

BAR CODE READER GENERAL CATALOG

KEYENCE provides advanced products with leading edge technology
and superior support services



FREE

BAR CODE LABEL ANALYSIS SERVICE

KEYENCE will analyze your bar code by using our state-of-the-art positioning equipment. An analysis report will be generated showing the readability, the optimal reading distance and the allowable reading width of the bar code. From this analysis you will be able to determine the optimal reading position of the bar code reader, eliminating any reading errors due to improper mounting.

The data sheet is provided within days

* This analysis service is available for all models of the BL Series.

FREE

LABEL QUALITY CHECK SERVICE

KEYENCE will check your bar code by measuring the reflectance of bars and spaces and measuring the thickness of the bars and compare to accepted industry standards in order to identify any reading errors or problems. Just provide your bar code label to your nearest sales office.

FREE

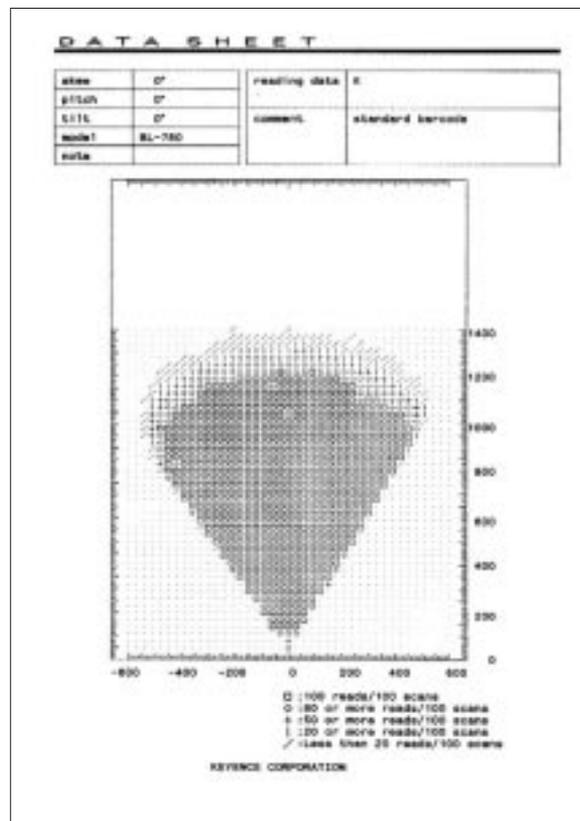
FREE TRIAL UNIT

We always recommend that customers purchase our products after evaluating the product's performance on their production lines. Customers may try any bar code product unit for a free 15-day trial period.

FREE

EXTENSIVE TECHNICAL INFORMATION

As a comprehensive manufacturer of bar code readers, KEYENCE can provide extensive technical information. This information is extremely useful when considering system installations, adjustments to production lines or troubleshooting. Please feel free to contact your nearest sales office to receive a free copy.



FREE

FAST DELIVERY SERVICE

KEYENCE has established a fast delivery system to deliver the required products whenever necessary. In emergency cases, this service may also include fast delivery on modified products. Products are shipped from our stocking network centers in Japan, U.S.(Chicago), U.K., Germany, France, Thailand, Malaysia, Singapore and South Korea or from 148 agents in 31 countries on the same day of receipt of an order. All products in the catalog are normally in stock.

ULTRA-LONG-RANGE, LASER TYPE

BL-700 Series



P6

- Superior reading angle capabilities
- Longest-in-class: 3.9' 1.2 m reading range
- Fastest-in-class: 700 scans/s

Reading range

BL-700	6.30" to 14.57"	160 to 370 mm
BL-740	5.91" to 29.57"	150 to 750 mm
BL-780	7.87" to 47.24"	200 to 1200 mm

ULTRA-SMALL, LASER TYPE



P8

- The world's smallest bar code reader
- Excellent reading depth and angle characteristics
- High-speed: 500 scans/s

Reading range

BL-600	2.95" to 12.99"	75 to 330 mm
BL-600HA	2.16" to 7.48"	55 to 190 mm

ULTRA-SMALL, CCD TYPE

BL-180 Series



P10

- Ultra small size - Half the size of a business card.
- Fastest -in-class: 500 scans/s

Reading range

BL-180	1.30" ± 0.39"	33 ± 10 mm
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AUTO ID DATA CONTROLLER

NEW

DV-90 Series



P12

- Verify bar code data and output results in parallel

BAR CODE DISPLAY INTERFACE

BL-V35E



P14

- Converts bar code data into preset data. Saves a substantial amount of labor on every production line.

MULTI-DROP CONTROLLER

N-400 Series



P16

- Allows one host computer to control up to 31 bar code readers.

CCD HANDHELD BAR CODE READER

BL-80 Series



P18

- CCD type is safe for the user's eyes. Direct transmission to PC's available.

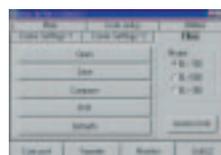
PERIPHERAL DEVICES



P19

- A full line of peripheral devices

SETUP SOFTWARE

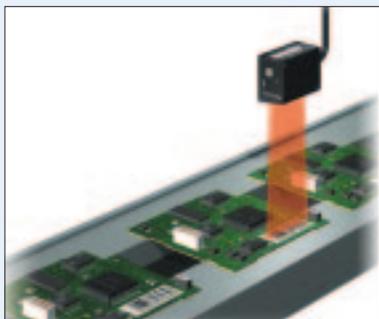


P20

- Setup is easy by clicking desired items without using any serial commands.

RELIABLE BAR CODE READERS FOR A WIDE RANGE OF APPLICATIONS

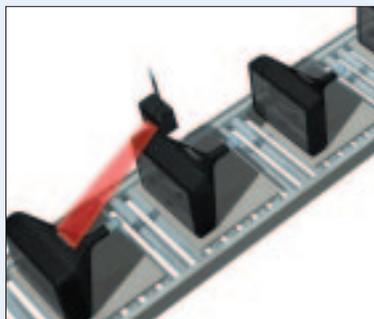
■ ELECTRIC/ELECTRONICS



PC board : Traceability

Reliably reads bar codes printed on PC boards regardless of vibration or the random position of the targets.

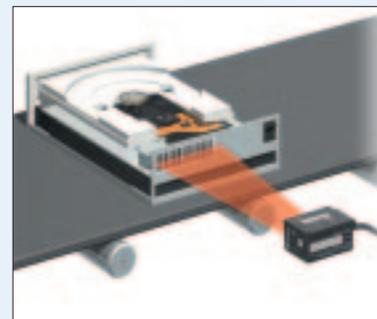
BL-600 → [P8]



CRT : Traceability

The reading is accurate even when the bar code labels are attached on curved surfaces.

BL-700 → [P6]



PC media drive : Traceability

Even with vibrations and unevenness, the BL-600 performs accurately and reliably.

BL-600 → [P8]

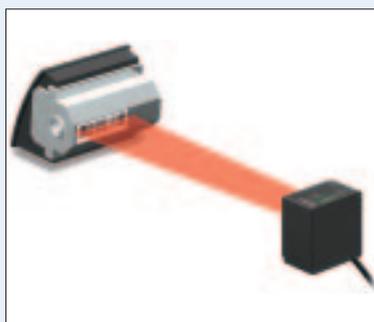
■ AUTOMOTIVE/AUTOMOTIVE COMPONENTS



Axle : Poka-Yoke

On a mixed production line, the part shelf lamps are turned on to prevent incorrect parts from being assembled.

BL-700 → [P6]



Air bag inflator : Traceability

A stationary scanner has been introduced to improve accuracy and efficiency in the inspection process of air bag inflators.

BL-700 → [P6]

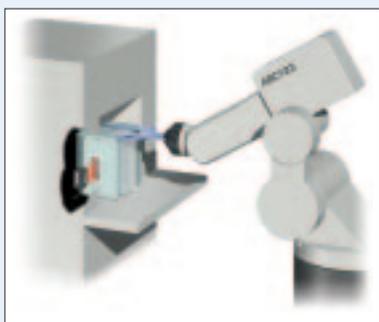


Seat parts : Traceability

Bar codes are used for traceability management of weight, position sensors, and seat belt.

BL-700 → [P6]

■ SEMICONDUCTOR/LCD



Wafer carriers management

Thanks to the AGC function, the BL-600 can reliably read PFA-coated bar code labels even at extreme angles.

BL-600 → [P8]



Wafer ring management

A stable reading is ensured even for bar codes on ceramic labels or those marked by a laser.

BL-600 → [P8]



Reticle cassettes management

The compact body can be easily mounted anywhere on the shelf.

BL-180 → [P10]

■ FOOD/PHARMACEUTICAL



Filler : Prevent mixing

The bar code data is compared with the preset data, and a "matched" or "mismatched" signal can be output without a PC.

