### Lens characteristics

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>9mm</td>
<td>KCX-M7214-03</td>
<td>20</td>
<td>28.2</td>
<td>27.2</td>
<td>47.8</td>
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<tr>
<td>13mm</td>
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<td>16.4</td>
<td>21.8</td>
<td>31.8</td>
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<td>16mm</td>
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<td>20</td>
<td>18.7</td>
<td>26.5</td>
<td>40.1</td>
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<tr>
<td>25mm (megapixel)</td>
<td>KCX-M7214-30</td>
<td>20</td>
<td>22.5</td>
<td>37.8</td>
<td>60.0</td>
</tr>
<tr>
<td>35mm (megapixel)</td>
<td>KCX-M7214-50</td>
<td>20</td>
<td>30.6</td>
<td>57.8</td>
<td>96.0</td>
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<td>8mm</td>
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<td>20.0</td>
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<td>47.8</td>
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<tr>
<td>12mm</td>
<td>KCX-M7214-10</td>
<td>20</td>
<td>18.7</td>
<td>24.7</td>
<td>38.1</td>
</tr>
<tr>
<td>16mm</td>
<td>KCX-M7214-20</td>
<td>20</td>
<td>21.8</td>
<td>31.3</td>
<td>52.1</td>
</tr>
<tr>
<td>25mm (megapixel)</td>
<td>KCX-M7214-30</td>
<td>20</td>
<td>30.6</td>
<td>57.8</td>
<td>96.0</td>
</tr>
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<td>20</td>
<td>30.6</td>
<td>57.8</td>
<td>96.0</td>
</tr>
</tbody>
</table>

* 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.

* Values in this table are for reference only; Actual values may vary.

* If a close-up ring is not used, a WD less than the value shown in this table cannot be used.

* WD is the lens tip reference.

---

### Specifications and appearance are subject to change without prior notice.

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**Yamaha’s own unique solution for integrated robot vision**

**RCX 3 Series CONTROLLER YAMAHA ROBOT VISION**

**RCXiVY2+ SYSTEM**

Yamaha’s own unique solution for integrated robot vision

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**New product information**

- **New product information**
  - **Simplicity**
  - **Sophistication**
  - **Assurance**

---

**RCXi by the best tip reference.**

---

**For tracking irregular shape workpieces**

- **Easy Operation**
- **Wide range of applications**
- **Shorter startup time**
- **Comprehensive support of robot and vision by Yamaha**

---

**YAMAHA MOTOR CO., LTD.**

Robotics Operations FA Section
1217 Toyotoki, Kita-ku, Hamamatsu, Shizuoka 433-8103, Japan
Tel: +81-53-525-8350 Fax: +81-53-525-8378
URL: https://global.yamaha-motor.com/business/robot/
E-mail: robotn@yamaha-motor.co.jp
Solutions RCXiVY2+ can provide:

**Reducing teaching process time**
Robot teaching work requires a lot of labor and time. The RCXiVY2+ system acts as “robot eye”. The final fine positioning can be automated and greatly reduce the teaching time that was required for the conventional models.

**Simplified positioning process**
Reducing positioning process time in frequent lot change in small lot production. Cost in preparation, control, and switching positioning jigs can be reduced.

**Random workpieces need to be handled.**
With position detection function of RCXiVY2+, pick & place operation of random shaped parts from parts feeder or pallet can be simplified.

**RCXiVY2+ features:**
- Compensating parts orientation on the fly
- Conveyor follower
- Searching randomly placed parts
- Positioning of products that are fixed roughly
- Top/bottom judgement
- OK/NG judgement

**Conveyor tracking**
With a feedback from encoder of a conveyor RCXiVY2+ can do pick & place following convey or move.

**Yamaha’s comprehensive support of Robot and Vision**
Yamaha’s integrated robot vision system. It means Yamaha supports both robot and vision system seamlessly. Have any questions and don’t know if it is robot or vision related? Simply contact Yamaha representative. We have answers.

