OMRON

PC VISION SYSTEM – FJ SERIES

Create your ideal system

» Seamless hardware & software integration

» Easy customisation

» Cutting-edge algorithms

realizing

Fast machine integration...
...easy customisation

The new customisable FJ Series Vision System combines the benefits of a compact system with the power and flexibility of an industrial PC platform. The system will enable you to develop your ideal machine vision solution quickly, no matter if you are creating a completely new application or modifying an exsisting one. Easy HMI creation, unique flexibity and fast integration define this new class of vision system. The FJ Series is available with a range of controllers and cameras, suitable for every application. This eliminates the time needed to integrate components and delivers a platform with the highest quality and reliability.

Features

Quick customisation:
• Fast drag and drop programming
• Choice of ready-made GUIs
• Using existing software

Seamless integration:
• Proven component compatibility
• Wide selection of intelligent cameras

Stable, high-speed processing:
• Advanced algorithms
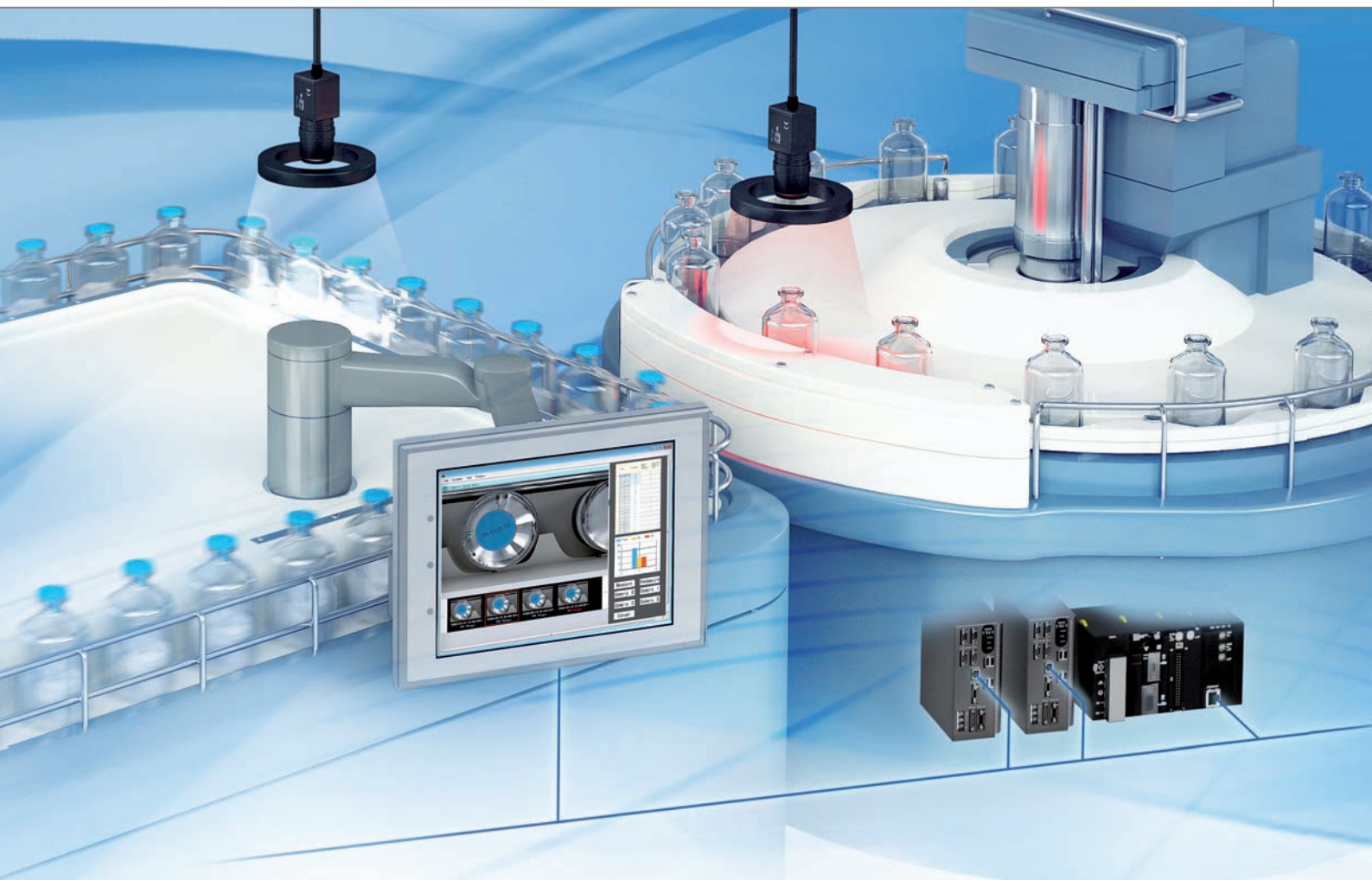• HDD-less controllers

Windows embedded-based FJ Controller

Development environment Application Producer

One complete and compatible collection of all the components you need to build your ideal machine vision system.

Highly flexible development

Imagine how much money you could save by reducing your current development time by 50%. With the FJ Series you can do just that. That's because you can build processing flow simply by listing the processing items for each measurement. Other features that accelerate development include: sample GUIs, options to re-use existing software, built-in touchscreens, and more.