DV-90 → [P12]

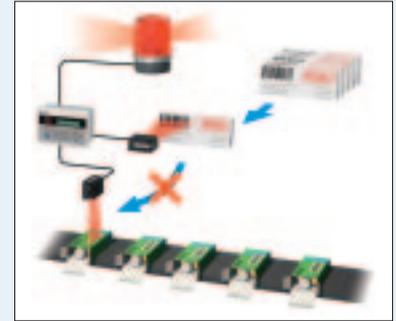


Cartoner : Prevent mixing

A reliable read is ensured even for bar codes with low PCS*, such as those on cardboard boxes.

*Print Contrast Standard

BL-700 → [P6]



Caser : POKA-YOKE

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

DV-90 → [P12]

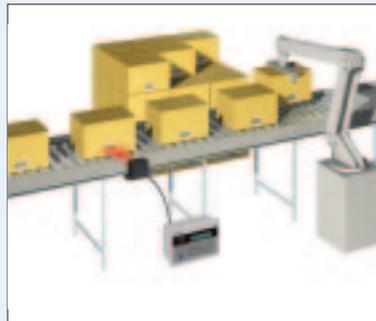
■ LOGISTICS/MATERIAL HANDLING



Automatic sorting in conveyor lines

Reliably reads bar codes printed on cardboard boxes of different sizes or those with low PCS. The BL-700 Series is designed to be less affected by the conveyor guide.

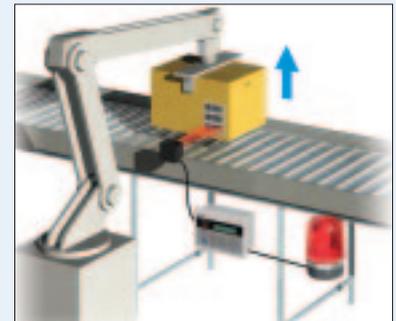
BL-700 → [P6]



Changeover

The preset number for the readout bar code can be output from the parallel port, enabling machine changeover.

DV-90 → [P12]



Quality check

Just reading bar codes enables a 100% check of bar code print quality.

DV-90 → [P12]

■ LAB AUTOMATION



Verification of pipette tray

The world smallest bar code reader BL-600 can be mounted in any limited space.

BL-600 → [P8]



Verification of test tubes

With its compact body and high speed reading capability, the BL-600 can easily read the bar codes on medical test tubes.

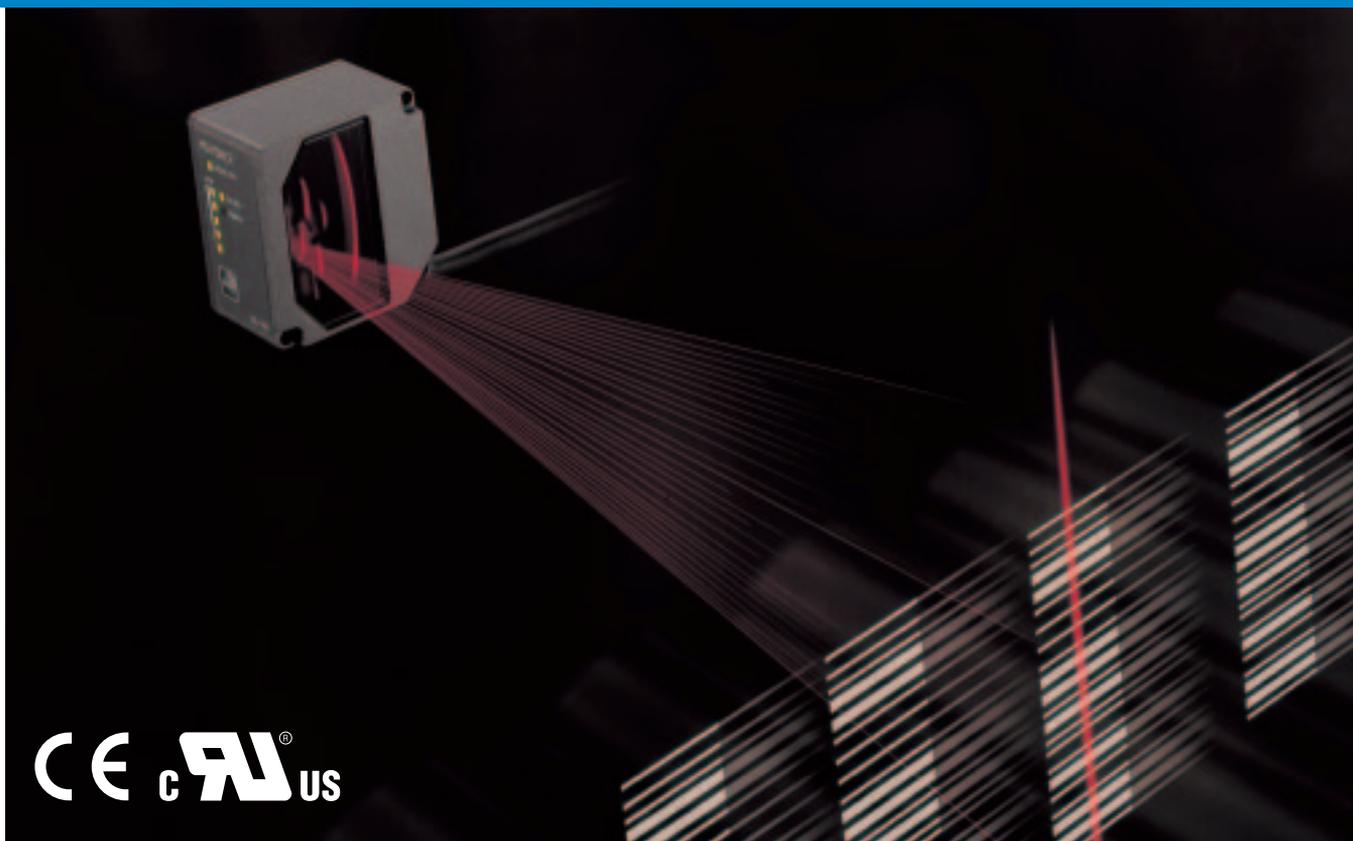
BL-600 → [P8]



Verification of test tube racks

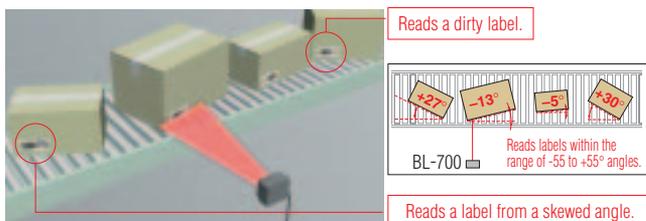
Despite the ultra-small body, just half the size of a business card, the BL-180 Series offers a wide reading range. It can reliably read bar codes on test tube racks.

BL-180 → [P10]



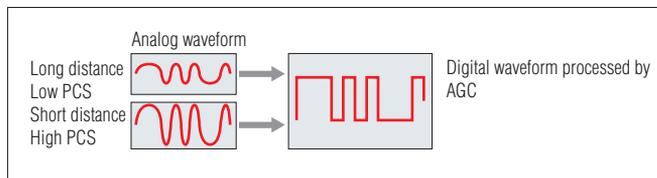
Superior Angle Reading Capabilities

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.



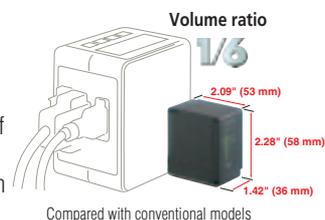
Auto Gain Control Patent pending

The Auto Gain Control (AGC) function automatically adjusts the intensity of the received light according to the change in the reading distance and PCS. With the AGC function, the BL-700 Series achieves an excellent reading range despite its ultra-small body. A reliable read is ensured for even bar codes with low PCS, such as those on cardboard boxes. During the AGC operation, the Specular Reflection Cancel (SRC) circuit minimizing the influence of strong reflective beams from parts other than bar codes.



World's smallest in its class

The BL-700 Series, a standard model for the warehousing industry, is surprisingly ultra-small with a depth of only 1.42" (36 mm). The cable, which exits from a slanted corner of the housing, greatly reduces the extra space needed for a cable or connector. Mounting can be done without any restrictions on the size of the space.



Longest-in-class: 3.9' (1.2 m) reading range

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.



Fastest-in-class: 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 ultrahigh-speed response that reliably reads bar codes moving at high speed on production lines.



First-in-class, 5-level bar LED indicating the reading performance

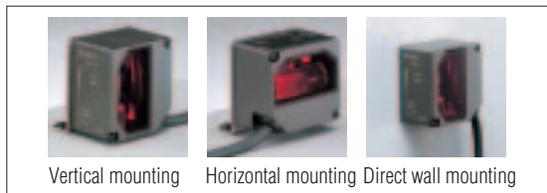
By pressing the test switch, the 5-level LED indicator shows, in real time, the decoding ratio per 100 scans as a percentage.