**Advanced RCXiVY2+ has been launched.**
- Setup is completed as little as eight minutes after power-on. Auto-calibration makes setup easy.
- With up to five million pixels, a variety of workpieces can be supported. Improve throughput to 100 CPM with conveyor tracking.
- 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.
- Increased application features:
  - Picking of irregular shape workpieces
  - Presence inspection
  - Multiple piece count
- Enhanced performance:
  - CPU capability is increased to improve the search speed 8 to 45%
  - Number of pixels is increased.
  - Frame rate is increased.
- Easy operation:
  - Supports template function of RCX-Studio 2020
Easy operation
New features for easy operation

High speed positioning of irregular shaped parts (foods or clothes)

Blob search function
Suitable for pick & place or detection of parts with wide tolerance in shape and size, or high speed counting. Detection speed is 2 to 10 times faster than edge detection.

Detection time is shortened up to 45%.
By adopting a high-performance camera and improving the camera frame rate and CPU capability, detection time is reduced by 8 to 45% while the resolution is improved.

Detection with Speed
Comparing with edge search, blob search is 2 to 10 times faster.

Comparison of edge search and blob search
* Only doughnut shape workpieces are detected.

Overlap can be eliminated.
Overlapped workpieces are recognized and they can be excluded from the search target.

Suitable for parts detection and high volume parts count

Application examples
* Subject to application and conditions.
- Detection of electronics components on PCB board
- Detection of screws and washers that secure parts
- Checking drilled holes
- Counting of the number of bottles in pallet
- Counting of electronics components

Detection of food labels

CMOS camera

- Improved camera pixels
- Improved camera frame rate
- Improved CPU

CMOS camera

CMOS camera

Comparison of search time

Conventional IVY2 RCXIVY2+ [When one workpiece is detected.]

[When 50 workpieces are detected.]

Edge search

Blob search

Edge search

Blob search

Search speed
Up to 10 times faster

YAMAMA ROBOT VISION
RCXIVY2+ SYSTEM
[Robot controller integrated type]

**Typical Robot Vision setup**

1. Time consuming robot coordinates alignment.
2. Need to calculate compensation for moving camera setup.
3. Operation deviation between the camera and robot due to communication time.
4. Adjustment of communication format is needed.

**RCXiVY2+ system**

1. Simple calibration function is incorporated.
2. Coordinates are corrected automatically even when the camera moves.
3. High-speed connections through dedicated bus line.
4. Controller is incorporated to provide the central operation.
5. Applicable to all models of YAMAHA robot lineup.

**Examples of program commands**

- **VSEARCH**
  - Detect parts with designated camera
  - Camera and component type to be used for detection and the calibration data to be used can be switched with one command.

  ```
  VSEARCH 1, 1, 1
  VSEARCH 2, 2, 1
  VSEARCH 3, 3, 2
  VSEARCH 4, 4, 2
  #01
  #02
  #03
  #04
  #05
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  #99
  #100
  
  VGETPOS
  - Acquires the coordinates of the detected workpieces.
  - The search results can be substituted into the point coordinates directly.

  ```
  VGETPOS (0) → Coordinates of 1
  VGETPOS (1) → Coordinates of 2
  VGETPOS (2) → Coordinates of 3
  VGETPOS (3) → Coordinates of 4
  VGETPOS (4) → Coordinates of 5
  VGETPOS (5) → Coordinates of 6
  VGETPOS (6) → Coordinates of 7
  VGETPOS (7) → Coordinates of 8
  VGETPOS (8) → Coordinates of 9
  VGETPOS (9) → Coordinates of 10
  VGETPOS (10) → Coordinates of 11
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  VGETPOS (93) → Coordinates of 94
  VGETPOS (94) → Coordinates of 95
  VGETPOS (95) → Coordinates of 96
  VGETPOS (96) → Coordinates of 97
  VGETPOS (97) → Coordinates of 98
  VGETPOS (98) → Coordinates of 99
  VGETPOS (99) → Coordinates of 100
  
