

# ifm Vision Assistant Overview



The ifm Vision Assistant software is a free and highly versatile configuration tool that will help you get the most from your ifm vision system.

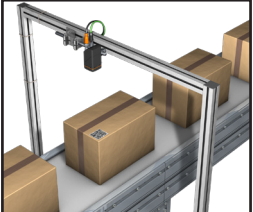
## ifm Wizards simplify set-up

About 90% of applications that can be addressed with an ifm camera can be set up using the built-in wizards. These wizards walk the user through the necessary settings.

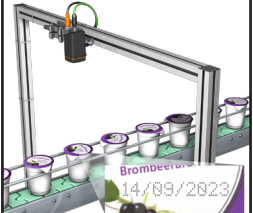
This step-by-step approach will minimize the learning curve for someone who is just getting into the vision world. For example, the wizard utilizes the system's autofocus capabilities to help determine exposure settings which optimize contrast.

For more advanced users, ifm's Vision Assistant software also has an advanced user-defined mode designed to allow seasoned vision experts to get the very most from these systems.

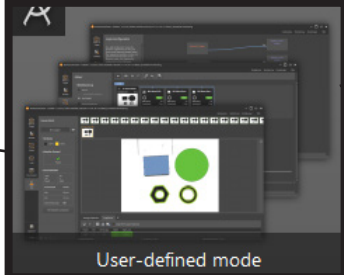
### O2I Wizards



**Logistics sorting**  
*Single- or multi-code setup (can also provide barcode quality metrics)*

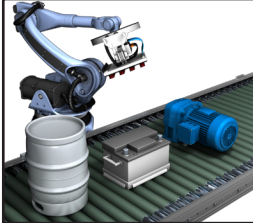


**Date code verification**  
*Using built-in OCR (Object Character Recognition)*




**User-defined mode**  
*Allows advanced users to develop custom rule-based applications*

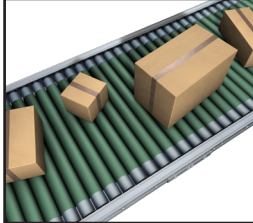
### O3D Wizards




**Robot pick and place**  
*Detection of parts returns robotic coordinates*



**Is the carton or case complete?**  
*Color is irrelevant*




**Dimensioning**  
*Logistics – for sorting based on size*

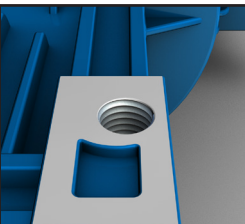


**Level of solid products**  
*Can determine percentage filled overall instead of just a single point*

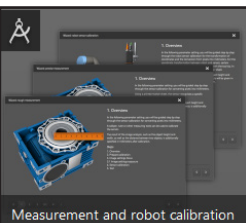
### O2D Wizards



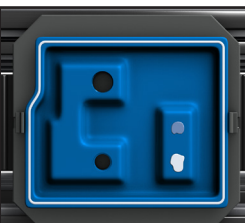
**Detection of parts**  
*Searches for a specific shape to see if the shape is in the image*



**Presence of threads**  
*Searches the image to see if a BLOB is present*



**Rough or precise measuring**



**Object width/quality**  
*By analyzing a BLOB*

# ifm Vision Assistant Overview



## Added control

The software also controls things like focus, exposure time, gain, control of internal and external lighting and other settings.

For example, ifm's O2D and O2I cameras have four built-in lights (two polarized and two non-polarized), and with the O2D RGBW cameras you can test red, green, blue, white and even polarized lighting strategies to find the best fit for your application.

## As seen by human eyes under white light

Objects may appear differently depending on the color of the light with which they're illuminated.

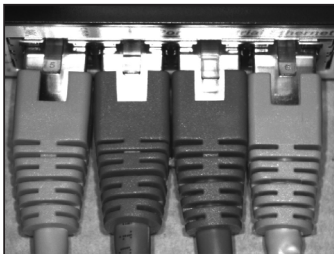
For example, here's how a set of differently colored plugs appears to human eyes when illuminated by white light.



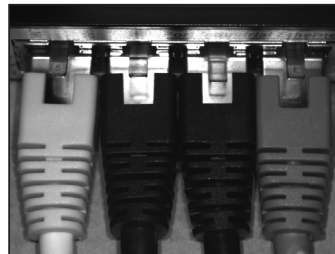
## As seen by ifm Vision Assistant under white, red, green or blue light

The ifm Vision Assistant allows objects to be illuminated by white light as well as by monochromatic light. The choice of light color may aid in visualization of various elements of the object in question (for instance, a barcode printed on colored packaging).

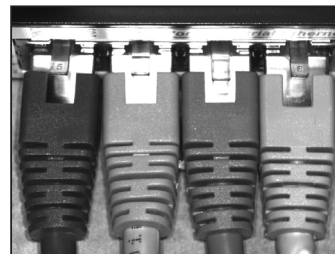
By way of illustration, here is how the same objects shown above might appear to the ifm Vision Assistant when illuminated under white, red, green or blue light. Note how the relative contrast between colors changes with different types of illumination.



