OMRON

FQ-M VISION SENSOR

Designed for motion tracking

» A new dimension in pick and place

» Fast & precise positioning

» Easy set-up and integration

realizing

Smart camera to guide your robot!

The new FQ-M series is a vision sensor designed specifically for Pick & Place applications. It comes with EtherCAT embedded and can be integrated easily into any environment. The FQ-M is compact, fast and includes an incremental encoder input for easy tracking calibration. Omron's Sysmac Studio software is the perfect tool for configuring the FQ-M and is complemented by the TouchFinder console for on-site monitoring.

Key features and benefits

- Made specifically for pick & place applications
- Encoder input for conveyor tracking and calibration
- Shape based object detection
- Smart calibration wizard
- Sysmac Studio software for vision system operation and setting

Easy set-up & integration

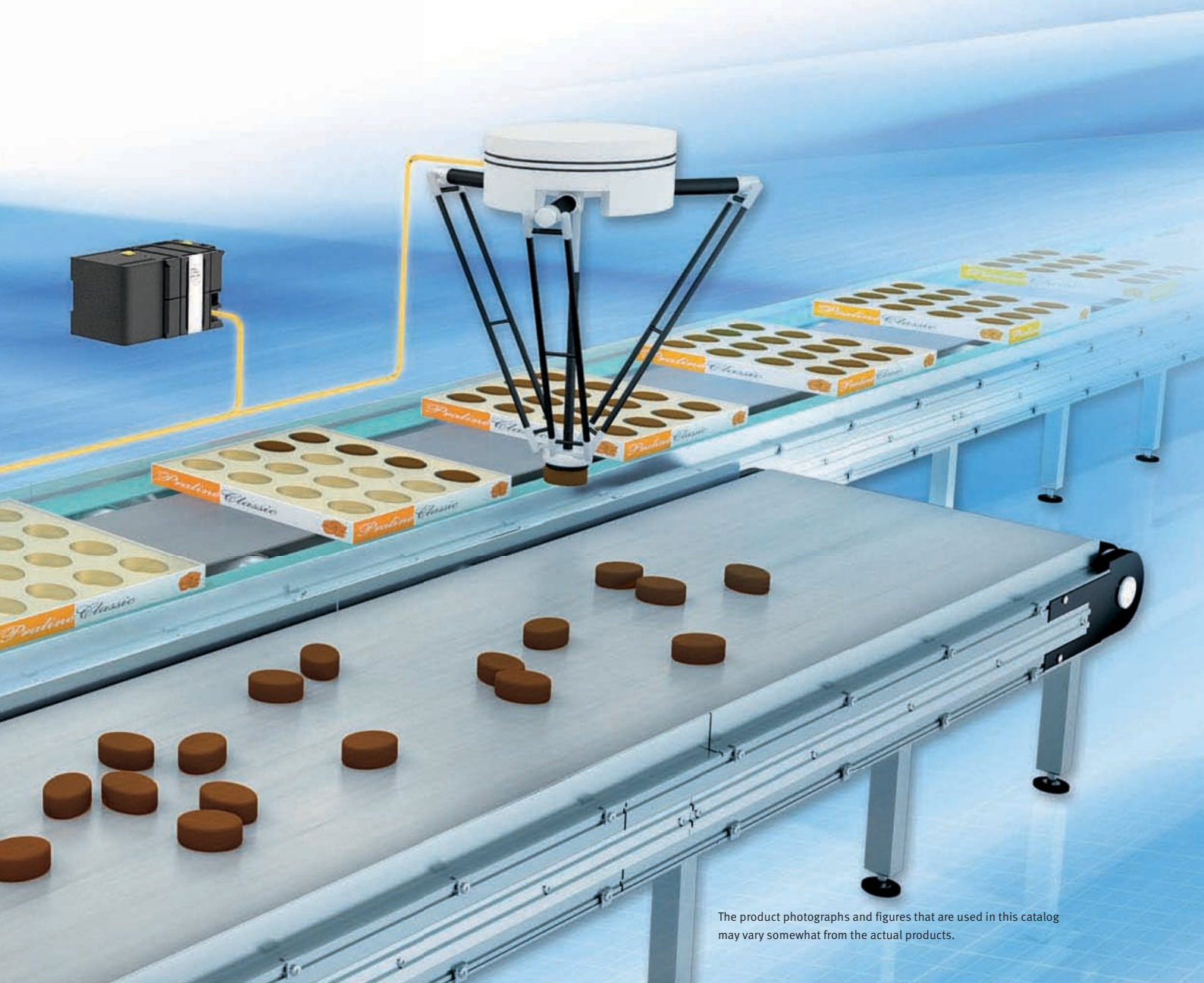
With intelligent wizards for calibration and communication integration into your machine is easier than ever.
The FQ-M communicates with all devices via EtherCAT, or standard Ethernet. The communication wizard lets you easily configure any robot protocol both as a server or as a client without complex programming.

Fast detection & high stability

The FQ-M can detect up to 32 pieces at once and more than 5000 pieces per minute. The new contour based search algorithm ensures the highest reliability.

„On-the-fly“ tracking

Synchronized control is even easier, because the FQ-M vision sensor has an in-built encoder input for accurate conveyor tracking and easy calibration. The FQ-M is able to output position coordinates and the correlative encoder values and is able to manage the object queue, so that no object’s coordinates are duplicated.



The product photographs and figures that are used in this catalog may vary somewhat from the actual products.

Easy set-up & integration with motion

Machine control

Programable out put format for your pick & place robot

Configuration as a server or as a client without complex programming.

Ethernet

Sysmac Studio for fast configuration

The Vision Editor of the Sysmac Studio software will help you to program the optimum vision setting. Intuitive and icon driven set-up and configuration.

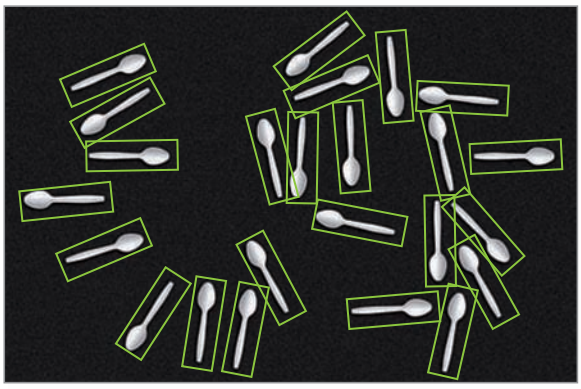
TouchFinder for monitoring on-site

With the intuitive TouchFinder console – which fits in the palm of your hand – you can access all functions and settings quickly and easily.

