



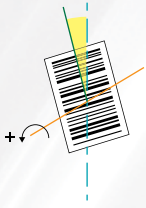
LASER BARCODE SCANNERS FOR INDUSTRIAL AUTOMATION



Fixed Mount Laser Barcode Scanners

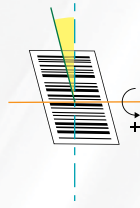
Reading Angle

Tilt Angle



As the width of the barcode increases, the effective height decreases

Pitch Angle



Results in decreased module width

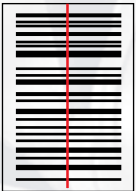
Rotational Angle



Results in decreased effective height

Step Ladder and Picket Fence Orientations

Step ladder



Picket fence



Picket fence w/raster



Barcode labels can be applied in two different orientations with respect to the direction of travel. With the step ladder orientation, the entire area of the barcode is scanned as shown by the red laser line in the first figure. Since the barcode moves left to right, small defects in the bars are of little consequence as there are many opportunities to read the bars. With the picket fence, the laser scans only a very small area of the barcode, the portions of the bars above and below the red laser line are never read. Small defects along the laser-scanned area result in unreadable codes. In order to alleviate this problem, a raster scanner option is available on most of our models. The raster scanner places additional lines in a vertical area of roughly 1/2". These extra laser scans provide plenty of additional opportunities to acquire a good reading.



Ladder Orientation, Side Reading

This is a popular configuration for reading barcodes on a package. The scanner is pivoted about 10° to avoid reflection. The entire height of the barcode passes through the reading area while the package travels down the conveyor; therefore, the barcode can be read even where there may be breaks or damage in the printed code.

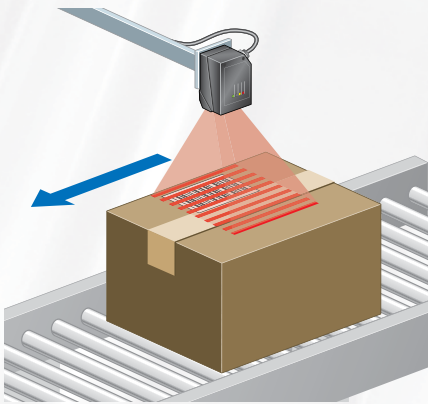
Recommended products: VB6, VB10, VB12, VB14A



Ladder Orientation, Side Reading, Large Tilt Angle

In contrast to the previous example, the large tilt angle of the barcode presents a problem to the reader because not all bars may be in view of the scanner at the same time. In this case, a reconstruction algorithm is needed in the barcode scanner to accomplish a successful read.

Recommended products: VB6, VB14A, VB34

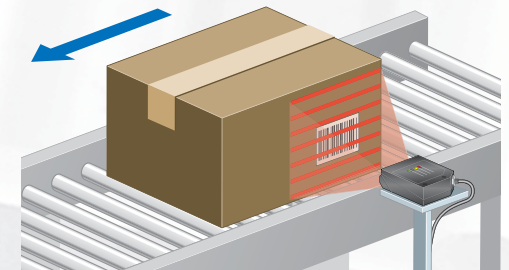
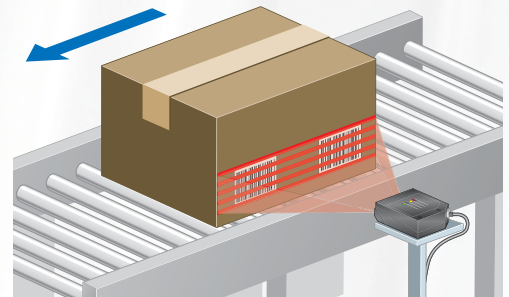


Picket Fence Orientation, Reading from Top

With a picket fence oriented barcode, a raster scanner option provides additional scanned areas to compensate for minor defects in the barcode. The angle of the reader is set to about 15° to avoid reflection and to form an optimum reading area. The distance between the raster lines is selected so that at least two scans, preferably all of them, scan the barcode through. Recommended products: VB10-R, VB12-R, VB14-R

