

FZ-Lite VISION SENSOR

Easy inspection beyond expectation



» Intuitive user guidance
» Crystal-clear imaging
» Flexible Vision platform

realrzing

Simple, flexible & crystal clear



Real Color Processing (16 million colors)
C-mount and Smart Cameras
EtherNet/IP & TCP/IP communication

Benefits

Features

• Simple and guided set-up

• Crystal-clear image quality

- Reliable results on any surface
- One platform for any application



The new FZ-Lite integrates the benefits of a

In combination with the powerful FZ-Lite controller it takes you into a new dimension of image processing. Highest performance, simplicity and unique flexibility are defining a new standard for Compact Vision Sensors.





Lite Controller







> Simple Operation

FZ-Lite supports the Smart Camera technology from the FQ-series Sensors. This allows fast and easy installation of the camera on the machine, without further optics and illumination. Crystal Clear images can be easily captured using High-power Lighting and a Polarizing Filter that eliminates glare.



>> Flexible Flow configuration

More than 20 processing items are provided by FZ-Lite, such as dimension measurements, various search items (pattern, contour), defects, edge and count tools. These processing items, can be combined in a flow program, offering branches or loops. This offers a new dimension of flexibility for Compact Vision Sensors.



>>> Open Network

EtherNet/IP, a global standard for factory automation data networking, is supported for seamless integration into a production line or machine. This allows users to easily connect to any EtherNet/IP enabled devices from any manufacturer. Further communication is possible via TCP/IP, serial and parallel interfaces.

A new benchmark in image clarity

> Simple Operation

Achieving sharp and crystal clear images that improve inspection performance has never been so easy. The FZ-Lite features powerful functions, to eliminate the effects of direct reflections, environmental light interference and big variations in brightness. These cutting edge functions shorten and simplify the installation and setup procedure. Simply don't care anymore about how to install the camera in the best way, to get a sharp image.

Camera with integrated High-power Lighting

The Camera utilizes integrated High-power Lighting that enables uniform illumination in the field of view. Utilizing a new optical design, bright and clear images can be achieved without additional lighting. A Polarizing Filter can be used to cut direct light reflections to eliminate the common issue of glare resulting from highly reflective surfaces.

HDR Sensing

A high dynamic range (HDR) function is provided to eliminate the influence of objects with irregular reflectance and changes in external light conditions. By increasing the high dynamic range by a factor of up to 5,000, objects that previously could not be detected due to inconsistent lighting or halation can be clearly inspected.





Real Color Sensing

Color sensing is standard for OMRON Vision Sensors. Real color processing enables stable detection of minute color differences, which is difficult to perform using color gray processing or filtering. It is not necessary to perform color extraction or redo the setup every time the workpiece color changes.

2 Million Pixel Camera

Inspections that require high resolution can be solved with the 2 Million Pixel Camera. Presence and dimension inspections can be realized. At a rate of 30 frames per second. The input speed is the highest in this class. The use of a C-mount Lens enables applications in any field of view.





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Powerful processing items for any inspection and industry

>> Flexible Application



Measurements



Dimension Measurements Scan Edge Width

Multiple measurements can be performed on the objects for their minimum width, maximum width, and average width. Enhanced performance is also provided to detect the depth of grooves on metal shafts.



Workpiece Count

A cluster of objects is extracted as labels, and the parameters for area, center of gravity, and other factors are generated for output and further processing. Perform measurements for roundness, enclosing rectangles, and circumference measurement. Counting by sorting of the labels according to coordinates or size can also be performed.

Appearance Inspections



Inspection of Defects

Defects

Perform inspection of defects and dirt on solid-colored objects, component chips or burrs.

Fine Matching

Fine Matching is ideal when the background has a pattern. In Combination with the standard image it enables high-speed, high-precision inspection for minute dirt and edge chips.





Detection of Subtle Differences

Sensitive Search

Detailed matching is performed by automatically separating a registered image. Subtle differences that cannot be determined using normal searches are detected with good stability and correlation difference. So, there's no need for accurate threshold settings.

Character Inspections



Inspection of Expiration Dates

Date Verification

By simply setting the period of production, the character string can be automatically verified and the printing can be easily validated. The printed expiration date is changed automatically every day.



Prevention of False Rejections Flexible Search

Inspection can be performed to accept items with variations in printing quality and shape, and to reject only those items that are obviously wrong. Registering multiple images of acceptable items as models enables stable searching regardless of the printing quality or changes in shape.

Choose the interface you need



A variety of interfaces, such as EtherNet/IP, general-purpose Ethernet, and serial communications allows easy communication with a PLC or other external devices.

EtherNet/IP

Easier, Faster

EtherNet/IP is a widely used communication protocol in factories around the world. You can easily connect to OMRON PLCs or any other vendor device that supports EtherNet/IP to enable high-speed communication.