Fast detection and high stability

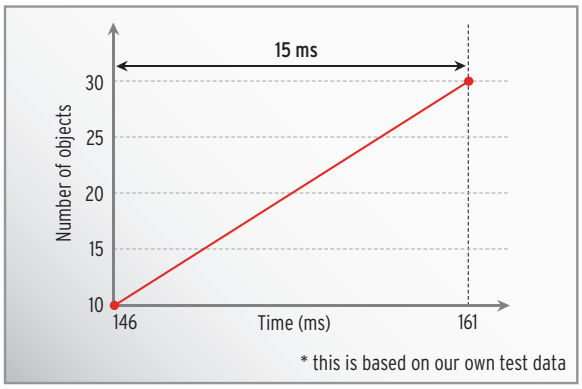
The new contour based search algorithm offers unique performance for pick & place applications. Changing lighting conditions, reflection, object inclination or partially hidden objects are no longer a problem. The FQ-M delivers a stable result even at high speed, no matter how many objects have to be detected at the same time.

Best in class performance

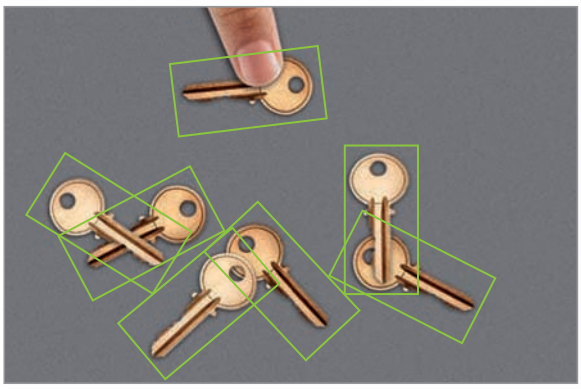


High-speed processing

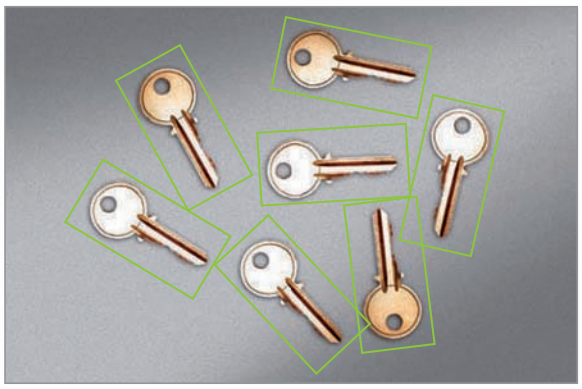
5000 pcs/min with 360° detection.



Only 15 ms time difference, detecting 10 objects or 30 objects at once.

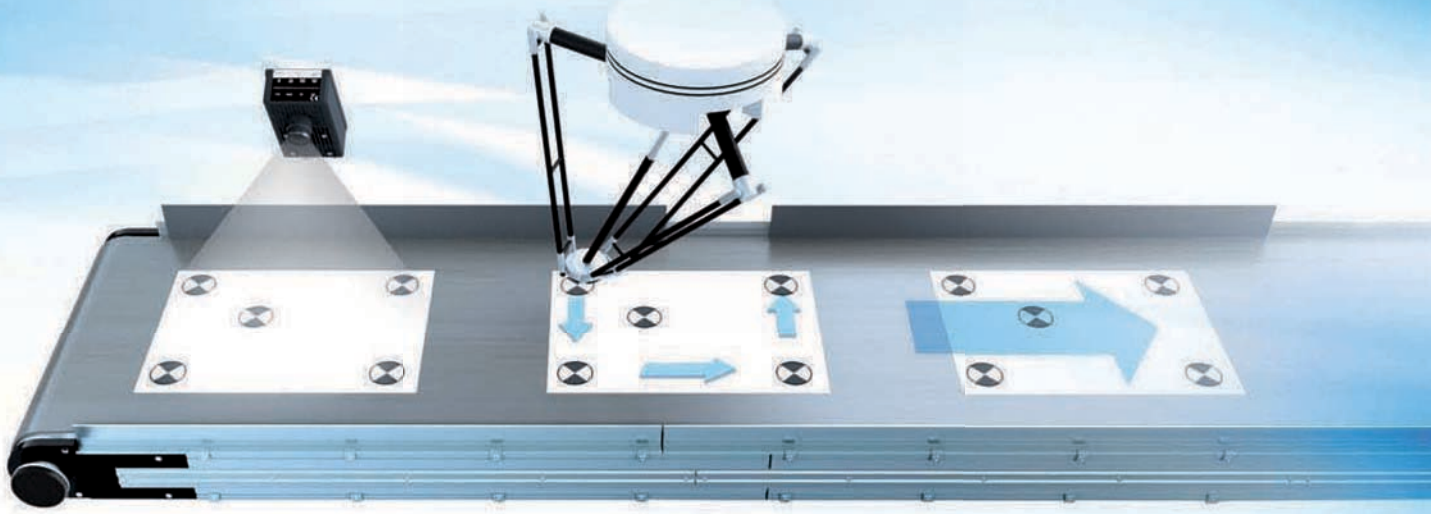


Stable and reliable detection, even if objects are overlapped or partially hidden.



Changing light conditions have no influence on the position accuracy.

Encoder input for simplified calibration & tracking



Step 1 – camera

Camera detects all calibration marks.

Step 2 – robot

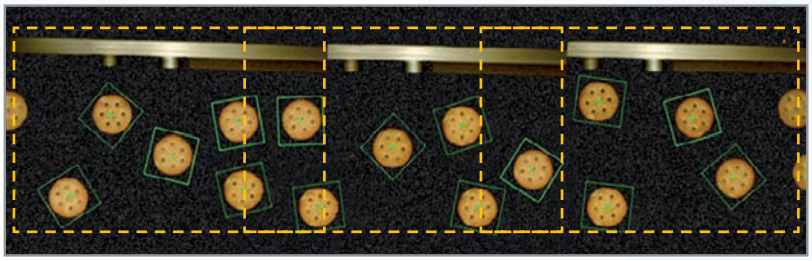
Robot moves to the calibration marks. The offset to the camera is registered through the encoder value.

Step 3 – system

Camera, conveyor, robot and encoder are automatically aligned.

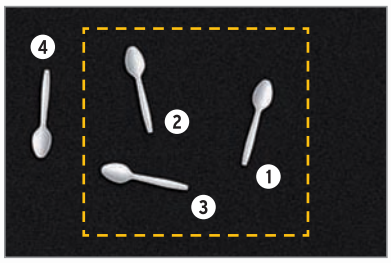
Panorama view – Parameter setting for ideal object detection

A panoramic view can be created from 3 different images, allowing easy parameter optimisation.



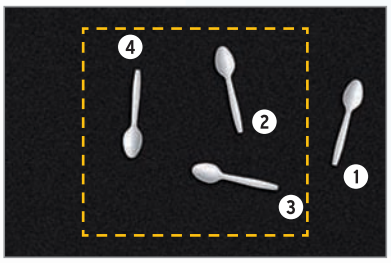
First shot **Second shot** **Third shot**

Objects that overlap within more than one field of view are segregated and only inserted in the picking queue once.



