ROBOT VISION iVY2 RCX340

Integrated Robot Vision System with "plug-and-play" simplicity
Basic specifications have been dramatically enhanced while retaining the current iVY system's ease of use.

Simplicity

Setup is completed as little as eight minutes after power-on.
Auto-calibration makes setup easy.

Sophistication

With up to five million pixels, a variety of workpieces can be supported.
Improve throughput to 100 CPM with conveyor tracking.

Assurance

Comprehensive support covers everything from camera image acquisition to the operation of the gripper and robot.
With support that only the robot manufacturer can provide, you can relax.

Basic specifications have been dramatically enhanced while retaining the current iVY system's ease of use.

Camera

Supports from 300,000 to

5 million pixels

Megapixel camera support

Number of registered types

Increased to

254 types

Previously 40 types

Shorter search time

Approximately

50 % less

With capture: 30–40% less
Search only: approximately 50% less

Note. Time depends on the workpiece.

Longer cables usable

Cables can be as long as

20 m

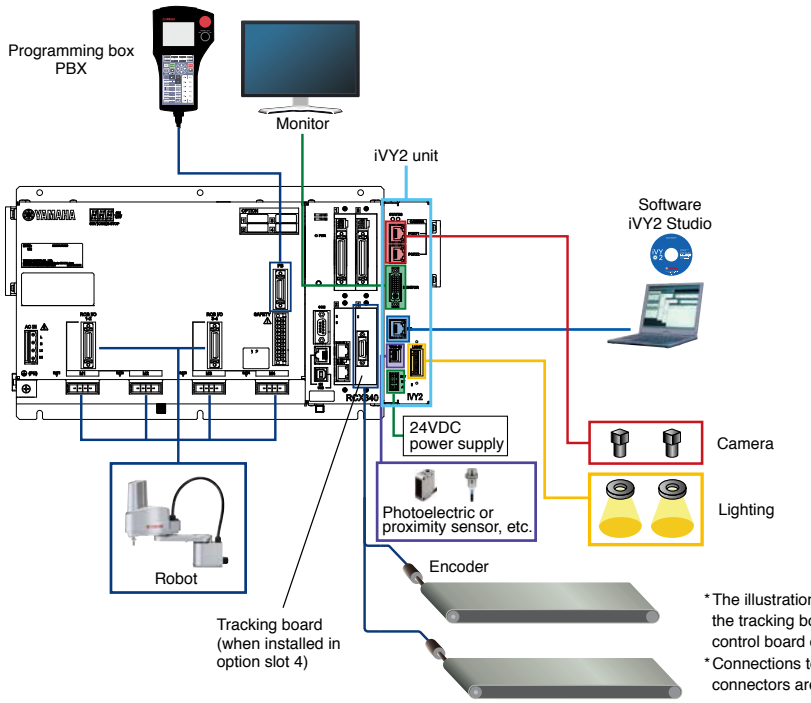
Previously 9.5 m

Monitoring

Monitor output is provided

Enables operating status to be monitored without a PC

iVY2 System configuration illustration

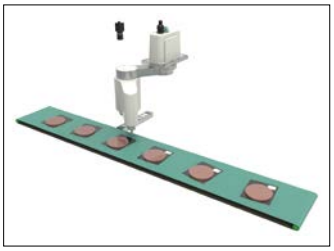


* The illustration left shows an example system with the tracking board and an iVY2 unit (when the lighting control board option is selected).
* Connections to the STD.DIO, ACIN, and SAFETY connectors are not shown in the left illustration.

POINT 1

Various application examples

Labeling device
(affixing labels to food packages)



■ Industry: food
■ Robot used: YK500TW omnidirectional robot

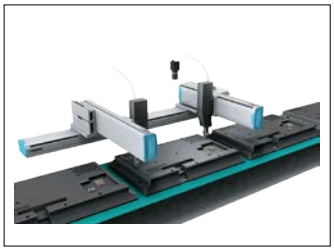
Even if the incoming workpieces are irregularly spaced or positioned, labels can be affixed at the same position.

Sealant touch-up
(engine block sealant)

■ Industry: automotive
■ Robot used: SXYX Cartesian robot

Even if the workpiece is skewed from its correct position, the skew and angle are detected, and the application path is automatically compensated.

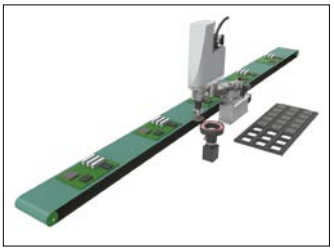
Screw attachment position detection
(television panel screw attachment)



■ Industry: electronics
■ Robot used: NXY Cartesian robot

Hole position is detected, and screws are fastened accurately.

Position compensation with upward-facing camera
(installing irregularly-shaped parts on a circuit board)



■ Industry: electronics
■ Robot used: YK150XG SCARA robot

The roughly-positioned circuit board connector is picked up, the upward-facing camera is used to apply position compensation, and the part is mounted directly on the circuit board.

POINT 2

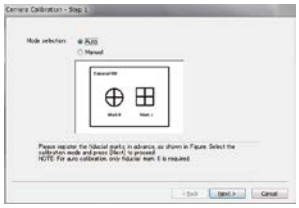
Auto-calibration

Requires as little as 5 minutes

Easily complete high-precision calibration just by following a wizard! Even if equipment becomes misaligned, execute auto-calibration and resume operation.

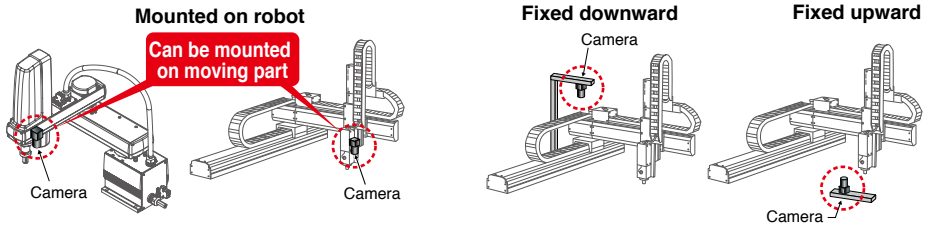
STEP 1

Register the desired fiducial mark



STEP 2

Select the camera mounting method



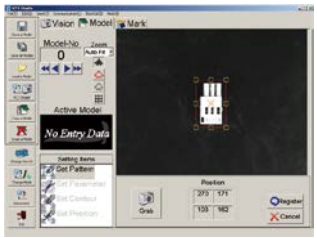
POINT 3

Easy workpiece registration

Requires as little as 3 minutes

From image acquisition, registration takes just three steps.

