

**NEW Super Compact
Laser Bar Code Reader**

BL-600 Series



The World's Smallest Bar Code Reader

Bar Code Reader BL-600 Series

World Smallest

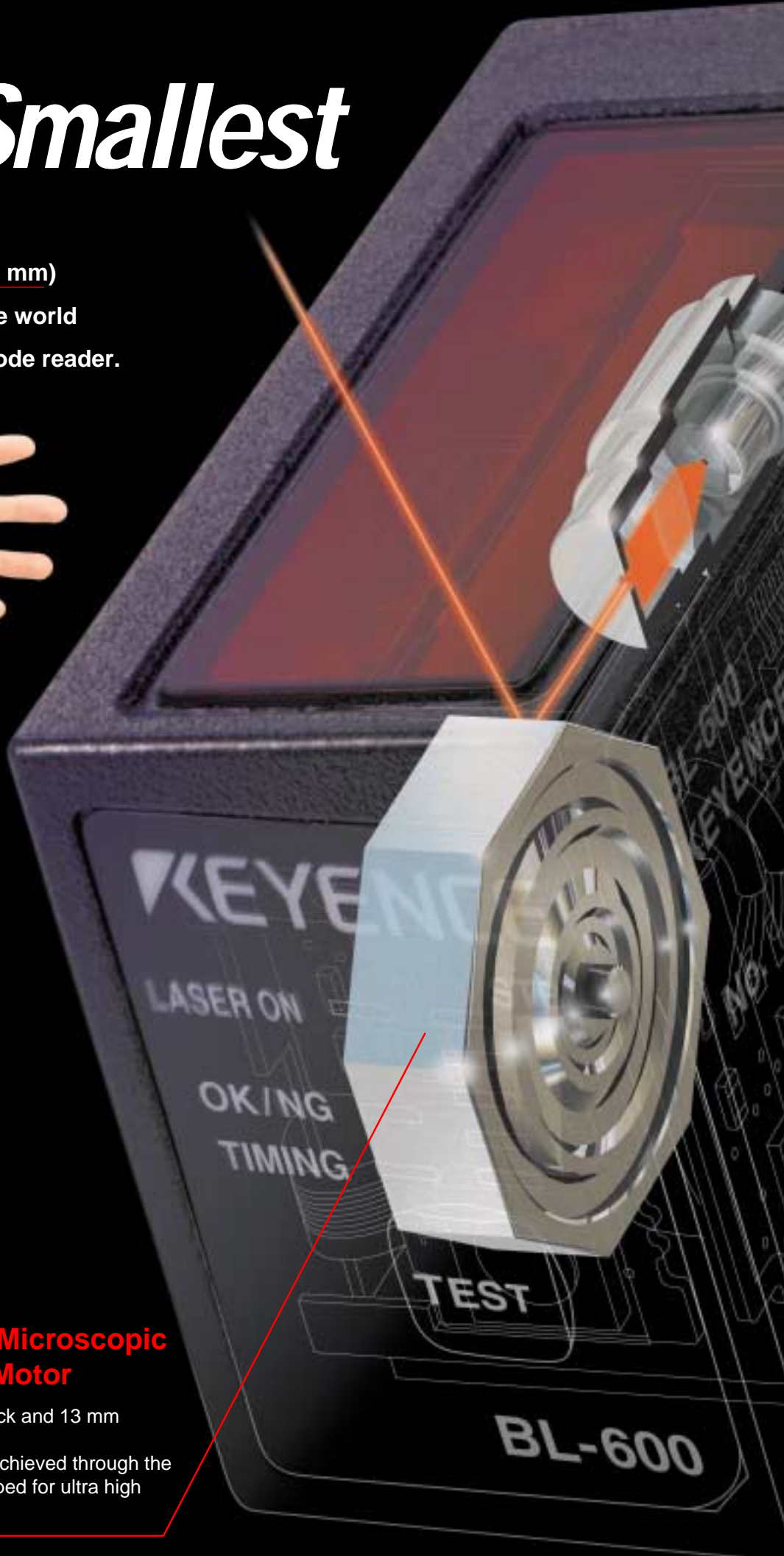
With the BL-600 (31 x 40 x 21 mm)
KEYENCE again smashes the world
record for the smallest bar code reader.



