



The new Dualis: Inspect, measure and control objects



Vision sensors

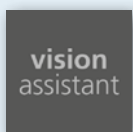
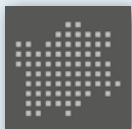


**2D vision sensor ensures
process and object quality**

**Surface and contour detection
for targeted robot arm
navigation**

**User-friendly software
simplifies set-up**

**Reliable functioning in
changing light conditions**




Versatile and indispensable

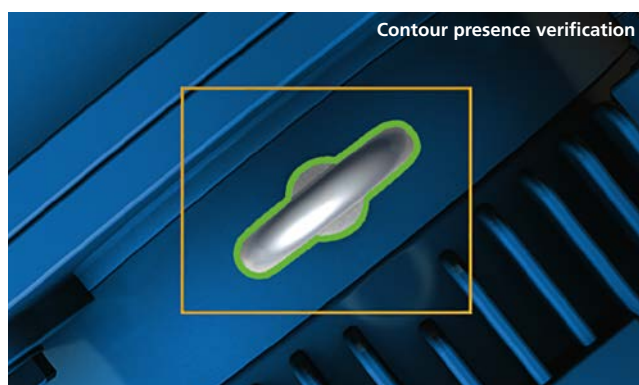
Missing retaining clips, too much adhesive, a toothed wheel that is too small: The new Dualis detects objects and uses the surfaces, contours, dimensions and distances to each other to check whether the quality of the object or the process step is correct. The Dualis also reliably assumes the precise control of robot arms to an object - this makes it a versatile sensor that is indispensable in processes with low error tolerances.

The new Dualis is set up with the user-friendly ifm Vision Assistant software. Four wizards support the user in setting up the most common applications: Surface analysis, contour detection, object dimensioning and robot navigation can be completed – individually or in combination – with just a few clicks.



Type	Description	Interface	Illumination	
			infrared	RGB-W
			Order no.	Order no.
	Standard lens, angle of view 16°	EtherNet/IP, TCP/IP	O2D520	O2D500
	Wide-angle lens, angle of view 30°	EtherNet/IP, TCP/IP	O2D522	O2D502
	Telephoto lens, angle of view 10°	EtherNet/IP, TCP/IP	O2D524	O2D504
	Standard lens, angle of view 16°	PROFINET, TCP/IP	O2D530	O2D510
	Wide-angle lens, angle of view 30°	PROFINET, TCP/IP	O2D532	O2D512
	Telephoto lens, angle of view 10°	PROFINET, TCP/IP	O2D534	O2D514

Simply solve your application step by step:



A contour presence verification wizard supports you in solving simple contour presence checks. Even inexperienced users can set up the application within 2 minutes.

Robot sensor calibration

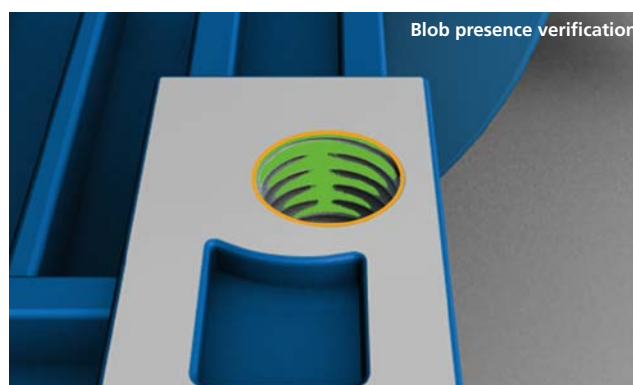
The Robot sensor calibration wizard enables precise control of an object by a robot arm. By means of marker calibration, the coordinate systems of the sensor and the robot are precisely adapted to each other.

Measurement

The wizard for measurement allows determination of contours and surfaces of objects. These can be set in relation to each other and their distance determined as absolute values.

User-defined mode

With the user-defined mode more complex applications with combinations of all functions can be solved.



Using the blob presence verification wizard, you can easily set up an application to analyse blobs. Blobs are contiguous pixels that form an area. These areas can be checked for their size, shape or other properties.

Many options for perfect quality control

The Dualis is available with infrared or RGB-W illumination. The latter makes it possible to distinguish objects by their colour. Highly reflective objects can also be detected easily thanks to the polarisation filter.

In strongly fluctuating light conditions, it takes up to 5 images with different exposure times and then selects the optimally illuminated image for quality control.

Thanks to the daylight filter, the Dualis is extremely resistant to extraneous light.

Fast replacement thanks to memory stick

The Dualis is equipped with an ifm memory stick on which the parameters and settings are stored. In the event of a device replacement, the stick can be used to easily transfer the data to the new Dualis.