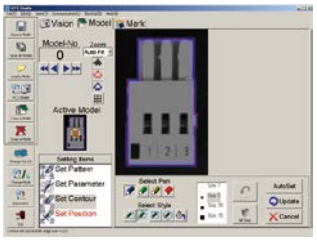
STEP 1



Capture images.

Put the workpiece within the camera field-of-view and specify an image capturing range.

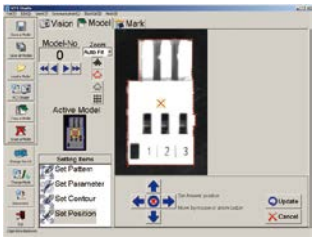
STEP 2



Set the contour.

Contour is automatically extracted. Paint the necessary contour with a pen tool.

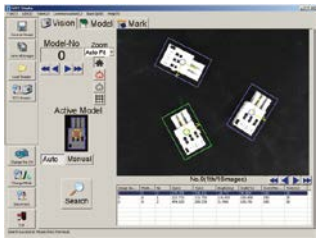
STEP 3



Register the detection position.

Specify the detection position with the mouse. Desired positions can be set.

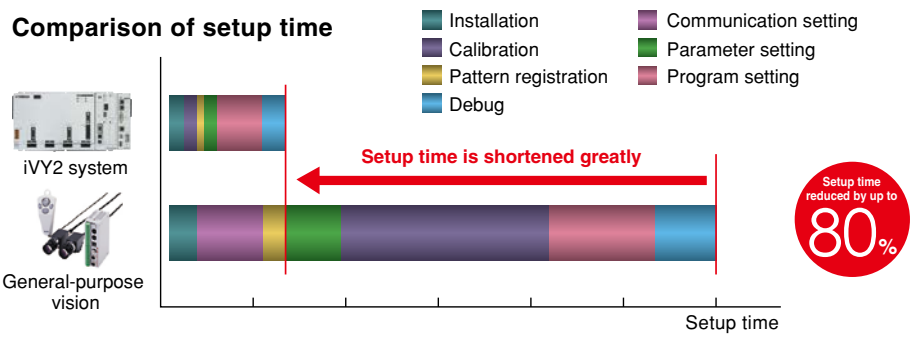
Search results



POINT 4

No need to make time-consuming connection settings. Dramatic reduction in setup time.

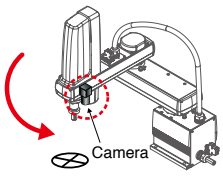
From image acquisition, registration takes just three steps.



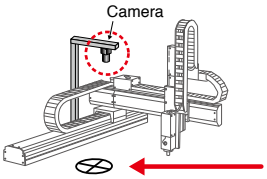
STEP 3

Align fiducial mark position

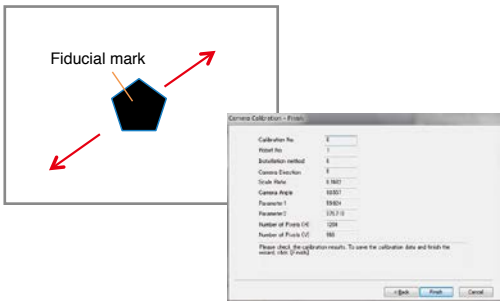
If camera is movable, move the robot



If camera is fixed, attach fiducial mark to robot, and move it



Execute auto-calibration



POINT 5

No need to create a coordinate conversion program.

Dedicated robot language for vision is provided.

General robot vision

```
MOVE P, P9
OFF LINE
SEND (* *) TO CMU ──┐
SEND CMU TO P10 ────┴── Communication with image processing unit
ON LINE
MOVE P, P10
```

RS-232C

Program of image processing unit ⟷ Program of host PLC

Camera and robot have separate programs

iVY2 system

```
MOVE P, P9
VSEARCH 1,2,0 ──── Searches for workpiece.
P10=VGETPOS(0) ──── Reads the point.
MOVE P, P10 ──── Moves to this point.
```

MERITS

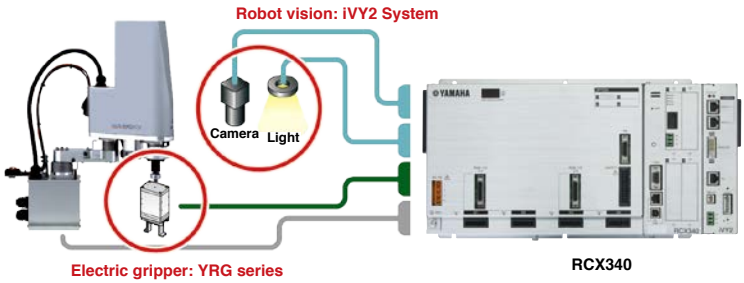
- No communication time lag
- Needs only few command lines.
- Simple and easy to understand

Centralized control using only the robot program

POINT 6

Easy inter-operation with peripheral equipment

The same controller provides unified control of robot, gripper, and lighting.



POINT 7

Also supports moving camera

Even if the camera is mounted on the robot, coordinates are automatically converted according to the robot's movement.

POINT 8

Conveyor tracking

Conveyor tracking reaches 100 CPM per unit

Ideal for high-speed packaging arrangement high-speed transport of multiple types of items such as pharmaceuticals, cosmetics, and food products.
The vision camera detects the position and orientation of parts moving on the conveyor, and the robot picks them up.