Stable reading indicator using the bar LED

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.



Vertical mounting

Horizontal mounting

Direct wall mounting

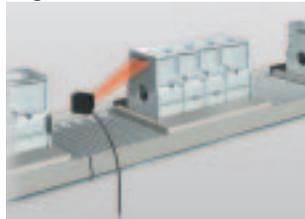
Built-in test switch

The BL-700 Series features a test mode operation that indicates the optimal reading position by a press of a button. This saves a large amount of installation and maintenance labor.



Applications

Engine block



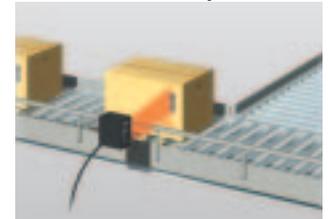
The AGC function guarantees a reliable read even if the bar code labels are dirty or dusty.

Compressor



Giving directions to pick the necessary parts for compressor assembly

Cardboard box conveyors



The BL-700 Series can be mounted in small spaces and is less affected by the conveyor guide.

Specifications

Model	BL-700	BL-701	BL-740	BL-741	BL-780	BL-781
Type	High-resolution		Middle-range		Long-range	
Scanning method ¹	Single	Raster	Single	Raster	Single	Raster
Light source	Visible semiconductor laser (Wavelength: 650 nm)					
Maximum output	1.4 mW		1.8 mW		2.0 mW	
Pulse duration	FDA: 50 μs, IEC: 91 μs					
Class	FDA Class II, IEC Class 2					
Reading distance	6.30" to 14.57" 160 to 370 mm (When narrow bar width is 0.02" 0.5 mm)		5.91" to 29.53" 150 to 750 mm (When narrow bar width is 0.04" 1.0 mm)		7.87" to 47.24" 200 to 1200 mm (When narrow bar width is 0.08" 2.0 mm)	
Reading bar width ²	0.006" to 0.04" 0.15 to 1.0 mm		0.01" to 0.08" 0.25 to 2.0 mm		0.01" to 0.08" 0.32 to 2.0 mm	
Largest readable label width ³	12.20" 310 mm (When reading distance is 13.19" 335 mm)		23.62" 600 mm (When reading distance is 26.77" 680 mm)		39.76" 1010 mm (When reading distance is 42.52" 1080 mm)	
PCS	0.6 or more (Reflectance of white part: 75% or more)					
Scanning rate	700 scans/sec					
Target code	CODE39, ITF, Industrial2-of-5, COOP2-of-5, Codabar, CODE128, CODE93, EAN/UPC(A•E)					
Number of readable digits	32 digits max. ⁴					
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	600/1,200/2,400/4,800/9,600/19,200/31,250/38,400 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, 30 mA				
	Leakage current (at OFF)	0.1 mA max.				
	Residual voltage (at ON)	0.5 V max.				
Environmental resistance	Enclosure rating	IP-65				
	Ambient light	Sunlight: 10,000 lux, Incandescent lamp: 6,000 lux	Sunlight: 10,000 lux, Incandescent lamp: 4,000 lux		Sunlight: 8,000 lux, Incandescent lamp: 3,000 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				
	Vibration	10 to 55 Hz, 0.06" 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively				
Power rating	Power supply voltage	5 VDC ±5%				
	Current consumption	510 mA max.				
Weight	Approx. 300 g (including cable)					

1. BL-701 raster width: 0.39" ±0.04" (10 ±1 mm) (reading distance: 7.87" (200 mm)) BL-741 raster width: 0.79" ±0.08" (20 ±2 mm) (reading distance: 11.81" (300 mm)) BL-781 raster width: 1.18" ±0.12" (30 ±3 mm) (reading distance: 17.72" (450 mm))

2. When the bar code type is CODE39.

3. Largest reading label width includes the bar code 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).



The World's Smallest Bar Code Reader

With the BL-600 (1.22" x 1.57" x 0.83" (31 x 40 x 21 mm)) KEYENCE again breaks the world's record for the smallest bar code reader.

* The BL-600 is less than 1/2 the size of conventional bar code readers but delivers ultra high performance

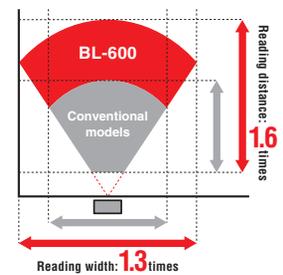
New and Innovative Microscopic Polygon Mirror and Motor

The BL-600 is an ultra compact bar code reader, at only 0.14" (3.5 mm) thick and 0.51" (13 mm) diagonally from corner to corner. The compact size is achieved by using optical technology developed for ultra high accuracy sensors.

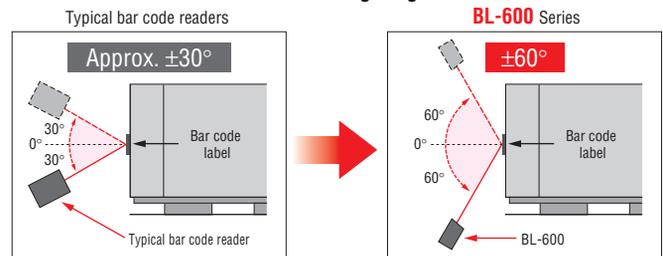


Twice the range with superior reading performance

Using KEYENCE'S exclusive AGC, circuits for advanced high-speed performance, the BL-600 offers excellent reading depth and angle characteristics. The reader also includes built-in SRC circuits that greatly reduce the effects of extraneous reflected light and allows a more reliable and stable reading.



[Stable reading range]



The BL-600 Series offers greater mounting flexibility.

Preventive Maintenance Information (PMI) Patent pending

The BL-600 Series is the first bar code reader to feature a PMI function, which prevents reading errors before they occur. This function outputs diagnostic information while the reader is reading bar codes. By examining the information, it is possible to detect problems that may cause reading errors. This unique function is an invaluable tool for acquiring maintenance information or for analyzing and finding the cause of reading errors.

Reading data PMI (Preventive Maintenance Information)

KEYENCE 01	:	0
KEYENCE 02	:	0
KEYENCE 03	:	1
KEYENCE 04	:	0
KEYENCE 05	:	0
KEYENCE 06	:	0

Problem

PMI = 0 : Normal
1 : Caution
2 : Warning
9 : Reading error

Front-view type

- Standard
- BL-600 (Single-scan)
- BL-601 (Raster-scan)
- High-resolution
- BL-600HA (Single-scan)
- BL-601HA (Raster-scan)

Side-view type

- High-resolution
- BL-650HA (Single-scan)
- BL-651HA (Raster-scan)



Test switch for easy adjustment

The test mode allows you to confirm the optimal reading position at the point of installation by simply pressing a button. This valuable feature of the BL-600 results in faster installation and maintenance.



5-bar LED display

The BL-600 indicates the reading ratio (decoding rate/100 scans) in real time using a five-bar LED display. Current reading status can be checked at a glance, helping to prevent reading errors before they occur. *Reading ratio can be output to computers.

5-bar LED reading status indicator



Heavy duty construction in an ultra-light package

Thanks to its die-cast magnesium casing, the BL-600 is not only ultra light and compact, but also solidly constructed.

Exceptional resistance even in severe environments

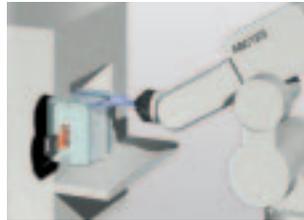
The highly resistant construction of the BL-600 passes the demanding IP-65 environmental standard for sensors. The BL-600 offers excellent protection in harsh or dirty environments and can be installed in almost any location.

Easy maintenance

The flat reading surface of the BL-600 Series greatly reduces the tedious maintenance often involved with bar code readers.

Applications

Wafer carriers



Thanks to the AGC function, the BL-600 can reliably read PFA-coated bar code labels even at extreme angles.

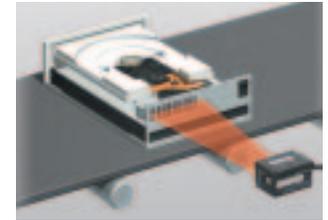
* A special model for a 300 mm wafer load ports (SEMI E15.1 fully supported) is also available.

Medical



With its compact body and high speed reading capability, the BL-600 can easily read the bar codes on medical specimens.

PC media drive



Even with vibrations and unevenness, the BL-600 performs accurately and reliably.