First shot

The position and orientation of objects 1, 2 and 3 is detected and added to the picking queue.



Next shot

Object 2, 3 and 4 are detected, but only the data of object 4 is evaluated. Position and orientation of objects 2 and 3 is ignored because they were already added to the queue with the shot before.

MEMO

Vision Sensor

FQ-M-Series

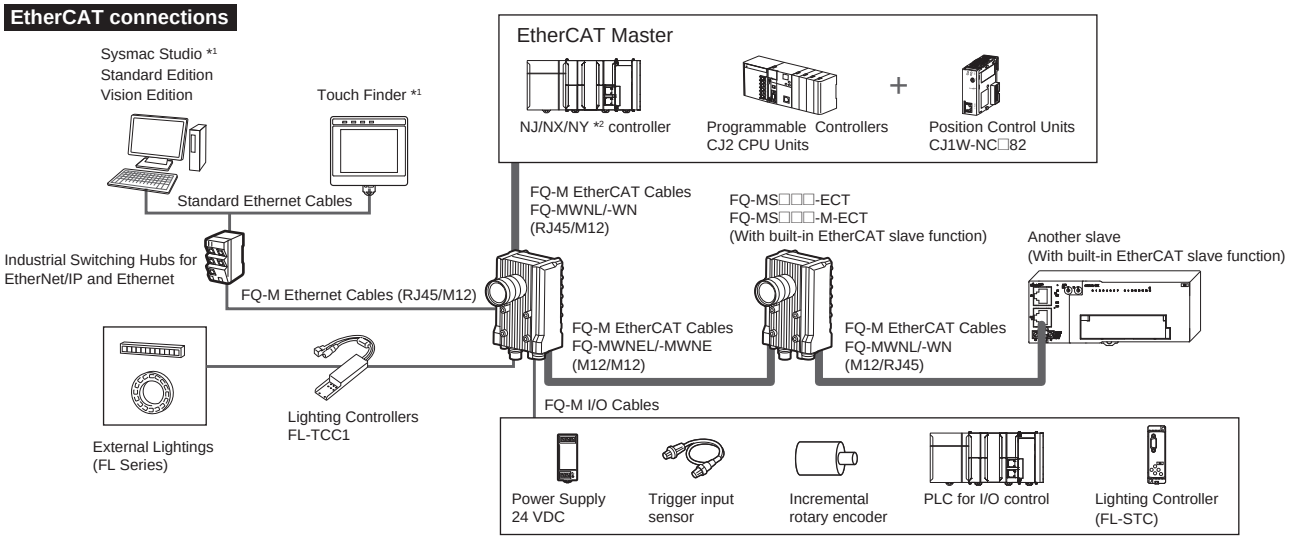
Designed for motion tracking

- Connectivity with EtherCAT/Ethernet
- Up to 5000 pieces per minute with 360 degree rotation*
- Vision sensor with encoder input for tracking function
- Calibration function of the complete system
- Flexible data output depending on the output devices

* The processing speed depends on setting conditions.

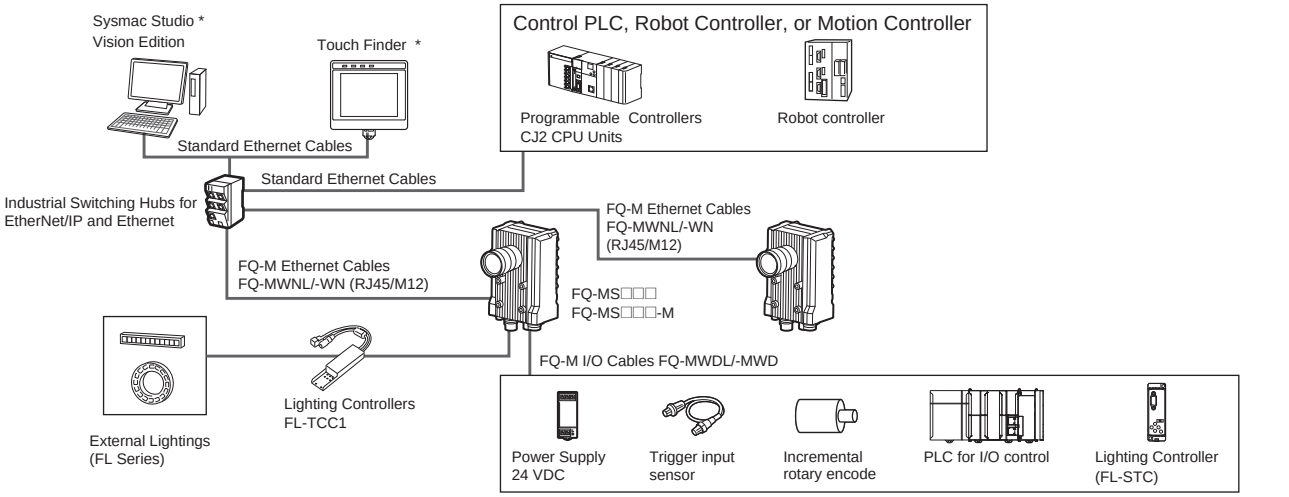
System configuration

EtherCAT connections



*1. Sysmac Studio and Touch Finder can not be used together. When both are connected, Sysmac Studio will have a priority.
When you make NJ/NX/NY controller settings with the Sysmac Studio Standard Edition, connect a computer and the controller via a USB connection or an Ethernet network.
*2. Industrial PC Platform NY-series IPC Machine Controller only.

No-protocol Ethernet and PLC Link Connections



* Sysmac Studio and Touch Finder can not be used together.
When both are connected, Sysmac Studio will have a priority.

Note: 1. EtherCAT and Ethernet (PLC Link) can not be used simultaneously.

2. It is not possible to configure and adjust the FQ-M via an NJ/NX/NY controller, when they are connected via an EtherCAT network. For configuration and adjustment of FQ-M, connect the FQ-M and a computer or a Touch Finder via an Ethernet network.

Sysmac is a trademark or registered trademark of OMRON Corporation in Japan and other countries for OMRON factory automation products.
Windows is registered trademarks of Microsoft Corporation in the USA and other countries.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.
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FQ-M-Series

Ordering Information

Sensors

Appearance	Type			Model
	Color	NPN	EtherCAT communication function not provided	**FQ-MS120**
		PNP		**FQ-MS125**
	Monochrome	NPN		**FQ-MS120-M**
		PNP		**FQ-MS125-M**
	Color	NPN	EtherCAT communication function provided	**FQ-MS120-ECT**
		PNP		**FQ-MS125-ECT**
	Monochrome	NPN		**FQ-MS120-M-ECT**
		PNP		**FQ-MS125-M-ECT**

Automation Software Sysmac Studio

Please purchase a DVD and required number of licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. Each model of licenses does not include any DVD.