Previous RCX240 controller

Example program (RCX240)

❶ PTP command MOVE P,P1
❷ CTMOVE CTMOVE (1)
❸ CTDRIVE CTDRIVE(10.0)

Executed using multiple operation commands

Unify movement commands

New RCX340 controller

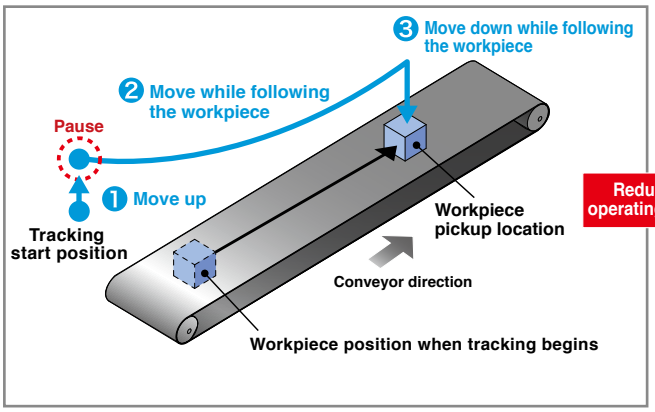
Example program (RCX340)

❶ New CTMOVE CTMOVE (1),Z=0.0,CTZ=10.0

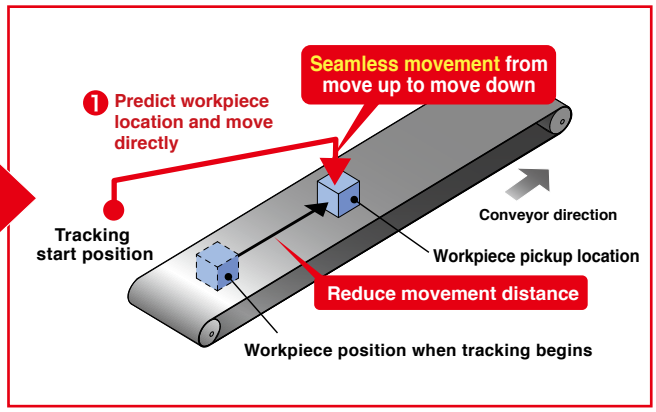
Can be executed with a single command

Multiple operating takt required

Unify the move up command, follow workpiece command, move down command



Reduce operating takt

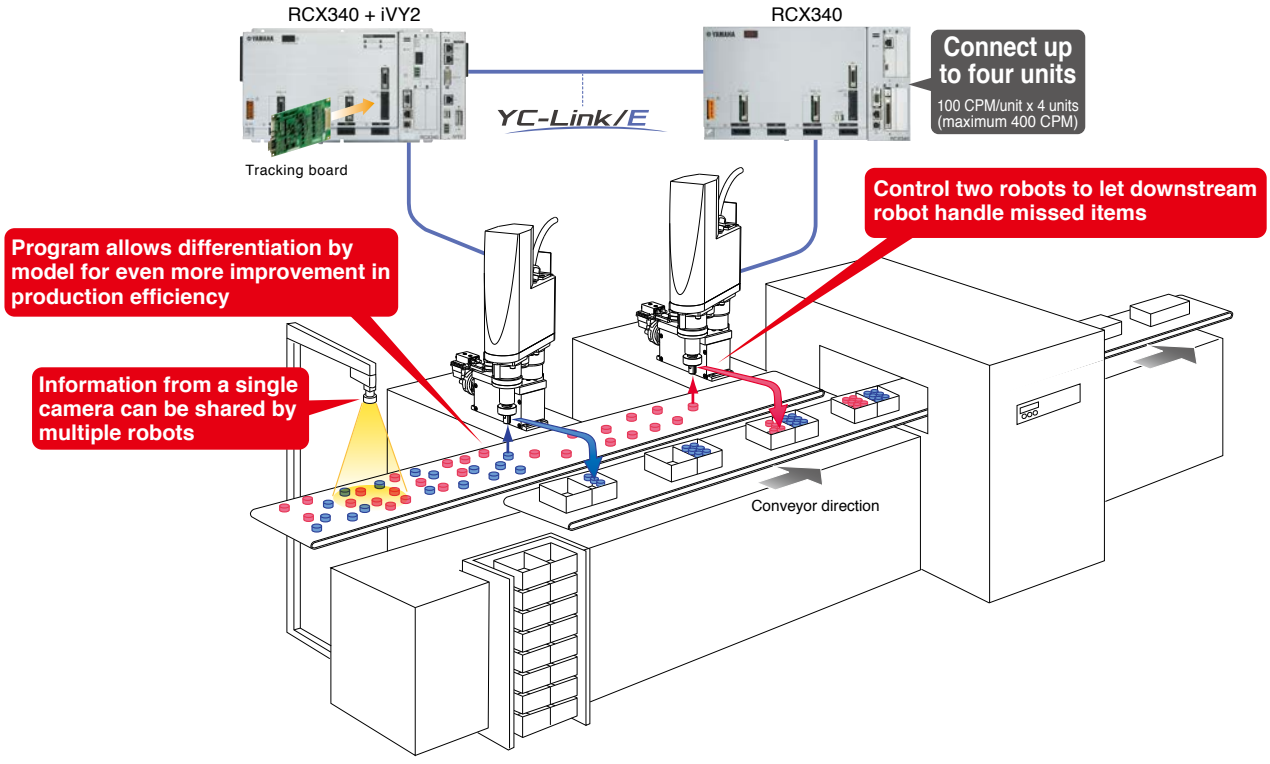


Operating conditions: YK500XG / payload 1 kg (total of workpiece and tool) / horizontal movement 250 mm / vertical movement 1 mm / conveyor speed 100 mm/sec

POINT 9

Control multiple robots for even more improvement in production efficiency.

