

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.

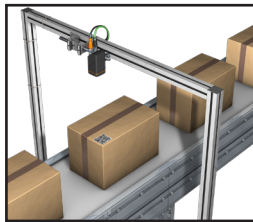
ifm Wizards simplify set-up

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.

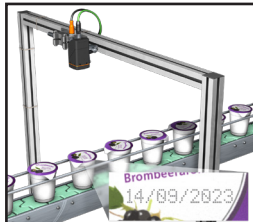
For more advanced users, ifm's Vision Assistant software also has an advanced user-defined mode designed to allow seasoned vision experts to get the very most from these systems.

O2I Wizards



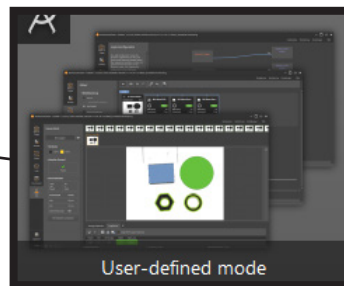
Logistics sorting

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



Date code verification

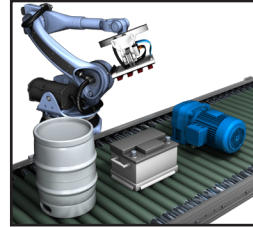
Using built-in OCR (Object Character Recognition)



User-defined mode

Allows advanced users to develop custom rule-based applications

O3D Wizards



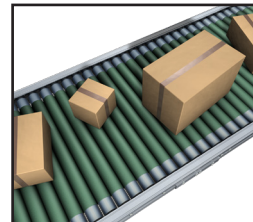
Robot pick and place

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

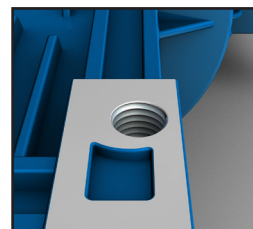
Can determine percentage filled overall instead of just a single point

O2D Wizards



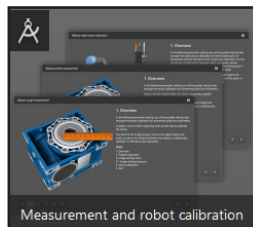
Detection of parts

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

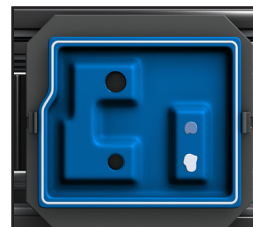


Presence of threads

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.

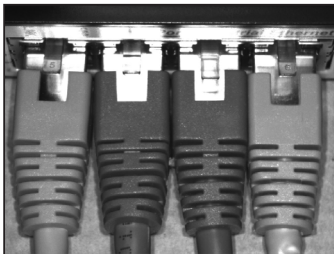
For example, here's how a set of differently colored plugs appears to human eyes when illuminated by white light.



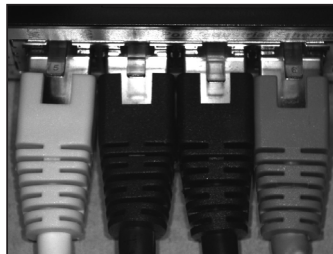
As seen by ifm Vision Assistant under white, red, green or blue light

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).

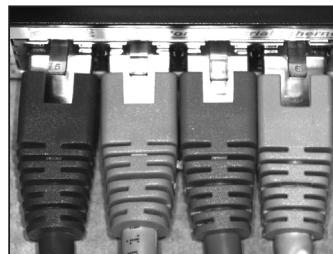
By way of illustration, here is how the same objects shown above might appear to the ifm Vision Assistant when illuminated under white, red, green or blue light. Note how the relative contrast between colors changes with different types of illumination.



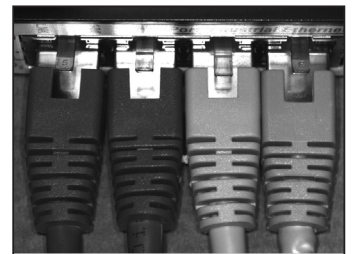
White light



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 Vision 2D Camera

**O2D500**

The ifm efector 2D machine vision sensor provides simple, capable and reliable image-based detection. Whether contour detection or BLOB analysis, the O2D family of vision sensors excels at solving most error-proofing and inspection applications throughout the manufacturing plant for a fraction of the cost of other vision systems and sensors.

Features

- Convenient autofocus
- Four built-in lights (two non-polarized and two polarized)
- Up to five configurable outputs
- Onboard logic engine
- IP65
- Anchor tracking
- Multi-image analysis at various exposure rates
- Contour and BLOB detection
- Imager resolution: 1.2MP

Applications

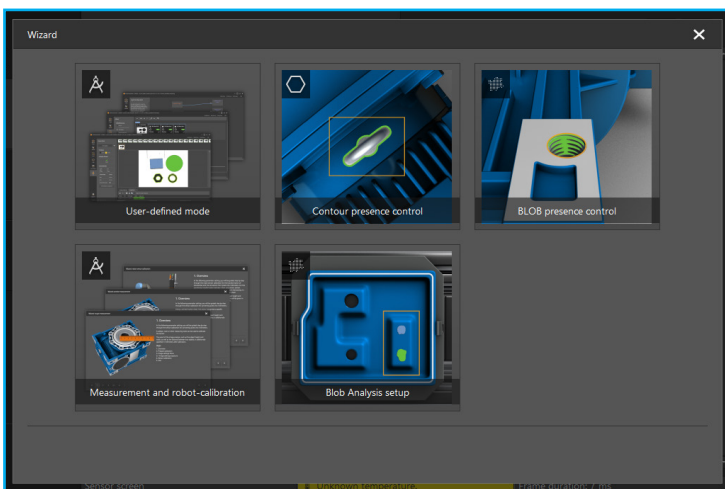
- Metal injection molding quality
- Bottle filling operation quality
- Packaging box quality
- Filter quality
- Tapped hole detection

