



# AutoID

## General Catalog

BARCODE READERS

2D CODE READERS

AUTO ID DATA CONTROLLERS



Evolving systems that have overwhelming performance and reliability.

# Read!



A new algorithm, created from years of experience, provides the best-in-class reading capabilities.

# Visualize!



The reading status can be checked at a glance! These products support stable operation by visualizing the reading margin.












# Connect!

EtherNet/IP  
 PROFINET  
 RS-485  
 CC-Link V2  
 DeviceNet™  
 PLC-Link  
 TCP/IP  
 RS-232C

Communication with a variety of controllers, such as PLCs and laser markers, is possible! This makes it possible to construct systems to match their environments.

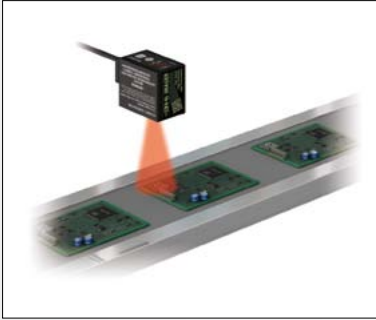
# Auto ID

KEYENCE has the number 1 track record for the sale of barcode readers in factory automation!

Fixed-type readers	Camera type	EtherNet/IP+PoE <b>SR-750 Series</b> P.6		Stable reading for difficult-to-read 1D and 2D codes	<b>SR-750</b>
		DPM Model <b>SR-D100 Series</b> P.8		2D High Performance Reader	<b>SR-D100</b>
		Ultra Compact <b>SR-600 Series</b> P.12		Powerful compact system	<b>SR-600</b>
Fixed-type readers	Laser/CCD	Digital, Laser Type <b>BL-1300 Series</b> P.14		High speed and high resolution 1D compact code reader	<b>BL-1300</b>
		Long-range, Laser Type <b>BL-700 Series</b> P.16		Ultra long range and outstanding angle capabilities	<b>BL-700</b>
		Ultra Compact, CCD Type <b>BL-180 Series</b> P.17		Ultra-compact size, half the size of a business card	<b>BL-180</b>
Peripheral equipment		Auto ID Data Controller <b>DV-90 Series</b> P.20		Verifies and evaluates data and converts data to I/O signals	<b>DV-90</b>
		RS-485 Master Unit <b>N-410 Series</b> P.21		Supports Multi-Drop and Multi-Head Mode	<b>N-410</b>
		Dedicated Power Supply/ Communication Units P.22		Selectable to match the specifications of the device being connected to	<b>Power Supply/ Communication</b>
Handheld readers		2D Code Model <b>HR-100 Series</b> P.24		Wide target area and high-speed response	<b>HR-100</b>
		Barcode Model <b>BL-N70 Series</b> P.25		Various communication models are available to connect with different PC or PLC systems.	<b>BL-N70</b>

# Applications

Identification solutions for every industry and every application.  
**KEYENCE** is dedicated to providing solutions for product traceability and management.  
A full line of 1D and 2D code readers, along with dedicated control and communication devices, ensure complete and reliable solutions.



### Circuit Board / ECU Traceability

The SR-600 easily reads codes on different colored boards with settings across 16 different memory banks.



### PC Component / HDD Traceability

Reading the code on parts such as Hard Disc Drives to automatically control and log the manufacturing, inspection and traceability records of all items.



### High Reading Performance

SR-D100 Series is designed with processing and filtering capabilities to scan DPM on difficult targets such as glass, metal, and silicon.



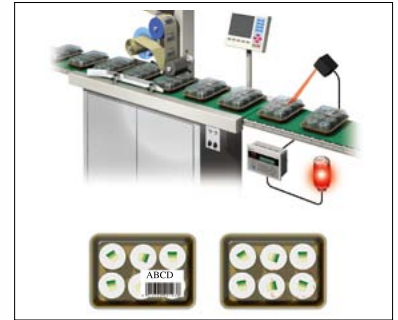
### High Resolution

SR-D100 Series can read minute codes with cells as small as 0.063 mm  $0.0025^{\circ}$ .



### In-process Checking

Ensure that correct codes are printed without creating bottle-necks or writing complicated PLC programs.



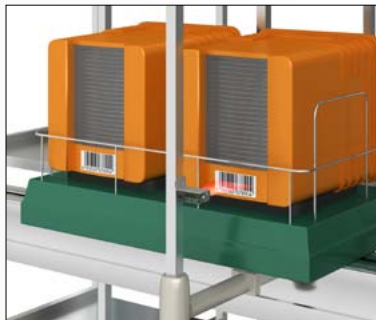
### Label Detection and Reading

Verify presence and the correct information is included when applying packaging labels.



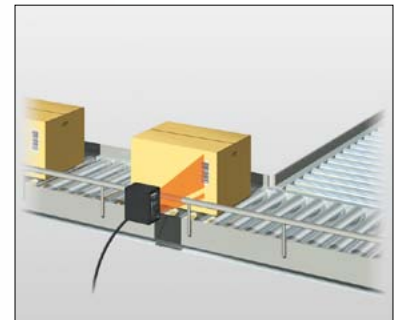
### Verification of Test Tubes

With its compact body and high speed reading capability, the BL-1300 can easily read the barcodes on medical test tubes.



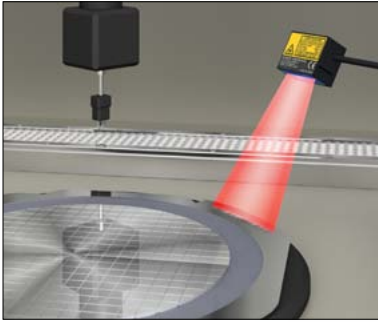
### Stock Management

Barcodes are used for a check so that cassettes are stocked in the correct addresses.



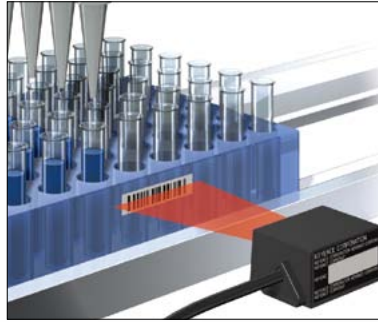
### Cardboard Box Conveyors

The BL-700 Series has long range reading and can be mounted in small spaces without being by the conveyor guide.



### Wafer Ring Management

Stable reading for laser marked and low contrast ceramic barcodes.



### Verification of Pipette Tray

The world's smallest barcode reader, BL-1300, can be mounted in limited space applications.



### Shelf Management

The BL-180's compact body can be mounted easily anywhere in the shelf.



### Auto-Scanning Mode Continuous Reading

When a label passes the field of view, it is automatically detected and decoded. Using the dedicated stand, the HR-100 automatically switches into auto scanning, continuous emission.



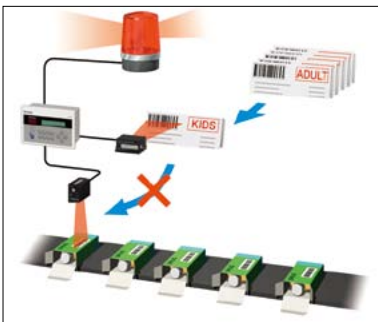
### Similar Components Management

Multiple reading settings can be saved, reducing the time and effort associated with the changing of equipment. On lines where multiple types of products are run, reading is automatically performed with optimal settings.



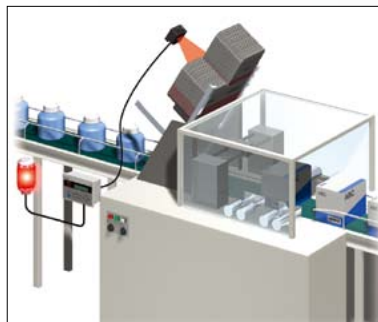
### Prevent Mixing

Wrong products or incorrect labels or documentation can be effectively prevented from entering the line.



### POKA-YOKE

Make sure that the correct instruction sheet is included with the product.



### Cartoner: Prevent mixing

A reliable read is ensured, even for barcodes with low print contrast, such as those on cardboard boxes.



### Changeover

The DV-90 will handle product differentiation and provide accurate instructions to the upper (control) devices.



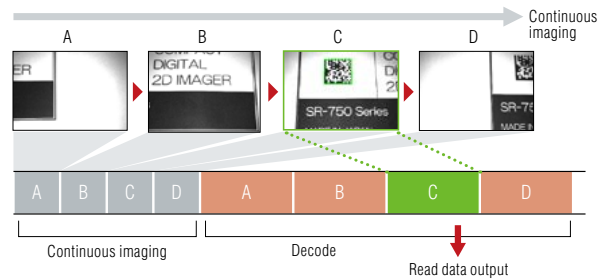


## High Performance Compact 1D and 2D Code Reader

### Powerful on Fast Moving Workpieces

**Burst Read Function:** Acquires up to 8 consecutive images. The decoding process is performed after continuous imaging, allowing for higher speed code detection.

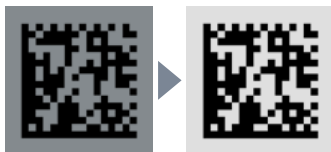
**High Speed Image Capturing:** The built-in high-intensity LEDs, bright enough even during short exposure times, and high-speed digital signal processor (DSP) can capture moving objects effectively. (Read codes at line speed up to 170 m/min 557.7 ft./min with a KEYENCE test label)



## Automatic Preprocessing Techniques for Reading Difficult Codes

### Capture Brightness Correction

Configure various settings for exposure time, dynamic range, and gain automatically in order to achieve ideal brightness level.



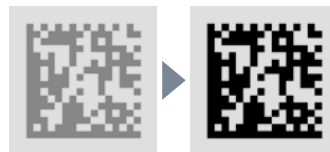
Example codes requiring brightness correction



Black resin PCB Brass

### Contrast Threshold Correction

Automatically corrects black/white classification thresholds and optimizes the contrast between code and background.



Example codes requiring threshold correction



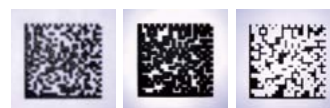
Nylon resin Low contrast Ceramic

### Correction through Filters

Automatically selects the best filter and filtering intensity to correct the captured image.



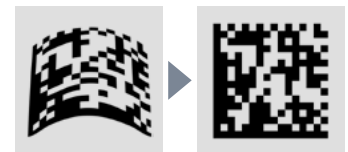
Example codes requiring filtering



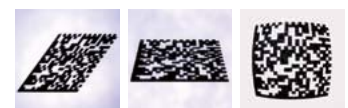
Bleeding Thick printing Thin printing

### Geometric Correction

Corrects distorted codes, such as those found on cylinders.

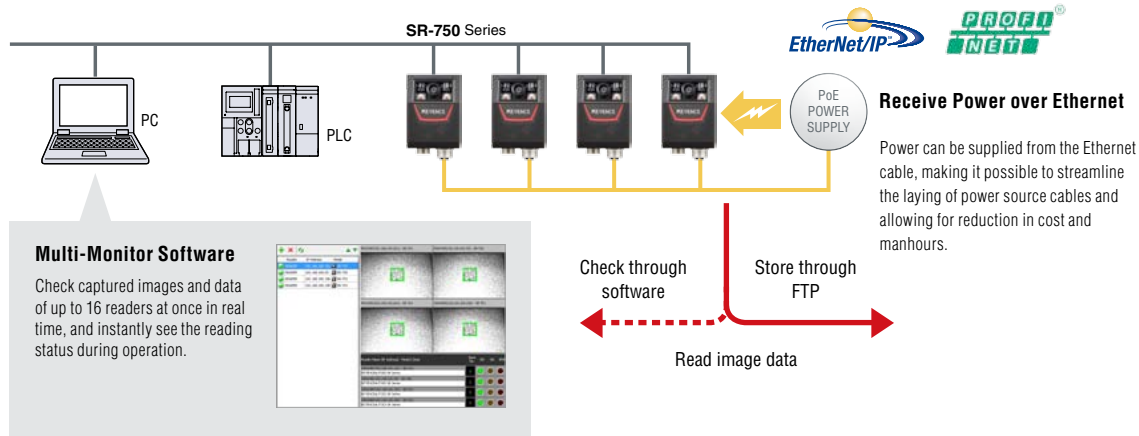


Example codes requiring geometric correction

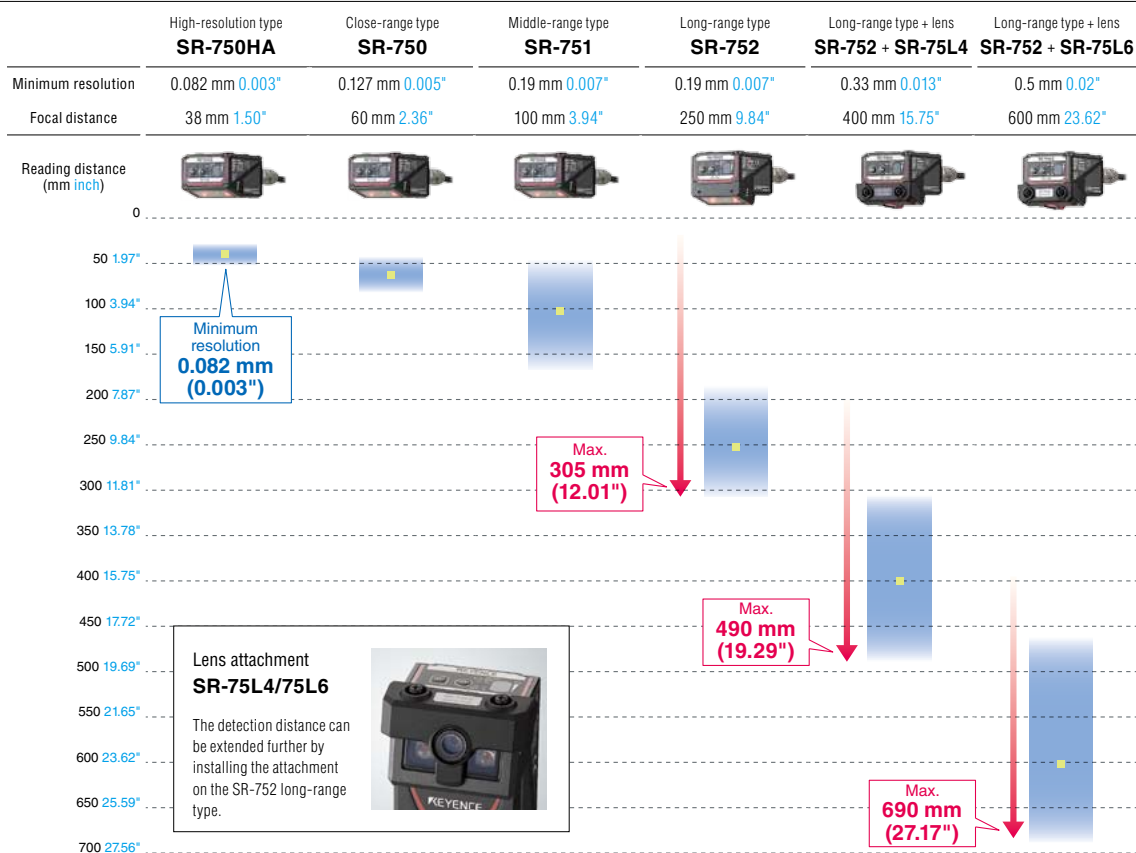


Parallel distortion Trapezoidal distortion Tread barrel distortion

# Built-in Ethernet Capabilities



## Model Lineup



The reading range above is a value measured with a KEYENCE test label. Max. 305 mm 12.01", 490 mm 19.29", and 690 mm 27.17" are for DataMatrix (cell size 0.5 mm 0.02").

## Cables

**NFPA79 compliant Control cable w/connector**  
 2 m **6.56'** : **OP-87527**  
 5 m **16.4'** : **OP-87528**  
 10 m **32.8'** : **OP-87529**

**NFPA79 compliant Ethernet cable**  
 2 m **6.56'** : **OP-87359**  
 5 m **16.4'** : **OP-87360**  
 10 m **32.8'** : **OP-87361**

**Ethernet Assembly Plug**  
**OP-87362**

## Configuration Software

**LENS ATTACHMENT**

**AutoID Network Navigator**  
**SR-H3W**

400 mm **15.75"** lens: **SR-75L4**  
 600 mm **23.62"** lens: **SR-75L6**



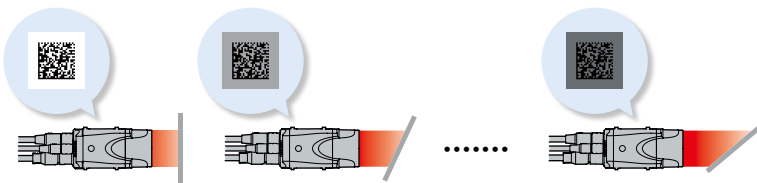
## High Performance 2D Code Reader

Optical design that is built to image targets with high resolution while optimizing the balance of lighting, aperture and filtering.

High-power and high-precision LED lighting offers ring lighting to illuminate target codes evenly.



Brightness support Change the skew/pitch angle ▶ Adjust the exposure time



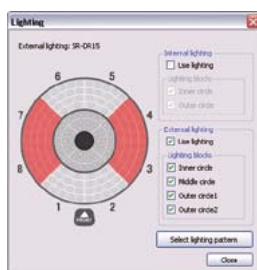
Exposure time 500  $\mu$ s Exposure time 1000  $\mu$ s  $\rightarrow$  1500  $\mu$ s  $\rightarrow$  .....  $\rightarrow$  4000  $\mu$ s  $\rightarrow$  4500  $\mu$ s Exposure time 5000  $\mu$ s

Automatically assigned and set.

## Lighting Options

### Simple lighting setup

Click this button to open the lighting setup window. Select the lighting while monitoring in the tuning view.



### Lighting pattern list function

Select lighting pattern Click this button to capture images using the various light patterns. Select the optimal pattern.



Image with full light

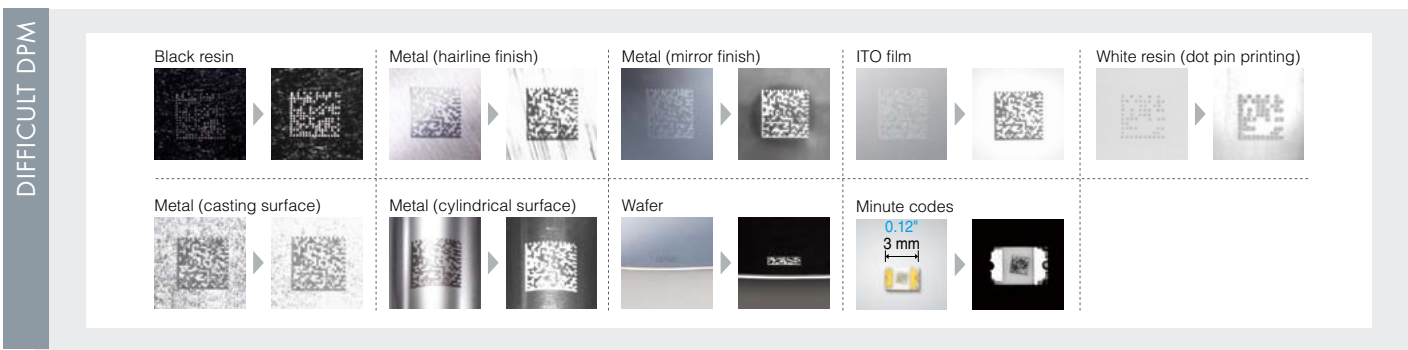
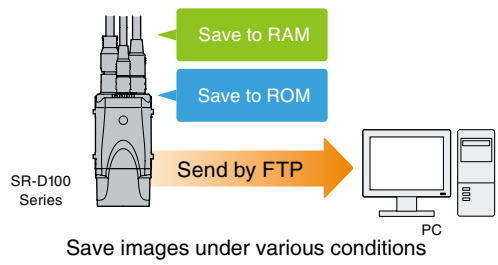
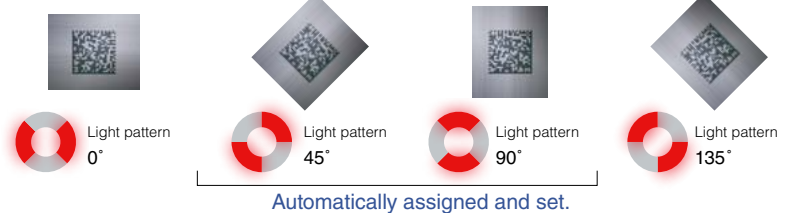


Image with optimal pattern





Partial light support Change the tilt angle ▶ Change the light pattern



## Code Quality Verification

Verifies 2D codes according to the specified code quality standard

Each verification grade result can be output. In addition, a code can be evaluated as higher or lower than a programmed quality threshold, allowing a signal to be output when the quality is too low.