Shortened cycle time | Improve throughput

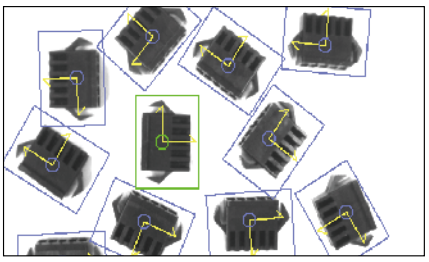


POINT 10

Approximately double the search speed (compared to previous model)

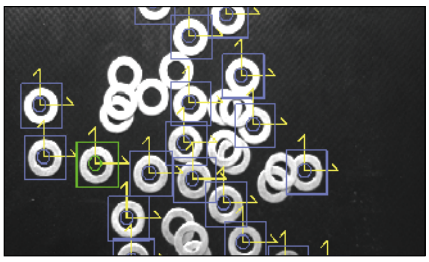
Even a large number of workpieces can be detected at high speed. The search speed is approximately double that of the previous model. This can be used for a wide variety of applications, including molded plastic parts or food items.

Sample workpiece ❶ Connector-shaped workpiece



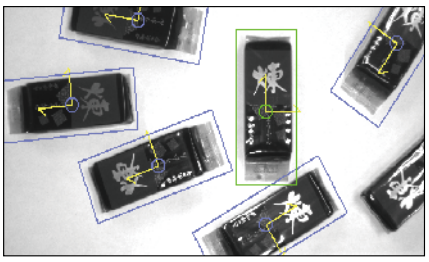
RCX240 + iVY	RCX340 + iVY2
158.7 ms →	83.8 ms

Sample workpiece ❷ Washer-shaped workpiece



RCX240 + iVY	RCX340 + iVY2
200.2 ms →	91.7 ms

Sample workpiece ❸ Food item workpiece



RCX240 + iVY	RCX340 + iVY2
149.8 ms →	91.1 ms

POINT 11

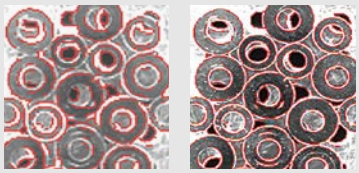
Support for five-megapixel cameras

(Choose from 300,000 pixel, 1.3 megapixel, and 2 megapixel, and 5 megapixel)

Stable workpiece detection

Detailed edge detection is possible even if workpieces are touching each other or have a complex shape.

● Previous: 300,000 pixel camera ● New: 1.3 megapixel camera

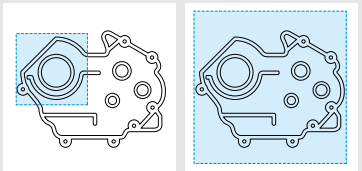


(partial detail illustration) (partial detail illustration)

Decreased number of search detections

A single search allows detection even for a large workpiece, improving takt.

● Previous: 300,000 pixel camera ● New: two-megapixel camera



Field of vision

POINT 12

254 types can be registered

Setup changes require only that part numbers be changed. Setup changes are easy.

POINT 13

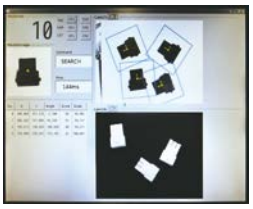
Monitor output is provided

Monitor the operating status

Monitor the search status while making calibration settings or during automatic operation.

Contents of output

- Selected type / Captured image
- Search result (position, score, scale)
- Executed command
- Time required by command



Output method

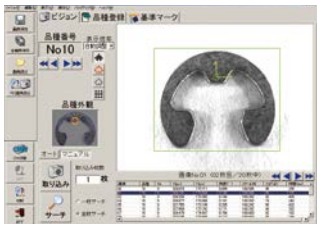
- DVI-I (supports digital monitor or analog monitor)

POINT 14

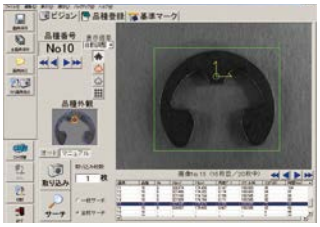
High-precision search even under low light

Edge search engine is built-in

Supports a variety of applications while being minimally affected by the external environment.



When lighting is sufficient



Accurate search even if lighting is insufficient

POINT 15

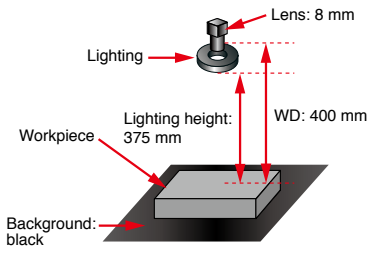
Preparatory evaluation and advice give you peace of mind

We borrow the workpiece from you, evaluate it, and submit an evaluation report.
In addition, we draw on our wealth of experience and evaluation results to provide advice and training regarding selection and installation of robots and peripheral equipment.

Hearing → **Workpiece is borrowed** → **Preliminary evaluation** → **Advice (evaluation report is submitted)** → **Robot training** → **Follow-up after delivery**

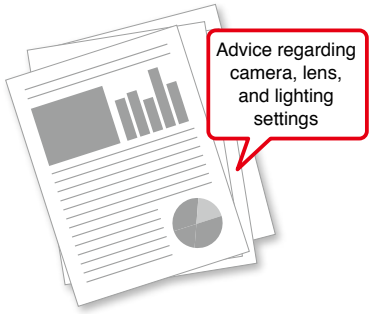
Preliminary evaluation

■ **Evaluation conditions (example)**



We borrow a workpiece from you and conduct an evaluation.

Advice (evaluation report is submitted)



The results of our preliminary evaluation regarding camera, lens, lighting selection, and setup are summarized as a report and submitted.

Robot training

Training can be performed according to the content of the customer's application.

POINT 16

Choose freely from Yamaha's lineup of robots

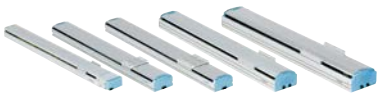
A low-cost and convenient robot vision system can be constructed using the models that are optimal for the customer's application.

■ XY-X Cartesian robots

■ YK-XG SCARA robots

■ YK-TW orbit type robots

■ FLIP-X single-axis robots



Note. The YA series is not supported.

iVY2 System

Applicable controllers ▶ RCX340

● Robot with image processing functions

Integrated Robot Vision System with "plug-and-play" simplicity.
Basic specifications have been dramatically enhanced while retaining the current iVY system's ease of use.