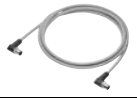
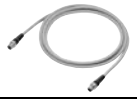
Product name	Specifications	Number of licenses	Media	Model	Standards
Sysmac Studio Standard Edition Ver.1.□□ *2	The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slave, and the HMI. Sysmac Studio runs on the following OS. Windows 7 (32-bit/64-bit version)/ Windows 8 (32-bit/64-bit version)/ Windows 8.1 (32-bit/64-bit version)/ Windows 10 (32-bit/64-bit version)/ Windows 11 (64-bit version) This software provides functions of the Vision Edition. Refer to OMRON website for details such as supported models and functions.	--- (Media only)	Sysmac Studio (32bit) DVD *3	**SYSMAC-SE200D**	---
		1 license *1	---	**SYSMAC-SE201L**	---
Sysmac Studio Vision Edition Ver.1.□□	Sysmac Studio Vision Edition is a limited license that provides selected functions required for FQ-M-series and FH-series Vision Sensor settings. Because this product is a license only, you need the Sysmac Studio Standard Edition DVD media to install it.	1 license	---	**SYSMAC-VE001L**	---

*1 Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).
*2 The FQ-M series is supported by Sysmac Studio version 1.01 or higher.
*3 The same media is used for both the Standard Edition and the Vision Edition.

Touch Finder

Appearance	Type	Model
	DC power supply	**FQ-MD30**

Bend resistant Cables for FQ-M Series

Cable Type	Appearance	Type	Cable length	Model
EtherCAT and Ethernet cable (M12/RJ45)		Angle: M12/ Straight: RJ45	5 m	**FQ-MWNL005**
			10 m	**FQ-MWNL010**
		Straight type	5m	**FQ-WN005**
			10 m	**FQ-WN010**
			20 m	**FQ-WN020**
EtherCAT cable (M12/M12)		Angle type	5 m	**FQ-MWNEL005**
			10 m	**FQ-MWNEL010**
		Straight type	5m	**FQ-MWNE005**
			10 m	**FQ-MWNE010**

Cable Type	Appearance	Type	Cable length	Model
I/O Cables		Angle type	5 m	**FQ-MWDL005**
			10 m	**FQ-MWDL010**
		Straight type	5 m	**FQ-MWD005**
			10 m	**FQ-MWD010**

Accessories

Appearance	Type			Model
	For Touch Finder	Panel Mounting Adapter		**FQ-XPM**
		AC Adapter (for models for DC/AC/Battery)		**FQ-AC□ ***
		Touch Pen (enclosed with Touch Finder)		**FQ-XT**
		SD Card	2GB	**HMC-SD291**
			4GB	**HMC-SD492**

* AC Adapters for Touch Finder with DC/AC/Battery Power Supply. Select the model for the country in which the Touch Finder will be used.

Plug type	Voltage	Certified standards	Model
A	125 V max.	PSE	**FQ-AC1**
		UL/CSA	**FQ-AC2**
	250 V max.	CCC mark	**FQ-AC3**
C	250 V max.	---	**FQ-AC4**

Industrial Switching Hubs for EtherNet/IP and Ethernet

Appearance	Number of ports	Current consumption	Model
	5	0.07 A	**W4S1-05D**

Note: Industrial switching hubs are cannot be used for EtherCAT.

EtherCAT junction slaves

Appearance	Number of ports	Power supply voltage	Current consumption	Model
	3	20.4 to 28.8 VDC (24 VDC -15 to 20%)	0.08 A	**GX-JC03**
	6		0.17 A	**GX-JC06**

Note: 1. Please do not connect EtherCAT junction slave with OMRON position control unit, Model CJ1W-NC□81/□82.
2. EtherCAT junction slaves cannot be used for EtherNet/IP and Ethernet.

Cameras peripheral devices

Type	Model	Remarks
CCTV Lenses	**3Z4S-LE Series**	Refer to Vision Accessory Catalog(Q198)
External Lightings	**FLV Series**	
	FL Series	

FQ-M-Series

Specifications

Sensors

Item	Type	EtherCAT communication function not provided		EtherCAT communication function provided	
		Color	Monochrome	Color	Monochrome
Model	NPN	FQ-MS120	FQ-MS120-M	FQ-MS120-ECT	FQ-MS120-M-ECT
	PNP	FQ-MS125	FQ-MS125-M	FQ-MS125-ECT	FQ-MS125-M-ECT
Field of vision, Installation distance		Selecting a lens according to the field of vision and installation distance. Refer to the *"Optical Chart"* page.			
Main functions	Inspection items	Shape search, Search, Labeling, Edge position			
	Number of simultaneous inspections	32			
	Number of registered scenes	32 *1			
Image input	Image processing method	Real color	Monochrome	Real color	Monochrome
	Image elements	1/3-inch color CMOS	1/3-inch monochrome CMOS	1/3-inch color CMOS	1/3-inch monochrome CMOS
	Image filter	High dynamic range (HDR) and white balance	High dynamic range (HDR)	High dynamic range (HDR) and white balance	High dynamic range (HDR)
	Shutter	Electronic shutter; select shutter speeds from 1/10 to 1/30000 (sec)			
	Processing resolution	752 (H) × 480 (V)			
	Pixel size	6.0 (μm) × 6.0 (μm)			
	Frame rate (image read time)	60fps (16.7ms)			
External Lightings	Connecting method	Connection via a strobe light controller			
	Connectable lighting	FL series			
Data logging	Measurement data	In Sensor: Max. 32000 items *2			
	Images	In Sensor: 20 images *2			
Measurement trigger		I/O trigger, Encoder trigger, Communications trigger (Ethernet No-protocol, PLC Link, or EtherCAT)			
I/O specifications	Input signals	9 signals • Single measurement input (TRIG) • Error clear input (IN0) • Encoder counter reset input (IN1) • Encoder input (A±, B±, Z±) *4			
	Output signals	5 signals *3 • OUT0 Overall judgement output (OR) • OUT1 Control output (BUSY) • OUT2 Error output (ERROR) • OUT3 (Shutter output: SHTOUT) • OUT4 (Strobe trigger output: STGOUT)			
	Ethernet specifications	100BASE-TX/10BASE-TX			
	EtherCAT specifications	---		Dedicated protocol for EtherCAT 100BASE-TX	
	Connection method	Special connector cables • Power supply and I/O: 1 special connector I/O cable • Touch Finder, Computer and Ethernet: 1 Ethernet cable • EtherCAT: 2 EtherCAT cable			
LED display		• OR: Judgment result indicator • ERR: Error indicator • BUSY: BUSY indicator • ETN: Ethernet communications indicator			
	EtherCAT display	---		• L/A IN (Link/Activity IN) × 1 • L/A OUT (Link/Activity OUT) × 1 • RUN × 1 • ERR × 1	
Ratings	Power supply voltage	21.6 to 26.4 VDC (including ripple)			
	Insulation resistance	Between all lead wires and case: 0.5 MΩ (at 250 V)			
	Current consumption	450mA max. (When the FL-series Strobe controller and lighting are used.) 250mA max. (When external lighting is not used.)			
Environmental immunity	Ambient temperature range	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)			
	Ambient atmosphere	No corrosive gas			
	Vibration resistance (destruction)	10 to 150 Hz, single amplitude: 0.35 mm, X/Y/Z directions, 8 min each, 10 times			
	Shock resistance (destruction)	150 m/s^2 3 times each in 6 direction (up, down, right, left, forward, and backward)			
	Degree of protection	IEC60529 IP40			
Materials		Case: alminium die casting, Rear cover: alminium plate			
Weight		Approx. 390 g (Sensor only)		Approx. 480 g (Sensor only)	
Accessories		Instruction Manual			

