

Material Handling

Logistics and Warehouse



1D AND 2D CODE READER

SR-2000 Series



FOR EVERY
READING SITUATION ON
LOGISTICS WORKSITES

KEYENCE LOGISTICS SOLUTIONS

**Breaking the stigma of code readers
Just install and go!**

NEW 1D/2D Code Reader
SR-2000 Series



Ultra-wide field of view 2x greater than conventional models

Greater depth of field at longer ranges 2x greater than conventional models

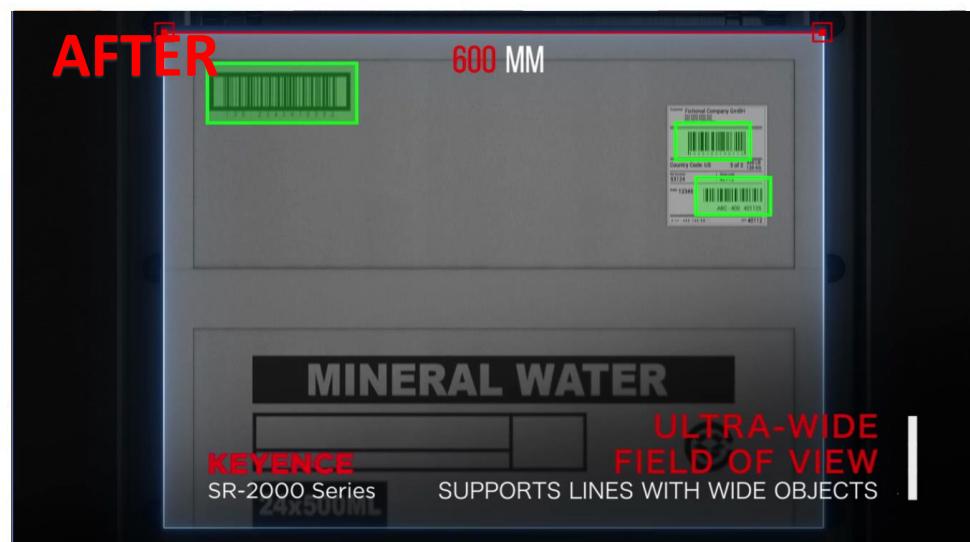
Read objects on the move

2x greater than conventional models

Fully automatic calibration



Ultra-wide field of view



1

Best-in-class 3.1 megapixel CMOS

Ultra-wide field of view through high-resolution imaging

2

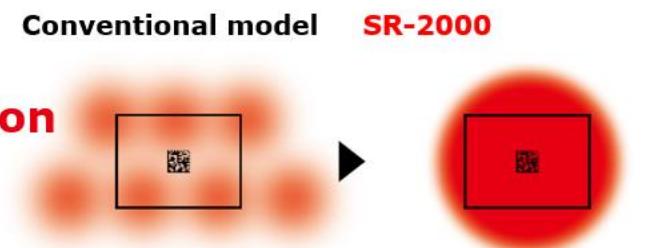
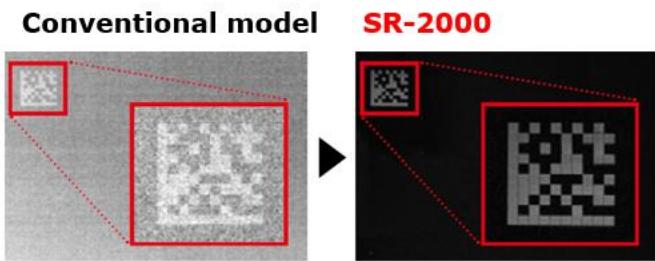
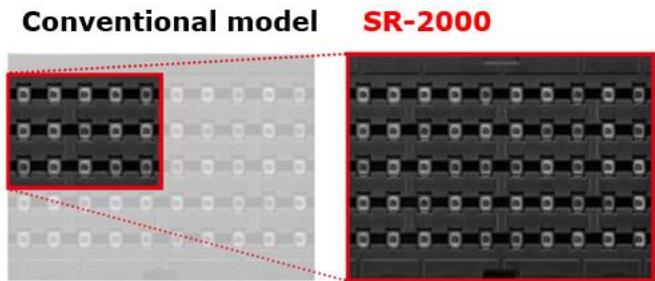
Low-noise, high-sensitivity CMOS sensor

Obtain bright images with low noise over an even wider field of view

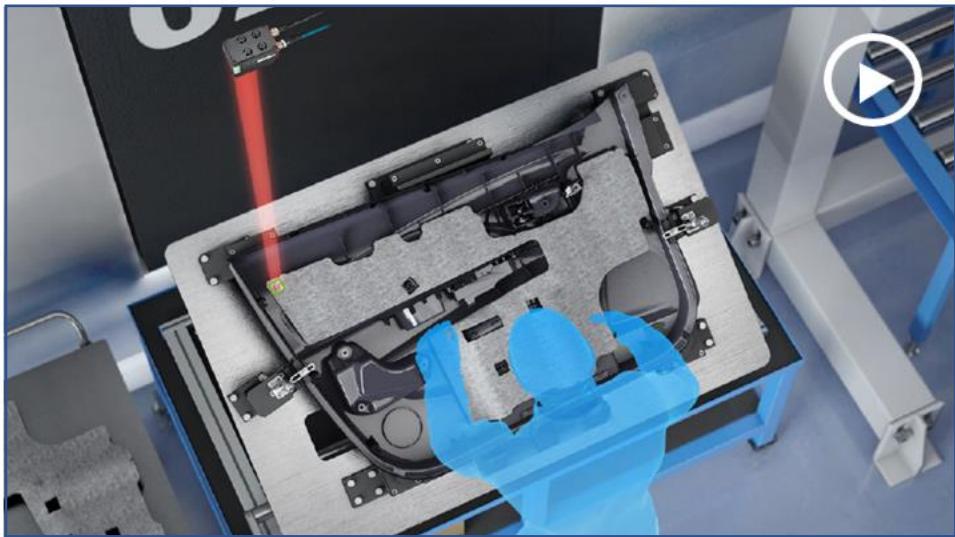
3

CPC (Compound Parabolic Concentrator) Illumination

Reflector reduces loss in light intensity for uniform and bright lighting



Greater depth of field at longer ranges



1 Newly designed lens with greater depth of field

Newly developed lens with minimal blurring—ideal for code identification

2 High-resolution algorithm

Read low-resolution codes even at long ranges

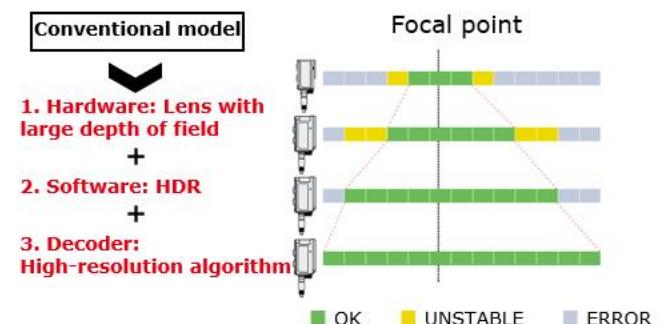
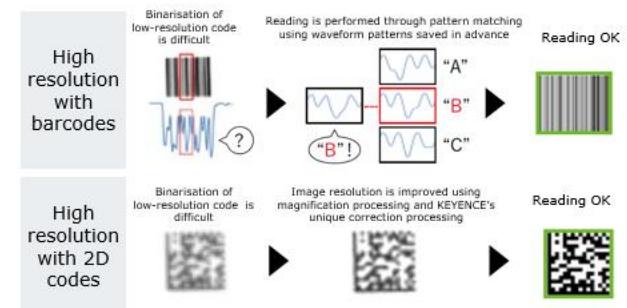
3 Greater depth of field at longer ranges comparable to laser scanners

Dramatic improvements thanks to collaboration between hardware, software, and decoder

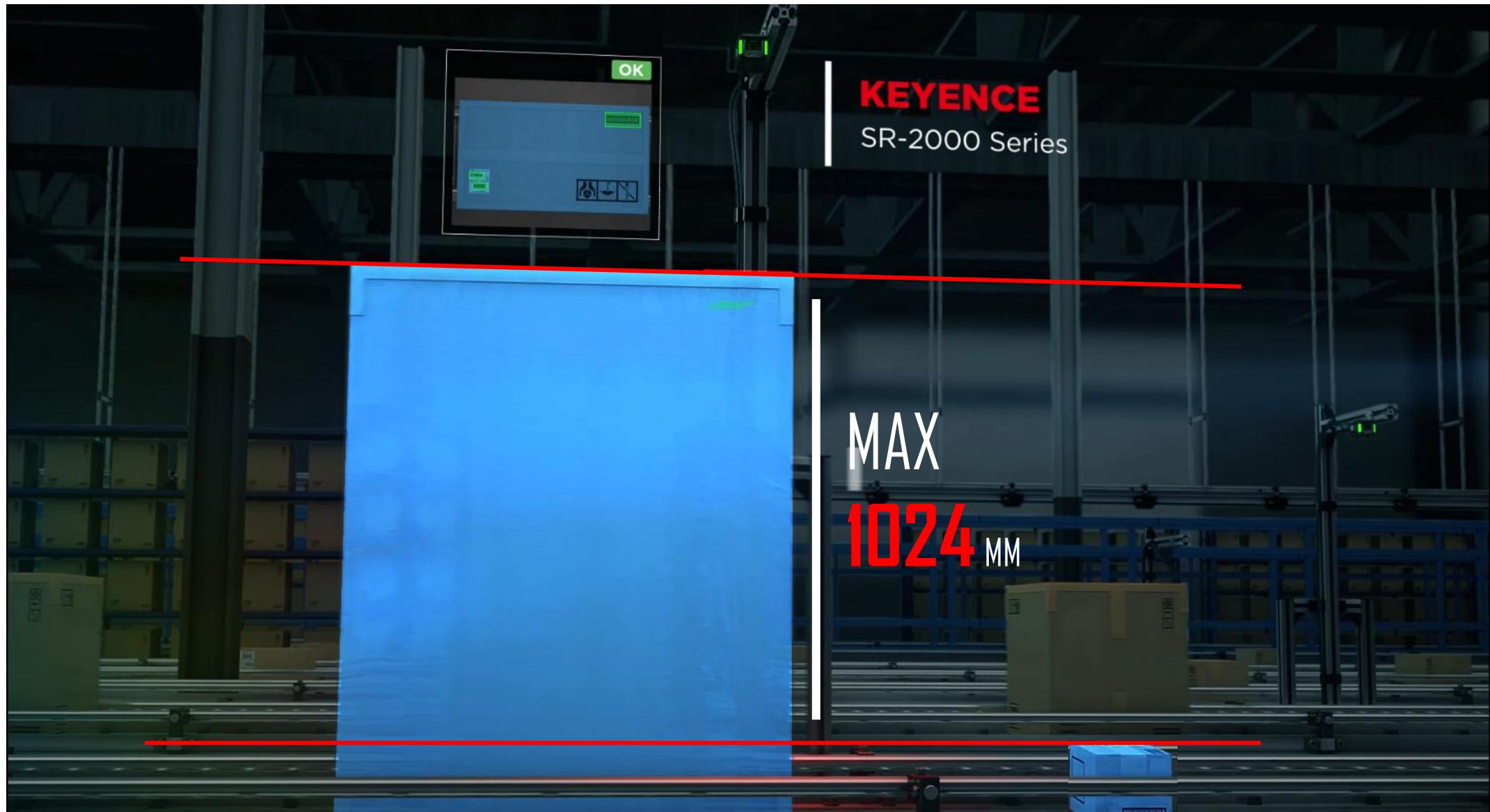


Image capture example with a 700 mm focus position

	Reading distance	500 mm (-200 mm)	700 mm (focus position)	900 mm (+200 mm)
Conventional model		Cell size =0.50mm	Cell size =0.50mm	Cell size =0.50mm
SR-2000		Cell size =0.50mm	Cell size =0.50mm	Cell size =0.50mm