Main functions ▶ P.80

■ Ordering method

RCX340 – [ ] – [ ] – [ ] – [ ] – [ ]

Controller	No. of controllable axes	Safety standards	Controller option A to D (OP.A to D)	Controller option E (OP.E)	Absolute battery
			TR : Tracking	No entry: Non-selection VY: iVY2 without light VL: iVY2 with light	

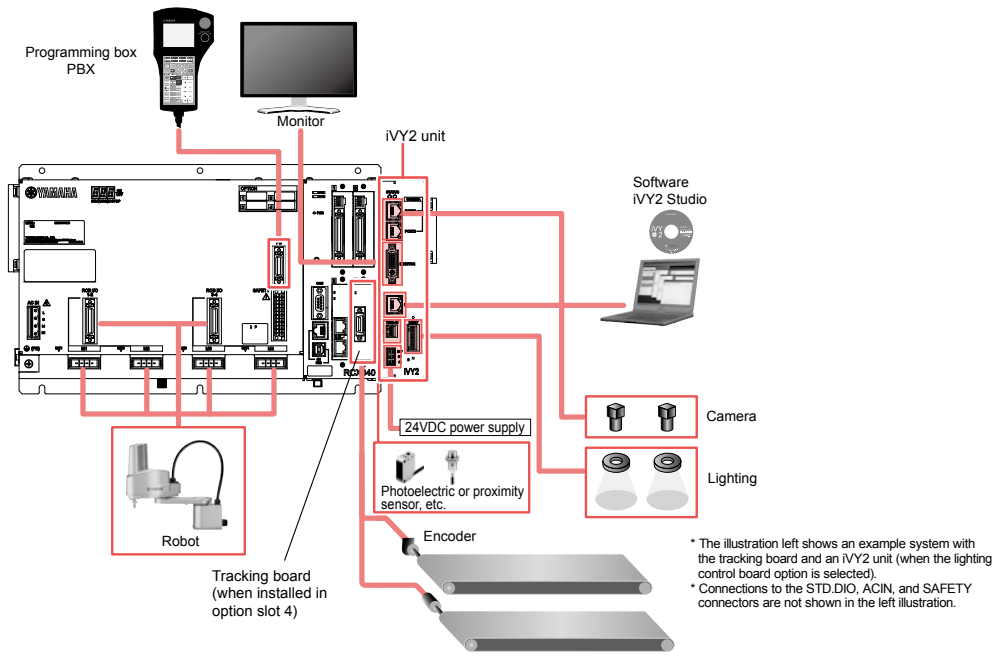
Note. For details on the various selection items, refer to P.545

■ Basic specifications

● Robot vision basic specifications

Item		iVY2 unit
Basic specifications	Applicable controllers	RCX340
	Number of screen pixels	648(H) × 494(V) (300,000 pixels, VGA) 1280(H) × 966(V) (1,300,000 pixels, SXGA) 1624(H) × 1236(V) (2,000,000 pixels, UXGA) 2592(H) × 1944(V) (5,000,000 pixels, QSXGA)
	Model setting capacity	254 models
	Number of connectable cameras	Max. 2 cameras
	Connectable camera	GigE camera (VGA, SXGA, UXGA) PoE: IEEE802.3af 1 ch up to 7W
	External interface	Ethernet (1000BASE-T) Note. For setting and monitor operations
	External monitor output	DVI-I Note. Also usable with an analog monitor by using a conversion adaptor. Monitor resolution: 1024 × 768
	Power supply	DC24V +/-10% 1.5A Max.
	Dimensions	W45 × H195 × D130 (iVY2 unit only)
	Weight	0.8kg (iVY2 unit only, when the lighting control board option is selected)
Search method		Edge search (correlated edge filter, Sobel filter)
Image capturing	Trigger mode	S/W trigger, H/W trigger
	External trigger input	2 points
Function		Position detection, automatic point data generation
Camera installation position		Fixed to the fixed camera (up, down) or robot (Y-axis, Z-axis). Perpendicular to the workpiece to be captured.
Setting support function		Calibration, image save function, model registration[Note], fiducial mark registration[Note], monitor function[Note] Note. iVY2 Studio function (requires a Windows PC)
Lighting control options	Number of connectable lighting units	Max. 2 lighting units
	Modulated light format	PWM modulated light control (0 to 100%), PWM frequency switchable 62.5 kHz/125 kHz
		Continuous light, strobe light (follows camera exposure)
	Lighting power input	12VDC or 24VDC (external supply shared by both channels)
	Lighting output	For 12VDC supply: Total of less than 40W for both channels. For 24VDC supply: Total of less than 80W for both channels.

System configuration illustration

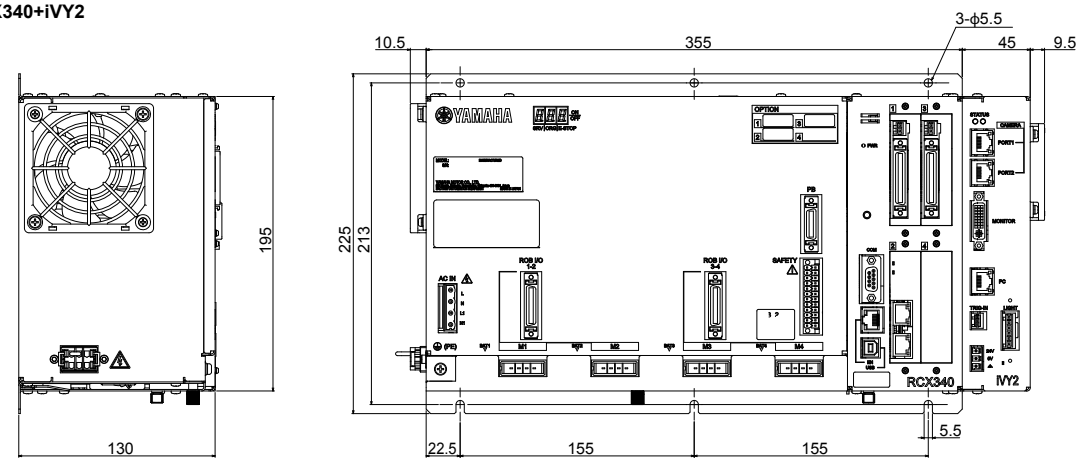


Tracking board basic Specifications

Item		Tracking board
Basic specifications	Applicable controllers	RCX340
	Number of connected encoders	Up to 2 units.
	Encoder power supply	5VDC (2 counters total 500 mA or less) (Supplied from controller)
	Applicable encoder	26LS31/26C31 or equivalent line driver (RS-422 compliance).
	Input phase	A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$
	Max. response frequency	2MHz or less
	Counter	0 to 65535
	Multiplier	4x
	Other	With disconnection detection function