Simple connection to robots

The ProfiNet version with an L-coded connector for power supply facilitates direct connection to industrial robots.



Industrial imaging

Automated collision warning for mobile machines



Camera systems for mobile machines

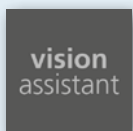
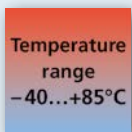
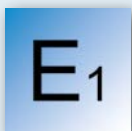


Simple application solutions thanks to preprocessed 3D data

Easy integration via predefined CODESYS function blocks

Patented PMD Time of Flight technology for quick distance detection

Intuitive logic editor for programme creation up to trigonometric functions



Mobile O3M 3D Smart Sensors

3D detection of surroundings and objects around mobile machines is already standard for future-oriented and efficiently operating vehicles. Whether vehicle automation or reliable collision warning – with the integrated functions and the intuitive logic editor, many applications can be solved quickly.

Communicative

The simple connection of the 3D smart sensors is carried out via the CAN bus for mobile applications using the CANopen or SAE-J1939 protocol and/or via the fast Ethernet interface using UDP. Digital and analogue inputs/outputs are also available via an optional I/O module.



Type of sensor	Pixel resolution [pixel]	Horizontal x vertical angle of aperture [°]	Illumination	Max. frame rate [Hz]	Order no.
----------------	-----------------------------	---	--------------	-------------------------	--------------

PMD 3D sensor · Type O3M · M12 connector

PMD 3D chip	64 x 16	70 x 23	ext. system illumination unit required (O3M950)	25/33/50	O3M151
PMD 3D chip	64 x 16	95 x 32	ext. system illumination unit required (O3M960)	25/33/50	O3M161
PMD 3D chip	64 x 16	97 x 44	ext. system illumination unit required (O3M970)	25/33/50	O3M171

Features and benefits

Powerful 3D Time of Flight measurement (ToF)

The principle of these 3D sensors is based on ifm's patented and award-winning PMD technology. It was specifically designed for outdoor use and difficult ambient light situations. Even interference such as sunlight or materials with different reflective characteristics do not influence the repeatability of the measured data.

Smart functions

The mobile 3D smart sensors integrate functions which enable a multitude of applications to be solved. A highly developed algorithm from the automotive industry is used ensuring, for example, reliable automatic object recognition of up to 20 objects. This function can, for example, be used as collision warning in airports during the automated docking of gangways to aircrafts, during grape harvesting with automatic line guidance along the grape row or as a collision warning on construction machines, mining vehicles or industrial trucks, e.g. forklifts.

For simple distance tasks typical functions such as minimum / maximum / average distance are available.

System parameter setting and monitoring

The parameter setting of the system and live monitoring of the 3D data are carried out via the easy-to-use ifm vision wizard for Windows. As an alternative, parameter setting can also be carried out via function blocks using the software CODESYS.

Communication interfaces

The preprocessed function data is output via the CAN bus using CANopen or SAE J 1939. If needed, the complete 3D information can be processed via Ethernet UDP and an external process unit.

Digital and analogue inputs/outputs are also available via the optional ZZ1102 I/O module.

Further technical data

Housing material	die-cast aluminium
Device connection	M12 connector
Protection rating, protection class	IP 67 / IP 69K, III
Operating voltage	[V DC] 9...32
Current consumption sensor	[mA] < 400
Current consumption system illumination unit	[A] < 5
Ambient temperature	[°C] -40...85
Interfaces	1 x CAN, 1 x fast Ethernet
Supported CAN protocols	CANopen, SAE J 1939
Standards and tests (extract)	CE, E1 (UN-ECE R10)

Accessories

Type	Description	Order no.
	IR system illumination unit (850 nm) Angle of aperture [°] 70 x 23	O3M950
	IR system illumination unit (850 nm) Angle of aperture [°] 95 x 32	O3M960
	IR system illumination unit (850 nm) Angle of aperture [°] 97 x 44	O3M970
	CAN/RS232 USB interface CANfox	EC2112
	Adapter cable set for CANfox	EC2114
	U-shaped bracket, suitable for sensor or illumination unit	E3M102

Connection technology

	MCI connection cable, connection sensor / system illumination unit, 0.25 m	E3M120
	MCI connection cable, connection sensor / system illumination unit, 2 m	E3M124
	M12 connection cable, voltage supply System illumination unit, 2 m, PUR cable	E3M131
	M12 connection cable, voltage supply System illumination unit, 10 m, PUR cable	E3M133