



LDR-M10

INSTRUCTION MANUAL

WARRANTY

MIREMADI warrants this product to be free from defects in material and workmanship for a period of 90 days from date of shipment.

During the warranty period, MIREMADI will, at its option, either repair or replace any product that proves to be defective.

To exercise this warranty, email support and you will be given prompt assistance and return instructions. Repairs will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the original warranty period of 90 days.

LIMITATION OF WARRANTY

This warranty does not apply to defects resulting from product modification, or misuse of any product or part. This warranty also does not apply to normal wear or failure to follow instructions on maximum input voltages and polarities.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. THE REMEDIES PROVIDED HEREIN ARE THE BUYER'S SOLE AND EXCLUSIVE REMEDIES.

NEITHER MIREMADI NOR ANY OF ITS EMPLOYEES SHALL BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF ITS INSTRUMENTS EVEN IF MIREMADI HAS BEEN ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES. SUCH EXCLUDED DAMAGES SHALL INCLUDE, BUT ARE NOT LIMITED TO: COST OF REMOVAL AND INSTALLATION, LOSSES SUSTAINED AS THE RESULT OF INJURY TO ANY PERSON, OR DAMAGE TO PROPERTY.

THIS DEVICE IS MADE FOR HOBBY USE AND SHOULD NOT BE USED IN SAFETY CRITICAL SYSTEMS.

SAFETY PRECAUTIONS

ALTHOUGH THIS DEVICE IS EYE SAFE, DO NOT LOOK IN TO THE IR SOURCE DIRECTLY FOR PROLONGED PERIODS. DO NOT LOOK AT THE IR SOURCE WITH MAGNIFYING GLASS OR OTHER OPTICAL INSTRUMENTS. IF THE DEVICE IS MALFUNCTIONING, DO NOT USE, REMOVE POWER AND CONTACT SUPPORT.

OPERATION

In normal use only the Main connector is required. Use the supplied connector and make sure that when plugged in the black wire is at the edge of the box. Apply 11V to 14V across the black and red wires with negative connected to black wire and positive to red wire. The white wire is the range signal output. It will supply 0-5V in to high impedance and 0-2.5V into a 1K Ohm load.

For additional control the AUX connector (user supplied) can be used. The SHUT DOWN pin can be asserted high (above 1.5V) to put the device in to low power mode. This input can be used for both 3.3V and 5V systems. If left unconnected the module defaults to the active state (ON), and operates in normal power mode.



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The energy output on the AUX connector provides a voltage that is proportional to the returned energy. This gives additional information on the reflectivity of the target. The output will supply 0-5V in to high impedance and 0-2.5V into a 1K Ohm load.

SPECIFICATIONS

+/- 0.1 inch resolution

+/- 20 Degree Field of View

10" to 4 feet range (depending on object reflectivity)

Will detect a white wall at 5 feet away

Analog output 0-5V

50 Hz Analog Bandwidth

Power supply voltage from 11 to 14 Volts

Less than 900 mW power consumption @11V

TTL level Shut Down pin to conserve power (100uA)

Operating Temperature range of 0-50 °C

Weight 65 grams

Dimensions 2" x 3.2" x 1" without mounting flange. 2" x 4" x 1" with mounting flange.