Half the size, twice the range
of other Bar Code Readers
in its class

New and Innovative Microscopic Polygon Mirror and Motor

Ultra compact at only 3.5 mm thick and 13 mm diagonally from corner to corner.
The BL-600's miniaturization is achieved through the use of optical technology developed for ultra high accuracy sensors.



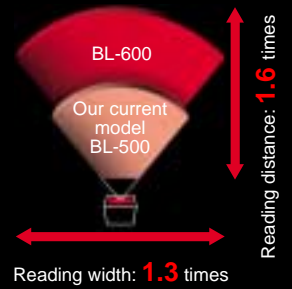
NEW

Twice the range with superb reading performance

Built-in AGC & SRC circuits

Using KEYENCE's original AGC circuits for advanced, high speed performance, the BL-600, the world's smallest bar code reader, offers excellent reading depth and angle characteristics. In addition, the reader includes built-in SRC circuits which greatly reduce the effects of extraneous reflected light for more reliable and stable reading. Consequently, the BL-600's reading performance is greatly improved over previous models.

*AGC=Auto Gain Control/SRC=Specular Reflection Cancel



NEW

The world's first built-in preventive maintenance function

Built-in PMI function (patent pending)

The BL-600 is the first ever bar code reader with a built-in PMI function for monitoring and reporting reading performance during operation. By referring to the PMI information, it is possible to quickly detect potential reading error problems. PMI offers a convenient tool for acquiring valuable maintenance information, and for investigating the causes of reading errors.

*Preventive Maintenance Information

NEW

Test switch for easy adjustment

Built-in test mode

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

Indicates reading status to prevent errors

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



100% of max. rate 40% of max. rate Reading error

Ultra high speed of 500 scans/sec

Outstanding reading accuracy, even on high-speed lines

Using advanced KEYENCE control technology the BL-600 operates at 500 scans per second, making it the fastest laser bar code reader in its class. It's remarkable speed allows it to perform with exceptional accuracy even on very fast production lines.

Reaching the Summit of Performance

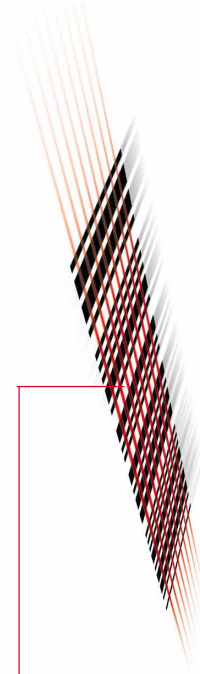
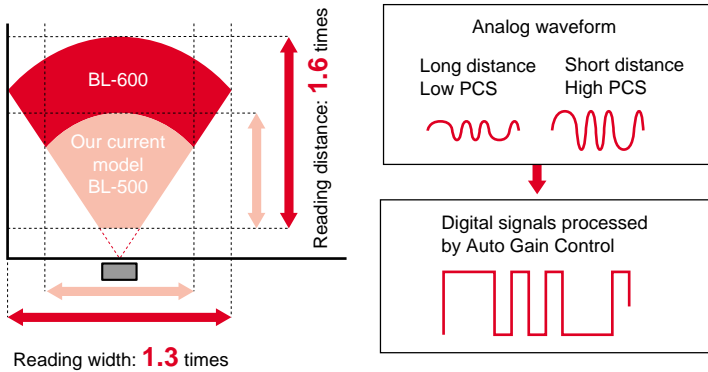
FUNCTION 1

Best in its class, with amazing reading performance

NEW AGC & SRC circuits

Auto Gain Control automatically controls the amount of light received by the bar code reader by adjusting gain to the optimal level according to reading distance and PCS changes. Through this AGC function, the BL-600 can operate over long and wide reading distances and angles, despite its ultra compact size. Since the AGC circuits can amplify the signals received by the reader, even bar codes with low PCS can be read accurately. In addition to automatic gain control, the BL-600 features built-in SRC circuits that cancel out the influence of light reflected from sources other than the bar codes. For example, under conditions where laser light bounces off polished metal or mirror surfaces, the BL-600 delivers much more stable reading performance than current models.