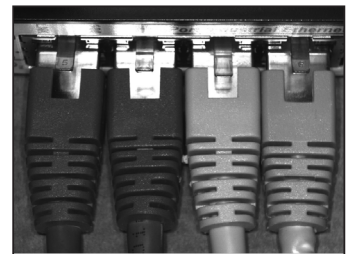
White light



Red light



Green light



Blue light

## Simulation features

Additionally, Vision Assistant offers a simulator feature. To access the simulator, first open the software. Once on the home screen "Ctrl+M" will open the "manual connection" dialog box, where the user can select the type of device to test (for example "O2I5XX SimuLater"). This mode allows the user to explore the functions and tools that the software has to offer.

Please note that the simulator does not have the ability to upload an example image and build the rules from that image.

# ifm efector Machine Mount 3D Vision Sensor



**O3D302**

The ifm efector 3D Smart Sensor utilizes the revolutionary PMD Time of Flight Imager to quickly and accurately measure the distance of 23,232 points within the field of view. The imager measures the distance between the sensor and the nearest surface point by point using the time-of-flight principle. The sensor illuminates the scene with an internal infrared light source and calculates the distance by means of the light reflected from the surface.

## Features

- Color and lighting independent
- Digital switching between 32 recipes
- Three configurable outputs
- Onboard logic engine
- IP65

## Applications

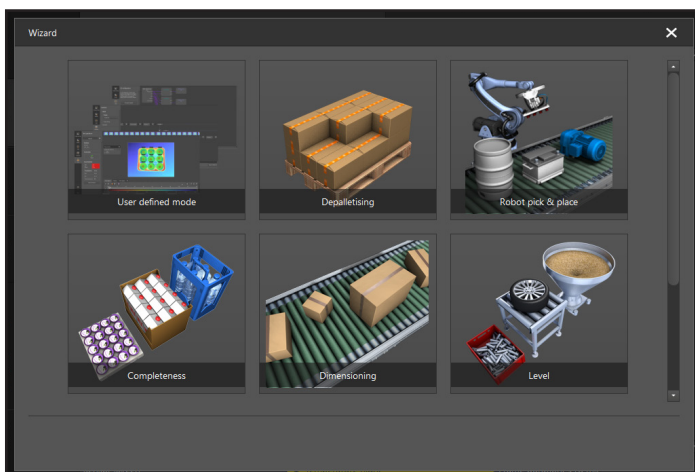
- Volume determination for storage and conveyor technology
- Non-contact dimensioning of rectangular objects such as cardboard packages or parcels
- Measurement of height, width and length to calculate strap length and volume
- Detection of size, orientation and positioning of the objects for automated storage space planning
- Robot navigation

ifm efector Machine Mount 3D Vision Sensor Selection Guide							
Part Number	Price	Scanner Capability	Lens Type	Light Emission	Port Protocols	Lens Material	Dimensional Drawing
<a href="#">O3D302</a>	\$1,520.00	3D – Time of Flight	Standard	Infrared	TCP/IP and EtherNet/IP	Gorilla glass	<a href="#">PDF</a>
<a href="#">O3D304</a>	\$1,520.00		Wide angle	Infrared			<a href="#">PDF</a>

**Note:** For continuous use, a heat sink ([E3D302](#)) is strongly recommended.

## Full-Featured Vision Assistant Configuration

The free ifm Vision Assistant configuration software contains several tools to make integration more seamless. The software also comes with several wizards including Robot Pick and Place, Completeness, Dimensioning, and Level.



**Screenshot of ifm's Vision Assistant Software. The software contains several wizards to assist in quick integration of the 3D sensor.**

**Please note that there is a wizard called "Depalletising." However, due to the large number of factors which may impact the implementation of this wizard, at this time AutomationDirect does not support this application.**

