



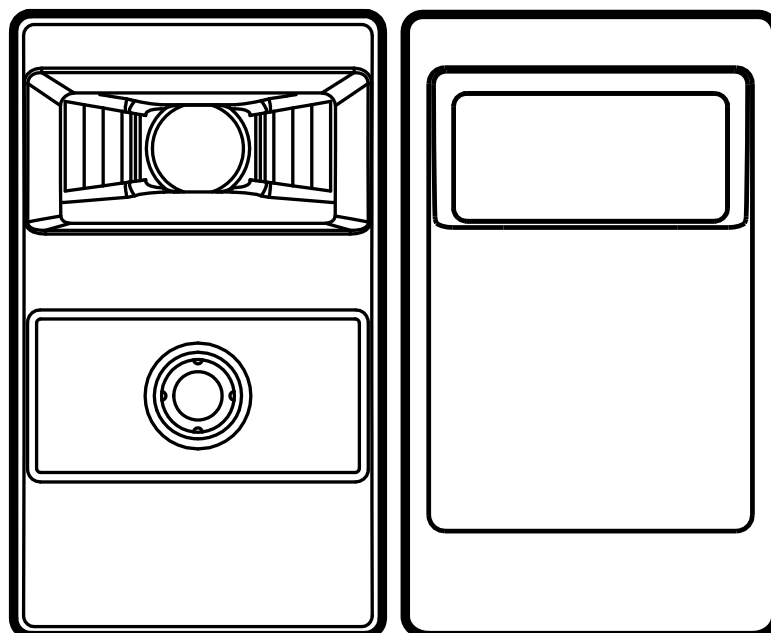
Brief instructions  
Mobile 3D (Smart) Sensor / Camera

**O3M1xx**

**O3M2xx**

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80258595/00 04/2020



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## 1 About these instructions

This document is intended for specialists. These specialists are people who are qualified by their appropriate training and their experience to see risks and to avoid possible hazards that may be caused during operation or maintenance of the device. The document contains information about the correct handling of the device.

Read this document before use to familiarise yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

For a detailed description of the device please read the operating instructions and the programming manual.

### 1.1 Symbols used

- ▶ Instructions
- > Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note  
Non-compliance may result in malfunction or interference.
-  Information  
Supplementary note

### 1.2 Warnings used

**NOTE**

Warning of damage to property.

## 2 Safety instructions

These instructions are part of the device. They contain texts and figures concerning the correct handling of the device and must be read before installation or use.

Note the safety instructions. Use the device as intended.

The installation and connection must comply with the applicable national and international standards. Responsibility lies with the person installing the device.

Only the signals indicated in the technical data or on the device label may be supplied to the connections or wires.

### 3 Functions and features

The Mobile 3D (Smart) Sensor / Camera is a photoelectric sensor measuring the distance between the sensor and the nearest surface point by point.

The sensor operates as a system with the illumination unit. The illumination unit illuminates the scene and the sensor processes the light reflected from the surface.

The processed data is used to describe the captured scene three-dimensionally. The data is provided via Ethernet. The device parameters are set via a CAN interface.

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### 4 Items supplied

- Mobile 3D (Smart) Sensor / Camera
- Brief instructions



The sensor is supplied without illumination unit, installation and connection accessories and software.

### 5 Accessories

The following accessories are needed for the operation of the device:

Description	Art. no.
Illumination unit	O3M950 / O3M960 / O3M970
MCI connection cable between sensor and illumination unit	E3M121 (alternatives: E3M122, E3M123)
Power supply cable for illumination unit	E3M131 (alternatives: E3M132, E3M133)
Sensor cable for CAN bus and power supply	E11596 (alternatives: E11597, EVC492 incl. terminating resistor)
M12 industrial Ethernet connection cable	E11898
Optional for O3M2xx: 2D connection cable	E3M151 (alternatives: E3M152, E3M153, E3M154)

The following accessories are needed for the set-up of the device:

Description	Art. no.
ifm Vision Assistant parameter setting software	E3D300
CAN USB interface "CANfox"	EC2112
CANfox adapter cable	EC2114



The ifm Vision Assistant software is available free of charge at our website:

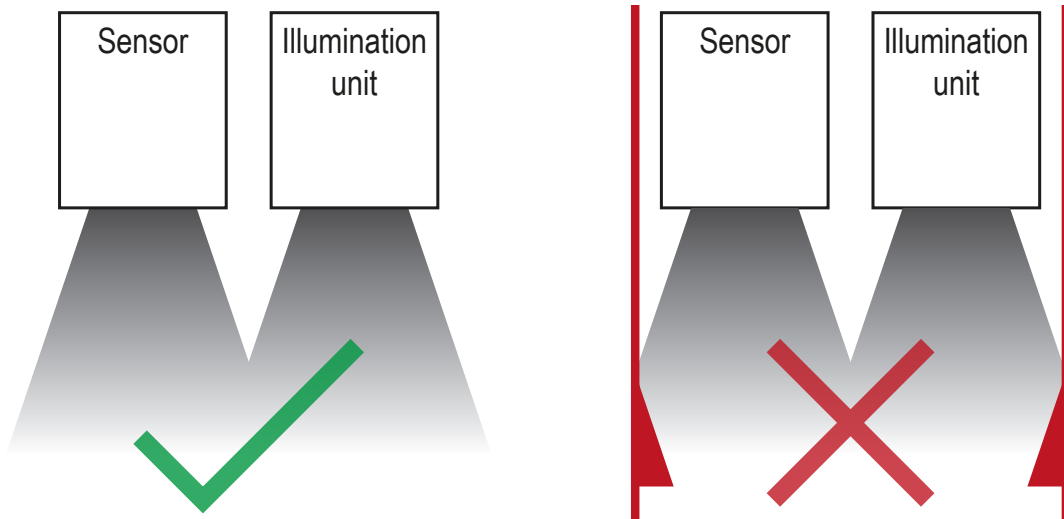
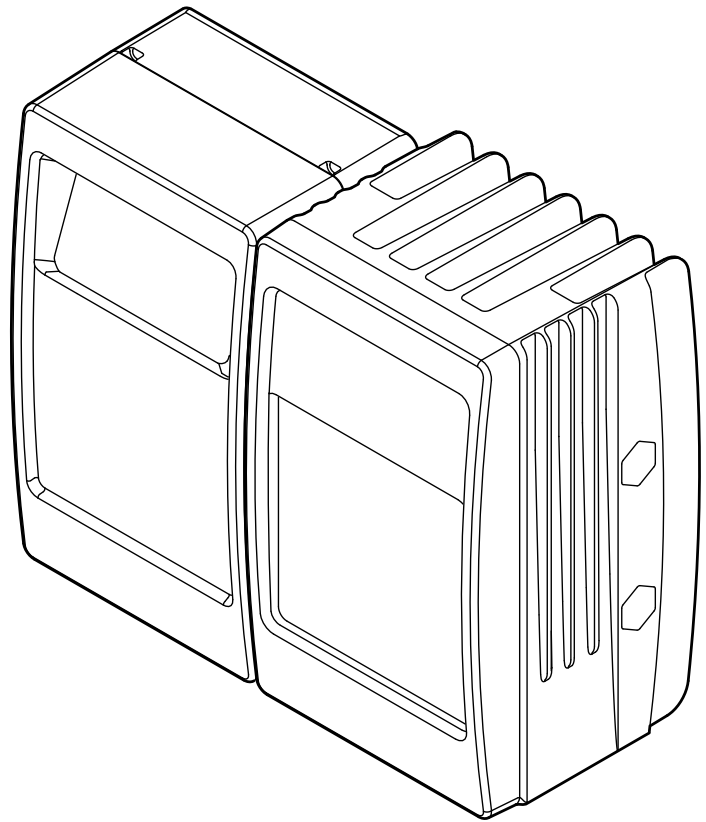
[www.ifm.com](http://www.ifm.com) → Service → Downloads

## 6 Installation

The Mobile 3D (Smart) Sensor / Camera is operated as a system together with the illumination unit.

During installation note the following:

- ▶ Operate sensor and illumination unit in combination.
- ▶ Install sensor and illumination unit between 0 and 2.80 m apart.
- > Select the matching MCI connection cable depending on the distance.
- ▶ Keep the area illuminated by the illumination unit free from any obstructions in a close range (up to 50 cm, see figure below).
- ▶ Use cables with strain relief.



### 6.1 Mounting accessories

Depending on the intended installation location and type of mounting the following mounting accessories are available:

Description	Art. no.
Mounting set U-shaped (U-shaped fixture, adjustable for types O3Mxxx)	E3M100
Mounting set U-shaped, black (U-shaped fixture, adjustable for types O3Mxxx)	E3M102

Description	Art. no.
Mounting set for rod mounting Ø 14 mm (clamp and bracket for type O3Mxxx)	E3M103
Rod straight Ø 14 mm, length 130 mm, M12	E20939
Rod, angled Ø 14 mm, length 200 mm, M12	E20941

You can find more information about the accessories at: [www.ifm.com](http://www.ifm.com)

## 7 Electrical connection

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### NOTE

The unit must be connected by a qualified electrician.

Device of protection class III (PC III)

The electric supply must only be made via PELV circuits.

