LMA-1400

SERIES

INDUCTIVE LOOP VEHICLE DETECTORS

- UNIVERSAL SINGLE CHANNEL PCB DESIGN
- DUAL PROGRAMMABLE RELAY OR SOLID STATE OUTPUTS

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

Three Connectors Available: The following model configurations are available:
- Model LMA-1400-M provides a 10-pin male Molex connector
- Model LMA-1400-F provides a 10-pin female Molex connector
- Model LMA-1400-B provides a 10-pin Block Terminal connector

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

Relay or Solid State Output: Relay outputs are standard. Solid state outputs are can be ordered as an option (add “-S”).

Versatile Power Supply Input Range: LMA-1400 series operates on 12VDC to 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 “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 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.
LMA-1400 DEFLECTOMETER™ SERIES INDUCTIVE LOOP VEHICLE DETECTORS

Universal Single Channel PCB Design with Dual Programmable Outputs

SPECIFICATION

Controls: DIP switches and push buttons allow the user to set operational parameters including frequency & sensitivity.

Reset (Power up): The Detector can be manually reset by pressing the RESET button or interrupting power. Upon power up, the loop frequency is displayed (quickly flashes) on the 7-segment LED followed by power-up, two or three numbers will display (quickly flashing) within two seconds. As an example, you may see a “2” then a “5”, indicating 25 kilohertz. The reset button is also used for reviewing previous loop fault conditions stored in the internal memory.

Setting Sensitivity - Sensitivity Push Buttons (UP & DOWN)
The DEFLECTOMETER™ (7-segment LED) aids in setting the DETECTOR quickly and easily to the most optimum sensitivity level to ensure the trouble-free detection of all vehicles, including motorcycles and pedestrians. For typical vehicle (mid-size vehicle / small pick-up) utilizing properly installed roadway loops, a value of 5 displayed on the DEFLECTOMETER™ during the DETECT output period indicates an optimum sensitivity setting. For high profile vehicles (commercial trucks, 4x4’s), the sensitivity should be increased three levels. For low profile vehicles (sports cars, etc…), a DEFLECTOMETER™ reading of 6 will be optimum.

Adjusting sensitivity using the DEFLECTOMETER™ (recommended):
The DEFLECTOMETER™ should read “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 6 as desired).

if a typical vehicle located over the roadway loop causes the number “7” to be displayed on the DEFLECTOMETER™, the sensitivity should be decreased two levels. This can be done by pressing the DOWN button two times.

if a typical vehicle located over the roadway loop causes the number “2” to be displayed on the DEFLECTOMETER™, the sensitivity should be increased three levels. This can be done by pressing the UP button three times.

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

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 to any desired level by pressing the UP or DOWN buttons when a vehicle is NOT over the roadway loop. The first time an UP or DOWN button is pressed, the current sensitivity level is displayed on the DEFLECTOMETER™ for 5 seconds. If either UP or DOWN button is pressed again before the 5 second period ends, the sensitivity setting will increase (UP) or decrease (DOWN). The new sensitivity value will be displayed on the DEFLECTOMETER™ display for 5 seconds. The factory default Sensitivity setting is level 4.

Sensitivity Boost (DIP Switch #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 Detector 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 Presence Modes (DIP Switch #2):
Two modes of Presence operation are selectable: Limited Presence or Infinite Presence. When ON (Limited Presence Mode), the presence DETECT Output hold time is between 5 minutes minimum and 3 hours maximum. Hold time depends on loop geometry, number of wire loops in the loop, vehicle size, and position of the vehicle relative to the loop. When OFF (Infinite Presence Mode), the presence DETECT Output hold time will always be maintained as long as a vehicle is located over the loop zone and power is not removed from the Detector.

2-Second Delay Output (DIP Switch #3): When ON, the DETECT output will be delayed for a period of 2 seconds after a vehicle has entered the detection zone. The DEFLECTOMETER™ 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 DETECT output will be produced.

2, 5, or 10-Second Extension Output (DIP Switch #4 & #5): One of three Extend times, or OFF may be selected for either presence modes. The DETECT output is held for the selected time after the initial loop fault detection. The DEFLECTOMETER™ will display the extension time in Flashes at a 4 Hz rate (Presence modes only).

Vehicle Detection = Steady ON
2-Second Delay = Flashes at a 2 Hz rate
2, 5, or 10 Seconds of Extension Time = Flashes at a 4 Hz Rate (Presence modes only).

Fault Status Indicator (Yellow LED): While a current fault is being detected, the red OUTPUT indicator and the yellow FLT indicator continuously emit a sequence of flashes together. When only the yellow FLT 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.

Faults:

Loop Faults:

Vehicle Detection = Steady ON
2-Second Delay = Flashes at a 2 Hz rate
2, 5, or 10 Seconds of Extension Time = Flashes at a 4 Hz Rate (Presence modes only).

F-PIN:
10
3
4
6
7
8
9
DC Ground / 24 VAC (-)
DC Ground / 24 VAC (+)
DC Ground / 24 VAC (-)
DC Ground / 24 VAC (+)
DC Ground / 24 VAC (-)
DC Ground / 24 VAC (+)
DC Ground / 24 VAC (-)
DC Ground / 24 VAC (+)

Power Supply: 10 to 32 VDC or 14 to 28 VAC, 85 mA maximum

Connectors:
LMA-1400-M/S: 10 pin Male (M) molex
LMA-1400-F/S: 10 pin Female (F) molex
LMA-1400-B/S: 10 pin Terminal Block (B) Type

Pin Assignment (Connections):

Loop Frequency (DIP Switch #9 & #10): One of four settings (normally in the range of 13 to 150 kilohertz) may be selected to alleviate interference which may occur when loops connected to different detectors are located close to one another. Each DIP switch utilizes 2 different settings, one with a loop 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 “A” followed by “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.

Loop Fault MONITOR 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 FLT indicators continuously emit a sequence of flashes. Additionally, the 7- Segment DEFLECTOMETER™ displays the letter “F” indicating a current loop fault. Each type of fault is identified by a different flash sequence:

Flash Sequence
Fault
1 flash
Open Circuit Loop
2 flashes
Shorted Circuit Loop
3 flashes
25% excessive 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 yellow FLT indicator will continue to flash with the sequence signifying 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 sensing. The fault condition will be indicated by the flash sequence of the FLT indicator. Pressing the ‘Reset’ button will reset the Detector and clear the flash sequence from the FLT 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

Default Settings:
Sensitivity
Level 4

Output “A” Relay
Infinite Presence

Output “B” Relay
Infinite Presence

Sensitivity Boost
OFF

2-Second DETECT Delay
OFF

2, 5, or 10-Second DETECT Extend
OFF