Specifications

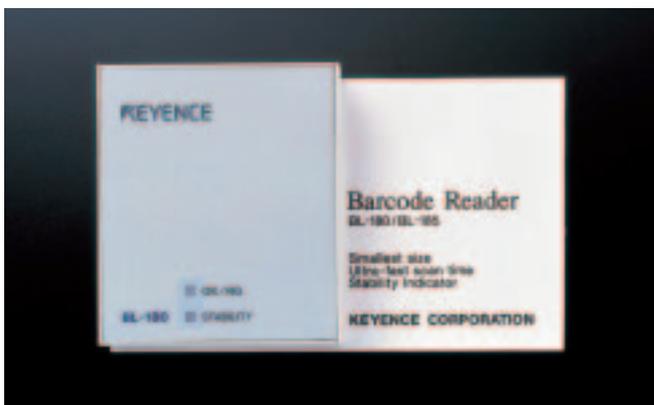
Model	BL600	BL-601	BL-600HA	BL-601HA	BL-650HA	BL-651HA
Type	Standard		High-resolution		High resolution, side scanning type	
Reading direction	Front				Side	
Scanning method ¹	Single	Raster	Single	Raster	Single	Raster
Light source	Visible semiconductor laser (Wavelength: 650 nm)					
Maximum output	1.5 mW					
Pulse duration	FDA: 56 μs, IEC: 99 μs				FDA: 56 μs, IEC: 82 μs	
Class	FDA Class II, IEC Class 2					
Reading distance	2.95" to 12.99" 75 to 330 mm (When narrow bar width is 0.04" 1.0 mm)		2.17" to 7.48" 55 to 190 mm (When narrow bar width is 0.02" 0.5mm)		1.77" to 6.89" 45 to 175 mm (When narrow bar width is 0.02" 0.5mm)	
Readable bar width ²	0.007" to 0.04" 0.19 to 1.0 mm * 0.01" to 0.04" 0.25 to 1.0 mm for CODE 93 and CODE 128		0.005" to 0.04" 0.125 to 1.0 mm * 0.006" to 0.04" 0.15 to 1.0 mm for CODE 93 and CODE 128			
Largest readable label width ³	9.84" 250 mm (When reading distance is 11.02" 280 mm)		6.14" 156 mm (When reading distance is 6.85" 174 mm)		6.69" 170 mm (When reading distance is 6.10" 155 mm)	
PCS	0.6 or more (Reflectance of white part: 75% or more)					
Scanning rate	500 scans/sec					
Target code	CODE39, ITF, Industrial2-of-5, COOP2-of-5, Codabar, CODE128, EAN-128, CODE93, EAN/UPC(A•E)					
Number of readable digits	32 digits max. ⁴					
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 9 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	IP-65				
	Ambient light	Sunlight: 10,000 lux, Incandescent lamp: 6,000 lux				
	Ambient temperature	0 to +45°C (32 to 113°F), No condensation				
	Relative humidity	35 to 85%, No condensation				
	Operating atmosphere	No dust or corrosive gas present				
Vibration	10 to 55 Hz, 0.06" 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively					
Power rating	Power supply voltage	5 VDC ±5%				
	Power consumption	330 mA max.				
Weight	Approx. 115 g				Approx. 130 g	

1. Raster width: BL-601: 0.30" ±0.07" (7.1 ±1.8 mm) (When reading distance is 4.72" (120 mm)), BL-601HA: 0.22" ±0.06" (5.5 ±1.4 mm) (When reading distance is 3.54" (90 mm)), BL-651HA: 0.22" ±0.06" (5.5 ±1.4 mm) (When reading distance is 2.56" (65 mm)) 2. Reading bar width indicates the range of readable narrow bar width when the bar code type is CODE39. 3. Maximum reading label width includes the bar code 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).



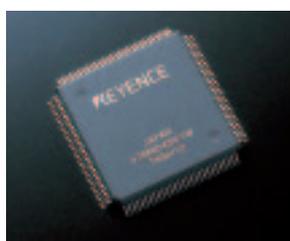
Ultra Small Size... Half the Size of a Business Card

The BL-180 Series ultra-small CCD bar code 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 3.15" (80 mm).



Fastest-in-class, 500 scans per second

The BL-180 Series is the first CCD bar code 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.



STABILITY LED for easy mounting

The BL-180 Series is the first bar code reader in the world to feature a 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.



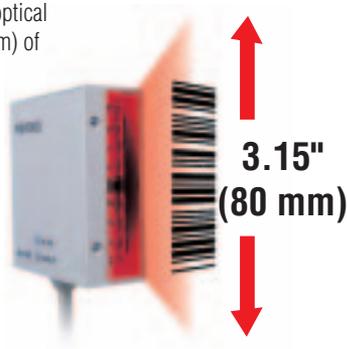
Front-view type
BL-180



Side-view type
BL-185

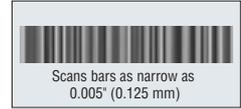
Ultra-small body reads labels as wide as 3.15" (80 mm).

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



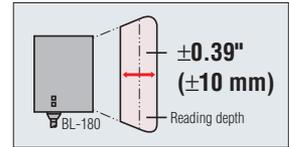
Reads bars as narrow as 0.005" (0.125 mm)

The BL-180 Series offers the best reading capability of all other CCD bar code readers in the world. It can read bars as narrow as 0.005" (0.125 mm), being the ideal readers for today's increasingly miniaturized bar codes.



Sufficient reading depth of ±0.39" (±10 mm)

Reading is reliable regardless of the vibration or position of the targets. The original optical technology and the high-intensity LED achieve a reading depth of ±0.39" (±10 mm), resulting in a stable reading performance.



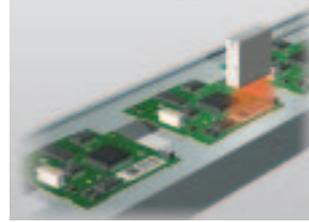
Applications

Medical applications



The BL-180 Series excels at reading bar codes on specimen containers with its reading width of 3.15" (80 mm).

PC board mounting process



The compact body and high-speed reading capability of the BL-180 Series makes it ideal for reading bar codes on PC boards or wafer carriers.

Shelf management



The compact body can be mounted easily anywhere in the shelf.

Specifications

Model		BL-180	BL-185
Reading direction		Front	Side
Light source/Light receiving element		LED/CCD image sensor	
Scanning distance		1.30" ±0.39" 33 ±10 mm ¹ . (Using narrow bars of at least 0.007" 0.19 mm in width)	
Readable bar width ²		0.005" to 0.04" 0.125 to 1.0 mm	
Largest readable label width		3.15" 80 mm ³ . (Using narrow bars of at least 0.007" 0.19 mm in width)	
PCS		0.45 or more (Reflectance of white part: 75% or more)	
Scanning rate		500 scans/sec	
Target code		CODE39, ITF, Industrial2-of-5, COOP2-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	600/1,200/2,400/4,800/9,600/19,200/31,250/38,400 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, 100 mA	
	Leakage current (at OFF)	0.1 mA max.	
Environmental resistance	Residual voltage (at ON)	0.5 V max.	
	Ambient light	Sunlight, Incandescent lamp: 10,000 lux, Fluorescent lamp: 3,000 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, 0.06" 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively	
	Power supply voltage	5 VDC ±5% ⁴	
	Current consumption	300 mA max.	
Weight		Approx. 165 g	Approx. 180 g

1. 1.30" ±0.20" (33 ±5 mm) when the narrowest bar is less than 0.007" (0.19 mm).

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

3. 2.36" (60 mm) when the narrowest bar is less than 0.007" (0.19 mm).

4. Use a stable power supply of 5 VDC ±5%. The BL-U1 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).



Automatic Bar Code Data Verification and Evaluation

Immediate Verification/Evaluation of Bar Code Data

The DV-90 compares the data read with a bar 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 programming.

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

Two serial ports & USB interface are standard

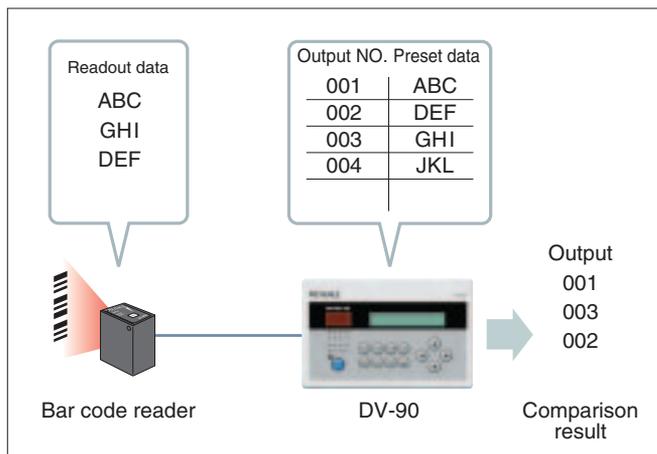
Both of the two serial ports can be used to connect BL Series units (bar code readers) respectively. It is also possible to select a port from PORT 1 or 2 to verify data for each preset number. Moreover, a USB interface is featured as standard. Consequently, two BL Series units and a PC can be connected simultaneously.