- **LVOLUME**
  - Intensity of light is adjustable from 0 to 100% range
  - In detection mode intensity of light can be adjusted with one command.
  - Detection can be repeated with adjusted intensity.

  ```
  LVOLUME(1)=50
  LVOLUME(1)=60
  LVOLUME(1)=70
  LVOLUME(1)=80
  LVOLUME(1)=90
  LVOLUME(1)=100
  
  MOVE P, P9
  OFF LINE
  SEND "*" TO CMU
  SEND CMU TO P10
  ON LINE
  MOVE P, P10
  
  MOVE P, P9
  OFF LINE
  SEND CMU "*" TO CMU
  SEND CMU TO P10
  ON LINE
  MOVE P, P10
  
  MOVE P, P9
  OFF LINE
  SEND CMU "*" TO CMU
  SEND CMU TO P10
  ON LINE
  MOVE P, P10
  
  MOVE P, P9
  OFF LINE
  SEND CMU "*" TO CMU
  SEND CMU TO P10
  ON LINE
  MOVE P, P10
  
  MOVE P, P9
  OFF LINE
  SEND CMU "*" TO CMU
  SEND CMU TO P10
  ON LINE
  MOVE P, P10
  ```

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

**Centralized control using only the robot program**

Camera and robot have separate programs

Program of image processing unit

Program of host PLC

Program of PLC

Program of robot PLC

PLC

RCXiVY2+ system

Camera and robot have separate programs

Centralized control using only the robot program

*The order to substitute into VGETPOS can be selected from the following:
1) Score order, 2) X coordinate, and 3) Y coordinate*
Conventional equipment combining “image processing unit + robot” requires many steps in “calibration” that aligns the camera coordinates with the robot coordinates. With the RCXiVY2+ system, following the wizard to perform the operation will complete the calibration easily within a short time. In addition, even when the setting position deviates, the calibration is executed and restored immediately.

**3 easy steps for parts registration**

1. **Capture images.** Put the workpiece within the camera field-of-view and specify an image capturing range.
2. **Set the contour.** Contour is automatically extracted. Paint the necessary contour with a pen tool.
3. **Register the detection position.** Specify the detection position using the mouse. Desired positions can be set.

**Search results**

**Contour setting pen**
- Paints the areas to be used from among the automatically detected edges.

**Priority area pen**
- Paints the areas to be used as priority areas during search from among the edges.

**Reduction area pen**
- Paints the areas where there should not be an edge during search.

**Usage example of contour setting pen**

- **When a workpiece with a partially different shape needs to be distinguished and recognized or when the top or bottom needs to be judged,** the detection can be performed by painting the contours in different colors by combining the contour setting pen with the priority area pen and reduction area pen.

**Detection results**

- **All contours are handled equivalently.**

- **Normal contour setting**
  - The score may slightly vary depending on the presence status of the protrusion. However, both are detected.

- **Priority area setting**
  - In addition to the blue area search, areas painted in green are used as priority areas to perform the judgement.
  - When no edge is detected in the area set as priority area, this is judged as NG and the workpiece is not detected.

- **Reduction area setting**
  - When there is an edge in the unnecessary area painted in yellow, the score is reduced.
  - When an edge is detected in the area set as unnecessary area, the score is reduced and the workpiece is not detected.

**Simple parts judgement process**

**[ Simple calibration ]**

Conventional equipment combining “image processing unit + robot” requires many steps in “calibration” that aligns the camera coordinates with the robot coordinates. With the RCXiVY2+ system, following the wizard to perform the operation will complete the calibration easily within a short time. In addition, even when the setting position deviates, the calibration is executed and restored immediately.

**Simple parts judgement process**

**Contour setting pen**
- Paints the areas to be used from among the automatically detected edges.

**Priority area pen**
- Paints the areas to be used as priority areas during search from among the edges.

**Reduction area pen**
- Paints the areas where there should not be an edge during search.

**Usage example**

- **Workpiece top or bottom judgement**
  - ABC A C
  - Simple OK or NG judgement

**Detection results**

- **Normal contour setting**
  - All contours are handled equivalently.

- **Priority area setting**
  - The score may slightly vary depending on the presence status of the protrusion. However, both are detected.

- **Reduction area setting**
  - When there is an edge in the unnecessary area painted in yellow, the score is reduced.

**Simple calibration**

- **Register the desired fiducial mark**
  - Contour is automatically extracted. Paint the necessary contour with a pen tool.

- **Set the detection position**
  - Specify the detection position using the mouse. Desired positions can be set.

**Search results**

- **Normal contour setting**
  - All contours are handled equivalently.

- **Priority area setting**
  - In addition to the blue area search, areas painted in green are used as priority areas to perform the judgement.
  - When no edge is detected in the area set as priority area, this is judged as NG and the workpiece is not detected.

