

# KEYENCE

Autofocus 1D and 2D Code Reader  
SR-1000 Series

EtherNet/IP<sup>™</sup> **PROFINET**<sup>®</sup> CE **SP**<sup>®</sup><sub>C US</sub>



## SETTING THE STANDARD FOR CODE READING

**SR-1000** Series



**SR-1000** Series

# 1 ANSWER JUST PRESS THE BUTTON



## PRESS THE BUTTON

1

### AUTOFOCUS

The reader can be mounted at any distance.  
(1000 mm max.)

2

### AUTOMATIC TUNING

Determines optimum settings for exposure time,  
image processing filter, etc. [Approx. 750000 combinations]

3

### AUTOMATIC POLARISATION

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

## SET-UP COMPLETE

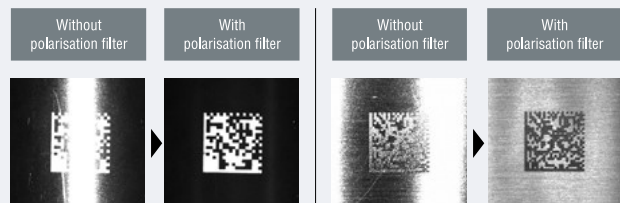


Autofocus 1D and 2D code reader  
SR-1000 Series



### WORLD'S FIRST AUTOMATIC POLARISATION CONTROL

The reader features both polarised and direct light sources.  
Automatic polarisation filter selection eliminates glare and  
allows flexible mounting.


















# AUTOMATIC TUNING

## OPTIMUM SETTING OF EXPOSURE TIME, FILTERS AND MORE

The code reader automatically optimises 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

 <p>Dark</p>	<p><b>CAPTURE BRIGHTNESS CORRECTION</b></p> <p>Automatically configures various combinations of exposure time, dynamic range and gain in order to achieve the optimal brightness.</p>	 <p>Black resin</p>	 <p>PCB</p>
 <p>Low contrast</p>	<p><b>CONTRAST THRESHOLD CORRECTION</b></p> <p>Automatically corrects black/white thresholds and optimises the contrast between code and background.</p>	 <p>Metal</p>	 <p>Ceramic</p>
 <p>Thin printing</p>	<p><b>FILTER CORRECTION</b></p> <p>Automatically selects the best filter and filtering intensity to correct the captured image.</p>	 <p>Bleeding</p>	 <p>Thick printing</p>
 <p>Distortion</p>	<p><b>GEOMETRIC CORRECTION</b></p> <p>Corrects distorted codes, such as those on cylinders and other round surfaces or when the reader is mounted at an angle.</p>	 <p>Parallel distortion</p>	 <p>Trapezoidal distortion</p>
 <p>Stray dots</p>	<p><b>IMAGE REDUCTION &amp; CORRECTION</b></p> <p>Reducing the image size may reduce background noise or missing spaces. Defects from background noise, dirt or scratches may appear insignificant after the image size reduction, hence causing them to be neglected.</p>	 <p>Primary noise</p>	 <p>Dot printing</p>

## APPLICATIONS

### Transportation and metal works industries

#### CRANKSHAFTS

##### INSPECTIONS

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



### Electronic devices industry

#### LEAD FRAMES

##### BONDING

This single device enables reading of extremely small codes and codes discoloured by heat or oxidation.



### Food, medical, and packaging industries

#### RETOUR FOOD PRODUCTS

##### VARIETY INSPECTIONS

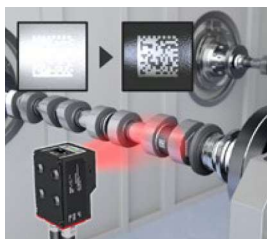
When transporting products on a conveyor belt, processing over a large field of view and with high-speed correction is possible even if the positions and orientations of the barcodes are different.



#### CAMSHAFTS

##### PROCESSING

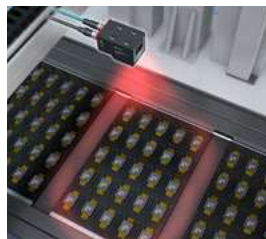
Automatic elimination of glare caused by cylindrical metals allow for stable reading.



#### IC CHIPS

##### INSPECTIONS

Simultaneous reading of component codes for multiple ICs in a tray is possible.



#### MEDICINAL PACKAGING

##### PACKAGING

With reliable capturing of barcodes and 2D codes traveling at high speeds help contribute to ever-increasing safety checks.