Dimensional outlines

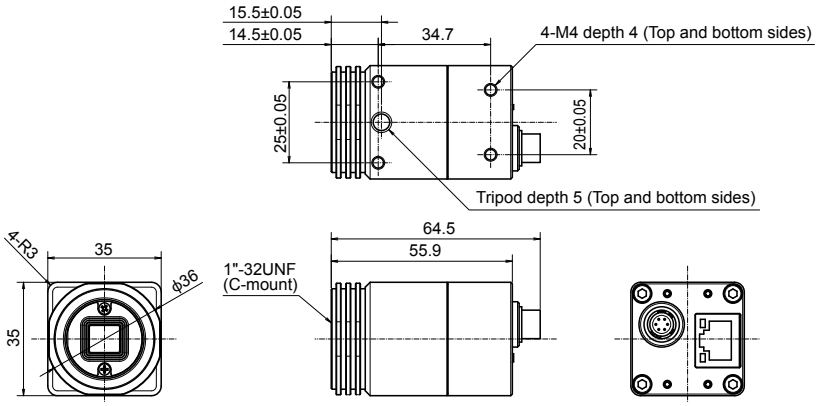
RCX340+iVY2



iVY2 System

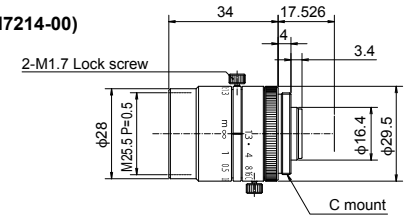
Dimensional outlines

CCD camera

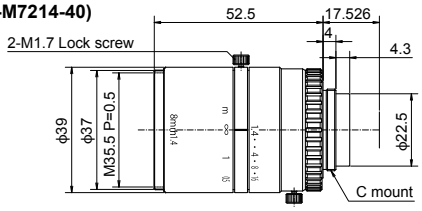


Lenses

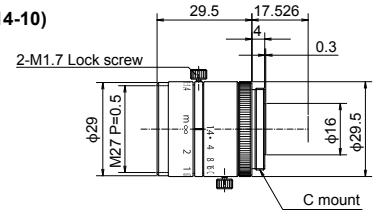
8mm lens
(Model No. : KCX-M7214-00)



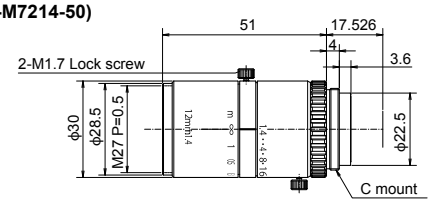
8mm lens (megapixel support)
(Model No. : KCX-M7214-40)



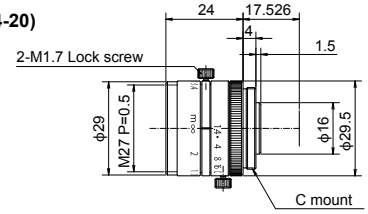
12mm lens
(Model No. : KCX-M7214-10)



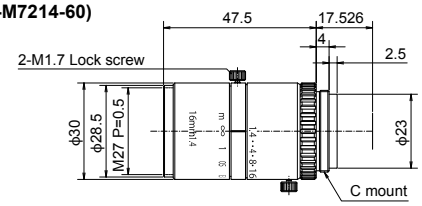
12mm lens (megapixel support)
(Model No. : KCX-M7214-50)



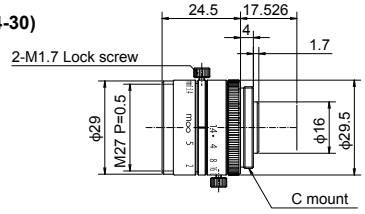
16mm lens
(Model No. : KCX-M7214-20)



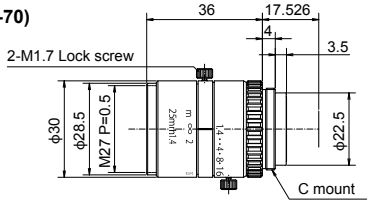
16mm lens (megapixel support)
(Model No. : KCX-M7214-60)



25mm lens
(Model No. : KCX-M7214-30)



25mm lens (megapixel support)
(Model No. : KCX-M7214-70)



Lens characteristics

Lens	Model	Focal length [mm]	Aperture value [F No.]	Angle-of-view (degrees) With 1/3 inch sensor KCX-M6541-00 (300,000 pixel camera) KCX-M6541-10 (1,300,000 pixel camera)		Angle-of-view (degrees) With 1/1.8 inch sensor KCX-M6541-20 (2,000,000 pixel camera)		Closest approach distance [m]
				Vertical	Horizontal	Vertical	Horizontal	
8mm	KCX-M7214-00	8	F1.3–CLOSE	25.21	33.2	37.08	47.59	0.2
12mm	KCX-M7214-10	12	F1.4–CLOSE	16.48	21.86	24.51	31.88	0.3
16mm	KCX-M7214-20	16	F1.4–CLOSE	12.57	16.71	18.77	24.51	0.4
25mm	KCX-M7214-30	25	F1.4–CLOSE	8.18	10.89	12.25	16.06	0.5
8mm (megapixel support)	KCX-M7214-40	8	F1.4–F16	25.36	33.4	37.3	47.86	0.1
12mm (megapixel support)	KCX-M7214-50	12	F1.4–F16	16.65	22.08	24.76	32.2	0.1
16mm (megapixel support)	KCX-M7214-60	16	F1.4–F16	12.68	16.85	18.92	24.72	0.1
25mm (megapixel support)	KCX-M7214-70	25	F1.4–F16	8.24	10.97	12.33	16.16	0.15

Note. This table shows the angle-of-view for Yamaha's standard lenses. If the angle-of-view is greater, there might be more distortion at the edge of the image.