COMPATIBLE SPECIFICATION

ISO/IEC 15415

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

SAE AS9132

SEMI T10-0701

OUTPUT DATA

AD-ERMT-55841B

Code Quality Verification Grade



## Model Lineup



Ultra high-resolution type SR-D100HA



High-resolution type SR-D100H



Standard type SR-D100



Wide-field type SR-D110



NEW Long-distance type SR-D130

## Cables



NFPA79 compliant control cable  
2 m (6.6'): OP-87353  
5 m (16.4'): OP-87354  
10 m (32.8'): OP-87355

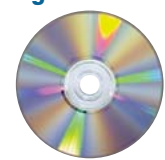


NFPA79 compliant Ethernet Cable  
2 m (6.6'): OP-87230  
5 m (16.4'): OP-87231  
10 m (32.8'): OP-87232



NFPA79 compliant Control cable w/connector  
2 m (6.6'): OP-87527  
5 m (16.4'): OP-87528  
10 m (32.8'): OP-87529

## Configuration Software



AutoID Network Navigator SR-H3W

## Lighting



ø100 (ø3.94) circular light SR-DR10



ø150 (ø5.91) circular light SR-DR15



Back light SR-DS3



Diffuser plate for SR-DR10 OP-87233



Diffuser plate for SR-DR15 OP-87234



Light guide lens OP-87235

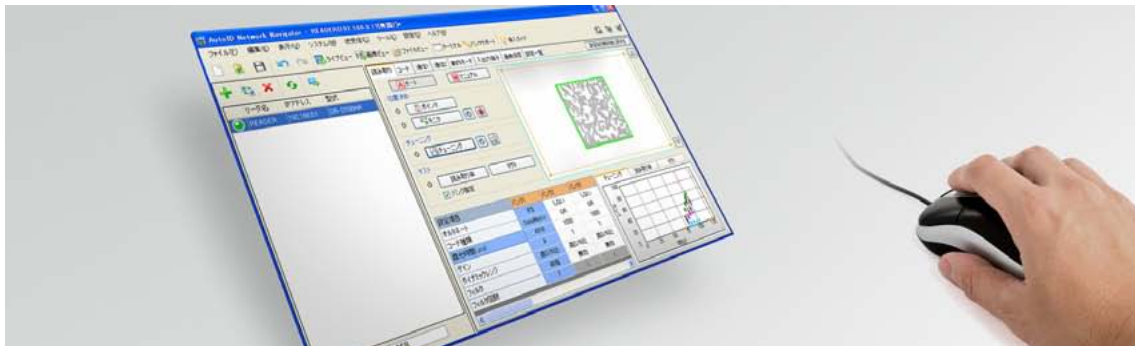


KEYENCE external lighting connection conversion cable OP-87236

## Monitor



Dedicated touch panel monitor SR-M80



## SR-750/SR-D100 Configuration Software

AutoID Network Navigator Software enables easy setup, tuning, networking, monitoring and troubleshooting for KEYENCE'S 2D Code Readers.

### Easy Setup

Simple 3-Step Tuning allows for quick configuration; automatically configuring the SR-750 or SR-D100 Series for optimal reading conditions.

**1** Set,

**2** monitor,

**3** and click

### Installation Guide

Selecting the optimal reader model and a preview of the field of view can be done based on code size and working distance.

QR DataMatrix CODE39 CODE128 GS1 DataBar GS

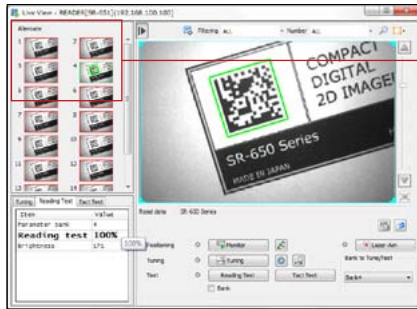
Symbology DataMatrix

Can create condition settings for each code type

Reading field of view simulation

# Live View

Reduce manhours for setup by executing reading tests: check read ratio, cycle time, and determine which banks are best used for reading.

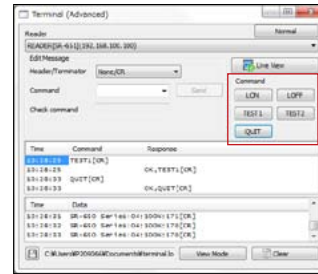


Can check real-time images while executing test mode.



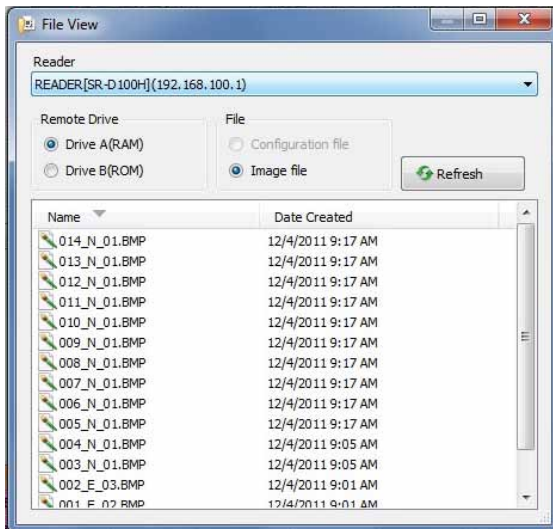
Can check the No. of banks that have been read.

Parameter bank function See P. 8

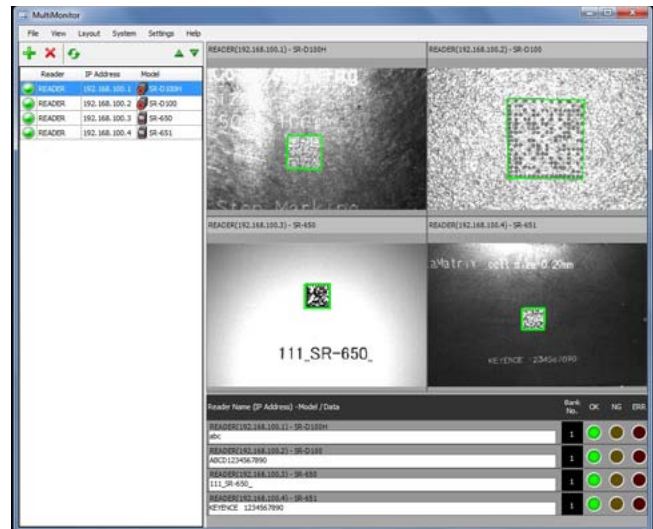


Arranges frequently used command buttons.

**File View:** Check, save, or delete images and configuration files saved in code readers' RAM/ROM.



**Multi Monitor:** See Live Images for up to 16 connected Readers at once to monitor operation.



# Communication Setup

Intuitive setup for Serial or Ethernet communication, connected device settings, discrete Input/Output configuration and FTP image output destination.



Connected Device Settings





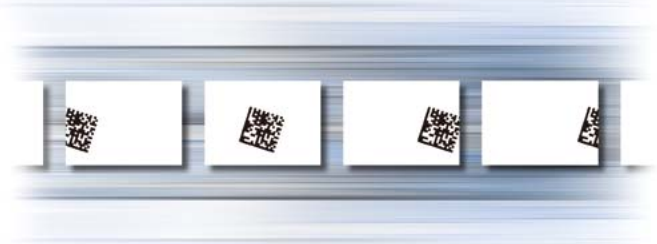


## Ultra-Compact 2D Code Reader

The SR-600 Series has a small body size without compromising code reading performance.

### [HI-SPEED] Reliable Moving Object Code Detection

Fastest in its class: New optical design with high-speed, high-sensitivity imaging allows the SR-600 Series to read codes moving as fast as 160 m/min [524.9 ft./min.](#)



### [Hi Performance] Advanced Reading Flexibility

Simple setup with advanced reading ability. Up to 16 parameter banks allow greater flexibility when reading conditions change.

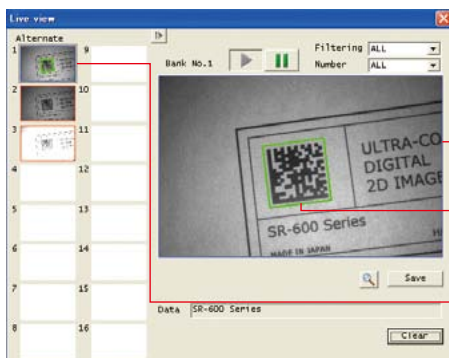


### [Hybrid USB Interface]

Makes it possible to display real time images on a PC for reductions in startup and maintenance. In addition, saved images can be retrieved in order to drastically reduce time spent troubleshooting.

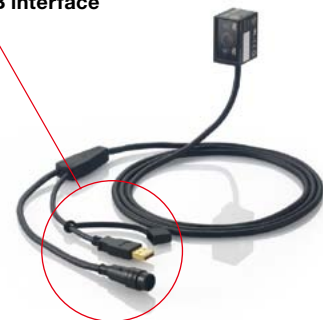
### [Hi Reliability] Easy Setup & Maintenance

Easy calibration can be performed by simply pressing the TUNE button. Built-in USB connectivity enables [Live] monitoring, testing, and function changes via the easy-to-use AutoID Navigator software.



- Live image (20 frames/second)
- When a live image is being read, the code is located and a target box  appears.
- When a parameter bank is set, the bank number currently being read is displayed in a blue frame.

### Fastest in its class Hybrid USB interface





## Smallest in its Class with Outstanding Ease-of-Use

KEYENCE focused on functionality and ease-of-use, all while designing the smallest 2D code reader in its class.

### ULTRA HIGH-DENSITY DESIGN BODY

High-density body protects the optical system and circuits, etc.

### 9 SEGMENT LED DISPLAY

Displays reading stability and bank number

### TUNING BUTTON/TEST BUTTON

Initiate tuning and test modes



SR-750

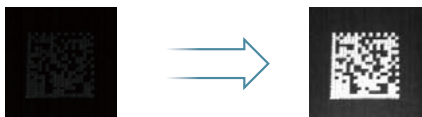
SR-D100

SR-600

## New Optical Design makes Codes Brighter & Clearer

The easiest way to improve code reading capability is to improve code clarity. The SR-600 combines the proper balance of lighting and processing to improve code clarity on all surface types.

### Illuminates codes with sufficient light intensity



Difficult-to-read workpiece due to dark background (black resin)

### The Hi-DR function suppresses luster to improve code contrast



Difficult-to-read workpiece due to low contrast caused by high luster



### Reverse Ernstar lens

A reverse Ernstar lens is utilized to minimize aberration. Although small, the reverse Ernstar lens is practically free from image distortion and offers excellent reading performance. Since it is glass, the reverse Ernstar lens resists environmental changes and maintains stable reading, even under severe manufacturing conditions.

## Model Lineup

	SR600 Close-Range	SR610 Middle-Range	SR600HA High-Resolution
Minimum resolution	0.082 mm 3.23 Mil	0.127 mm 5 Mil	0.19 mm 0.98 Mil
Focal distance	38 mm 1.50"	60 mm 2.36"	100 mm 3.94"
Reading distance (mm inch)			
	0		
	50 1.97"		
	100 3.94"		
	150 5.91"		
	200 7.87"		

Minimum resolution 0.082 mm (3.23 Mil)

## Extension Cable



NX-CO3R (3 m 9.8')  
NX-CO5R (5 m 16.4')

## Configuration Software



AutoID Navigator  
SR-H60WE



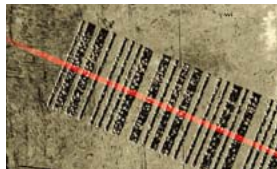
## Ultra-Compact Digital Barcode Reader

KEYENCE's BL-1300 Series (3Hi-Digital) models. The first models in this class to use parallel digital processing technology. Noise reduction and compensation functions only possible with digital processing overcome the reading performance difficulties of conventional analog scanners.

### [HI-PERFORMANCE]

#### New Digital Processing Reads Very Low Quality Codes

A new edge detection process accurately extracts the points of alternation between bars and spaces in even the most difficult-to-read barcodes, while digital compensation makes it possible to read varying narrow/wide ratios.



### [HI-SPEED]

#### 100% Decode Rate at 1300 scans/sec is Unmatched by Conventional Barcode Readers

New high-speed motor (2.6 times faster than previous model) and high-speed processing engine (HPPE\*).

\* HPPE = Hi-Speed Parallel Processing Engine



### [UNMATCHED DECODE SPEED]

#### High-Speed Engine Maximizes Performance HPPE

#### New High-Speed Motor and Receiver Lens

BL-1300 Series models have a high-speed motor 2.6 times faster than previous models, enabling performance of 1300 scans and 1300 decodes per second. KEYENCE has also developed a new aspherical lens that has doubled the intensity of the received beam (the read source), reducing noise and increasing the effective label reading distance.

#### High-Speed Processing Circuit

The new HPPE\* in BL-1300 Series models provides about 100 times the information processing capacity of previous models, providing reading performance that combines high speed and high precision.

\* HPPE=Hi-Speed Parallel Processing Engine

#### IP65 Environmental Resistance

Die-cast magnesium bodies make BL-1300 Series models highly resistant to adverse environments and dirt, allowing mounting anywhere and use with any equipment.

### [HI-RESOLUTION]

#### Minimum Readable Narrow Bar Width : 0.08 mm 0.003"

Digital processing guarantees stable decoding of barcodes with incredibly small margins. This allows codes to be printed smaller without the worry of noise affecting the reader.



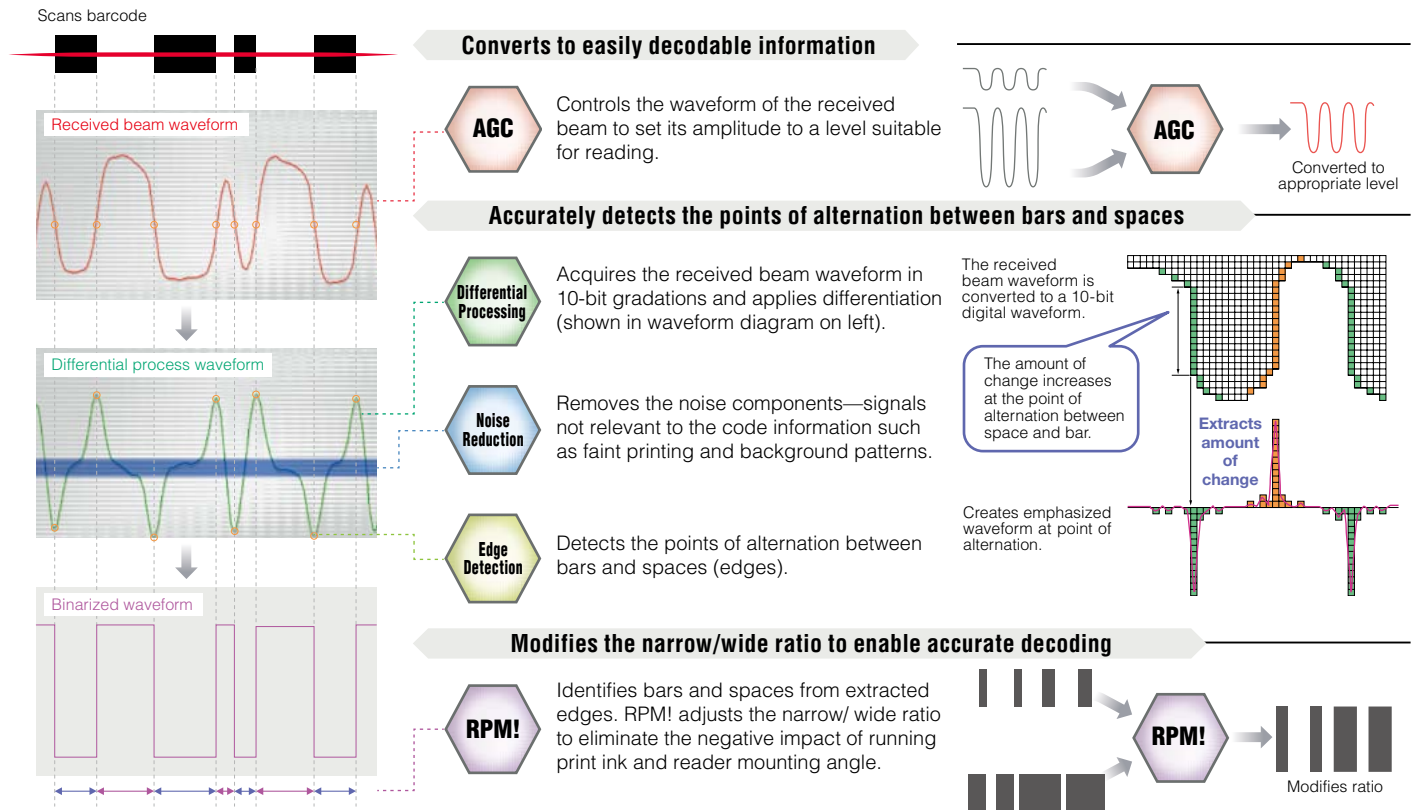
CODE39:16 digits



**1300**  
Decodes/second

# Superior Reading Performance 3Hi-DIGITAL

## Decoding Process Provides Unrivaled Reading Performance



BL-1300

BL-700

BL-180

## 3Hi-DIGITAL Models Solve Typical Reading Problems

**Thick print lines**

Problem: Spaces are extremely narrow

**PREVIOUS MODELS** Thick print lines prevented adequate space between bars, forcing the reader to move to the next bar without obtaining the proper amplitude.

**3Hi-DIGITAL** 3Hi-Digital models use noise reduction and edge detection to recognize the difference between spaces and faint printing, enabling accurate decoding.

**Reading from diagonal orientation (pitch angle)**

**PREVIOUS MODELS** When reading from an angle, previous models couldn't receive adequate beam intensity, and barcode recognition failed.

**3Hi-DIGITAL** 3Hi-Digital models reliably detect edges to recognize barcodes, and use RPM! to compensate for bar width ratio variations created by tilted orientations.