- **Reduction area setting**
  - When there is an edge in the unnecessary area painted in yellow, the score is reduced.
  - When an edge is detected in the area set as unnecessary area, the score is reduced and the workpiece is not detected.

**Calibration is automated with the dedicated jig.**

By automating the calibration using the advanced calibration function, highly accurate calibration can be achieved easily without depending on the operator’s skill.

Since the dedicated jig is the standard part (option part), the jig does not need to be designed and manufactured and can be used immediately.

**Hand data creation**
- Approx. 20 min.

**Teaching**
- Approx. 30 min.

**Calibration**
- Approx. 20 min.

**Result check**
- Approx. 30 min.

*This jig can be used only with the downward camera.
[**Setup time reduced greatly**](#)

When using third-party vision, a coordinate conversion program needs to be created in the robot controller since the robot coordinate data differs from the vision format.

In RCXiVY2+, vision system is incorporated in robot controller the robot coordinate data can be stored into the robot point data using single process. This ensures very simple operation. Additionally, the unified control of the camera control and light control can be performed using the robot program. Start-up process will be greatly simplified.

**Comparison of setup time**

<table>
<thead>
<tr>
<th>General-purpose vision</th>
<th>Setup time reduced by up to 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCXiVY2+ system</td>
<td></td>
</tr>
</tbody>
</table>

[**Easy link with peripheral equipment**](#)

One controller provides unified control of robot, gripper, and lighting.

[**System configuration illustration**](#)

* Shows a system configuration example of the RCXiVY2+ unit (with light control board option).
* To the STD.DIO, ACIN, and SAFETY connectors not shown.

[**Conveyor tracking**](#)

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.

**Conveyor tracking illustration**

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

[**Improving productivity by controlling multiple robot systems**](#)

Parts sorting by program contributes productivity

Information from a single camera can be shared by multiple robots

Control two robots to let downstream robot handle missed items

Connect up to four units 100 CPM/unit x 4 units (maximum 400 CPM)

Seamless movement from move up to move down

Unify the move-up command, follow workplace command, move down command

Predict workplace location and move directly

Reduce movement distance

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

New CTMOVE

Can be executed with a single command

Start-up process will be greatly simplified.

Improve throughput 

Shortened cycle time 
[ 254 types can be registered ]

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

[ High-precision search even under low light ]

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

[ Monitor output is provided ]

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

Contents of output:
- Selected type / Captured image
- Search result (position, score, scale)
- Time required by command

Output method:
- DVI-I (supports digital monitor or analog monitor)

[ Lens distortion and camera inclination correction function ]

Mounting accuracy is improved. Camera is installed in the inclined status.

The lens distortion and camera inclination correction function is enabled during calibration. The calibration data for the distortion and inclination correction is created. When images are captured using this calibration data, captured images are corrected and output.

[ Also supports moving camera ]

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

[ Easy-to-use dedicated software RCXiVY2+ Studio ]

With support software "RCXiVY2+ Studio", all vision related operations such as registration of fiducial marks and workpieces used for calibration (contour settings, various parameter settings, and read range settings), backup, restore operation, and operation monitor can be performed.

- Search trial-run, part type registration
- Reference mark registration (for calibration)
- Up to 254 workpiece types can be registered.
- Workpiece can also be added easily.
- Up to 100 workpieces can be detected at once.
- Data backup
- This software functions as a monitor during program operation.

[ Easy programming ]

Robot vision system can be configured at a low cost using the optimal model corresponding to the application.

RCX-Studio 2020 program template function

Program is created automatically only by following the operating procedures.

Five program templates related to the vision system are incorporated into support software RCX-Studio 2020 for the RCX3 series controller.

- Pallet picking using the vision
- Dispensing work using the vision
- Gripping deviation correction using the vision
- Gripping deviation and mounting position correction using the vision
- Gripping deviation and mounting position correction using the vision (without using any master)

As the command entry is not needed, the program creation time is shortened greatly.

[ 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/XE SCARA robots
- YK-TW orbit type robots
- FLIP-X single-axis robots

* The YA series is not supported.