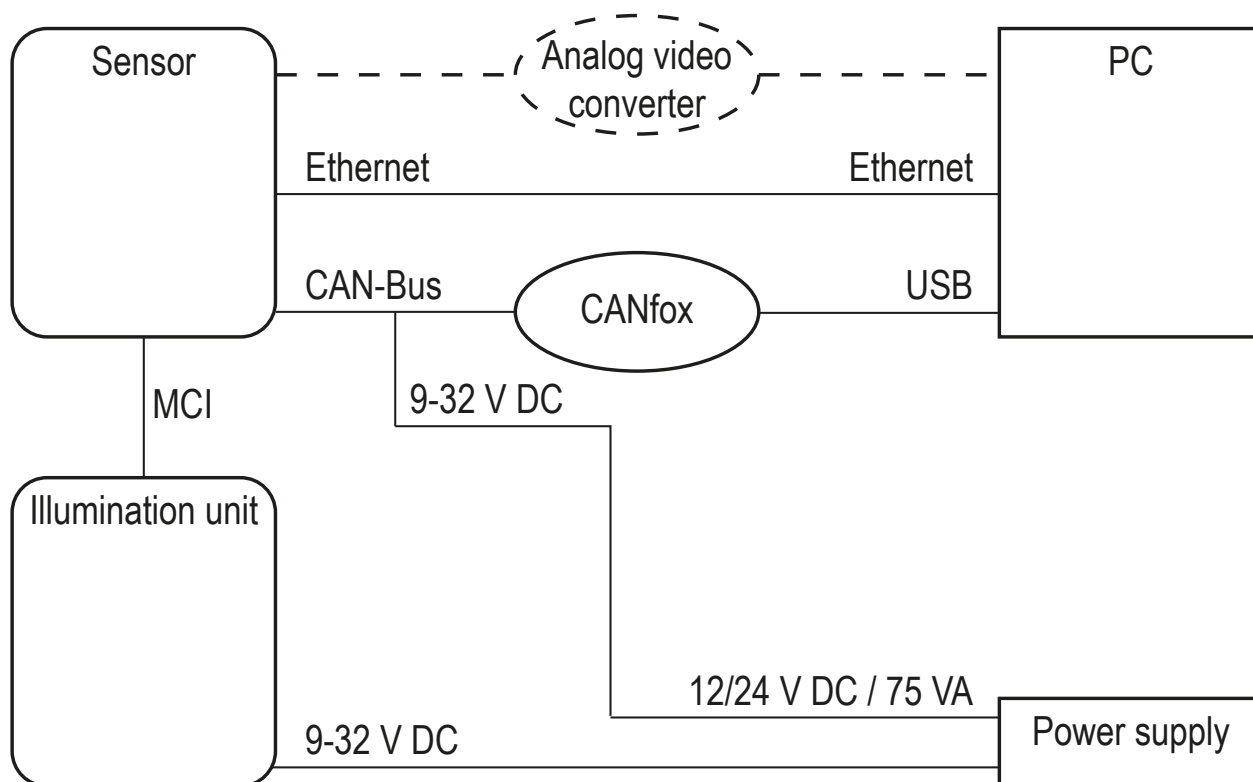
► Switch off the power supply before electrical connection.

### NOTE

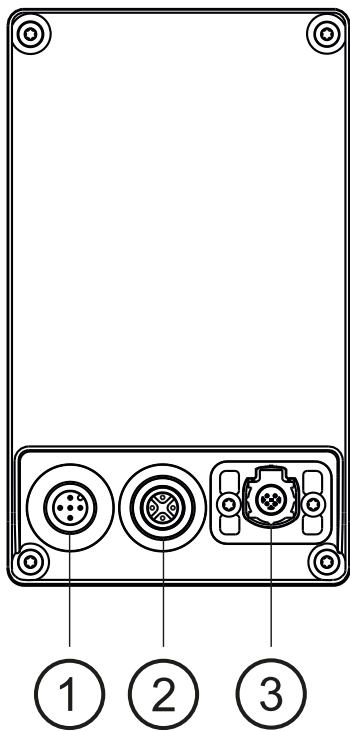
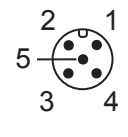
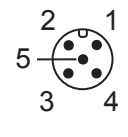
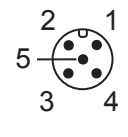



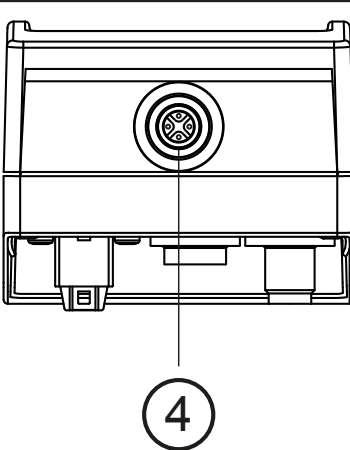
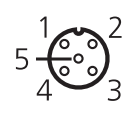
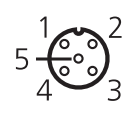
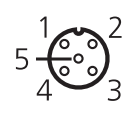
The IP rating given in the data sheet is only guaranteed if the M12 connectors are firmly screwed.

The unit can be damaged by insufficiently tightened M12 connectors.

► Firmly screw the M12 connectors to the unit.



## 7.1 Wiring Mobile 3D (Smart) Sensor / Camera

	<p><b>(1) Power supply and CAN bus</b></p> <p>M12 connector, A-coded, 5 poles</p> <table border="1"> <tr> <td>  </td> <td> <ul style="list-style-type: none"> <li>1 Shield</li> <li>2 9..32 V</li> <li>3 GND</li> <li>4 CAN High</li> <li>5 CAN Low</li> </ul> </td> </tr> </table>		<ul style="list-style-type: none"> <li>1 Shield</li> <li>2 9..32 V</li> <li>3 GND</li> <li>4 CAN High</li> <li>5 CAN Low</li> </ul>
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	<p><b>(2) Ethernet</b></p> <p>M12 socket, D-coded, 4 poles</p> <table border="1"> <tr> <td>  </td> <td> <ul style="list-style-type: none"> <li>1 Ethernet TD +</li> <li>2 Ethernet RD +</li> <li>3 Ethernet TD -</li> <li>4 Ethernet RD -</li> <li>S Shield</li> </ul> </td> </tr> </table>		<ul style="list-style-type: none"> <li>1 Ethernet TD +</li> <li>2 Ethernet RD +</li> <li>3 Ethernet TD -</li> <li>4 Ethernet RD -</li> <li>S Shield</li> </ul>
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<p><b>(3) MCI - Modulation and Communication Interface</b></p> <p>Connection sensor - illumination unit</p> <p>Only use original ifm cables E3M121, E3M122 or E3M123.</p>			
	<p><b>(4) Analogue video output (PAL)</b></p> <p>M12 socket, A-coded, 5 poles</p> <table border="1"> <tr> <td>  </td> <td> <ul style="list-style-type: none"> <li>1 Shield</li> <li>2 n.c.</li> <li>3 GND</li> <li>4 FBAS (Video)</li> <li>5 n.c.</li> </ul> </td> </tr> </table>		<ul style="list-style-type: none"> <li>1 Shield</li> <li>2 n.c.</li> <li>3 GND</li> <li>4 FBAS (Video)</li> <li>5 n.c.</li> </ul>
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<p>Only use original ifm cables E3M151, E3M152, E3M153 or E3M154.</p>			

You can find more information about the accessories at: [www.ifm.com](http://www.ifm.com)

### 7.1.1 Ethernet interface

The data of the sensor is provided via the Ethernet interface. The factory-set IP address of the sensor is 192.168.1.1.