# TWO MODES CAN BE SELECTED DEPENDING ON THE APPLICATION



## UNAFFECTED BY CHANGING CONDITIONS

SMART MODE NEW

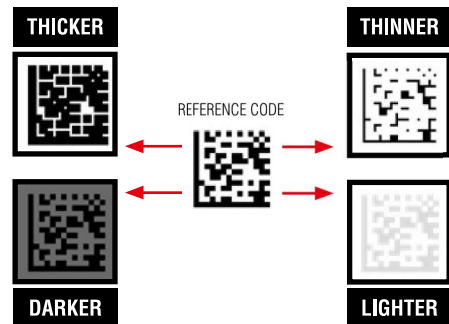
## FOR CONSISTENT READING REGARDLESS OF CODE CONDITIONS



LOW CONTRAST CODE

Fluctuations in code conditions are predicted during tuning and extended 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.

The reader predicts 43 patterns of alternative printing conditions.



## DETECTING CHANGES IN CODE CONDITIONS

CUSTOM MODE

## FOR CODE QUALITY MANAGEMENT

The SR-1000 has the functionality to make judgements 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.

### Matching level judgement function

Provides code quality comparison

Two codes, which both have a reading rate of 100%, can still be distinguished by the matching level



Reading rate **100%**  
Matching level **75**



Reading rate **100%**  
Matching level **43**

### Code quality verification function

Verification based on code quality standards

OUTPUT DATA **AD-ERMT-55841:B**

### TOTAL GRADE JUDGEMENT

Judgement 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).

# SOPHISTICATED MEASUREMENT MODES

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

## READING RATE MEASUREMENT

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

Tuning	Reading Test	Tact Test	Depth
Reading Test	100%		
Matching level	97		
Symbology	DataMatrix(12 x 12)		
Cell size	1.00mm		
Code size (width)	12.0mm		
PPC	25.0pixel/cell		
Read Data	123456789		

## READING TACT MEASUREMENT

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

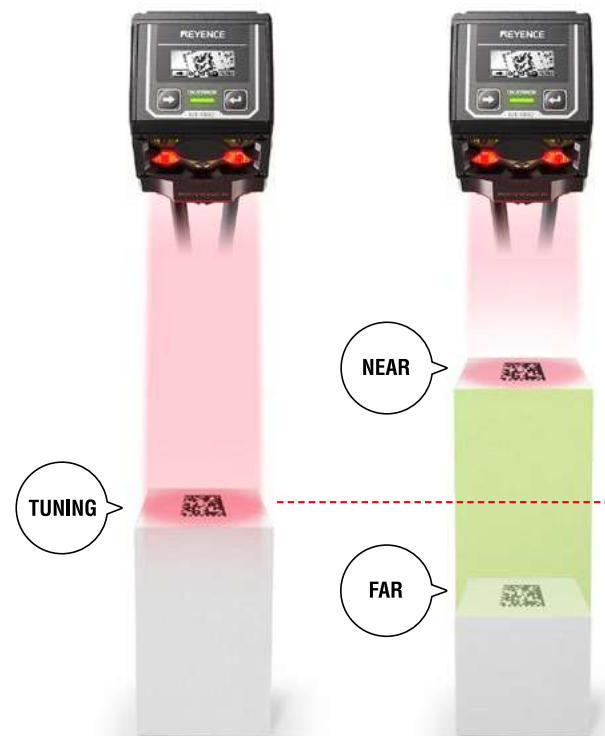
Tuning	Reading Test	Tact Test	Depth
Read time	32ms		
Max time	33ms		
Min time	32ms		
Read Data	123456789		

## READING DEPTH MEASUREMENT NEW

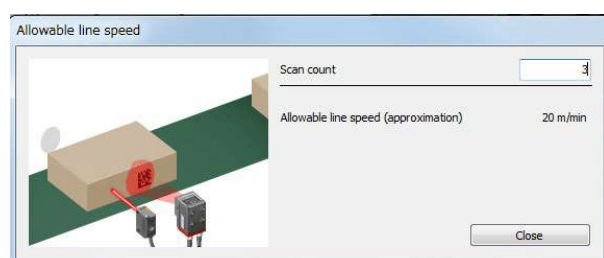
The depth of field can be determined from the mounting distance and the code used for tuning, without conducting reading tests with targets on the actual production line or equipment.

(When the mounting distance changes, perform re-tuning to enable reading again.)

Tuning	Reading Test	Tact Test	Depth
Installation distance	175mm		
Reading depth	110mm		
Near depth	-55mm		
Far depth	+55mm		



## LINE SPEED MEASUREMENT NEW



You can check allowable line speed before installation. This helps to reduce man-hours that are spent to adjust the production line designs or jigs.

