

ifm electronic



Brief instructions
Mobile 3D sensor

efector250[®]

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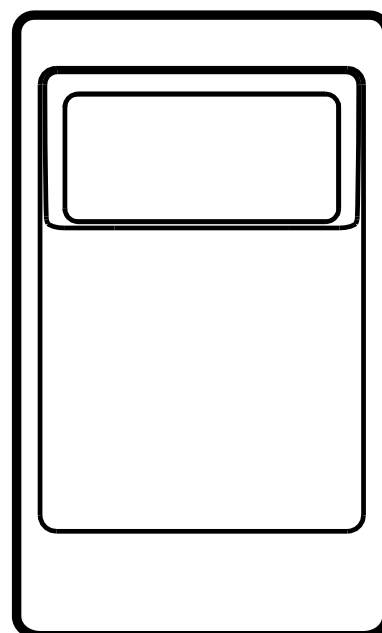
O3M150

O3M151

O3M160

O3M161

80236592/00 03/2016



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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 sensor 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.

4 Items supplied

- O3M15x / O3M16x mobile 3D sensor
- CD with software and documentation
- 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
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

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

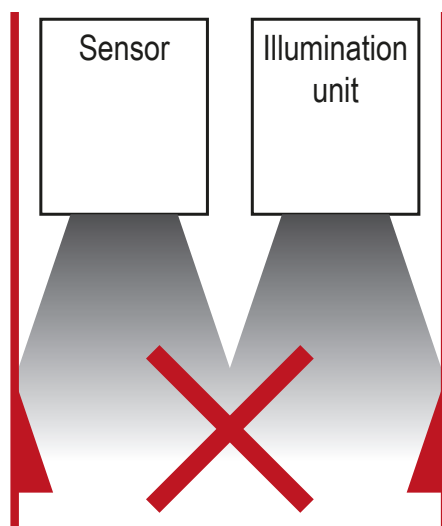
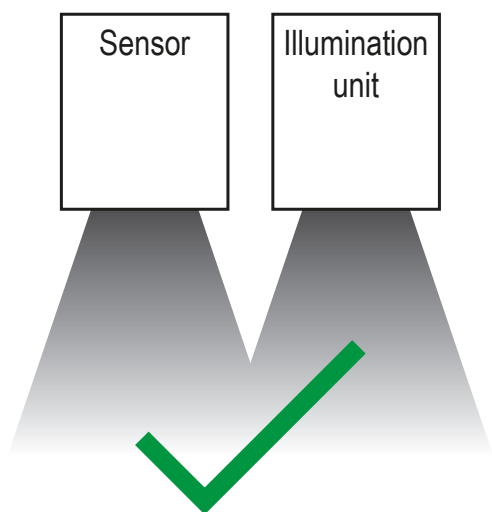
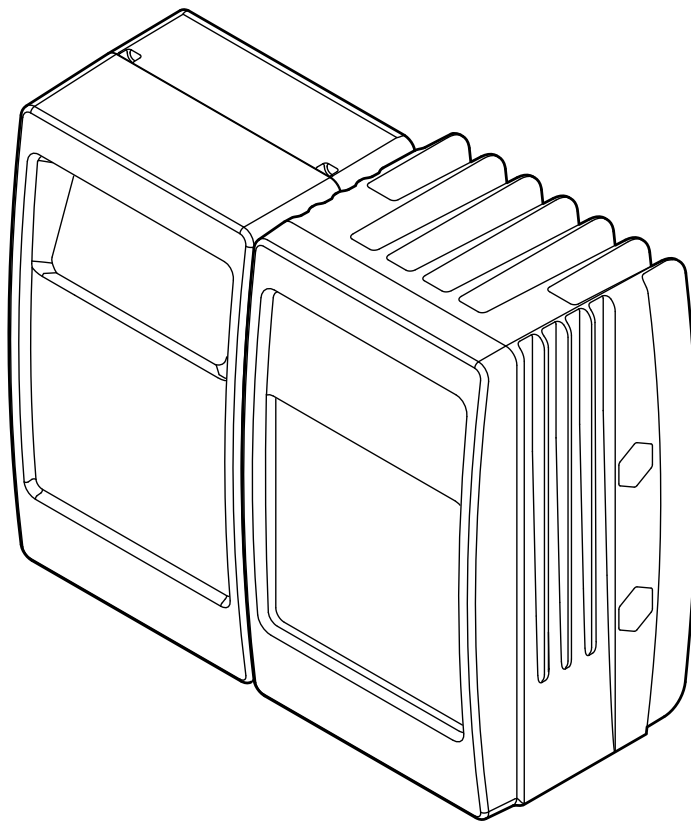
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6 Installation