ifm efector Machine Vision 2D Camera Selection Guide

Part Number	Price	Lens Type	Light Emission	Port Protocols	Lens Material	Dimensional Drawing
<u>O2D500</u>	\$1,436.00	Standard	RGBW (red/green/blue/white)	TCP/IP and EtherNet/IP	Gorilla glass	<u>PDF</u>
<u>O2D520</u>	\$1,436.00		Infrared			<u>PDF</u>
<u>O2D502</u>	\$1,436.00	Wide angle	RGBW (red/green/blue/white)			<u>PDF</u>
<u>O2D522</u>	\$1,436.00		Infrared			<u>PDF</u>

Full-Featured Vision Assistant Configuration

The free ifm Vision Assistant configuration software contains several tools to make integration more seamless. The tools in the library include pattern, form, object, location, measurement, diameter, and roundness, just to name a few. The powerful camera features a 35 frames-per-second target speed. Please note that camera speed is dependent on how much processing must be done by the camera.



Screenshot of ifm's Vision Assistant software. The software contains several wizards to assist in efficient integration of the camera into the automation system and PLC to quickly get you up and running.

ifm efector

Machine Vision 2D Camera



ifm efector Machine Vision 2D Camera Technical Specifications					
Product Characteristics					
Image Resolution	(pixels)	1280 x 960			
Maximum Reading Rate	(Hz)	40			
Electrical Data					
Operating Voltage	(V)	18-30 VDC			
Current Consumption	(mA)	<400 (24VDC; with switched outputs: <900mA)			
Reverse Polarity Protection		Yes			
Wavelength	(nm)	625, 525, and 423			
Image Sensor		CMOS image sensor (black/white)			
Inputs					
Trigger		External: 24V PNP/NPN (IEC 61131-2 Type 3) TCP/IP EtherNet/IP Continuous			
Outputs					
Output Function		PNP/NPN (configurable)			
Maximum Current Load Per Output	(mA)	100			
Monitoring Range					
Field of View	(mm [in])	For Standard Lens (O2D500 and O2D520)		For Wide Angle Lens (O2D502 and O2D522)	
		Operating Distance:	Field of View:	Operating Distance:	Field of View:
		85 [3.35]	28 x 21 [1.10 x 0.83]	35 [1.38]	25 x 19 [0.98 x 0.75]
		300 [11.81]	92 x 69 [3.62 x 2.72]	300 [11.81]	184 x 138 [7.24 x 5.43]
		500 [19.69]	152 x 114 [5.98 x 4.49]	500 [19.69]	304 x 228 [11.97 x 8.98]
		1000 [39.37]	302 x 227 [11.89 x 8.94]	1000 [39.37]	604 x 453 [23.78 x 17.83]
		1500 [59.06]	453 x 340 [17.83 x 13.39]	1500 [59.06]	904 x 678 [35.59 x 26.69]
		2000 [78.74]	603 x 452 [23.74 x 17.80]	2000 [78.74]	1204 x 903 [47.40 x 35.55]
		2500 [98.43]	753 x 564 [29.65 x 22.20]	2500 [98.43]	1504 x 1128 [59.21 x 44.41]
Operating Distance	(mm [in])	>85 [3.35]		>35 [1.38]	
Image Resolution	(pixels)	1280 x 960			
Autofocus Type		Mechanical autofocus			
Interfaces					
Communication Interface		Ethernet			
Transmission Standard		10Base-T; 100Base-TX			
Transmission Rate		10 MBit/s; 100 MBit/s			
Protocol		TCP/IP; EtherNet/IP			
Factory Settings		IP address: 192.168.0.69 Subnet mask: 255.255.255.0 (Class C) Gateway IP address: 192.168.0.201			
Operating Conditions					
Ambient Temperature		-10 to 50°C [14 to 122°F]			
Storage Temperature		-40 to 70°C [-40 to 150°F]			
IP Rating		IP65			
Mechanical Data					
Weight	g [lb]	612.4 [1.35]			
Material		Housing: Diecast zinc powder coated; Front lens: Gorillaglas; LED window: PC; Pushbuttons: POM			

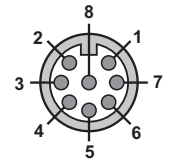
ifm efector

Machine Vision 2D Camera



Electrical Connections – Supply

Connection Colors



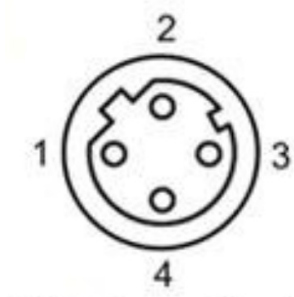
Pin View from Switch
M12 Male

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	OUT5	Switching output 5
5	Gray	Gray	OUT3	Switching output 3
6	Pink	Pink	OUT4	Switching output 4
7	Blue	Violet	OUT2/IN2	Switching input or output 2
8	Red	Orange	OUT1/IN1	Switching input or output 1

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

02D Accessories Selection Guide			
Part Number	Price	Description	Drawing
E2D500	\$34.00	Right-angle bracket for 12mm rod	PDF



E2D500



E21112

316L Stainless Steel Rod Selection Guide				
Part Number	Price	Diameter (mm [in])	Length (mm [in])	Drawing
E21112	\$14.50	12 [0.5]	200 [7.9]	PDF
E21113	\$16.50	12 [0.5]	300 [11.8]	PDF