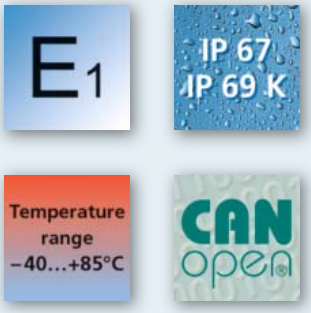
True 3D vision sensor with intelligent functions

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**
- **Optimised for reliable outdoor use with IP 67 and IP 69K**
- **Angle of aperture up to 95°**



Mobile 3D smart sensors O3M

The 3D detection of scenes and objects, already a standard on the factory floor, is ready for mobile machines. Apart from new possibilities for vehicle automation (AGV, automatic guided vehicles) this results in new assistance functions for automation tasks.

Different integrated functions configurable via the Windows software are available as standard.

The simple connection of the 3D smart sensors is carried out via the CAN bus for mobile applications using the CANopen or SAE J 1939 protocol and/or via the fast Ethernet interface using UDP.

Type of sensor	Resolution pixels [pixel]	Angle of aperture horizontal x vertical [°]	Illumination	Max. sampling rate [Hz]	Order no.
PMD 3D sensor · Type O3M · M12 connector					
PMD 3D chip	64 x 16	70 x 23	ext. illumination required **(O3M950)**	25/33/50	**O3M151**
PMD 3D chip	64 x 16	95 x 32	ext. illumination required **(O3M960)**	25/33/50	**O3M161**

Functions and advantages

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.

Powerful electronics

The integrated 2 x 32-bit processor architecture ensures a rapid and reliable calculation of the 3D data and functions directly integrated in the system with up to 50 fps. The complete electronics of the mobile 3D smart sensor is optimised and adapted to the demands and requirements of mobile machines.
Besides shock and vibration resistance self-diagnostic functions from the sensor to the IR system illumination unit are of course also available.

Smart functions

The mobile 3D smart sensors integrate some 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.
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 at the same time via Ethernet UDP and an external process unit.

Further technical data Smart sensors O3M151, O3M161		
Housing material		diecast 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		1x CAN, 1 x fast Ethernet
Supported CAN protocols		CANopen, SAE J 1939
Standards and tests (extract)		CE, E1 (UN-ECE R10)

Accessories

Description	Order no.
IR system illumination unit (850 nm) for mobile 3D sensors, angle of aperture 70 x 23	**O3M950**
IR system illumination unit (850 nm) for mobile 3D sensors, angle of aperture 95 x 32	**O3M960**
CAN/RS232 USB interface CANfox	**EC2112**
Adapter cable set for CANfox	**EC2114**
Operating software for vision sensors	**E3D300**
U-shaped holder, suitable for sensor or illumination unit	**E3M100**

Connection technology

Type	Description	Order no.
	MCI cable, connection sensor / system illumination unit, 1 m	**E3M121**
	MCI cable, connection sensor / system illumination unit, 2 m	**E3M122**
	M12 socket, voltage supply system illumination unit, 2 m, PUR cable, 4 poles	**E3M131**
	M12 socket, voltage supply system illumination unit, 10 m, PUR cable, 4 poles	**E3M133**
	Ethernet, cross-over patch cable, 2 m, PVC cable, M12 / RJ45	**E11898**
	Ethernet, cross-over patch cable, 10 m, PVC cable, M12 / RJ45	**E12204**

ifm article no. 78002294 · We reserve the right to make technical alterations without prior notice. · 04/2016