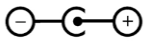
ERGOMAT INC.

FORKLIFT LIDAR

CAUTION: NOT INTENDED FOR SAFETY CRITICAL APPLICATIONS

SPECIFICATIONS

POWER



Center-positive, 5.5x2.1mm barrel jack

12-24VDC (9-36 VDC max)

OUTPUT

Solid-state output: 10A

DETECTION RANGE

Up to 35ft (10.5m)

DIMENSIONS

3.7 x 4.9 x 2.8 in.,

94 x 125 x 72 mm.

THEORY OF OPERATION

This device utilizes a spinning LIDAR beam to detect objects within a user-definable 2D plane - the Detection Box. The shape and dimensions of the Detection Box are set via the four buttons and graphic display on the top of the device. A “point cloud” of objects being detected in front of the LIDAR is shown on the display in real time. If any of the detected objects enter the Detection Box, the device’s output will activate. The output may be used to drive an LED caution sign, external wireless transmitter, audible alert, or disable a piece of equipment (NOTICE: THIS DEVICE IS NOT INTENDED FOR ANY SAFETY CRITICAL APPLICATION AND SHOULD NOT BE USED TO CONTROL EQUIPMENT WHICH HAS THE POTENTIAL TO CAUSE BODILY HARM).

INSTRUCTIONS

Apply power to the left barrel jack (when viewed from the back) labeled “POWER IN” (refer to the *Power Source Considerations* section, below for additional information about power source selection; such as powering the device from a forklift). A startup screen will appear for a few seconds then the LIDAR sensor will begin spinning. While the sensor is running, the user-defined Detection Box, the four dimensions of the Detection Box (in either feet or meters), and a point cloud of detected objects will be displayed on the screen as shown in figure 1, below.

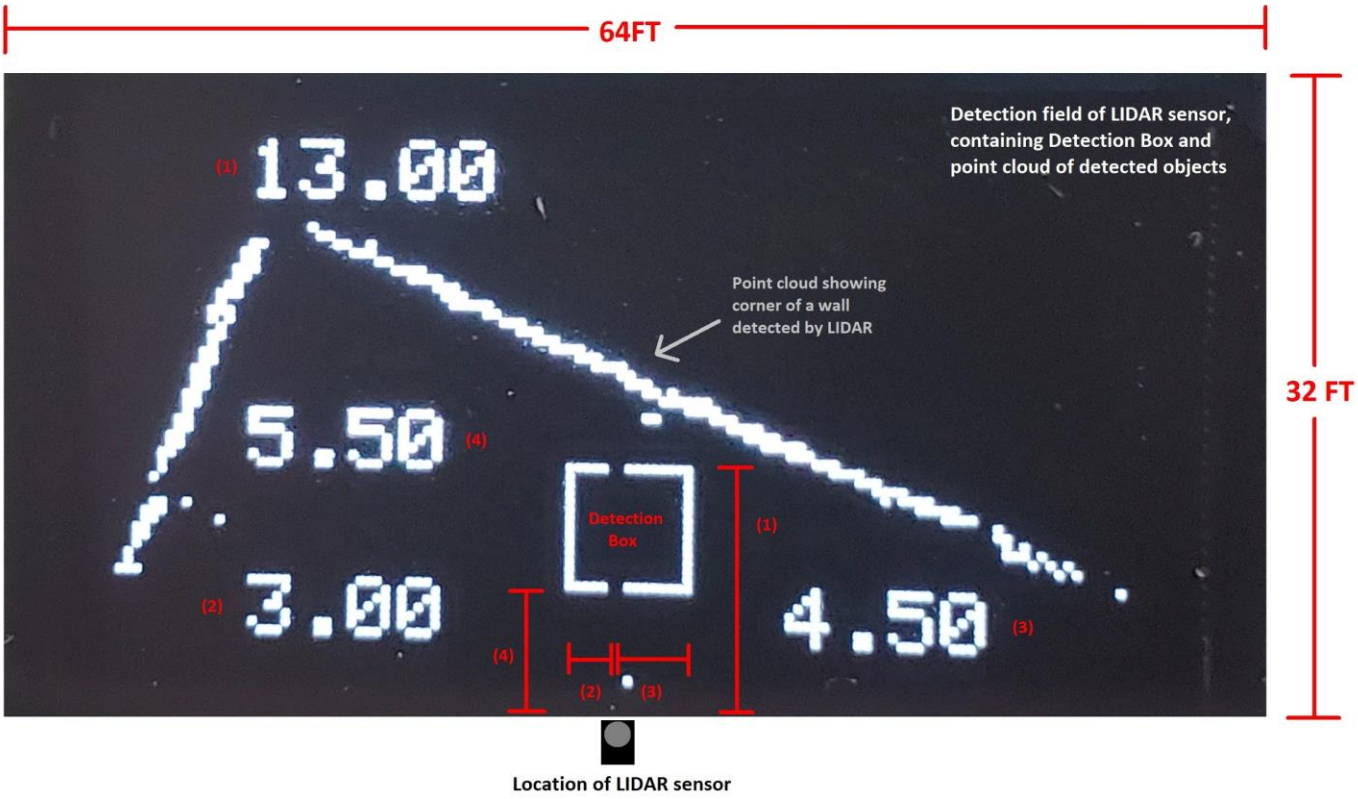


Figure 1: Graphic Display of LIDAR sensor, showing the user-defined Detection Box and point cloud of real-time LIDAR readings

Four buttons located above the display (shown in figure 2, below) are used to adjust the four dimensions of the Detection Box. The forward button (1) extends the upper boundary of the Detection Box outward from the front of the LIDAR. The left button (2) extends the Detection Box to the left of the LIDAR and the right button (3) extends the Detection Box to the right. The bottom button (4) extends the lower boundary of the Detection Box away from the sensor.