*AGC=Auto Gain Control/ SRC=Specular Reflection Cancel



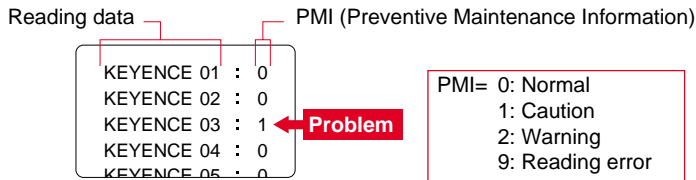
FUNCTION 2

Preventive Maintenance Information (PMI) prevents reading errors before they occur

The world's first PMI function Patent pending

This function adds preventive maintenance information (PMI), relating to the reliability and stability of bar code reading performance, to the bar code data that is output by the reader. The PMI function allows performance to be monitored so that possible causes of reading errors, such as deterioration in bar code printing quality or the presence of dirt on the lens of the bar code reader, can be detected at an early stage. These kinds of errors are often difficult to identify with conventional bar code readers. This function is especially convenient when using several bar code readers together.

*Reading stability tolerance settings are freely adjustable.



FUNCTION 3

Enhanced stability reading with 8 scan lines

Raster scan type

The BL-600 is available in a raster scan unit that reads bar codes using eight scan lines. Raster scan offers reliable, accurate bar code reading even with bar codes containing flaws such as chips, voids, or stains.

Easy-to-use, intuitive setup tools

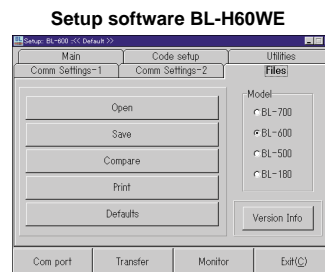
Setup software with monitor mode (Accessory)

The BL-600 series is supplied with clear, intuitive, software for setting up your bar code reader's operating parameters. Settings can be modified easily using a dialog-style interface with plain English commands—no need for command lines.

The software also includes a monitor mode for conveniently checking the data being read. This function allows you to view the last 1000 lines read from the bar code reader.

(Windows 3.1/95/98 compatible)

*Windows is a registered trademark of Microsoft Corp. of the United States.



Simple dialog-style screens

The Compact Yet Durable Design



DESIGN 1

An ultra light 115 g, yet solid construction

Die-cast magnesium construction

Thanks to its die-cast magnesium casing, the BL-600, the world's smallest bar code reader, is not only ultra light and ultra compact, it is also strong and rigid.

DESIGN 2

Exceptional resistance even in severe environments

Easily satisfies all IP-65 standards

The highly resistant construction of the BL-600 clears all the demanding IP-65 environmental weathering standards for sensors. Since it offers excellent tolerance to harsh or dirty environments, it can be installed in almost any location or facility.

DESIGN 3

In pursuit of easy maintenance

Flat reading surface

The absolutely flat reading surface of the BL-600 series greatly reduces the tedious maintenance work often involved with bar code readers. With this kind of design, KEYENCE is making bar code readers as easy to use as sensors.

Applications



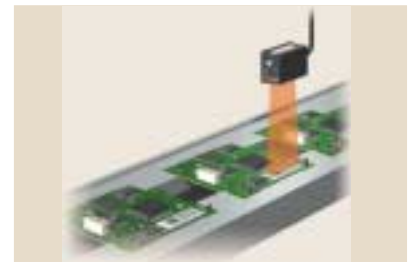
Wafer carriers

Even teflon-coated bar codes can be read reliably, thanks to the BL-600's sophisticated AGC function.



Medical

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



Printed circuit boards

The BL-600 is ideal for use in printed circuit board production lines. Even with vibrations and unevenness, the BL-600 can perform accurately and reliably.

The BL-600 series is available in a variety of types to suit different application conditions, such as available installation space, minimum bar width, and bar code printing quality.

Select for installation space

Front type

Makes best use of limited space

Side type

Select for bar code quality

Single scan type

Raster scan type reliably reads bar codes with stains, chips, or other flaws.