### Model Lineup

	Front Type			Side Type
	Standard Range	High Accuracy	Long Range	High Accuracy
Single Line	BL-1300	BL-1300HA	BL-1370	BL-1350HA
Raster	BL-1301	BL-1301HA	BL-1371	BL-1351HA



### Configuration Software



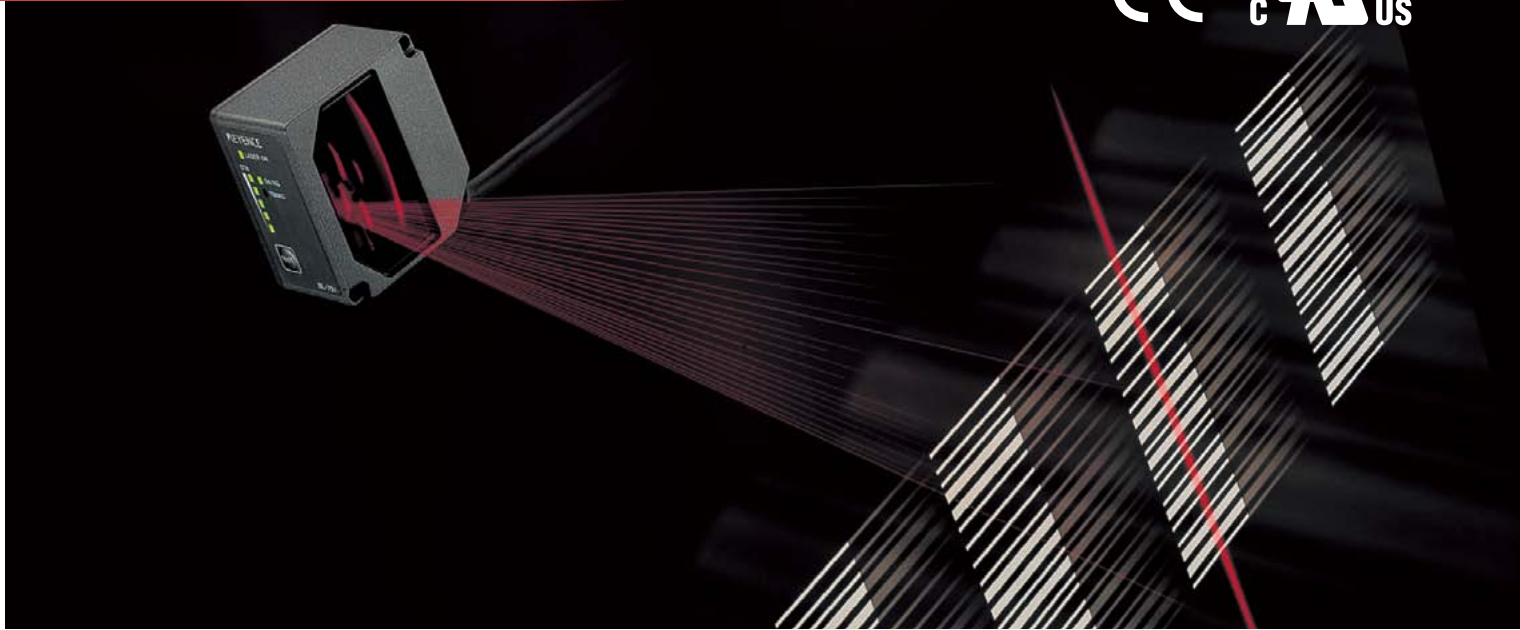
■ AutoID Navigator  
BL-H13WE

### Extension Cable



**NX-CO3R** (3 m 9.8')  
**NX-CO5R** (5 m 16.4')  
**NX-CO8R** (8 m 26.2')



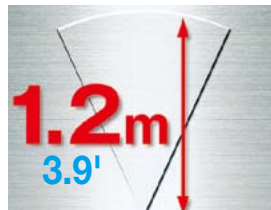


## Long Distance Laser Barcode Reader

KEYENCE's original AGC (Auto Gain Control) provides superior angle reading capabilities. This revolutionary reading capability is outstanding compared to other models. The BL-700 Series provides reliable reading regardless of the orientation or size of the labels.

### Longest Reading Range in Its Class : 1.2 m 3.9'

With KEYENCE's laser technology, the BL-700 Series allows an ultra-long distance read. Even if the target size varies, the AGC function ensures a reliable reading through an unparalleled reading depth.



### Space-Saving, Slanted-Corner Design

The slanted corner of the housing allows the cable to be routed in any direction. Since the BL-700 Series requires no space for a connector, it can be neatly mounted anywhere, such as the side of a conveyor, in a space just as large as its body size.



### High Speed : 700 Scans/s

With a 32-bit RISC CPU chip and KEYENCE's control technology, the BL-700 Series achieves 700 scans (700 decodes) per second. An ultra high-speed response that reliably reads barcodes moving at high speed on production lines.



### Model Lineup

- BL-700
- BL-701
- BL-740
- BL-741
- BL-780
- BL-781



### Peripheral Equipment

#### Sweep Raster Unit **BL-R7**

Achieves an ultra-wide area sweep width (up to 660 mm **25.98"**) with a single barcode reader



- Simplifies control by eliminating the need for positioning
- Greatly reduces retooling production costs
- Equipped with a sweep width switching function







BL-1300

BL-700

BL-180

## CCD Barcode Reader

The BL-180 Series ultra-small CCD barcode reader is easily mounted in any device, allowing the complete system to be downsized. Despite the small size, it features a built-in decoder and reads labels as wide as 80 mm 3.15".



## Stability LED for Easy Mounting

The BL-180 Series features a highly visible STABILITY LED indicator. The optimal mounting position can be determined quickly and easily. Moreover, reading errors can be prevented by checking the reading performance rate or the decode count output.



The LED shows the performance rate with three colors: green, orange, and red.

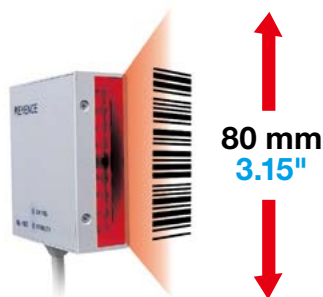
## 500 Scans Per Second

The BL-180 Series is the first CCD barcode reader that achieves a laser-type-level, 500 scans per second. The reliability is dramatically improved with the high-speed processing circuit developed by KEYENCE.



## Ultra-small Body Reads Labels as Wide as 80 mm 3.15"

The BL-180 Series is small in size but reads wide. KEYENCE's original optical technology achieves 80 mm 3.15" of readable label width.



## Model Lineup



Front type  
BL-180



Side type  
BL-185

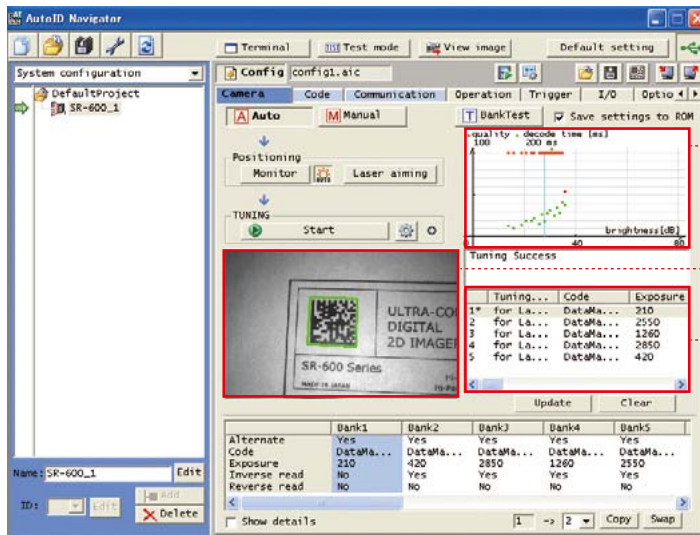
## Setup, test, and troubleshoot

The AutoID Navigator will immediately eliminate concerns such as difficult calibration, lengthy setup time, and troublesome maintenance.

### SIMPLE OPERATION FROM BASIC SETTING TO MANUAL TUNING

#### AUTOMATIC TUNING

Simple, step-by-step calibration enables you to easily and automatically set the optimum reading conditions. You can perform tuning with ease while actually monitoring read images.



#### Real Time Plot

Graphs the relationship between the reading condition parameters and reading stability at each point of the tuning process.

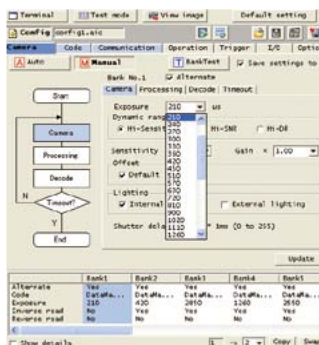
#### Tuning View

Enables you to view the code, in real time, throughout the tuning process.

#### Tuning History Function

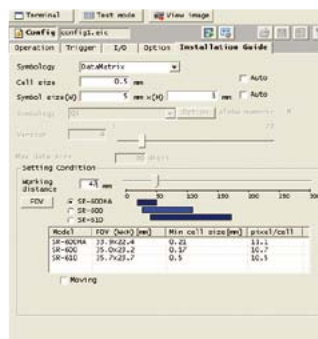
Enables you to select the optimum conditions by comparing multiple tuning results. The desired results can be set to different parameter banks, allowing the reader to account for different reading conditions, without being re-calibrated.

#### Manual Tuning Screen



Enables you to perform manual tuning. Configurable parameters are displayed on this screen to allow more detailed setting.

#### Installation Guide Screen



Entering conditions such as the data size, code type, and symbol size from this screen enables automatic calculation of the reading distance and field of view capabilities.

#### Image Capture Function

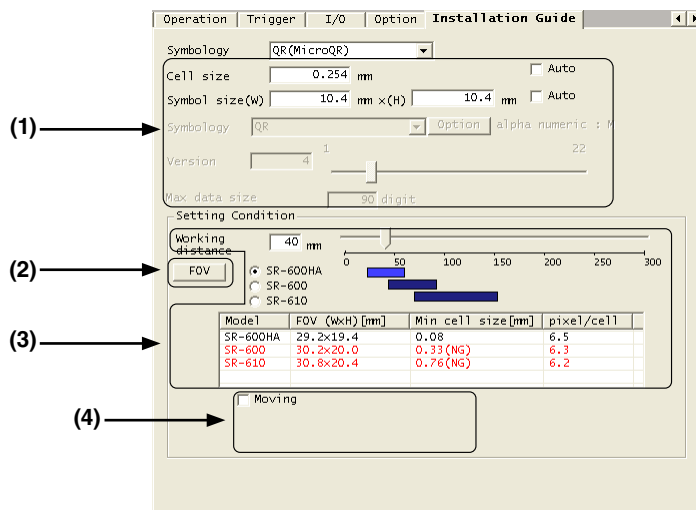
Enables you to save and review images that the SR-600 failed to successfully read.

#### Quick setup 2D Codes

Convert the contents set on your PC to Quick setup 2D codes and print them in advance. This enables you to change the settings by simply reading codes.

# Installation Guide

You can select the appropriate model based on the size of the code and the reading conditions.



## (1) Code specification

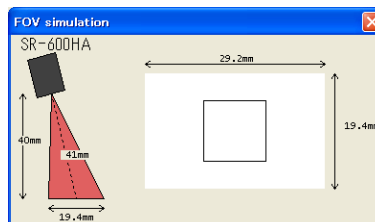
The specifications of the code can be entered here.

Fill in two of the three fields with Cell size, Symbol size, and Code size (No. of cells on one side).

The codes supported by the specification check are: QR, MicroQR, DataMatrix, CODE39, CODE128, GS1 Databar, composite.

## (2) Field of view display

The field of view obtained with the specified model and working distance is displayed, along with the size of the code in that field.



## (3) Model and mounting distance settings

Select the model to be used as well as the working distance.

The smallest readable cell size is automatically calculated from the code specifications and working distance.

The table shows the reading capabilities under the specified conditions with color-coding:

- Black: Reading possible
- Orange: Attention required (Reading is possible, but margin around code will be small.)
- Red: Reading not possible

## (4) Moving

The maximum exposure time is calculated for reading a code on a moving target.

When the tuning algorithm is set to [for Moving target], the tuning should be performed with the exposure time set to this calculated value or less.

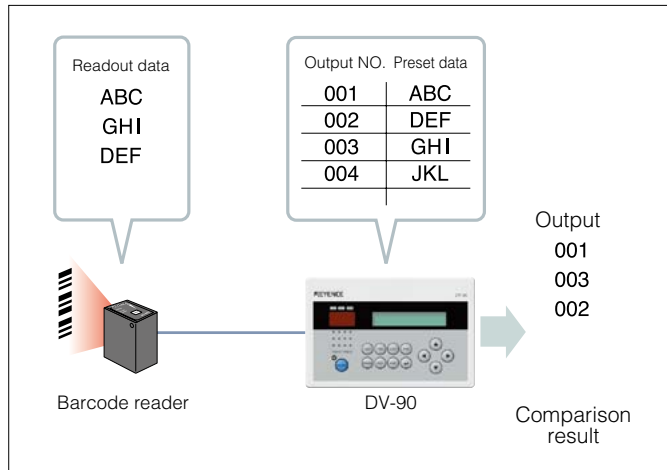


## Autoid Data Controller

### Immediate Verification/Evaluation of Code Data

The DV-90 compares the data read with a code reader to the data registered in advance (preset data) for verification. The evaluation result is output in parallel \*. Setting is easy without any need for difficult PLC programming.

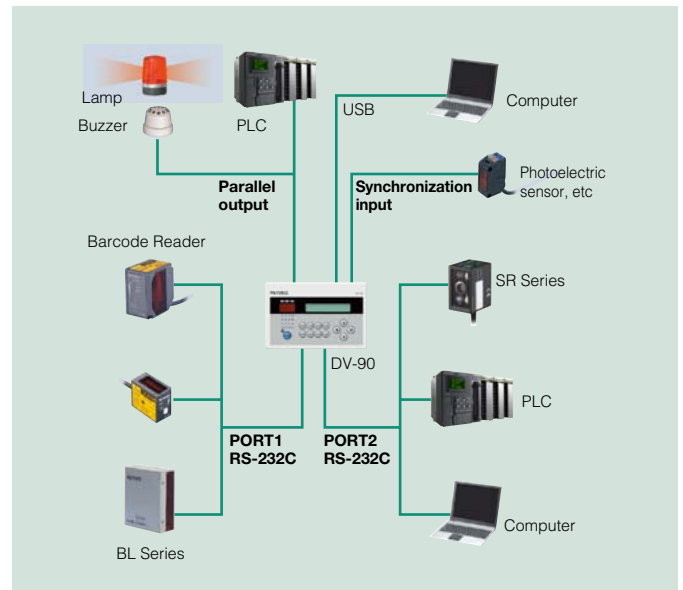
\*The output can be selected from bit, binary, and BCD. Up to 900 pieces of master data can be registered.



### NPN or PNP Discrete Outputs DV-90NE, DV-90PE

#### Configuration Software

DV-90 Set



### DV-90 Series Verification Functions

#### Normal Verification

Compares scanned data to all preset data and outputs the result with a corresponding output number.

#### Step Verification

Compares two consecutive data readings and outputs whether the two data strings match or do not match.

#### Active Verification

Compares scanned data to a specific preset data and outputs whether they match or do not match.

#### 3-Point A Verification

Compares the combinations of three pieces of data and outputs whether the combinations match or do not match.

#### 3-Point B Verification

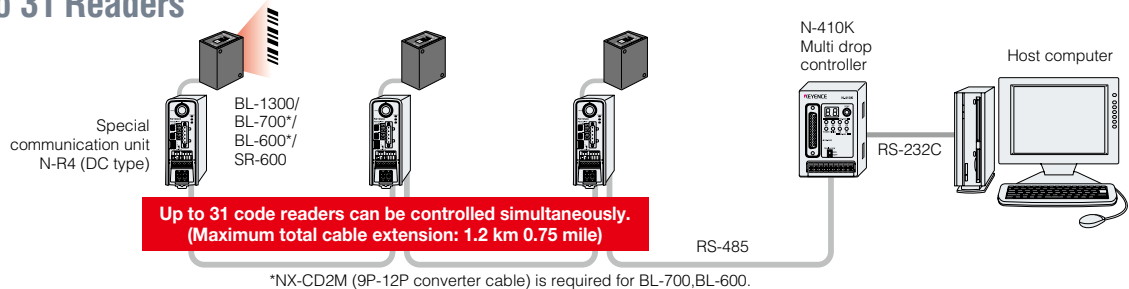
Compares three barcodes in turn and determines that they are picked in the correct order.



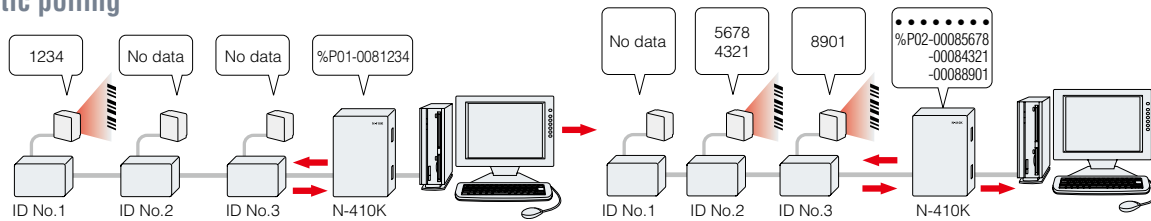


## Multi-Drop Controller

### Connect up to 31 Readers



### Automatic polling

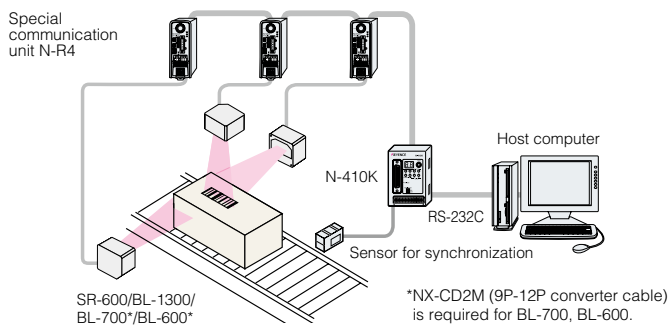


The N-410K constantly inquires for data (polling) to the connected code readers. The data is stored temporarily in the internal memory (sending buffer) of the N-410K.

The N-410K polls the connected code readers. The N-410K receives data and sends it to the host computer immediately.

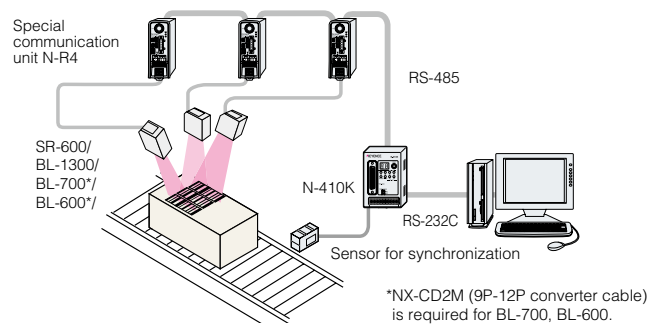
## Multi-Head Mode

The N-410K controls several code readers as if they were a single unit, without using a host computer. This mode is useful when the position of labels varies between work pieces.



## Mutual Interference Prevention Function

The N-410K controls several code readers so that they scan alternately, eliminating mutual interference. This function is useful when several code readers must be installed close to each other to read a label with multiple codes.



# N-R2/BL-U Series



## Communication Modules for Interfacing with various hosts.

N Series communication units have 2 discrete input which can be assigned for operations such as triggering, registering preset data, or enabling test modes.

RS-232C	RS-422A or 485	USB	TCP/IP
One-to-one connection between code reader and PC or PLC. Standard D-Sub 9-pin port for easy connection to serial devices.	One-to-one or multi-point (daisy chain) connections can be extended up to 1200 meters (3900 feet). RS-485 communication can be used with N-410K.	Direct connection between code reader and PC can easily established with standard USB protocol.	Connection between code readers and PCs or PLCs can be established via Ethernet over TCP/IP.

## Multi-I/O Function

Lets you assign various operation conditions to individual I/O terminals. Supports two inputs and four outputs, which can be freely configured to match application conditions.

### Example configuration when reading serial Nos.

- IN 1: Timing input
- IN 2: Test mode START
- OUT 1: OK (Read OK)
- OUT 2: ERROR (Read error output)
- OUT 3: POSITION (Read position is outside set area.)

### Example configuration when checking for presence of different products

- IN 1: Timing input
- IN 2: Preset registration
- OUT 1: OK (Read OK/comparison OK)
- OUT 2: FAIL (Comparison FAIL output: Mismatch with preset data)
- OUT 3: ERROR (Read error output: Barcode read failure)
- OUT 4: PRESET: Output when preset data registration has finished.

Compact, DIN-rail mount communication units provide 5 VDC power directly to the reader head. Bi-directional voltage inputs and photo MOS relay outputs can easily be wired to control devices, external trigger sensors, and various visual and audible indicators.

