EDI's wide range of vehicle detection products help technicians save valuable time and maximize profits by quickly installing, accurately trouble-shooting, and reliably maintaining access control systems with easy to use hi-tech vehicle detectors that provide built-in set-up tools, frequency & sensitivity meters, and non-volatile memory to maintain diagnostic history, all of which are invaluable and always available – Because they're built-in!

The LMA-1500-LP operates with extremely low power requirements making it suitable for solar and battery powered applications. It offers all the same great features as the LMA-1500 model.

### ENHANCED FEATURES

**Power Requirements:** 
*Power consumption in the No Detect state is less than 8 milliamps.*

**DEFLECTOMETERTM:** 
The front panel 7-segment LED DEFLECTOMETERTM provides visual feedback and assistance for setting the correct sensitivity, reading the frequency of the loop, reporting Loop Faults, and indicating Delay & Extension Timing functions.

**Sensitivity Meter:** 
With a typical size vehicle over the roadway loop, the DEFLECTOMETERTM functions as a Sensitivity Meter. The optimum sensitivity setting should provide a reading of “5”. You can adjust the DEFLECTOMETERTM reading by using the front panel UP or DOWN sensitivity buttons. Automatic quantitative feedback of the loop system operation ensures that the detector is set to the most optimum sensitivity level to detect ALL vehicles, including motorcycles and high-bed vehicles.

**Frequency Meter:** 
Following power-up or reset, the DEFLECTOMETERTM will indicate a 2 or 3 digit number (quickly flashes) that indicates the loop frequency of the loop & loop network. Keeping your loops separated by at least 5 KHz avoids crosstalk problems and future service calls.

**Ten (10) Levels of Sensitivity:** 
10 levels of sensitivity (0 to 9) can be easily set using the UP or DOWN push buttons.

**One Model Covers ALL Low Voltages:** 
LMA-1500 operates on 12VDC, 24VDC, and 24VAC

**Advanced Loop Diagnostics:** 
The Loop Fault Monitor continually checks the integrity of the loops and will report and store three types of loop faults; Open Loops, Shorted Loops, and 25% sudden changes in inductance.

**Loop Fault Memory:** 
The Loop Fault Memory uses internal Non-Volatile memory to store and display the current and previous loop faults utilizing the front panel “Loop Fault” LED and DEFLECTOMETERTM. A power loss or reset will not delete this memory. A MUST FOR TROUBLESHOOTING!

**Call Output Memory:** 
The detector will not drop a Call state if power is lost for a minimum of 4 seconds or less.

**2 Second Delayed Detection:** 
A 2-second CALL delay time can be provided via the program DIP switch.

### STANDARD FEATURES

- Automatic Tuning
- Lightning & Surge Protection
- Four (4) Frequency Levels
- Compatible with ALL radio controls & remote openers
- Sensitivity Boost
- Fail Safe and Fail Secure Configurations
- Separate Color-Coded LED indicators
- Wide Loop Inductance Range: 20 to 2500 micro Henries.

*OTHER INDUSTRY OPERATORS MAY ALSO BE COMPATIBLE, PLEASE CONTACT EDI FOR BRAND AND MODEL NUMBER UPDATES.

Deflectometer is a trademark of Eberle Design Inc.
Controls: PCB mounted DIP switch (8 position) and front panel push buttons allow the user to set up operational parameters including frequency & sensitivity. All switch settings, excluding the frequency setting, are stored in the internal memory.

Reset (Power up): The detector can be manually reset by pressing the front panel RESET button, or by interrupting power. Upon power up, the loop frequency is displayed (quickly flashes) on the 7-segment display following power-up or Reset. If the detector is in the fail safe mode, the power up will display the current loop fault condition. The detector will automatically tune to the loop and lead-in combination within the tuning range. The front panel DEFLECTOMETER display will indicate a two or three digit number (quickly flashing mode) that indicates the loop frequency.

