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.
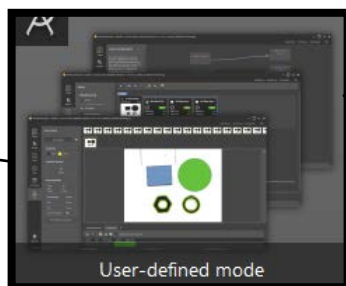
O3D Wizards

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

O2I Wizards

Logistics sorting
Single- or multi-code setup (can also provide barcode quality metrics)
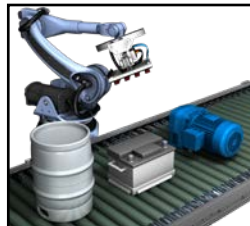
Date code verification
Using built-in OCR (Object Character Recognition)

User-defined mode
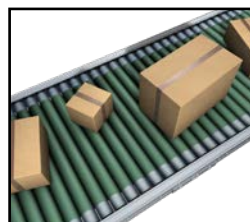*Allows advanced users to develop custom rule-based applications*
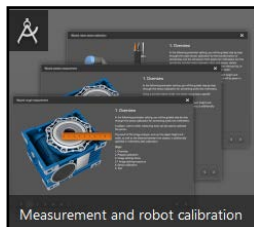
O2D Wizards

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

Measurement and robot calibration

Rough or precise measuring
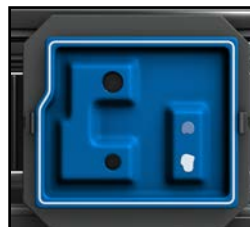
Object width/quality
By analyzing a BLOB

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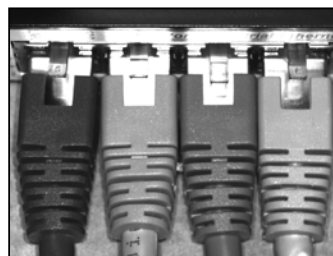
By way of illustration, here is how the same objects shown above might appear to the ifm Vision Assistant when illuminated under white, red, green or blue light. Note how the relative contrast between colors changes with different types of illumination.
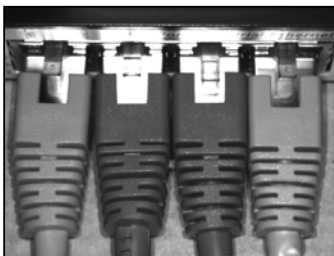
White light
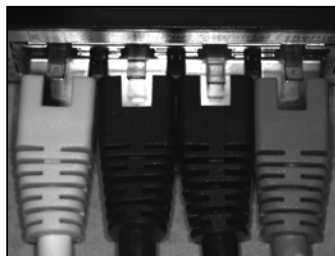
Red light

Green light
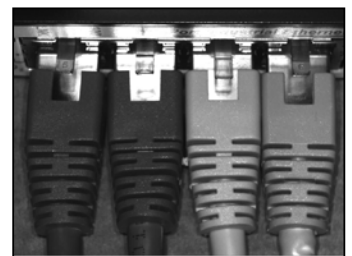
Blue light

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
O2D500	$;00667q:	Standard	RGBW (red/green/blue/white)	TCP/IP and EtherNet/IP	Gorilla glass	PDF
O2D520	$;;00667t:	Standard	Infrared	TCP/IP and EtherNet/IP	Gorilla glass	PDF
O2D502	$;00667s:	Wide angle	RGBW (red/green/blue/white)	TCP/IP and EtherNet/IP	Gorilla glass	PDF
O2D522	$;00667u:	Wide angle	Infrared	TCP/IP and EtherNet/IP	Gorilla glass	PDF

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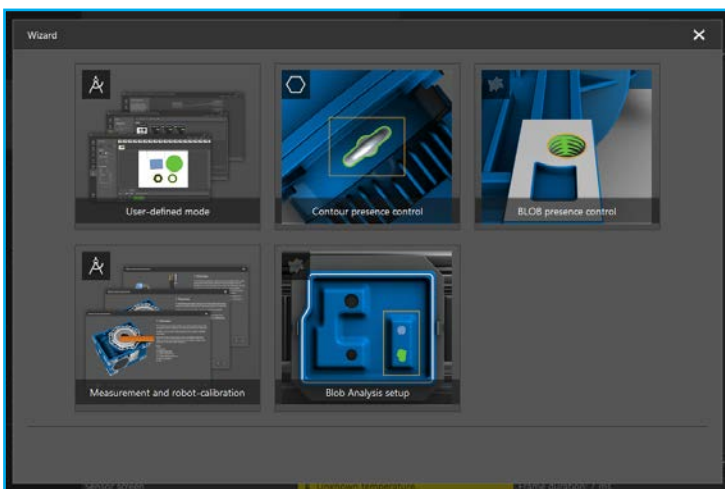
Screenshot of ifm's Vision Assistant software. The software contains several wizards to assist in efficient integration of the camera into the automation system and PLC to quickly get you up and running.

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 Mbps; 100 Mbps			
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
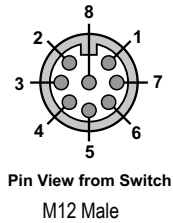
	M12 8-Pin Male Connector			
Pin	292 Cable*	295 Cable*	Signal	Description
1	White	Brown	+24V	Power supply
2	Brown	White	Trigger	Trigger input
3	Green	Blue	GND	Ground
4	Yellow	Black	OUT5	Switching output 5
5	Gray	Gray	OUT3	Switching output 3
6	Pink	Pink	OUT4	Switching output 4
7	Blue	Violet	OUT2/IN2	Switching 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
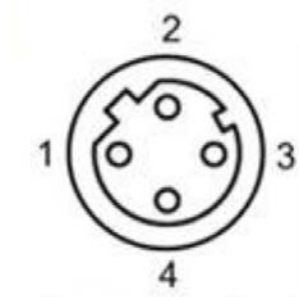
M12 4-Pin Male (D-coded Ethernet)	
1	TxD+, transmit data +
2	RxD+, receive data +
3	TxD-, transmit data –
4	RxD-, receive data –

Accessories

O2D Accessories Selection Guide			
Part Number	Price	Description	Drawing
E2D500	$667_:	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	$-66iq:	12 [0.5]	200 [7.9]	PDF
E21113	$-66is:	12 [0.5]	300 [11.8]	PDF