The mobile 3D sensor 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 for rod mounting Ø 14 mm (clamp and bracket for type O3Mxxx)	E3M103

Description	Art. no.
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 → Data sheet search → e.g. O3M150 → Accessories

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.

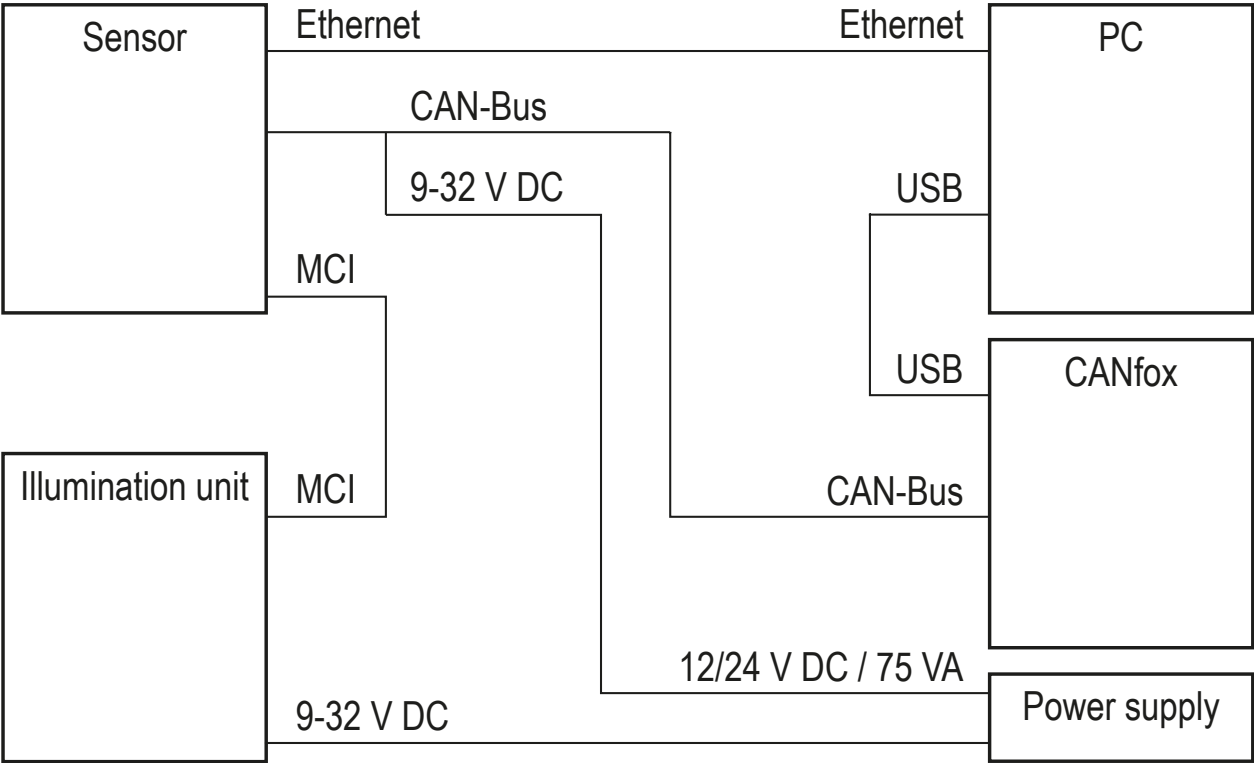
► Switch off the power supply before electrical connection.

