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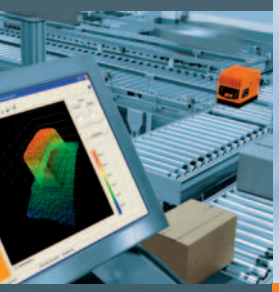
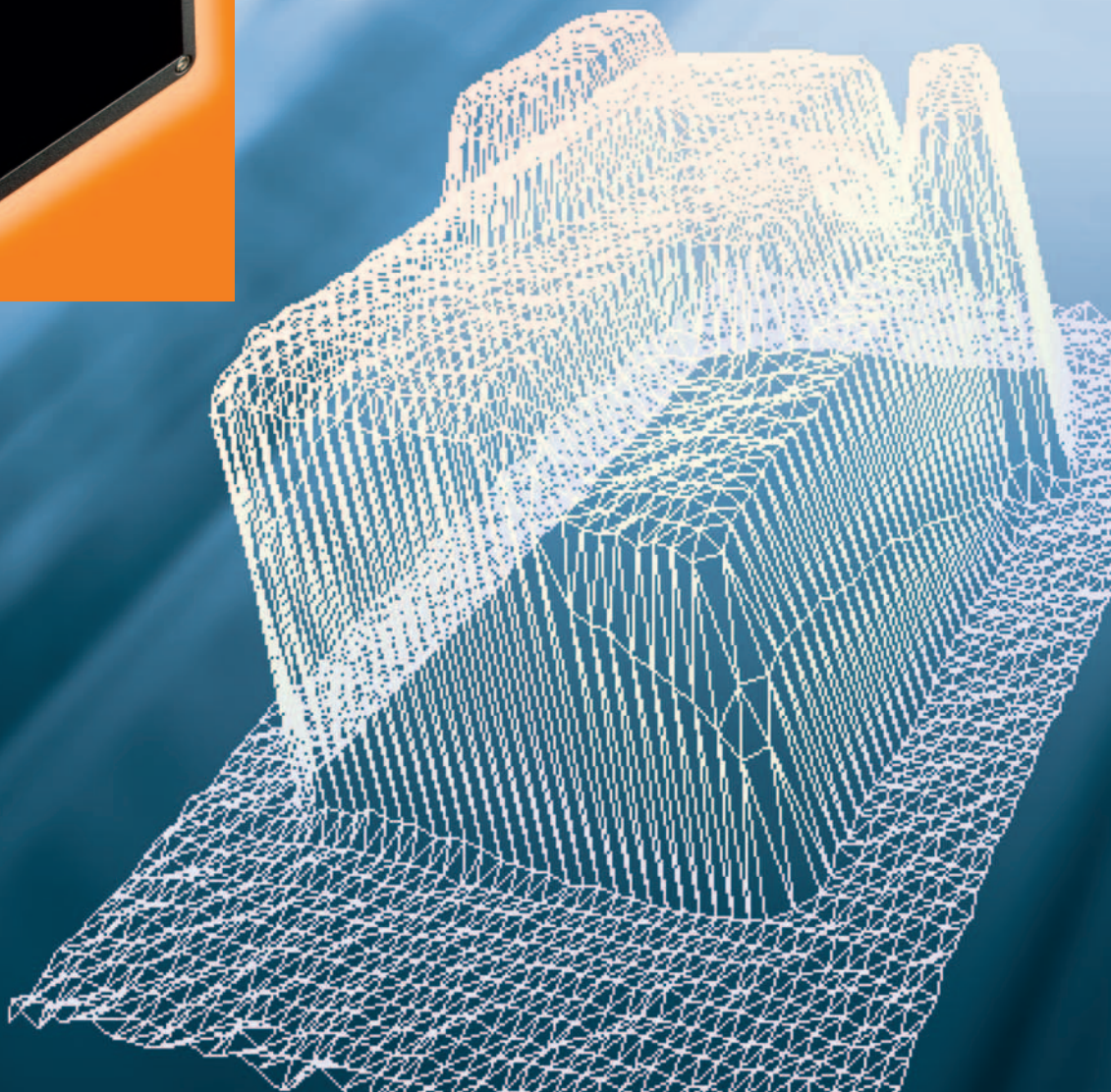


The third dimension at a glance.