Picket Fence Orientation, Reading from Side

The raster scanner provides redundant scan lines for minor code defects. The scanner should be placed at an angle of approximately 10° to avoid reflection. In addition, the distance between the successive scan lines should be selected so that at least two, but preferably all, of the scan lines pass through the barcode. In order to ensure that the scan lines fall on the barcode, consistent placement of the barcode is critical. An optional oscillating mirror directs the laser in two directions—essentially providing a large raster window. This allows barcodes to be read over a large area on the conveyed material. Exact positioning of the barcode is not required, or multiple barcodes on the conveyed material can be read if clearly differentiated. Recommended products: VB14A/OM-VB14A, VB34-OM



Combined Orientation, Reading from Front

In this example, the barcode is read as the package approaches the scanner line. The barcode is scanned from bottom to top. The scanner is placed at about 45° to avoid reflection and facilitate scanning while allowing the package to clear beneath it. This method works well for similarly sized packages. For dissimilar packages, the VB34 has dynamic and automatic focus. Recommended products: VB14A and VB34

Definitions

<p>Bar The dark element of a barcode.</p>	<p>Module Width X The width of the narrowest element.</p>
<p>Space The light element between two bars of a barcode symbol.</p>	<p>Quiet Zone This is also called light margin or clear area. The quiet zone must be at least 10 times the X dimension or 2.5 mm (minimum). In scanner applications involving a large depth of field, the quiet zone must be larger, 15 times the X dimension with a width of 6.5 mm (minimum).</p>
<p>Element A bar or space in a barcode symbol.</p>	<p>Barcode Symbol A complete symbol consists of the barcode itself (including start and stop bars), quiet zone, and, space permitting, includes a human readable translation of the symbology below the bars.</p>
<p>Module The narrowest element in a barcode; wide bars or spaces are expressed in multiples of modules</p>	

VB6 Series

- Compact design
- Up to 1,200 scans/s
- ACB (Advanced Code Builder)
- Test mode with bar graph display
- Motor on/off software control
- Rugged, IP65 industrial housing



Our VB6-240 barcode scanner is a great solution to many of your linear barcode applications. The model covers a working range from 40 mm to 240 mm. The combination of extremely compact dimensions and powerful high-speed reading capabilities makes the VB6 scanner ideal for demanding applications. In fact, VB6 miniaturization allows easy integration into OEM equipment and automatic machinery. The high scan rate and sophisticated electronic design effectively address difficult reading conditions. Availability of embedded ACB (Advanced Code Builder) reconstruction software algorithm allows consistent decoding of damaged or misapplied labels. The VB6 operates on 5 VDC and requires ASK CVL-701 cable when used with C-BOX100. It also requires a 25-pin gender changer, which is included with the ASK CVL-701.



VB8 Series

- 240,000 hours MTBF
- Flexible all-in-one interface architecture
- Small, compact design
- Works with Windows® software

The VB8-305 CCD scanner is the entry-level solution for many OEM applications. Thanks to its unique combination of technical characteristics it is ideally suited for installation in machinery. The VB8-305 excels through optimal reading characteristics. It can scan codes directly at the read window due to its wide reading field and improved depth focus. An optionally available 80° deflection mirror reduces the overall space requirement and facilitates contact readings. The high-performance CCD camera (3,648 pixels) can even read damaged and poor-quality codes quickly and accurately. A simple and flexible communication to any kind of controller is achieved by the “all-in-one” system (RS 232, keyboard wedge or pen emulation).

VB10 Series

- 500 scans/second
- Small compact design
- High resolution
- Large reading angle
- Wide depth of focus
- IP65 protection rating



Our VB10 series barcode scanners include two models covering short-range and medium-range working distances from 40 mm to 220 mm. The VB10 family is a rugged, industrial barcode scanner in an IP65 metal housing. They have an external trigger input, two programmable outputs and laser protection class II. They can be operated across a wide power supply range commonly found in industrial environments from 10-30 VDC. They are also available as raster scanners. Programming and setup are quick and easy via the included VISOSETUP Microsoft Windows-based program.