Greater depth of field at longer ranges



Read objects on the move



1

Faster image transfers

Twice as fast compared with conventional models



2

Triple core high-speed processing

Higher speeds through parallel CPU, DSP, and FPGA processing

3

Encoder input support

Control timing of reads with encoder pulse signals to match varying speeds

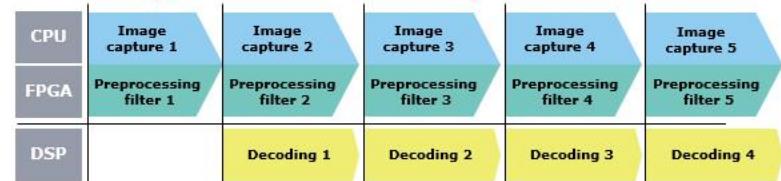
Image transfer time

Number of pixels	1280 × 1024 pixels 1.3 million pixels	2048 × 1536 pixels 3.1 million pixels
Conventional model	20ms	-
SR-2000	14ms	20ms

GENERAL CODE READER [SINGLE-CORE MODELS]



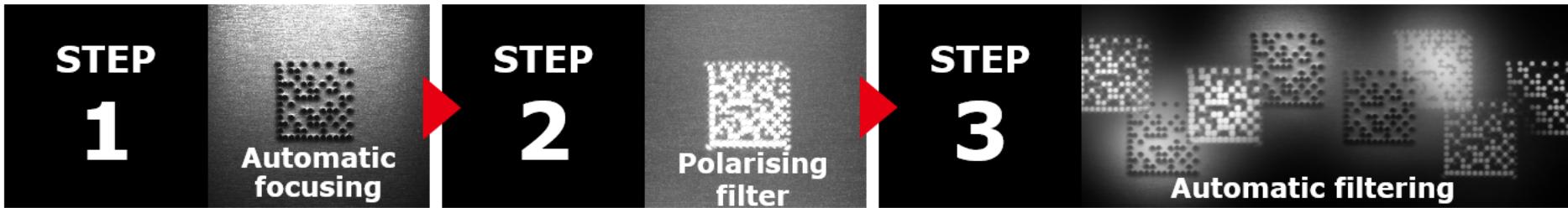
SR-2000 [TRIPLE CORE MODELS]



Reading starts at seventh ON



Fully automatic calibration

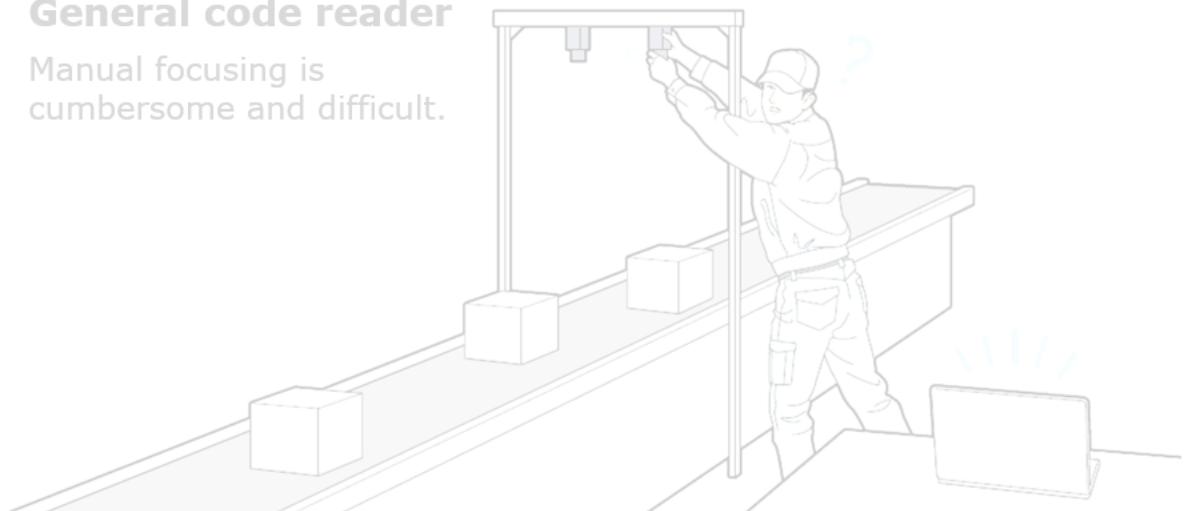


STEP 1 Auto-focus function

1 No adjustment of focus or aperture is required, and no selection of C-mount lenses is necessary

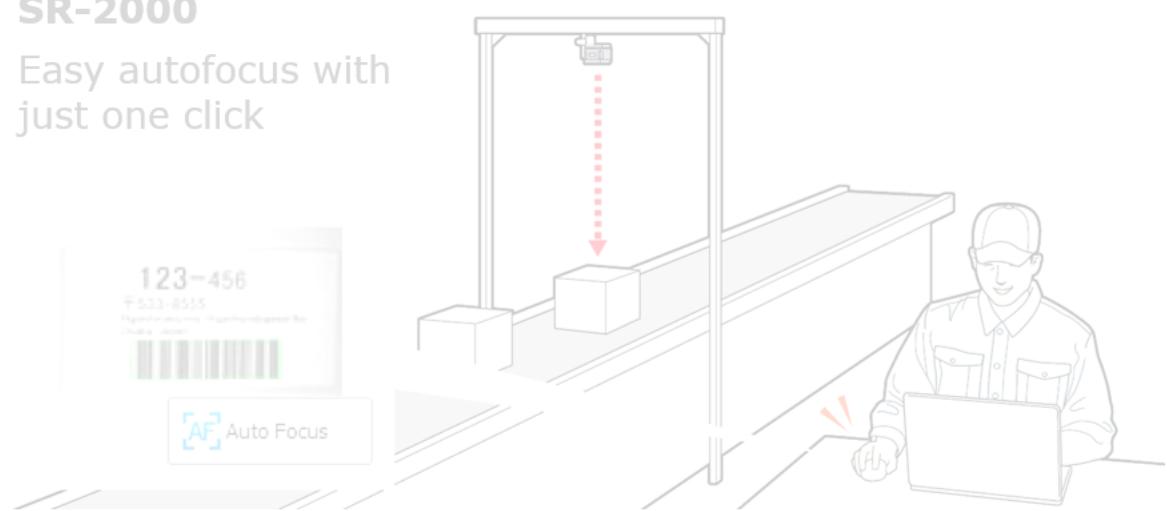
General code reader

Manual focusing is cumbersome and difficult.

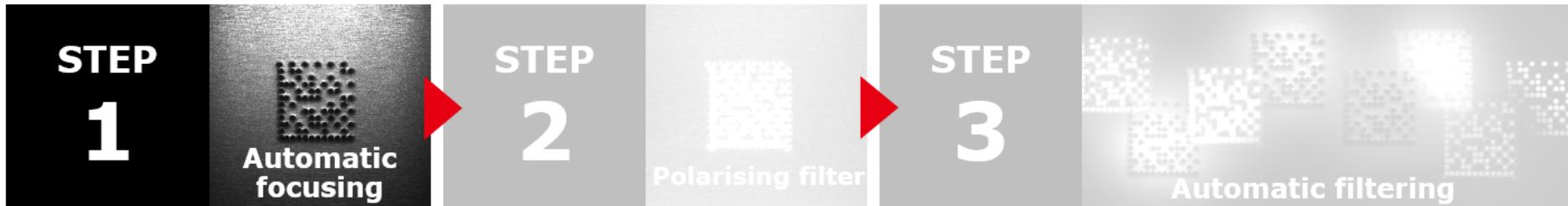


SR-2000

Easy autofocus with just one click



Fully automatic calibration

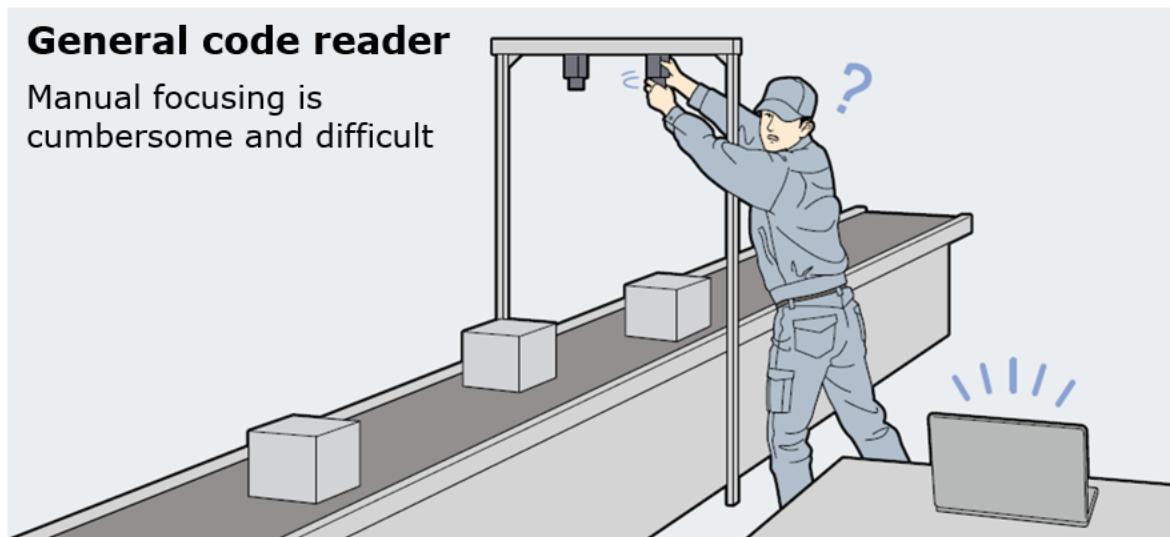


STEP 1 Auto-focus function

No adjustment of focus or aperture is required, and no selection of C-mount lenses is necessary