Setting Sensitivity - Front Panel Sensitivity Push Buttons:
The DETECTOMETER™ (front panel 7-segment LED) aids in setting the DETECTOR quickly and easily to the last optimal sensitivity level to ensure the trouble-free detection of all vehicles, including motorcycles and high bed vehicles. For typical vehicles (mid-size vehicle / small pick up) utilizing properly installed roadway loops, a value of 5 displayed on the DETECTOMETER™ during the DETECT output period indicates an optimum sensitivity setting. For high profile vehicles (commercial trucks, 4x4’s, etc.), a DETECTOMETER™ reading of 4 will be optimum. For low profile vehicles (sports cars, etc.), a DETECTOMETER™ reading of 6 will be optimum.

Adjusting sensitivity using the DETECTOMETER™ (Recommended):
The DETECTOMETER™ should read 5 (or less) with no vehicle over the roadway loop. When the typical vehicle is completely in the detection zone (OUTPUT indicator ON), the sensitivity should be adjusted up or down until the DETECTOMETER™ displays the desired optimum value of 5 or 6 as appropriate.

If a typical vehicle located over the roadway loop causes the number ‘7’ to be displayed on the DETECTOMETER™, the sensitivity should be decreased two levels. This can be done by pressing the front panel SENS button twice.

If a typical vehicle located over the roadway loop causes the number ‘2’ to be displayed on the DETECTOMETER™, the sensitivity should be increased three levels. This can be done by pressing the front panel SENS button three times.

NOTE: THE DETECTOMETER™ DYNAMICALLY UPDATES AFTER EACH SENSITIVITY LEVEL CHANGE, ALLOWING YOU TO CHANGE SENSITIVITY SETTINGS WHILE A VEHICLE REMAINS IN THE LOOP DETECTION ZONE.

Adjusting sensitivity without using the DETECTOMETER™ (Manually setting sensitivity):
The DETECTOR offers 10 levels of sensitivity (0 to 9). Level 9 is the highest sensitivity. Sensitivity can be manually adjusted by decreasing the voltage on the front panel SENS switch (® or ¯) when a vehicle is NOT over the roadway loop. The first time a SENS button (® or ¯) is pressed, the current sensitivity level is decreased by one. The second press of the same SENS button (® or ¯) is pressed again before the 5 second period ends, the sensitivity setting will increase (SENS ®) or decrease (SENS ¯). The new sensitivity value will be displayed on the DETECTOMETER™ display for 2 seconds.

Loop Frequency (2 Position DIP Switch - DIP 1 & 2):
Four frequencies, normally in the range of 13 to 150 kilohertz are DIP switch selectable. To help eliminate crosstalk problems, the loop frequency is displayed on the front panel DETECTOMETER. Following power-up or Reset, the display will indicate a two or three digit number (quickly flashing mode) that indicates the loop frequency. As an example, you may see a “2” followed by a “5”, indicating 25 kilohertz. This feature is a great tool for separating frequencies of adjacent loops to avoid crosstalk. Typically you want two detectors (loops) to be at least 5 kilohertz away from each other in order to ensure good separation.

Fail Safe / Fail Secure Operation (8 Position DIP Switch - DIP 3):
When operating in the Fail Safe mode, the Detector will operate when connected to poor quality loops. The Detector will automatically tune to any loop and lead-in combination within the tuning range and across the entire frequency range. When operating in the Fail Secure mode, the Detector will not respond to loop failures.

Output Relay “B” Modes (8 Position DIP Switch - DIP 4 & 5):
Four modes of operation are selectable from DIP switches 4 & 5:

- Presence, Pulse on Entry, Pulse on Exit, or Fault.
- OFF
- ON
- 250 millisecond pulse on vehicle exit.
- Duplicates operation of Output A.
- ON
- 250 millisecond pulse on vehicle entry.

2-Second Output Delay (8 Position DIP Switch - DIP 6):
This feature may be turned on, via the 8 position DIP Switch, so outputs A & B will be delayed for a period of 2 seconds after a vehicle has entered the detection zone. Note, the DETECTOMETER will display the letter “D” during the delay period. If the vehicle does not remain in the loop zone for the full 2 seconds the delay will terminate and no DETECT output will be produced.