*1 The maximum number of resisterable scenes depends on settings due to restrictions on memory.
*2 If a Touch Finder is used, results can be saved up to the capacity of an SD card.
*3 The five output signals can be allocated for the judgements of individual inspection items.

*4 Encoder input specifications

Pulse input Specifications (When an open collector type encoder is used.)

Item		Specification		
Input voltage		24 VDC ±10%	12 VDC ±10%	5 VDC ±5%
Input current		4.8 mA (at 24 VDC, typical value)	2.4 mA (at 12 VDC, typical value)	1.0 mA (at 5 VDC, typical value)
NPN	ON voltage *1	4.8 V max.	2.4 V max.	1.0 V max.
	OFF voltage *2	19.2 V min.	9.6 V min.	4.0 V min.
PNP	ON voltage *1	19.2 V min.	9.6 V min.	4.0 V min.
	OFF voltage *2	4.8 V max.	2.4 V max.	1.0 V max.
Maximum response frequency *3		50 kHz (I/O cable: when the FQ-MWD005 or FQ-MWDL005 cables is used.) 20 kHz (I/O cable: when the FQ-MWD010 or FQ-MWDL010 cables is used.)		
Input impedance		5.1 kΩ		

*1 ON voltage: Voltage to change from OFF to ON state. The ON voltage is the difference of voltages between the GND terminal of the encoder power terminals and each input terminal.
*2 OFF voltage: Voltage to change from ON to OFF state. The ON voltage is the difference of voltages between the GND terminal of the encoder power terminals and each input terminal.
*3 Select maximum response frequency depending on length of the encoder cable and response frequency of the encoder.

Pulse input Specifications (When a line-driver output type encoder is used.)

Item	Specification
Input voltage	EIA standard RS-422-A line driver level
Input impedance *1	120 Ω ±5%
Differential input voltage	0.2 V min.
Hysteresis voltage	50 mV
Maximum response frequency *2	200 kHz (I/O cable: when the FQ-MWD005, FQ-MWDL005, FQ-MWD010, or FQ-MWDL010 cables is used.)

*1 When terminating resistance function is used.
*2 Select maximum response frequency depending on length of the encoder cable and response frequency of the encoder.

Touch Finder

Item			Type	Model with DC power supply
			Model	FQ-MD30
Number of connectable Sensors				2 max.
Main functions	Types of measurement displays			Last result display, Last NG display, trend monitor, histograms
	Types of display images			Through, frozen, zoom-in, and zoom-out images
	Data logging			Measurement results, measured images
	Menu language			English, Japanese
Indications	LCD	Display device		3.5-inch TFT color LCD
		Pixels		320 × 240
		Display colors		16,777,216
	Backlight	Life expectancy *1		50,000 hours at 25 °C
		Brightness adjustment		Provided
		Screen saver		Provided
	Indicators	Power indicator (color: green)		POWER
		Error indicator (color: red)		ERROR
		SD card access indicator (color: yellow)		SD ACCESS
		Charge indicator (color: orange)		---
Operation interface	Touch screen	Method		Resistance film
		Life expectancy *2		1,000,000 operations
External interface	Ethernet			100 BASE-TX/10 BASE-T
	SD card			Omron SD card (Model: HMC-SD291/SD491) or a SDHC card of Class4 or higher rating is recommended.
Ratings	Power supply voltage	DC power connection		20.4 to 26.4 VDC (including ripple)
		AC adapter connection		---
		Battery connection		---
	Continuous operation on Battery *3			---
	Current consumption			DC power connection: 0.2 A
	Insulation resistance			Between all lead wires and case: 0.5 MΩ (at 250 V)
Environmental immunity	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)
Environmental immunity	Ambient atmosphere			No corrosive gas
	Vibration resistance (destruction)			10 to 150 Hz, single amplitude: 0.35 mm, X/Y/Z directions 8 min each, 10 times
	Shock resistance (destruction)			150 m/s^2 3 times each in 6 direction (up, down, right, left, forward, and backward)
	Degree of protection			IEC 60529 IP20

Item / Type / Model	Model with DC power supply
	FQ-MD30
Dimensions	95 × 85 × 33 mm
Materials	Case: ABS
Weight	Approx. 270 g (without Battery and hand strap)
Accessories	Touch Pen (FQ-XT), Instruction Manual

*1 This is a guideline for the time required for the brightness to diminish to half the initial brightness at room temperature and humidity. No guarantee is implied. The life of the backlight is greatly affected by the ambient temperature and humidity. It will be shorter at lower or higher temperatures.
*2 This value is only a guideline. No guarantee is implied. The value will be affected by operating conditions.
*3 This value is only a guideline. No guarantee is implied. The value will be affected by the operating environment and operating conditions.

Sysmac Studio

Item	Requirement
Operating system (OS) *1, *2 Japanese or English system	Windows 7 (32-bit/64-bit version)/ Windows 8.1 (32-bit/64-bit version)/ Windows 10 (32-bit/64-bit version)/ Windows 11 (64-bit version)
CPU	Windows computers with Celeron 540 (1.8 GHz) or faster CPU. Core i5 M520 (2.4 GHz) or equivalent or faster recommended
Main memory	2GB min.
Hard disk	At least 1.6 GB of available space *3
Display	XGA 1024 × 768, 1600 million colors. WXGA 1280 × 800 min. recommended
Disk drive	DVD-ROM drive
Communications ports	USB port corresponded to USB 2.0, or Ethernet port

*1 Sysmac Studio Operating System Precaution:
System requirements and hard disk space may vary with the system environment.
*2 The following restrictions apply when Sysmac Studio is used with Microsoft Windows 7 or Windows 8.
Some Help files cannot be accessed.
The Help files can be accessed if the Help program distributed by Microsoft for Windows (WinHlp32.exe) is installed. Refer to the Microsoft homepage listed below or contact Microsoft for details on installing the file. (The download page is automatically displayed if the Help files are opened while the user is connected to the Internet.)
http://support.microsoft.com/kb/917607/en-us
*3 To use the file logging function, additional memory area to save the logging data is necessary.