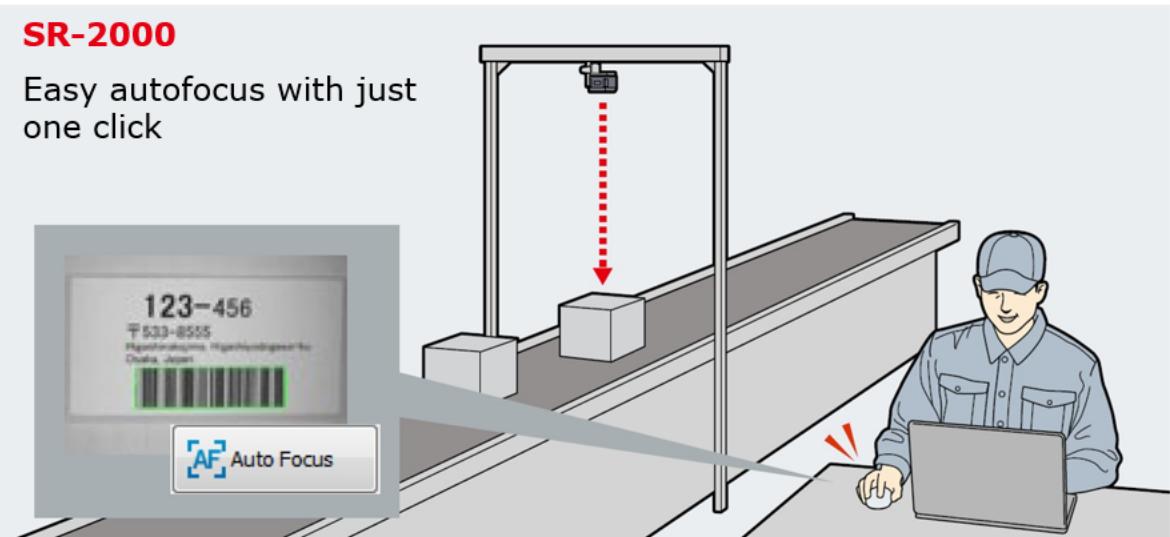
General code reader

Manual focusing is cumbersome and difficult

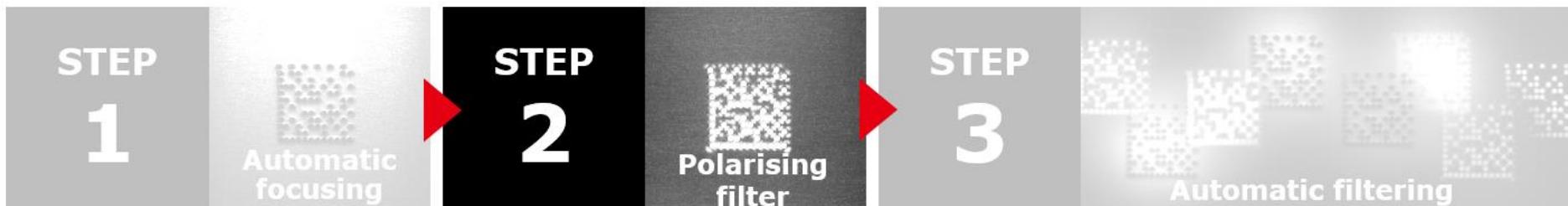


SR-2000

Easy autofocus with just one click

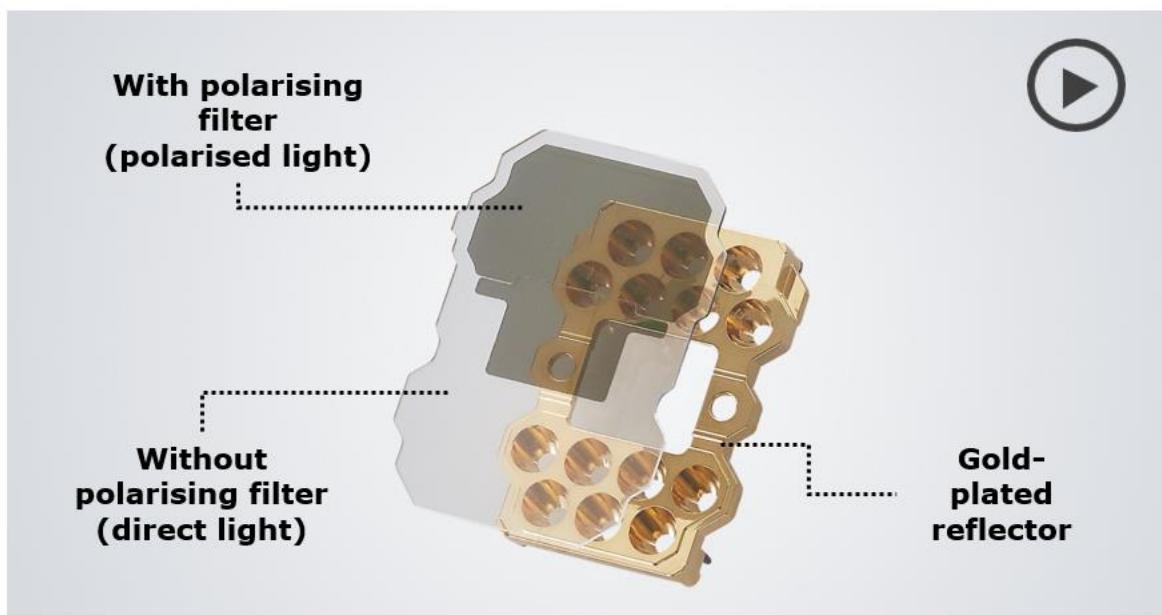


Fully automatic calibration ◎

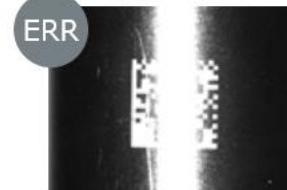


STEP 2 Automatic polarisation control function

2 Polarising filter for glare removal



[Black resin] Cylinder



Without polarising filter

With polarising filter

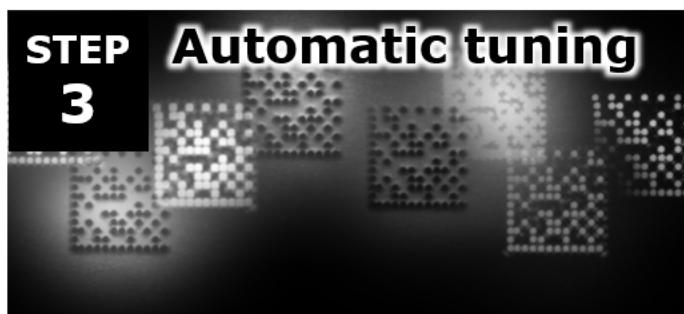
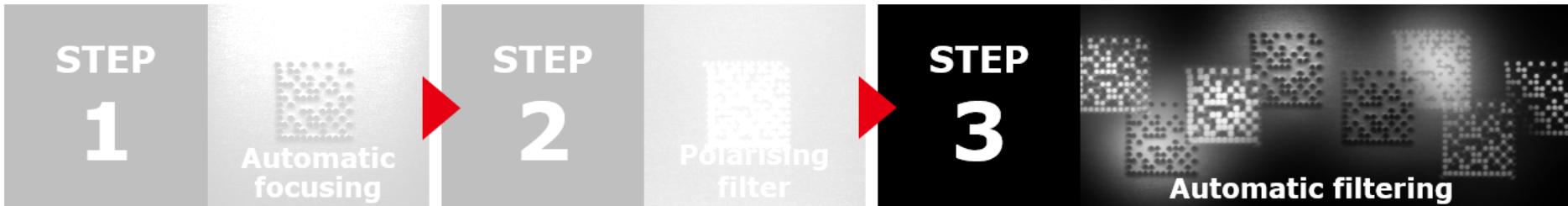
[Metal] DPM on cast surface



Without polarising filter

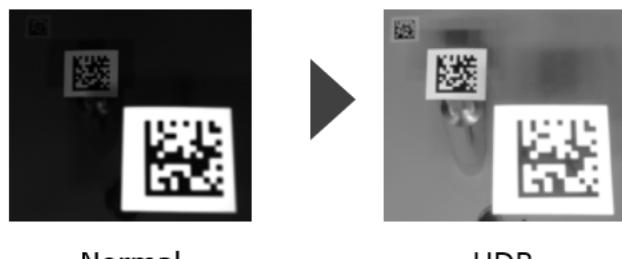
With polarising filter

Fully automatic calibration

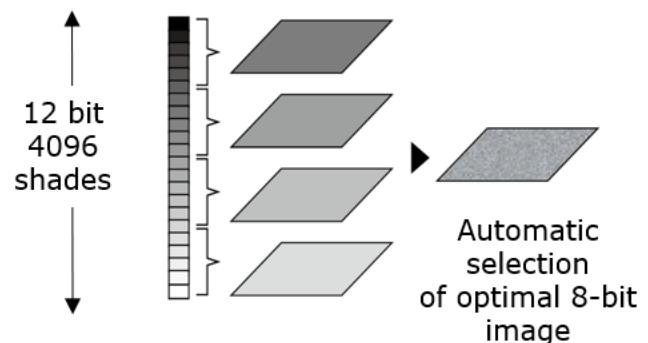


HDR(High Dynamic Range)