Loop Fault Monitoring:
The detector continuously checks the integrity of the loop. The system is able to detect shorted or open circuit loops, or sudden changes in inductance exceeding 25% of the nominal inductance. If a fault is detected, the DETECT and POWER LEDs continuously emit a sequence of flashes. For example, if a segment of the loop is opened, the POWER LED will continue to flash with the sequence signifying the type of fault that was detected. In the case of the excessive inductance change fault, the unit will return to the new inductance after a period of two seconds and continue operation. The fault condition will be indicated by the flash sequence of the POWER LED.

Loop Fault Memory:
Previous loop faults are stored in non-volatile (internal) memory. If power is interrupted, for any length of time, the detector will not lose the last loop condition status, which is valuable information for troubleshooting purposes. When power is restored to the detector, the GREEN POWER / FAULT LED will automatically indicate the last loop status condition (open, shorted loop, 25% excessive change in inductance or no loop problem occurred). Momentarily pressing the front panel RESET button will reset the loop fault memory and the detector. However, you should want to review the last loop fault condition, simply press and hold the "RESET" button for 2 seconds. See “Loop Fault Memory”.

Self Tuning:
The Detector will automatically tune to any loop and lead-in combination within the tuning range upon application of power.

Environmental Tracking:
The Detector automatically and continuously compensates for component drift and environmental effects throughout the tuning range and across the entire temperature range. Loop Inductance (Tuning) Range: 20 to 2500 micro-Henry with a Q factor greater than 5.

Loop Input (Lightning Protection): The loop input incorporates lightning and transient protection devices and the loop oscillator circuit is transformer-isolated. The lightning protection will withstand the discharge of a 10 uf capacitor charged to 2500V across the loop inputs or between either loop input and earth ground. The transformer isolation allows operation with a loop which is grounded at a single point.

Construction:
The Detector will operate when connected to poor quality loops including those that have a short to ground at a single point.

Internal Circuitry Isolation:
All internal electronic circuitry is isolated from the loops by means of the loop isolation transformer.

Lead-In Length: The Detector will operate with lead-in (feeder) lengths up to 5,000 feet with appropriate loops and proper lead-in cable.

Output Rating(s): Open Collector Transistor referenced to DC Common. Max current rating 100 mAmps. Max voltage 30 VDC.

Construction:
Printed circuit boards are double sided 1oz. copper with plated through holes. Circuit boards are conformally coated for environmental protection.

Environmental:
- Operating Temperature Range: -34°C to +74°C (-30°F to 165°F)
- Humidity Range: 0 to 95% relative.

Mechanical:
- Dimensions: “230’’ (5.84 cm.) high x 2.75’’ (6.98 cm.) wide x 0.83” (20.3 cm.) thick
- Weight: 1.50 oz. (42 g.)

Power Supply:
- 10 to 30 VDC or 14 to 26 VAC
- 8 mA maximum in No Call state.
- 9 mA maximum in Call state.

The front panel DEFLECTOMETER display is active for 2 minutes following power-up or after any button press. This adds approximately 10 mA to the current draw.

Connector: Rear mount 10 pin male female Molex type 09-48-1104. Mates with other male PCB 0.156’’ pitch headers used by many gate, park, and access control devices.

Pin Assignment (Connections):

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loop Input</td>
</tr>
<tr>
<td>2</td>
<td>Loop Input</td>
</tr>
<tr>
<td>3</td>
<td>Power (+10 to 30 VDC or 26 VAC)</td>
</tr>
<tr>
<td>4</td>
<td>No Connection</td>
</tr>
<tr>
<td>5</td>
<td>No Connection</td>
</tr>
<tr>
<td>6</td>
<td>Output A</td>
</tr>
<tr>
<td>7</td>
<td>Output B</td>
</tr>
<tr>
<td>8</td>
<td>Output B Inverted</td>
</tr>
<tr>
<td>9</td>
<td>Output A (Presence Output)</td>
</tr>
<tr>
<td>10</td>
<td>Power (+10 to 30 VDC or 26 VAC)</td>
</tr>
</tbody>
</table>

NOTE: Relay Contacts are shown with power applied on either pin 3 or 9, or both.

Default Settings:
- Sensitivity: 7
- Loop Fault Delay: Infinite Presence
- Output “B": Fail Output
- Sensitivity Boost: OFF
- Change Fault Delay: 200msec
- Configuration: FAIL SAFE