Download from website (member site)
User’s application is verified using actual sample parts before making a purchase decision. Based on the evaluation result, recommendation will be made for most suitable and economical solution.

**Preliminary evaluation**
Starting evaluation with actual sample piece

**Actual machine test**
Evaluation of application with robot and vision setup

**Recommendation**
Based on the results of preliminary evaluation necessary recommendation is made
Recommendation on vision system setup

**Robot training**
Training is available upon request

- **Evaluation conditions (example)**
  - Lighting: 375 mm
  - House: 400 mm
  - Workpiece: 216 mm
  - Background black

- **Evaluation conditions (example)**
  - Lighting: 375 mm
  - House: 400 mm
  - Workpiece: 216 mm
  - Background black

- **Sample parts review**
- **Application review**
- **Actual Simulation**
- **Actual machine test**
- **Advice (evaluation report is submitted)**
- **Robot training**
- **Follow-up after delivery**

**Random flow of parts on conveyor**

- The workpiece positions are recognized by the camera and the labels are adhered to the determined positions on workpieces.
- The adhesion position can also be specified for each part type.

**Automatically compensating sealing points**

- The workpiece shape is recognized by the camera and the sealing is applied to the correct position.

**Lot application examples**

1. **Application**
   - Position of workpiece is correctly recognized by its shape.
   - Changing setup or jig between production lot can be eliminated.

2. **Application**
   - The correct position of even the workpiece whose hole position varies depending on the workpiece is recognized by the camera and the screw can be tightened.

3. **Application**
   - The workpiece is placed within the specified area.
   - The camera recognizes the workpiece position.
   - The sealing is applied correctly.

4. **Application**
   - Use of the upward camera makes it possible to correct the position during transfer.
   - Workpiece can be handled without teaching to reduce the number of steps.

5. **Application**
   - The position and orientation of the component transported to an arbitrary position in an arbitrary posture on the conveyor are recognized and the SCARA robot picks up the component.

6. **Application**
   - Irregular shape workpieces such as foods and clothes.
   - Conveyor tracking of foods and clothes whose shapes and sizes have large variations can be performed.
## Ordering specifications

### RXC340

- **Number of controllable axes**: A, A, B, B, Z, Z
- **Safety standards**:  
  - Note2. For settings and monitoring operations
  - Note5. RCXiVY2+ Studio function (requires a Windows PC)

### RXC320

- **Number of controllable axes**: A, A, B, B, Z, Z

### RXC320+ unit

- **TR: Tracking Note1**
- **Controller option A to D (OP.A to D)**
- **Controller option E (OP.E)**

### RXC320+ Studio

- **Note5. RCXiVY2+ Studio function (requires a Windows PC)**

### RXC340/RXC320

- **Total of less than 40W for both channels.**
- **Total of less than 80W for both channels.**

## Accessories and part options

### Standard accessories

- **Model**: 24V power supply connector
  - **Model**: KCF-M5382-00

### Options

- **Lens**
  - **Model**: KFR-M6541-10
  - **Model**: KFR-M6541-20
  - **Model**: KFR-M6541-30

- **Lighting control board**
  - **Model**: KCF-M4403-00
  - **Model**: KCF-M4404-00

- **Lighting control board accessories**
  - **Model**: KCF-M657K-10

- **Tracking board**
  - **Model**: KCF-M657K-10

- **Recommended option cable**
  - **Model**: KCF-M65AF-00

- **Calibration jig**
  - **Model**: KCF-M7200-00

### Camera cable

- **Model**: KCF-M66P-00

## Environment

- **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**: 30MB of available space required on installation drive, capacity
- *** Additional recent space is required for saving images and data.

### Communication/Network

- **Network Ports**: Ethernet Port of TCP/IP

*Microsoft, Windows XP, Windows Vista, Windows 7, Windows 8, 8.1, and Windows 10 are registered trademarks of the Microsoft Corporation, USA.

* *EtherCAT is a registered trademark of the ADOXCX Corporation, USA.