Proven reliability

All the hardware and software components are completely compatible. In addition, the controllers use flash memory – not hard disc drives – so they always remain highly reliable even in a hostile factory environment.

Stable and high-speed inspection

The Halcon library of algorithms provides high-speed processing and measurement. In addition, the FJ Series' High Dynamic Range and Real Colour sensing techniques ensure robust and stable operation.

*HALCON is a registered trademark of MVTec Software GmbH.

Smart programming
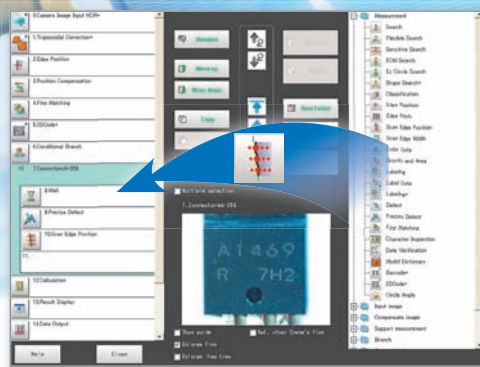
Drag and drop with image processing

You can create new measurement and inspection flows quickly and easily with our ready-made modules. Simply choose from the 60+ modules and drag and drop them to define your required image-input, measurement and other sequences – as well as building your processing flows. No more searching subroutine libraries and painstakingly piecing them together. You can immediately create new inspection functions from our ready-made software modules.

Time-saving Macros
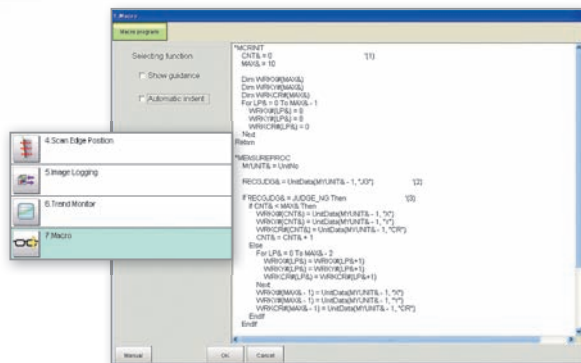
We also offer a wide range of Macros to further accelerate your development process – especially for your calculation functions. Simply drag and drop the required Macro into your flow.
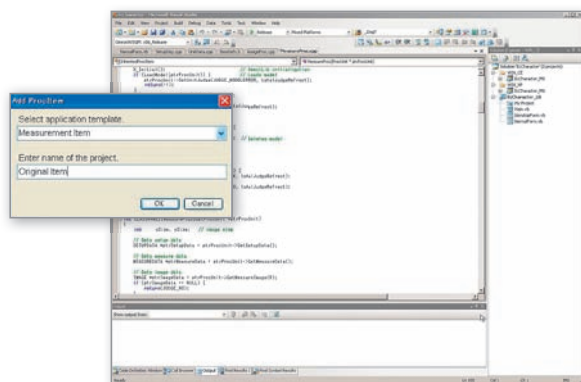
Own developed algorithms

If the item you need is not included in the new FJ Series software suite, you can easily create your own item using Microsoft® Visual Studio® and the "Application Producer". The Development Wizard and code samples ensure that creating programs, including those for your GUI, is always quick and simple.

*Microsoft® Visual Studio® is a registered trademark of Microsoft Corporation.

Easy HMI configuration

Show only the buttons you need

Choose from our library of buttons and position them anywhere on-screen to best support your daily operation, without 'screen clutter".
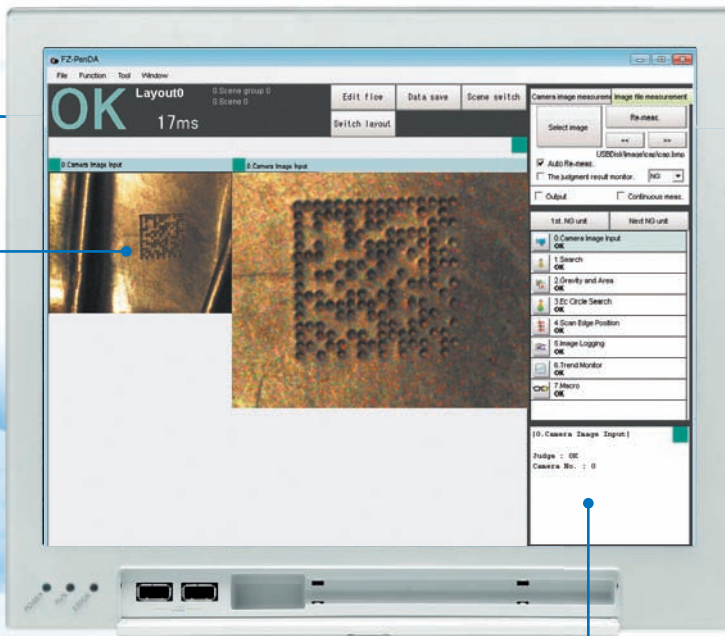
Add a camera image

With just one click.