Reading of codes at different heights



Dynamic range correction NEW



Contrast zoom NEW

Reading of low-contrast codes on white resin



Correction items and examples of affected codes



Dark codes



Capture brightness correction



Black resin



PCB



Distorted codes



Geometric correction



Parallel distortion



Trapezoidal distortion



Thin/thick printing



Filter correction

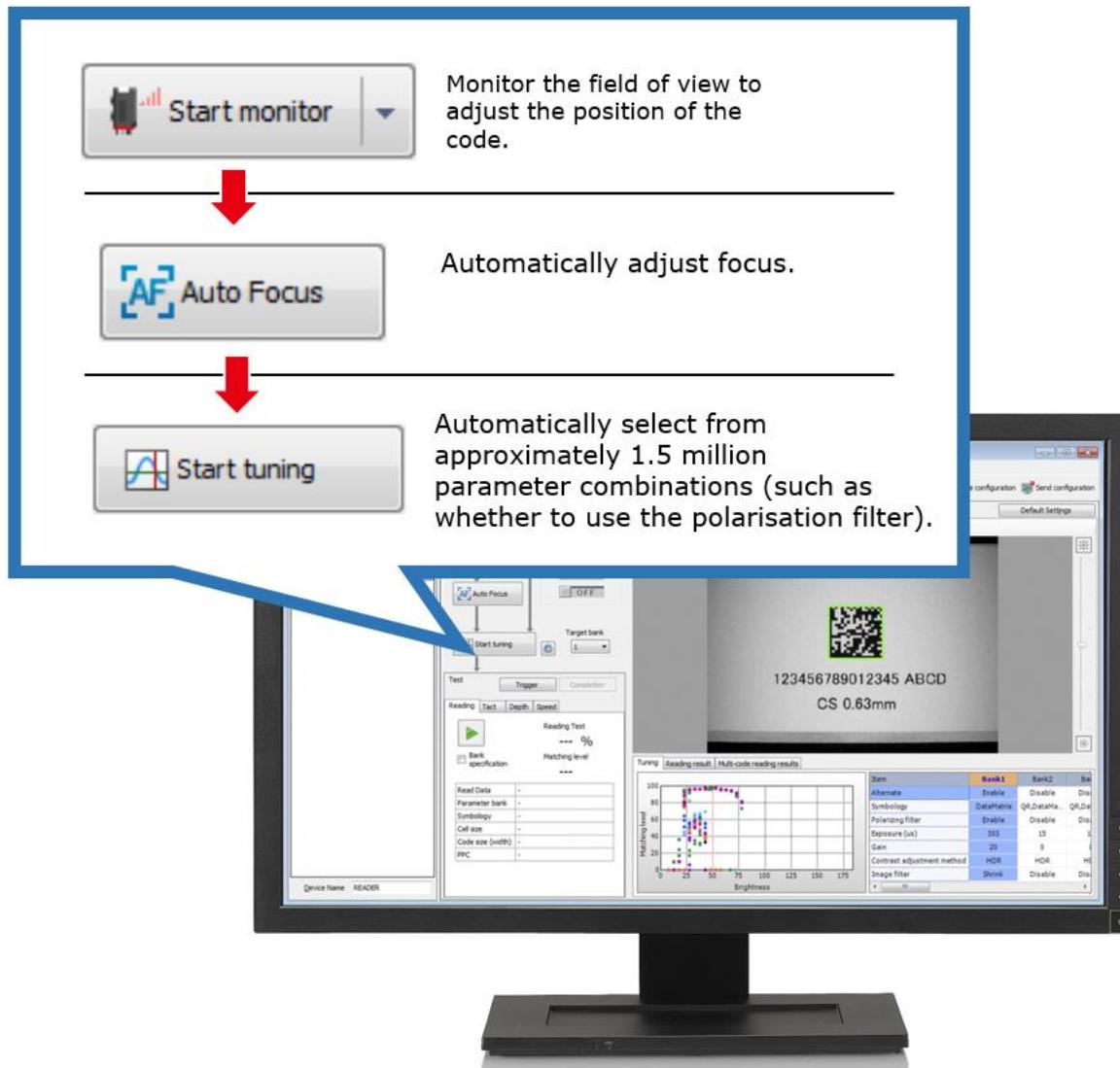


Bleeding



Thick printing

High-performance imaging is possible, regardless of the user



Parameter bank function

AUTOMATIC SELECTION OF OPTIMAL READING CONDITIONS



Register



Register



Misalignment

Register

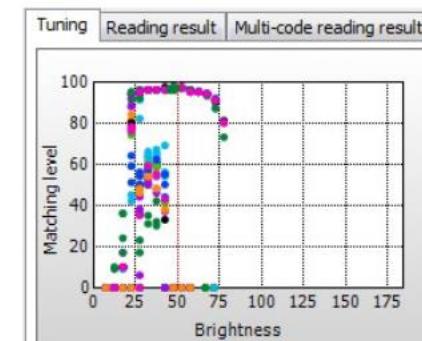
BANK 1

BANK 2

BANK 16

Automatically alternate between 16 banks to determine the best reading conditions.

Tuning monitor

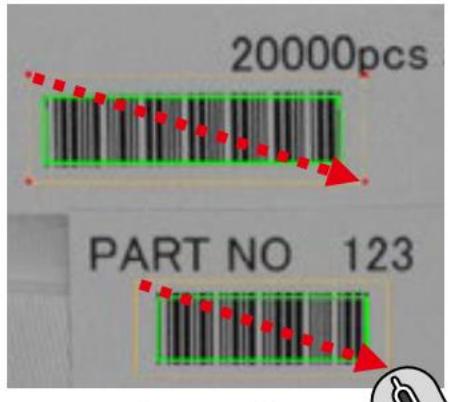


Improved multi-code tuning

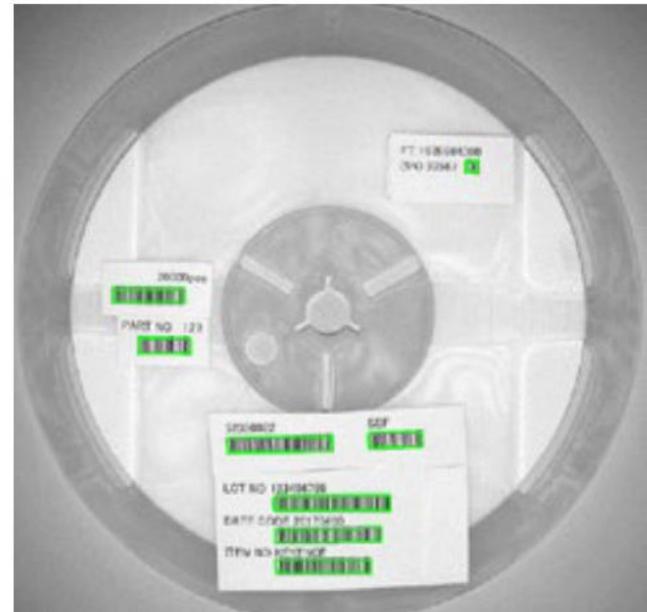
NEW

Intuitive operation that involves simply creating a frame and pressing a button

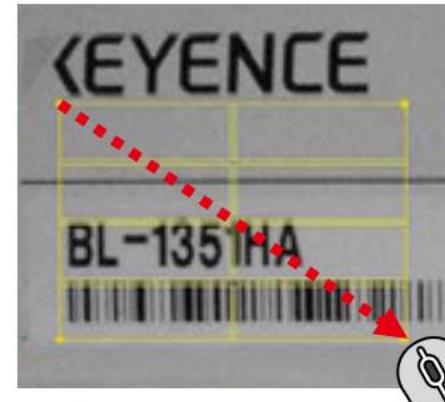
Frame codes individually



Just select each code individually and press the tuning button!



Frame multiple codes at once



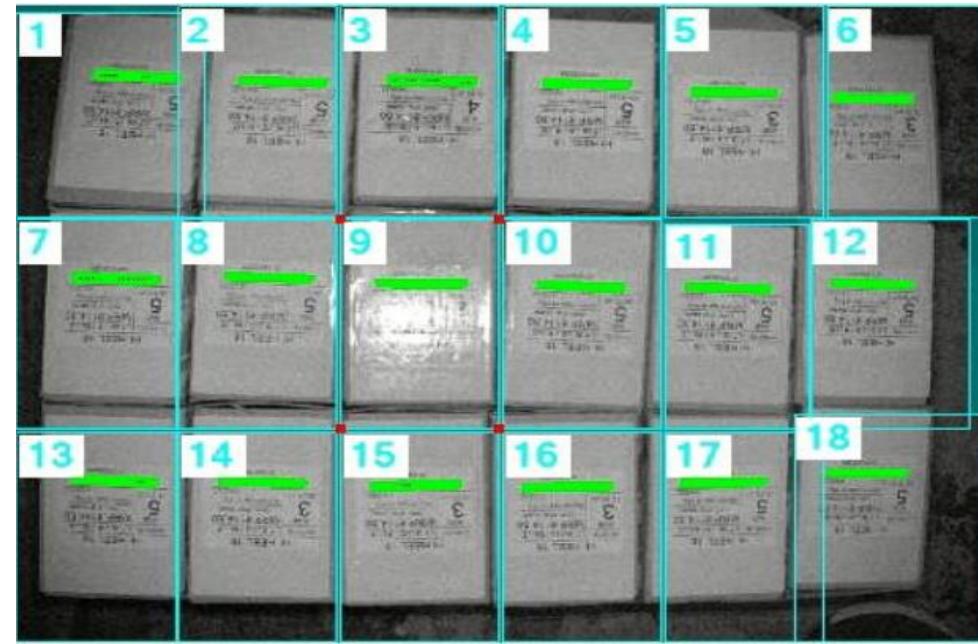
Select a 2×4 frame and press the turning button



Improved multi-code tuning

NEW

Intuitive operation that involves simply creating a frame and pressing a button



Tuning Consultant

NEW



Easily discover the optimum mounting position and prevent post-installation problems.

The screenshot shows the Tuning Consultant software interface divided into four main sections:

- STEP 1 Code information:** Shows a camera reading a barcode on a target. Buttons include "Start monitor", "Auto Focus", "Symbology: 2D code", "Minimum cell size (mm): 0.65".
- STEP 2 Moving conditions:** Shows two boxes moving parallel. Settings: Direction "Parallel movement", Speed "60 mm/min", "Not specified".
- STEP 3 Code position conditions:** Shows a camera reading a barcode on a moving box. Settings: Reader orientation "Horizontal", Depth (a) "100 mm", Height (b) "100 mm", "Installation condition details".
- STEP 4 Tuning:** Shows a camera at a distance from a target. Tuning target distance: 500mm, Current distance (approximate): 490mm. Notes: "The displayed distance is an approximation. Measure the distance at the time of installation." Target bank: 1.

STEP 1

Code information

STEP 2

Moving conditions

STEP 3

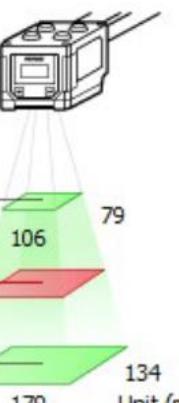
Code position conditions

STEP 4

Tuning

Five test modes

Verify stability before line or equipment installation

Depth of field measurement test	Speed measurement test NEW	Code verification test NEW	Reading rate measurement test																											
<p>Reading Tact Depth Speed</p> <p><input type="checkbox"/> Bank specification</p> <p>Reading depth 220 mm</p> <p>Installation distance</p>  <p>Unit (mm)</p>	<p>Reading Tact Depth Speed</p> <p><input type="checkbox"/> Bank specification</p> <p>Speed 64 m/min</p> <p>Scan count of 2 83</p> <p>Scan count of 3 or higher 64</p> 	<p>Reading Tact Depth Speed Verification</p> <p><input type="checkbox"/> Bank specification</p> <p>Overall A</p> <p>ISO/IEC 15416</p> <table border="1"><thead><tr><th>Decode</th><th>A</th><th>4.0</th></tr></thead><tbody><tr><td>EdgeDetermination</td><td>A</td><td>4.0</td></tr><tr><td>Symbol Contrast</td><td>A</td><td>4.0</td></tr><tr><td>Min. Reflectance</td><td>A</td><td>4.0</td></tr><tr><td>Min. Edge Contrast</td><td>A</td><td>4.0</td></tr><tr><td>Modulation</td><td>A</td><td>4.0</td></tr><tr><td>Quiet Zone</td><td>A</td><td>4.0</td></tr><tr><td>Decodability</td><td>A</td><td>4.0</td></tr><tr><td>Defects</td><td>A</td><td>4.0</td></tr></tbody></table>	Decode	A	4.0	EdgeDetermination	A	4.0	Symbol Contrast	A	4.0	Min. Reflectance	A	4.0	Min. Edge Contrast	A	4.0	Modulation	A	4.0	Quiet Zone	A	4.0	Decodability	A	4.0	Defects	A	4.0	<p>Reading rate measurement test</p> <p>Tact measurement test</p>
Decode	A	4.0																												
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Quiet Zone	A	4.0																												
Decodability	A	4.0																												
Defects	A	4.0																												

Functions for Even Greater Usability

- ▶ **Matching level function**
- ▶ **Advanced multi head function**
- ▶ **Code verification function**
- ▶ **Always-on function**
- ▶ **Data edit function**

Prevent causes of reading errors before they occur.

