SETTING THE NEW STANDARD FOR CODE READING

SR-1000 Series
3 CHALLENGES CODE READERS FACE

1 READER CANNOT BE MOUNTED AT DESIRED DISTANCE

“Selecting the right reader and lens combination for the distance is frustrating.”
“The system has to be designed to fit the specifications of the reader.”

2 OPTIMAL SETTINGS ARE UNKNOWN

“Reading was successful during setup but there are many errors during actual operation.”
“Setup requires a whole day.”

3 READING FAILS DUE TO GLARE

“Do we need to mount the reader at a certain angle? What is the best angle?”
“Is external lighting required? What kind?”
PRESS THE BUTTON

AUTOFOCUS

1
The reader can be mounted at any distance and maintain a clear image. (1000 mm max.)

AUTOMATIC TUNING

2
Determines optimal settings for exposure time, image processing filter, etc. [About 750,000 combinations]

AUTOMATIC POLARIZATION

3
Glare can be eliminated. Reader angle adjustment or external lighting is unnecessary.

SETTING COMPLETE

WORLD’S FIRST AUTOMATIC POLARIZATION CONTROL

The reader features both polarized and direct light sources. Automatic polarizing filter selection eliminates glare and allows flexible mounting.
AUTOFOCUS

ONE READER FOR MANY APPLICATIONS

Mounting is less restricted by performance or specifications of the code reader itself, thus improving flexibility in machine designs for production lines and jigs. With autofocus capabilities, a single reader can detect codes on targets of varying heights.

Detecting targets with differing heights
Securing a robot’s movement range
Reading extremely small codes

FIELD OF VIEW 4x LARGER

Conventional field of view
Field of view of the SR-1000 Series

Range:
290 mm × 220 mm
11.42" × 8.66"

Distance:
110 mm
4.33"

Range:
1000 mm
39.37"

4x WIDER
than conventional models

1.6x LONGER
than conventional models

EVEN IF THE CODE IS SMALL

EVEN IF THE POSITION CHANGES
EVEN IF THE DISTANCE IS FAR
AUTOMATIC TUNING

OPTIMAL SETTING OF EXPOSURE TIME, FILTERS AND MORE

The code reader automatically optimizes the exposure time, image processing filter and other parameters according to the target and mounting distance.

CLEAR IMAGE CAPTURE

CORRECTION ITEMS AND EXAMPLES OF AFFECTED CODES

<table>
<thead>
<tr>
<th>Capture Brightness Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatically configures various combinations of exposure time, dynamic range and gain in order to achieve the optimal brightness.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contrast Threshold Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatically corrects black/white thresholds and optimizes the contrast between code and background.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filter Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatically selects the best filter and filtering intensity to correct the captured image.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geometric Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrects distorted codes, such as those on cylinders and other round surfaces or when the reader is mounted at an angle.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Image Reduction &amp; Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reducing the image size may reduce background noise or missing spaces relatively smaller.</td>
</tr>
</tbody>
</table>

APPLICATIONS

**Automotive and metal works industries**

**CAMSHAFTS**

Inspections

The large field of view and autofocus function compensate for changes in both the position and reading distance of codes between product types.

**CRANKSHAFTS**

Inspections

Automatically eliminates glare caused by cylindrical and metallic materials to stabilize reading.

**Electronic devices industry**

**IC CHIPS**

Inspections

Simultaneously reads multiple codes in a tray of ICs for identification.

**LEAD FRAMES**

Bonding

This single device can read both extremely small codes and codes discolored by heat or oxidation.

**Food, medical, and packaging industries**

**FOOD PACKAGING**

 Variety Inspections

Reads codes over a large field of view and at high speeds, even as position and orientation of codes vary.

**MEDICINAL PACKAGING**

Processing

Reliably captures barcodes and 2D codes traveling at high speeds to help contribute to ever-increasing safety checks.
AUTOMATIC POLARIZATION CONTROL

ENSURING FLEXIBLE MOUNTING

Automatic polarization control function

The code reader automatically eliminates glare, thus eliminating the need for mounting angle adjustment or external lighting during installation. When combined with the autofocus function, mounting becomes highly flexible.