Angle-of-view size, WD, and magnification when close-up ring is used

Close-up ring [mm]			Lens							
			8 mm KCX-M7214-00		12 mm KCX-M7214-10		16 mm KCX-M7214-20		25 mm KCX-M7214-30	
None	WD [mm]		200		300		400		500	
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	96.2 × 126.2		91.4 × 119.9		91.4 × 119.9		71.7 × 94.1	
		KCX-M6541-10 (1,300,000 pixels)	95.4 × 126.4		90.6 × 120		90.6 × 120		71.1 × 94.2	
		KCX-M6541-20 (2,000,000 pixels)	143.2 × 188.1		136 × 178.7		136 × 178.7		106.7 × 140.1	
	Optical magnification		0.038		0.040		0.040		0.051	
0.5	WD [mm]		69.5	118.6	143	296.8	222	524.1	358.5	1269.4
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	36.6 × 48	59 × 77.4	45.7 × 60	91.4 × 119.9	51.5 × 67.6	118 × 154.7	51.5 × 67.6	182.8 × 239.8
		KCX-M6541-10 (1,300,000 pixels)	36.3 × 48	58.5 × 77.5	45.3 × 60	90.6 × 120	51.1 × 67.7	116.9 × 154.9	51.1 × 67.7	181.1 × 240
		KCX-M6541-20 (2,000,000 pixels)	54.4 × 71.5	87.8 × 115.3	68 × 89.4	136 × 178.7	76.6 × 100.7	175.5 × 230.5	76.6 × 100.7	271.9 × 357.3
	Optical magnification		0.100	0.062	0.080	0.040	0.071	0.031	0.071	0.020
1.0	WD [mm]		38.7	53.8	91.3	142.3	152	257.1	280.8	635.9
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	22.6 × 29.6	29.5 × 38.7	30.5 × 40	45.7 × 60	36.2 × 47.5	60 × 78.7	40.2 × 52.7	91.4 × 119.9
		KCX-M6541-10 (1,300,000 pixels)	22.4 × 29.7	29.3 × 38.8	30.2 × 40	45.3 × 60	35.9 × 47.6	59.4 × 78.7	39.9 × 52.8	90.6 × 120
		KCX-M6541-20 (2,000,000 pixels)	33.6 × 44.2	43.9 × 57.7	45.4 × 59.6	68 × 89.4	53.9 × 70.8	89.2 × 117.2	59.8 × 78.6	136 × 178.7
	Optical magnification		0.162	0.124	0.120	0.080	0.101	0.061	0.091	0.040
1.5	WD [mm]				65.4	90.8	114.5	168.1	230.9	424.7
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			22.8 × 29.8	30.3 × 39.7	27.7 × 36.4	39.8 × 52.2	33 × 43.2	61 × 80
		KCX-M6541-10 (1,300,000 pixels)			22.5 × 29.9	30 × 39.7	27.5 × 36.4	39.4 × 52.2	32.7 × 43.3	60.4 × 80
		KCX-M6541-20 (2,000,000 pixels)			33.8 × 44.4	45 × 59.1	41.2 × 54.2	59.2 × 77.7	49 × 64.4	90.7 × 119.1
	Optical magnification				0.161	0.121	0.132	0.092	0.111	0.060
2.0	WD [mm]				50	65.1	91.2	123.6	196.3	319.1
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			18.2 × 23.9	22.8 × 29.8	22.6 × 29.6	30 × 39.4	28.2 × 36.9	46.3 × 60.7
		KCX-M6541-10 (1,300,000 pixels)			18.1 × 23.9	22.5 × 29.9	22.4 × 29.7	29.7 × 39.4	27.9 × 37	45.9 × 60.8
		KCX-M6541-20 (2,000,000 pixels)			27.1 × 35.6	33.8 × 44.4	33.6 × 44.2	44.6 × 58.6	41.9 × 55	68.9 × 90.5
	Optical magnification				0.201	0.161	0.162	0.122	0.130	0.079
5.0	WD [mm]								104.2	129
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)							14.7 × 19.2	18.4 × 24.1
		KCX-M6541-10 (1,300,000 pixels)							14.5 × 19.2	18.3 × 24.2
		KCX-M6541-20 (2,000,000 pixels)							21.8 × 28.6	27.4 × 36
	Optical magnification								0.250	0.199

Note. WD is the lens tip reference.

