

Typical values distance 900 mm
Reading window: X = 550 mm, Y = 500 mm
Resolution: X = 0.5 mm, Y = 0.5 mm, Z = 1 mm

900 mm

High Reliability at Long Range
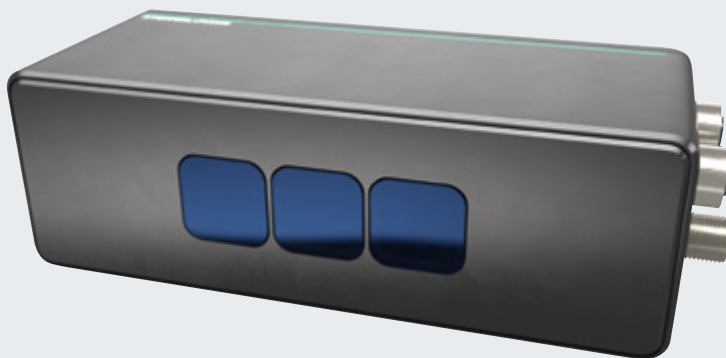
Optimized for Fast Processes

With a measuring rate of 30 Hz, the SmartRunner Explorer 3-D with Time-of-Flight technology guarantees maximum reliability even in fast processes. Due to the special four-phase measurement, objects are precisely detected even at a distance of ten meters and converted into 3-D data. Due to the 940 nanometer infrared light, the sensor is also very resistant to ambient light and can therefore be used in outdoor applications.

Typical use is in automated guided vehicles. Obstacles in the travel path can be reliably detected and avoidance routes calculated. The measurement of objects or the detection of pallet recesses in automated forklifts are also no problem with this high-performance technology.

Excerpt of Technical Data	SmartRunner Explorer 3-D ToF
Type code	VTE*
Eye safety	Laser class 1
Operating frequency/object speed	Up to 30 Hz at full resolution/up to 1 m/s
Interface	Gigabit Ethernet TCP/IP
Dimensions	165 × 67 × 56 mm (W × H × D)
Ambient light suppression	> 100 klx
Raw image size	640 × 480 pixels
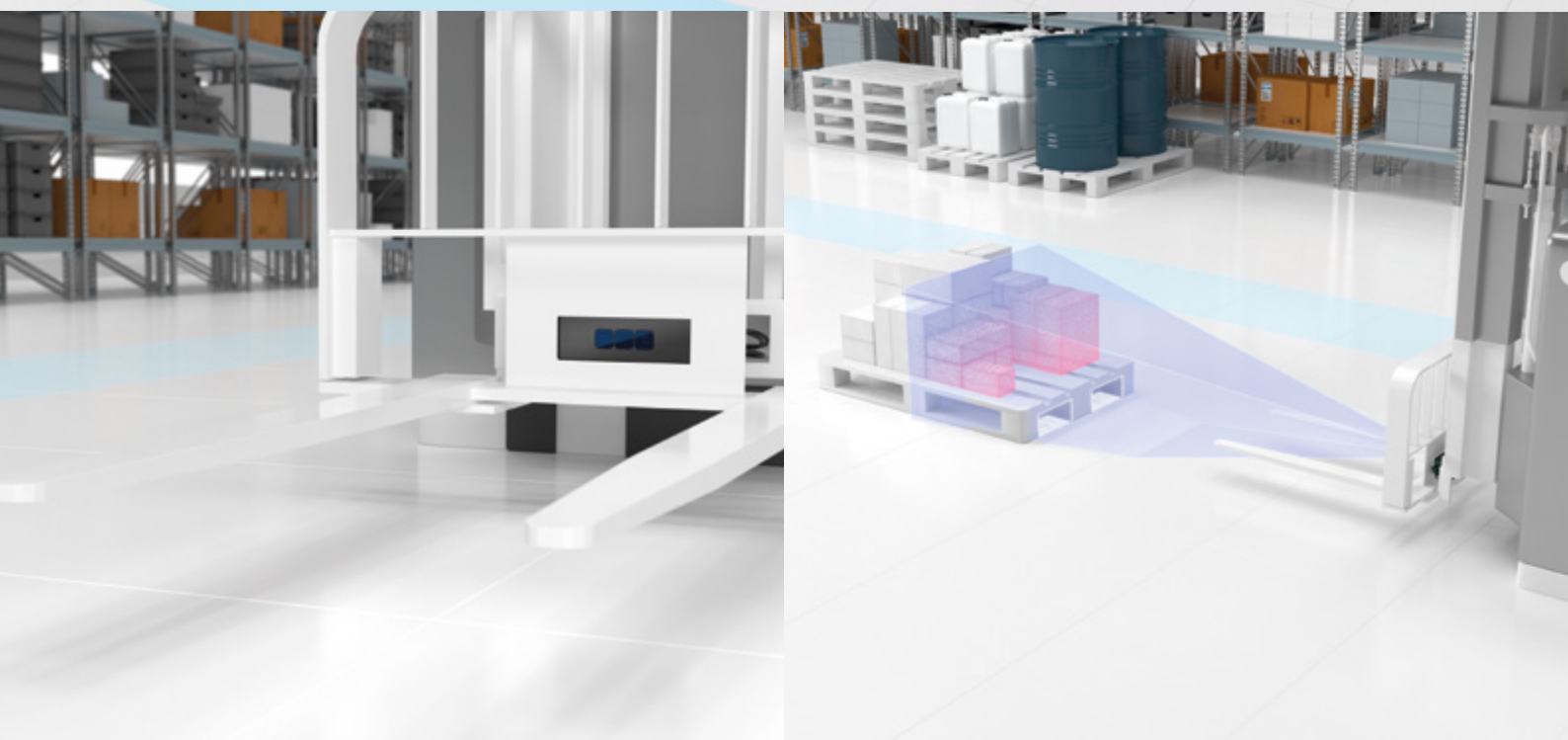
A: ± 2.5 mm
B: 440 × 330 mm
C: 0.7 mm
D: 2 mm

A: ± 12.5 mm
B: 2,200 × 1,650 mm
C: 3.5 mm
D: 10 mm

A: ± 40 mm
B: 6,600 × 4,950 mm
C: 10.5 mm
D: 31 mm

1,000 mm

5,000 mm

10,000 mm

500 mm

2,500 mm

7,500 mm

Working distance

A: ± 5 mm
B: 880 × 660 mm
C: 1.5 mm
D: 4 mm

A: ± 25 mm
B: 4,400 × 3,300 mm
C: 7 mm
D: 20 mm

Opening angle: 47° × 35°

Typical values

A: Depth resolution
B: Image window size X, Y

C: Resolution X, Y
D: min. object size

Your automation, our passion.

- Industrial Sensors

- Industrial Communication and Interfaces

- Enterprise Mobility

- Hazardous Area Products and Solutions

Pepperl+Fuchs Quality
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