Eight screen layout

Up to 8 screens can be stored depending on the application or user classification.
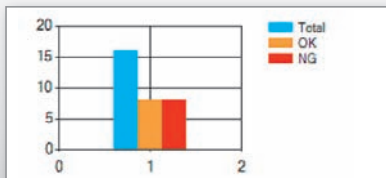
Move windows freely

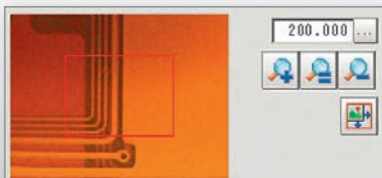Drag and drop windows where you want. You can also change the box size and delete.

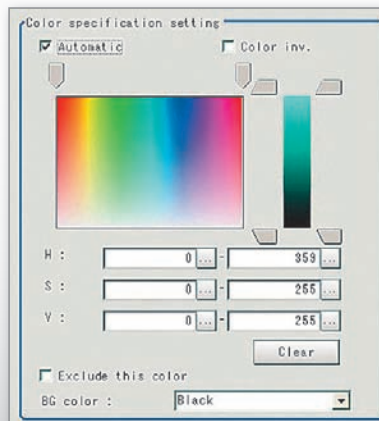## Free HMI programming

Create the HMI to fit your needs

You can create original HMI and GUIs quickly with Visual Studio®, rich customisable control units and program samples in the FJ "Application Producer".

Progam sample for bar graph

Zoom browser

Colour setting control

Seamless connectivity with your machine

Working in perfect harmony with your machine

The FJ Series controllers are Windows-based Open IPCs on which you can install your regular PC programs.
You can also install printer and robot controller driver software.

The Windows-based environment in the FJ Series allows you to reuse your existing software which supports the
building of your machine's vision application such as statistical, communication, printer driver and other
software. This not only saves time but enables you to continue benefitting from previous investments.

Statistics analysis software

Robot controller

Printer driver

Remote monitoring and control

The FJ Series is Ethernet-compatible. This enables you to remotely monitor your systems when in use
at your customer's sites and therefore enables you to schedule timely maintenance programs and
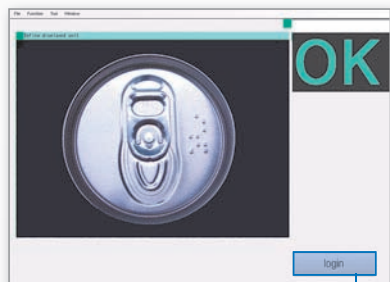ensure continued customer satisfaction.

Factory

Office

Build in security – more customer satisfaction

You can further delight your customers by building in security functions that prevent operational errors on the shop floor. Simply choose from the sample, ready-made code in the "Application Producer".
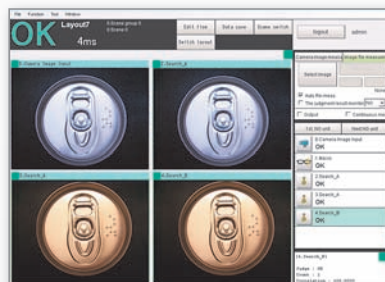
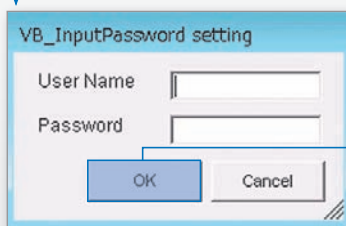## Access control operation

Running screen

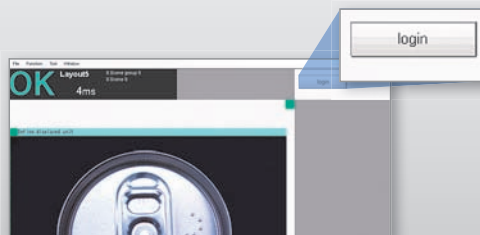Measurement result clearly displayed

Administrative screen

Tuning menu

Easy implementation
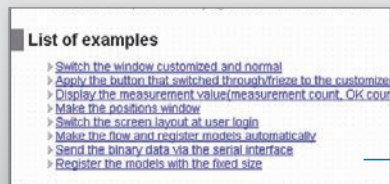
1. Select from the sample list in the "Application Producer"

2. Drag and Drop the zip file

3. The login button is automatically created

Always keeping you up to date with the latest software

You can get free downloads of the latest versions of software, sample programs, and new technical documentation any time after purchasing the FJ Series. With Omron, you will always have access to the latest systems and knowledge.

http://www.omron-cxone.com/pc_v/index.html

Stable, high-speed inspection
via superior image processing...

HDR sensing

With our High Dynamic Range* sensing technology, changing lighting levels will never affect the performance of your system, making it extremely stable. HDR sensing also avoids the need for complex illumination schemes, the FJ Series Vision System is highly stable and performs at high speed in normal lighting levels. Also with an HDR of up to 5000:1 your vision system will also inspect shiny, reflective surfaces with extreme accuracy and without halation.

Real Colour Sensing

The limitations of traditional vision systems have also been overcome in the FJ Series by using 24-bit Real Colour sensing to better mimic the colours found in the real world. Real Colour sensing instantly recognises more than 16 million different colours in real-time using 256 shades of red, 256 shades of blue, and 256 shades of green. This translates into faster inspections without sacrificing quality, performance, or resolution.