PNP output type available

A PNP open-collector output model is also available (DV-90PE)

DV Quick Setup Code

The included software allows users to setup the DV-90 by simply scanning the bar codes which are printed out from the software.



* Up to 900 presets can be registered.

Easy preset registration

The preset bar code data can be registered easily by simply scanning the bar codes applied on products or instruction sheets. Additions or a change of products can be registered easily without changing the program.

▶ See page 20 for setup software.



Bar Code Data Verification Functions

DV-90 Series Verification Functions

Normal Verification

Compares readout data to the 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 the readout data to one selected preset data and outputs whether they match or do not match.

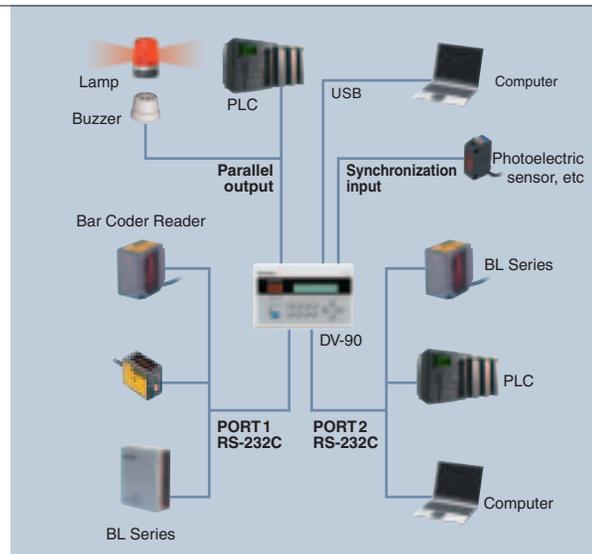
3-point A Verification

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

3-point B Verification

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

Applications

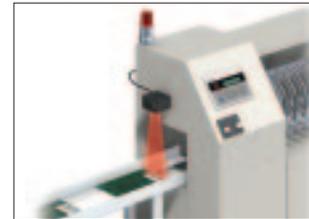


Prevent Mixing



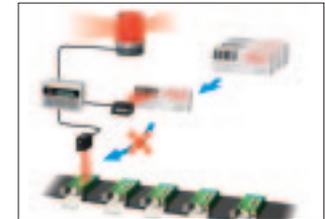
Wrong products can be effectively prevented from entering the line.

Changeover



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

POKA-YOKE



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

Specifications

Model		DV-90NE (NPN output type), DV-90PE (PNP output type)	
Applicable bar code reader		BL-700/600/500/180/80RKE	
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
Serial interface	PORT1 (For connecting bar code reader)	Applied standards	RS-232C
		Synchronization	Asynchronous
		Baud rate	600/1,200/2,400/4,800/9,600/19,200/31,250/38,400/57,600/115,200 bps
	PORT2 (For connecting PC, PLC, or bar code reader)	Data length	7/8 bits
		Parity check	None/Even/Odd
		Stop bit length	1 bit/2 bits
USB (Special for connecting PC)		USB 2.0 (B type) (Communication speed fixed to 115,200 bps)	
Power output	Power for bar code reader	5 VDC $\pm 5\%$, 1,100 mA max. (at the ambient temperature of 0 to +40°C (32 to 104°F)) 850 mA max. (at the ambient temperature of 40 to +50°C (104°F to 122°F))	
	Power for sensor	24 VDC $\pm 10\%$, 250 mA max.	
Environmental resistance	Enclosure rating	IP-65 (only the front panel when panel-mounted)	
	Ambient temperature	0 to +50°C (32 to 122°F), No condensation	
	Relative humidity	35 to 85%, No condensation	
Power rating	Operating atmosphere	No dust or no corrosive gas present	
	Power supply voltage	24 VDC $\pm 10\%$, class 2	
Weight	Current consumption	850 mA max.	
		Approx. 360 g	



Converts Bar Code Data into ON/OFF Signals

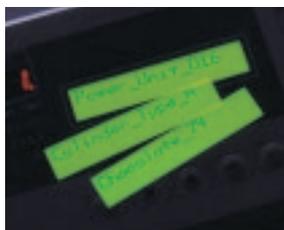
Once the preset bar code data is entered, the BL-V35E compares the readout data with the preset data and produces a parallel output (bit, binary, or BCD) for the matched registration number.

Up to 399 bar codes can be preset

To preset a bar code, just read it with the BL-V35E. No difficult programming is required. A bar code system can be implemented with extremely simple operation and at low cost.

Easy-to-read character display

The data reference function instantly converts the bar code data read into item names. Products can be quickly and reliably checked.



PLC link

When the BL-V35E is connected to a PLC, the bar code data read can be directly written to the PLC data memory. It does not require a personal computer or tedious communication programs.



Compatible with all of KEYENCE's bar code readers

The BL-V35E can be connected directly with all of KEYENCE's bar code readers. The BL-V35E provides added convenience with its built-in timing inputs.



BL setup software is available

The software not only allows the preset and reference data to be loaded but also saved.

Setup software BL-H35W (optional)

No.	Output No.	PresetData	RefData
0	NG	(preset NG)	(no data)
1	1	49145432	A4 notebook
2	2	49632433	B5 notebook
3	3	49218394	Eraser
4	4	49302432	Pencil
5	5	49672351	Floppy disk
6	6		
7	7		
8	8		

Packed with Convenient Features for Practical Applications

Step verification feature

The step verification feature compares the first and second readout data, and outputs whether or not both data match. This is convenient to compare slips with actual items.

Serial Number check feature

The serial number check feature determines whether bar code labels are properly printed in serial order. This is ideal for checking the serial numbers of products.

Preset-active feature

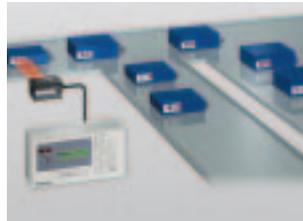
The preset-active feature checks whether the readout data matches one of the preset data (399 max.) and outputs whether or not the two data match. This is convenient for changeovers while checking for the mixing of different products.

Bar code samples



Applications

Smooth sorting



The preset number for the readout bar code can be output from the parallel port, enabling smooth sorting.

Checking for the mixing of different products



The readout bar code data is compared with the preset data, and a matched or unmatched signal can be output without a PC.

Instructions for operation or pickup



The readout bar code data can be sent directly to a PLC without any complicated communication programming.

Specifications

Model		BL-V35E	
Number of storable preset data		399 data max.	
Memory backup		Lithium battery (service life: approx. 10 years at 25°C (77°F))	
Parallel interface	Input (7 points)¹	Non-voltage input (contact, solid-state)	
	Output (12 points)	Output form	NPN
	• OK output (Matched)	Rated load	30 VDC, 100 mA
	• NG output (Unmatched)	Leakage current (at OFF)	0.1 mA max.
	• OUT1 to OUT10 outputs (Output No.)	Residual voltage (at ON)	Less than 1 V
Serial interface	• Serial port 1 (for connecting an external device ² or bar code reader)	Applied standard	Conforms to RS-232C approved by EIA
		Synchronization	Start-stop (Full duplex)
		Transmission code	ASCII
	• Serial port 2 (special for connecting a bar code reader)	Baud rate	600 to 38400 bps
		Data length	7/8 bits
		Parity check	None/ Even/ Odd
	Stop bit length	1 bit/2 bits	
Power supply for bar code reader		5 V ±5%, 750 mA max.	
Environmental resistance	Ambient temperature	0 to +50°C (32 to 122°F), No condensation	
	Ambient humidity	35 to 85%, No condensation	
	Vibration	10 to 55 Hz, 0.06 ¹ 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively	
Power rating	Power supply voltage	100 to 120 VAC, 50/60 Hz	
	Power consumption	20 VA	
Dimensions		7.56" x 3.78" x 2.01" 192 x 96 x 51mm	
Panel cutout		3.62 ^{+0.03} ₀ " x 7.40 ^{+0.04} ₀ " 92 ^{+0.8} ₀ x 188 ⁺¹ ₀ mm Panel thickness: 0.24" 6 mm max.	
Weight		Approx. 600 g	

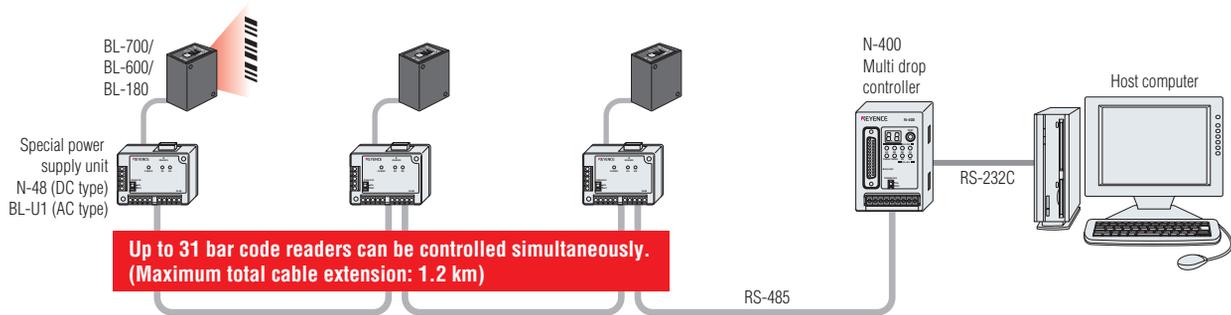
1. Two synchronization inputs for bar code readers connected to serial 1 and 2. Five inputs for the same operation as that of the main keys (Preset, , , Cancel, Enter).

