Eberle Design, Inc. (EDI) provides access professionals with reliable, high quality mission critical vehicle detection products that will improve the performance and lifecycle of your access control systems.

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!

ENHANCED FEATURES

DEFLECTOMETER™: The front panel 7-segment LED DEFLECTOMETER™ 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 DEFLECTOMETER™ functions as a Sensitivity Meter. The optimum sensitivity setting should provide a reading of “5”. You can adjust the DEFLECTOMETER™ 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 DEFLECTOMETER™ 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.

Two Models Cover ALL Voltages: LMA-1250-LV operates on 12VDC, 24VDC, and 24VAC
LMA-1250-HV operates on 120VAC and 240VAC

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 DEFLECTOMETER™. 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.

“Delayed” & “Extended” Detection: A 2-second CALL “Delay” time and 2, 5, or 10-second CALL “Extension” time can be provided.

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.

Deflectometer is a trademark of Eberle Design Inc.
LMA-1250 DEFLECTOMETER™ SERIES INDUCTIVE LOOP VEHICLE DETECTORS
Single Channel with Dual Programmable Relay Outputs

SPECIFICATION

Controls: Rear mounted DIP switches and front panel push buttons allow the user to set up operation including frequency & sensitivity. The DIP switches include:
- DIP 1: Adjusts the sensitivity of the Detector.
- DIP 2: Selects the operation mode (Limited Presence or Infinite Presence).
- DIP 3 & DIP 4: Select the input/output relay type.
- DIP 5: Selects the loop fault protection mode.

Reset (Power up): The Detector can be manually reset by pressing the front panel RESET button or interrupting power. Upon power up, the loop frequency is displayed (quickly flashes) on the 7-segment DEFLECTOMETER™. Following power-up, two or three numbers will display (quickly flashing) within 2 seconds. As an example, if you set the SENS button to ‘2’ a “2” then a “5”, indicating 25 kHz sensitivity.

Adjusting sensitivity using the DEFLECTOMETER™ (recommended): The DEFLECTOMETER™ should read zero (0) 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 DEFLECTOMETER™ displays the desired optimum value of 5 (or 4 or 3). For typical roadways, 5 kHz is recommended. When the roadway profile includes a large number of high bed vehicles or has a high frequency of low bed vehicles, a DEFLECTOMETER™ reading of 4 will be optimum. For low profile vehicles (sports cars, etc.), a DEFLECTOMETER™ reading of 6 will be optimum.

Adjusting sensitivity without using the DEFLECTOMETER™ (manually setting sensitivity): The DETECTOR offers 10 levels of sensitivity (0 to 9). Level 9 is the highest sensitivity. Sensitivity can be manually set by pressing the front panel SENS button until the vehicle is NOT over the roadway loop. The first time a SENS button (1 or 9) is pressed, the current sensitivity level is displayed on the DEFLECTOMETER™ for 5 seconds. If either SENS button (1 or 9) is pressed a second time, the sensitivity setting (SENS 1) or (SENS 9) will be decreased by one sensitivity level.

Loop Frequency (2 Position DIP Switch - DIP 1 & 2): One of four settings (normally in the range of 13 to 15 kHz). This frequency is selected by 2 positions of the DIP switches. The detector input frequency displayed on the DEFLECTOMETER™ following power-up or Reset. The display will indicate a two or three digit number (quickly flashing) 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. Detectors on adjacent loops should all be separated by at least 5 kilohertz.

Sensitivity Boost (8 Position DIP Switch - DIP 1): When ON, sensitivity will increase only during the Detect Output period without changing the sensitivity of a vacant loop. When a vehicle enters the loop, the sensitivity is boosted to a higher level than the vacant loop setting. The boosted sensitivity remains throughout the Detect Output period. When the vehicle leaves the loop, the sensitivity returns to the vacant loop setting. This feature helps prevent dropouts during the passage of high bed vehicles and is exceptionally useful in sliding gate situations.

Output “A” Relay Modes (8 Position DIP Switch - DIP 2): Two modes of Presence operation are selectable: Limited Presence or Infinite Presence. The output can be either in Normally Open or Normally Closed. The detector detects the presence of a vehicle over a roadway loop only when a consistent presence condition is detected during a 5 second period of time. This allows the Detector to detect vehicles that pass through the loop for a brief time period and are then not present.

Output “B” Relay Modes (8 Position DIP Switch - DIP 6 & 7): Four modes of operation are selectable from DIP switches 6 and 7: Presence, Pulse on Entry, Pulse on Exit, or Fault. The Detector will automatically and continuously compensate for component temperature changes.

Fail Safe Operation (Models LMA-1250-LV & LMA-1250-HV): When the loop fails or power is removed, continuity exists between Common & Normally Open. Continuity exists between Common & N.C. for Relay B.

Fail Secure Operation (Models LMA-1250S-LV & LMA-1250S-HV): When the loop fails or power is removed, continuity exists between Common & Normally Closed on both relays “A” & “B”.

Loop Fault Detection: 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 OUTPUT and LOOP FAULT indicators continuously emit a sequence of flashes.

Additionally, the 7-Segment DEFLECTOMETER™ displays the letter “F” indicating a current loop fault operation. Each type of fault is identified by a period of flash sequence.