Conventional images   HDR images
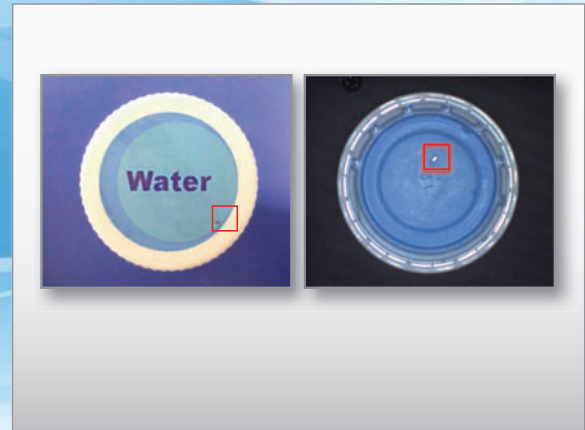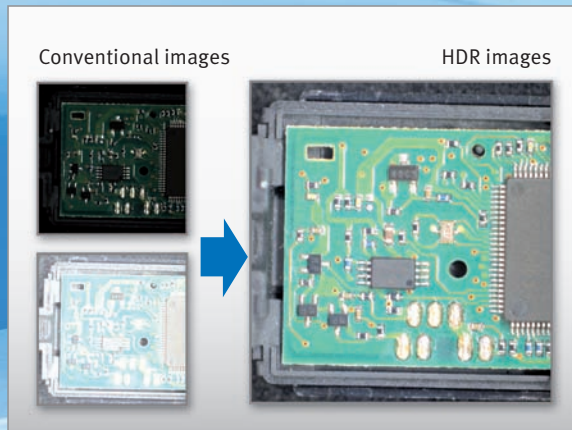
* The "dynamic range" of an imaging system refers to its ability to detect differences in luminosity. The higher the dynamic range, the clearer the images.

Inspection and Measurement Items

| Search | Flexible Search | Sensitive Search | ECM Search | EC Circle Search | Sharpe Search+ | Classification | Edge Position | Edge Pitch | Scan Edge Position | Scan Edge Width |

...and advanced algorithms

HALCON

More than 1600 algorithms

Take advantage of the HALCON Algorithm vision library: more than 1600 state-of-the-art algorithms specially made for high-speed inspection systems. Combine these with Omron's wide range of GUIs to create your ideal processing items. This also allows you to easily build an interface to turn HALCON Algorithms into useful processing items on the shop floor.

Shape-based matching

Even under difficult conditions, such as missing workpieces or foreign objects on the line, the FJ Series still conducts robust measurements and inspections.
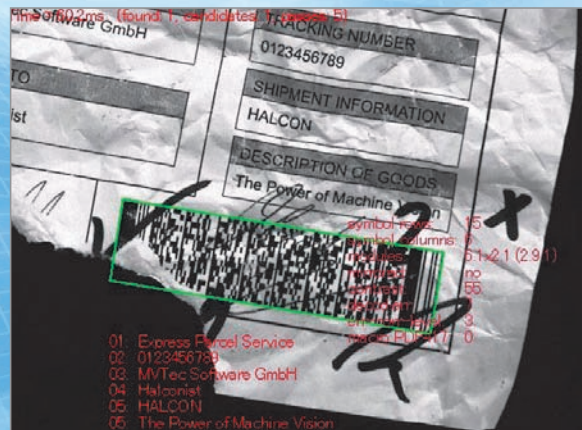
High-speed, stable code reading

Even scratched or dirty codes can be read with extreme accuracy. Codes printed onto materials with varying reflectivity, such as metals, PCBs, and glass can also be read with excellent accuracy.

| Colour Data | Gravity and Area | Labelling | Defect | Precise Defect | Fine Matching | Character Inspection | Date Verification | Barcode+ | 2DCode+ | Circle Angle |

Highly reliable hardware

guaranteed connectivity

All the different components in the FJ Series – cameras, controllers, frame grabbers, light sources, and software – are proven to be 100% compatible. So you can choose the exact components you want, with the exact performance levels you need, and be confident that it will all come together perfectly.

HDD-less

Highly robust controllers

The FJ Series controllers use Flash memory – not hard disc drives. That's why they are highly robust and can take a few knocks in the factory environment. Even sudden power outages and strong vibration will not affect them. Choose either the compact controller when space is limited, or the touchscreen-integrated model for optimised ease of use.

Controller BOX-type

Controller integrated with LCD

Ladder programs made easy

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

Applicable PLCs
• Omron CS, CJ, CP, and NSJ Series
• Mitsubishi Electric Q Series

Wide range of cameras

You have a choice of 20 different digital cameras, including intelligent models which can automatically adjust their shutter speeds to compensate for changing lighting levels. There is also a choice of compact intelligent cameras for when space is limited.

SEAMLESS CONNECTIVITY

Choice of lighting

Lighting timing and lighting power are managed by the FJ Series controller. When several cameras are connected to one controller, the flash timings are controlled automatically to prevent interference.