Raster scan type

Select for minimum bar width

Standard type
(Min. readable bar width: 0.19 mm)

Select according to the min. bar widths of the bar codes to be read.

High-resolution type
(Min. reading bar width: 0.125 mm)



Front type

- Standard type BL-600 (single)
- BL-601 (raster)

- High-resolution type BL-600H (single)
- BL-601H (raster)



Side type

- High-resolution type BL-650H (single)
- BL-651H (raster)

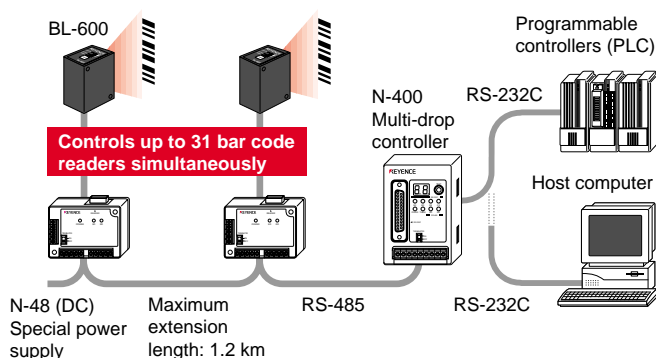
A complete system interface for diverse needs

Multi-drop PLC link: a first for any product in its class

Controls up to 31 bar code readers simultaneously

Using a multi-drop controller (N-400), up to 31 bar code readers can be controlled from a single host computer. Since the N-400 handles communication with the bar code readers, data read from multiple bar code readers can be written directly to PLC memory without the need for communication software.

(Compatible models: KEYENCE KV Series, Mitsubishi Electric MELSEC-A Series, Omron SYSMAC-C Series)



■ Specification

Model	BL-600	BL-601	BL-600H	BL-601H	BL-650H	BL-651H
Type	Standard type		High-resolution		High-resolution, side-scanning type	
Scanning direction	Front				Side	
Scan method	Single	Raster	Single	Raster	Single	Raster
Light source ¹	Semiconductor laser (Wavelength: 650 nm)					
Maximum output	1.5 mW					
Pulse width	99 μs				82 μs	
Class	FDA		Class II			
	IEC		Class 2		Class 2	
Reading distance	75 to 330 mm (When narrow width is 1.0 mm)		55 to 190 mm (When narrow width is 0.5 mm)		45 to 175 mm (When narrow width is 0.5 mm)	
Reading bar width ²	0.19 to 1.0 mm * 0.25 to 1.0 mm for CODE 93 and CODE 128		0.125 to 1.0 mm * 0.15 to 1.0 mm for CODE 93 and CODE 128			
Maximum reading label width ³	250 mm (When reading distance is 280 mm)		156 mm (When reading distance is 174 mm)		170 mm (When reading distance is 155 mm)	
PCS	0.6 or more (white reflection rate 75% or more)					
Scan count	500 scans/second					
Supported codes	CODE39, ITF, Industrial 2 of 5, COOP 2 of 5, Coda bar, CODE128, EAN-128, CODE93, EAN / UPC(A•E)					
Reading digit	32 digits max. ⁴					
Trigger input	Non-voltage input (relay contact, solid state) * TTL input is also available.					
OK/NG output	Output type		NPN open collector			
	Rating load		24 VDC, 30 mA			
	Leakage current at OFF		0.1 mA max.			
	Residual voltage at ON		0.5 V max.			
Serial interface	Applied standard		In accordance with RS-232C			
	Synchronization		Start-stop synchronization			
	Transmission code		ASCII code			
	Baud rate		600, 1200, 2400, 4800, 9600, 19200, 31250, 38400 bit/s			
	Data length		7/8 bits			
	Parity check		None/even/odd			
Stop bit length		1/2 bits				
Enclosure rating	IP-65					
Ambient light	Sunlight: 10000 lx, Incandescent lamp: 6000 lx					
Ambient temperature	0 to 45° C					
Relative humidity	35 to 85%					
Operating atmosphere	No dust or corrosive gas present					
Vibration	10 to 55 Hz, amplitude 1.5 mm, 2 hours each in X, Y and Z directions.					
Power supply voltage	5 V DC ±5%					
Power consumption	330 mA max.					
Weight	Approx. 115 g				Approx. 130 g	