2. Can be connected to a personal computer, a PLC (programmable logic controller), or a serial printer.

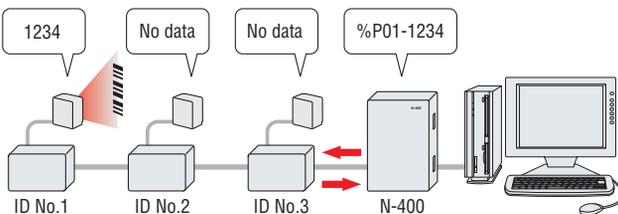


Multi-drop Link can be Established Easily.

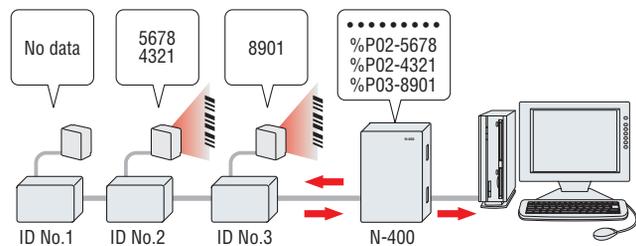
Up to 31 bar code readers can be controlled with a single host computer. The N-400 controls the communication between the bar code readers, partially eliminating the need for programming the host computer.



Automatic polling



The N-400 inquires for data (polling) to the connected bar code readers all the time. The data is stored temporarily in the internal memory (sending buffer) of the N-400.

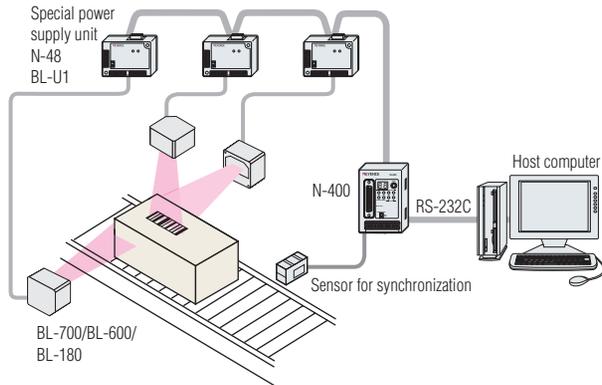


The N-400 polls the connected bar code readers. The N-400 receives data and sends it to the host computer immediately.

Multiple Scanning Heads

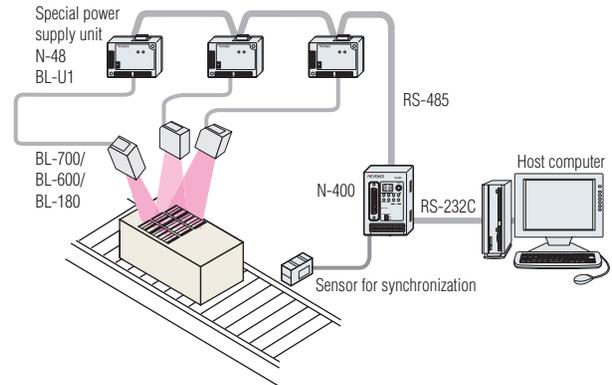
Multi-head mode

The N-400 controls several bar code readers as if they were a single unit, without using a host computer. This mode is useful when several bar code readers are used simultaneously to read bar code labels pasted on various positions.



Mutual interference prevention function

The N-400 controls several bar code readers so that they scan alternatively, eliminating mutual interference. This function is useful when several bar code readers must be installed close to each other to read a label with several bar codes.



Features of the N-400

Greatly reduced programming for the host computer

Up to 31 bar code readers can be controlled with a single host computer.

24 KB memory (sending buffer) featured as standard

The internal buffer can store up to approximately 3500 pieces of five-digit data. In the event of an accident the data is retained even when the host computer is turned off.

Built-in test mode for connection check

The N-400 features a test mode to enable an easy check of the connection with the bar code readers. No special programming or PC is required.

Setting change of bar code readers

You can change various settings of bar code readers using the N-400, such as adding bar code types or changing the maximum code length to be read.

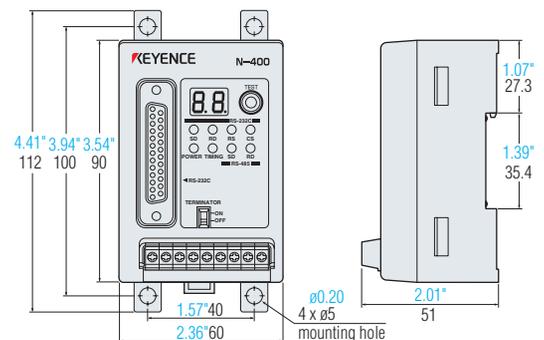
Reading test of each bar code reader

You can use the handy functions of the BL Series, as well as the test mode, through the N-400. This allows remote access to the bar code readers to check settings and ensure correct operation.

Specifications

Model	N-400	
Connectable bar code reader	BL-700 Series, BL-600 Series, BL-180 Series	
Trigger input	Rated input	15 to 26 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	600/1,200/2,400/4,800/9,600/19,200/31,250/38,400 bps
	Data length	7/8 bits
	Parity check	Even/Odd/None
	Stop bit length	1 bit/2 bits
	Max. number of connectable units	31
RS-485	Applied standards	RS-485
	Synchronization	Start-stop (Full-duplex)
	Transmission code	ASCII
	Baud rate	600/1,200/2,400/4,800/9,600/19,200/31,250/38,400 bps
	Data length	7/8 bits
	Parity check	Even/Odd/None
	Stop bit length	1 bit/2 bits
	Max. total extension distance	1.2 km
Environmental resistance	Ambient temperature	0 to +50°C (32 to 122°F), No condensation
	Relative humidity	35 to 85%, No condensation
Power rating	Power supply voltage	24 VDC ^{+10%} / _{-20%}
	Current consumption	140 mA max.
Weight	Approx. 180 g	

Dimensions





Safe for the eyes

Uses LED's, not a laser as the light source. This eliminates possible danger to the user's eyes, preventing accidents from happening.

Low price

This super-high-quality low-priced product is made possible through a streamlined manufacturing system integrating all processes from development to production.

Directly connects to a PC

Transmitting bar code data is as easy as connecting the reader to a PC. There is no need for software.

Simple set up with data menu

Set-up is easily achieved by simply scanning the bar code menu located in the manual.

Superb reading ability.

The BL-80 Series can reliably read bars as narrow as 0.005" (0.125 mm).

Specifications

Model	BL-80VE	BL-80RE	BL-80RKE
Interface	PS/2 Keyboard Interface		RS-232C
	External PS/2 keyboard	RS-232C general purpose	For Keyence products
Connector type	Mini-DIN 6-pin or DIN 5-pin		D-sub 9-pin (Female)
Light source	Red LED		
Reading distance	0" to 0.71" 0 to 18 mm		
Readable bar width	3.23" 82 mm (included quiet zone)		
Resolution	CODE39, ITF, IATA, Industrial 2 of 5, Codabar	0.006" 0.15 mm	0.005" 0.125 mm
	EAN/UPC	0.01" 0.25 mm (0.8 times)	
	CODE93, CODE128, EAN-128	0.007" 0.17 mm	0.006" 0.15 mm
Scanning rate	100 scans/second		
Target codes	EAN/UPC (A+E), CODE39, Codabar, ITF, Industrial2-of-5, IATA, CODE93, CODE128, EAN-128		
Ambient temperature	0 to +40°C (32 to 104°F), No condensation		
Relative humidity	35 to 85%, No condensation		
Power supply voltage	5 VDC ±5%	5 VDC ±5% ¹	
Current consumption	Less than 95 mA	Less than 175 mA	
Weight	Approx. 140 g (without cable)		
Cable length	5.3' 1.6 m (coiled)	6.6' 2.0 m	

