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.

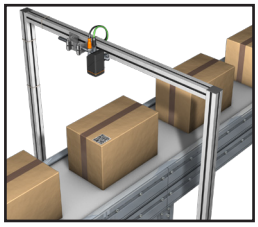
ifm Wizards simplify set-up

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.

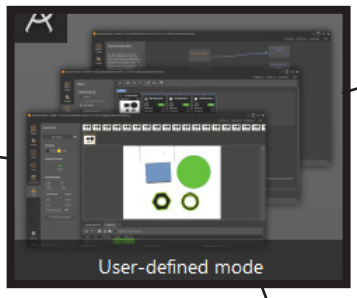
For more advanced users, ifm's Vision Assistant software also has an advanced user-defined mode designed to allow seasoned vision experts to get the very most from these systems.

O2I Wizards



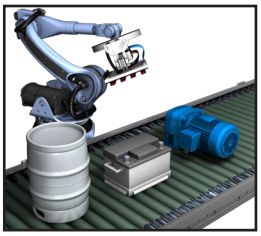
Logistics sorting
Single- or multi-code setup (can also provide barcode quality metrics)

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



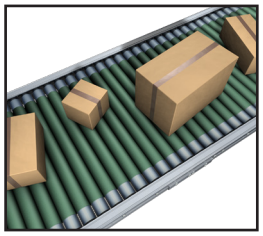
User-defined mode
Allows advanced users to develop custom rule-based applications

O3D Wizards



Robot pick and place
Detection of parts returns robotic coordinates

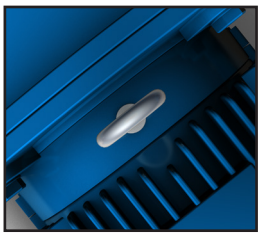
I the carton or case complete?
Color is irrelevant



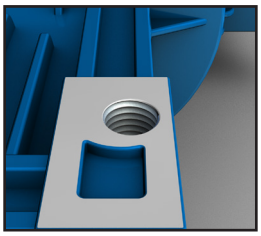
Dimensioning
Logistics – for sorting based on size

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

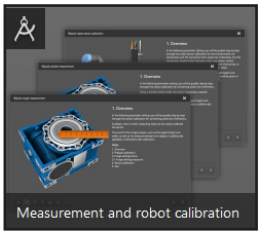
O2D Wizards



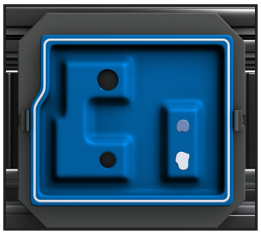
Detection of parts
Searches for a specific shape to see if the shape is in the image



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

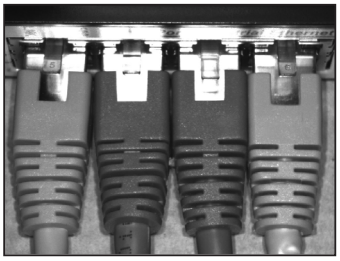
Objects may appear differently depending on the color of the light with which they're illuminated.

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

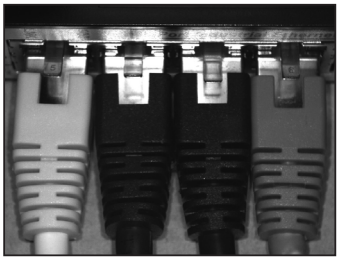
As seen by ifm Vision Assistant under white, red, green or blue light

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).

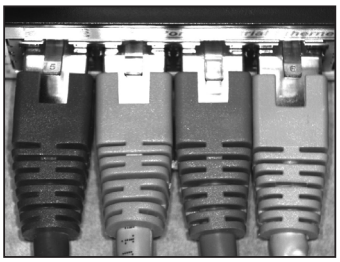
By way of illustration, here is how the same objects shown above might appear to the ifm Vision Assistant when illuminated under white, red, green or blue light. Note how the relative contrast between colors changes with different types of illumination.