VB12 Series

- 500 scans/second
- Motor ON/OFF software commands
- Very compact dimensions
- Easy setup and commissioning
- Lightweight (<100g, 3.5 oz)
- Dual high-speed interface



Our VB12 series barcode scanners include four models covering short and medium-range working distances from 10 mm to 220 mm. The VB12 family is a rugged, industrial barcode scanner in an IP65 metal housing. They have an external trigger input, two programmable outputs and laser protection class II. They can be operated across a wide power supply range commonly found in industrial environments from 10 – 30 VDC. They are also available as raster scanners and include an option with emission from the narrow side of the reader for space critical applications. Microsoft Windows-based VISOSETUP is included for easy programming and setup.

	VB6-240	VB8-305	VB12-110 VB12-110-S	VB12-220 VB12-220-S
Reading Range	40-240 mm	35-305 mm	10-110 mm	30-220 mm
Reading Angle		80°	70°	70°
Resolution	0.15 mm (6 mil)	0.076 mm (3 mil)	0.12 mm (5 mil)	0.2 mm (8 mil)
Scan Rate	1200 s ⁻¹	270 s ⁻¹	500 s ⁻¹	
Raster (-R versions)			15 mm @ 220 mm	
Symbologies	EAN/UPC, I 2 of 5, 39, 93, 128, EAN128, ISBM128, Pharmacode	EAN/UPC, I 2 of 5, 39, 49, 93, 128, 16K, EAN128, ISBT128, Codabar, Delta IBM	Code 2/5, Code 39, Code 93, Code 128, EAN/UPC, EAN 128, Codabar, Plessey, Pharmacode	
Approvals			CE, cULus	
Operating Display	ON, Good Read, Ext Trig, TX, Laser On	LED1: Power ON, LED2: Good Read	LED red: Power on (POWER ON), LED green: Laser on (LASER ON), LED yellow: external trigger (EXT. TRIG).	
Operating Voltage	5 VDC/2 W (max)	10-30 VDC/1.5 W (max)	10-30 VDC/1.5 W (max)	
Interface	Serial	Serial, keyboard, pen	Serial	
Input	External trigger	External trigger	External trigger	
Output	2 opto-isolated	1 opto-isolated (good read)	2 opto-isolated	
Mechanical				
Protection Degree	IP65	IP40	IP65 according to DIN 40050	
Housing Material	Zn, Al, Mg Alloy	Plastic	Magnesium and polycarbonate	
Weight	44 g	100 g	100 g	



VB14A Series

- Advanced reconstruction algorithm
- High ambient light immunity
- IP65 rugged industrial housing
- Up to 1000 scans/second
- Direct view or 90° read positioning
- VISOSETUP Windows-based software setup

Our VB14A series include five models covering short-range and high-resolution scanning from 45 mm to long-range scanners capable of reading barcodes at 600 mm. They have an external trigger input, two programmable outputs, and laser protection class II. They are also available as raster scanners. All units have an advanced reconstruction algorithm for reading barcodes that are damaged or have a high amount of skew. We offer an option for a oscillating mirror to increase the scan area. Windows programming software is included.



VB34 Series

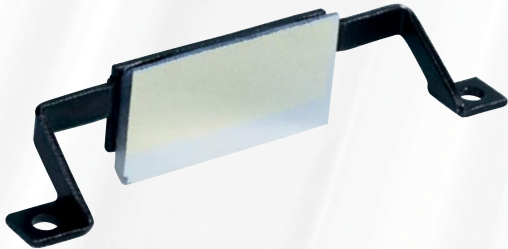
- Reading range to 2500 mm
- Serial, LonWorks; optional Ethernet, DeviceNet, PROFIBUS interfaces
- 1200 scans/second
- Advanced code reconstruction algorithm
- Automatic and programmable focus

The VB34 barcode scanner can achieve reading rates up to 1,200 scans/second. Versions are available with or without oscillating mirror. The VB34 offers a complete and modular solution in terms of reading performance, connectivity, and ease of maintenance. It has a built-in linear motor providing a dynamic focus system, fully controlled via software. This system is capable of moving the focus position from the minimum to the maximum position in less than 10 msec. The VB34 optionally offers connectivity to Ethernet, DeviceNet, and PROFIBUS industrial interfaces.