FQ-M Series EtherCAT Communications Specifications

Item	Specifications
Communications standard	IEC 61158 Type12
Physical layer	100BASE-TX (IEEE802.3)
Connector	M12 × 2 E-CAT IN : EtherCAT (IN) E-CAT OUT : EtherCAT (OUT)
Communications media	Use the cables for FQ-MWN□□, or FQ-WN□□ series.
Communications distance	Use the communication cable within the length of FQ-MWN□□ or FQ-WN□□ series cables.
Process data	Variable PDO Mapping
Mailbox (CoE)	Emergency messages, SDO requests, SDO responses, and SDO information
Distributed clock	Synchronization with DC mode 1
LED display	L/A IN (Link/Activity IN) × 1, L/A OUT (Link/Activity OUT) × 1, RUN × 1, ERR × 1

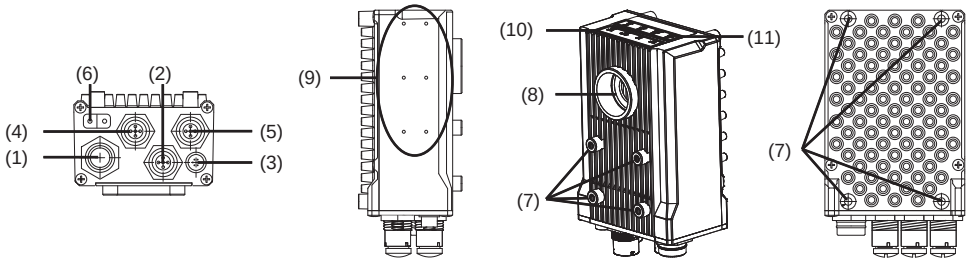
Version Information

FQ-M Series and Programming Devices

FQ-M Series	Required Programming Device	
	Sysmac Studio Standard Edition/Vision Edition	
	Ver.1.00	Ver.1.01 or higher
FQ-MS□□□(-M) FQ-MS□□□(-M)-ECT	Not supported	Supported

Components and Functions

Sensor

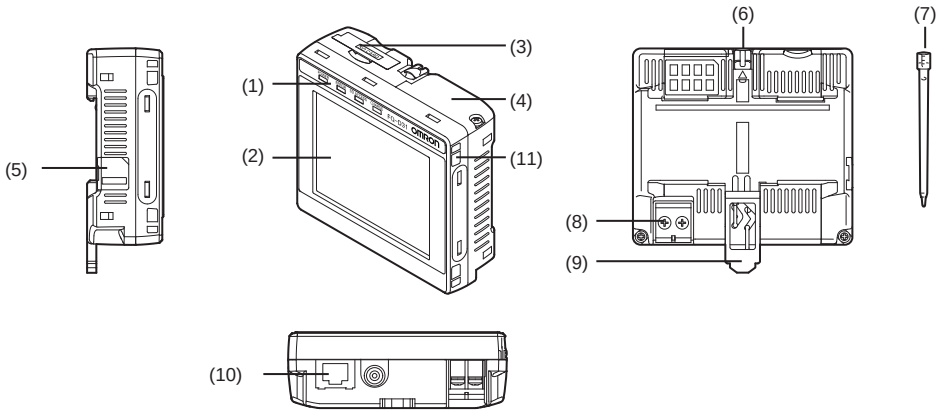


No.	Name	Description
(1)	I/O Cable connector	An I/O Cable is used to connect the Sensor to the power supply and external I/O.
(2)	Ethernet connector	An Ethernet cable is used to connect the Sensor to external devices such as PLCs, the Touch Finder, or computers.
(3)	Lighting connector	Connect an external lighting (strobe controller).
(4)	EtherCAT connector (IN)*	Connect an EtherCAT compatible device.
(5)	EtherCAT connector (OUT)*	Connect an EtherCAT compatible device.
(6)	Node address switch *	Set the node address for EtherCAT communications.
(7)	Installation holes	Holes to install and secure the camera.
(8)	C-mount lens connection part	Install the C-mount lens in this part. Determine the field of view depending on the measurement target and select a suitable CCTV lens (C-mounting lens).

No.	Name		Description
(9)	Strobe controller connection holes		Install the strobe controller in this part. FL-TCC1 can be mounted.
(10)	Measure-ment process Operation indicators	OR	Lit in orange while OR signal is ON.
		ETN	Lit in orange while in Ethernet communi-cations.
		ERROR	Lit in red when an error occurs.
		BUSY	Lit in green while the sensor is processing.
(11)	EtherCAT Operation indicators	L/A IN	Lit in green when Link with EtherCAT device is established and flickers in green when communicating (data IN).
		L/A OUT	Lit in green when Link with EtherCAT device is established and flickers in green when communicating (data OUT).
		ECAT RUN	Lit in green when EtherCAT communica-tion is available.
		ECAT ERROR	Lit in red when an EtherCAT communica-tions error occurs.

* FQ-MS□□□-ECT and FQ-MS□□□-M-ECT only.

Touch Finder



No.	Name		Description
(1)	Operation indicators	POWER	Lights green when the Touch Finder is turned ON.
		ERROR	Lights red when an error occurs.
		SD ACCESS	Lights yellow when an SD card is inserted. Flashes yellow when the SD card is being accessed.
		CHARGE *	Lights orange when the Battery is charging.
(2)	LCD/touch panel		Displays the setting menu, measurement results, and images input by the camera.
(3)	SD card slot		An SD card can be inserted.
(4)	Battery cover *		The Battery is inserted behind this cover. Remove the cover when mounting or removing the Battery.
(5)	Power supply switch		The Battery is inserted behind this cover. Remove the cover when mounting or removing the Battery.

No.	Name	Description
(6)	Touch pen holder	The touch pen can be stored here when it is not being used.
(7)	Touch pen	Used to operate the touch panel.
(8)	DC power supply connector	Used to connect a DC power supply.
(9)	Slider	Used to mount the Touch Finder to a DIN Track.
(10)	Ethernet port	Used when connecting the Touch Finder to the Sensor with an Ethernet cable. Insert the connector until it locks in place.
(11)	Strap holder	This is a holder for attaching the strap.