## Power Supply Units

BL-U1SO (7176)\*1



**RS-232C, 422A or 485**  
Serial communication is selectable to connect one-to-one or in multi-drop network. Power is supplied via 100 to 240 VAC.

N-42



**RS-422A**  
Extend serial output up to 1200 meters.

N-48



**RS-485**  
For use in multi-drop network.

BL-U2



**RS-232C**  
Connect directly to PC or PLC



# Options

Model	Type
OP-98769	25 to 25 Pin Straight Serial Cable (1.5 m 4.9')
OP-27937	9 to 9 Pin Cross Serial Cable (2 m 6.6')
OP-84114	Serial to USB Converter
NX-CD2M	9 to 12 Pin Conversion Cable
OP-26486	RJ-11 to 9 Pin Crossover Connector
OP-26485	RJ-11 to 25 Pin Crossover Connector
OP-29860	25 to 9 Pin Straight Serial Cable (1.5 m 4.9')
OP-29859	9 to 9 Pin Straight Serial Cable (2 m 6.6')

Model	Type
OP-25057	25 to 9 Pin Conversion Connector
OP-26487	RJ-11 to RJ-11 Serial Modular Cable (2.5 m 8.2')
OP-80616	12 to 9 pin Converter Cable
OP-87533	Null Modem Converter
OP-24045	RJ-11 to RJ-11 Serial Modular Cable (1 m 3.3')
OP-24025	RJ-11 to RJ-11 Serial Modular Cable (5 m 16.4')
OP-22149	25 to 25 Cross Serial Cable (1.5 m 4.9')



NX-CD2M



OP-26486

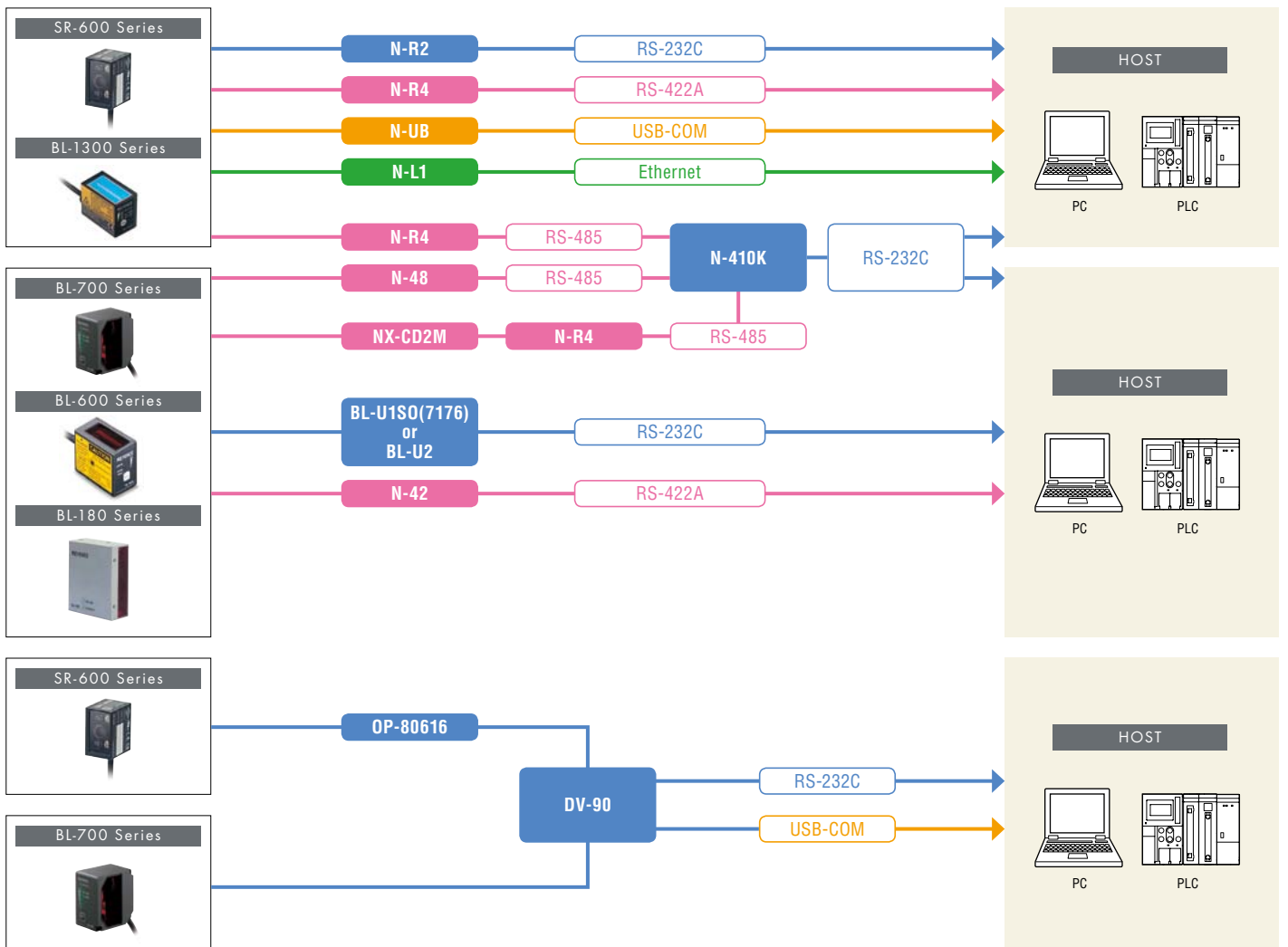


OP-26485



OP-26487

# Configuration



DV-90  
N-410K  
Power Supply/  
Communication



## Handheld 2D Code Reader Various features increase ease of use

### Drop impact resistance 1.8 m 5.91'

The HR-100 Series is built to withstand accidental drops. You can rely on its durability and use it without fear of damage.

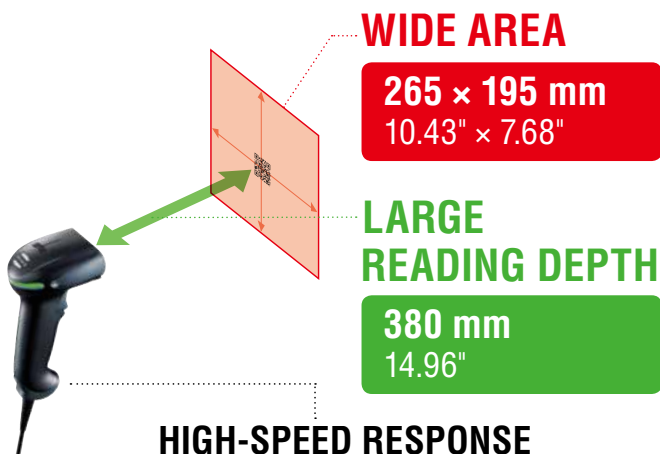


### Continuous reading in auto-scanning mode

When a label passes into the field of view, it is automatically detected and decoded. Using the dedicated stand, the HR-100 automatically switches into Auto Scanning, continuous emission.



Flexible arm stand **OP-87532**



Configuration Software  
**HR-H1WE**

### Model Lineup

**HR-100**  
Standard Model

**HR-101**  
High-Resolution Model

### Accessories

<b>HR-1C3UN</b>	3 Meter Straight USB Cable USB (Type A)	
<b>HR-1C3UC</b>	3 Meter Coiled USB Cable USB (Type A)	
<b>HR-1C5UC</b>	5 Meter Coiled USB Cable USB (Type A)	
<b>HR-1C3RC</b>	3 Meter Coiled RS-232C Cable D-sub 9-pin (female)	
<b>HR-1C3VC</b>	3 Meter Coiled PS/2 Cable Mini-DIN 6-pin	
<b>OP-87531</b>	HR Holder	
<b>OP-87532</b>	HR Flexible Arm Stand	
<b>OP-87530</b>	AC Adapter	
<b>OP-99022</b>	AC Cable for US	





## Handheld Laser 1D Barcode Scanner

Easy to use barcode reader, with little setup required. Plug-and-play for most applications. Various communication models are available to connect with different PC or PLC systems.

Easy setup codes can enable or disable different barcode types. Data output and communication settings can be changed to match existing systems.

### Model Lineup

#### BL-N70VE

PS/2 Keyboard Input Type

#### BL-N70UBE

USB Keyboard Interface Type

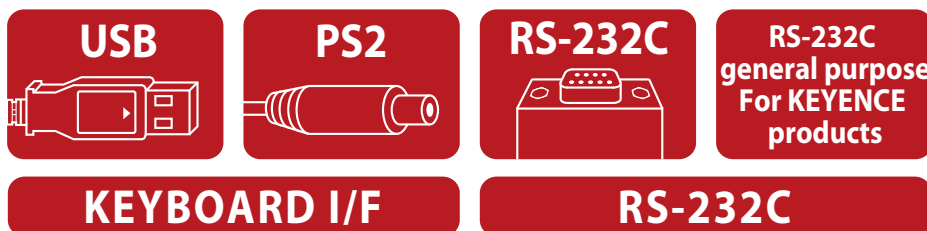
#### BL-N70RE

RS-232C Communication for connection to serial devices including PCs or PLCs

#### BL-N70RKE

RS-232C type for connection to other KEYENCE devices such as DV-90 or N-L1

**4** type connections according to applications  
 Transmitting bar code data is as easy as connecting the reader to a PC.  
 There is no need for special power supply or software



OP-77470	Table Top Stand
OP-77466	Replacement Cable for Keyboard Interface
OP-77467	Replacement Cable for USB
OP-77468	Replacement Cable for RS-232C
OP-77469	Replacement Cable for RS-232C to KEYENCE



# Specifications

## SR-750 Series

Model		SR-750HA	SR-750	SR-751	SR-752	SR-752 + SR-75L4	SR-752 + SR-75L6	
Type		High-resolution	Close-range	Middle-range	Long-range	With 400 mm 15.75" lens	With 600 mm 23.62" lens	
Receiver	Sensor	CMOS Image Sensor						
	Number of pixels	752 x 480 pixels						
Lighting	Light source	Red LED						
Laser pointer	Light source	Visible semiconductor laser, Wavelength 660 nm						
	Output	60 µW						
	Pulse duration	200 µs						
	Laser class	Class 1 Laser Product (IEC60825-1, FDA (CDRH) Part 1040.10**)						
Reading specifications	Supported symbol	2D	QR, MicroQR, DataMatrix (ECC200), GS1 DataMatrix, PDF417, MicroPDF, GS1 Composite(CC-A, CC-B, CC-C)					
		Barcode	*1	GS1 DataBar, CODE39, CODE39 FullASCII, ITF, NW-7 (Codabar), CODE128, GS1-128, JAN/EAN/UPC, CODE93, 2of5 (Industrial 2of5), COOP 2of5, Trioptic CODE39				
	Minimum resolution	2D	0.082 mm 0.003"	0.127 mm 0.005"	0.19 mm 0.007"	0.19 mm 0.007"	0.33 mm 0.013"	0.5 mm 0.02"
		Barcode	-	0.127 mm 0.005"	0.127 mm 0.005"	0.17 mm 0.007"	0.22 mm 0.009"	0.33 mm 0.013"
	Reading distance (typical examples)	DataMatrix QR	22 to 50 mm 0.87" to 1.97" (Cell size = 0.25 mm 0.01")	40 to 80 mm 1.58" to 3.15" (Cell size = 0.25 mm 0.01")	45 to 165 mm 1.77" to 6.50" (Cell size = 0.5 mm 0.02")	180 to 305 mm 7.09" to 12.01" (Cell size = 0.5 mm 0.02")	300 to 490 mm 11.81" to 19.29" (Cell size = 0.5 mm 0.02")	460 to 690 mm 18.11" to 27.17" (Cell size = 0.5 mm 0.02")
		Barcode	-	30 to 100 mm 1.18" to 3.94" (Narrow bar width = 0.33 mm 0.013")	45 to 195 mm 1.77" to 7.68" (Narrow bar width = 0.5 mm 0.02")	180 to 330 mm 7.09" to 12.99" (Narrow bar width = 0.5 mm 0.02")	250 to 540 mm 9.84" to 21.26" (Narrow bar width = 0.5 mm 0.02")	400 to 760 mm 15.75" to 29.92" (Narrow bar width = 0.5 mm 0.02")
	Focal distance		38 mm 1.50"	60 mm 2.36"	100 mm 3.94"	250 mm 9.84"	400 mm 15.75"	600 mm 23.62"
Field of view (at focal distance)		26 x 17 mm 1.02" x 0.67"	42 x 27 mm 1.65" x 1.06"	70 x 45 mm 2.76" x 1.77"	65 x 41 mm 2.56" x 1.61"	108 x 69 mm 4.25" x 2.72"	165 x 106 mm 6.50" x 4.17"	
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					
	Ethernet	Residual voltage when ON	1 V or less					
		Communication standard	10BASE-T/100BASE-TX					
		Supported protocol	TCP/IP, FTP, SNMP, BOOTP, EtherNet/IP, PROFINET, MC protocol, KV STUDIO					
Serial communication	Communication standard	RS-232C compliant						
	Transmission speed	9600, 19200, 38400, 57600, 115200 bps						
Environmental resistance	Supported protocol	Non-procedural, MC protocol, SYSWAY, KV STUDIO						
	Enclosure rating	IP65						
	Ambient temperature	0 to 45°C 32 to 113 °F						
	Ambient storage temperature	-10 to +50°C 14 to 122 °F						
	Relative humidity	35 to 95% RH (No condensation)						
	Storage ambient humidity	35 to 95% 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 1.5 mm 0.06"/55 to 500 Hz: Acceleration 5G, 3 hours each in X, Y and Z directions						
	Power voltage*3	Control port: 24 VDC±10% or Ethernet port: PoE TypeA/B 36 to 57 V (Cannot supply at the same time)						
Weight	Current consumption	Control port: 220 mA (When 24 VDC power supply is used) Ethernet port: PoE Power Class 2**						
		Approx. 160 g		Approx. 175 g		Approx. 185 g		

\*1 SR-750HA can read Barcodes which fit into the Field of View.

\*2 The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50.

\*3 To comply with CSA No.61010-1/UL61010-1/IEC61010-1, use a power supply meeting the following criteria:

- provides Class 2 output as defined in the CEC and NEC, or
- evaluated as a Limited Power Source as defined in CAN/CSA-C22.2 No.60950-1/UL60950-1/IEC60950-1.

\*4 Peak operating current for PoE Power Class 2: 210 mA maximum.

\* PROFINET is a trademark or registered trademark of PROFIBUS International.

\* EtherNet/IP is a trademark or registered trademark of ODVA.

## SR-D100 Series

Model		SR-D100HA	SR-D100H	SR-D100	SR-D110	NEW SR-D130
Type		Ultra high-resolution	High-resolution	Standard	Wide-field	Long-distance
Internal memory	RAM	Max. saved images: 80				
	ROM	Max. saved images: 1000				
Illumination	Light source	High-intensity red LED				
Reading	Supported codes	QR, MicroQR, DataMatrix (ECC200), GS1 DataMatrix				
	Focal distance	40 mm 1.57"	85 mm 3.35"	100 mm 3.94"	150 mm 5.91"	300 mm 11.81"
	Cell size (focal position)	0.025 mm 0.001"	0.063 mm 0.002"	0.15 mm 0.006"	0.22 mm 0.009"	0.22 mm 0.009"
	View range (focal position)	5.5 x 3.5 mm 0.22" x 0.14"	13.5 x 8.6 mm 0.53" x 0.34"	32 x 20 mm 1.26" x 0.79"	47 x 30 mm 1.85" x 1.18"	56 x 36 mm 2.20" x 1.42"
Serial communication	Communication standard	RS-232C compliant				
	Communication speed	9600, 19200, 38400, 57600, 115200 bps				
	Supported protocols	Procedureless, MC protocol, SYSWAY, KVSTUDIO				
Ethernet	Communication standard	Complies with IEEE802.3/100Base-TX				
	Protocol	TCP/IP, EtherNet/IP, PROFINET, MC protocol, KVSTUDIO, FTP, BooTP				
Input terminals	Number of terminals	2				
	Input format	Two-way voltage input				
	Max. rating	26.4 VDC				
	Min. on voltage	15 VDC				
	Max. off voltage	0.2 mA or less				
Output terminals	Number of terminals	3				
	Output format	PhotoMOS relay				
	Max. rating	30 VDC				
	Max. load current	1-output max.: 50 mA, 3-output total: 100 mA				
	OFF leak current	0.1 mA max.				
	ON residual voltage	1 V max.				
Environmental resistance	Enclosure rating	IP65				
	Ambient operating temperature	0 to +45°C 32 to 113°F				
	Ambient operating humidity	35 to 95% (no condensation)				
	Ambient operating illuminance	Sunlight: 10000 lux, Incandescent lamp: 6000 lux, Fluorescent lamp: 2000 lux				
	Operating atmosphere	No dust or corrosive gas present				
	Vibration resistance	10 to 57 Hz, 0.75 mm 0.03" double amplitude in X, Y, and Z directions, 3 hours respectively				
Rating	Power voltage	24 VDC ±10%				
	Current consumption	600 mA (SR-D100 Series standalone), 1100 mA (with SR-DR15 attached), 850 mA (with SR-DR10 attached), 800 mA (with SR-DS3 attached)				
Weight		Approx. 300 g (including diffuser plate)				

Model		SR-DR10	SR-DR15	SR-DS3
Type		ø100 ø3.94" light	ø150 ø5.91" light	Back light
Illumination	Light source	High-intensity red LED		
Rating	Power voltage	12 VDC		
	Current consumption	500 mA	1000 mA	400 mA
Environmental resistance	Enclosure rating	IP65		
	Ambient operating temperature	0 to +45°C 32 to 113°F		
	Ambient operating humidity	35 to 95% (no condensation)		
	Operating atmosphere	No dust or corrosive gas present		
	Vibration resistance	10 to 57 Hz, 0.75 mm 0.03" double amplitude in X, Y, and Z directions, 3 hours respectively		
Weight	Approx. 500 g (including cable)	Approx. 800 g (including cable)	Approx. 250 g (including cable)	

Model		SR-M80
Max. number of displays		4
Display panel		TFT color LCD (640 x 480 dots)
Ethernet connection	Transmission speed	10Base-T/100Base-TX
	Max. number of connected hubs	2
Environmental resistance	Enclosure rating	Construction with IP65f or equivalent dust and water drop protection only for the front operating part of the panel embedded type.
	Ambient operating temperature	0 to +50°C 32 to 122°F
	Ambient operating humidity	35 to 85% (no condensation)
	Operating atmosphere	No dust or corrosive gas present
Rating	Power voltage	24 VDC ±10%
	Current consumption	950 mA max.
Weight		Approx. 1500 g

# Specifications

## SR-600 Series

Model		SR-600	SR-610	SR-600HA	
Type		Close-range	Middle-range	High-resolution	
Laser pointer	Light source	Visible light semiconductor laser (wavelength: 660 nm)			
	Output	90 µW			
	Pulse duration	200 µs			
	Laser class	Class 1 Laser Product (IEC60825-1, FDA (CDRH) Part1040.10)*			
illumination	Light source High-intensity red LED				
Reading	Supported codes	Barcode	CODE39, ITF, Industrial 2-of-5, COOP 2-of-5, Codabar, CODE128, GS1-128 (EAN128), GS1 Databar (RSS), CODE93, EAN/UPC, Trioptic Code39		
		2D code	QR, MicroQR, DataMatrix, PDF417, MicroPDF, MaxiCode, GS1-Composite		
	Focal distance	60 mm 2.36"	100 mm 3.94"	38 mm 1.50"	
	Minimum resolution	Barcode	0.127 mm 0.005"	0.127 mm 0.005"	0.082 mm 0.003"
		2D code	0.127 mm 0.005"	0.25 mm 0.01"	
	Reading time (representative example)		21 ms (Focal distance, in QR CODE21 x 21)		
	Reading distance (representative example)	QR	31 mm 1.22" to 97 mm 3.82" (Cell size: 0.339 mm 0.01")	35 mm 1.38" to 188 mm 7.40" (Cell size: 0.508 mm 0.02")	17 mm 0.67" to 54 mm 2.13" (Cell size: 0.254 mm 0.01")
		DataMatrix	35 mm 1.38" to 95 mm 3.74" (Cell size: 0.339 mm 0.01")	40 mm 1.57" to 173 mm 6.81" (Cell size: 0.508 mm 0.02")	19 mm 0.75" to 51 mm 2.01" (Cell size: 0.254 mm 0.01")
Barcode		29 mm 1.14" to 106 mm 4.17" (Narrow bar width: 0.339 mm 0.01")	44 mm 1.73" to 205 mm 8.07" (Narrow bar width: 0.508 mm 0.02")		
Reading view range (focal distance)		42.5 mm 1.67" x 27.1 mm 1.07"	70.6 mm 2.78" x 45.0 mm 1.77"	26.6 mm 1.05" x 17.0 mm 0.67"	
I/O	Input terminal	2 inputs (IN1, IN2), non-voltage input (relay contact, solid state)			
	Control output	NPN open-collector output: 4 outputs (OUT1 to OUT4) 30 mA max. (24 V max.) Residual voltage 0.8 V max., leakage current 0.1 mA max.			
	RS-232C	Communication method	Conforms to RS-232C		
		Communication speed	9600/19200/38400/57600/115200 bps		
		Synchronous method	Start-stop synchronization		
		Data length	7/8 bits		
		Stop bit length	1/2 bits		
Parity check	None/Even/Odd				
USB	Conforms to USB 2.0 Full Speed				
Environmental resistance	Enclosure rating	IP65			
	Operating ambient temperature	0 to 45 °C 32 to 113 °F			
	Storage ambient temperature	-10 to +50 °C 14 to 122 °F, No condensation			
	Operating ambient humidity	35 to 95% RH, No condensation			
	Ambient operating illuminance	Sunlight: 10000 lux, Incandescent lamp: 6000 lux, Fluorescent lamp: 2000 lux			
	Operating atmosphere	No dust or corrosive gas present			
	Vibration resistance	10 to 55 Hz, 1.5 mm 0.06" double amplitude in X, Y, and Z directions, 3 hours respectively			
Rating	Power voltage	5 VDC +5%, -10%			
	Consumption current	630 mA max.			
Weight	Approx. 160 g (including the cable)/Weight without cable: Approx. 27 g				

\* The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50.