READING RANGE CHARACTERISTICS [TYPICAL]

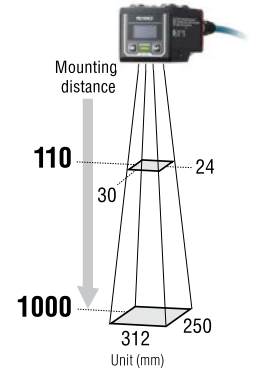
**SR-1000**

MINIMUM RESOLUTION

Distance	Unit (mm)	
	2D	Barcode
110	0.063	0.082
110 to 140	0.082	
110 to 230	0.14	
110 to 300	0.18	0.11
110 to 400	0.24	0.15
110 to 600	0.37	0.22
110 to 1000	0.61	0.37

FIELD OF VIEW

Distance	Image capture range (1280 × 1024 pixels)		Image capture range (800 × 600 pixels)	
	Width	Height	Width	Height
110	30	24	19	14
140	40	32	25	18
230	68	54	42	32
300	90	72	56	42
400	122	97	76	57
600	185	148	116	87
1000	312	250	195	146



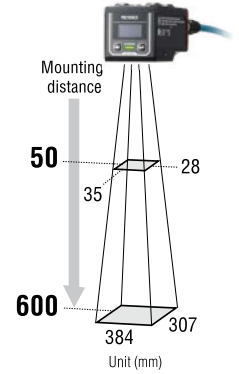
**SR-1000W**

MINIMUM RESOLUTION

Distance	Unit (mm)	
	2D	Barcode
50	0.082	0.082
50 to 100	0.14	
50 to 150	0.20	0.12
50 to 230	0.30	0.18
50 to 300	0.38	0.23
50 to 400	0.51	0.31
50 to 600	0.76	0.45

FIELD OF VIEW

Distance	Image capture range (1280 × 1024 pixels)		Image capture range (800 × 600 pixels)	
	Width	Height	Width	Height
50	35	28	22	16
100	67	54	42	31
150	99	79	62	46
230	150	120	93	70
300	194	155	121	91
400	257	206	161	120
600	384	307	240	180



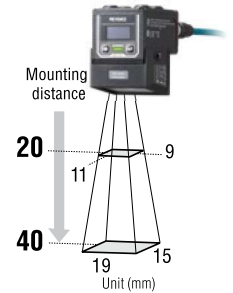
**SR-1000 + SR-10AH**

MINIMUM RESOLUTION

Distance	Unit (mm)	
	2D	Barcode
20	0.025	0.082
20 to 30	0.03	
20 to 40	0.04	

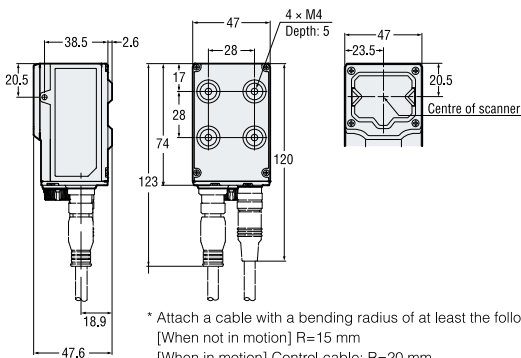
FIELD OF VIEW

Distance	Image capture range (1280 × 1024 pixels)		Image capture range (800 × 600 pixels)	
	Width	Height	Width	Height
20	11	9	7	5
30	15	12	9	7
40	19	15	11	8

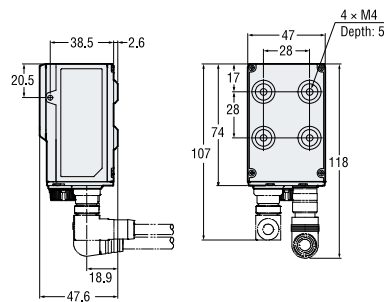


DIMENSIONS

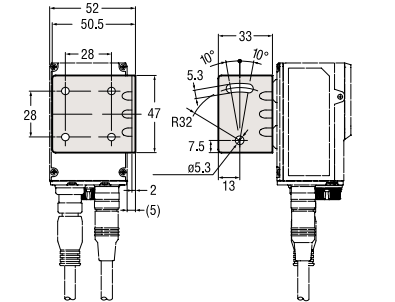
Main unit  
**SR-1000/1000W**



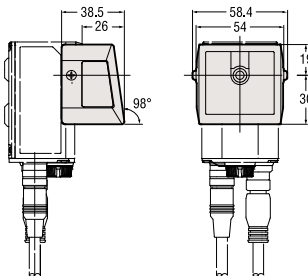
With right angle connector



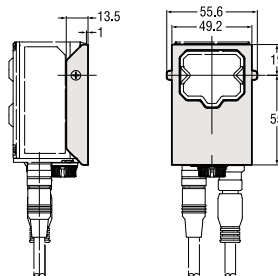
Adjustable bracket  
**OP-87866**



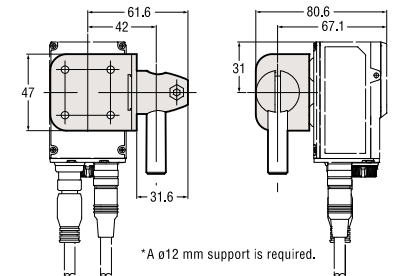
High resolution attachment  
**SR-10AH**