NEW OPTICAL DESIGN FOR STABLE READING

CPC (Compound Parabolic Concentrator) Illumination

A specially shaped reflector has been designed to create high efficiency illumination by reducing loss in light intensity from the high intensity LEDs. Gold plating maximizes the reflectance to achieve brightness exceeding conventional levels by 400%. This provides reading under bright, uniform illumination even at long ranges.

Light is concentrated efficiently within the field of view to provide high intensity illumination.
TWO MODES CAN BE SELECTED DEPENDING ON THE APPLICATION

UNAFFECTED BY CHANGING CONDITIONS

SMART MODE  NEW

FOR CONSISTENT READING REGARDLESS OF CODE CONDITIONS

Fluctuations in code conditions are predicted during tuning and expanded reading settings are automatically generated. This ensures stable reading even when the contrast of the code changes, eliminating the need to reconfigure the code reader.

FOR CODE QUALITY MANAGEMENT

The SR-1000 has the functionality to make judgments on code quality. Because code quality degradation can be detected before reading errors occur, this mode can be used for predictive maintenance of the printing process.

DETECTING CHANGES IN CODE CONDITIONS

CUSTOM MODE

The reader predicts 43 patterns of change in printing conditions.

The reader predicts 43 patterns of change in printing conditions.

<table>
<thead>
<tr>
<th>Matching level judgment function</th>
<th>Provides code quality comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two codes, which both have a reading rate of 100%, can still be distinguished by the matching level</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reading rate</th>
<th>Matching level</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>75</td>
</tr>
<tr>
<td>100%</td>
<td>43</td>
</tr>
</tbody>
</table>

Code verification function

Verification based on code quality standards

OUTPUT DATA  AD-ERMT-55841:B

TOTAL GRADE JUDGMENT

Judgment can also be given for each parameter

SUPPORTED STANDARDS

- ISO/IEC 15415
- ISO/IEC TR 29158 (AIM DPM-1-2006)
- ISO/IEC 16022
- SAE AS9132
- SEMI T10-0701

*This function is designed for 2D codes (QR, DataMatrix, GS1 Composite, PDF417).
EASY-TO-USE HIGH PERFORMANCE

ADVANCED SETUP SOFTWARE

Monitor the field of view to adjust the position of the code.

The focus is adjusted automatically.

Automatically selects from about 750000 parameter combinations and whether or not to enable the polarization filter.

SR-H6W NEW

The software provides not only easy code reader setup but also functionality to reduce man-hours for preliminary tests. It is possible to connect to the software through USB.

IMAGE CAPTURE RANGE

The smaller the range, the shorter the reading time becomes. Selectable from 800 × 600 mm 31.50" × 23.62", 1280 × 1024 mm 50.39" × 40.31", and user defined.

ADVANCED SETUP SOFTWARE

The software provides not only easy code reader setup but also functionality to reduce man-hours for preliminary tests. It is possible to connect to the software through USB.

ADVANCED SETTINGS

TARGET BANK (in custom mode only)
Specify the parameter bank number to modify.

TUNING HISTORY (in custom mode only)
Tuning history can be reviewed.

POLARIZATION FILTER
Selectable between enabled or disabled.

NO. OF CODES FOR READING
Specify the number of codes to read simultaneously.

TUNING MONITOR

The optimum settings are automatically determined from multiple combinations of image processing filters and brightness levels.

ETHERNET COMMUNICATION WIZARD

Setup can be completed in just four steps with a question-answer form including visual explanations. In previous versions, the user needed to understand the settings available on the screen and determine which items required input.

The new version uses a setup wizard to eliminate the need for item extraction, reducing man-hours for communication setup.

STEP 1 TRIGGER SETTINGS
(I/O input, command input)

STEP 2 DESTINATION FOR READ DATA
(Field network, PC)

STEP 3 COMMUNICATION PROTOCOL
(EtherNet/IP™, PROFINET, TCP, UDP, or PLC link)

STEP 4 ADVANCED SETTINGS
(Detailed setting for each protocol)
SOPHISTICATED MEASUREMENT MODES

The SR-1000 Series provides pre-verification prior to line operation based on tuning results as well as measurement of allowable line speed for reading codes at high speeds.