The user data is sent to all accessible participants via UDP broadcast. The preset target IP address for the broadcast is 255.255.255.255, port 42000.




Communication via Ethernet is unidirectional. The sensor is a transmitter only; it cannot receive any data via Ethernet.



**7.1.2 CAN bus interface**

The sensor has a CAN interface. Parameter setting, diagnostics and firmware update are made via the CAN interface. No connection via CAN bus is required for the operation of the sensor.

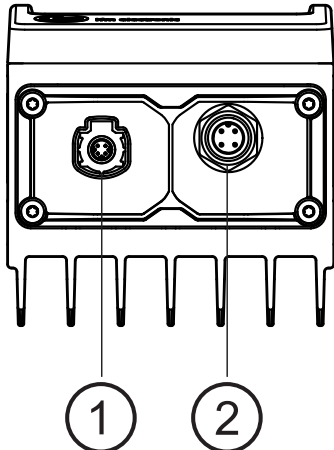

 Use cables that are approved for CAN bus. Terminate the cables using terminating resistors (120 Ω). Use the EVC492 cable with integrated terminating resistor as an alternative.


**7.1.3 Analogue video output**

The sensor versions with 2D camera are equipped with an additional analogue video output. The 2D image of the analogue video output can be displayed using a video converter in the ifm Vision Assistant.

 Please use a video converter with DirectX support. Set the video converter to PAL.

**7.2 Wiring illumination unit**

	<b>(1) MCI - Modulation and Communication Interface</b>	
	Connection sensor - illumination unit	
	Only use original ifm cables E3M121, E3M122 or E3M123.	
	<b>(2) Power supply</b>	
M12 connector, A-coded, 4 poles		
	1	GND
	2	9..32 V
	3	9..32 V
	4	GND

-  Before wiring note the following:
- ▶ Use all 4 wires of the M12 connector for the power supply.
  - ▶ Unnecessarily long cables cause an additional voltage drop. For the power supply keep the cable short.
  - ▶ Up to 14 A may flow via the cable for the power supply. Ensure a sufficiently dimensioned core cross-section.
  - ▶ Use original ifm cables E3M131, E3M132 or E3M133.

## 8 Software

### 8.1 CANfox

Install the CANfox software according to the CANfox operating instructions.

### 8.2 System requirements ifm Vision Assistant

The sensor is set and set-up using the ifm Vision Assistant software. The software has the following system requirements:

- Windows 7, Windows 8 (not Windows RT), Windows 10
- Minimum screen resolution: 1024 x 768 pixels
- Colour depth of the screen: 32 bits



The UDP packages of the sensor must not be blocked by a firewall.

### 8.3 Install ifm Vision Assistant

The ifm Vision Assistant software is available free of charge on our website:

[www.ifm.com](http://www.ifm.com)

→ Service → Downloads

- ▶ Unzip the ifm Vision Assistant file on the hard disk.
- > The ifm Vision Assistant folder contains all necessary files. Installation is not necessary.

## 9 Set-up

### 9.1 Put the sensor into operation

To put the sensor into operation follow the instructions below.

1. Switch off the power supply.
2. Use MCI cable to connect sensor and illumination unit.
3. Connect sensor with Ethernet cable.
4. Connect the sensor with the sensor cable for CAN bus and power supply.
  - > The sensor cable connects the power supply and CAN with the sensor.
5. Connect illumination unit with power supply.
6. Connect CANfox USB interface with PC via USB and with CAN via adapter cable.
7. Only for O3M2xx: connect sensor with analogue connection cable.
8. Establish power supply.



During the first set-up the sensor connects with the illumination unit. Connection may take up to 60 s.