Reflector attachment  
**SR-10AR**



Adjustable bracket  
**OP-88002**



# SPECIFICATIONS



## Main unit

Model <sup>1,2</sup>		SR-1000	SR-1000W	SR-1000+SR-10AH	
Type		Standard type	Wide-field type	When the high resolution attachment is used	
Receiver	Sensor	CMOS Image Sensor			
	Number of pixels	1280 × 1024 pixels			
Light emitter	Illumination light source	High intensity red LED			
	Pointer light source	High intensity green LED			
Focus adjustment		Autofocus*			
Reading specifications	Supported symbol	2D	QR, MicroQR, DataMatrix (ECC200), GS1 DataMatrix, PDF417, MicroPDF417, GS1 Composite (CC-A/CC-B/CC-C)		
		Barcode	CODE39, ITF, 2of5 (Industrial 2of5), C0DP 2of5, NW-7 (Codabar), CODE128, GS1-128, GS1 DataBar, CODE93, JAN/EAN/UPC, Trioptic CODE39, CODE39 Full ASCII, Pharmacode		
	Minimum resolution	2D	0.063 mm	0.082 mm	0.025 mm
		Barcode	0.082 mm	0.082 mm	0.082 mm
Reading distance		110 to 1000 mm	50 to 600 mm	20 to 40 mm	
Field of view for reading		122 × 97 mm (Typical example at 400 mm)	257 × 206 mm (Typical example at 400 mm)	19 × 15 mm (Typical example at 40 mm)	
I/O specifications	Control input	Number of inputs	2		
		Input type	Bidirectional voltage input		
		Maximum rating	26.4 VDC		
		Minimum ON voltage	15 VDC		
		Maximum OFF current	0.2 mA or less		
	Control output	Number of outputs	3		
		Output type	Photo MOS relay output		
		Maximum rating	30 VDC		
		Maximum load current	1 output: 50 mA or less, Total of 3 outputs: 100 mA or less		
		Leakage current when OFF	0.1 mA or less		
		Residual voltage when ON	1 V or less		
	Ethernet	Communication standard	IEEE 802.3 compliant, 10BASE-T/100BASE-TX		
		Supported protocol	TCP/IP, SNT, FTP, BOOTP, MC protocol, Omron PLC link, KV STUDIO, EtherNet/IP™, PROFINET		
	Serial communication	Communication standard	RS-232C compliant		
Transmission speed		9600, 19200, 38400, 57600, 115200 bps			
USB	Supported protocol	No-protocol, MC protocol, SYSWAY, KV STUDIO			
	Communication standard	USB 2.0 Full Speed compliant			
Environmental resistance	Enclosure rating	IP65			
	Ambient temperature	0 to +45°C			
	Ambient storage temperature	-10 to +50°C			
	Relative humidity	35 to 85% RH (No condensation)			
	Storage ambient humidity	35 to 85% RH (No condensation)			
	Ambient luminance	Sunlight: 10000 lux, Incandescent lamp: 6000 lux, Fluorescent lamp: 2000 lux			
	Operating environment	No dust or corrosive gas present			
Rating	Vibration	10 to 55 Hz Double amplitude 0.75 mm, 3 hours each in X, Y and Z directions			
	Power voltage	24 VDC ±10%			
Weight	Current consumption	Approx. 200 g	Approx. 700 mA	Approx. 250 g	

- \* The focal position can be adjusted automatically during installation.
- SR-1000N and SR-1000WN are available as supported models for India.

## Setup software (AutoID Network Navigator)

Model	SR-H6W
Supported OS	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

- \*SR-2000/G100 products do not support Windows Vista.
- .NET Framework 3.5 SP1 or later installed • Internet connectivity for Windows 8/10 machines with .NET 3.5 installed • Control panel operability for Windows 8/10 machines with .NET 3.5 installed

## SR SERIES LINEUP

Ultra-compact 1D and  
2D Code Reader  
**SR-700 Series**



Compact 1D and  
2D Code Reader  
**SR-750 Series**



Please visit: [www.keyence.com](http://www.keyence.com)



### SAFETY INFORMATION

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

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