Flash Sequence
Fault
1 flash Open Circuit Loop.
2 flashes Shorted Circuit Loop.
3 flashes Inductive change in inductance.
4 flashes Resistor failure.
5 flashes Inductive change in inductance. If the Open or Shorted fault condition self heals, the DETECT Output indicator and 7-Segment DEFLECTOMETER™ will return to normal operation. The LOOP FAULT indicator will continue to flash until the sequence signifies the type of fault that was last 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 LOOP FAULT indicator.

Pressing the “Reset” button will reset the Detector and clear the flash sequence from the LOOP FAULT indicator. To review the last loop fault condition, simply press and hold the “Reset” button for 2 seconds. See “Loop Fault Memory” below.

Power Status Indicators (Green LED): Solid ON indicates normal power status during detector operation. The POWER Indicator will flash every 2 seconds during low input voltage (Brown out) conditions, indicating insufficient input voltage. In addition to the POWER indicator, the seven (7) segment DEFLECTOMETER™ display will be illuminated during normal detector operation.

Output “A” & “B” Detect Output Status Indicator (Red LED’s):
- Vehicle Detection = Steady ON
- 2-Second Delay = Flashes at a 2 Hz rate
- 2, 5, or 10 Seconds of Extension Time = Flash at a 4 Hz rate (Presence modes only).

Fault Status Indicator (Yellow LED): While a current fault is being detected, the red OUTPUT and yellow LOOP FAULT indicator continuously emit a sequence of flashes together. When only the yellow LOOP FAULT indicator continuously emits a sequence of flashes, a fault has occurred and the Detector had self corrected. Each type of fault is identified by a different flash sequence.

Loop Fault Memory: Previous loop faults are stored in non-volatile (internal) memory. If power is interrupted for a long period of time, the Detector will not loose the last loop condition status, which is valuable information for troubleshooting purposes. When power is restored to the Detector, the yellow LOOP FAULT indicator will automatically display the last fault status condition (open loop, shorted loop, 25% change in inductance or no loop problem occurred). Momentarily pressing the front panel Reset button will reset the fault memory and the Detector. To review the last loop fault condition, simply press and hold the reset button for 2 seconds. See “Loop Fault Memory” below.

Dc Supply (5 VDC): 10 to 2500 micro-Henry with a Q factor greater than 5.

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 temperature changes and environmental effects throughout the tuning range and across the entire temperature range.

Loop Input (Lightning Protection): The input incorporates lightning and transient protection devices and the loop oscillator circuitry is transformer-isolated. The lightning protection will withstand the discharge of a 10 uF capacitor charged to 2,000V across the loop inputs or between either input and earth ground. The transformer isolation allows operation with a loop which is grounded at a single point.

Ground Loop Operation: The Detector will operate when connected to poor quality loops without ground loops and is capable of sharing a ground with a single point.

Input / Output Circuitry Isolation: The loop inputs are isolated by means of the internal loop isolation transformer. The outputs are isolated by means of the output relay.

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

Output Relay Rating(s): Contacts are rated 5A, 250 VAC, 30 VDC.

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

Mechanical:
- Dimensions: 2.875” (7.30 cm.) long x 1.3750” (3.49 cm.) wide x 3.0625” (7.78 cm.) tall
- Weight: 10 oz.

Power Supply:
- Model LMA-1250-LV & LMA-1250S-LV: 10 to 32 VDC or 14 to 28 VAC, 50 mA max.
- Model LMA-1250-HV & LMA-1250S-HV: 95 to 250 VAC, 50/60 Hz, 0.5 Watts max.

Connector: Rear mount 11 pin male Molex “Amphenol” P/N 8586P11.

Pin Assignment (Connections):

<table>
<thead>
<tr>
<th>Pin Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DC (AC) (+) / Line</td>
</tr>
<tr>
<td>2 DC Ground (AC) (-) / Neutral</td>
</tr>
<tr>
<td>3 Output Relay “B”, Normally Open (Closes for DETECT)</td>
</tr>
<tr>
<td>4 No Connection</td>
</tr>
<tr>
<td>5 Output Relay “A”, Common</td>
</tr>
<tr>
<td>6 Output Relay “A”, Normally Open (Closes for DETECT)</td>
</tr>
<tr>
<td>7 Loop Input</td>
</tr>
<tr>
<td>8 Loop Output</td>
</tr>
<tr>
<td>9 Output Relay “B”, Common</td>
</tr>
<tr>
<td>10 Output Relay “A”, Normally Closed (Opens for DETECT)</td>
</tr>
<tr>
<td>11 Bypass 25 ms Resistor</td>
</tr>
</tbody>
</table>

NOTE: Relay contacts are shown with power applied, loops connected and no vehicle in the loop zone (No DETECT Output).

Default Settings:
- Loop Fault Mode: Infinite Presence
- Sensitivity Mode: Level 4
- Input Fault Mode: Infinite Presence
- Power Fault Mode: Infinite Presence
- Fail Safe Mode: ON
- Fail Safe Mode: OFF
- Fail Secure Mode: ON
- Fail Secure Mode: OFF
- 2-Second DETECT Delay: OFF
- 2, 5, or 10-Second DETECT Extension: OFF