	VB14A-100	VB14A-300	VB14A-340	VB14A-440	VB14A-600	VB34
Reading Range	45-100 mm	50-300 mm	75-340 mm	100-440 mm	200-600 mm	500-2500 mm
Reading Angle	60°	60°	60°	60°	60°	
Resolution	0.2 mm (8 mil)	0.2 mm (8 mil)		0.25 mm (10 mil)	0.35 mm (14 mil)	0.2 mm (8 mil)
Scan Rate	800-1000 s ⁻¹	500-800 s ⁻¹	600-1000 s ⁻¹	600-1000 s ⁻¹		600-1200 s ⁻¹
Raster (-R versions)	18 mm @ 300 mm			24 mm @ 500 mm		
Symbologies	Code 2/5, Code 39, Code 93, Code 128, EAN/UPC, Codabar, EAN 128, Pharmacode			Code 2/5, Code 39, Code 93, Code 128, EAN/UPC, EAN 128, Codabar, Pharmacode, ISBN128		Code 2/5, Code 39, Code 93, Code 128, EAN/UPC, EAN 128, Codabar
Approvals	CE, cULus					CE, cULus
Operating Display	LED red: Power on (PWR/TXD), LED green: Laser on (LASER ON), LED yellow: external trigger (EXT. TRIG).					Green LED: Power on, Yellow LED: trigger phase active, plus LCD data display
Operating Voltage	10-30 VDC.5 W (max)					15-30 VDC/20 W (max)
Interface	Serial					Serial & LonWorks included PROFIBUS, DeviceNet, Ethernet optional
Input	External trigger					3 digital inputs plus external trigger
Output	2 opto-isolated					
Mechanical						
Protection Degree	IP65 according to DIN 40050					IP64
Housing Material	Aluminum					Aluminum
Weight	330 g					1500 g

Accessories

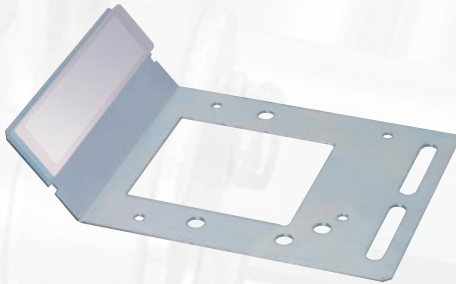
■ **DM-VB14A** 80° deviating mirror for VB14A



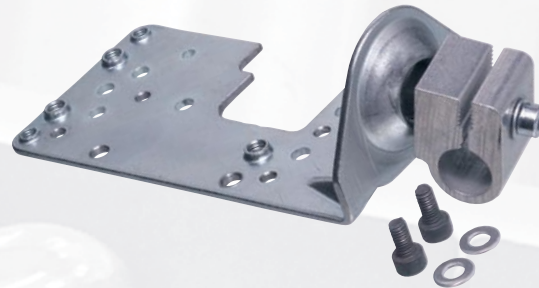
■ **OM-VB14A** Optical oscillating mirror



■ **DM-VB8** 80° deviating mirror for VB8



■ **OMH-VBo1** Mounting accessories for VB8, VB12, VB14A



Breakout Boxes

■ **C-BOX100**

Connects power and switching outputs through screw connectors. 9-pin SUB D plug for connection of the RS232 auxiliary interface to the PC with a null-modem cable.



■ **C-BOX300**

RS232 / PROFIBUS gateway with 9-pin SUB D connection plug for the PROFIBUS, with up to 12 Mbit/s. The parameters of the scanner can be stored in either the control system or in the C-BOX. This enables the fast, simple replacement of the scanner.

■ **C-BOX400**

Connects DeviceNet and a trigger sensor directly to the terminals.

FACTORY AUTOMATION – SENSING YOUR NEEDS



Pepperl+Fuchs sets the standard in quality and innovative technology for the world of automation. Our expertise, dedication, and heritage of innovation have driven us to develop the largest and most versatile line of industrial sensor technologies and interface components in the world. With our global presence, reliable service, and flexible production facilities, Pepperl+Fuchs delivers complete solutions for your automation requirements—wherever you need us.

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