Open Network

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

EtherNet/IP™

System Configuration

Standard Configuration

Controllers integrated with LCD

Box-type Controllers
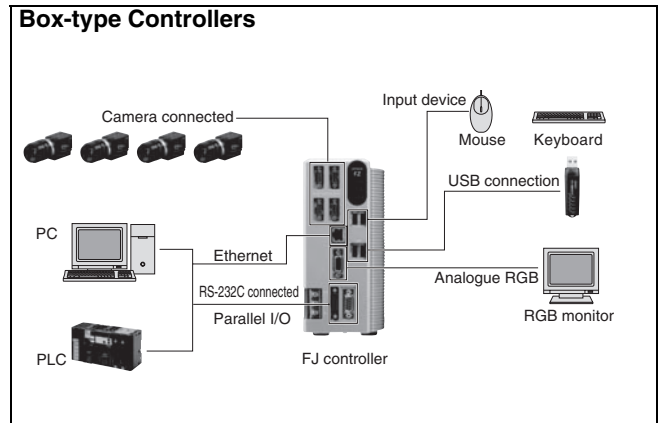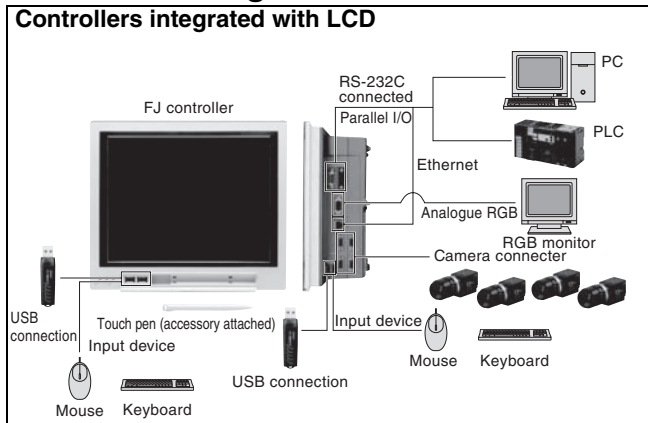
For Customization

Development environment Application Producer

Sample codes and Development Wizard for easy customization are available.

Ordering Information

Controller

CPU	Type	Dual-task	HALCON installed (See note)	No. of Cameras	Output	Model
Core i5 2.4 GHz	Controller integrated with LCD	Yes	No	2	NPN	**FJ-3000**
		Yes	No	4	NPN	**FJ-3000-10**
		Yes	No	2	PNP	**FJ-3005**
		Yes	No	4	PNP	**FJ-3005-10**
		Yes	Yes	2	NPN	**FJ-H3000**
		Yes	Yes	4	NPN	**FJ-H3000-10**
		Yes	Yes	2	PNP	**FJ-H3005**
		Yes	Yes	4	PNP	**FJ-H3005-10**
	Box-type Controller	Yes	No	2	NPN	**FJ-3050**
		Yes	No	4	NPN	**FJ-3050-10**
		Yes	No	2	PNP	**FJ-3055**
		Yes	No	4	PNP	**FJ-3055-10**
		Yes	Yes	2	NPN	**FJ-H3050**
		Yes	Yes	4	NPN	**FJ-H3050-10**
		Yes	Yes	2	PNP	**FJ-H3055**
		Yes	Yes	4	PNP	**FJ-H3055-10**
Atom 1.6 GHz	Box-type Controller	No	No	2	NPN	**FJ-350**
		No	No	4	NPN	**FJ-350-10**
		No	No	2	PNP	**FJ-355**
		No	No	4	PNP	**FJ-355-10**

Note: HALCON runtime license has been installed. The development of HALCON requires HDevelop.

Development environment

Type	Model	Operating environment

Application Producer	**FJ-AP1**	· CPU: Intel Pentium Processor (SSE2 or higher)
		· OS: Windows XP Professional (32bit) Service pack 3 or later, or Windows 7 Professional (32bit) or Enterprise (32bit) or Ultimate (32bit)
		· .NET Framework: .NET Framework 3.5 or higher
		· Memory: At least 2 GB RAM
		  Available disk space: At least 2 GB
		· Browser: Microsoft® Internet Explorer 6.0 or later
		· Display: XGA (1024×768), True Color (32-bit) or higher
		· Optical drive: CD/DVD drive
		· The following sofware is required to customize the software:
		  Microsoft® Visual Studio® 2010 Profesional

Cameras

Type			Model	Remarks
Digital Cameras	300,000 pixels	Color	**FZ-SC**	Lens required
		Monochrome	**FZ-S**	
	2 million pixels	Color	**FZ-SC2M**	
		Monochrome	**FZ-S2M**	
	5 million pixels	Color	**FZ-SC5M2**	
		Monochrome	**FZ-S5M2**	

Type			Model	Remarks
Small Digital Cameras	300,000-pixel flat type	Color	FZ-SFC	Lens for small cameras required
		Monochrome	FZ-SF	
	300,000-pixel pen type	Color	FZ-SPC	
		Monochrome	FZ-SP	
High-speed Cameras	300,000 pixels	Color	FZ-SHC	Lens required
		Monochrome	FZ-SH	
Intelligent Compact Cameras	Wide View (Long-distance)	Color	FZ-SQ100F	Camera + Lens + High-power Lighting
	Wide View (Short-distance)	Color	FZ-SQ100N	
	Standard	Color	FZ-SQ050F	
	Narrow View	Color	FZ-SQ010F	
Intelligent Cameras	Wide field of vision	Color	FZ-SLC100	Camera + Zoom, Autofocus Lens + Intelligent Lighting
	Narrow field of vision	Color	FZ-SLC15	
Autofocus Cameras	Wide field of vision	Color	FZ-SZC100	Camera + Zoom, Autofocus Lens
	Narrow field of vision	Color	FZ-SZC15	