READING RATE MEASUREMENT

The reading success rate can be measured without conducting reading tests on multiple targets with the actual production line or equipment.

READING TACT MEASUREMENT

The reading cycle time (tact) can be determined without conducting reading tests on multiple targets with the actual production line or equipment.

READING DEPTH MEASUREMENT

The depth of field can be determined from the mounting distance and the code used for tuning, without conducting reading tests on targets with the actual production line or equipment. (When the mounting distance changes, perform re-tuning to enable reading again.)

LINE SPEED MEASUREMENT

You can check allowable line speed before installation. This helps reduce man-hours spent adjusting production line designs or jigs.
MASTER/SLAVE FUNCTION FOR USING MULTIPLE READERS EFFICIENTLY

The master reader can control up to 31 slave readers when multiple readers are used. (Up to 7 slave readers can be controlled in multi-head mode.) This function drastically reduces the programming load on the host computer/PLC.

* SR-D100/750 Series units can also be added (in combination with SR-1000 Series units) into this function.

PRODUCT CHANGEOVER FUNCTION

Up to 8 different configuration files can be stored in the reader's ROM. A simple command can switch configurations to allow reading under differing conditions such as reading distance, marking style, and code type.

CHECK OPERATION ON-SITE WITHOUT A PC

There is no need for a personal computer or monitor in the facility. The code position adjustment and operating condition can be checked simply with the intuitive built-in display.

EASY SETUP WITHOUT A PC

You can set the optimal reading parameters after adjusting the code position by simply pressing the ENTER button to complete fully automatic tuning.

HIGHLY-ADVANCED FUNCTIONS OFFER SIMPLE OPERATION

Communication and control via EtherNet/IP™ and PROFINET are also possible. (Only in multi-head mode)
LATEST TECHNOLOGIES PROVIDING STABLE READING

HIGH-SPEED SEARCH

2D CODE SEARCH IN CAPTURED IMAGES

Binary processing enables immediate detection of 2D codes even if there is a code-like pattern in the field of view.

ADVANCED IDENTIFICATION

DEFECTIVE CODE POSITIONING PROGRAM

A newly developed defective code positioning program can identify four corners of a 2D code based on a similar code detection pattern, leading to a significant improvement in code detection performance.

HIGH-LEVEL DECODING

CONTRAST ALGORITHM FOR LOCAL CONCENTRATION (CALC)

Our contrast algorithm for local concentrations divides a code into smaller pieces to perform binary processing using thresholds specified for each division. This enables accurate black/white classification without being affected by uneven print density.

**The above illustration is only for reference and does not mean that a code is always divided into 16 parts.**

AUTOMATIC SELECTION OF OPTIMAL READING CONDITIONS (PARAMETER BANK FUNCTION)

The reader will automatically alternate between registered parameter banks until the proper reading conditions are determined.

CONTINUOUS HIGH-SPEED READING

BUILT-IN DUAL CORE PROCESSOR

**CPU**

**DSP**

SR-1000 SERIES
COMPATIBILITY WITH VARIOUS COMMUNICATION PROTOCOLS

Built-in EtherNet/IP™, PROFINET, and PLC link protocols make PLC connections even easier. In addition, general-purpose TCP/IP and FTP communications are also supported. With FTP communication, it is possible to transmit not only images but also text files of data.

Connection information for various PLC types can be found here: www.barcodereader.com/

CUSTOMIZABLE DATA OUTPUT FORMATTING

Thanks to customizable data output formats with the Data Edit function, programming corrections on the host side (PC, PLC, etc.) are not required, resulting in shorter setup time.

[EXAMPLES OF DATA EDIT FUNCTION IN USE]

Extracting specific characters

Adding information to image file names

Controlling output signals

OK/NG output based on vertex coordinates of code

CONVENIENT SOFTWARE TOOLS

1. Specification and installation check
2. Operational testing and maintenance
3. Simple operations

Installation Guide
Checks for the proper reading distance, field of view, and line speed based on the code size.