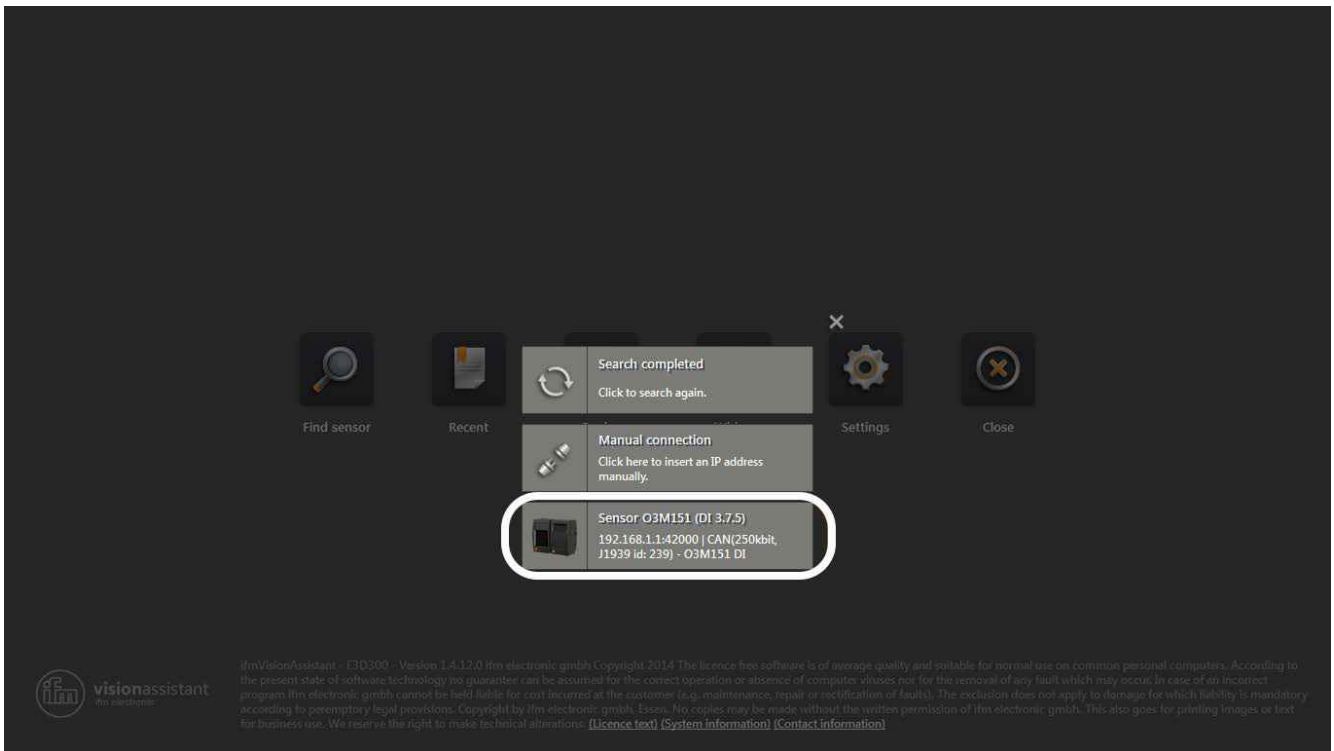
### 9.2 Connect ifm Vision Assistant

To connect ifm Vision Assistant take the following steps:

1. Start ifm Vision Assistant software on the PC.



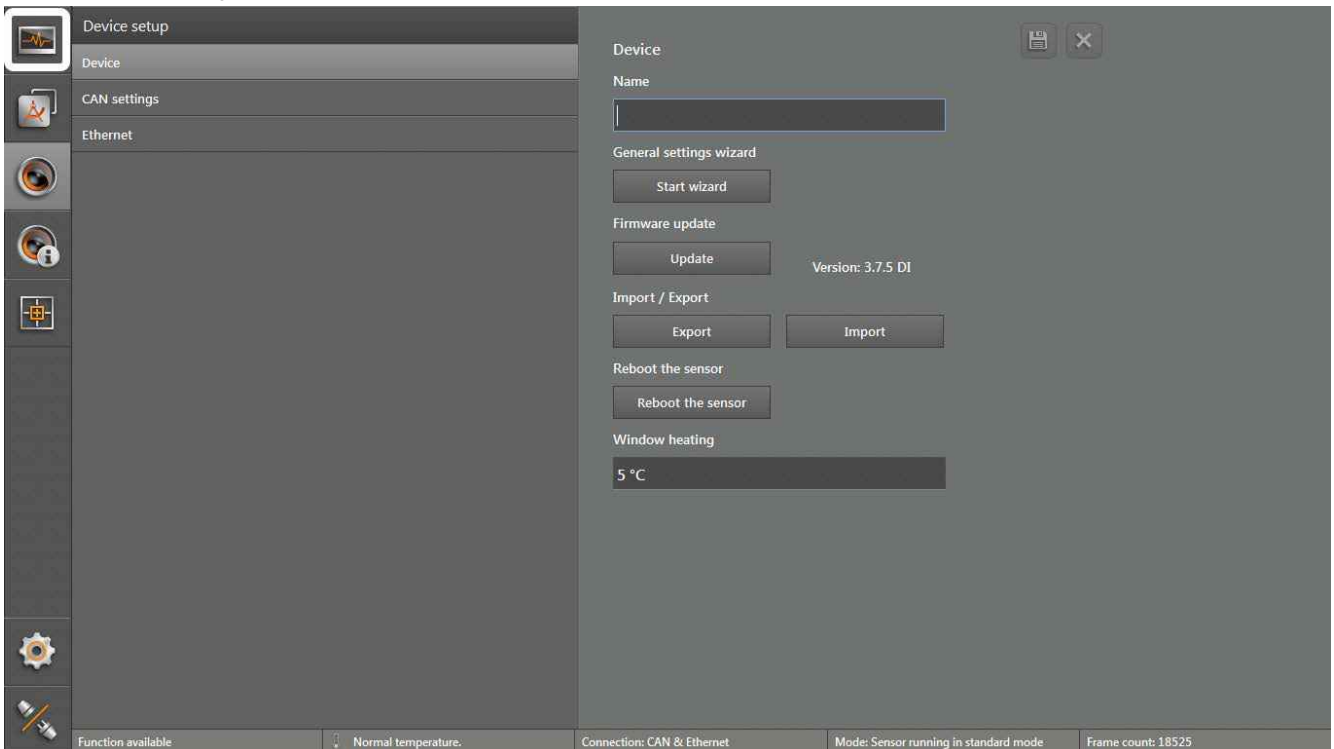
2. Select the [Find sensor] button.