# ifm efector

## Machine Mount 3D Vision Sensor



ifm efector Machine Mount 3D Vision Sensor Technical Specifications				
<b>Electrical Data</b>				
<b>Operating Voltage</b>	(V)	20.4 to 28.8 VDC, to EN 61131-2		
<b>Current Consumption</b>	(mA)	<2400 peak current pulsed, typ. mean value 420; max mean value 1600		
<b>Power consumption</b>	(W)	10 (typical value)		
<b>Inputs</b>				
<b>Trigger</b>		External: 24V PNP/NPN (IEC 61131-2 Type 3) TCP/IP EtherNet/IP Continuous		
<b>Outputs</b>				
<b>Maximum Current Load Per Output</b>	(mA)	100		
<b>Output</b>		Digital outputs: 3 (configurable), 24 V PNP/NPN (IEC 61131-2) Analog outputs: 1 output (configurable as current or voltage output)		
<b>Current Output</b>	(mA)	4 - 20		
<b>Max Load</b>	(Ω)	500		
<b>Min Load</b>	(Ω)	230		
<b>Voltage Output</b>	(V)	0 - 10		
<b>Min Load</b>	(Ω)	10,000		
<b>Detection Range</b>				
<b>Operating Distance</b>	(mm [in])	300 - 8000 [11.81 - 314.96], with reflectivity of 18% and object size of 200mm x 200mm [7.87 in x 7.87 in]		
<b>Max Measuring Range</b>		Typically up to 5000mm, but depending on setting and reflectivity can be up to 30m		
<b>Resolution</b>	(pixels)	176 x 132		
<b>Angle of Aperture</b>	(°)	O3D302: 60 x 45 nominal value without lens distortion correction O3D304 70 x51, nominal value without lens distortion correction		
<b>Interfaces</b>				
<b>Parameter Setting Interface</b>		Ethernet TCP/IP: 10Base-T / 100Base-TX		
<b>Process Interface</b>		Ethernet TCP/IP: Ethernet/IP		
<b>IP Address</b>		192.168.0.69		
<b>Subnet Mask</b>		255.255.255.000		
<b>Gateway IP Address</b>		192.168.0.201		
<b>Environment</b>				
<b>Ambient Temperature</b>		-10 to 50°C [14 to 122°F]		
<b>Storage Temperature</b>		-40 to 85°C [-40 to 185°F]		
<b>IP Rating</b>		IP65		
<b>Other Technical Data</b>				
<b>Integrated Lighting</b>		Infrared LED (850nm), invisible radiation of light-emitting diodes		
<b>Other Data</b>				
<b>Field of View Size With Lens Distortion Correction</b>	For Standard Lens (O3D302)		For Wide-Angle Lens (O3D304)	
	Measuring Range/ Distance (m [ft])	Length x Width (m [ft])	Measuring Range/ Distance (m [ft])	Length x Width (m [ft])
	0.50 [1.64]	0.37 x 0.50 [1.21 x 1.64]	0.50 [1.64]	0.40 x 0.55 [1.31 x 1.80]
	1.00 [3.28]	0.75 x 1.00 [2.46 x 3.28]	1.00 [3.28]	0.80 x 1.10 [2.62 x 3.61]
	2.00 [6.56]	1.50 x 2.00 [4.92 x 6.56]	2.00 [6.56]	1.60 x 2.20 [5.25 x 7.22]
	3.00 [9.84]	2.25 x 3.00 [7.38 x 9.84]	3.00 [9.84]	2.40 x 3.30 [7.87 x 10.83]
	4.00 [13.12]	3.00 x 4.00 [9.84 x 13.12]	4.00 [13.12]	3.20 x 4.40 [10.50 x 14.44]
5.00 [16.40]	3.75 x 5.00 [12.30 x 16.40]	5.00 [16.40]	4.00 x 5.00 [13.12 x 16.40]	

For application specific accuracy information, please refer to the datasheet

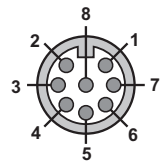


# ifm efector Machine Mount 3D Vision Sensor



## Electrical Connections – Supply

### Connection Colors



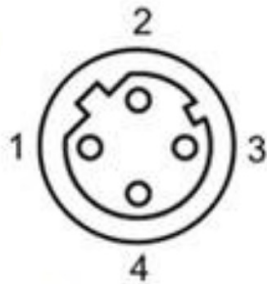
Pin View from Switch  
M12 Male

M12 8-PIN MALE CONNECTOR				
Pin	292 Cable*	295 Cable*	Signal	Description
1	White	Brown	+24V	Power supply
2	Brown	White	Trigger	Trigger input
3	Green	Blue	GND	Ground
4	Yellow	Black	OUT	Switching Output 1 (digital or analog)
5	Gray	Gray	OUT3	Switching Output 3 Ready
6	Pink	Pink	OUT2	Switching Output 2 (digital)
7	Blue	Violet	IN1	Switching Input 1
8	Red	Orange	IN2	Switching Input 2

**Notes:**

\* AutomationDirect sells M12 8-pole cables with two different color patterns (7000-170x1-292xxxx and 7000-170x1-295xxxx).

## Electrical Connections – Ethernet



M12 4-Pin Male (D-coded Ethernet)	
1	TxD+, transmit data +
2	RxD+, receive data +
3	TxD-, transmit data -
4	RxD-, receive data -

## Accessories

O3D Accessories Selection Guide			
Part Number	Price	Description	Drawing
<a href="#">E3D302</a>	\$85.00	Heat sink	<a href="#">PDF</a>
<a href="#">E3D301</a>	\$60.00	Right-angle bracket for 14mm rod	<a href="#">PDF</a>



**E3D302**



**E3D301**



**E21228**

316L Stainless Steel Rod Selection Guide				
Part Number	Price	Diameter (mm [in])	Length (mm [in])	Drawing
<a href="#">E21228</a>	\$21.50	14mm [0.6]	200 [7.9]	<a href="#">PDF</a>
<a href="#">E21229</a>	\$22.50	14mm [0.6]	300 [11.8]	<a href="#">PDF</a>
<a href="#">E21232</a>	\$25.00	14mm [0.6]	400 [15.7]	<a href="#">PDF</a>