1. AC adapter is included with BL-80RE. The power supply voltage for the AC adapter is 120 VAC (60 Hz, 7 W)

Peripheral devices

Power supply units

N-42



N-48



BL-U1



BL-U2



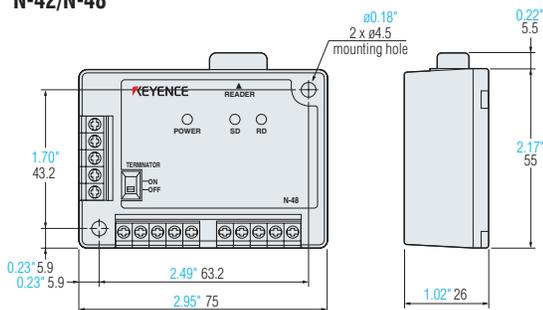
Specifications

Model		N-42	N-48
Conversion interface		RS-232C ↔ RS-422A (Level conversion)	RS-232C ↔ RS-485 (Level conversion)
Connectable bar code reader		BL-700 Series, BL-600 Series, BL-180 Series	
Power supply for bar code 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)	RS-485 (Max. number of connectable units: 31) (Max. total extension distance: 1.2 km)
Power rating	Power supply voltage	24 VDC ^{+10%} / _{-20%}	
	Current consumption	260 mA max.	
Weight		Approx. 100 g	

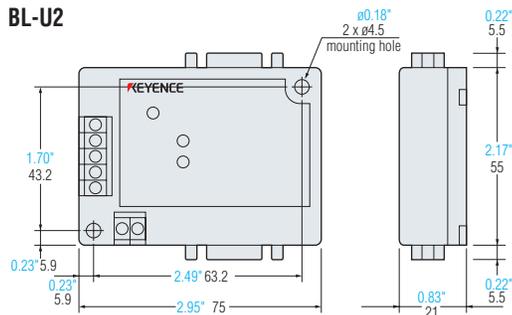
Model		BL-U1	BL-U2
Connectable bar code reader		BL-700 Series, BL-600 Series, BL-180 Series	
Power supply for bar code reader		5 VDC ±5% (1.5 A)	5 VDC ±5% (630 mA)
Power supply for sensor		12 V ±10% (300 mA)	—
Trigger input	Input rating	8.5 to 30 VDC, 10 mA max.	8.5 to 26 VDC, 10 mA max.
	Max. OFF current	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)	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

Dimensions

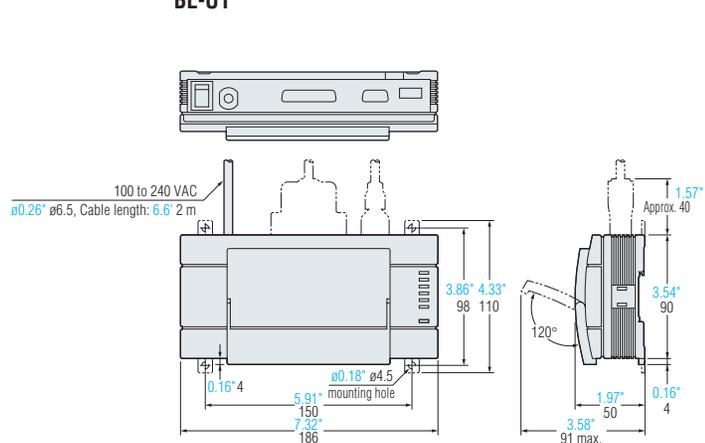
N-42/N-48



BL-U2

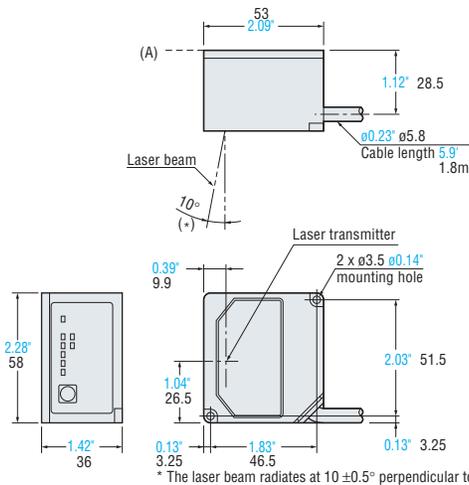


BL-U1

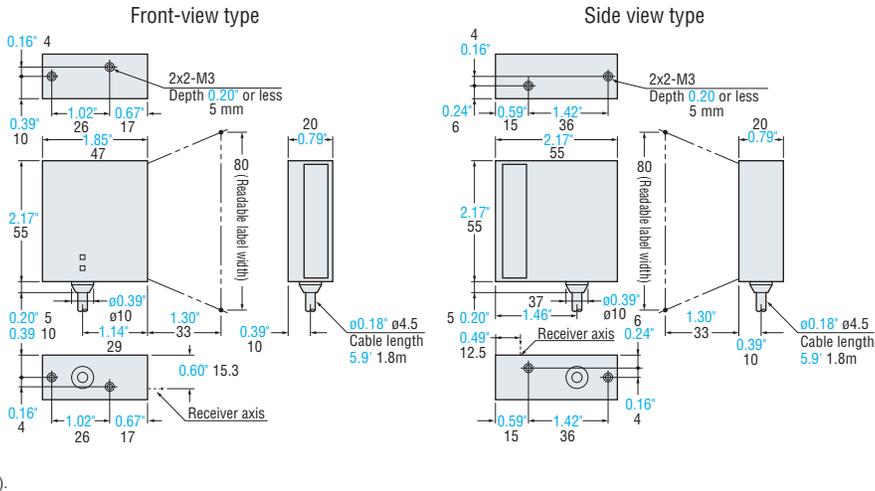


Dimensions

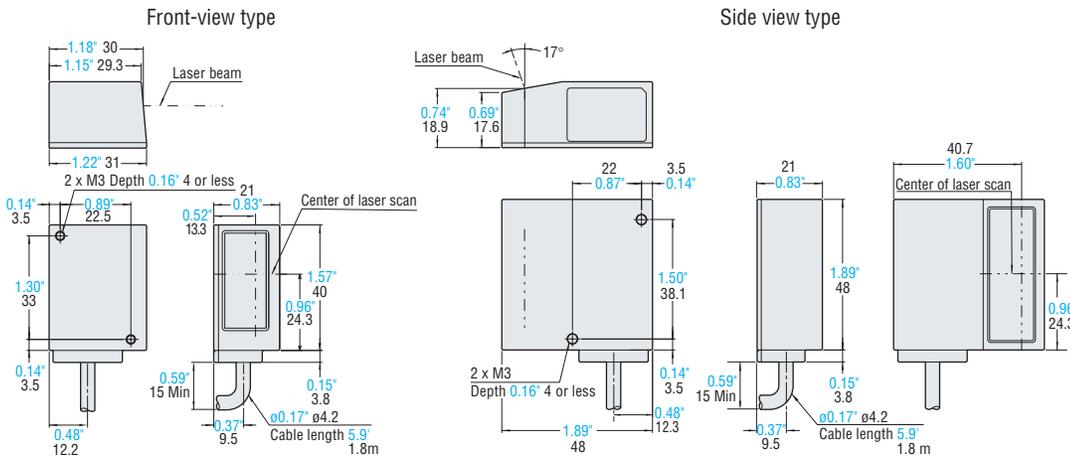
BL-700 Series



BL-180 Series



BL-600 Series



Warning

The BL-600 Series conforms to FDA and IEC standards as follows:

Model	BL-600/601/600HA/601HA/650HA/651HA
FDA	Class II
IEC	Class 2

The BL-700 Series conforms to FDA and IEC standards as follows:

Model	BL-700/701/740/741/780/781
FDA	Class II
IEC	Class 2

Protective housing labels

FDA
CAUTION—LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM.

IEC
CAUTION
Laser radiation when open. Do not stare into beam.

FDA
CAUTION—LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM.

IEC
CAUTION
Laser radiation when open. Do not stare into beam.

Warning labels

BL- 600/601/ 600HA/ 601HA

FDA Class II
AVOID EXPOSURE. LASER RADIATION IS EMITTED FROM THIS APERTURE. **CAUTION** LASER RADIATION—DO NOT STARE INTO BEAM. LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. **CAUTION** SEMICONDUCTOR LASER. 650 nm. MAXIMUM OUTPUT: 1.4 mW. PULSE DURATION: 91 μs. CLASS 2 LASER PRODUCT.

IEC Class 2
LASER RADIATION. DO NOT STARE INTO BEAM. Maximum output: 1.4 mW. Pulse duration: 91 μs. Emitted wavelength: 650 nm. CLASS 2 LASER PRODUCT (in conformity to IEC 60825-1:1993). **CAUTION**—Laser radiation when open. Do not stare into beam.

BL-700/701

FDA Class II
AVOID EXPOSURE. LASER RADIATION IS EMITTED FROM THIS APERTURE. **CAUTION** LASER RADIATION—DO NOT STARE INTO BEAM. LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. **CAUTION** SEMICONDUCTOR LASER. 650 nm. MAXIMUM OUTPUT: 1.4 mW. PULSE DURATION: 91 μs. CLASS 2 LASER PRODUCT.

