

MANUAL

OM-VB14N

OSCILLATING MIRROR





With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"



Figure A

- ① Laser Beam Output Window
- ② Power Cable

DESCRIPTION

The OM-VB14N oscillating mirror is an accessory for the VB14N laser scanners. It is designed to generate homogeneous and adjustable raster reading through deflection of the scanning laser beam.

The system consists of the oscillating mirror attached to the scanner and allows a surface instead of a line to be observed; versatility and reading accuracy are therefore increased in "Picket Fence" reading mode.

Some examples are given in the following cases: codes presented at different "heights" on the reading surface; codes with printing defects.

The electronic and electromechanical components controlling the mirror movement are contained inside the rugged metal casing, which guarantees protection class IP65 when the OM-VB14N is mounted correctly onto the scanner.

The OM-VB14N is directly powered from the scanner through a connector which is accessible after removing the scanning window (see assembly instructions on page 5). It therefore operates exclusively at low power, between 10 and 30 VDC.

MECHANICAL INSTALLATION

When opening the packaging, verify that the OM-VB14N oscillating mirror is complete with a set of fixture screws.

MECHANICAL DIMENSIONS

The following figure gives the overall dimensions of the OM-VB14N and may be used for its installation.

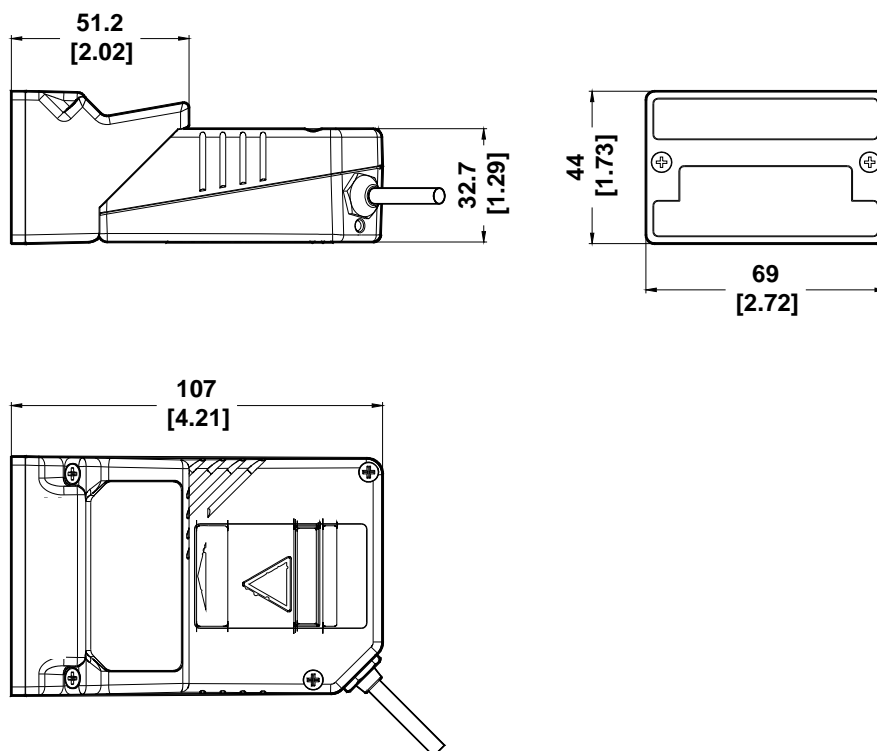


Figure 1 – Overall Dimensions

ASSEMBLY TO THE SCANNER

- 1) Clean the OM-VB14N mirror surface and output window (internally and externally) with a clean soft cloth and alcohol before assembling it to the scanner.



CAUTION

All abrasive substances must be absolutely avoided as they cause irreparable damage to the transparency of the glass.

- 2) Remove the scanning window from the scanner (see Figure 2).

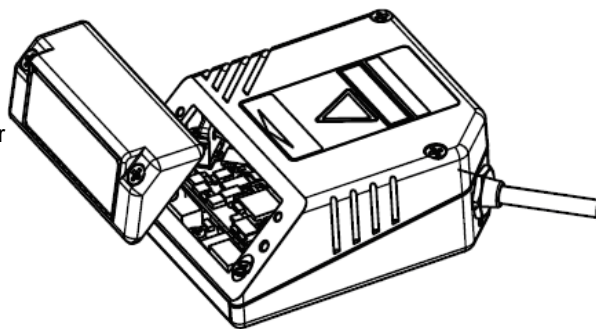


Figure 2

- 3) Bring the OM-VB14N close to the scanner and insert the cable into the power connector of the scanner (See Figure 3).