► Matching level function



Check the reading margin using numerical values



Reading rate **100%**

Matching level **75**



Reading rate **100%**

Matching level **43**

Use the matching level to distinguish between codes with reading rates 100%

► Code verification function

Verification according to standard-specified print quality criteria

Barcode



Total grade judgement

Judgement can also be given for each parameter

Output data

4 9 1 2 3 4 5 1 2 3 4 5 9 : B



[Supported standards]

- ISO/IEC 15416
- ISO/IEC 15415
- ISO/IEC TR 29158
(AIM-DPM-1-2006)

- ISO/IEC 16022
- SAE AS9132
- SEMI T10-0701

Data processing for greater on-site usability

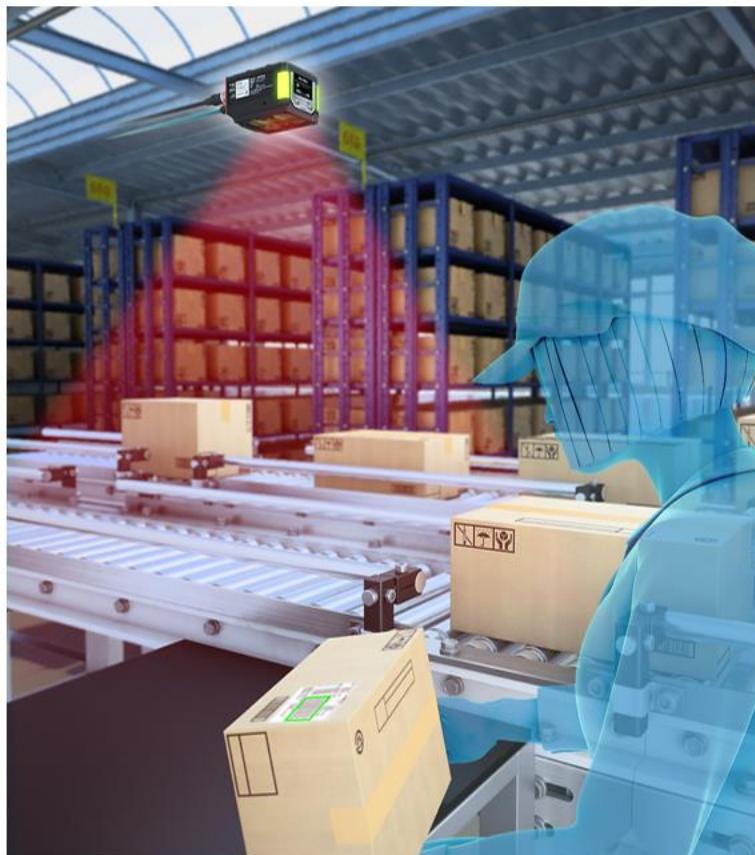
► Advanced multi head function

Reading of an even larger field of view or of multiple surfaces



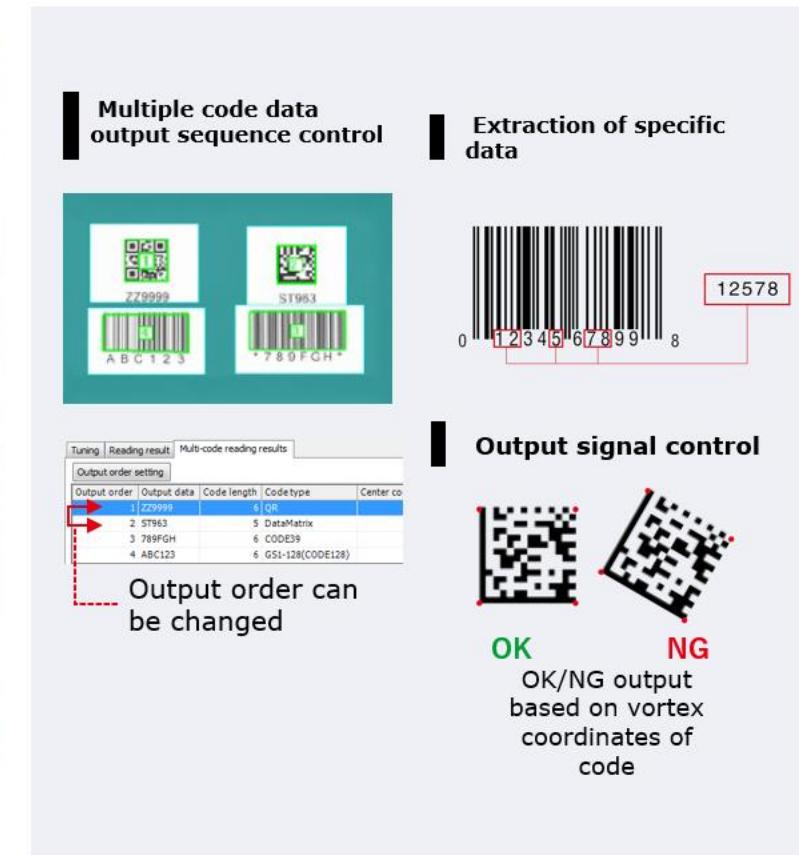
► Always-on function

Reading with minimal movement through overhead placement



► Data edit function

Customisable reading data output formatting





KEYENCE

SR-2000 Series

MULTI HEAD FUNCTION
ADVANCED
SUPPORTS READING OF MULTIPLE SURFACES

This handy function contributes to stable operation by allowing monitoring of code reader status from anywhere at any time

► SR WebMonitor

NEW



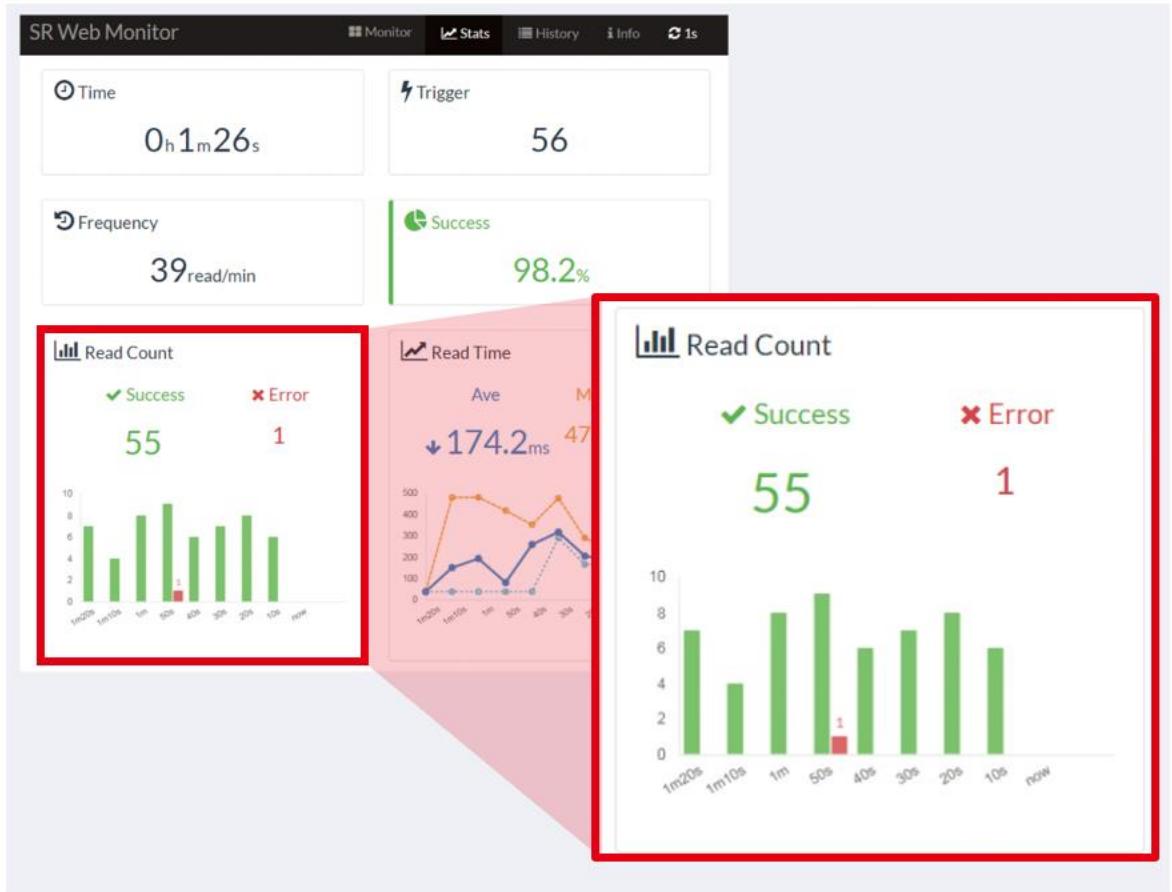
With this function, you can use a web browser to monitor the operating status of the reader.

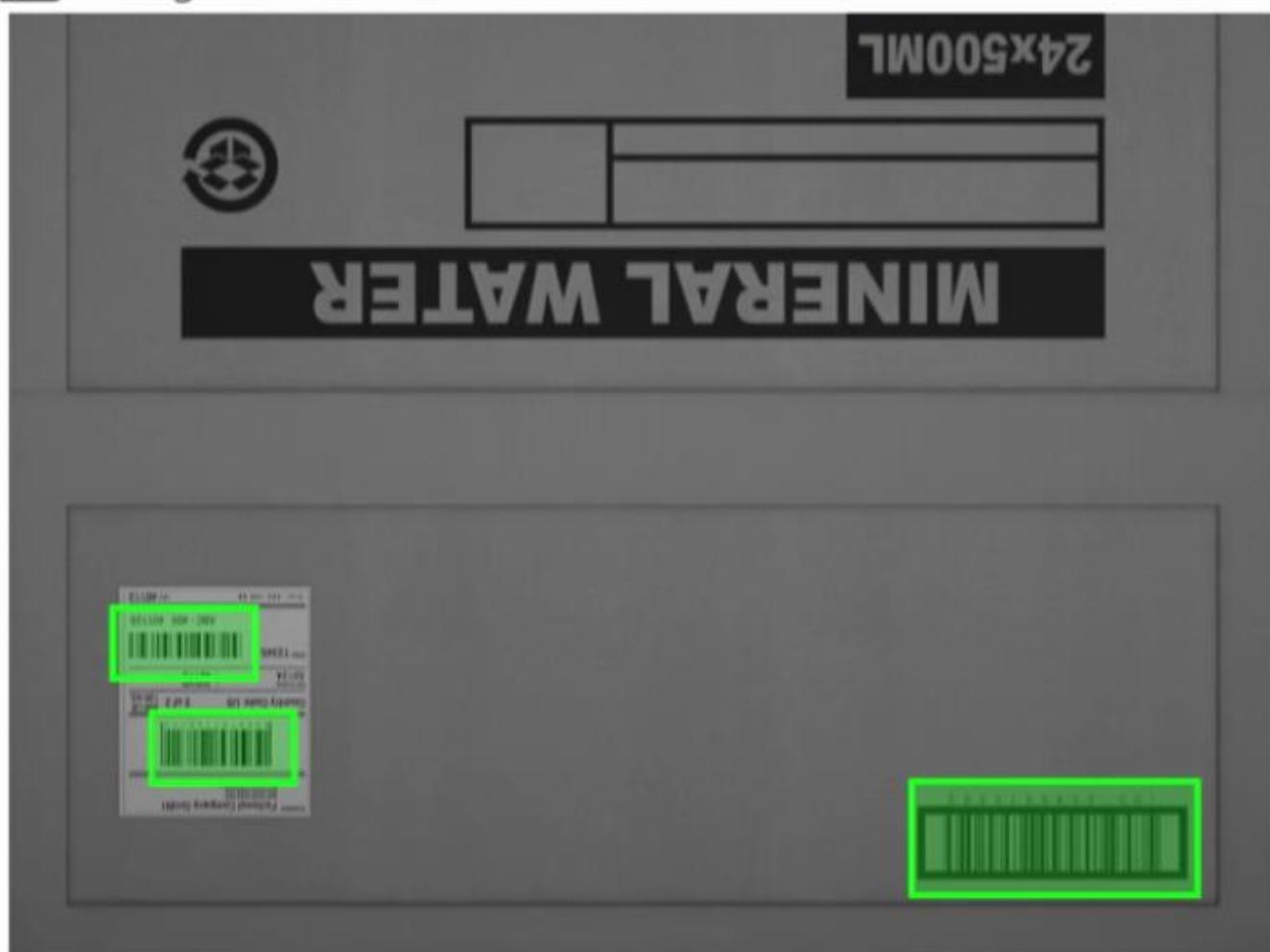


Supported browsers

Google Chrome 57 or later, Internet Explorer 11 or later
Microsoft Edge 14 or later, Safari 10 or later