\* Use the Limited Power Source defined in UL/IEC60950-1 to comply with UL/IEC60950-1.

## BL-1300 Series

Model		BL-1300	BL-1301	BL-1300HA	BL-1301HA
Type		Standard		High-resolution	
Read direction		Standard		Front	
Light source		Visible-light semiconductor laser (660 nm wavelength)			
Output	Output	85 µW			
	Pulse duration	112 µs			
	Laser class	Class 2 Laser Product (IEC60825-1, FDA (CDRH) Part1040.10) <sup>1)</sup>			
Scanning method		Single	Raster	Single	Raster
Focal distance		120 mm 4.72"		90 mm 3.54"	
Reading distance		65 to 500 mm 2.56" to 19.69" <sup>2)</sup> (1.0 mm 0.04" narrow bar width)		45 to 270 mm 1.77" to 10.63" <sup>2)</sup> (0.5 mm 0.02" narrow bar width)	
Readable bar width		0.125 mm 0.005"		0.08 mm 0.003"	
Largest readable label width		339 mm 13.35" <sup>2)</sup> (350 mm 13.78" distance, 1.0 mm 0.04" narrow bar width)		189 mm 7.44" <sup>2)</sup> (189 mm 7.44" distance, 0.5 mm 0.02" narrow bar width)	
PCS		0.4 or more			
Scanning rate		500 to 1300 scans/second			
Supported barcodes		CODE39, ITF, Industrial 2-of-5, Standard 2-of-5, COOP 2-of-5, Codabar, CODE128, GS1-128 (EAN-128), CODE93, UPC/EAN, GS1 DataBar (RSS)			
Number of readable digits		74 digits (148 digits with CODE128 start character C)			
Environmental resistance	Enclosure rating	IP65			
	Operating ambient illumination	Sunlight: 10000 lux, Incandescent lamp: 6000 lux			
	Operating ambient temperature	0 to 45°C 32 to 113 °F			
	Storage ambient temperature	-20 to +60°C -4 to +140 °F			
	Operating ambient humidity	35 to 85% RH, No condensation			
	Operating environment	No dust or corrosive gas			
Rated values	Vibration resistance	10 to 55 Hz, 1.5 mm 0.06" double amplitude in X, Y, and Z directions, 2 hours respectively			
	Power supply	5 VDC ±5%			
Current consumption		400 mA max.			
Weight	Approx. 115 g				



Model	BL-1350HA	BL-1351HA	BL-1370	BL-1371
Type	High-resolution side		Long-distance	
Read direction	Side		Front	
Light source	Visible-light semiconductor laser (660 nm wavelength)			
	Output	85 µW		
	Pulse duration	112 µs		
	Laser class	Class 2 Laser Product (IEC60825-1, FDA (CDRH) Part1040.10) <sup>1</sup>		
Scanning method	Single	Raster	Single	Raster
Focal distance	65 mm 2.56"		230 mm 9.06"	
Reading distance	40 to 250 mm 1.57" to 9.84" <sup>*2</sup> (0.5 mm 0.02" narrow bar width)		160 to 600 mm 6.30" to 23.62" <sup>*2</sup> (1.0 mm 0.04" narrow bar width)	
Readable bar width	From 0.08 mm 0.003"		From 0.15 mm 0.006"	
Largest readable label width	201 mm 7.91" <sup>*2</sup> (175 mm 6.89" distance, 0.5 mm 0.02" narrow bar width)		404 mm 15.91" <sup>*2</sup> (420 mm 16.54" distance, 1.0 mm 0.04" narrow bar width)	
PCS	0.4 or more			
Scanning rate	500 to 1300 scans/second			
Supported barcodes	CODE39, ITF, Industrial 2-of-5, Standard 2-of-5, COOP 2-of-5, Codabar, CODE128, GS1-128 (EAN-128), CODE93, UPC/EAN, GS1 DataBar (RSS)			
Number of readable digits	74 digits (148 digits with CODE128 start character C)			
Environmental resistance	Enclosure rating	IP65		
	Operating ambient illumination	Sunlight: 10000 lux, Incandescent lamp: 6000 lux		
	Operating ambient temperature	0 to 45°C 32 to 113 °F		
	Storage ambient temperature	-20 to +60°C -4 to +140 °F		
	Operating ambient humidity	35 to 85% RH, No condensation		
	Operating environment	No dust or corrosive gas		
Rated values	Vibration resistance	10 to 55 Hz, 1.5 mm 0.06" double amplitude in X, Y, and Z directions, 2 hours respectively		
	Power supply	5 VDC ±5%		
	Current consumption	400 mA max.		
Weight	Approx. 130 g		Approx. 115 g	

\*1 The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50.

\*2 Specifications for 500-scan/second operation

- Use the Limited Power Source defined in UL/IEC60950-1 to comply with UL/IEC60950-1.
- Internal body settings are written in the internal memory area (can be rewritten 100,000 times).

## ■ BL-700 Series

Model	BL-700	BL-701	BL-740	BL-741	BL-780	BL-781
Type	High-resolution		Middle-range		Long-range	
Scanning method <sup>*1</sup>	Single	Raster	Single	Raster	Single	Raster
Light source	Visible semiconductor laser (Wavelength: 655 nm)					
	Output	100 µW				
	Pulse duration	50 µs (FDA (CDRH) Part1040.10), 99.5 µs (IEC60825-1)				
	Laser class	Class II Laser Product (FDA (CDRH) Part1040.10), Class 2 Laser Product (IEC60825-1)				
Reading distance	160 to 370 mm 6.30" to 14.57" (When narrow bar width is 0.5 mm 0.02")		150 to 750 mm 5.91" to 29.53" (When narrow bar width is 1.0 mm 0.04")		200 to 1200 mm 7.87" to 47.24" (When narrow bar width is 2.0 mm 0.08")	
Reading bar width <sup>*2</sup>	0.15 to 1.0 mm 0.006" to 0.04"		0.25 to 2.0 mm 0.01" to 0.08"		0.32 to 2.0 mm 0.01" to 0.08"	
Largest readable label width <sup>*3</sup>	310 mm 12.20" (When reading distance is 335 mm 13.19")		600 mm 23.62" (When reading distance is 680 mm 26.77")		1010 mm 39.76" (When reading distance is 1080 mm 42.52")	
PCS	0.6 or more (Reflectance of white part: 75% or more)					
Scanning rate	700 scans/sec					
Target code	CODE39, ITF, Industrial 2-of-5, COOP 2-of-5, Codabar, CODE128, CODE93, EAN/UPC (A-E)					
Number of readable digits	32 digits max. <sup>*4</sup>					
Trigger input	Non-voltage input (contact, solid-state), TTL input is also possible.					
Serial interface	Applied standard	RS-232C				
	Synchronization	Start-stop				
	Transmission code	ASCII				
	Baud rate	600/1200/2400/4800/9600/19200/31250/38400 bps				
	Data length	7/8 bits				
	Parity check	None/Even/Odd				
OK/NG output	Stop bit length	1 bit/2 bits				
	Output form	NPN				
	Rated load	24 VDC, 30 mA				
	Leakage current (at OFF)	0.1 mA max.				
Environmental resistance	Residual voltage (at ON)	0.5 V max.				
	Enclosure rating	IP65				
	Ambient light	Sunlight: 10000 lux, Incandescent lamp: 6000 lux		Sunlight: 10000 lux, Incandescent lamp: 4000 lux		Sunlight: 8000 lux, Incandescent lamp: 3000 lux
	Ambient temperature	0 to 40°C 32 to 104°F, No condensation				
	Relative humidity	35 to 85%, No condensation				
	Operating atmosphere	No dust or corrosive gas present				
Power rating	Vibration	10 to 55 Hz, 1.5 mm 0.06" double amplitude in X, Y, and Z directions, 2 hours respectively				
	Power supply voltage	5 VDC ±5%				
	Current consumption	510 mA max.				
Weight	Approx. 300 g (including cable)					

\*1 BL-701 raster width: 10 ±1 mm 0.39" ±0.04" (reading distance: 200 mm 7.87") BL-741 raster width: 20 ±2 mm 0.79" ±0.08" (reading distance: 300 mm 11.81")

BL-781 raster width: 30 ±3 mm 1.18" ±0.12" (reading distance: 450 mm 17.72")

\*2 When the barcode type is CODE39.

\*3 Largest reading label width includes the barcode margin (quiet zone).

\*4 When start/stop character of CODE128 is CODE-C, up to 64 digits are allowed.

Note: The internal BL settings are written to the built-in EEPROM (erasable up to 100,000 times).

# Specifications

## ■ BL-600 Series

Model	BL-600	BL-601	BL-600HA	BL-601HA	BL-650HA	BL-651HA
Type	Standard		High-resolution		High resolution, side	
Reading direction	Front		Front		Side	
Scanning method <sup>*1</sup>	Single	Raster	Single	Raster	Single	Raster
Light source	Visible semiconductor laser (Wavelength: 650 nm)					
Output	1.5 mW (FDA (CDRH) Part1040.10), 85 μW (IEC60825-1)					
Pulse duration	56 μs (FDA (CDRH) Part1040.10), 112 μs (IEC60825-1)					
Laser class	Class II Laser Product (FDA (CDRH) Part1040.10), Class 2 Laser Product (IEC60825-1)					
Reading distance	75 to 330 mm <b>2.95" to 12.99"</b> (When narrow bar width is 1.0 mm <b>0.04"</b> )		55 to 190 mm <b>2.17" to 7.48"</b> (When narrow bar width is 0.5 mm <b>0.02"</b> )		45 to 175 mm <b>1.77" to 6.89"</b> (When narrow bar width is 0.5 mm <b>0.02"</b> )	
Readable bar width <sup>*2</sup>	0.19 to 1.0 mm <b>0.008" to 0.04"</b> (0.25 to 1.0 mm <b>0.01" to 0.04"</b> for CODE 93 and CODE 128)		0.125 to 1.0 mm <b>0.005" to 0.04"</b> (0.15 to 1.0 mm <b>0.006" to 0.04"</b> for CODE 93 and CODE 128)			
Largest readable label width <sup>*3</sup>	250 mm <b>9.84"</b> (When reading distance is 280 mm <b>11.02"</b> )		156 mm <b>6.14"</b> (When reading distance is 174 mm <b>6.85"</b> )		170 mm <b>6.69"</b> (When reading distance is 155 mm <b>6.10"</b> )	
PCS	0.6 or more (Reflectance of white part: 75% or more)					
Scanning rate	500 scans/sec					
Target code	CODE39, ITF, Industrial 2-of-5, COOP 2-of-5, Codabar, CODE128, GS1-128(EAN-128), CODE93, EAN/UPC (A-E)					
Number of readable digits	32 digits max. <sup>*4</sup>					
Trigger input	Non-voltage input (contact, solid-state), TTL input is also possible.					
Serial interface	RS-232C (Refer to the data of BL-700 Serial Interface in page 19 for details.)					
OK/NG output	Output form	NPN				
	Rated load	24 VDC, 30 mA				
	Leakage current (at OFF)	0.1 mA max.				
	Residual voltage (at ON)	0.5 V max.				
Environmental resistance	Enclosure rating	IP65				
	Ambient light	Sunlight: 10000 lux, Incandescent lamp: 6000 lux				
	Ambient temperature	0 to 45°C <b>32 to 113°F</b> , No condensation				
	Relative humidity	35 to 85%, No condensation				
	Operating atmosphere	No dust or corrosive gas present				
Power rating	Vibration	10 to 55 Hz, 1.5 mm <b>0.06"</b> double amplitude in X, Y, and Z directions, 2 hours respectively				
	Power supply voltage	5 VDC ±5%				
	Power consumption	330 mA max.				
Weight	Approx. 115 g				Approx. 130 g	

\*1 Raster width: BL-601: 7.1 ±1.8 mm **0.28" ±0.07"** (When reading distance is 120 mm **4.72"**), BL-601HA: 5.5 ±1.4 mm **0.22" ±0.06"** (When reading distance is 90 mm **3.54"**), BL-651HA: 5.5 ±1.4 mm **0.22" ±0.06"** (When reading distance is 65 mm **2.56"**)

\*2 Reading bar width indicates the range of readable narrow bar width when the barcode type is CODE39. \*3 Maximum reading label width includes the barcode margin (quiet zone).

\*4 When start/stop character of CODE128 is CODE-C, up to 64 digits are allowed. Note: The internal BL settings are written to the built-in EEPROM (erasable up to 100,000 times).

## ■ BL-180 Series

Model	BL-180	BL-185
Model (with connector)	BL-180SO (7030)	BL-185SO (7031)
Reading direction	Front	Side
Light source/Light receiving element	LED/CCD image sensor	
Scanning distance	33 ±10 mm <b>1.30" ±0.39"</b> <sup>*1</sup> (Using narrow bars of at least 0.19 mm <b>0.008"</b> in width)	
Readable bar width <sup>*2</sup>	0.125 to 1.0 mm <b>0.005" to 0.04"</b>	
Largest readable label width	80 mm <b>3.15"</b> <sup>*3</sup> (Using narrow bars of at least 0.19 mm <b>0.008"</b> in width)	
PCS	0.45 or more (Reflectance of white part: 75% or more)	
Scanning rate	500 scans/sec	
Target code	CODE39, ITF, Industrial 2-of-5, COOP 2-of-5, Codabar, CODE128, EAN/UPC (A-E)	
Number of readable digits	32 digits	
Trigger input	Non-voltage input (contact or solid-state), TTL input is also possible.	
Serial interface	Applied standard	RS-232C
	Synchronization	Start-stop
	Transmission code	ASCII
	Baud rate	600/1200/2400/4800/9600/19200/31250/38400 bps
	Data length	7/8 bits
	Parity check	None/Even/Odd
	Stop bit length	1 bit/2 bits
OK/NG output	Output form	NPN
	Rated load	24 VDC, 100 mA
	Leakage current (at OFF)	0.1 mA max.
	Residual voltage (at ON)	0.5 V max.
Environmental resistance	Ambient light	Sunlight, Incandescent lamp: 10000 lux, Fluorescent lamp: 3000 lux.
	Ambient temperature	0 to 40°C <b>32 to 104°F</b> , No condensation
	Relative humidity	35 to 85%, No condensation
	Operating atmosphere	No dust or corrosive gas present
	Vibration	10 to 55 Hz, 1.5 mm <b>0.06"</b> double amplitude in X, Y, and Z directions, 2 hours respectively
Power rating	Power supply voltage	5 VDC ±5% <sup>*4</sup>
	Current consumption	300 mA max.
Weight	Approx. 165 g	Approx. 180 g

\*1 33 ±5 mm **1.30" ±0.20"** when the narrowest bar is less than 0.19 mm **0.008"**.

\*2 Readable bar width indicates the range of the narrowest readable bar.

\*3 60 mm **2.36"** when the narrowest bar is less than 0.19 mm **0.008"**.

\*4 Use a stable power supply of 5 VDC ±5%. The BL-U2 special power unit is available as an option.

Note: The internal BL settings are written to the built-in EEPROM (erasable up to 100,000 times).