AutoID Terminal
Establishes direct communication with the code reader in order to isolate problems due to communication.

AutoID Keyboard Wedge
Outputs code data through the PC’s keyboard interface. Both Windows and Mac versions are available.
Improved reading of extremely small codes

HIGH RESOLUTION LENS ATTACHMENT SR-10AH

Capable of reading extremely small codes and codes printed on mirror finished surfaces.

Field of View: Increased 4.5×

When compared to conventional models
Mounting distance: 40 mm 1.57”
Image capture range: 800 × 600 pixels

Variable installation distance for extremely small codes

When KEYENCE’s test codes are used
Cell size 0.0016” 0.040 mm

Automatically adjust to optimal settings based on current conditions

Highly flexible mounting

When compared to conventional models

APPLICATION EXAMPLES

Micro-size sample (chip LED)  Mirrored surface (wafer)  Metal (IC package)

Superior reading of codes printed on mirror finished surfaces

REFLECTOR ATTACHMENT SR-10AR

By diffusing the reflected light from mirror finished surfaces, it’s possible to achieve the same effect as using external lighting to create a clear image.

Reduces installation costs and setup time

ADJUSTABLE BRACKET OP-88002

This bracket allows the reader to be mounted in any position along either the vertical or horizontal axis.
**SR-1000 Series**

### Standard type SR-1000

- **NFPA79 compliant control cable**
  - 2 m 6.56': OP-87353
  - 5 m 16.4': OP-87354
  - 10 m 32.8': OP-87355

- **NFPA79 compliant Ethernet cable**
  - 2 m 6.56': OP-87230
  - 5 m 16.4': OP-87231
  - 10 m 32.8': OP-87232

### Wide-field type SR-1000W

- **Ethernet**
  - 2 m 6.56': OP-87230
  - 5 m 16.4': OP-87231
  - 10 m 32.8': OP-87232

### Optional Accessories

- **Mounting bracket OP-87866**
- **Adjustable bracket OP-88002**
- **High resolution lens attachment SR-10AH**
- **Reflector attachment SR-10AR**

For details on optional accessories, see P. 13.

---

**Cable**

**USB CABLE**

- USB cable plug A-mini B
  - 2 m 6.56': OP-51580

**CONTROL CABLE**

- NFPA79 compliant control cable with D-sub 9-pin
  - 2 m 6.56': OP-87527
  - 5 m 16.4': OP-87528
  - 10 m 32.8': OP-87529

**ETHERNET CABLE**

- NFPA79 compliant Ethernet cable
  - 2 m 6.56': OP-87230
  - 5 m 16.4': OP-87231
  - 10 m 32.8': OP-87232

---

**PC**

- **PC for setup**
- **Software SR-H6W**

- AutoID Network Navigator
- AutoID Keyboard Wedge
- AutoID Terminal
- MultiMonitor
- FileView
- Various driver files
- EDS/GSDML files
- Sample Windows programs

---

**POWER SUPPLY**

- 24 VDC power supply

---

**HOST**

- **PC/Panel PC/Board PC**
- **PLC**
- **HMI [Touch panel]**

---

**SYSTEM CONFIGURATION DIAGRAM**

14
### SR-1000

#### MINIMUM RESOLUTION

<table>
<thead>
<tr>
<th>Distance</th>
<th>2D</th>
<th>Barcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>4.33&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>110 to 140</td>
<td>4.33&quot; to 5.51&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>110 to 230</td>
<td>4.33&quot; to 9.06&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>110 to 300</td>
<td>4.33&quot; to 11.81&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>110 to 400</td>
<td>4.33&quot; to 15.75&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>110 to 600</td>
<td>4.33&quot; to 23.62&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>110 to 1000</td>
<td>4.33&quot; to 39.37&quot;</td>
<td>0.003&quot;</td>
</tr>
</tbody>
</table>