PLC Link Function

Easy Creation of Ladder Programs

A PLC Link function is included to reduce the effort in ladder programming for serial communications and standard Ethernet.

Applicable PLCs

• OMRON CS, CJ, CP, and NSJ Series • Mitsubishi Electric Q Series









I/O be

Network Drive Function

Network Logging

The network drive function in FZ-Lite allows users to output and store images and measurement values to computers over a network, not limited to internal or only to USB memory. Connecting a large-capacity hard drive enables long-term image logging. It can also be used for storage of configuration data. Back-up and restore of any data over the network is also supported.



Controllers

Appearance	Туре			Model	Remarks
	Lite Controllers	Two-camera controllers	NPN	FZ3-L350	-
			PNP	FZ3-L355	-
		Four-camera controllers	NPN	FZ3-L350-10	-
			PNP	FZ3-L355-10	_

Cameras

Appearance	Туре			Model	Remarks
		Wide View (Short-distance) 100mm	Color	FZ-SQ100N	
	Intelligent Compact	Wide View (Long-distance) 100mm	Color	FZ-SQ100F	Camera +Lens +
	Cameras	Standard 50mm	Color	FZ-SQ050F	High-power Lighting
		Narrow View 10mm	Color	FZ-SQ010F	
	Intelligent Cameras	Wide field of vision	Color	FZ-SLC100	Camera + Zoom, Autofocus
		Narrow field of vision	Color	FZ-SLC15	Lens + Intelligent Lighting
	Autofocus Cameras	Wide field of vision	Color	FZ-SZC100	Camera + Zoom, Autofocus
Star In		Narrow field of vision	Color	FZ-SZC15	Lens
	Digital Cameras	2 million pixels	Color	FZ-SC2M	
			Monochrome	FZ-S2M	
and it a	Digital Cameras	200.000 zinala	Color	FZ-SC	
		300,000-pixels	Monochrome	FZ-S	
	Small Digital Cameras	eras 300,000-pixel flat type	Color	FZ-SFC	
			Monochrome	FZ-SF	
60	Small Digital Cameras	III Digital Cameras 300,000-pixel pen type	Color	FZ-SPC	
			Monochrome	FZ-SP	
	High-speed Cameras		Color	FZ-SHC	
		300,000-pixeis	Monochrome	FZ-SH	

Cameras peripheral devices

Appearance	Туре		Model	Remarks		
Cite	CCTV Lenses		374S-LE Series	_		
	Extension Tubes		JZ40-LL JENES	_		
	Low-distortion Lenses		Low-distortion Lenses		FZ-LEH5/LEH8/LEH12/LEH16/ LEH25/LEH35/LEH50/LEH75/ LEH100	Low distortion lens for 2-million Pixel Cameras
6	Lenses for Small Camera		FZ-LES3/LES6/LES16/LES30	Lens for 300,000-pixel Small Cameras		
	Extension Tubes for Small Camera		FZ-LESR	Extension Tubes for 300,000-pixel Small Cameras		
	Intelligent Comerce Diffusion Plate	Wide field of vision	FZ-SLC100-DL	_		
	Narrow field of vision		FZ-SLC15-DL	_		

Cables

Appearance	Туре	Cable length:	Model	Remarks
\sim	Camera Cable	2m, 5m, 10m (See note 2)	FZ-VS	-
<i>•</i>	Bend resistant Camera Cables	2m, 5m, 10m (See note 3)	FZ-VSB	_
\sim	Right-angle Camera Cable (See note 1)	2m, 5m, 10m (See note 2)	FZ-VSL	_
<i>.</i> 0	Long-distance Camera Cable	15m (See note 4)	FZ-VS2	_
	Long-distance Right-angle Camera Cable	15m (See note 4)	FZ-VSL2	-
	Cable Extension Unit	Maximum cable length: 45 m (Up to two Extension Units and three Cables can be connected.)	FZ-VSJ	_
.9	Monitor Cable	2m, 5m	FZ-VM	_
\bigcirc	Parallal Cable	2m, 5m	FZ-VP	_
	Parallel Cable	2m, 5m, Connector-type	FZ-VPX (See note 5)	_

Note: 1. This Cable has an L-shaped connector on the Camera end.

The 10-m Cable cannot be used for the Intelligent Camera and Autofocus Camera.
 The 10-m Cable cannot be used for the Intelligent Camera, Autofocus Camera and 2 Million-pixel Camera.