## ■ DV90 Series

Model		DV-90NE (NPN output), DV-90PE (PNP output)	
Applicable barcode reader		SR Series, BL-1300/700/600/180/N70RKE, HR-100	
Registered preset data number		900 max.	
Memory backup		Flash ROM (Rewritable: 100,000 times)	
I/O terminal	Input (4 points) • Trigger input (2 points) • Unlock input • Remote input	Rated input voltage	10 to 26 VDC, 10 mA, Class 2
		Maximum OFF current	1.0 mA
	Output (16 points) • Out 1 through 12 • OK output • NG output • Read error output • Quality error output	Output form	DV-90NE: NPN Open-collector DV-90PE: PNP Open-collector
		Rated load	30 VDC, 100 mA
		Leakage current at OFF	0.1 mA max.
		Residual voltage at ON	Less than 1 V
		Applied standards	RS-232C
Serial interface	PORT1 (For connecting code reader)	Synchronization	Asynchronous
		Baud rate	600/1200/2400/4800/9600/19200/31250/38400/57600/115200 bps
	PORT2 (For connecting PC, PLC, or code reader)	Data length	7/8 bits
		Parity check	None/Even/Odd
	USB (Special for connecting PC)	Stop bit length	1 bit/2 bits
		USB (Special for connecting PC)	USB 2.0 (B type) (Communication speed fixed to 115200 bps)
Power output	Power for barcode reader	5 VDC $\pm$ 5%, 1100 mA max. (at the ambient temperature of 0 to 40°C <b>32 to 104°F</b> ) 850 mA max. (at the ambient temperature of 40 to 50°C <b>104 to 122°F</b> )	
	Power for sensor	24 VDC $\pm$ 10%, 250 mA max.	
Environmental resistance	Enclosure rating	IP65 (only the front panel when panel-mounted)	
	Ambient temperature	0 to 50°C <b>32 to 122°F</b> , No condensation	
	Relative humidity	35 to 85%, No condensation	
	Operating atmosphere	No dust or no corrosive gas present	
Power rating	Power supply voltage	24 VDC $\pm$ 10%, Class 2	
	Current consumption	850 mA max.	
Weight		Approx. 360 g	

## ■ N410 Series

Model		N-410K	
Connectable code reader		SR-600, BL-1300/700/600/180 Series	
Trigger input	Rated input	15 to 26.4 VDC, 10 mA max.	
	Max. OFF current	1.0 mA	
RS-232C	Applied standards	RS-232C	
	Synchronization	Start-stop (Full-duplex)	
	Transmission code	ASCII	
	Baud rate	9600/19200/38400/57600/115200 bps	
	Data length	7/8 bits	
	Parity check	Even/Odd/None	
	Stop bit length	1 bit/2 bits	
RS-485	Applied standards	RS-485	
	Synchronization	Start-stop (Full-duplex)	
	Transmission code	ASCII	
	Baud rate	600 to 115200 bps	
	Data length	7/8 bits	
	Parity check	Even/Odd/None	
	Stop bit length	1 bit/2 bits	
Environmental resistance	Max. number of connectable units	31	
	Max. total extension distance	1.2 km <b>0.75 mile</b>	
Power rating	Ambient temperature	0 to 55°C <b>32 to 131°F</b> , No condensation	
	Relative humidity	35 to 85%, No condensation	
Weight	Power supply voltage	24 VDC (+10%, -20%)	
	Current consumption	80 mA max.	
Weight		Approx. 180 g	

# Specifications

## ■ N-R2 Series

Model		N-R2	N-R4	N-UB	N-L1
Power supply for the code reader		5 VDC ± 5% (650 mA)			
Environment resistance	Operating surrounding air temperature	0 to 50°C <b>32 to 122°F</b>			
	Storage ambient temperature	-20 to +60°C <b>-4 to +140°F</b>			
	Operating ambient humidity	35 to 85% RH, No condensation			
	Operating atmosphere	No dust or corrosive gases present			
Vibration resistance		10 to 55 Hz, complex amplitude 1.5 mm <b>0.06"</b> , 2 hours in each of X, Y, and Z directions			
Rating	Power voltage	24 VDC (+10%, -20%)			
	Consumption current	380 mA or less			
Mass		Approx. 135 g	Approx. 135 g (excluding the connector)	Approx. 155 g	
Terminal block	Input	Number of pins		2 (IN1 and IN2)	
		Input format		Bidirectional voltage input	
		Input maximum rating		26.4 VDC	
		Minimum ON voltage		15 VDC	
		Maximum OFF current		1 mA	
	Output	Number of pins		4 (OUT1 to 4)	
		Output format		Photo MOS relay output	
		Output rating load		30 VDC, 100 mA	
		OFF time leak current		0.1 mA or less	
		ON time residual voltage		1 V or less	
Host interface		15 m <b>49.21'</b> or less (including the head cable)	1.2 km <b>0.75 mile</b> or less	5 m <b>16.40'</b> or less	100 m <b>328.08'</b> or less

Model		N-42	N-48
Conversion interface		RS-232C RS-422A (Level conversion)	RS-232C RS-485 (Level conversion)
Connectable barcode reader		BL-700/600/180 Series	
Power supply for barcode reader		5 VDC ±5% (630 mA)	
Trigger input	Input rating	15 to 26 VDC, 10 mA max.	
	Max. OFF current	1.0 mA	
Interface		RS-422A (Max. total extension distance: 1.2 km <b>0.75 mile</b> )	RS-485 (Max. number of connectable units: 31) (Max. total extension distance: 1.2 km <b>0.75 mile</b> )
Power rating	Power supply voltage	24 VDC, +10%, -20%	
	Current consumption	260 mA max.	
Weight		Approx. 100 g	

## ■ BL-U Series

Model		BL-U1SO (7176) <sup>1</sup>	BL-U2
Connectable barcode reader		BL-700/600/180 Series	
Power supply for barcode reader		5 VDC ±5% (1.5 A)	5 VDC ±5% (630 mA)
Power supply for sensor		12 V ±10% (300 mA)	
Trigger input	Input rating	8.5 to 30 VDC, 10 mA max.	8.5 to 26 VDC, 10 mA max.
	Max. OFF current	0.5 mA	1.0 mA
Interface		RS-232C, RS-422A, RS-485 multi-drop (Max. number of connectable units: 31) (Max. total extension distance: 1.2 km <b>0.75 mile</b> )	Conforms to RS-232C approved by EIA
Power rating	Power supply voltage	100 to 240 VAC (50/60 Hz)	24 VDC (+10%, -20%)
	Power consumption	40 VA (100 VAC), 50 VA (240 VAC)	
	Current consumption		250 mA max.
Weight		Approx. 615 g (including cable)	Approx. 80 g



## ■ HR-100 Series

### Reader

Model		HR-100		HR-101	
Type		Standard		High resolution	
Light source		Red LED			
Reading specifications	Supported symbol	2D	QR, Micro QR, DataMatrix (ECC200), PDF417, MicroPDF, MaxiCode, Aztec Code, GS1 Composite (CC-A, CC-B, CC-C)		
		Barcode	GS1 Databar, CODE39, ITF, 2of5, CODE128, NW-7 (Codabar), JAN/EAN/UPC, GS1-128, CODE11, CODE93, MSI, Postal		
	Minimum resolution	2D	0.169 mm <b>0.007*</b>		0.127 mm <b>0.005*</b>
		Barcode	0.127 mm <b>0.005*</b>		0.076 mm <b>0.003*</b>
Reading distance	2D	15 to 180 mm <b>0.59* to 7.09*</b> (Cell size = 0.254 mm <b>0.01*</b> )		0 to 114 mm <b>4.49*</b> (Cell size = 0.254 mm <b>0.01*</b> )	
	Barcode	25 to 115 mm <b>0.98* to 4.53*</b> (Narrow bar width = 0.127 mm <b>0.005*</b> )		0 to 96 mm <b>3.78*</b> (Narrow bar width = 0.127 mm <b>0.005*</b> )	
Communication specifications	Interface	Serial, Keyboard			
Environmental resistance	Ambient temperature	0 to 50°C <b>32 to 122°F</b>			
	Relative humidity	5 to 95% RH (no condensation)			
	Ambient light	Sunlight: 10000 lux, Fluorescent lamp: 2000 lux			
	Drop impact resistance	1.8 m <b>5.91'</b> 50 times on concrete			
Rating	Power voltage	4.0 to 5.5 VDC			
	Current consumption	Reading: 450 mA, Standby: 90 mA			
Dimensions		161 mm × 86 mm (head) × 71 mm (head) <b>6.34" × 3.39" × 2.80"</b>			
Weight		Approx. 147 g			

### Communication cable

Model	HR-1C3UN	HR-1C3UC	HR-1C5UC	HR-1C3RC	HR-1C3VC
Cable type	Straight		Curled		
Cable length	Approx. 3 m <b>9.84'</b>		Approx. 5 m <b>16.4'</b>	Approx. 3 m <b>9.84'</b>	
Interface	USB Ver.1.1 (USB-HID, USB-COM)			RS-232C	PS/2 keyboard
Connector	USB (type A)			D-sub 9-pin (female)	Mini-DIN 6-pin

## ■ BL-N70 Series

Model		BL-N70VE	BL-N70UBE	BL-N70RE <sup>*1</sup>	BL-N70RKE
Interface		PS2	USB	RS-232C <sup>*3</sup>	RS-232C *For KEYENCE products
	Connector type	Mini-DIN 6-pin	USB (Type A)	D-sub 9-pin (female)	
Light source	Visible red semiconductor laser (Wavelength 650 nm)				
	Output	40 μW			
	Pulse duration	1.5 ms			
	Laser class	Class 1 Laser Product (IEC 60825-1, FDA (CDRH) Part1040.10) <sup>*2</sup>			
Reading distance	0 to 177 mm <b>0* to 6.97*</b> (When the narrow bar width is 0.66 mm <b>0.03*</b> )				
Resolution	0.125 mm <b>0.005*</b> min.				
PCS	0.35 min.				
Scanning rate	72 scans per second				
Target codes	EAN/UPC(A-E), CODE39, CODE128/GS1-128 (EAN128), Codabar, CODE93, ITF, 2-of-5, GS1 Data bar (RSS)				
Readable bar width	Maximum 3 to 40 digits (80 digits with CODE128 CODE-C)				
Environmental resistance	Ambient light	4800 lux			
	Ambient temperature	0 to 40°C <b>32 to 104°F</b>			
	Relative humidity	35 to 85% RH, No condensation			
	Operating atmosphere	No dust or corrosive gas			
Ratings	Power supply	5 VDC ±5%			
	Current consumption	200 mA max.			
EMI	EN 55022, Class B				
Weight	Approx. 100 g				

\*1 Available in U.S. only.

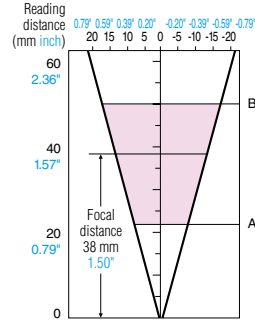
\*2 The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50.

\*3 AC adapter is included with BL-N70RE. AC adapter power voltage is 125 VAC ±10% (6 VA). BL-N70RE does not comply with the requirements on CE Marking.

# Reading Distances

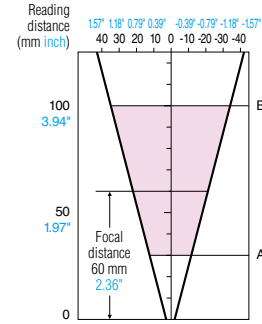
## SR-750HA

Code type	Cell size*	A	B
DataMatrix QR	0.08 0.003"	31 1.22"	39 1.54"
	0.127 0.005"	27 1.06"	42 1.66"
	0.25 0.01"	22 0.87"	50 1.97"



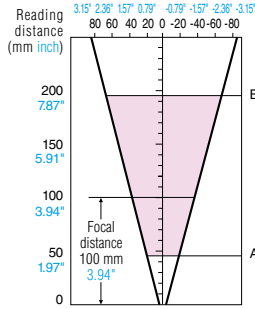
## SR-750

Code type	Cell size*	A	B
DataMatrix QR	0.127 0.005"	50 1.97"	70 2.76"
Code39	0.127 0.005"	46 1.81"	74 2.91"
Code128	0.25 0.01"	34 1.34"	90 3.54"



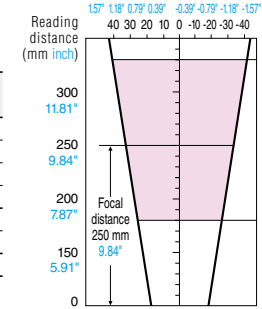
## SR-751

Code type	Cell size*	A	B
DataMatrix QR	0.25 0.01"	65 2.56"	130 5.12"
Code39	0.127 0.005"	75 2.95"	110 4.33"
Code128	0.25 0.01"	50 1.97"	150 5.91"



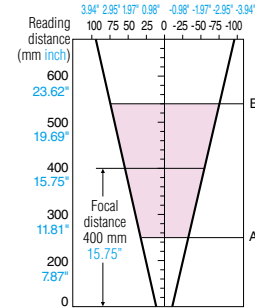
## SR-752

Code type	Cell size*	A	B
DataMatrix QR	0.19 0.007"	220 8.66"	260 10.24"
Code39	0.17 0.007"	220 8.66"	260 10.24"
Code128	0.25 0.01"	195 7.68"	275 10.83"



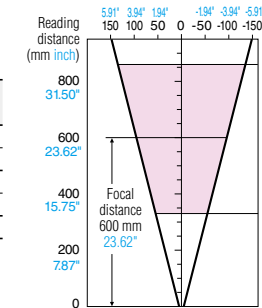
## SR-752 + SR-75L4

Code type	Cell size*	A	B
DataMatrix QR	0.33 0.01"	350 13.78"	450 17.72"
Code39	0.22 0.01"	370 14.57"	440 17.32"
Code128	0.25 0.01"	350 13.78"	450 17.72"



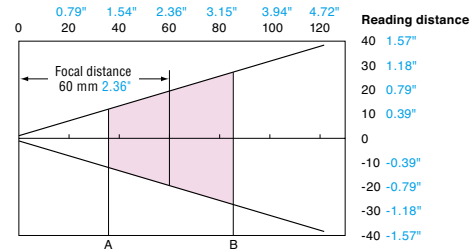
## SR-752 + SR-75L6

Code type	Cell size*	A	B
DataMatrix QR	0.5 0.02"	460 18.11"	690 27.17"
Code39	0.33 0.01"	500 19.69"	690 27.17"
Code128	0.33 0.01"	500 19.69"	690 27.17"



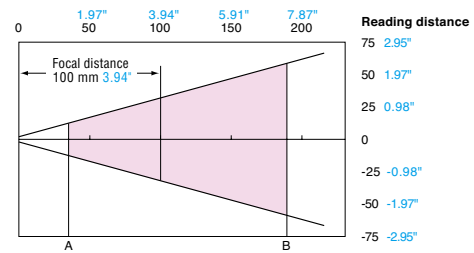
## SR-600

Code type	Cell size*	A	B
2D code	QR	0.127 0.01"	48 1.89"
	QR	0.25 0.01"	36 1.42"
	DataMatrix	0.127 0.01"	48 1.89"
	DataMatrix	0.25 0.01"	38 1.50"
GS1 Composite	CC-A	0.25 0.01"	31 1.22"
Barcode	CODE39	0.127 0.01"	42 1.65"
	CODE39	0.25 0.01"	30 1.18"
	CODE128	0.25 0.01"	27 1.06"
	GS1 DataBar	0.25 0.01"	37 1.46"



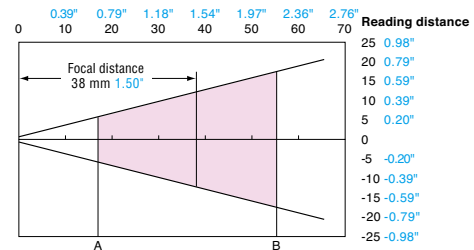
## SR-610

Code type	Cell size*	A	B
2D code	QR	0.25 0.01"	58 2.28"
	QR	0.5 0.02"	35 1.38"
	DataMatrix	0.25 0.01"	62 2.44"
	DataMatrix	0.5 0.02"	40 1.57"
GS1 Composite	CC-A	0.25 0.01"	51 2.01"
Barcode	CODE39	0.25 0.01"	45 1.77"
	CODE39	0.5 0.02"	44 1.73"
	CODE128	0.25 0.01"	41 1.61"
	GS1 DataBar	0.25 0.01"	48 1.89"



## SR-600HA

Code type	Cell size*	A	B
2D code	QR	0.08 0.003"	28 1.10"
	QR	0.127 0.01"	24 0.94"
	QR	0.25 0.01"	17 0.67"
	DataMatrix	0.08 0.003"	28 1.10"
	DataMatrix	0.127 0.01"	24 0.94"
	DataMatrix	0.25 0.01"	19 0.75"



\* For barcode, narrow bar width.

**SR-600**

Reading Distance		27 1.06"	38 1.50"	60 2.36"	84 3.31"	97 3.81"
View Size	Width	20.6 0.81"	27.9 1.10"	42.5 1.67"	58.4 2.30"	67.0 2.64"
	Height	13.1 0.52"	17.8 0.70"	27.1 1.07"	37.3 1.47"	42.8 1.69"

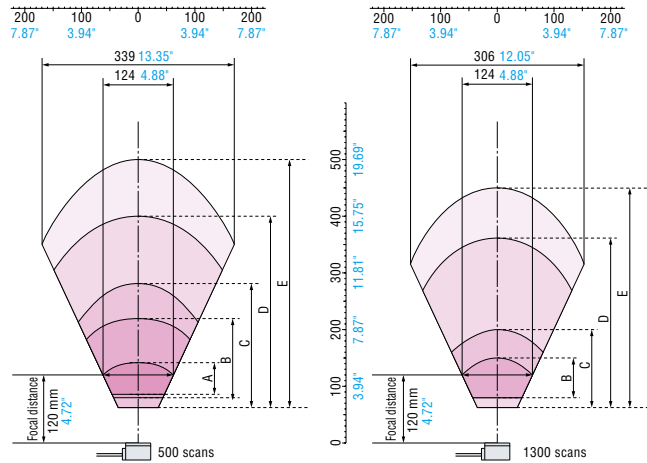
**SR-610**

Reading Distance		35 1.38"	62 2.44"	100 3.94"	154 6.06"	205 8.07"
View Size	Width	26.6 1.05"	44.8 1.76"	70.6 2.78"	107.1 4.22"	141.6 5.57"
	Height	17.0 0.67"	28.6 1.13"	45.0 1.77"	68.4 2.69"	90.4 3.56"

**SR-600HA**

Reading Distance		17 0.67"	28 1.10"	38 1.50"	45 1.77"	54 2.13"
View Size	Width	13.2 0.52"	20.2 0.80"	26.6 0.81"	31.1 1.22"	36.9 1.45"
	Height	8.4 0.33"	12.9 0.51"	17.0 0.67"	19.8 0.78"	23.5 0.93"

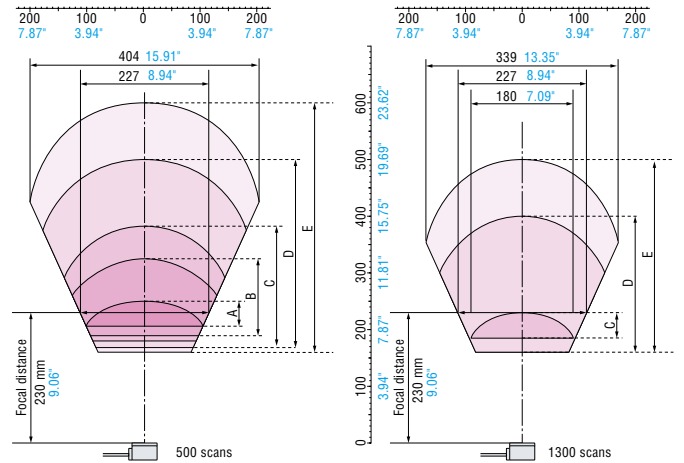
**BL-1300/1301 (standard type)**



	Barcode type	Narrow bar width	Read distance (500 scans)	Read distance (1300 scans)
A	CODE39	0.125 0.005"	85 to 140 3.35' to 5.51'	—
B	CODE39	0.19 0.008"	80 to 220 3.15' to 8.66'	80 to 150 3.15' to 5.91'
C	CODE39	0.25 0.01"	65 to 280 2.56' to 11.02'	60 to 200 2.36' to 7.87'
D	CODE39	0.5 0.02"	65 to 400 2.56' to 15.75'	60 to 360 2.36' to 14.17'
E	CODE39	1.0 0.04"	65 to 500 2.56' to 19.69'	60 to 450 2.36' to 17.72'

Measurement conditions: Standard KEYENCE barcode (narrow/wide bar ratio of 1:2.5);  
Mounting conditions: 15° skew, 0° pitch, 0° tilt

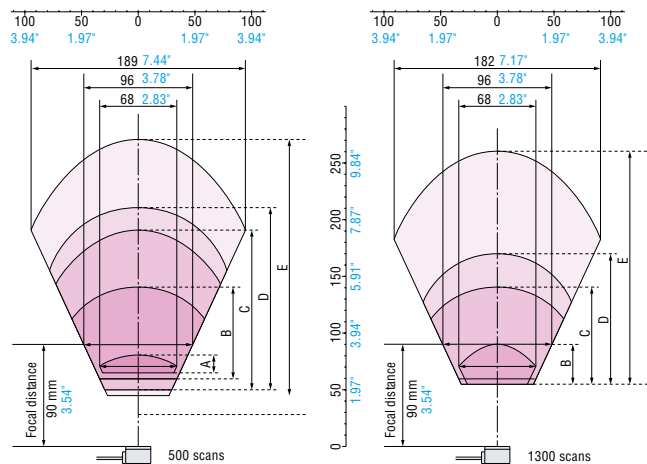
**BL-1370/1371 (long-distance type)**



	Barcode type	Narrow bar width	Read distance (500 scans)	Read distance (1300 scans)
A	CODE39	0.15 0.006"	205 to 250 8.07' to 9.84'	—
B	CODE39	0.19 0.008"	190 to 330 7.48' to 12.99'	—
C	CODE39	0.25 0.01"	180 to 380 7.09' to 14.96'	190 to 230 7.48' to 9.06'
D	CODE39	0.5 0.02"	170 to 500 6.69' to 19.69'	160 to 400 6.30' to 15.75'
E	CODE39	1.0 0.04"	160 to 600 6.30' to 23.62'	160 to 500 6.75' to 19.69'