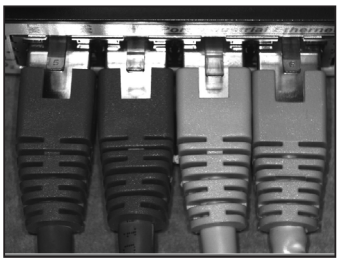
White light



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

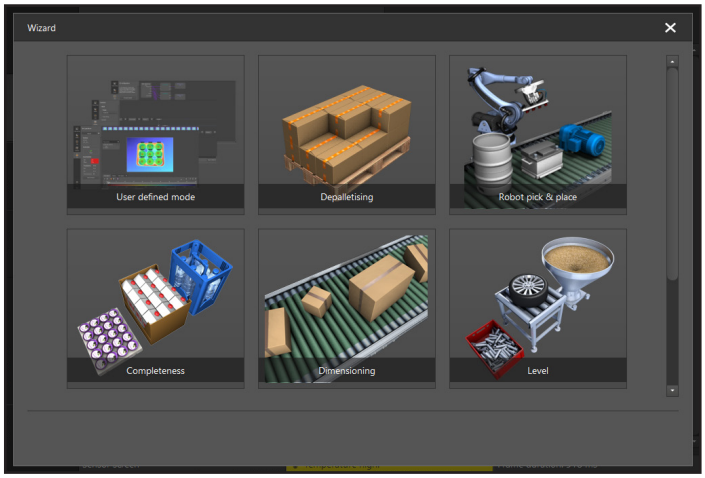
ifm efector Machine Mount 3D Vision Sensor Selection Guide

Part Number	Price	Scanner Capability	Lens Type	Light Emission	Port Protocols	Lens Material	Dimensional Drawing
O3D302	$1,520.00	3D – Time of Flight	Standard	Infrared	TCP/IP and EtherNet/IP	Gorilla glass	PDF
O3D304	$1,520.00		Wide angle	Infrared			PDF

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

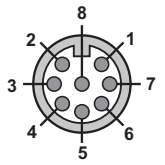
ifm efector Machine Mount 3D Vision Sensor Technical Specifications					
Electrical Data					
Operating Voltage	(V)	20.4 to 28.8 VDC, to EN 61131-2			
Current Consumption	(mA)	<2400 peak current pulsed, typ. mean value 420; max mean value 1600			
Power consumption	(W)	10 (typical value)			
Inputs					
Trigger		External: 24V PNP/NPN (IEC 61131-2 Type 3) TCP/IP EtherNet/IP Continuous			
Outputs					
Maximum Current Load Per Output	(mA)	100			
Output		Digital outputs: 3 (configurable), 24 V PNP/NPN (IEC 61131-2) Analog outputs: 1 output (configurable as current or voltage output)			
Current Output	(mA)	4 - 20			
Max Load	(Ω)	500			
Min Load	(Ω)	230			
Voltage Output	(V)	0 - 10			
Min Load	(Ω)	10,000			
Detection Range					
Operating Distance	(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]			
Max Measuring Range		Typically up to 5000mm, but depending on setting and reflectivity can be up to 30m			
Resolution	(pixels)	176 x 132			
Angle of Aperture	(°)	O3D302: 60 x 45 nominal value without lens distortion correction O3D304 70 x51, nominal value without lens distortion correction			
Interfaces					
Parameter Setting Interface		Ethernet TCP/IP: 10Base-T / 100Base-TX			
Process Interface		Ethernet TCP/IP: Ethernet/IP			
IP Address		192.168.0.69			
Subnet Mask		255.255.255.000			
Gateway IP Address		192.168.0.201			
Environment					
Ambient Temperature		-10 to 50°C [14 to 122°F]			
Storage Temperature		-40 to 85°C [-40 to 185°F]			
IP Rating		IP65			
Other Technical Data					
Integrated Lighting		Infrared LED (850nm), invisible radiation of light-emitting diodes			
Other Data					
Field of View Size With Lens Distortion Correction		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

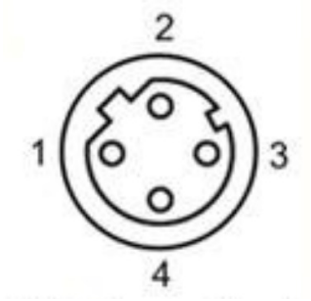
M12 Male

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***
E3D302	$85.00	Heat sink	PDF
E3D301	$60.00	Right-angle bracket for 14mm rod	PDF

E3D302

E3D301

E21228

316L Stainless Steel Rod Selection Guide				
Part Number	***Price***	***Diameter (mm [in])***	***Length (mm [in])***	***Drawing***
E21228	$21.50	14mm [0.6]	200 [7.9]	PDF
E21229	$22.50	14mm [0.6]	300 [11.8]	PDF
E21232	$25.00	14mm [0.6]	400 [15.7]	PDF