4. The 15-m Cable cannot be used for the Intelligent Camera and Autofocus Camera.

5. Connector-Terminal Block Conversion Units can be connected (Recommended Products: OMRON XW2B-50G4/50G5, XE2D-50G6).

Peripheral devices

Appearance	Туре			Model	Remarks
	LCD Monitor			FZ-M08	_
•	USB Memory			FZ-MEM1G	Capacity: 1 GB
-	Strobe Controller	Strobe Controller For 3Z4S-LT Series		Manufactured by MORITEX Corporation 3Z4S-LT MLEK-C100E1TS2	Required to control external lighting
	Stroba Controllar	For FZ-LT Series	One channel	FZ-LTA100	from a Controller
	Choice Controller		Two channels	FZ-LTA200	
-	Mouse			_	_
_	External Lighting			3Z4S-LT Series	_
				FZ-LT Series	_

Lite Controller

Madal	NPN		FZ3-L350 FZ3-L350-10			
wodei	PNP		FZ3-L355	FZ3-L355-10		
No. of Cameras	eras		2 4			
	With Intelligent Con	npact Camera	752 (H) × 480 (V)			
Processing	When connected to	a 300.000-pixel camera	640 (H) × 480 (V)			
resolution	When connected to	a 2 million-pixel camera	1600 (H) × 1200 (V)			
		Inspections / Measurement	Search, Flexible Search, Sensitive Sea Classification, Edge Position, Edge Pitt Scan Edge Width, Color Data, Gravity a Precise Defect, Fine Matching, Charac Model Dictionary, Circle Angle	arch, ECM Search, Ec Circle Search, ch, Scan Edge Position, and Area, Labeling, Label Data, Defect, ter Inspection, Date Verification,		
		Image Capturing	Camera image Input, Camera Image Ir Lite, Camera Switching, Measurement	put HDR, Camera Image Input HDR Image Switching		
	Processing Items	Correcting images	Position Compensation, Filtering, Back Extract Color Filter, Anti Color Shading	grond Suppression, Color Gray Filter, , Polar Transformation		
Main functions		Assisting inspections / measurement	Calculation, Line Regression, Circle Regression, Set Unit Data, Get Unit Data Set Unit Figure, Get Unit Figure, Trend Monitor, Image Logging, Data Logging Elapsed Time, Wait, Focus, Iris			
		Branching processing	Conditional Branch, End, DI Branch			
		Outputting results	Serial data output, Parallel data output, Parallel judgement output, Fieldbus data output			
		Displaying results onthe monitor	Result Display, Display Image File, Dis	play Last NG Image		
	Number of simultan	eous inspections1	No limit to setting (as permitted by mer	nory capacity)		
	Desition commonos	41	Yes			
	Position compensa	tion	(flexible combination with processing ite	ems for inspections and measurements)		
	Number of registere	ed scenes	32			
		Connected to 1 camera	214			
	With Intelligent	Connected to 2 cameras	107			
	Compact Camera	Connected to 3 cameras	71			
		Connected to 4 cameras	53			
	When connected to a 300,000-pixel camera	Connected to 1 camera	Color Camera: 250. Monochrome Camera: 252			
Number of		Connected to 2 cameras	Color Camera: 125, Monochrome Camera: 126			
logged images		Connected to 3 cameras	Color Camera: 83 Monochrome Came	ira: 84		
(See note 1.)		Connected to 4 cameras	Color Camera: 62, Monochrome Camera: 63			
		Connected to 4 camera	Color Camera: 40 Monochrome Camera: 40			
	When connected		Color Camera: 20 Monochrome Camera: 20			
	to a 2 million-pixel	Connected to 2 cameras	Color Camera: 20, Monochrome Camera: 20			
	camera	Connected to 3 cameras	Color Camera: 13, Monochrome Camera: 13			
		Connected to 4 cameras	Color Camera: 10, Monochrome Camera: 10			
	Serial communicati	ons	RS-232C 1CH			
1/0	Network communications		Ethernet 1000BASE-T/100BASE-TX/10	DBASE-T		
specifications	EtherNet/IP		Ethernet port baud rate: 100 Mbps (100)Base-TX)		
	Parallel I/O		11 inputs (RESET, STEP, DSA, and DI 0 to 7), 26 outputs (RUN, BUSY, GATE, OR, READY, ERROR, STGOUT 0 to 3, and DO 0 to 15)			
Monitor interface			Analog RGB video output, 1 channel (Resolution: XGA 1,024 × 768 dots)			
USB Interface			2 cnannels (supports USB 1.1 and 2.0)	-		
Operation			Mouse or similar device			
Settings	-		Create series of processing steps by editing the flowchart (Help messages provided).			
	Power supply voltage	ge (See note 2.)	20.4 to 26.4 VDC	[
Detines	Current	With Intelligent Compact Camera When connected to a intelligent or autofocus camera	4.0 A max.	5.5 A max.		
Naungs	consumption (See note 3.)	When connected to a 300,000-pixel				
	(at 24.0 VDĆ)	camera When connected to a 2 million-	2.6 A max.	2.9 A max.		
	pixel camera					
	Ambient temperatu	re range	Operating: 0 to 50 °C, Storage: -25 to	b5 °C (with no icing or condensation)		
Environmental	Ambient humidity ra	ange	Operating and storage: 35% to 85% (w	nth no condensation)		
immunity	Ambient atmospher	re	No corrosive gas			
	Degree of protectio	n	IEC 60529 IP20			
Materials			Plating steel board			
Weight			Approx. 1.8kg			
Accessories			Instruction Manual			

Note: 1. The number of logged images will vary when connecting multiple Cameras with different models.
2. Do not ground the positive terminal of the 24-VDC power supply to the Lite Controller. If the positive terminal is grounded, electrical shock may occur when an SG (0-V) part, such as the case of the Controller or Camera, is touched.