Cameras peripheral devices

Type		Model	Remarks
CCTV Lenses		3Z4S-LE Series	–
Extension Tubes			
Low-distortion Lenses		FZ-LEH5/LEH8/LEH12/LEH16/LEH25/LEH35/LEH50/LEH75/LEH100	Low distortion lens for 2-million and 5-million Pixel Cameras
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 Camera Diffusion Plate	Wide field of vision	FZ-SLC100-DL	–
	Narrow field of vision	FZ-SLC15-DL	
Halation cut illumination		FZ-SXCRB7018BR-4S	Integrated unit combining special Halation cut illumination, strobe controller and camera (without lens)
		FZ-LTCRB7018BR-4S	Integrated unit combining special Halation cut illumination and strobe controller
		FZ-LTRB7018BR-4S	Special Halation cut illumination only
For Intelligent Compact Camera	Mounting brackets	FQ-XL/XL2	–
	Polarizing Filter Attachment	FQ-XF1	

Cables

Type	Cable length:	Model	Remarks
Camera Cable	2 m, 5 m, 10 m (See note 2)	FZ-VS	
Bend resistant Camera Cables	2 m, 5 m, 10 m (See note 3)	FZ-VSB	
Right-angle Camera Cable (See note 1)	2 m, 5 m, 10 m (See note 2)	FZ-VSL	
Long-distance Camera Cable	15 m (See note 4)	FZ-VS2	
Long-distance Right-angle Camera Cable	15 m (See note 4)	FZ-VSL2	–
Cable Extension Unit	Maximum cable length: 45 m (Up to two Extension Units and three Cables can be connected.) (See note 5)	FZ-VSJ	
Monitor Cable	2 m, 5 m	FZ-VM	
Parallel Cable	2 m, 5 m	FZ-VP	
	2 m, 5 m, Connector-type	FZ-VPX (See note 6)	

Note: 1. This Cable has an L-shaped connector on the Camera end.
2. The 10-m Cable cannot be used for the Intelligent Camera, Autofocus Camera and 5-million pixel camera.
3. The 10-m Cable cannot be used for the Intelligent Camera, Autofocus Camera, 2-million pixel camera and 5-million pixel camera.
4. The 15-m Cable cannot be used for the Intelligent Camera, Autofocus Camera and 5-million pixel camera.
5. Maximum cable length depends on type of camera and cable length to connect. For details, refer to "Cameras / Cables Connection Table".
6. Connector-Terminal Block Conversion Units can be connected (Recommended Products: OMRON XW2B-50G4/50G5, XE2D-50G6).

Peripheral devices

Type			Model	Remarks
LCD Monitor			FZ-M08	For box-type controller
USB Memory			FZ-MEM1G	Capacity: 1 GB
VESA attachment			FZ-VESA	For installing the controller integrated with LCD
Desktop controller stand			FZ-DS	For installing the controller integrated with LCD
Lighting Controller	For FL-Series		FL-TCC1	
Strobe Controller	For 3Z4S-LT Series	One channel	Manufactured by MORITEX Corporation 3Z4S-LT MLEK-C100E1TS2	Required to control external lighting from a Controller
	For FZ-LT Series	One channel	FZ-LTA100	
		Two channels	FZ-LTA200	
Adapter for the strobe controller			Manufactured by MORITEX Corporation 3Z4S-LT LBK-003	Required to mount a strobe controller on a 5-million pixel camera when using 3Z4S-LT series
External Lighting			3Z4S-LT Series	–
			FZ-LT Series	
			FL-Series	

Cameras / Cables Connection Table

Type of camera	Model	Cable length	Intelligent cameras Autofocus cameras	High-speed cameras	Digital cameras			Small digital cameras Pen type / flat type	Intelligent compact cameras
					300,000-pixel	2 million-pixel	5 million-pixel		
Camera Cables Right-angle camera cables	FZ-VS FZ-VSL	2m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		5m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		10m	No	Yes	Yes	Yes	No	Yes	Yes
Bend resistant camera cables	FZ-VSB	2m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		5m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		10m	No	Yes	Yes	No	No	Yes	Yes
Long-distance camera cable Long-distance right-angle camera cable	FZ-VS2 FZ-VSL2	15m	No	Yes	Yes	Yes	No	Yes	Yes