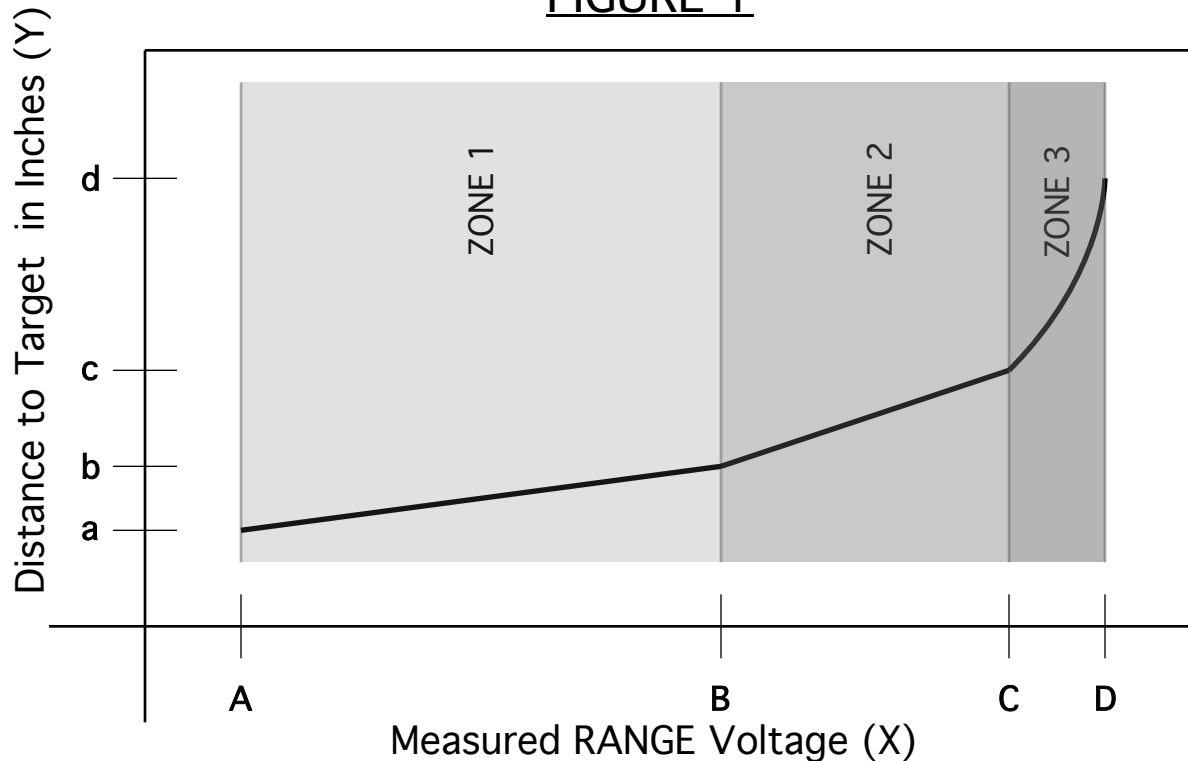
Can work outdoors in indirect sunlight

OUTPUT CHARACTERISTICS

The RANGE output is a voltage that is proportional to the range of the object being detected (Fig 2). The device is designed to work with different target reflectivity, however, there is always a dependance of the range reading on the target reflectivity. The calibration data supplied is obtained using a 8.5" by 11" light grey cardboard target. The data is unique to the serial number of the device. The serial number is located on the internal PCB and can be read just above the MAIN connector (Fig 2) with the box held at an angle.

The ENERGY output can be used to gather additional information on target reflectivity. The Energy output can be used to detect objects at distances further than the range output. This is useful for distant object detection applications, or to predict approaching objects.

FIGURE 1



There are three distinct zones in Range plot (Fig 1). There is a linear zone 1 and 2 and a second order polynomial zone 3. The points "A" through "D", "a" through "d" and the equations for the three zones are provided and unique to each module. To find the distance to the object, first check to see what zone the measured voltage is located in. Then use the appropriate equation given for each zone to obtain the distance. The following is pseudo code showing this method. After each line, if true, the answer is returned without executing the following lines.

If (range < A) then object closer than "a"

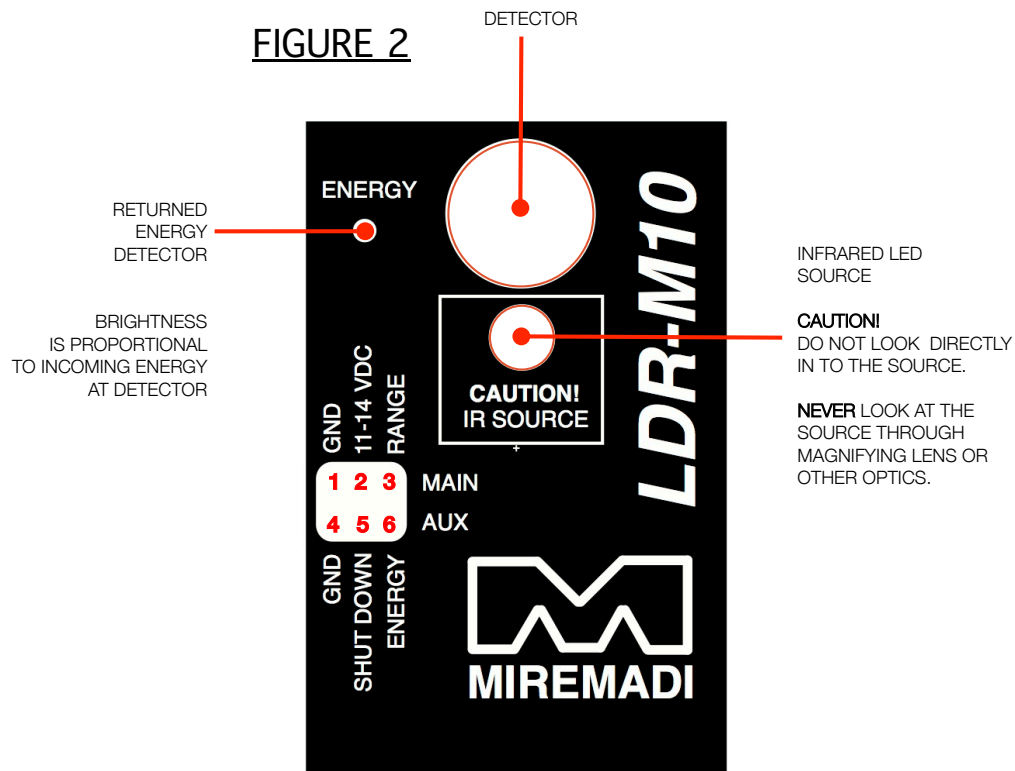
if (range < B) then use Zone 1 equation to get distance in inches

if (range < C) then use Zone 2 equation to get distance in inches

if (range < D) then use Zone 3 equation to get distance in inches

if (range > D) then object further than "d"

FIGURE 2



Pin Name	Function	Description
MAIN CONNECTOR		
1	INPUT	Power Input Ground return
2	INPUT	10.9 - 15 VDC Power Input (75mA @ 11V) (Keep power supply noise low for best sensitivity)
3	OUTPUT	Voltage output proportional to range, lower voltage means closer to sensor. 0-5 Vdc @1K Ohm source impedance
AUX CONNECTOR		
4	INPUT	GND Return
5	INPUT	Voltage above 2 V will shutdown the device and reduce standby current to 100uA below 0.7V or floating is normal operation. This pin is pulled down internally to ground
6	OUTPUT	Voltage output proportional to returned energy, higher voltage means more energy returned to detector. 0-5 Vdc @1K Ohm source impedance