3. The current consumption when the maximum number of Cameras supported by each Controller are connected. If a strobe Controller model is connected to a lamp, the current consumption is as high as when an Intelligent Camera is connected.

LCD Monitor

Model	FZ-M08
Size	8.4 inches
Туре	Liquid crystal color TFT
Resolution	1,024×768 dots
Input signal	Analog RGB video input, 1 channel
Power supply voltage	21.6 to 26.4 VDC
Current consumption	Approx. 0.7 A max.
Ambient temperature range	Operating: 0 to 50 °C, Storage: –25 to 65 °C (with no icing or condensation)
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)
Weight	Approx. 1.2 kg
Accessories	Instruction Sheet and 4 mounting brackets

Monitor Cable

Model	FZ-VM
Vibration resistiveness	10 to 150 Hz single amplitude 0.15 mm 3 directions, 8 strokes, 4 times
Ambient temperature range	Operation: 0 to +50 °C, Storage: -20 to +65 °C (with no icing or condensation)
Ambient humidity range	Operation and storage: 35% to 85%RH (with no condensation)
Ambient atmosphere	No corrosive gases
Material	Cable sheath: heat-resistant PVC Connector: PVC
Minimum bending radius	75 mm
Weight	approx.170 g

Intelligent Compact Camera

Model		FZ-SQ010F	FZ-SQ050F	FZ-SQ100F	FZ-SQ100N			
Field of vision		7.5×4.7 to 13×8.2 mm	13×8.2 to 53×33 mm	53×33 to 240×153 mm	29×18 to 300×191 mm			
Installation distance		38 to 60 mm	56 to 215 mm	220 to 970 mm	32 to 380 mm			
	Image processing method	Real color						
Image input	Image elements	1/3-inch color CMOS	1/3-inch color CMOS					
	Shutter	1/250 to 1/32258						
	Processing resolution	752 (H) × 480 (V)	752 (H) × 480 (V)					
	Partial function	8 to 752 lines						
	Lighting method	Pulse	Pulse					
Lighting	Lighting color	White						
	LED class	Class 2						
	Ambient temperature range	Operating: 0 to 50 °C, Storage: -25 to 65 °C (with no icing or condensation)						
Environmental	Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)						
immunity	Ambient atmosphere	No corrosive gas						
	Degree of protection	IEC 60529 IP40 (with Polarizing Filter Attachment mounted.)						
Materials		Camera: PBT, PC, SUS Mounting Bracket: PBT Polarizing Filter Attachment: PBT, PC						
Weight		Approx. 160 g Approx. 150 g						
Accessories		Mounting Bracket (FQ-XL) (1) Polarizing Filter Attachment (FQ-XF1) (1) Instruction Manual Member registration sheet						

System configuration



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Controllers

FZ3-L35□ FZ3-L35□-10



Intelligent Compact Camera

Narrow View and Standard

FZ-SQ010F FZ-SQ050F



Wide View

FZ-SQ100F (Long-distance) FZ-SQ100N (Short-distance)



The Mounting Bracket can be mounted to either side.

Note. The Mounting Bracket can be mounted to either side.

Tightening torque: 1.2 N·m

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LCD Monitor

FZ-M08







* Field of Vision

The images displayed on the monitor will be rectangular images of 640×480 pixels. The valid processing area for measurements is the 480×480-pixel area in the middle.

The above figures show the dimensions of the middle 480×480 pixels.

2 Million-pixel Digital Camera

FZ-S⊟2M



The 5-mm Extension Tubes (3Z4S-LE ML-EXR) cannot be used with FZ-LEH25 Lenses.



300,000-pixel Small Digital Cameras

FZ-SF□, FZ-SP□

Note: 1. The vertical axis represents WD, not installation distance.



300,000-pixel High-speed Camera, and Digital Camera FZ-SHD, FZ-SD



Meaning of Optical Chart

The X axis of the optical chart shows the field of vision (mm) (Note1), and the Y axis of the optical chart shows the camera installation distance (mm) (Note2).



Note: 1. The lengths of the fields of vision given in the optical charts are the lengths of the Y axis.2. The vertical axis represents WD for small cameras.

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