OM2000N

INSTALLATION MANUAL

Figure A

1. Laser Beam Output Window
2. Power Cable
DESCRIPTION

The OM2000N oscillating mirror is an accessory for the 2000N family laser scanners: DS2100N, DS2400N. 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 OM2000N is mounted correctly onto the scanner.

The OM2000N is directly powered from the scanner through a connector which is accessible after removing the scanning window (see assembly instructions on page 3). It therefore operates exclusively at low power, between 10 and 30 VDC.

MECHANICAL INSTALLATION

When opening the packaging, verify that the OM2000N oscillating mirror is complete with a set of fixture screws.

MECHANICAL DIMENSIONS

The following figure gives the overall dimensions of the OM2000N and may be used for its installation.

Figure 1 – Overall Dimensions
ASSEMBLY TO THE SCANNER

1) Clean the OM2000N 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).

3) Bring the OM2000N close to the scanner and insert the cable into the power connector of the scanner (See 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 OM2000N onto the scanner, fix it using the two screws (see Figure 4).

5) In the indicated space on the front side of the OM2000N, apply the relative replicate scanner serial number label provided with the scanner itself (see Figure 5).
READING FEATURES

The reading distance of the 2000 series scanner with the OM2000N is shifted by 10 mm towards the scanner because of the internal optical path between the scanner and the OM2000N 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 OM2000N and the reflection on the mirror surface.

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

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).
CONFIGURATION

The OM2000N must be mounted to a DS2x00N scanner and is configurable exclusively through the Genius™ utility program. The DS2x00N scanner must have software version 2.03 or later.

When entering the X-PRESS™ interface on the DS2x00N, the Oscillating Mirror remains in the default fixed position (-15°) in order to make barcode reading easier while performing the X-PRESS™ functions.

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:

- **Selections:**
  - (OM2000N only) **Fixed**
  - (OM2000N only) **Continuous**

  - Fixed: the oscillating mirror deflects the scan line at a fixed angle of deflection (-15°).
  - 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 parameter 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.
FAM2K OSCILLATING MIRROR COMPATIBILITY

OM2000N COMPATIBILITY TO DS2KA SCANNERS

If using the new OM2000N on the older DS2100A or DS2400A scanners (see scanner label), close jumpers DJ1 and DJ2 on the OM2000N board with solder bridges.

NOTE
If the OM2000N is used on a DS2100N or DS2400N these jumpers must not be soldered closed.

OM2000 COMPATIBILITY TO DS2KN SCANNERS

The older OM2000 is fully compatible with the new DS2100N or DS2400N. Follow the instructions in the OM2000 manual for frequency and aperture settings.

NOTE
## TECHNICAL FEATURES

### ELECTRICAL FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>10 to 30 Vdc</td>
</tr>
<tr>
<td>Input current max</td>
<td>40 mA (RMS) @ 10 Vdc; 1.2 A max peak current @ 10 Vdc at startup for max duration = 100 ms</td>
</tr>
<tr>
<td>Power Consumption max</td>
<td>1 W (RMS) @ 30 Vdc</td>
</tr>
<tr>
<td>Raster width</td>
<td>software adjustable from 10° to 40°</td>
</tr>
<tr>
<td>Oscillation frequency</td>
<td>software adjustable from 0.5 Hz to 4 Hz</td>
</tr>
<tr>
<td>Response time</td>
<td>1s max</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>0° to +45 °C (+32° to +113 °F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20° to +70 °C (-4° to +158 °F)</td>
</tr>
<tr>
<td>Humidity max</td>
<td>90% non condensing</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>- 14 mm @ 2-10 Hz</td>
</tr>
<tr>
<td></td>
<td>- 1.5 mm @ 13-55 Hz</td>
</tr>
<tr>
<td></td>
<td>- 2 g @ 70-200 Hz</td>
</tr>
<tr>
<td></td>
<td>- 2 hours on each axis</td>
</tr>
<tr>
<td>Bump Resistance</td>
<td>30 g; 6 ms; 5000 shocks on each axis</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>30 g; 11 ms; 3 shocks on each axis</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP65 (when correctly mounted to the scanner)</td>
</tr>
</tbody>
</table>

### PHYSICAL FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>68 x 43 x 51.2 mm (2.68 x 1.69 x 2.02 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>approximately 160 g. (5.7 oz)</td>
</tr>
</tbody>
</table>

**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

OM2000N 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.
SERVICES AND SUPPORT

Datalogic provides several services as well as technical support through its website. Log on to www.automation.datalogic.com and click on the links indicated for further information including:

- **PRODUCTS**
  Search through the links to arrive at your product page where you can download specific Manuals and Software & Utilities including:
  - Genius™ a utility program, which allows device configuration using a PC. It provides RS232 interface configuration.

- **SERVICES & SUPPORT**
  - Datalogic Services - Warranty Extensions and Maintenance Agreements
  - Authorised Repair Centres

- **CONTACT US**
  E-mail form and listing of Datalogic Subsidiaries

COMPLIANCE

LASER SAFETY

WARNING

Once the scanner-oscillating mirror reading system is assembled, the laser beam is emitted from the output window of the OM2000N. 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 Datalogic 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.
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declares that the

OM2000N; Oscillating Mirror Laser Scanner

and all its models

are in conformity with the requirements of the European Council Directives listed below:

2004 / 108 / EC EMC Directive

This Declaration is based upon compliance of the products to the following standards:

EN 55022 (CLASS A ITE), SEPTEMBER 1998:
INFORMATION TECHNOLOGY EQUIPMENT
RADIO DISTURBANCE CHARACTERISTICS
LIMITS AND METHODS OF MEASUREMENTS

EN 61000-6-2, SEPTEMBER 2005:
ELECTROMAGNETIC COMPATIBILITY (EMC)
PART 6-2: GENERIC STANDARDS - IMMUNITY FOR INDUSTRIAL ENVIRONMENTS

Lippo di Calderara, July 16th, 2009

Lorenzo Girotti
Product & Process Quality Manager