1. Raster width: BL-601: 7.1 mm±1.8 mm (When reading distance is 120 mm), BL-601H: 5.5 mm± 1.4 mm (When reading distance is 90 mm), BL-651H: 5.5 mm± 1.4 mm (When reading distance is 65 mm)

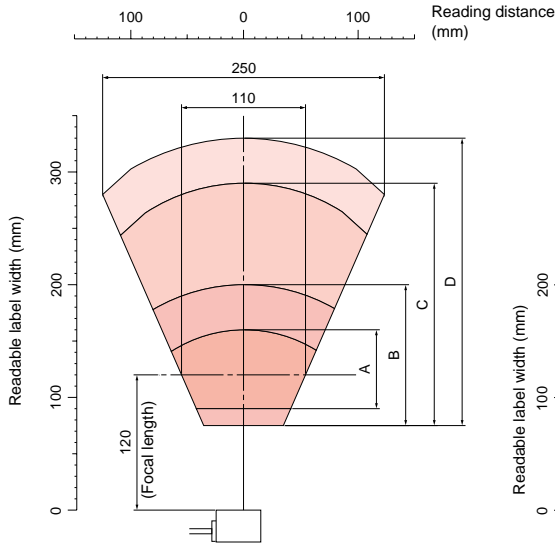
2. Reading bar width indicates the range of readable narrow bar width when the bar code type is CODE39.

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).

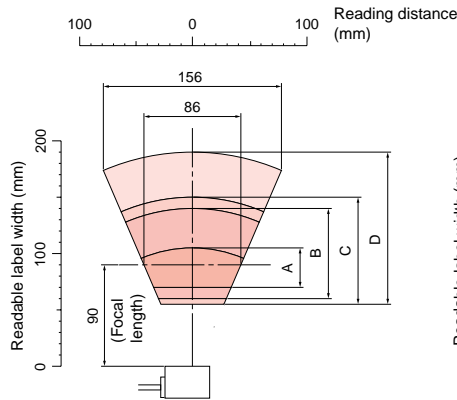
Characteristics



BL-600/601

Bar code type	Narrow bar width	Reading distance
A	CODE39 0.19	90 to 160
B	CODE39 0.25	75 to 200
C	CODE39 0.5	75 to 290
D	CODE39 1.0	75 to 330

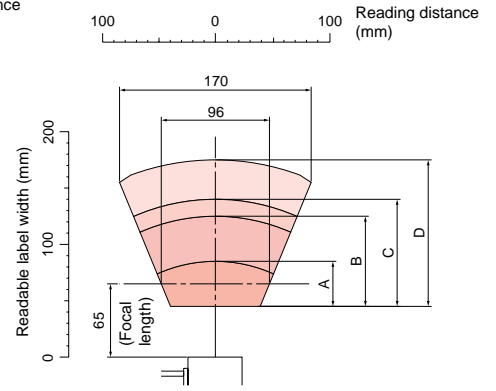
[Measuring conditions]
The KEYENCE standard bar code is used.
Ratio of thin bar to thick bar = 1:2.5
Skew: 15°
Pitch: 0°
Tilt: 0°



BL-600H/601H

Bar code type	Narrow bar width	Reading distance
A	CODE39 0.125	70 to 105
B	CODE39 0.19	60 to 140
C	CODE39 0.25	55 to 150
D	CODE39 0.5	55 to 190

[Measuring conditions]
The KEYENCE standard bar code is used.
Ratio of thin bar to thick bar = 1:2.5
Skew: 15°
Pitch: 0°
Tilt: 0°



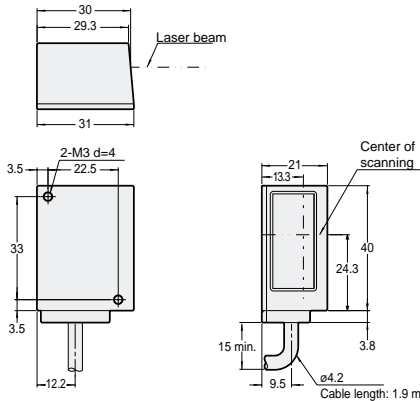
BL-650H/651H

Bar code type	Narrow bar width	Reading distance
A	CODE39 0.125	45 to 85
B	CODE39 0.19	45 to 125
C	CODE39 0.25	45 to 140
D	CODE39 0.5	45 to 175