## Specifications

### Robot vision basic specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>RXC340/RXC320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable controllers</td>
<td>RXC340/RXC320</td>
</tr>
<tr>
<td>Number of screen pixels</td>
<td>728(H) × 544(V) (400,000 pixels)</td>
</tr>
<tr>
<td>Connectable cameras</td>
<td>2 cameras</td>
</tr>
<tr>
<td>External interface</td>
<td>USB 2.0 (Hi-speed)</td>
</tr>
<tr>
<td>Power supply</td>
<td>24 VDC ±10%</td>
</tr>
<tr>
<td>Dimensions</td>
<td>198(W) × 195(H) × 130(D) (RXC340/RXC320)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.8kg (only RCX320)</td>
</tr>
<tr>
<td>Search method</td>
<td>Edge search (correlated edge filter, sobel filter)</td>
</tr>
<tr>
<td>Image capturing</td>
<td>S/W trigger</td>
</tr>
<tr>
<td>Function</td>
<td>Position detection, coordinate conversion, automatic point data generation, distortion and inclination correction</td>
</tr>
<tr>
<td>Camera installation position</td>
<td>Plastic to the fixed camera (up/down) or robot (Y-axis, 2-axis). Perpendicular to the workspace to be captured.</td>
</tr>
<tr>
<td>Setting support function</td>
<td>Calibration, image save function, model registration, 3D model mark registration, measurement function registration, block registration, monitor function registration</td>
</tr>
<tr>
<td>Lighting control options</td>
<td>2 lighting units</td>
</tr>
<tr>
<td>Modulated light format</td>
<td>PWM modulated light (0% to 100%), PWM frequency switchable 62.5kHz to 125kHz</td>
</tr>
<tr>
<td>Continous light, strobe light</td>
<td>12VDC to 24VDC (external power shared by both channels)</td>
</tr>
<tr>
<td>Light output</td>
<td>For 12VDC supply: Total of less than 40W for both channels. For 24VDC supply: Total of less than 80W for both channels.</td>
</tr>
<tr>
<td>Counter</td>
<td>0 to 65535</td>
</tr>
<tr>
<td>Other</td>
<td>With disconnection detection function</td>
</tr>
</tbody>
</table>

### Tracking board basic specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Tracking board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable controllers</td>
<td>RXC340/RXC320</td>
</tr>
<tr>
<td>Number of controllable encoders</td>
<td>2 controllable</td>
</tr>
<tr>
<td>Encoder power supply</td>
<td>5VDC (2 counters total 500mA or less) (Supplied from controller)</td>
</tr>
<tr>
<td>Applicable encoder</td>
<td>36LS3120C1 or equivalent line driver (RS-422 compliance)</td>
</tr>
<tr>
<td>Input phase</td>
<td>A, B, C, T, Z</td>
</tr>
<tr>
<td>Max. response frequency</td>
<td>384kHz or less</td>
</tr>
<tr>
<td>Counter</td>
<td>0 to 65535</td>
</tr>
<tr>
<td>Start code</td>
<td>4x</td>
</tr>
<tr>
<td>Other</td>
<td>With disconnection detection function</td>
</tr>
</tbody>
</table>

### Standard accessories

- **Model**: No lighting KFR-M4400-10
  - **Model**: With lighting KFR-M4400-D0

### Options

- **Lens**
  - **Model**: 8mm KX0-M4400-00
  - **Model**: 12mm KX0-M4400-10
  - **Model**: 16mm KX0-M4400-20

- **Lighting control board**
  - **Model**: KCF-M4403-00
  - **Model**: KCF-M4404-00

- **Lighting control board accessories**
  - **Model**: KCF-M657K-10

- **Tracking board**
  - **Model**: KCF-M657K-10

- **Recommended option cable**
  - **Model**: KCF-M65AF-00

- **Calibration jig**
  - **Model**: KCF-M7200-00

### Camera cable

- **Model**: KCF-M66P-00

### Specifications

- **Model**: KX0-M7200-00

### Accessories and part options

- **Lens**
  - **Model**: KX0-M6541-10
  - **Model**: KX0-M6541-20
  - **Model**: KX0-M6541-30

- **Lighting control board**
  - **Model**: KCF-M4403-00
  - **Model**: KCF-M4404-00

- **Lighting control board accessories**
  - **Model**: KCF-M657K-10

- **Tracking board**
  - **Model**: KCF-M657K-10

- **Recommended option cable**
  - **Model**: KCF-M65AF-00

- **Calibration jig**
  - **Model**: KCF-M7200-00