► It's now possible to determine the number of successful reading operations for a given time period



 Image

OK

3456789012FGHIJK

 Summary

Trigger

375

✓ Success

375

✗ Error

0

⚠ NG

0

⚠ Unstable

0

⚠ Missed

0

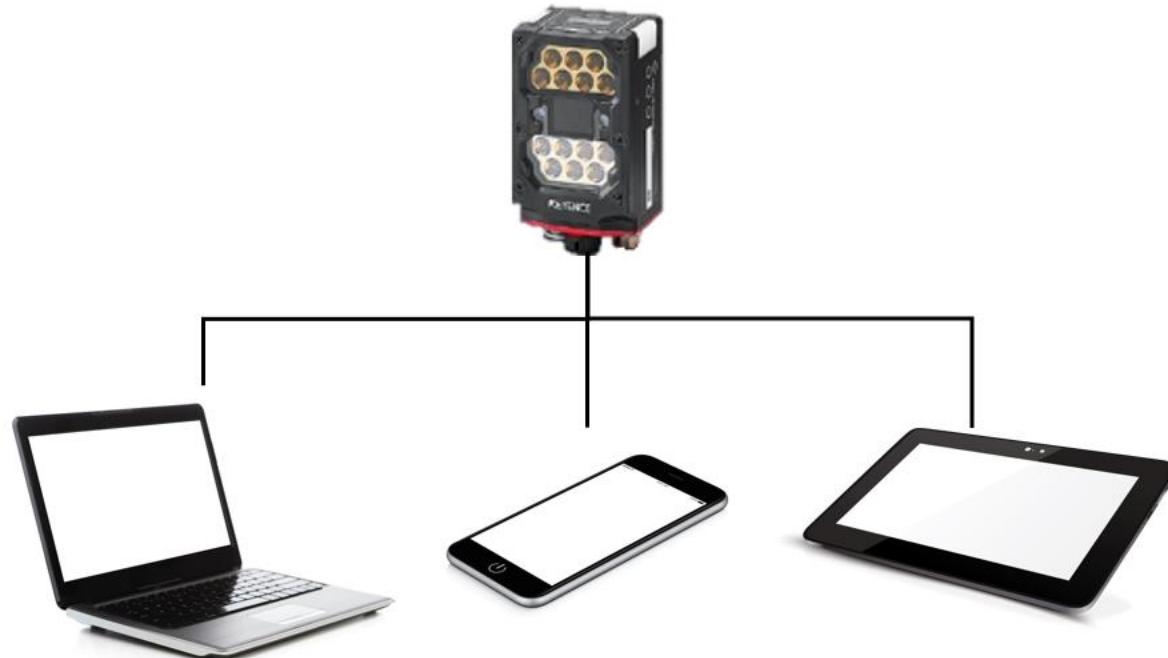
This handy function contributes to stable operation by allowing monitoring of code reader status from anywhere at any time

► SR WebMonitor

NEW



With this function, you can use a web browser to monitor the operating status of the reader.



Supported browsers

Google Chrome 57 or later, Internet Explorer 11 or later
Microsoft Edge 14 or later, Safari 10 or later

► Check error history without interrupting operation

The screenshot shows the SR Web Monitor interface. At the top, there are tabs for "Monitor", "Stats", "History", "Info", and a "1s" button. Below this is a table titled "Recent Read" with columns for "Id", "trigger time", "result", "read data", and "read time". The table lists several entries, with the first two having "ERROR" results. A red box highlights the "Error Images" section, which contains a thumbnail of a barcode labeled "005_E_01.JPG". A red callout bubble with the text "Click" points to the thumbnail. Below the table, there is another row of error details: "18" (trigger time: 6h 59m 53.867s), "17" (trigger time: 6h 59m 51.476s), and "16" (trigger time: 5h 53m 40.834s).

Id	trigger time	result	read data	read time
18	6h 59m 53.867s	ERROR	ERROR	153ms
17	6h 59m 51.476s	ERROR	ERROR	156ms
16	5h 53m 40.834s	OK	11111111111113	32ms
15	5h 53m 33.258s	OK	11111111111113	32ms
14	22m 41.723s	OK		
13	22m 41.252s	OK		
12	22m 40.874s	OK		
11	22m 40.475s	OK		
10	2m 30.156s	OK		
	29.852s			

New Attachments

Lighting attachment



High-resolution lens attachment



Polarising filter (for full lighting)

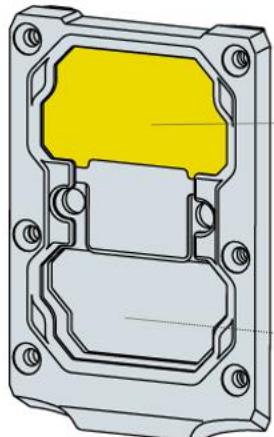


New Attachments

Polarising filter (for full lighting)

NEW

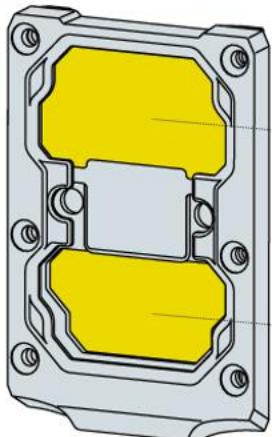
Brighter illumination removes halation



With polarising filter

Without polarising filter

Polarising filter (included)



With polarising filter

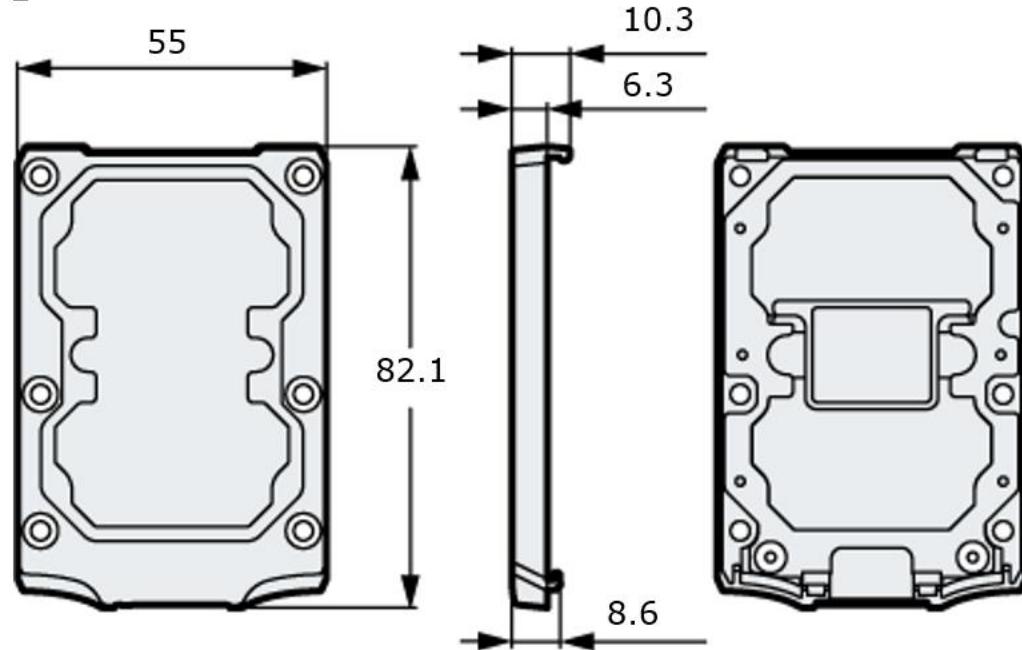
With polarising filter

Polarising filter (for full lighting)

NEW

OP-88256

Polarising filter (OP-88256)





Applications – Polarizing Filter

ORIGINAL



FILTERED



Improved code reader operation regardless of industry or item



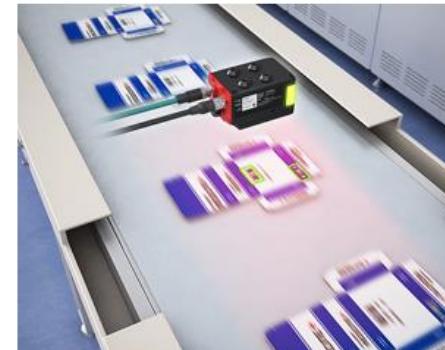
Applications



Reading upon warehousing reception



Gate-type reading of labels with undefined locations



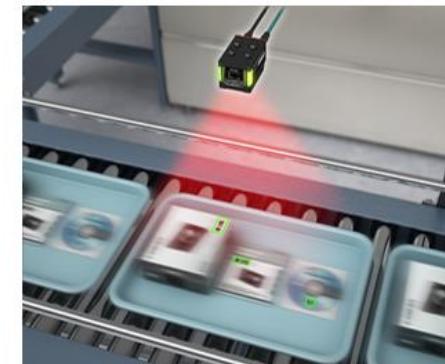
Reading of multiple codes in motion



Verification of inclusion of individually packaged products



High-speed code reading



Checking enclosures of individually-packaged units

Improved code reader operation regardless of industry or item



Applications



**Reading codes from
3 stacked boxes**



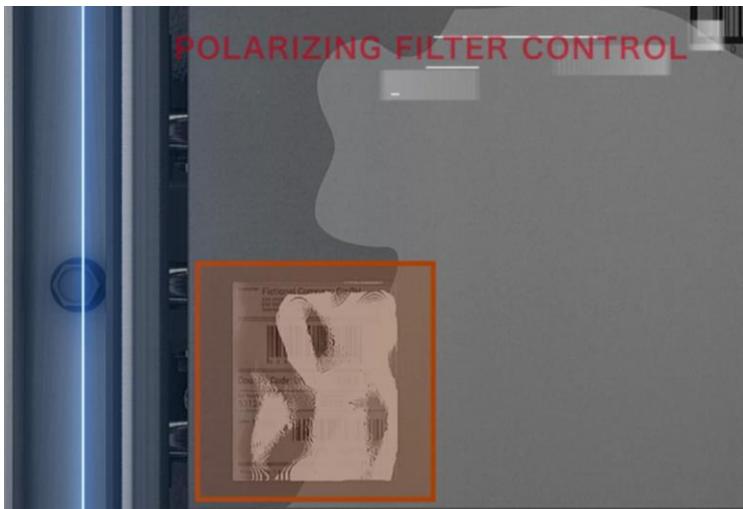
**Error-proofing product
types in filling machines**