Ratings and Performance

Controller

Model	NPN Output	FJ-3000	FJ-3000-10	FJ-3050	FJ-3050-10	FJ-H3000	FJ-H3000-10	FJ-H3050	FJ-H3050-10	FJ-350	FJ-350-10
	PNP Output	FJ-3005	FJ-3005-10	FJ-3055	FJ-3055-10	FJ-H3005	FJ-H3005-10	FJ-H3055	FJ-H3055-10	FJ-355	FJ-355-10
Controller type		Controller integrated with LCD		Box-type controller		Controller integrated with LCD		Box-type controller		Box-type controller	
No. of cameras		2	4	2	4	2	4	2	4	2	4
CPU		Intel Core i5-520E Processor 2.40 GHz								Intel Atom N270 Processor 1.6 GHz	
Main memory		3 GB								2 GB	
Storage		Compact Flash 2 GB									
OS		Windows Embedded Standard 2009									
Dual-task		Yes								No	
HALCON installed		No				Yes				No	
Connected camera		Can be connected to all cameras.									
Operation		Controller integrated with LCD: touch pen, mouse, etc. Box-type controller: mouse, etc.									
Processing resolution		Intelligent Compact Camera: 752 (H) × 480 (V) 300,000-pixel camera: 640 (H) × 480 (V) 2-million pixel camera: 1600 (H) × 1200 (V), 5-million pixel camera: 2488 (H) × 2044 (V)									
No. of scenes		32									
Number of logged images	When connected to an Intelligent Compact Camera — Connected to 1 camera	214									
	Connected to 2 cameras	107									
	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									
	Connected to 2 cameras	Color camera: 125, Monochrome Camera: 126									
	Connected to 3 cameras	Color camera: 83, Monochrome Camera: 84									
	Connected to 4 cameras	Color camera: 62, Monochrome Camera: 63									
	When connected to a 2 million-pixel camera — Connected to 1 camera	Color camera: 40, Monochrome Camera: 40									
	Connected to 2 cameras	Color camera: 20, Monochrome Camera: 20									
	Connected to 3 cameras	Color camera: 13, Monochrome Camera: 13									
	Connected to 4 cameras	Color camera: 10, Monochrome Camera: 10									
	When connected to a 5 million-pixel camera — Connected to 1 camera	Color camera: 15, Monochrome Camera: 15									
	Connected to 2 cameras	Color camera: 7, Monochrome Camera: 7									
	Connected to 3 cameras	Color camera: 5, Monochrome Camera: 5									
	Connected to 4 cameras	Color camera: 3, Monochrome Camera: 3									
Serial communications		RS-232C/422A: 1CH								RS-232C: 1CH	
Network communications		Ethernet 100BASE-TX/10BASE-T								Ethernet 1000BASE-T/ 100BASE-TX/ 10BASE-T	
EtherNet/IP		Ethernet port baud rate: 100 Mbps (100BASE-TX)									
Parallel I/O		17 inputs (RESET, STEP0/ENCTRIG_Z0, STEP1/ENCTRIG_Z1, DSA0 to 1, ENCTRIG_A0 to 1, ENCTRIG_B0 to 1, DI0 to 7) 29 outputs (RUN/BUSY1, BUSY0, GATE0 to 1, OR0 to 1, READY0 to 1, ERROR, STGOUT0 to 3*, DO0 to 15)								11 inputs (RESET, STEP, DSA, DI0 to 7) 26 outputs (RUN, BUSY, GATE, OR, READY, ERROR, STGOUT0 to 3*, DO0 to 15)	
Monitor interface		Controller integrated with LCD: integrated controller and LCD 12.1 inch TFT color LCD (Resolution: XGA 1,024 × 768 dots) Box-type controller: Analog RGB video output, 1 channel (Resolution: XGA 1,024 × 768 dots)									
USB interface		4 channels (supports USB 1.1 and 2.0)								2 channels (supports USB 1.1 and 2.0)	
Power supply voltage		20.4 to 26.4 VDC									
Current consumption (at 24.0 VDC)	When connected to an Intelligent Compact Camera, intelligent or autofocus camera	5.0 A max.	7.5 A max.	5.0 A max.	7.5 A max.	5.0 A max.	7.5 A max.	5.0 A max.	7.5 A max.	4.0 A max.	5.5 A max.
	When connected to a 300,000-pixel, 2 million-pixel, or 5 million-pixel camera	3.7 A max.	4.9 A max.	3.7 A max.	4.9 A max.	3.7 A max.	4.9 A max.	3.7 A max.	4.9 A max.	2.6 A max.	2.9 A max.
Ambient temperature range		Operating: 0 to +45°C for low cooling fan speeds 0 to +50°C for high cooling fan speeds Storage: -20 to 65°C (with no icing or condensation)								Operating: 0 to 50°C Storage: -20 to 65°C (with no icing or condensation)	
Ambient humidity range		Operating and storage: 35 to 85% (with no condensation)									
Weight		Approx. 3.4 kg		Approx. 1.9 kg		Approx. 3.4 kg		Approx. 1.9 kg		Approx. 1.8 kg	
Accessories		Controller integrated with LCD: touch pen (one, inside the front panel), Instruction Manual, 6 mounting brackets, Member registration sheet Box-type controller: Instruction Manual, Member registration sheet									