Close-up ring [mm]			Lens							
			8 mm lens for megapixel KCX-M7214-40		12 mm lens for megapixel KCX-M7214-50		16 mm lens for megapixel KCX-M7214-60		25 mm lens for megapixel KCX-M7214-70	
None	WD [mm]		100		100		100		150	
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	52.3 × 68.5		36.6 × 48		26.9 × 35.3		24.6 × 32.2	
		KCX-M6541-10 (1,300,000 pixels)	51.8 × 68.6		36.3 × 48		26.7 × 35.3		24.4 × 32.3	
		KCX-M6541-20 (2,000,000 pixels)	77.7 × 102.1		54.4 × 71.5		40 × 52.6		36.5 × 48	
	Optical magnification		0.070		0.100		0.136		0.149	
0.5	WD [mm]		46	113.6	66.1	283.2	77.8	505.4	130.3	1232.2
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	27.7 × 36.4	58.1 × 76.2	25.4 × 33.3	89.2 × 117	22.1 × 28.9	118 × 154.7	21.7 × 28.4	182.8 × 239.8
		KCX-M6541-10 (1,300,000 pixels)	27.5 × 36.4	57.5 × 76.2	25.2 × 33.4	88.4 × 117.1	21.9 × 29	116.9 × 154.9	21.5 × 28.5	181.1 × 240
		KCX-M6541-20 (2,000,000 pixels)	41.2 × 54.2	86.4 × 113.5	37.8 × 49.7	132.7 × 174.3	32.8 × 43.1	175.5 × 230.5	32.2 × 42.3	271.9 × 357.3
	Optical magnification		0.132	0.063	0.144	0.041	0.166	0.031	0.169	0.020
1.0	WD [mm]				47.2	131.9	62.6	243	114.6	607.2
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			19.8 × 26	45.2 × 59.2	18.6 × 24.4	59 × 77.4	19.4 × 25.4	91.4 × 119.9
		KCX-M6541-10 (1,300,000 pixels)			19.6 × 26	44.8 × 59.3	18.4 × 24.4	58.5 × 77.5	19.2 × 25.4	90.6 × 120
		KCX-M6541-20 (2,000,000 pixels)			29.4 × 38.7	67.2 × 88.3	27.7 × 36.3	87.8 × 115.3	28.8 × 37.9	136 × 178.7
	Optical magnification				0.185	0.081	0.197	0.062	0.189	0.040
1.5	WD [mm]				35.2	81.4	51.5	155.5	102	398.9
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			16.3 × 21.4	32.7 × 42.9	16.1 × 21.1	39.4 × 51.6	17.5 × 23	61 × 80
		KCX-M6541-10 (1,300,000 pixels)			16.1 × 21.4	32.4 × 42.9	15.9 × 21.1	39 × 51.7	17.4 × 23	60.4 × 80
		KCX-M6541-20 (2,000,000 pixels)			24.2 × 31.8	48.6 × 63.8	23.9 × 31.4	58.5 × 76.9	26.1 × 34.2	90.7 × 119.1
	Optical magnification				0.225	0.112	0.228	0.093	0.209	0.060
2.0	WD [mm]				26.9	56.2	43	111.7	91.5	294.7
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			13.8 × 18.1	22.5 × 29.5	14.2 × 18.6	29.8 × 39	16 × 21	45.7 × 60
		KCX-M6541-10 (1,300,000 pixels)			13.7 × 18.1	22.3 × 29.5	14 × 18.6	29.5 × 39.1	15.9 × 21	45.3 × 60
		KCX-M6541-20 (2,000,000 pixels)			20.5 × 26.9	33.4 × 43.9	21 × 27.6	44.3 × 58.1	23.8 × 31.3	68 × 89.4
	Optical magnification				0.266	0.163	0.259	0.123	0.229	0.080
5.0	WD [mm]								53.9	107.2
	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)							10.5 × 13.8	18.3 × 24
		KCX-M6541-10 (1,300,000 pixels)							10.4 × 13.8	18.2 × 24
		KCX-M6541-20 (2,000,000 pixels)							15.6 × 20.5	27.2 × 35.8
	Optical magnification								0.349	0.200

Note. The above table shows the field of view when the standard lens and close-up ring are used. (Closest distance value is shown in No Close-up Ring column).
Note. If a close-up ring is not used, a WD less than the value shown in this table cannot be used.
Note. If a close-up ring is used, only WD in the region of this value can be used.
Note. Values in this table are for reference only; Actual values may vary.

Accessories and part options

iVY2 System

Standard accessories

iVY2 unit

The iVY2 unit adds robot vision to the RCX340 robot controller.

Model	No lighting	KCX-M4400-V0
	With lighting	KCX-M4400-L0

iVY2 unit accessories

Name	Individual model
Camera trigger input cable connector	KX0-M657K-00
24V power supply connector	KCF-M5382-00

Support software for PC iVY2 Studio

iVY2 Studio is support software for the iVY2 system that allows registering part types and reference marks as well as monitoring the work search status during automatic robot operation by connecting to the robot controller.

Environment

Software model	KCX-M4988-00
OS	Microsoft Windows XP / Vista (32bit/64bit) / 7 (32bit/64bit) / 8, 8.1 (32bit/64bit)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk capacity	16MB of available space required on installation drive.
Display	800 x 600 dot, or higher, 32768 colors (16bit High Color) or higher (recommended)
Communication Port	Ethernet Port of TCP/IP

Note. Microsoft, Windows XP, Windows Vista, Windows 7, Windows 8, 8.1 are registered trademarks of the Microsoft Corporation, USA.

Tracking encoder cable (10m)

Model	KX0-M66AF-00

Options

Camera

CCD camera	300,000 pixel	648×494 (VGA)	KCX-M6541-00
	1,300,000 pixel	1280×966 (SXGA)	KCX-M6541-10
	2,000,000 pixel	1624×1236 (UXGA)	KCX-M6541-20
CMOS camera	5,000,000 pixel	2592×1944 (QSXGA)	KCX-M6541-30

Lens

Model	8mm	KCX-M7214-00
	12mm	KCX-M7214-10
	16mm	KCX-M7214-20
	25mm	KCX-M7214-30
	8mm (megapixel support)	KCX-M7214-40
	12mm (megapixel support)	KCX-M7214-50
	16mm (megapixel support)	KCX-M7214-60
	25mm (megapixel support)	KCX-M7214-70

Close-up ring

Model	0.5mm	KX0-M7215-00
	1.0mm	KX0-M7215-10
	2.0mm	KX0-M7215-20
	5.0mm	KX0-M7215-30

Lighting control board

This board adds lighting control functionality to the iVY2 system. (Installed in the iVY2 unit when shipped)

Model	KCX-M4403-L0

Lighting control board accessories

Name	Model
Lighting power cable connector	KX0-M657K-10

Tracking board

This board adds conveyor tracking functionality to the RCX340 controller.

Model	KCX-M4400-T0

Tracking board accessories

Name	Single unit model
AB phase input cable connector	KX0-M657K-20

Recommended option cable Note

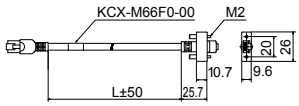
Name	Single unit model
AB phase input cable (10 m, only for counter 1)	KX0-M66AF-00

Note. Not included.
We can provide an option that is pre-wired to the AB phase input cable connector.

Camera cable

Cable for connecting the camera to the iVY2 board.

External diagram of camera cable



Model	5m	KCX-M66F0-00
	10m	KCX-M66F0-10
	15m	KCX-M66F0-20

LAN cable with shield cloth (5 m)

Model	KX0-M55G0-00