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 sensor

(1) Power supply and CAN bus											
M12 connector, A-coded, 5 poles											
	<table><tr><td>1</td><td>Shield</td></tr><tr><td>2</td><td>9..32 V</td></tr><tr><td>3</td><td>GND</td></tr><tr><td>4</td><td>CAN High</td></tr><tr><td>5</td><td>CAN Low</td></tr></table>	1	Shield	2	9..32 V	3	GND	4	CAN High	5	CAN Low
1	Shield										
2	9..32 V										
3	GND										
4	CAN High										
5	CAN Low										
(2) Ethernet											
M12 socket, D-coded, 4 poles											
	<table><tr><td>1</td><td>Ethernet TD +</td></tr><tr><td>2</td><td>Ethernet RD +</td></tr><tr><td>3</td><td>Ethernet TD -</td></tr><tr><td>4</td><td>Ethernet RD -</td></tr><tr><td>S</td><td>Shield</td></tr></table>	1	Ethernet TD +	2	Ethernet RD +	3	Ethernet TD -	4	Ethernet RD -	S	Shield
1	Ethernet TD +										
2	Ethernet RD +										
3	Ethernet TD -										
4	Ethernet RD -										
S	Shield										
(3) MCI - Modulation and Communication Interface											
Connection sensor - illumination unit											
Only use original ifm cables E3M121, E3M122 or E3M123.											

You can find more information about the accessories at:
www.ifm.com → Data sheet search → O3M150 → Accessories

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.

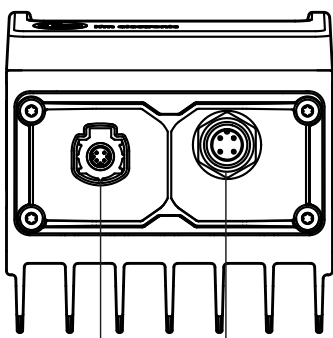
 Communication via Ethernet is unidirectional. The sensor is a transmitter only; it cannot receive any data via Ethernet.

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.

7.2 Wiring illumination unit



1 2

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

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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 XP SP2, Windows 7, Windows 8 (not Windows RT)
- 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

→ Service → Download → Industrial imaging

- 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. Establish power supply.