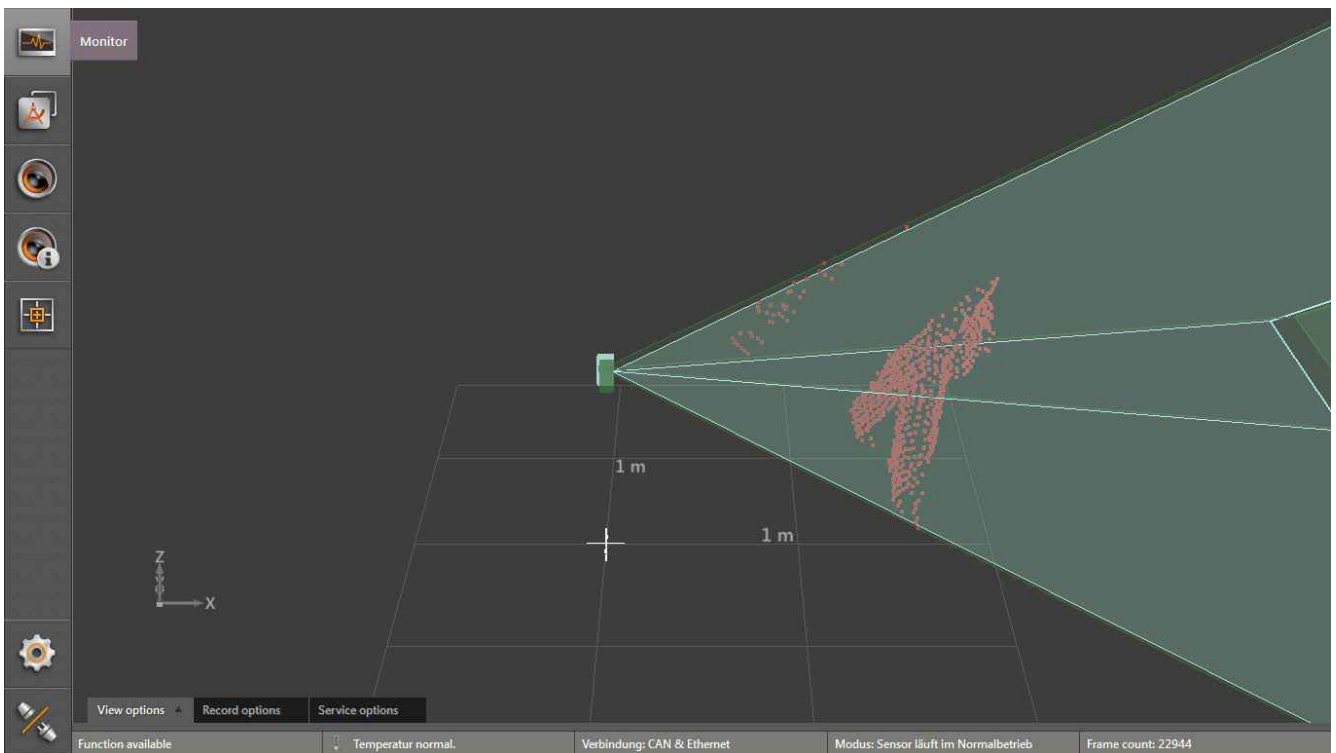
3. Select the [Sensor O3Mxxx] button.
- > ifm Vision Assistant is connected with the sensor.

### 9.3 Display live image of the sensor

When ifm Vision Assistant is connected with the sensor, a live image of the sensor can be displayed in the [Monitor] mode.