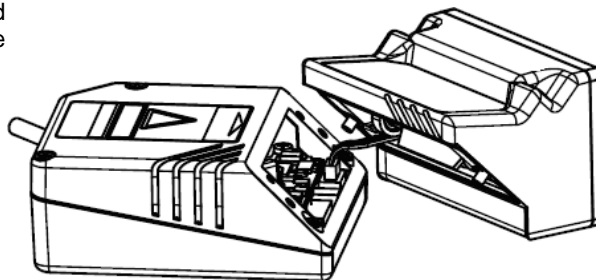


Figure 3



NOTE

Make sure the cable doesn't remain in the path of the mirror movement.

- 4) Check that the seal is correctly positioned and then after having aligned the OM-VB14N onto the scanner, fix it using the two screws (see Figure 4).

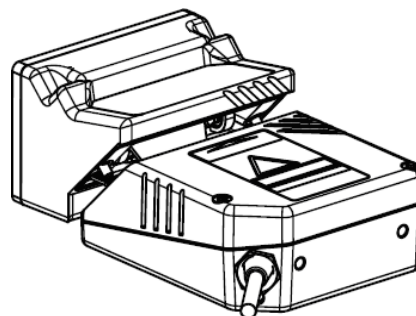


Figure 4

READING FEATURES

The reading distance of the VB14N scanner with the OM-VB14N is shifted by 10 mm towards the scanner because of the internal optical path between the scanner and the OM-VB14N output window.

The reading performance also decreases in typical conditions by about 10% due to the optical signal passing through the output window of the OM-VB14N and the reflection on the mirror surface.

The combination of these effects produces the reading diagram represented below:

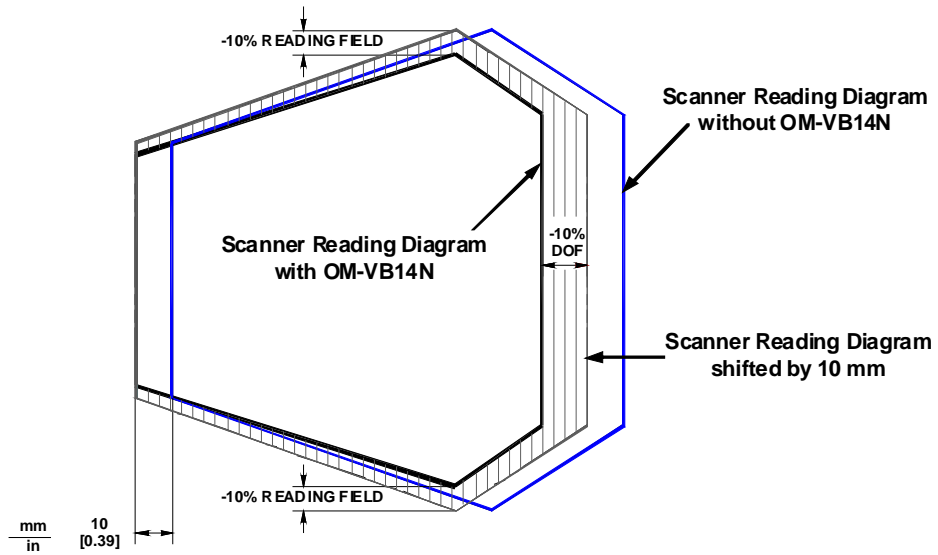


Figure 5 – OM-VB14N Reading Performance Comparison

The reading distance also depends on the amplitude of aperture used. In particular, wider apertures require the scanner to be closer to the code in order to read at the extreme edges of the sweep (see figure 6 below).