Visual assessment of distance, level or volume. The new 3D vision sensor.

efector pmd3d



Object recognition

www.ifm.com/gb/pmd3d

For industrial applications

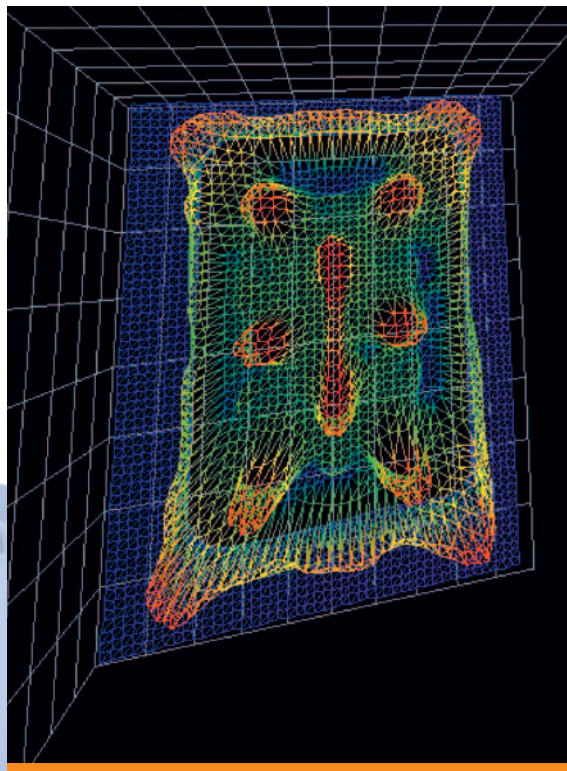
A quantum leap in optoelectronics.

Three-dimensional vision.

efector ***pmd 3d*** *is the first industrial 3D sensor that can detect objects in three dimensions at a glance. The time of flight measurement principle enables an unimagined variety of application solutions. In conventional systems, either the object or the sensors must be in motion in order to obtain several measurement points of an object.*

The innovation: the measurement and the evaluation of the time of flight are integrated on one sensor chip. The sensor chip has 64 x 48 pixels. In addition to the reflectivity, each pixel of this chip matrix evaluates its distance to the object.

This results in 3072 distance values at the same time. The image of the object on the chip matrix and the respective distance values correspond to a 3D image. These measurement points of the 3D image enable distance-independent assessment of the characteristics of the object or the scene. They form the basis for the three evaluation modes volume, distance and level, serving as solutions for different applications.



Calculation of volumes.

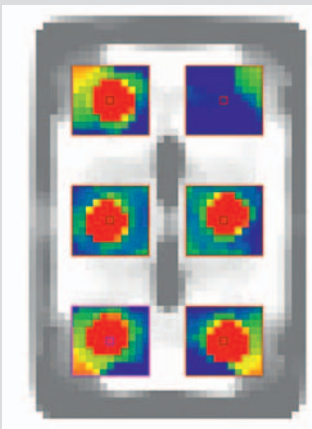
Volume: irrespective of the distance between sensor and object, ***efector*** ***pmd 3d*** *determines the volume of any object.*

Areas of application: control of the loading and filling condition of outer packaging or trays.

Example bread baking pan: dynamic processes in conveyor lines can be detected as well. The different pans are monitored for underfill or overfill.

Example crate: the sensor moreover enables subdivision of the field of view into separate windows. Areas of no interest can be ignored and relevant areas can be inspected in detail.

Up to 64 windows can be monitored for the same adjustable threshold. The missing bottle in this case triggers a switching signal.



The third dimension at a glance.

Unique:
efector pmd 3D – the first industrial 3D sensor that can detect objects in three dimensions at a glance.

Award winning:
The sensor operates on the principle of time of flight measurement, based on PMD technology.

Precise:
The resolution of 64 x 48 pixels results in 3072 distance values per measurement for the detailed assessment of the application.

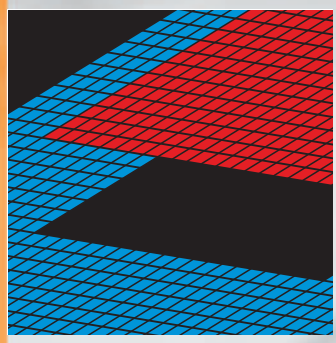
Versatile:
Visual assessment of distance, level or volume.

Independent:
Illumination, time of flight measurement and evaluation integrated in an industrially compatible housing.

Easy:
Switching outputs and analogue outputs for the simple integration into the control environment.

Easy handling:
intuitive user interface.

All-rounder:
In conveying, packaging industry and level applications.

