**Matrix 120™ QUICK REFERENCE GUIDE**

**SUPPORT THROUGH THE WEBSITE**
Datalogic provides several services as well as technical support through its website. Log on to www.datalogic.com.

For quick access, from the home page click on the search icon and type in the name of the product you’re looking for. This allows you access to download Data Sheets, Manuals, Software & Utilities, and Drawings.

Hover over the Support & Service menu for access to Services and Technical Support.

**INSTALLATION PROCEDURE**
1. Using a 2.5 mm hex key, set the Focus Adjustment Screw to one of the three pre-calibrated distances according to your application.
2. Physically mount the Matrix 120 reader.
3. Make the necessary electrical connections.

**HMI X-PRESS™ INTERFACE**
In normal operating mode the colors and meaning of the five LEDs are illustrated in the following table:

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>READY (green)</td>
<td>Indicates the device is ready to operate.</td>
</tr>
<tr>
<td>GOOD (green)</td>
<td>Confirms successful reading.</td>
</tr>
<tr>
<td>TRIGGER (yellow)</td>
<td>Indicates the status of the reading phase.</td>
</tr>
<tr>
<td>COM (yellow)</td>
<td>Indicates active communication on main serial port.</td>
</tr>
<tr>
<td>STATUS (red)</td>
<td>Indicates a NO READ result.</td>
</tr>
</tbody>
</table>

During the reader startup (reset or restart phase), all the LEDs blink for one second.

The single push button gives immediate access to the following relevant functions:
- Test Mode with bar graph visualization to check static reading performance.
- Focus (Aim) turns on the laser LED to aim the reader at the target. The target should be placed 8 mm to the left and centered vertically with respect to the aiming pattern (cross).
- Setup to self-optimize and auto-configure photometry parameters.
- Learn to self-detect and auto-configure for reading an unknown barcode (by type and length). Only one symbology type can be saved using this method. Performing Autolearn on a second symbology will overwrite the first one.

**Mounting**
1. To mount the Matrix 120, use the mounting bracket to obtain the most suitable position for the reader. Common mounting configurations are shown in the figures below.

**Electrical Connections**

**I/O Connections**

**CAUTION:** When Matrix 120 is connected to the CBX connection box through CAB-1011, Inputs and Outputs become opt-isolated and maintain the polarity significance of the CBX signals. To function correctly, they all require setting the respective Line Type configuration parameters to NPN. The hardware connection to the CBX can be either NPN or PNP.

The electrical features of both inputs at the CBX are:
- \[ V_{IN} = 30 \text{ Vdc max.} \]
- \[ I_{IN} = 12 \text{ mA (CAB-1011) + 12 mA (CBX) max.} \]

The following connections refer to Datalogic sensors.

**CAUTION:** If output devices are powered externally (separate from Matrix 120 power), it is always advisable to maintain the same voltage levels used for the Matrix 120 device.
**CAUTION:** Do not rotate the Focus Adjustment Screw beyond the focus limit. Doing so may damage the optical system.

The following tables show the reading ranges at the three focal positions for Code 128 (1D) and Matrix 2D (10 ml resolution codes):

<table>
<thead>
<tr>
<th>Focus Position</th>
<th>Horizontal Range</th>
<th>Reading Range (DOR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 mm</td>
<td>38 - 70 mm</td>
<td>25 - 70 mm</td>
</tr>
<tr>
<td>70 mm</td>
<td>58 - 125 mm</td>
<td>45 - 100 mm</td>
</tr>
<tr>
<td>125 mm</td>
<td>95 - 155 mm</td>
<td>65 - 120 mm</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL FEATURES**

- **Operating Temperature:** 0 to 46 °C (32 to 113 °F)
- **Storage Temperature:** -20 to 70 °C (4 to 158 °F)
- **Humidity:** 5% - 95% non-condensing
- **Vibration Resistance:** 14 gms ± 10 Hz; 1.5 gms ± 155 Hz; 2 gms ± 500 Hz; 2 hours each axis
- **Shock Resistance:** EN 60068-2.27; 3 shocks up and down on each axis
- **Rain Resistance:** EN 60068-2.29; 5000 bumps up and down on each axis
- **IP65**

**USER INTERFACE**

- **LED Indicators:** Power, Ready, Good, Trigger, Coin, Status, Ethernet Network, Green Spot (See Reference Manual for other LEDs)

**TECHNICAL FEATURES**

**ELECTRICAL FEATURES**

- **Power:** 5 to 30 Vdc (10 to 30 Vdc with CBX) 0.4 to 0.1 A Max.
- **Supply Voltage:** 2400 to 115200 bps
- **USB:** USB 2.1 TeS Speed

**OPTICAL FEATURES** (see Reference Manual for details)

- **Dimensions mm (inch):** 45.4 x 31.1 x 23.5 (1.8 x 1.2 x 1.1)
- **Weight grams (ounces):** 117 (4.1) with cable; 200 (7.1) with cable
- **Maximum Laser Power:** 40 mW (1.5 mW)
- **Spot Size:** 6.5 mm (0.26 in)
- **Distance (max):** 120 mm (4.7 in)
- **LED Emission according to EN 62471.

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