Measurement conditions: Standard KEYENCE barcode (narrow/wide bar ratio of 1:2.5);  
Mounting conditions: 15° skew, 0° pitch, 0° tilt

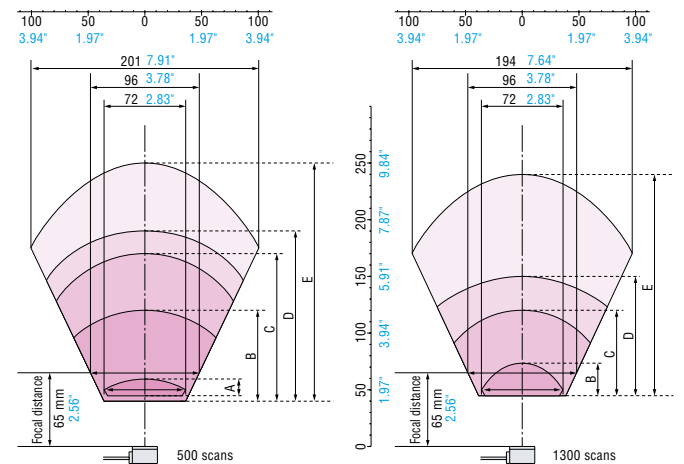
**BL-1300HA/1301HA (high-resolution front type)**



	Barcode type	Narrow bar width	Read distance (500 scans)	Read distance (1300 scans)
A	CODE39	0.08 0.003"	65 to 80 2.56' to 3.15'	—
B	CODE39	0.125 0.005"	60 to 140 3.15' to 5.51'	55 to 90 2.17' to 3.54'
C	CODE39	0.19 0.008"	50 to 190 1.97' to 7.48'	55 to 140 2.17' to 5.51'
D	CODE39	0.25 0.01"	45 to 210 1.77' to 8.27'	55 to 170 2.17' to 6.69'
E	CODE39	0.5 0.02"	45 to 270 1.77' to 10.63'	55 to 260 2.17' to 10.24'

Measurement conditions: Standard KEYENCE barcode (narrow/wide bar ratio of 1:2.5);  
Mounting conditions: 15° skew, 0° pitch, 0° tilt

**BL-1350HA/1351HA (high-resolution side type)**

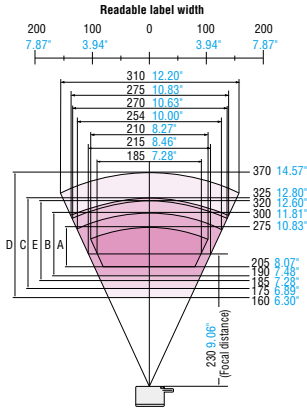


	Barcode type	Narrow bar width	Read distance (500 scans)	Read distance (1300 scans)
A	CODE39	0.08 0.003"	45 to 60 1.77' to 2.36'	—
B	CODE39	0.125 0.005"	40 to 120 1.57' to 4.72'	45 to 75 1.77' to 2.95'
C	CODE39	0.19 0.008"	40 to 170 1.57' to 6.69'	45 to 120 1.77' to 4.72'
D	CODE39	0.25 0.01"	40 to 190 1.57' to 7.48'	45 to 150 1.77' to 5.91'
E	CODE39	0.5 0.02"	40 to 250 1.57' to 9.48'	45 to 240 1.77' to 9.45'

Measurement conditions: Standard KEYENCE barcode (narrow/wide bar ratio of 1:2.5);  
Mounting conditions: 15° skew, 0° pitch, 0° tilt

# Reading Distances

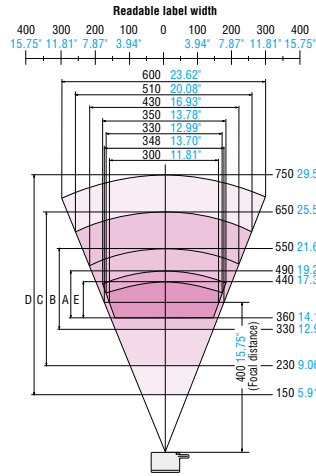
**BL-700/701**



	Narrow bar width
A	0.15 mm 0.006"
B	0.19 mm 0.008"
C	0.25 mm 0.01"
D	0.5 mm 0.02"
E	1 (EAN)

- (Measuring conditions)
- The KEYENCE standard barcode is used.
  - Skew: 0°
  - Pitch: 0°
  - Tilt: 0°
  - Ratio 1:2.5
  - Including the margins

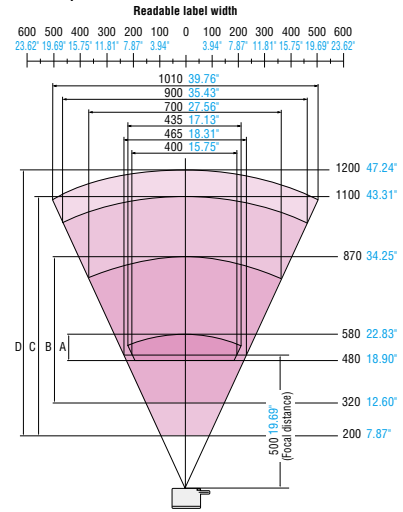
**BL-740/741**



	Narrow bar width
A	0.25 mm 0.01"
B	0.32 mm 0.013"
C	0.5 mm 0.02"
D	1 mm 0.04"
E	1 (EAN)

- (Measuring conditions)
- The KEYENCE standard barcode is used.
  - Skew: 0°
  - Pitch: 0°
  - Tilt: 0°
  - Ratio 1:2.5
  - Including the margins

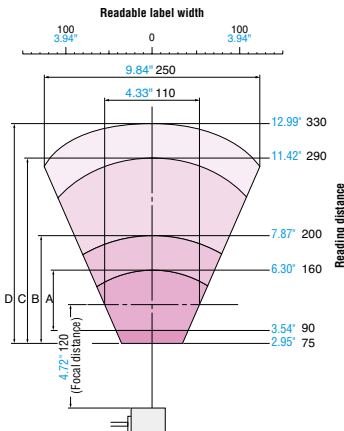
**BL-780/781**



	Narrow bar width
A	0.32 mm 0.013"
B	0.5 mm 0.02"
C	1.0 mm 0.04"
D	2.0 mm 0.08"

- (Measuring conditions)
- The KEYENCE standard barcode is used.
  - Skew: 0°
  - Pitch: 0°
  - Tilt: 0°
  - Ratio 1:2.5
  - Including the margins

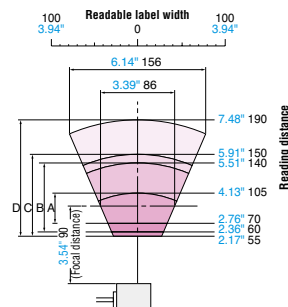
**BL-600/601**



	Narrow bar width
A	0.008 0.19 mm
B	0.01 0.25 mm
C	0.02 0.5 mm
D	0.04 1.0 mm

- (Measuring conditions)
- The KEYENCE standard barcode is used.
  - Skew: 15°
  - Pitch: 0°
  - Tilt: 0°
  - Ratio 1:2.5
  - Including the margins

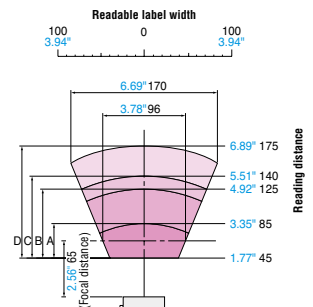
**BL-600HA/601HA**



	Narrow bar width
A	0.005 0.125 mm
B	0.008 0.19 mm
C	0.01 0.25 mm
D	0.02 0.5 mm

- (Measuring conditions)
- The KEYENCE standard barcode is used.
  - Skew: 15°
  - Pitch: 0°
  - Tilt: 0°
  - Ratio 1:2.5
  - Including the margins

**BL-650HA/651HA**



	Narrow bar width
A	0.005 0.125 mm
B	0.008 0.19 mm
C	0.01 0.25 mm
D	0.02 0.5 mm

- (Measuring conditions)
- The KEYENCE standard barcode is used.
  - Skew: 0°
  - Pitch: 0°
  - Tilt: 0°
  - Ratio 1:2.5
  - Including the margins

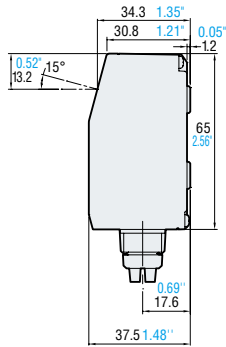


# Dimensions

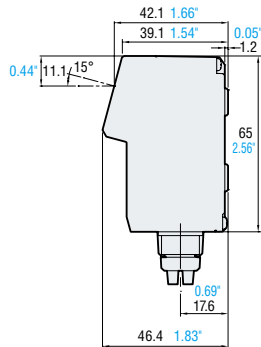
Unit: mm inch

## Main unit

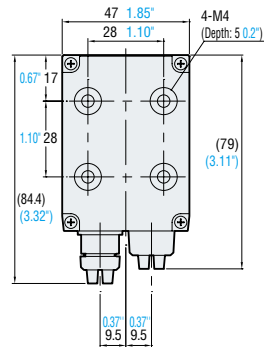
### SR-750/751/750HA



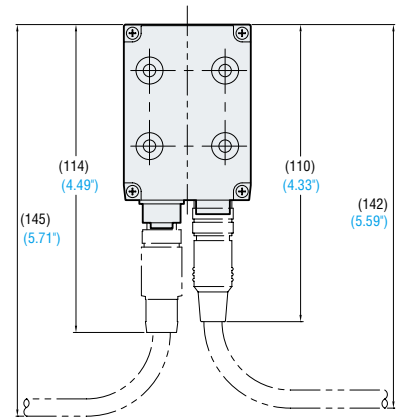
### SR-752



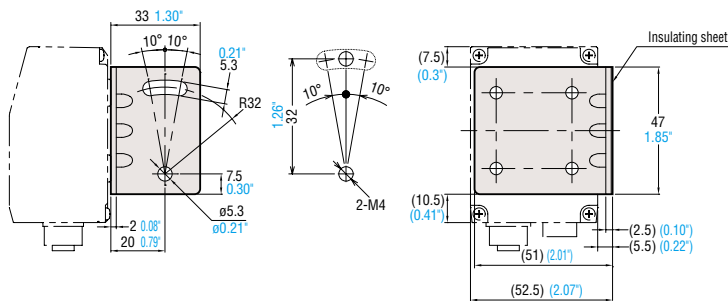
### With port cover



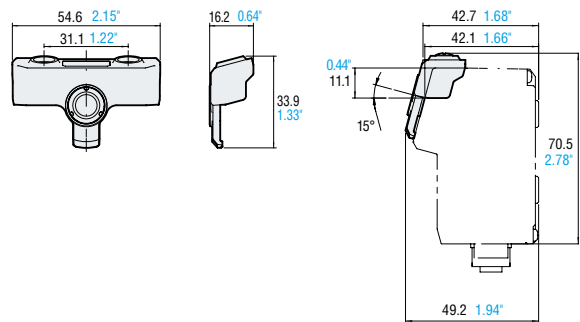
### With cable



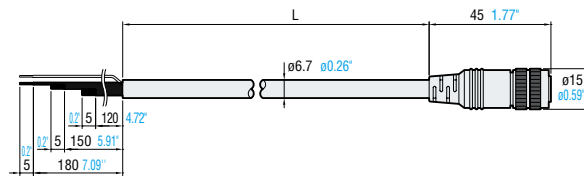
## Mounting bracket



## Long distance lens attachment SR-75L4/75L6

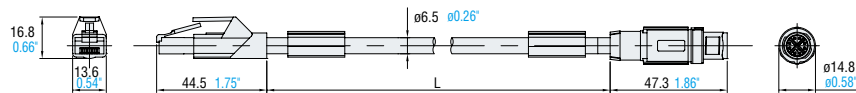


## NFPA79 compliant control cable



Model	L
OP-87353	2 m 6.56'
OP-87354	5 m 16.4'
OP-87355	10 m 32.8'

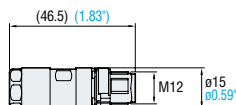
## NFPA79 compliant Ethernet cable



Model	L
OP-87359	2 m 6.56'
OP-87360	5 m 16.4'
OP-87361	10 m 32.8'

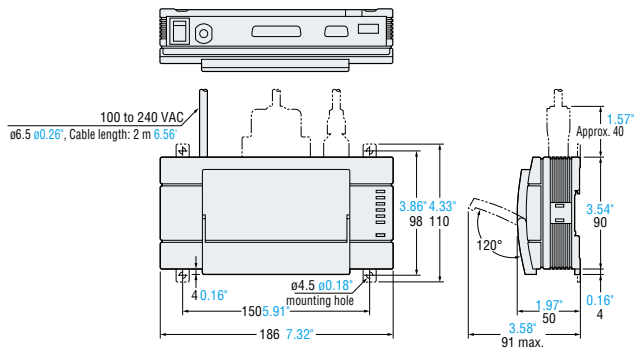
## Ethernet plug assembly

### OP-87362

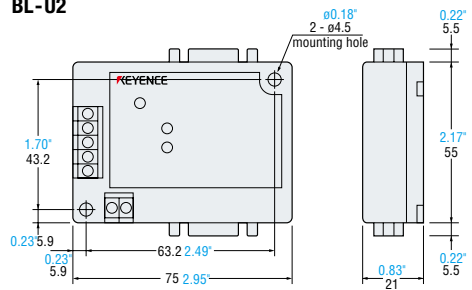


# Dimensions

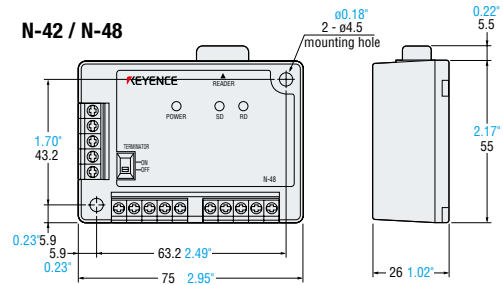
**BL-U1S0 (7176)**



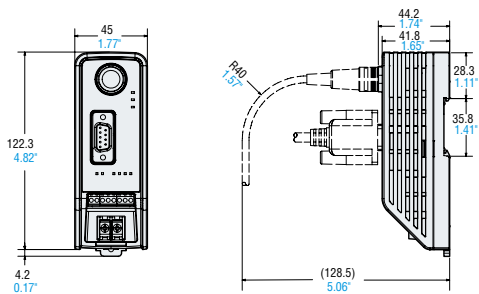
**BL-U2**



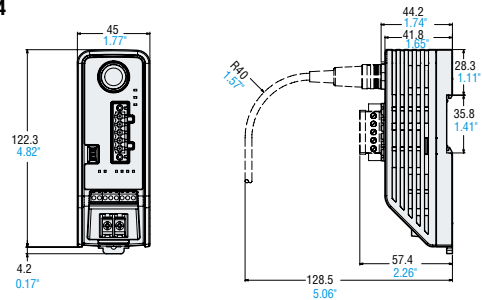
**N-42 / N-48**



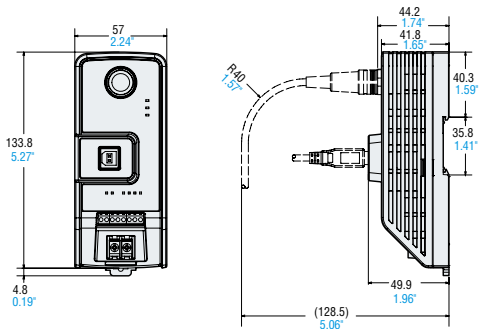
**N-R2**



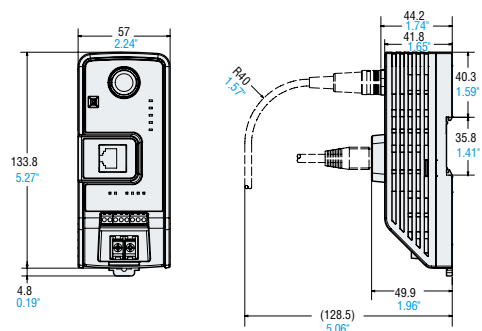
**N-R4**



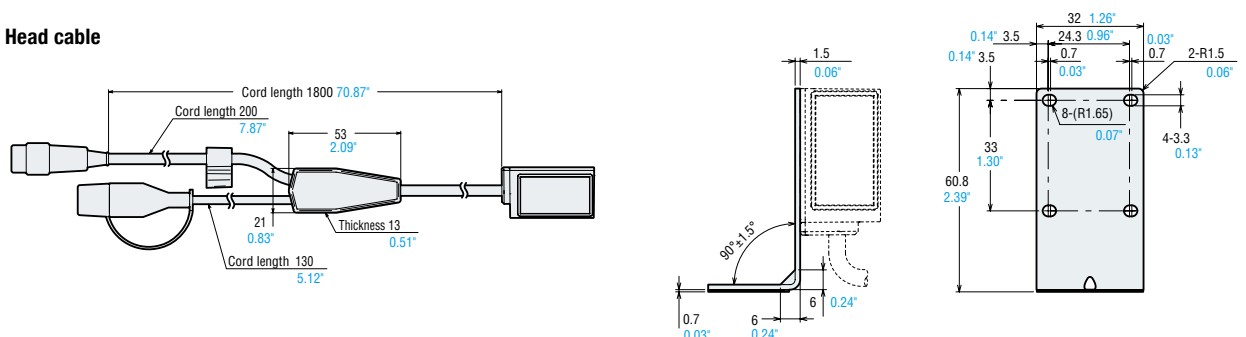
**N-UB**



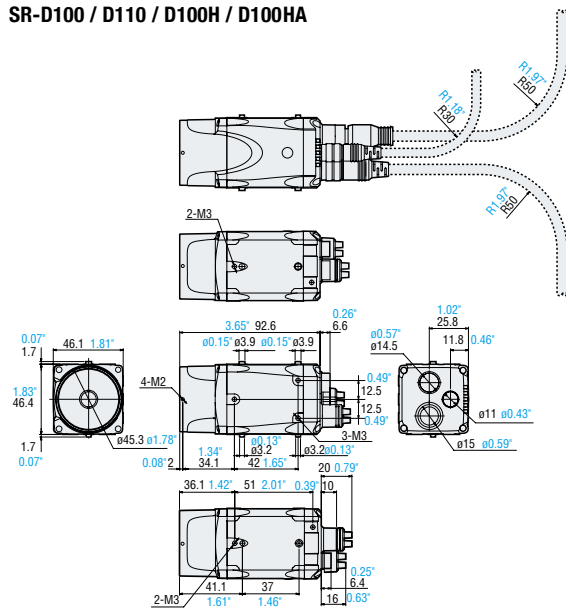
**N-L**



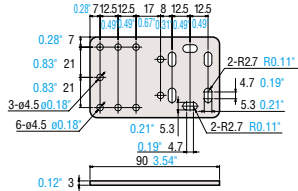
**Head cable**



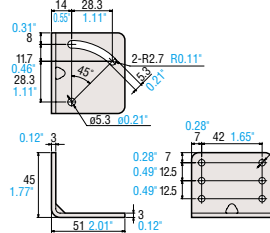
**SR-D100 / D110 / D100H / D100HA**



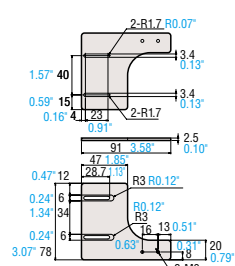
**Mounting bracket A**



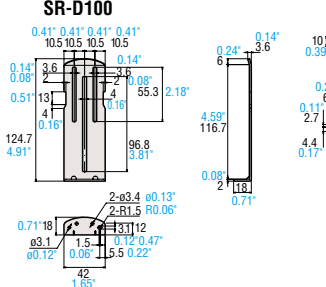
**Mounting bracket B**



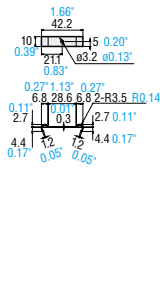
**Dedicated Mounting bracket for SR-DS3**