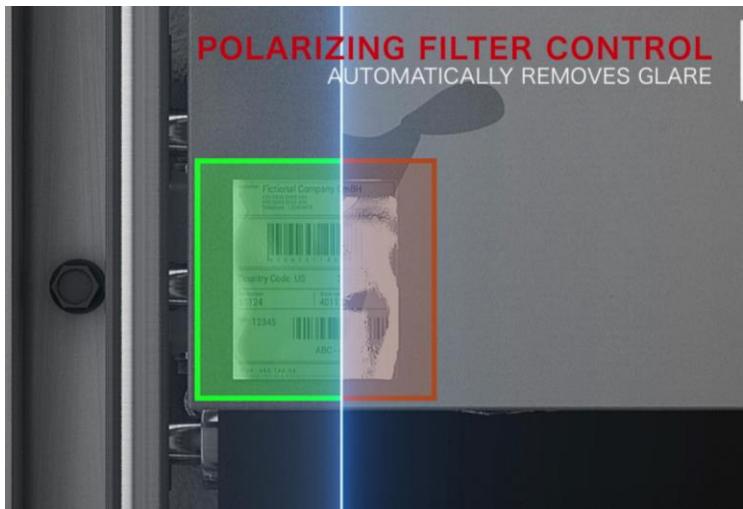
**Reading products in
laminated packaging**



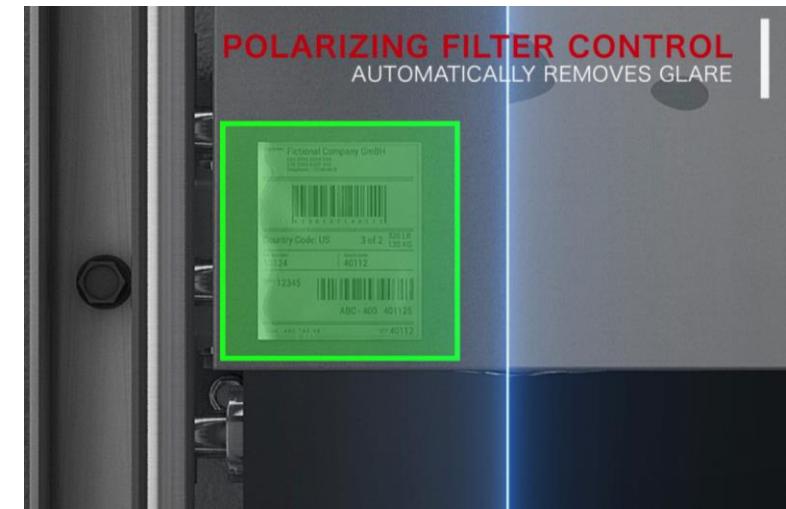
Applications



POLARIZING FILTER CONTROL



POLARIZING FILTER CONTROL
AUTOMATICALLY REMOVES GLARE

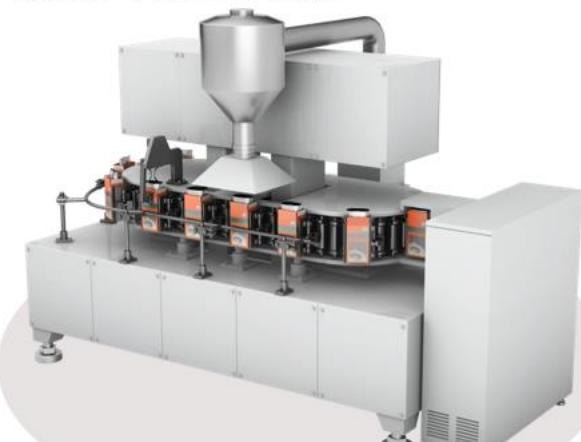


POLARIZING FILTER CONTROL
AUTOMATICALLY REMOVES GLARE



GENERAL LAYOUT

Processing/Packing Raw Materials



Packaging



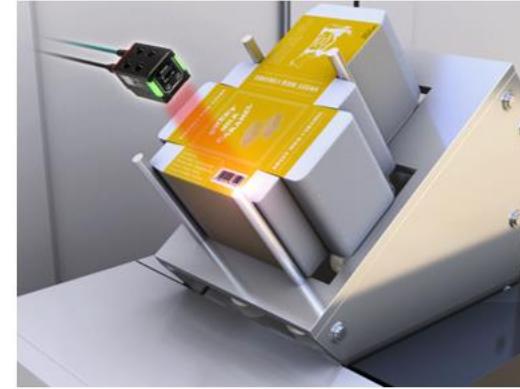
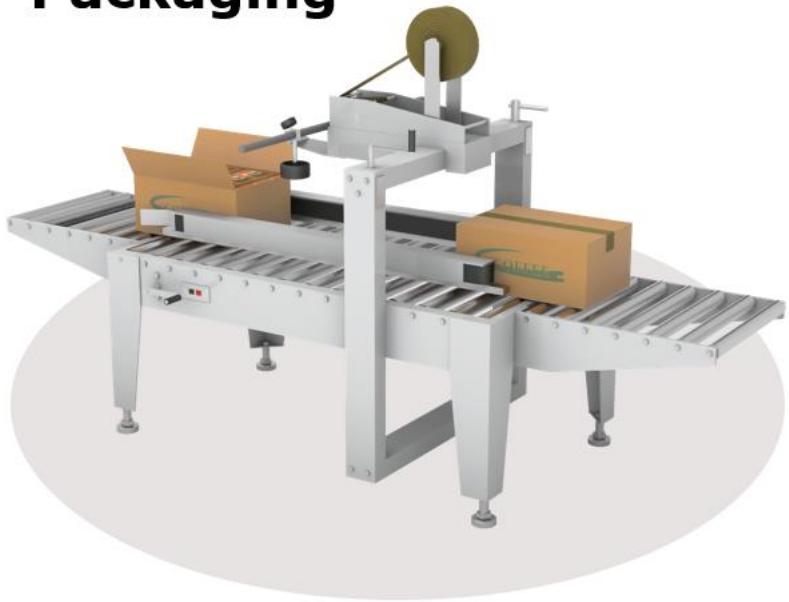
Transporting/Shipping





GENERAL LAYOUT

Packaging



Preventing wrong products being packaged by cartoner



Checking printing during the packaging process



Indicating product types for the weight checker



GENERAL LAYOUT

Transporting/Shipping



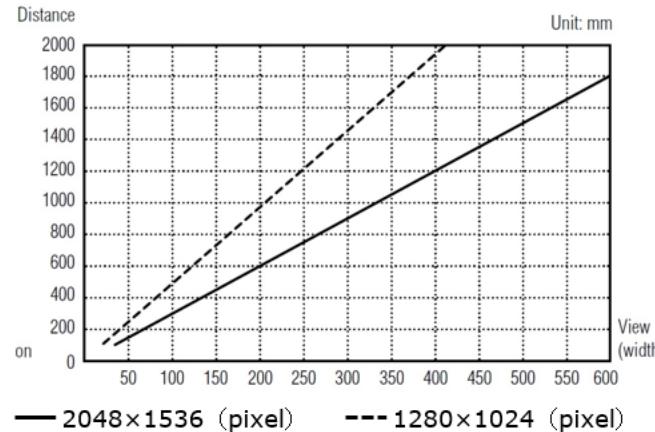
Reading worn barcodes
on cardboard



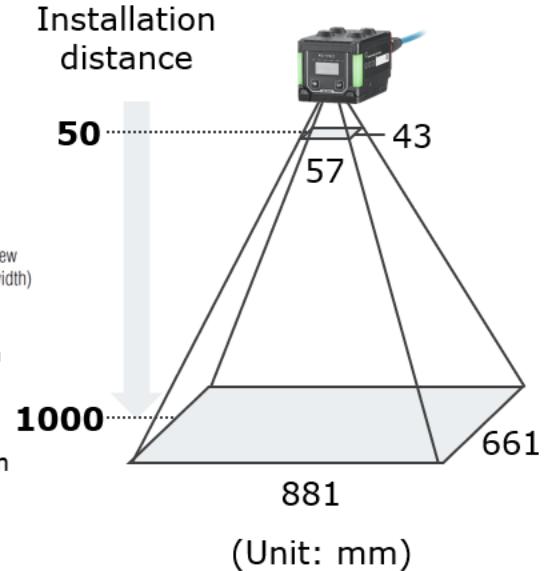
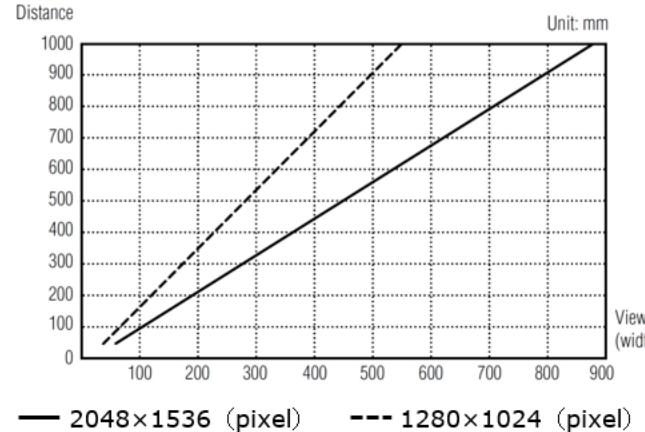
Reading with minimal operation
by just holding out a code

READING RANGE CHARACTERISTICS [TYPICAL]

SR-2000 Full-range model



SR-2000W Ultra-wide field of view model



Field of view (typical) Unit: mm

Distance	2048×1536 (pixel)		1280×1024 (pixel)	
	Width	Height	Width	Height
100	32	24	20	16
340	111	83	69	55
700	230	173	144	115
1000	329	247	206	164
1400	461	346	288	230
1800	594	445	371	297
2000	660	495	412	330

Field of view (typical) Unit: mm

Distance	2048×1536 (pixel)		1280×1024 (pixel)	
	Width	Height	Width	Height
50	57	43	36	28
150	144	108	90	72
250	231	173	144	115
350	317	238	198	158
500	447	335	279	223
650	577	433	361	288
1000	881	661	550	440