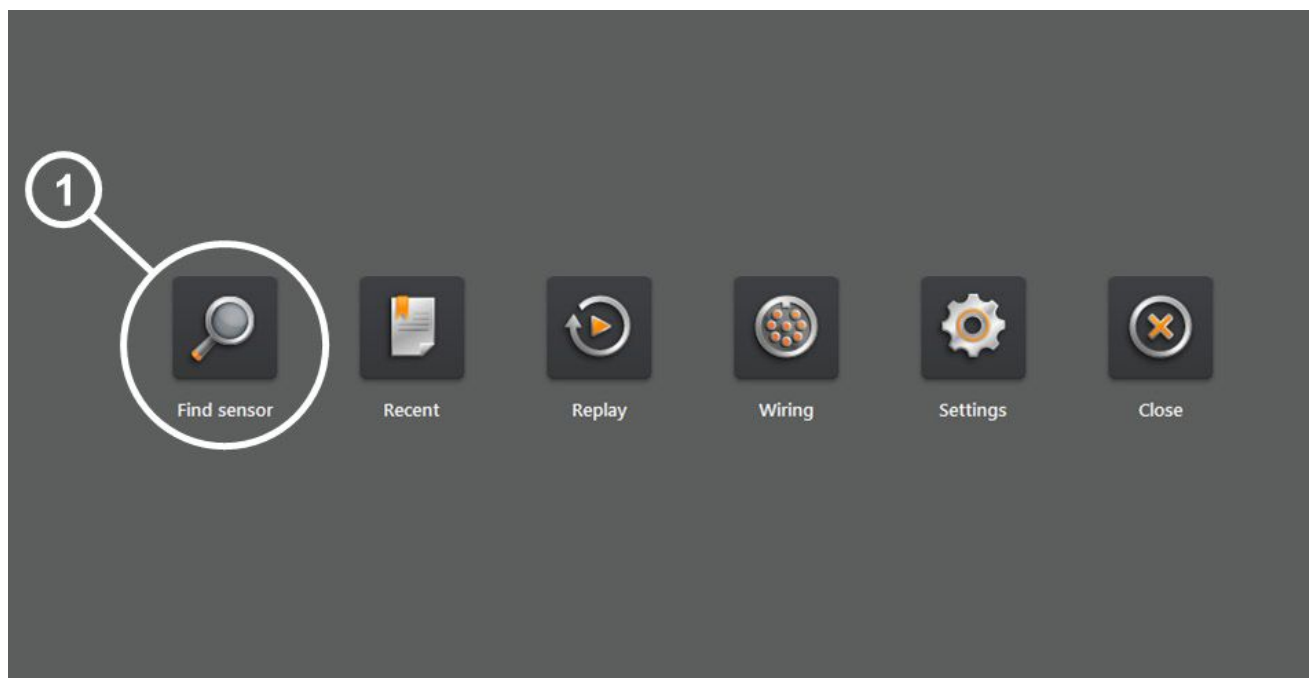


During the first set-up the sensor connects with the illumination unit.
Connection may take up to 60 s.

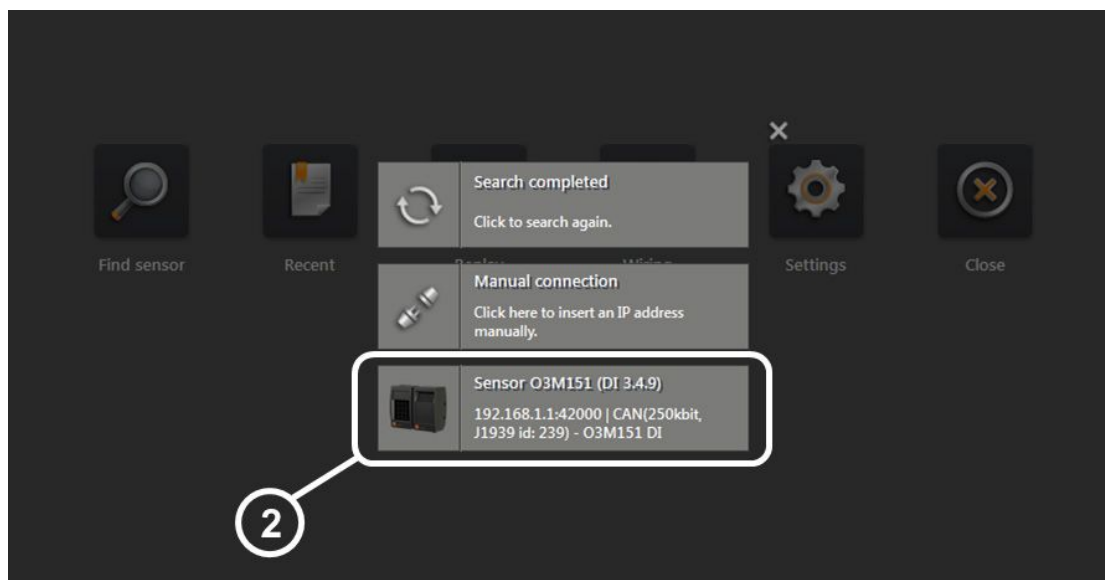
9.2 Connect ifm Vision Assistant

To connect ifm Vision Assistant take the following steps:

1. Start ifm Vision Assistant software on the PC.



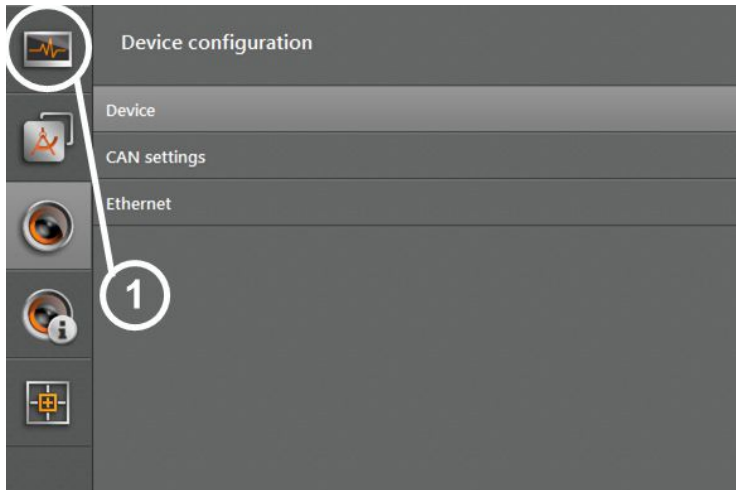
2. Select the [Find sensor] button (1).



3. Select the [Sensor O3M1XX] button (2).
- > ifm Vision Assistant is connected with the sensor.

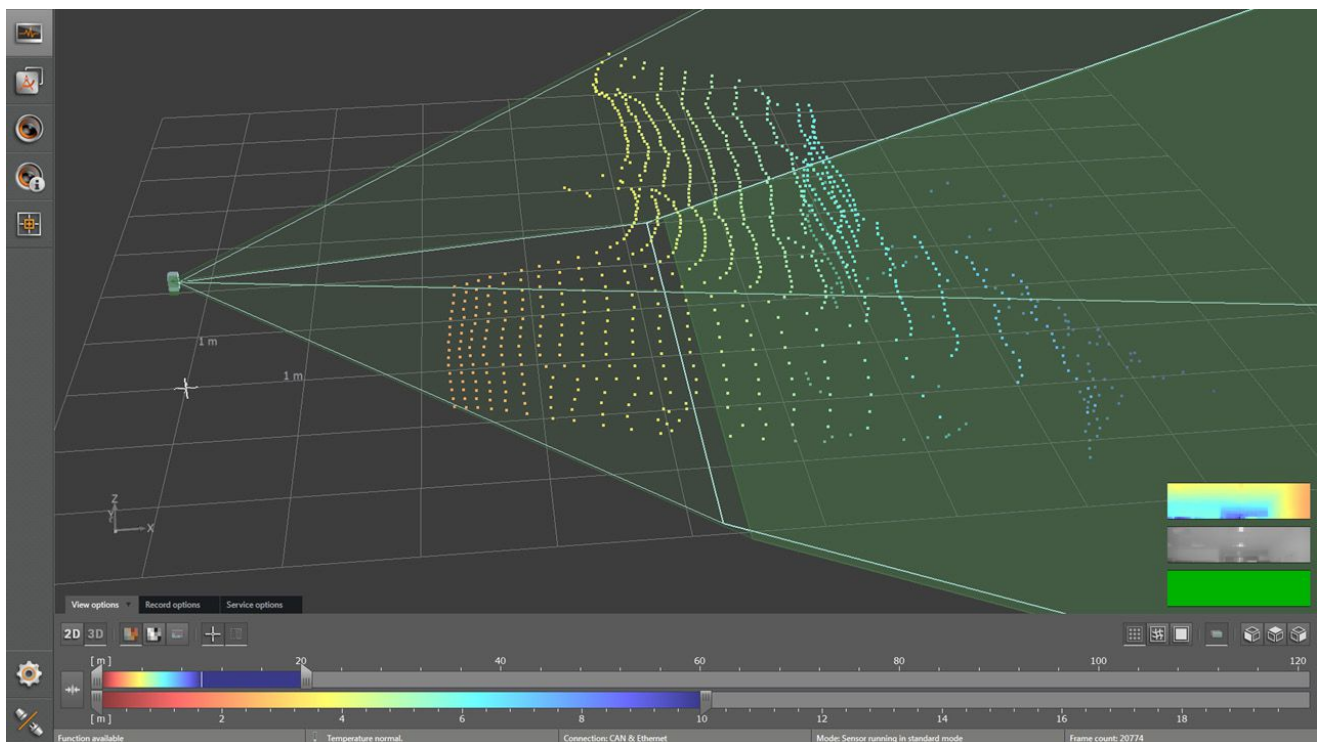
9.3 Display live image of the sensor

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



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- Select [Monitor] (1) button.