### SR-1000W

#### MINIMUM RESOLUTION

<table>
<thead>
<tr>
<th>Distance</th>
<th>2D</th>
<th>Barcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 to 100</td>
<td>1.97&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>50 to 150</td>
<td>1.97&quot; to 5.91&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>50 to 230</td>
<td>1.97&quot; to 9.06&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>50 to 300</td>
<td>1.97&quot; to 11.81&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>50 to 400</td>
<td>1.97&quot; to 15.75&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>50 to 600</td>
<td>1.97&quot; to 23.62&quot;</td>
<td>0.003&quot;</td>
</tr>
</tbody>
</table>

### SR-1000 + SR-10AH

#### MINIMUM RESOLUTION

<table>
<thead>
<tr>
<th>Distance</th>
<th>2D</th>
<th>Barcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.79&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>20 to 30</td>
<td>0.79&quot; to 1.18&quot;</td>
<td>0.003&quot;</td>
</tr>
<tr>
<td>20 to 40</td>
<td>0.79&quot; to 1.57&quot;</td>
<td>0.003&quot;</td>
</tr>
</tbody>
</table>

---

### FIELD OF VIEW

#### Image capture range (1280 × 1024 pixels)

<table>
<thead>
<tr>
<th>Distance</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>4.33&quot;</td>
<td>0.063&quot;</td>
</tr>
<tr>
<td>140</td>
<td>5.51&quot;</td>
<td>0.114&quot;</td>
</tr>
<tr>
<td>230</td>
<td>9.06&quot;</td>
<td>0.214&quot;</td>
</tr>
<tr>
<td>300</td>
<td>11.81&quot;</td>
<td>0.346&quot;</td>
</tr>
<tr>
<td>400</td>
<td>15.75&quot;</td>
<td>0.51&quot;</td>
</tr>
<tr>
<td>600</td>
<td>23.62&quot;</td>
<td>0.94&quot;</td>
</tr>
<tr>
<td>1000</td>
<td>39.37&quot;</td>
<td>1.57&quot;</td>
</tr>
</tbody>
</table>

#### Image capture range (800 × 600 pixels)

<table>
<thead>
<tr>
<th>Distance</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1.97&quot;</td>
<td>0.38&quot;</td>
</tr>
<tr>
<td>100</td>
<td>3.94&quot;</td>
<td>0.76&quot;</td>
</tr>
<tr>
<td>150</td>
<td>5.91&quot;</td>
<td>1.24&quot;</td>
</tr>
<tr>
<td>230</td>
<td>9.06&quot;</td>
<td>2.05&quot;</td>
</tr>
<tr>
<td>300</td>
<td>11.81&quot;</td>
<td>3.03&quot;</td>
</tr>
<tr>
<td>400</td>
<td>15.75&quot;</td>
<td>4.01&quot;</td>
</tr>
<tr>
<td>600</td>
<td>23.62&quot;</td>
<td>5.98&quot;</td>
</tr>
</tbody>
</table>

### DIMENSIONS

- **Main unit**
  - SR-1000/1000W
  - Adjustable bracket OP-87866
- **High resolution lens attachment** SR-10AH
- **Reflector attachment** SR-10AR
- **Adjustable bracket** OP-88002

---

* A pole with ø12 mm ø0.47” is needed.
### Main unit

<table>
<thead>
<tr>
<th>Model</th>
<th>SR-1000</th>
<th>SR-1000W</th>
<th>SR-1000+SR-10AH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Standard type</td>
<td>Wide-field type</td>
<td>When the high resolution lens attachment is installed</td>
</tr>
<tr>
<td><strong>Receiver</strong></td>
<td>SR-H6W</td>
<td>SR-H6W</td>
<td>SR-H6W</td>
</tr>
<tr>
<td><strong>Number of pixels</strong></td>
<td>1280 × 1024 pixels</td>
<td>1280 × 1024 pixels</td>
<td>1280 × 1024 pixels</td>
</tr>
<tr>
<td><strong>Light emitter</strong></td>
<td>Humidity light source</td>
<td>Humidity light source</td>
<td>Humidity light source</td>
</tr>
<tr>
<td><strong>Power light source</strong></td>
<td>High intensity red LED</td>
<td>High intensity red LED</td>
<td>High intensity red LED</td>
</tr>
</tbody>
</table>