SYSTEM CONFIGURATION DIAGRAM

SR-2000 Series

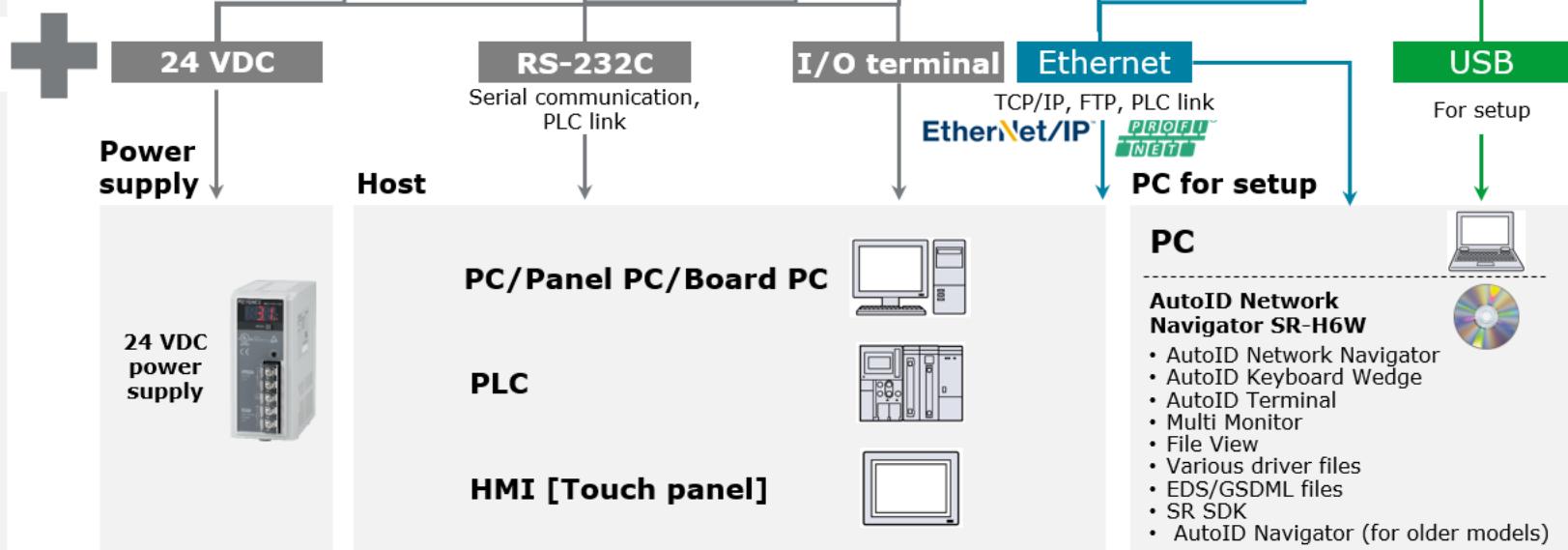


Option



Cable

		Control cable NFPA79-compliant				Ethernet cable (NFPA79-compliant)		USB cable (USB-A to Mini-B)
		D-sub 9-pin connector	Right angle connector			Right angle connector		
2m	OP-87224	OP-87353	OP-87527	OP-88304	OP-88307	OP-87230	OP-88301	OP-51580
5m	OP-87225	OP-87354	OP-87528	OP-88305	OP-88308	OP-87231	OP-88302	OP-86941
10m	OP-87226	OP-87355	OP-87529	OP-88306	OP-88309	OP-87232	OP-88303	—



Main unit

EtherNet/IP™

PROFINET



Mode	SR-2000	SR-2000W	SR-2000 + SR-20AH
Type	Full-range model	Ultra-wide field of view model	High-resolution model
Receiver	Sensor Number of pixels Focus	CMOS image sensor 2048 × 1536 Auto*	
Light emitter	Light source Pointer light source	High-intensity red LED High-intensity green LED	
Reading specifications	Supported symbols	QR、MicroQR、DataMatrix（ECC200）、GS1 DataMatrix、PDF417、MicroPDF417、GS1 Composite（CC-A/CC-B/CC-C）、DotCode、CODE39、ITF、2of5（Industrial 2of5）、COOP 2of5、NW-7（Codabar）、CODE128、GS1-128、GS1 DataBar、CODE93、JAN/EAN/UPC、Trioptic CODE39、CODE39 Full ASCII、Pharmacode、Postal（Japan Postal、IMB）	
	Barcode		
	Minimum resolution	2D code Barcode	0.040mm 0.082mm
	Reading distance	100~2000mm	50~1000mm 35~70mm
I/O Specifications	Field of view for reading	263 × 197 mm (at 800 mm)	707 × 530 mm (at 800 mm) 26 × 19 mm (at 70 mm)
	Control input	Number of inputs Input type Maximum rating Minimum ON voltage Maximum OFF current	2 Bidirectional voltage input 26.4 VDC 15 VDC 0.2mA
	Control Output	Number of outputs Output type Maximum rating Maximum load current Leakage current when OFF Residual voltage when ON	3 Photo MOS relay output 30 VDC Single output: 50 mA or less, 3-output total: 100 mA or less 0.1 mA or less 1 V or less
	Ethernet	Communication standard Supported protocol	IEEE 802.3-compliant, 10BASE-T/100BASE-TX TCP/IP, SNTP, FTP, BOOTP, EtherNet/IP/TM, PROFINET, KV STUDIO, MC Protocol, OMRON PLC Link
	Serial communication	Communication standard Communication speed Supported protocol	RS-232C-compliant 9600、19200、38400、57600、115200bps No-protocol, KV STUDIO, MC protocol, SYSWAY
	USB	Communication standard	USB 2.0 Full Speed-compliant
	Enclosure rating		IP65
	Ambient temperature		0 to +45°C
	Ambient storage temperature		-10 to +50°C
	Ambient humidity		35 to 85% RH (No condensation)
Environmental resistance	Ambient storage humidity		35 to 85% RH (No condensation)
	Ambient illuminance		Sunlight: 10000 lux, Incandescent lamp: 6000 lux, Fluorescent lamp: 2000 lux
	Operating environment		No dust or corrosive gas present
	Vibration resistance		10 to 55 Hz: Double amplitude 0.75 mm, 3 hours each in X, Y and Z directions
Ratings	Power voltage		24 VDC ±10%
	Current consumption		Approx. 1600 mA
Weight		Approx. 300 g	Approx. 350 g

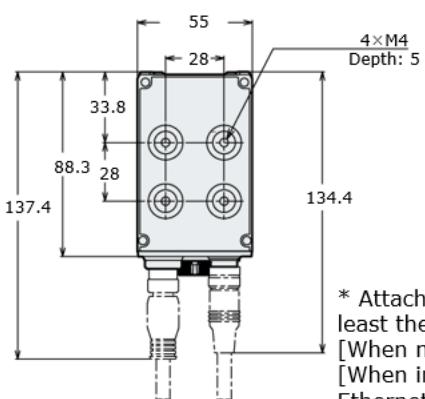
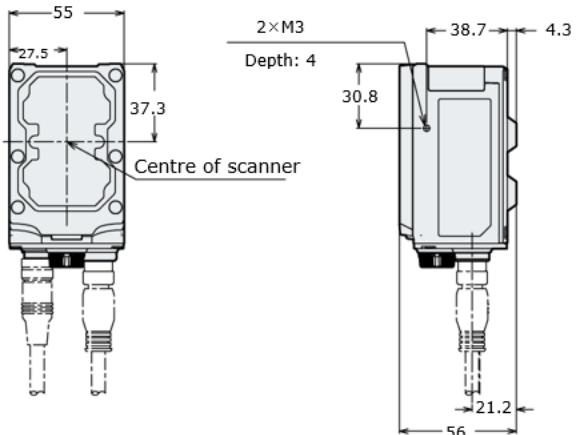
Setup software (AutoID Network Navigator)

Model	SR-H6W
Supported OS	<ul style="list-style-type: none"> Windows 10 Professional or later, 32 bit/64 bit Windows 8 Professional or later, 32 bit/64 bit (Except for Windows RT) Windows 7 Professional or later, 32 bit/64 bit Windows Vista Business/Ultimate SP2 or later, 32 bit*
Running environment	Processor: 2.0 GHz or better, Memory: 1 GB (32 bit)/2 GB (64 bit), DVD-ROM drive (during installation), Screen resolution: 1024 × 768 or better

DIMENSIONS

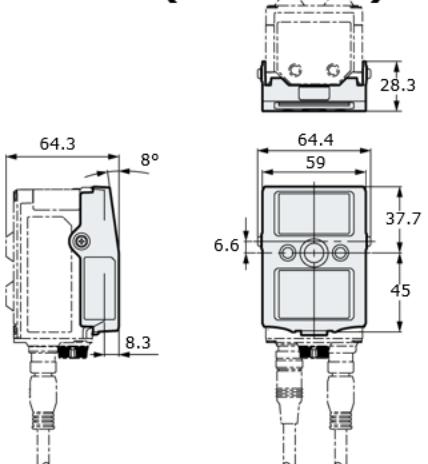
Unit: mm

SR-2000/2000W

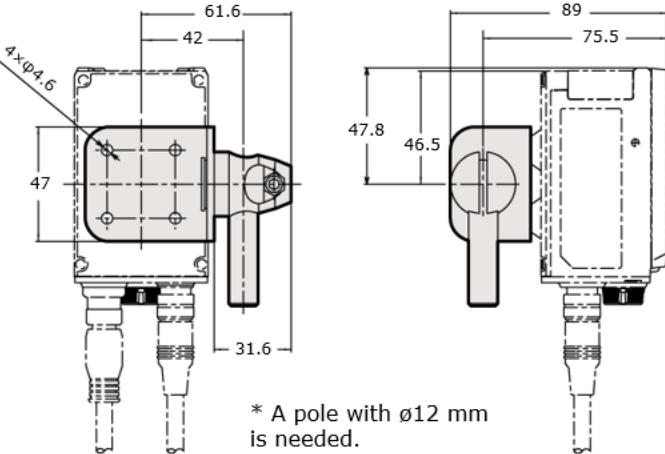


* Attach a cable with a bending radius of at least the following values.
[When not in motion] R = 15 mm
[When in motion] Control cable: R = 20 mm
Ethernet cable: R = 50 mm

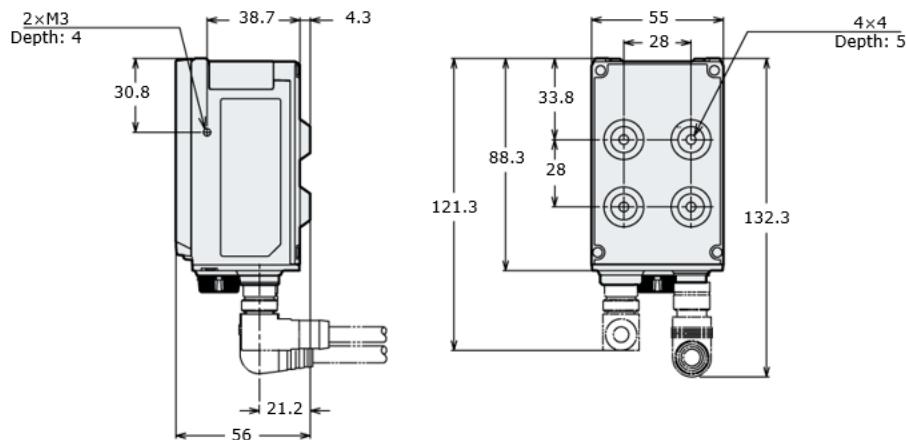
With high-resolution lens attachment (SR-20AH)



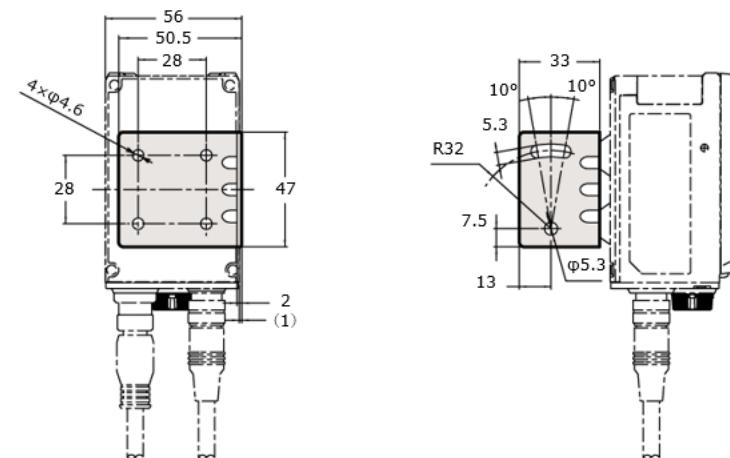
With adjustable bracket (OP-88002)



With right angle connector



With mounting bracket (OP-87866)





MEETING ALL THE NEEDS OF
LOGISTICS CODE READERS

KEYENCE LOGISTICS SOLUTIONS