- > A live sensor image is displayed.
- Select [Parametrization] (1) to terminate the live image.

9.4 Changing the function of the smart sensor

The function of the O3M151 / O3M161 smart sensor can be changed by using different firmware. O3M151 / O3M161 is supplied with the firmware with the basic functions.



Only the function of the O3M151 / O3M161 smart sensor can be changed.

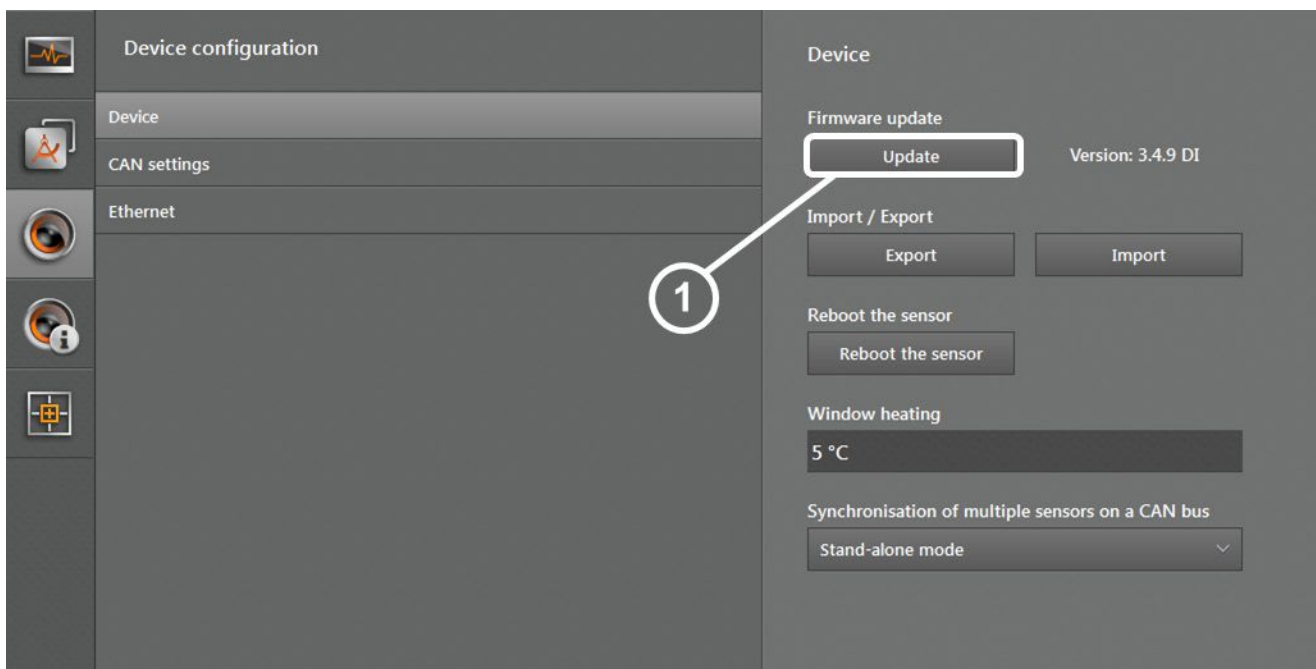
Each firmware is saved in a flash container (file extension fcr). The flash containers can be downloaded at:

www.ifm.com

→ Service → Download → Industrial imaging

To change the function of the smart sensor take the following steps:

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



3. Select the [Update] button (1).
 4. Select flash container.
- > The selected flash container is transferred to the device. Transfer takes about 2 minutes. After successful transfer the device starts with the new functions.



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

10 Approvals/standards

The CE Declaration of Conformity can be downloaded at:

www.ifm.com

→ Data sheet search → e.g. O3M150 → Approvals

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

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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