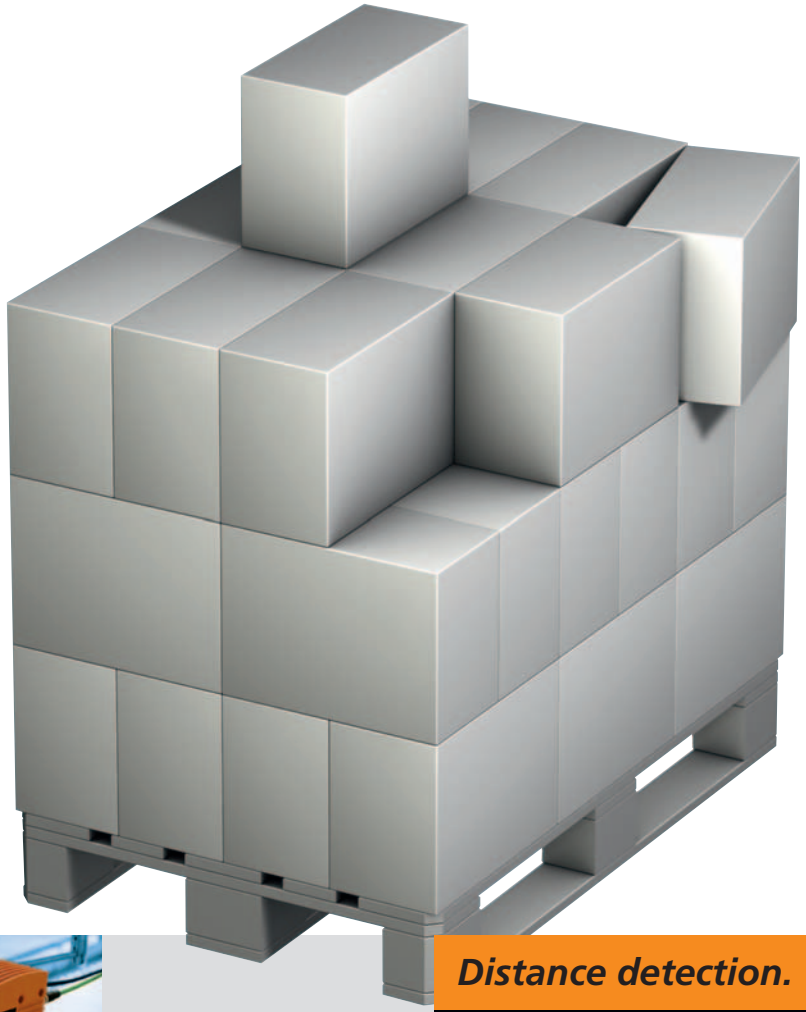


Object detection in three dimensions.

Measuring range / distance [cm]	Field of view [cm]		Minimum object surface [cm]	Repeatability (6 Sigma) of the distance values of an individual pixel [cm]*	
	Length	Width		Grey (18 %)	Black (6 %)
100	85	60	2.5 x 2.5	± 4 mm	± 10 mm
200	170	115	5 x 5	± 8 mm	± 24 mm
300	250	170	8 x 8	± 15 mm	± 45 mm
400	340	230	10.5 x 10.5	± 25 mm	± 75 mm
500	420	290	13 x 13	± 40 mm	
600	500	345	16 x 16	± 60 mm	

*factory settings at 15 Hz

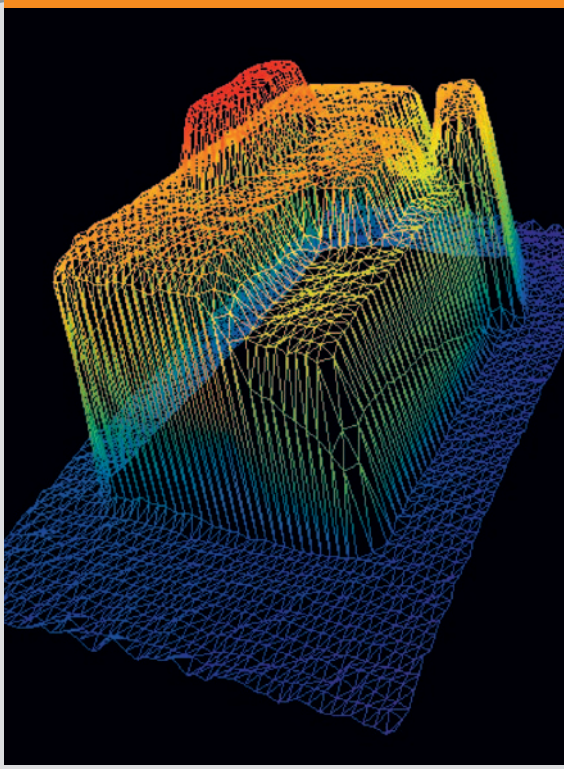
efector pmd 3d

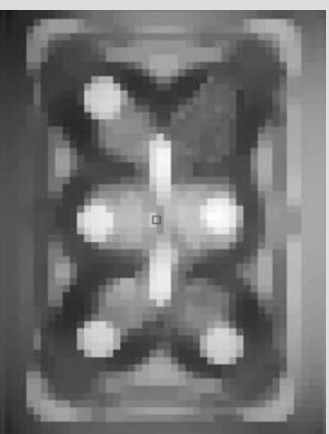


Example Euro pallet: if the 3D sensor is installed about 1.5 m above the maximum stack height, overlapping parts can be detected in addition to overfill and underfill.