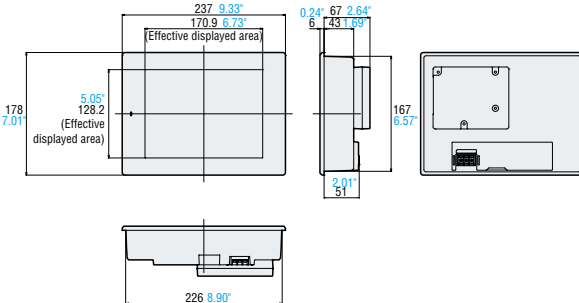
**Mounting bracket for SR-D100**



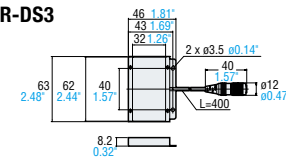
**Non-slip fitting**



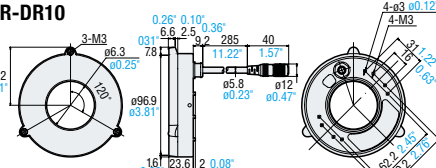
**SR-M80**



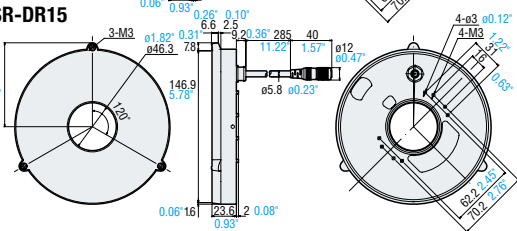
**SR-DS3**



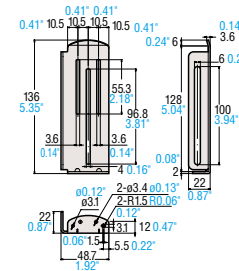
**SR-DR10**



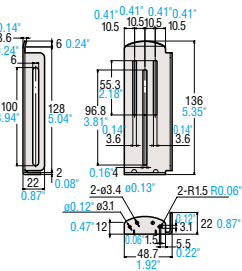
**SR-DR15**



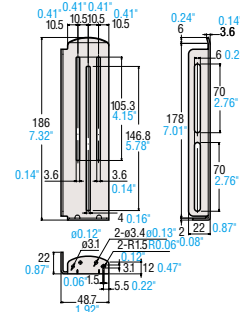
**Lighting mounting bracket (small) for SR-DR10/15 L**



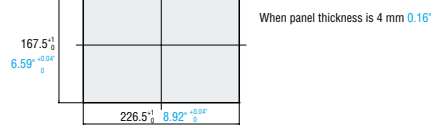
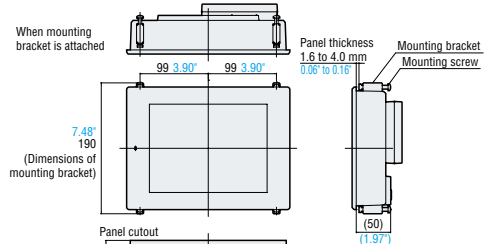
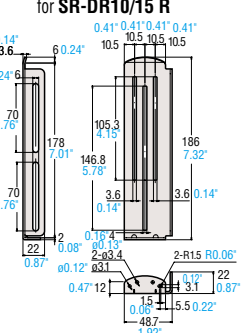
**Lighting mounting bracket (small) for SR-DR10/15 R**



**Lighting mounting bracket (large) for SR-DR10/15 L**

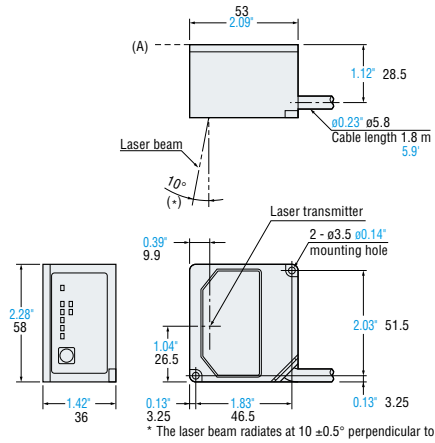


**Lighting mounting bracket (large) for SR-DR10/15 R**



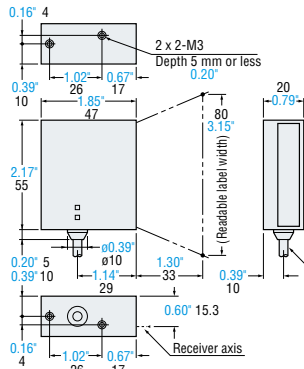
# Dimensions

## BL-700 Series

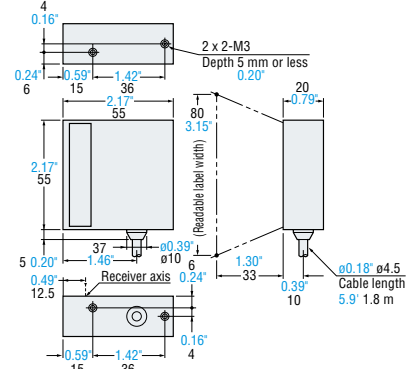


## BL-180 Series

### Front-view type

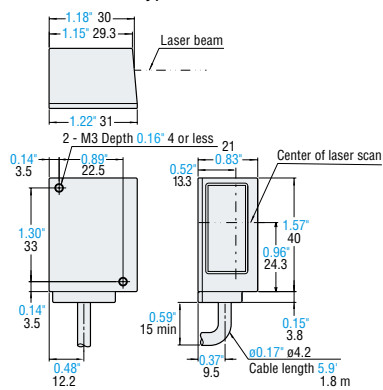


### Side view type

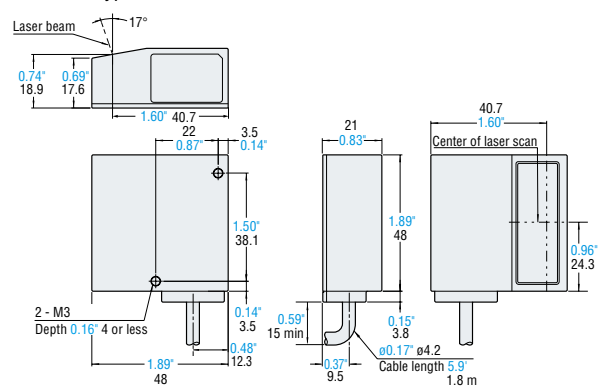


## BL-600 Series

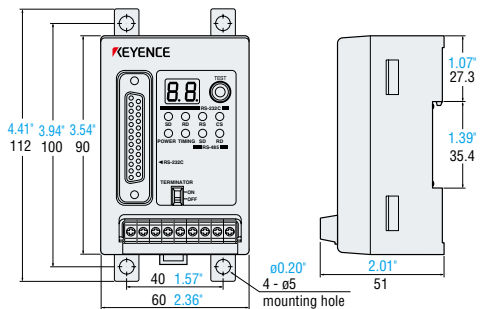
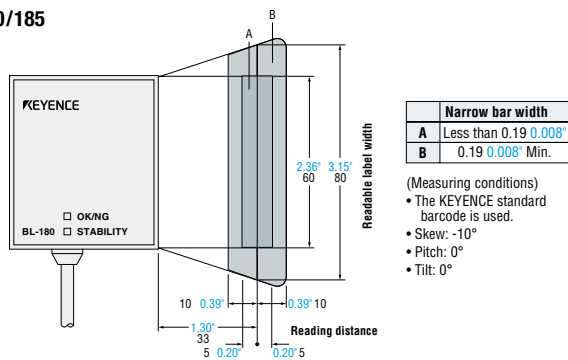
### Front-view type



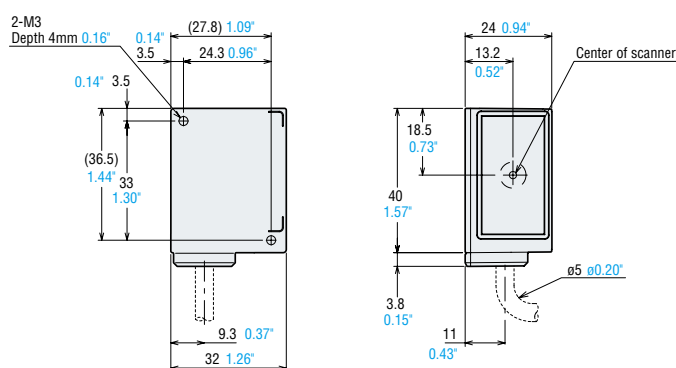
### Side view type



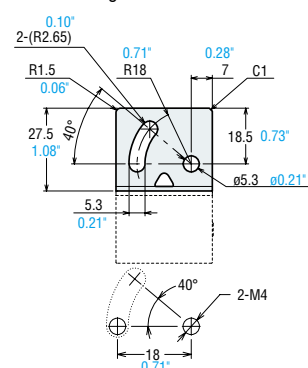
## BL-180/185



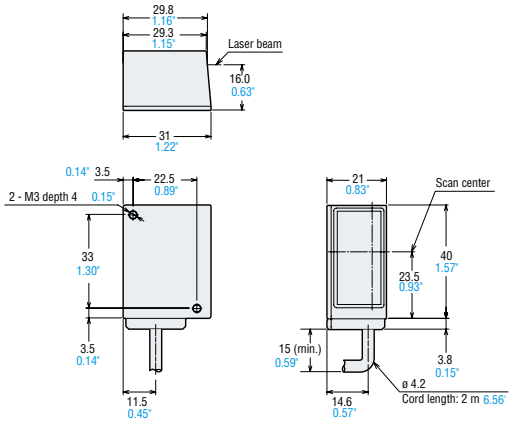
## SR-600/610/600HA



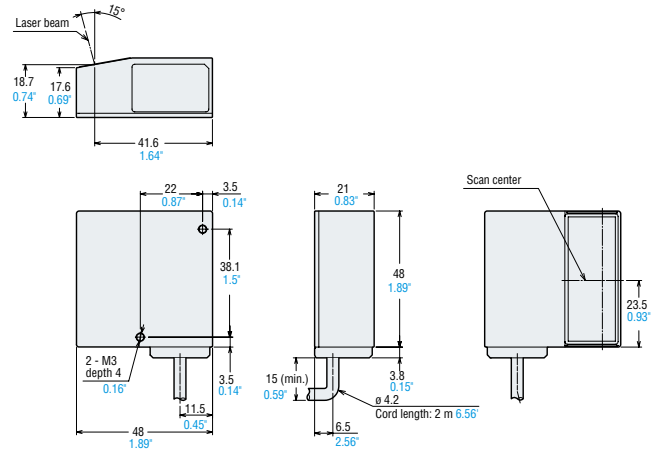
### Mounting bracket



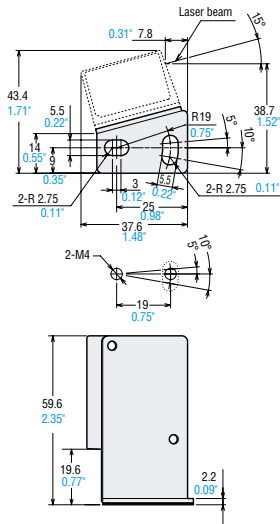
**BL-1300 / 1301 / 1300HA / 1301HA / 1370 / 1371 (front type)**



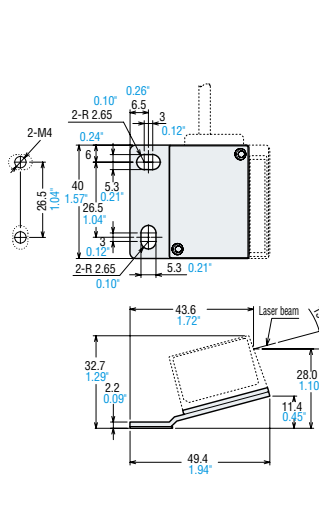
**BL-1350HA / 1351HA (side type)**



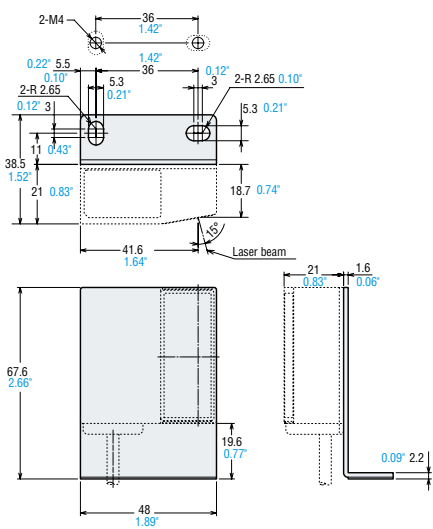
**Mounting A (front type)**



**Mounting B (front type)**



**Mounting (side type)**







## Developing Industry Leading Products through Intense In-House Research and Development

KEYENCE products are designed to add value to the manufacturing and research practices of our customers. We are constantly looking to improve our product offerings to better meet and exceed customers' expectations. Our products are engineered to be versatile, so they can be used in every industry and a wide variety of applications. KEYENCE offers the world's best products for today and tomorrow's application needs.

At KEYENCE, terms like "World's First," "World's Fastest," "Industry First," and "Best in Class" come standard with our products. With over 30 years of direct, on-site problem solving experience, we know the industries we serve better than other companies enabling us to provide optimal solutions.

## CLEAN Energy Policy

KEYENCE recognizes that protecting our environment is of paramount importance to the entire planet. We strive to contribute to the protection and improvement of the global environment. Our value added solutions enable a wide range of industries to produce goods efficiently by minimizing waste and the impact to the environment.

## RoHS

Since April 2005, KEYENCE has been progressively eliminating hazardous substances from our products and implementing the switch to RoHS compliant products.

## Corporate Information

### FACTS

Global Headquarters: Osaka, Japan  
 Founded: May 1974

2012 Global Sales: \$2,269,062,000 USD  
 Worldwide Employees: 3,800

Note: Dollar amounts are translated from Japanese yen, for convenience only, at ¥96 = US\$1, the approximate exchange rate on March 20, 2013

### AN EXCEPTIONAL COMPANY

#### Newsweek Electronics Industry Ranking

1	IBM	:	:
2	HP	16	Xerox
3	CANON INC.	:	:
4	Panasonic	26	Seagate
5	Apple INC.	:	:
6	ABB	39	KEYENCE
7	DELL	:	:
8	Schneider Electric	42	Rockwell Automation
9	Emerson Electric	43	Cooper Industries
10	Sony	:	:

#### Forbes' World's Most Innovate Companies

1	Salesforce.com
2	Amazon.com
3	Intuitive Surgica
4	Tencent Holdings
5	Apple
:	:
7	Google
:	:
17	KEYENCE
18	FMC Technologies
19	Starbucks
20	Nintendo
:	:

As of 2011



## Your online portal to...

A complete knowledge center to assist you with all of your Auto ID needs

**Get Useful Technical Literature FREE!**



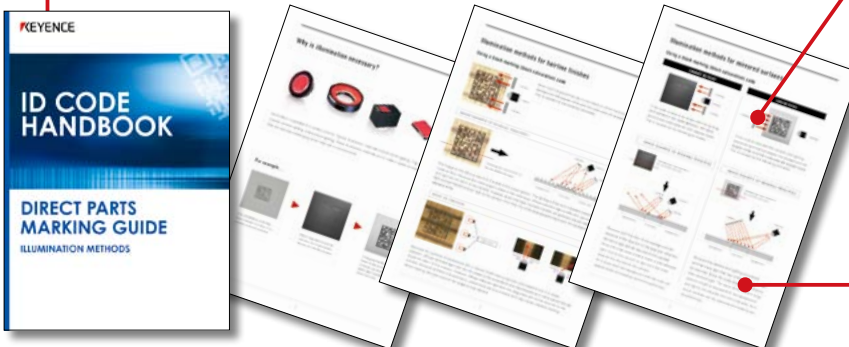
## WOULD YOU LIKE TO LEARN MORE ABOUT AUTO ID TECHNOLOGY?

Free resource guides provide barcode basics, troubleshooting tips, and real applications.



### Simple & Quick Solutions

KEYENCE draws from its decades of experience to provide the solution and troubleshooting techniques. Valuable knowledge of lighting, optics and 1D/2D codes is available for download.

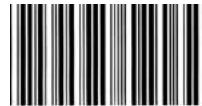


### Comprehensive Guides

References for installation, setup, and operation are also available for download to simplify the integration of KEYENCE barcode readers.

**CODE39**

NB=0.25 mm 0.01", NB:WB=1:3.0



\*12345\*

NB=0.5 mm 0.02", NB:WB=1:2.5



\*POP\*

NB=1.0 mm 0.04", NB:WB=1:2.2



\*C39\*

**UPC/EAN**

UPC-A



UPC-E

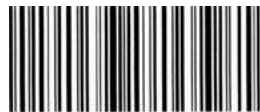


EAN



**CODE128**

NB=0.25 mm 0.01"



12345678901234567890

NB=0.25 mm 0.01"



ABCabc123+==

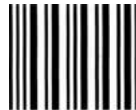
**ITF**

NB=0.25 mm 0.01", NB:WB=1:3.0



0123456789

NB=0.5 mm 0.02", NB:WB=1:2.2



9999

NB=1.0 mm 0.04", NB:WB=1:2.5



12345678

**2D CODE**

Data Matrix

Cell size=0.5 mm 0.02"



KEYENCE

PDF417

Cell size=0.5 mm 0.02", Aspect ratio = 1:3



PDF417

QR CODE

Cell size=0.5 mm 0.02"



QR CODE

Data Matrix

Cell size=0.5 mm 0.02"



KEYENCE



CALL TOLL FREE

TO CONTACT YOUR LOCAL OFFICE  
**1-888-KEYENCE**  
1 - 8 8 8 - 5 3 9 - 3 6 2 3

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



**SAFETY INFORMATION**

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

**KEYENCE CORPORATION OF AMERICA**

**Corporate Office** 669 River Drive, Suite 403, Elmwood Park, NJ 07407 PHONE: 888-539-3623 FAX: 855-539-0123 E-mail: [keyence@keyence.com](mailto:keyence@keyence.com)

**Sales & Marketing Head Office** 1100 North Arlington Heights Road, Suite 210, Itasca, IL 60143 PHONE: 888-539-3623 FAX: 855-539-0123

■ Regional offices	<b>CO</b> Denver	<b>IN</b> Indianapolis	<b>MI</b> Detroit	<b>NJ</b> Elmwood Park	<b>OH</b> Cincinnati	<b>PA</b> Pittsburgh	<b>TX</b> Austin	<b>WI</b> Milwaukee
<b>AL</b> Birmingham	<b>FL</b> Tampa	<b>KS</b> Kansas City	<b>MI</b> Grand Rapids	<b>NY</b> Rochester	<b>OH</b> Cleveland	<b>SC</b> Greenville	<b>TX</b> Dallas	
<b>CA</b> N. California	<b>GA</b> Atlanta	<b>KY</b> Louisville	<b>MN</b> Minneapolis	<b>NC</b> Charlotte	<b>OR</b> Portland	<b>TN</b> Knoxville	<b>VA</b> Richmond	
<b>CA</b> Los Angeles	<b>IL</b> Chicago	<b>MA</b> Boston	<b>MO</b> St. Louis	<b>NC</b> Raleigh	<b>PA</b> Philadelphia	<b>TN</b> Nashville	<b>WA</b> Seattle	

**KEYENCE CANADA INC.**

**Head Office** PHONE: 905-366-7655 FAX: 905-366-1122 E-mail: [keyencecanada@keyence.com](mailto:keyencecanada@keyence.com)  
**Montreal** PHONE: 514-694-4740 FAX: 514-694-3206 **Windsor** PHONE: 905-366-7655 FAX: 905-366-1122

**KEYENCE MEXICO S.A. DE C.V.**

PHONE: +52-81-8220-7900 FAX: +52-81-8220-9097  
E-mail: [keyencemexico@keyence.com](mailto:keyencemexico@keyence.com)