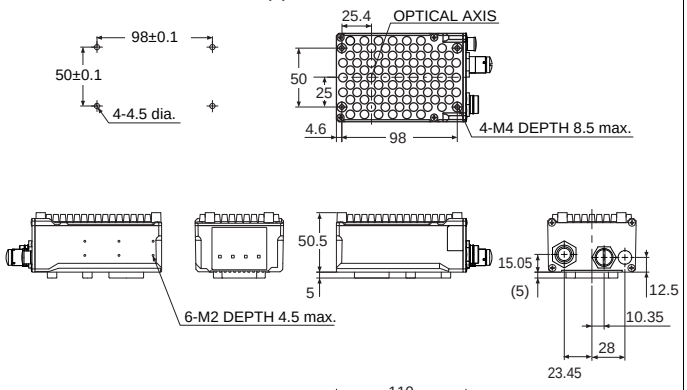
Dimensions

(Unit: mm)

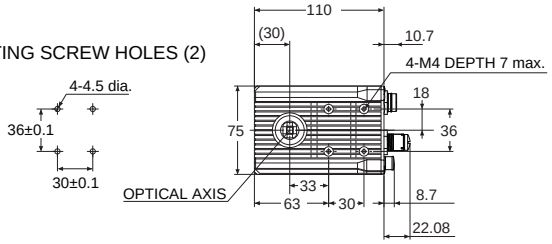
Sensor

FQ-MS120/MS120-M
FQ-MS125/MS125-M

MOUNTING SCREW HOLES (1)

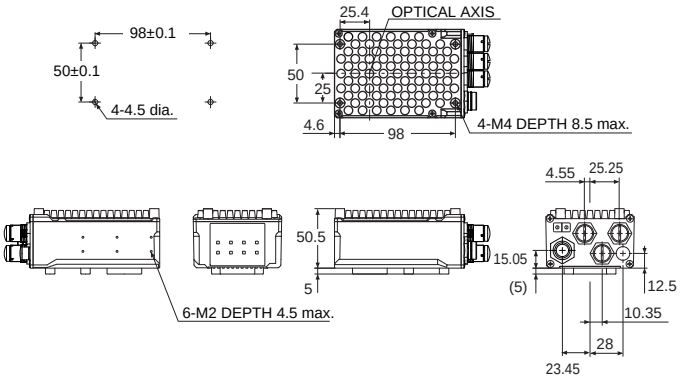


MOUNTING SCREW HOLES (2)

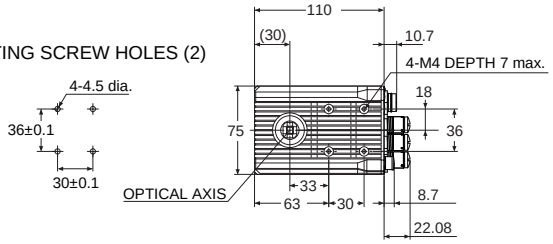


FQ-MS120-ECT/MS120-M-ECT
FQ-MS125-ECT/MS125-M-ECT

MOUNTING SCREW HOLES (1)

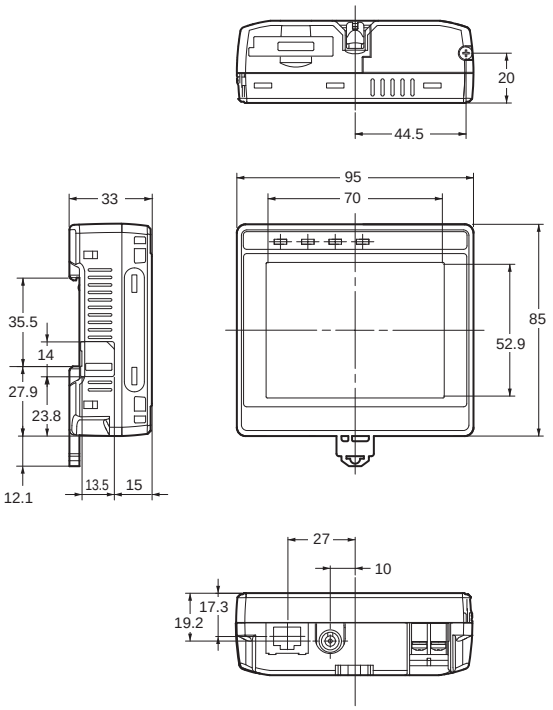


MOUNTING SCREW HOLES (2)

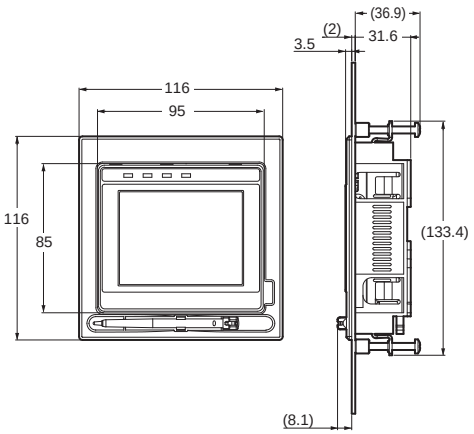


Touch Finder

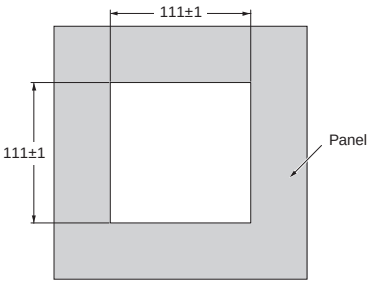
FQ-MD30



Panel Mounting Adapter *



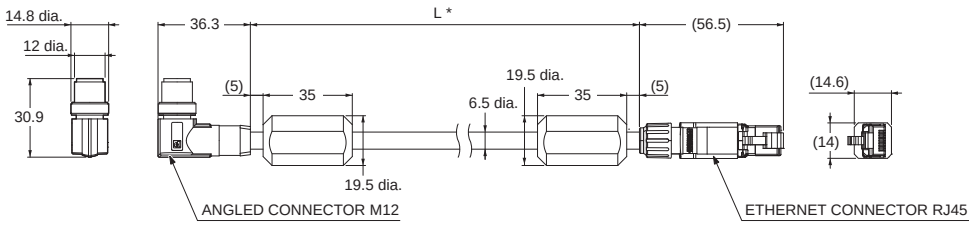
Panel Cutout Dimensions



* The dimension of the panel mounting adapter does not include that of a FQ-MD□□.