Example conveying technology: navigation support or collision avoidance on AGVs; use in parcel sorting systems.

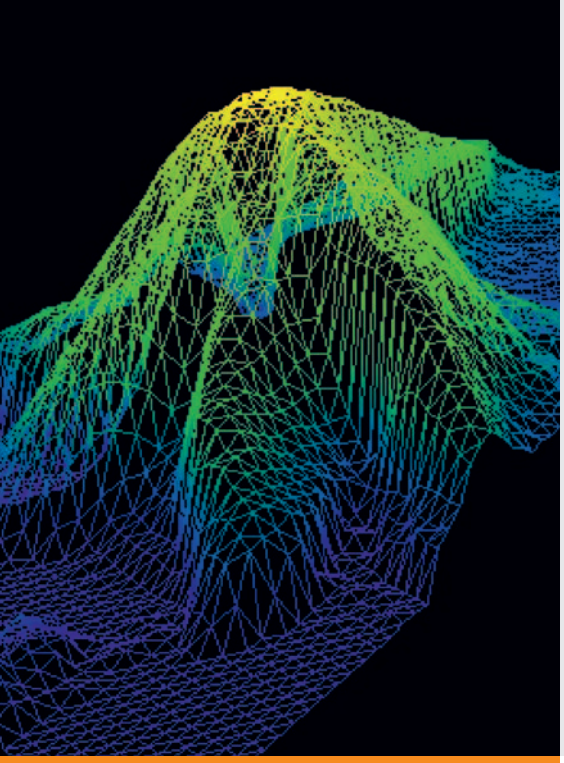
Distance detection.





Distance: with the 3D sensor, the measurement of distances from irregular surfaces is no longer a challenge. 3072 precise distance values replace a multitude of standard photoelectric sensors.
***efector pmd 3d** also is a clever alternative to ultrasonic sensors, photoelectric distance sensors or laser scanners.*

Application examples: filling status of shelves, pallets or stacks. Navigation support or collision avoidance on AGVs.



Level assessment.

Level: the sensor determines the level above the previously defined background in the search zone. The shape of the bulk material does not matter.

Areas of application: level measurement of bulk material such as grains or granulates in silos. Control of the correct filling of packaging in the food industry.

Level measurement irrespective of shape, colour or material. Whether coffee powder, grain or small plastic parts.

Technical data efector *pmd 3d*

Application area		**Visual assessment of distance, level or volume**
Electrical design		**PhotonICs® PMD, resolution: 64 x 48 pixels**
Order no.		**O3D200**
Sampling rate / switching frequency	[Hz]	max. 25, adjustable
Unambiguous ranges	[m]	6.5 (single frequency mode) / 48 (dual frequency mode)
Illumination		infrared (850 nm)
Operating voltage	[V]	24 DC (± 10 %)
Current consumption	[mA]	< 1000 (max. 2500)
Short-circuit protection, pulsed		•
Overload protection		•
Operating temperature	[°C]	-10...50
Protection		IP 67, III
Dimensions	[mm]	122 x 75 x 95
Materials		Housing: aluminium; lens window: polycarbonate; LED window: polycarbonate
Connections		external trigger; max. 2 switching inputs / outputs; analogue output (configurable)
Parameter setting options		via PC / notebook or 10-segment display and two pushbuttons
Parameter setting interface		Ethernet 10Base-T / 100Base-TX

Accessories (selection)

Description	Order no.
Switched-mode power supply 24 V DC / 2.5 A	**DN2011**
Operating software for O3D	**E3D200**
Mounting set for rod mounting Ø 12 mm	**E3D103**
Mounting rod, 100 mm, Ø 12 mm, M10 thread, stainless steel	**E20938**

Sockets

Description	Order no.
2 m PUR, M12 straight, 8 poles	**E11950**
5 m PUR, M12 straight, 8 poles	**E11807**
10 m PUR, M12 straight, 8 poles	**E11311**
Parameter setting cable, 2 m, M12 D-coded / RJ45, cross-link	**E11898**

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Fluid sensors and diagnostic systems
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- Flow sensors
- Pressure sensors
- Temperature sensors
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- Evaluation systems, power supplies
- Connection technology

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