IEC Class 2
LASER RADIATION. DO NOT STARE INTO BEAM. Maximum output: 1.4 mW. Pulse duration: 91 μs. Emitted wavelength: 650 nm. CLASS 2 LASER PRODUCT (in conformity to IEC60825-1:11.1993).

BL- 650HA/ 651HA

FDA Class II
AVOID EXPOSURE. LASER RADIATION IS EMITTED FROM THIS APERTURE. **CAUTION** LASER RADIATION—DO NOT STARE INTO BEAM. LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. **CAUTION** SEMICONDUCTOR LASER. 650 nm. MAXIMUM OUTPUT: 1.4 mW. PULSE DURATION: 91 μs. CLASS 2 LASER PRODUCT.

IEC Class 2
LASER RADIATION. DO NOT STARE INTO BEAM. Maximum output: 1.4 mW. Pulse duration: 91 μs. Emitted wavelength: 650 nm. CLASS 2 LASER PRODUCT (in conformity to IEC 60825-1:1993).

BL-740/741

FDA Class II
AVOID EXPOSURE. LASER RADIATION IS EMITTED FROM THIS APERTURE. **CAUTION** LASER RADIATION—DO NOT STARE INTO BEAM. LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. **CAUTION** SEMICONDUCTOR LASER. 650 nm. MAXIMUM OUTPUT: 1.4 mW. PULSE DURATION: 91 μs. CLASS 2 LASER PRODUCT.

IEC Class 2
LASER RADIATION. DO NOT STARE INTO BEAM. Maximum output: 1.4 mW. Pulse duration: 91 μs. Emitted wavelength: 650 nm. CLASS 2 LASER PRODUCT (in conformity to IEC60825-1:11.1993).

BL-780/781

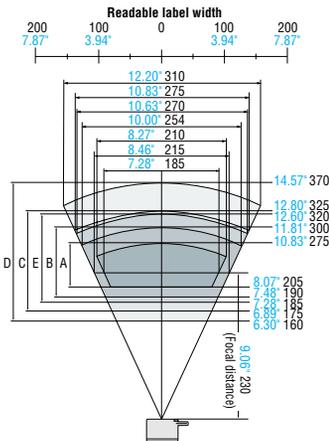
FDA Class II
AVOID EXPOSURE. LASER RADIATION IS EMITTED FROM THIS APERTURE. **CAUTION** LASER RADIATION—DO NOT STARE INTO BEAM. LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. **CAUTION** SEMICONDUCTOR LASER. 650 nm. MAXIMUM OUTPUT: 2.0 mW. PULSE DURATION: 91 μs. CLASS 2 LASER PRODUCT.

IEC Class 2
LASER RADIATION. DO NOT STARE INTO BEAM. Maximum output: 2.0 mW. Pulse duration: 91 μs. Emitted wavelength: 650 nm. CLASS 2 LASER PRODUCT (in conformity to IEC60825-1:11.1993).

Reading range characteristics

Unit: Inch mm

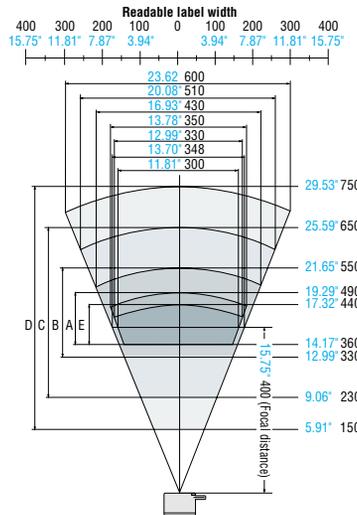
BL-700/701



Narrow bar width	
A	0.006" 0.15 mm
B	0.007" 0.19 mm
C	0.01" 0.25 mm
D	0.02" 0.5 mm
E	1 (EAN)

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

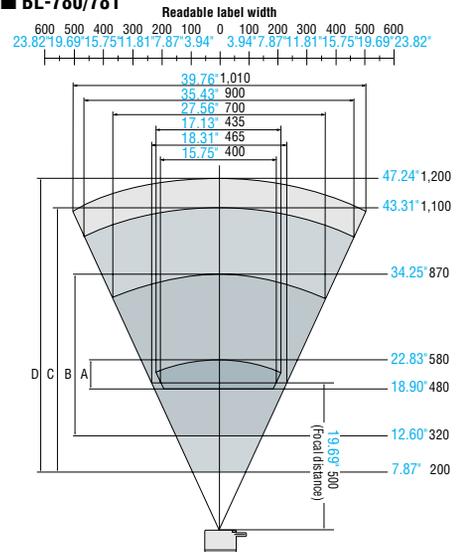
BL-740/741



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

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

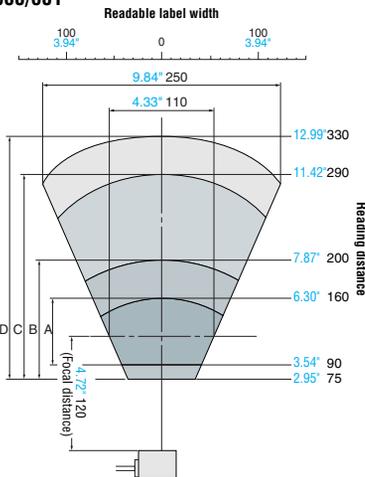
BL-780/781



Narrow bar width	
A	0.01" 0.32 mm
B	0.02" 0.5 mm
C	0.04" 1.0 mm
D	0.08" 2.0 mm

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

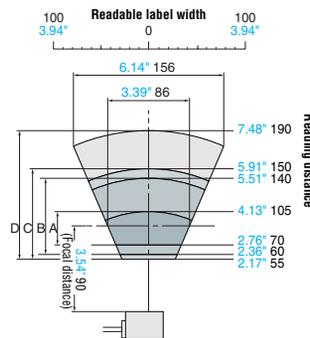
BL-600/601



Narrow bar width	
A	0.007" 0.19 mm
B	0.010" 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

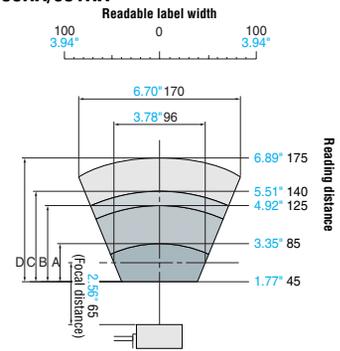
BL-600HA/601HA



Narrow bar width	
A	0.049" 0.125 mm
B	0.007" 0.19 mm
C	0.010" 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

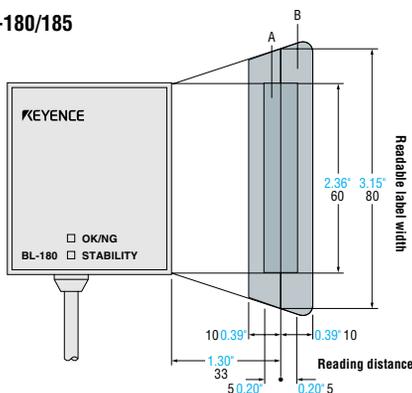
BL-650HA/651HA



Narrow bar width	
A	0.0049" 0.125 mm
B	0.007" 0.19 mm
C	0.010" 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

BL-180/185



Narrow bar width	
A	Less than 0.007" 0.19
B	0.007" 0.19 Min.

- (Measuring conditions)
- The KEYENCE standard barcode is used.
 - Skew: -10°
 - Pitch: 0°
 - Tilt: 0°

Barcode samples

NB= Narrow bar width
WB= Wide bar width
* The bar codes given below do not show the bar code reader performance criteria.

CODE39

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



12345

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



POP

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



C39

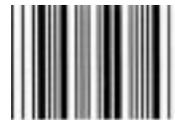
CODABAR

NB=0.25mm,NB:WB=1:2.5



A0663791111A

NB=0.38mm,NB:WB=1:2.67



B123A

NB=0.5mm,NB:WB=1:2.25



C9876D

UPC/EAN

UPC-A



0 12345 67899 8

UPC-E



0 123456 5

EAN



4 912345 678904

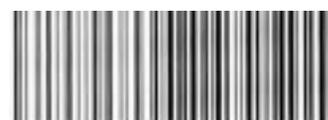
CODE128

NB=0.25mm



12345678901234567890

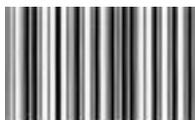
NB=0.25mm



ABCabc123+=-

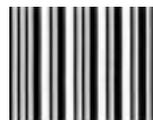
ITF

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



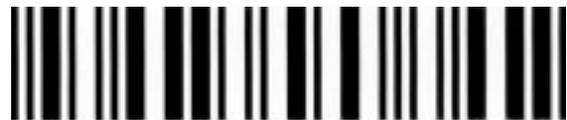
0123456789

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



9999

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



12345678

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