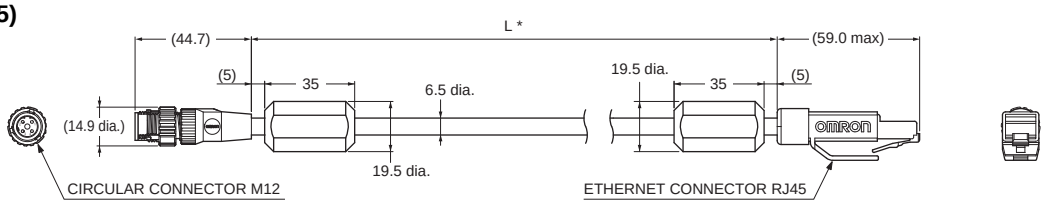
Cables

- **For EtherCAT and Ethernet cable**
  Angle:M12/ Straight:RJ45
  FQ-MWNL005/010



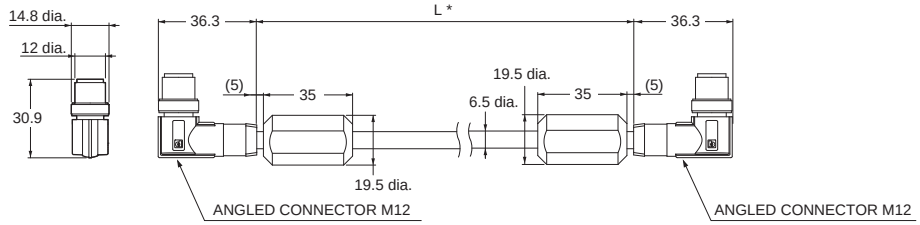
* Cable is available in 5 m/10 m.

Straight type (M12/RJ45)
FQ-WN005/010



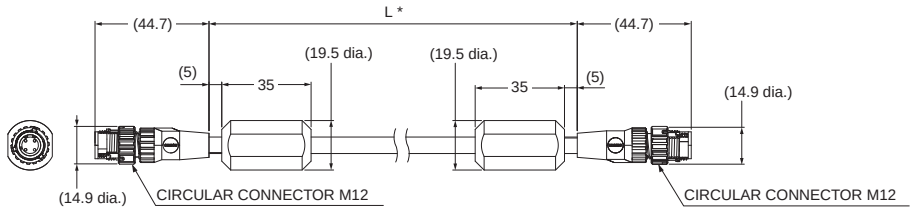
* Cable is available in 5 m/10 m.

- **For EtherCAT cable**
  Angle type (M12/M12)
  FQ-MWNEL005/010



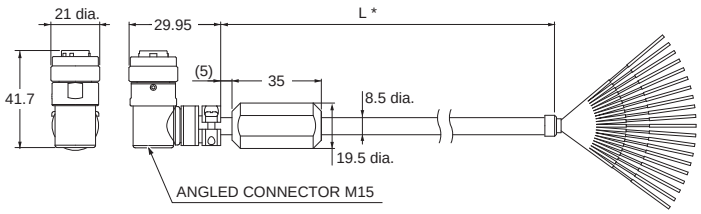
* Cable is available in 5 m/10 m.

Straight type (M12/M12)
FQ-MWNE005/010



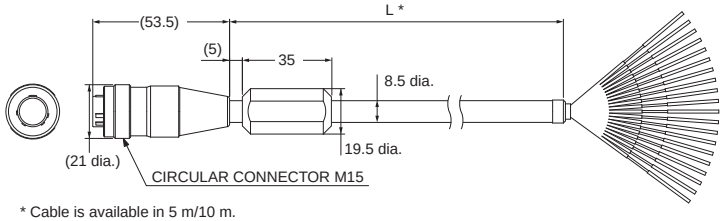
* Cable is available in 5 m/10 m.

- **I/O Cables**
  Angle type
  FQ-MWDL005/010



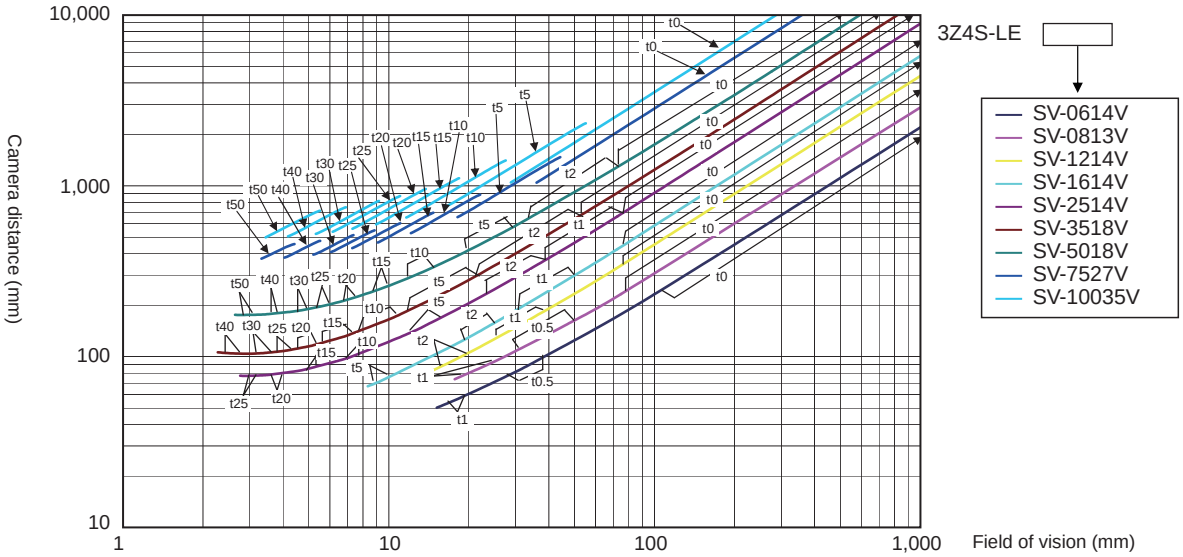
* Cable is available in 5 m/10 m.

Straight type
FQ-MWD005/010



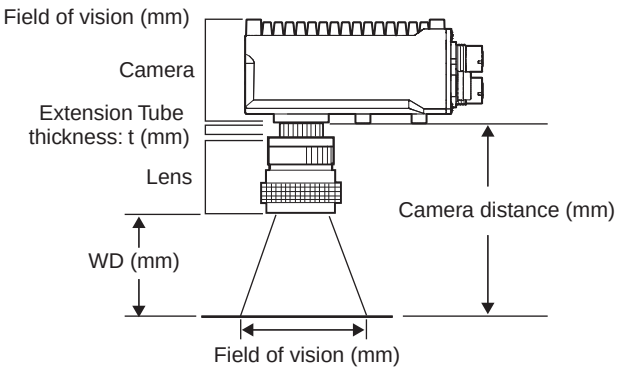
* Cable is available in 5 m/10 m.

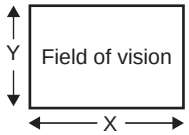
Optical Chart



Meaning of Optical Chart

The X axis of the optical chart shows the field of vision (mm) *1,
and the Y axis of the optical chart shows the camera installation distance (mm).*2





*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.

Related Manuals

Cat. No.	Model number	Manual
Z314	FQ-MS□□□(-M) FQ-MS□□□(-M)-ECT	Specialized Vision Sensor for Positioning FQ-M-Series User's Manual
W504	SYSMAC-□□□□□□	Sysmac Studio OPERATION MANUAL

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