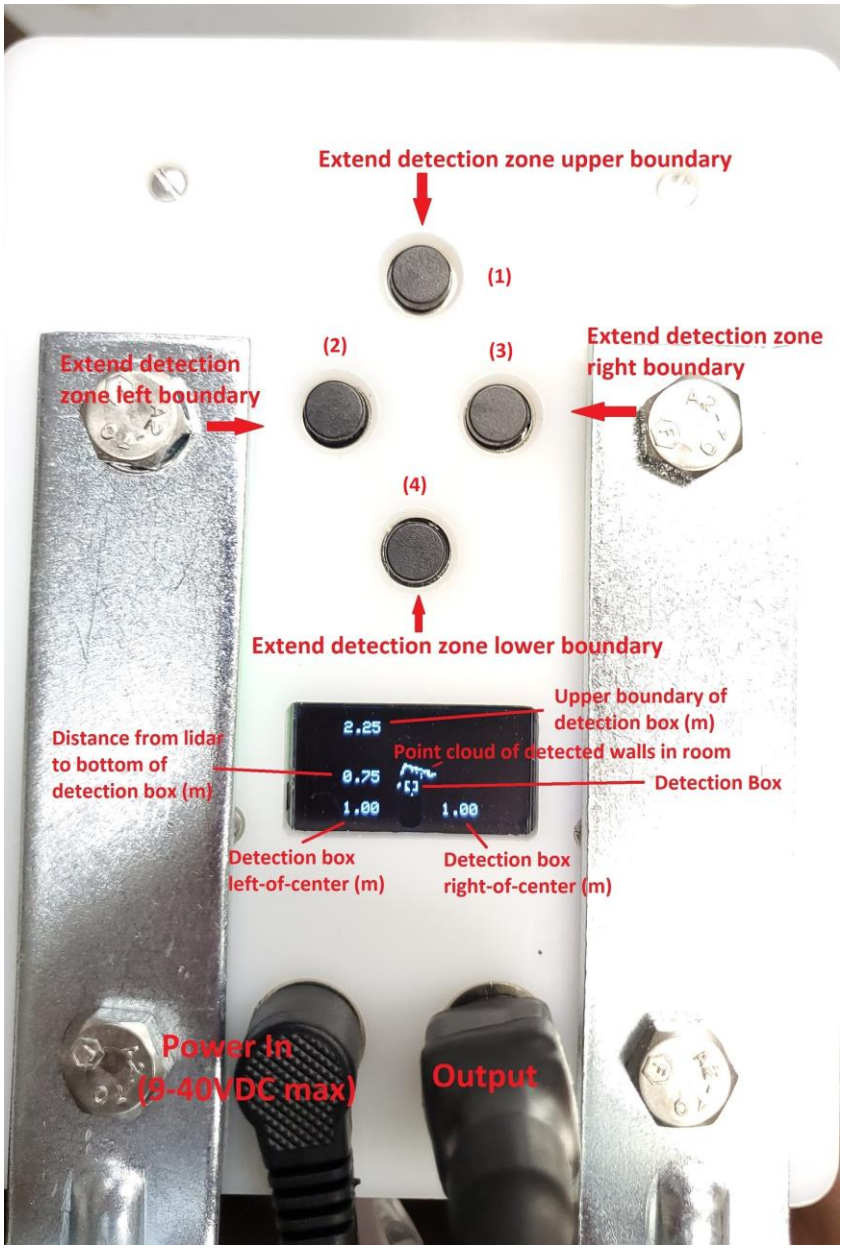


Figure 2: LIDAR controls and power input/output connectors

POWER SOURCE CONSIDERATIONS

LIDAR Voltage Range

A 12 or 24 VDC power source is recommended, though the LIDAR can accept voltages of 9-40VDC maximum to the power input connector. If the available power source is outside this maximum voltage range (such as from a high-voltage forklift battery), a voltage converter will be required to reduce the voltage to a level within the power limits of the device.

Output Voltage

The voltage at the device's output will be the same as that provided to the power input. Therefore, if the LIDAR is intended to drive a 12V LED sign, a 12V power source must be supplied to the device (either directly or by way of a voltage converter).

OUTPUT

Flash/Solid Output

To set the output to flash when activated, power down the unit then hold the up and down buttons while reapplying power. Once the Ergomat splash screen is displayed, release the buttons. Now, when an object is detected within the detection box, the output will flash on and off until the object is no longer detected.

To set the output back to a solid, continuous output, press the left and right buttons while powering up the unit.

Driving LED Sign

Connect the low voltage electronic device, such as an LED sign, to be controlled to the connector labeled “OUTPUT” via a 5.5x2.1mm barrel connector. This solid-state output activates when a person or object is detected within the Detection Box, and is capable of delivering up to 10 amps of power to the load.

Using an External Wireless Transmitter

A wireless transmitter may be connected to the output to wirelessly trigger a device, such as a LED sign, when an object is detected within the Detection Box. To allow the Low-Overhead LIDAR to control the wireless transmitter, use a male-to-male 5.5x2.1mm jumper to connect the LIDAR “OUTPUT” terminal to the power input of the transmitter.

FAIL-SAFE

If the LIDAR sensing unit becomes damaged or fails, the device will send out a continuous “detect” signal.

WARNING

This device is not intended to be used in any safety critical applications. Installations of this product should be carried out by professionals with care taken to ensure any failure, including but not limited to loss of power or failure to receive signal, does not result in injury.

ERGOMAT SHALL NOT BE RESPONSIBLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.