∗ STGOUT 2 to 3 only for camera 4ch type

Digital cameras

	FZ-S	FZ-SC	FZ-S2M	FZ-SC2M	FZ-S5M2	FZ-SC5M2
Image elements	Interline transfer reading all pixels, 1/3-inch CCD image elements		Interline transfer reading all pixels, 1/1.8-inch CCD image elements		Interline transfer reading all pixels, 2/3-inch CCD image elements	
Color/Monochrome	Monochrome	Color	Monochrome	Color	Monochrome	Color
Effective pixels	640 (H) × 480 (V)		1600 (H) × 1200 (V)		2448 (H) × 2044 (V)	
Pixel size	7.4 (μm) × 7.4 (μm)		4.4 (μm) × 4.4 (μm)		3.45 (μm) × 3.45 (μm)	
Shutter function	Electronic shutter; select shutter speeds from 1/10 to 1/50,000 s		Electronic shutter; select shutter speeds from 1/10 to 1/50,000 s		Electronic shutter; select shutter speeds from 1/10 to 1/50,000 s	
Partial function	12 to 480 lines		12 to 1200 lines		12 to 2044 lines	
Frame rate (image read time)	80 fps (12.5 ms)		30 fps (33.3 ms)		16 fps (62.5 ms)	
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance					
Ambient temperature range	Operating: 0 to 50°C Storage: -25 to 65°C (with no icing or condensation)		Operating: 0 to 40°C Storage: -25 to 65°C (with no icing or condensation)		Operating: 0 to 40°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. 55 g		Approx. 76 g		Approx.140 g	
Accessories	Instruction manual					

Small digital cameras

	FZ-SF	FZ-SFC	FZ-SP	FZ-SPC
Image elements	Interline transfer reading all pixels, 1/3-inch CCD image elements			
Color/Monochrome	Monochrome	Color	Monochrome	Color
Effective pixels	640 (H) × 480 (V)			
Pixel size	7.4 (μm) × 7.4 (μm)			
Shutter function	Electronic shutter; select shutter speeds from 1/10 to 1/50,000 s			
Partial function	12 to 480 lines			
Frame rate (image read time)	80 fps (12.5 ms)			
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance			
Ambient temperature range	Operating: 0 to 50°C (camera amp) 0 to 45°C (camera head) Storage: -25 to 65°C (with no icing or condensation)		Operating: 0 to 50°C (camera amp) 0 to 45°C (camera head) Storage: -25 to 65°C (with no icing or condensation)	
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)		Operating and storage: 35% to 85% (with no condensation)	
Weight	Approx.150 g		Approx.150 g	
Accessories	Instruction manual, installation bracket, Four mounting brackets(M2)		Instruction manual	

High-speed cameras

	FZ-SH	FZ-SHC
Image elements	Interline transfer reading all pixels, 1/3-inch CCD image elements	
Color/Monochrome	Monochrome	Color
Effective pixels	640 (H) × 480 (V)	
Pixel size	7.4 (μm) × 7.4 (μm)	
Shutter function	Electronic shutter; select shutter speeds from 1/10 to 1/50,000 s	
Partial function	12 to 480 lines	
Frame rate (image read time)	204 fps (4.9 ms)	
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance	
Ambient temperature range	Operating: 0 to 40°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.105 g	
Accessories	Instruction manual	

Intelligent compact cameras

	FZ-SQ010F	FZ-SQ050F	FZ-SQ100F	FZ-SQ100N
Image elements	1/3-inch CMOS image elements			
Color/Monochrome	Color			
Effective pixels	752 (H) × 480 (V)			
Pixel size	6.0 (μm) × 6.0 (μm)			
Shutter function	1/250 to 1/32,258			
Partial function	8 to 752 lines			
Frame rate (image read time)	60 fps			
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
LED class	Class 2			
Ambient temperature range	Operating: 0 to 50°C Storage: -25 to 65°C			
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)			
Weight	Approx. 150 g		Approx. 140 g	
Accessories	Mounting bracket (FQ-XL), polarizing filter attachment (FQ-XF1), instruction manual and warning label			

Intelligent cameras, autofocus cameras

	FZ-SLC100	FZ-SLC15	FZ-SZC100	FZ-SZC15
Image elements	Interline transfer reading all pixels, 1/3-inch CCD image elements			
Color/Monochrome	Color			
Effective pixels	640 (H) × 480 (V)			
Pixel size	7.4 (μm) × 7.4 (μm)			
Shutter function	Electronic shutter; select shutter speeds from 1/10 to 1/50,000 s			
Partial function	12 to 480 lines			
Frame rate (image read time)	80 fps (12.5ms)			
Field of vision (See note 2.)	13 to 100 mm (See note1.)	2.9 to 14.9 mm (See note1.)	13 to 100 mm (See note1.)	2.9 to 14.9 mm (See note1.)
Installation distance	70 to 190 mm (See note1.)	35 to 55 mm (See note1.)	77.5 to 197.5 mm (See note1.)	47.5 to 67.5 mm
LED class (See note 3.) (lighting)	Class 2		—	
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. 670 g	Approx. 700 g	Approx. 500 g	
Accessories	Instruction Sheet and hexagonal wrench			

Note: **1.** Tolerance: ±5% max.
2. The length of the visual field is the lengths along the Y axis.
3. Applicable standards: IEC 60825-1: 1993 + A1: 1997 + A2-2001, EN 60825-1: 1994 + A1: 2002 + A2: 2001

LED Safety

⚠ WARNING	Displaying LED Labels
The lighting of Intelligent Compact Cameras emits visible light, which may adversely affect the eyes in rare instances. Do not look directly into the light emitted from the lighting. When the subject is a specular reflective object, protect your eyes from reflected light.	Attached the enclosed warning label in a readily visible location near the product, such as on the cable.

⚠ WARNIG
LED RADIATION
DO NOT STARE
INTO BEAM
Max.60mW 400msec
400-700nm
CLASS 2 LED PRODUCT
JIS C 6802:2005

Note: Do not use this document to operate the Unit.