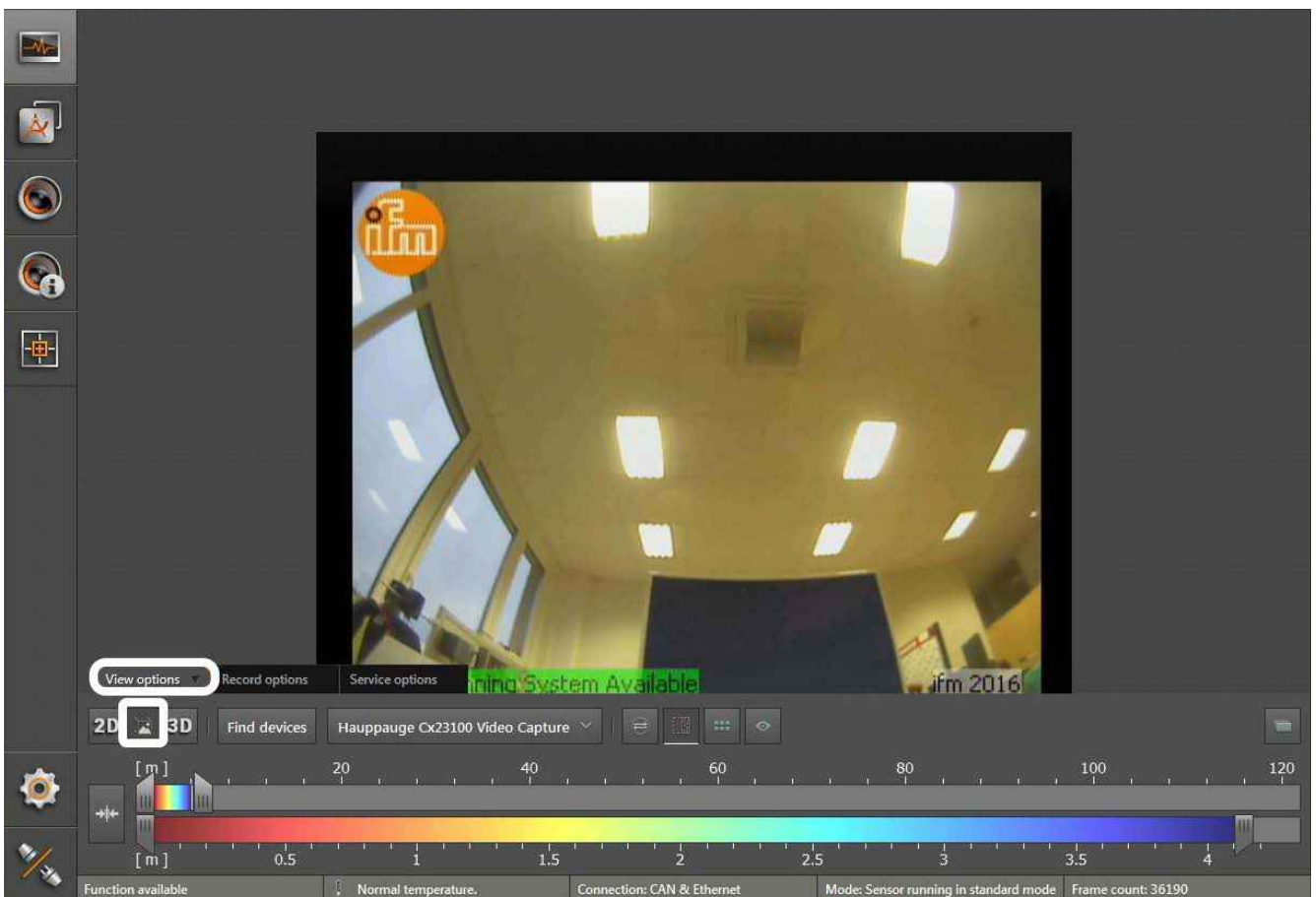


- ▶ Select [Monitor] button.

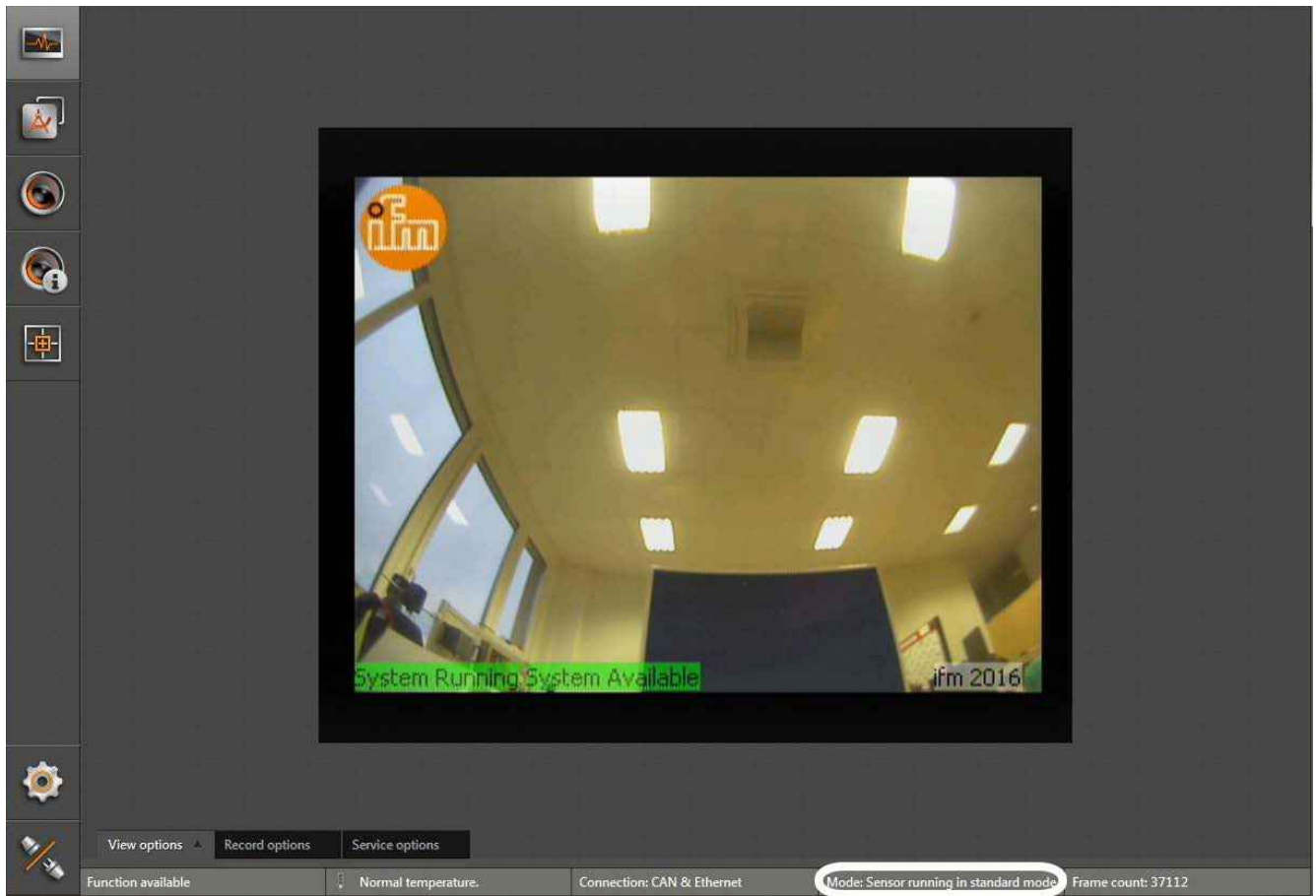


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> A live sensor image is displayed.