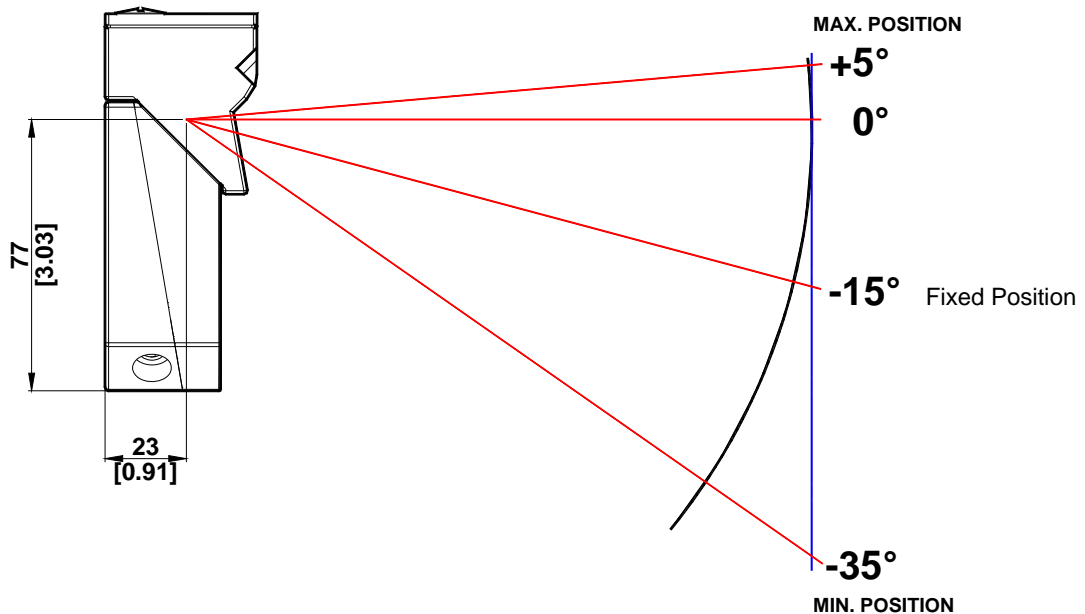


Figure 6 – OM-VB14N Reading Distance

CONFIGURATION



NOTE

The OM-VB14N must be mounted to a VB14N scanner and is configurable exclusively through the Genius™ utility program. The VB14N scanner must have software version 2.03 or later.



NOTE

When entering the Mode interface on the VB14N, the Oscillating Mirror remains in the default **fixed position** (-15°) in order to make barcode reading easier while performing the functions (like test mode or auto learn).

The following software configuration parameters are available through Genius™ and described below for reference:

Oscillating Mode

This parameter defines the oscillating mode of the scanner mirror:

<u>Selections:</u>	(OM-VB14N only)	Fixed	the oscillating mirror deflects the scan line at a fixed angle of deflection (-15°).
	(OM-VB14N only)	Continuous	the scan line is deflected according to the Amplitude and Frequency settings.

Amplitude (degrees)

This parameter is available only when working in Continuous oscillating mode. It defines the deflection range in degrees as a symmetrical oscillation with respect to the fixed angle (-15°).

Selections: a value from **10°** to **40°**:

Frequency (Hz)

This parameter is available only when working in Continuous oscillating mode. It defines the oscillating frequency in Hertz:

Selections: a value from **0.5** to **4.0** Hertz

NOTE

The maximum allowable frequency for an amplitude of 35° or more is 3 Hz.

Triggered

If checked, it allows assigning a trigger through which the oscillating mirror can be activated to work in a second reading zone according to the defined parameters.

Second Zone Trigger

This parameters defines the number of the input or the phase working as trigger.

Selections: **Phase** (available only when working in On Line operating mode)

Input 1

Input 2

Second Zone Trigger Level

This parameter allows setting the active state of the trigger. When the selected state is active, the oscillating mirror starts working in the second reading zone according to the parameters set:

Selections: **Active Open**
 Active Closed

Second Zone Oscillating Mode

This parameter defines the oscillating mode of the scanner mirror to be used in the second reading zone:

Selections: **Fixed** the oscillating mirror deflects the scan line at a fixed angle of deflection (-15°).
 Continuous the scan line is deflected according to the **Second Zone Amplitude** and **Second Zone Frequency** settings.

Second Zone Amplitude (degrees)

This parameter is available only when working in Continuous Second Zone Oscillating Mode. It defines the deflection range in degrees as a symmetrical oscillation with respect to the fixed angle (-15°).

Selections: a value from **10°** to **40°**:

Second Zone Frequency (Hz)

This parameter is available only when working in Continuous Second Zone Oscillating Mode. It defines the oscillating frequency in Hertz:

Selections: a value from **0.5** to **4.0** Hertz:

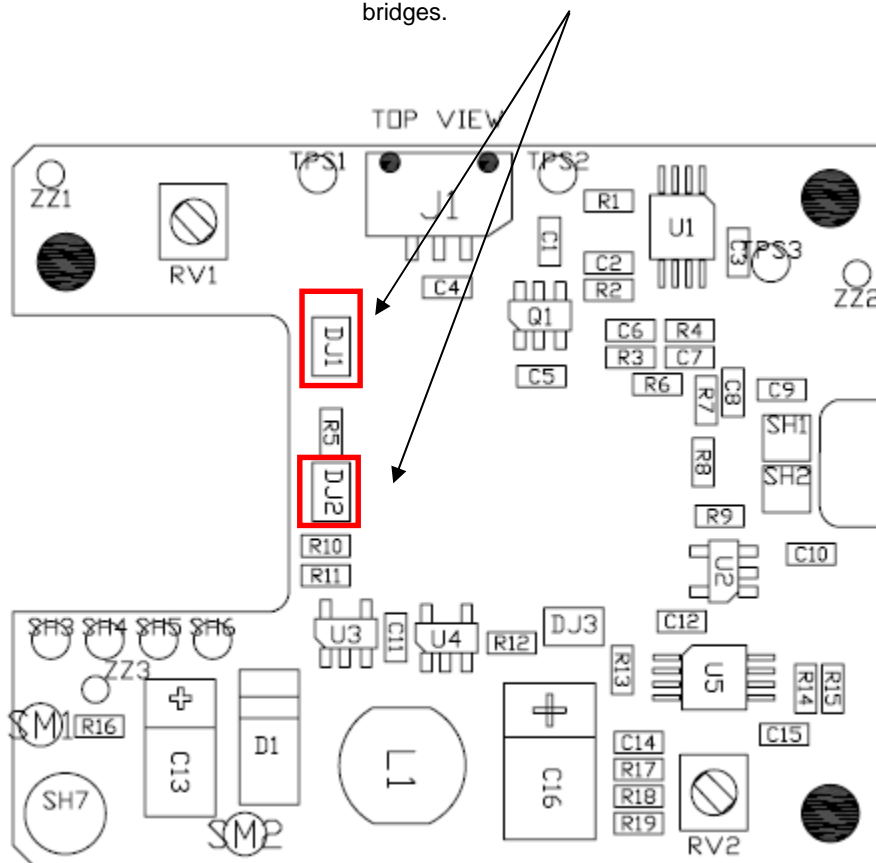
NOTE

The maximum allowable frequency for an amplitude of 35° or more is 3 Hz.

VB14 OSCILLATING MIRROR COMPATIBILITY

OM-VB14N COMPATIBILITY TO VB14A / VB14A2 SCANNERS

If using the new OM-VB14N on the older VB14A scanners (see scanner label), close jumpers DJ1 and DJ2 on the OM-VB14N board with solder bridges.



OM-VB14N PCB

The Oscillating mirror will function at 0.8 Hz with an aperture of 40°.



NOTE

If the OM-VB14N is used on a VB14N these jumpers must not be soldered closed.

OM-VB14A COMPATIBILITY TO VB14N SCANNERS



NOTE

The older OM-VB14A is fully compatible with the new VB14N. Follow the instructions in the OM-VB14A manual for frequency and aperture settings.

TECHNICAL FEATURES

ELECTRICAL FEATURES	
Operating voltage	10 to 30 Vdc
Input current max	40 mA (RMS) @ 10 Vdc; 1.2 A max peak current @ 10 Vdc at startup for max duration = 100 ms
Power Consumption max	1 W (RMS) @ 30 Vdc
Raster width	software adjustable from 10° to 40°
Oscillation frequency	software adjustable from 0.5 Hz to 4 Hz
Response time	1s max
ENVIRONMENTAL FEATURES	
Operating temperature	0° to +45 °C (+32° to +113 °F)
Storage Temperature	-20° to +70 °C (-4° to +158 °F)
Humidity max	90% non condensing
Vibration Resistance EN 60068-2-6	- 14 mm @ 2-10 Hz - 1.5 mm @ 13-55 Hz - 2 g @ 70-200 Hz - 2 hours on each axis
Bump Resistance EN 60068-2-29	30 g; 6 ms; 5000 shocks on each axis
Shock Resistance EN 60068-2-27	30 g; 11 ms; 3 shocks on each axis
Protection Class EN 60529	IP65 (when correctly mounted to the scanner)
PHYSICAL FEATURES	
Dimensions	68 x 43 x 51.2 mm (2.68 x 1.69 x 2.02 in)
Weight	approximately 160 g. (5.7 oz)

Note: the features indicated are to be considered typical at an ambient temperature of 25 °C (77 °F), if not specified differently.

MAINTENANCE AND TROUBLESHOOTING

OM-VB14N has no user replaceable components and, apart from periodically cleaning the output window, no particular maintenance is necessary; dust and dirt on the surface may alter the reading performance of the system.

Clean the window with soft material and alcohol, absolutely avoiding all abrasive substances.



WARNING

Do not remain in the laser beam output zone during these procedures.

If the device does not operate correctly, verify the connection to the scanner.

COMPLIANCE

LASER SAFETY



WARNING

Once the scanner-oscillating mirror reading system is assembled, the laser beam is emitted from the output window of the OM-VB14N. All the precautions regarding laser exposure must be taken, (details are given in the Installation Manual of the scanner).

CE COMPLIANCE

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC COMPLIANCE

Modifications or changes to this equipment without the expressed written approval of Pepperl+Fuchs could void the authority to use the equipment.

This device complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FACTORY AUTOMATION – SENSING YOUR NEEDS



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