### Reading specifications

<table>
<thead>
<tr>
<th><strong>Supported symbol</strong></th>
<th>2D</th>
<th>Barcode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum resolution</strong></td>
<td>0.063 mm 0.002&quot;</td>
<td>CODE39, TF, 2D5(Industrial 2d5), COD5 3D5, JW-1(Godbar), CODE128, G1-128, G1 DataBar, CODE93, JAI/SAN/UPC, Trioptic CODE39, CODE39 Full ASCII, Pharmacode</td>
</tr>
<tr>
<td><strong>Reading distance</strong></td>
<td>110 mm to 1000 mm 4.33&quot; to 38.7&quot;</td>
<td>50 mm to 600 mm 1.97&quot; to 23.62&quot;</td>
</tr>
<tr>
<td><strong>Field of view for reading</strong></td>
<td>122 × 97 mm 4.80&quot; × 3.82&quot; (Typical example at 400 mm 15.75&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

### I/O specifications

<table>
<thead>
<tr>
<th><strong>Control input</strong></th>
<th>Number of inputs</th>
<th>Bidirectional voltage input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input type</strong></td>
<td>Maximum rating</td>
<td>26.4 VDC</td>
</tr>
<tr>
<td><strong>Minimum ON voltage</strong></td>
<td>15 VDC</td>
<td>15 VDC</td>
</tr>
<tr>
<td><strong>Maximum OFF current</strong></td>
<td>0.2 mA or less</td>
<td>0.2 mA or less</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Control output</strong></th>
<th>Number of outputs</th>
<th>Photo MOS relay output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output type</strong></td>
<td>Maximum rating</td>
<td>30 VDC</td>
</tr>
<tr>
<td><strong>Maximum load current</strong></td>
<td>1 output: 50 mA or less, Total of 3 outputs: 100 mA or less</td>
<td>1 output: 50 mA or less, Total of 3 outputs: 100 mA or less</td>
</tr>
<tr>
<td><strong>Leakage current when OFF</strong></td>
<td>0.1 mA or less</td>
<td>0.1 mA or less</td>
</tr>
</tbody>
</table>

### Environmental resistance

<table>
<thead>
<tr>
<th><strong>Enclosure rating</strong></th>
<th>IP65</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>0 to +45°C/32 to 113°F</td>
</tr>
<tr>
<td><strong>Ambient storage temperature</strong></td>
<td>-15 to +60°C/5 to 140°F</td>
</tr>
<tr>
<td><strong>Relative humidity</strong></td>
<td>35 to 85% RH (no condensation)</td>
</tr>
<tr>
<td><strong>Storage ambient humidity</strong></td>
<td>35 to 85% RH (no condensation)</td>
</tr>
<tr>
<td><strong>Ambient luminance</strong></td>
<td>Sunlight: 10000 lux, Incandescent lamp: 6000 lux, Fluorescent lamp: 2000 lux</td>
</tr>
<tr>
<td><strong>Operating environment</strong></td>
<td>No dust or corrosive gas present</td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
<td>10 to 55 Hz, Double amplitude 0.75 mm (0.03&quot;), 3 hours each in X, Y and Z directions</td>
</tr>
</tbody>
</table>

### Rating

<table>
<thead>
<tr>
<th><strong>Power voltage</strong></th>
<th>24 VDC ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current consumption</strong></td>
<td>Approx. 700 mA</td>
</tr>
</tbody>
</table>

**Setup software (AutoID Network Navigator)**

**Model:** SR-1000

<table>
<thead>
<tr>
<th><strong>Supported OS</strong></th>
<th>Windows 10 Professional or later, 32 bit/64 bit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Running environment</strong></td>
<td>Processor: 2.0 GHz or better</td>
</tr>
<tr>
<td></td>
<td>Memory: 1 GB (32 bit)/2 GB (64 bit)</td>
</tr>
<tr>
<td></td>
<td>DVD-ROM drive (during installation)</td>
</tr>
<tr>
<td></td>
<td>Screen resolution: 1024 × 768 or better</td>
</tr>
</tbody>
</table>

### Safety Information

Please read the instruction manual carefully in order to safely operate any KEYENCE product.