- ▶ Only for O3M2xx: select the [2D3D view] button.
- ▶ Only for O3M2xx: select the [View options] button.



- > The live image is fully visible. The status bar indicates the active mode of the sensor.

## 9.4 Changing the function of the O3Mxx1

The functions of the O3Mxx1 can be changed by using different firmware. O3Mxx1 is supplied with the firmware "basic functions".



Only the functions of the O3Mxx1 can be changed.

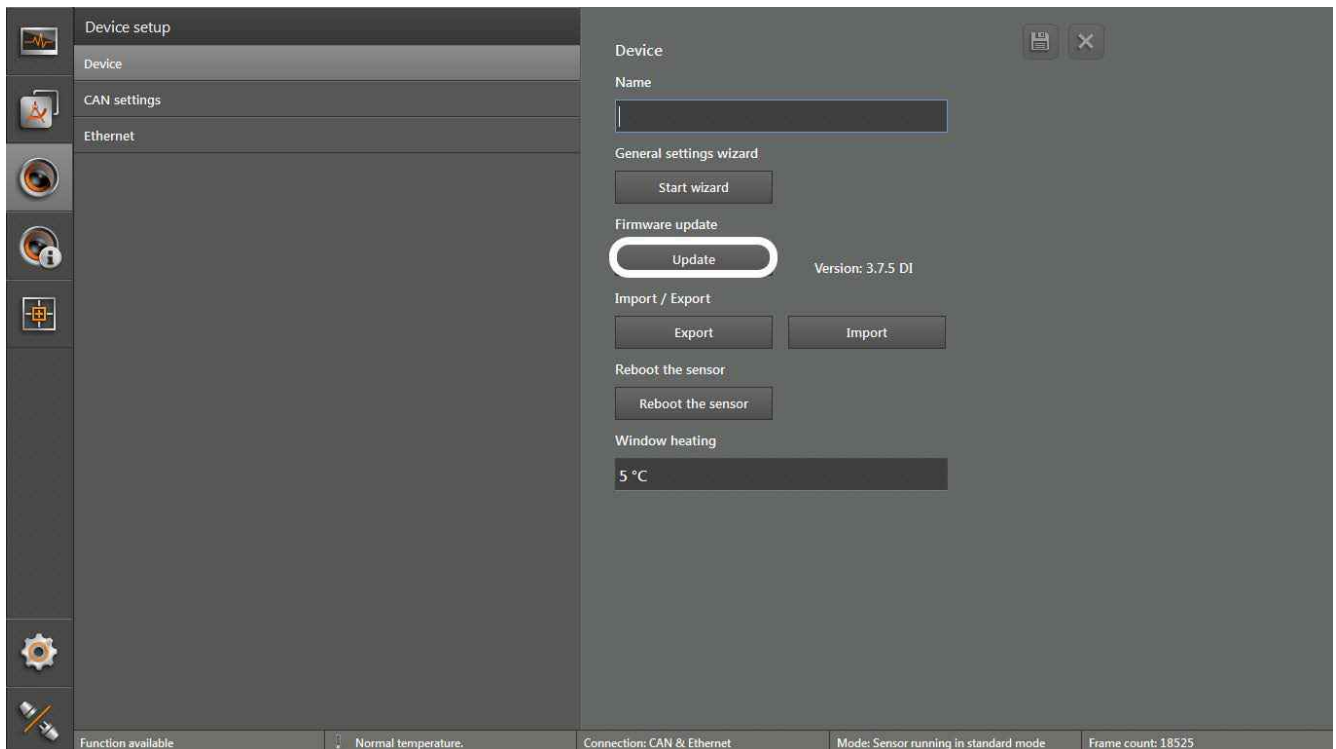
Each firmware is saved in a flash container (file extension fcr). The flash containers can be downloaded at:

[www.ifm.com](http://www.ifm.com) → Service → Downloads

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To change the functions take the following steps:

1. Download the flash container.
2. Connect ifm Vision Assistant with the O3Mxx1 (→ 9.2).



3. Select the [Update] button.
  4. Select flash container.
- > The selected flash container is transferred to the O3Mxx1. Transfer takes a few minutes. After successful transfer the O3Mxx1 starts with the new functions.



Do not disconnect the O3Mxx1 while the flash container is being transferred.

## 10 Approvals/standards

The EU Declaration of Conformity can be downloaded at: [www.ifm.com](http://www.ifm.com)

## 11 Note on the software

This unit contains (maybe modified) open source software which is subject to special licensing terms.

For copyright information and licensing terms please refer to:  
[www.ifm.com/int/GNU](http://www.ifm.com/int/GNU)

For software subject to the GNU General Public License or the GNU Lesser General Public License the source code can be requested against payment of the copying and shipping costs.



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