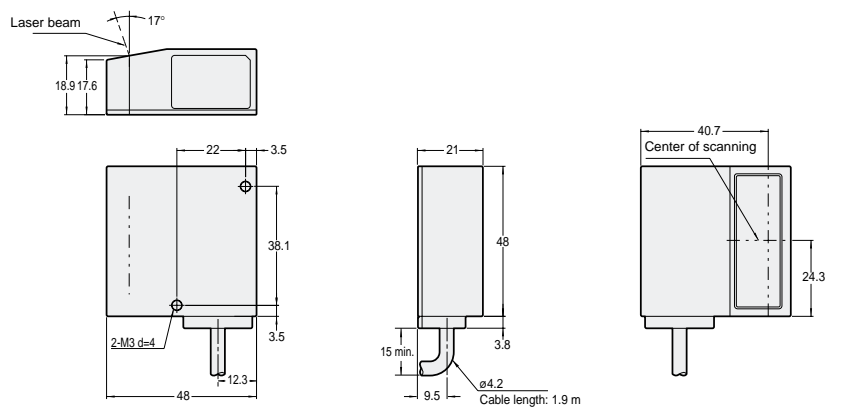
[Measuring conditions]
The KEYENCE standard bar code is used.
Ratio of thin bar to thick bar = 1:2.5
Skew: 0°
Pitch: 0°
Tilt: 0°

Dimensions

BL-600/BL-601/BL-600H/BL-601H



BL-650/BL-651/BL-650H/BL-651H



Warning

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

Model	BL-600/601/600H/601H	BL-650H/651H
FDA	Class II	
IEC 825-1 11.1993	Class 2	

BL-600/601/600H/601H
FDA

▲ AVOID EXPOSURE
LASER RADIATION IS EMITTED FROM THIS APERTURE.

CAUTION
LASER RADIATION
DO NOT STARE INTO BEAM.

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

SEMICONDUCTOR LASER 650 nm
MAXIMUM OUTPUT 1.5 mW
PULSE DURATION 56 μs
CLASS II LASER PRODUCT

IEC

LASER RADIATION
DO NOT STARE INTO BEAM
Maximum output 1.5 mW
Pulse duration 56 μs
Emitted wavelength 650 nm
CLASS 2 LASER PRODUCT
in conformity to IEC 60825-1:1995-01

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

BL-650H/651H
FDA

▲ AVOID EXPOSURE
LASER RADIATION IS EMITTED FROM THIS APERTURE.

CAUTION
LASER RADIATION
DO NOT STARE INTO BEAM.

CAUTION
LASER RADIATION WHEN OPEN.
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SEMICONDUCTOR LASER 650 nm
MAXIMUM OUTPUT 1.5 mW
PULSE DURATION 56 μs
CLASS II LASER PRODUCT

IEC

LASER RADIATION
DO NOT STARE INTO BEAM
Maximum output 1.5 mW
Pulse duration 56 μs
Emitted wavelength 650 nm

CLASS 2 LASER PRODUCT
in conformity to IEC 60825-1:1995-01

■ Associated Products

Multidrop link controller
N-400



DC power supply unit
N-42 (with RS-422A interface)
N-48 (with RS-485 interface)



DC power supply unit
BL-U2 (with RS-232C interface)



■ Introduction to Related Products

Long Distance Laser Bar Code Reader
BL-700 Series



A Fully-featured Long Distance Bar Code Reader

- Laser-style mounting type
- Smallest product in its class (58 x 53 x 36 mm)
- Longest range (1.2 m) in its class
- The world's widest angle range
- Fastest scanning count (700 scans/sec.) in its class
- Best environmental resistance (IP-65) in its class
- 5-bar LED
- Conforms to all major overseas safety standards

Visit our website for Keyence products at <http://world.keyence.com>

Specifications are subject to change without notice.

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