



Models:
LMA-400-12M
LMA-400-24M



Models:
LMA-400-12F
LMA-400-24F

LMA-400 SERIES

INDUCTIVE LOOP VEHICLE DETECTORS

- SINGLE CHANNEL
- DUAL PROGRAMMABLE RELAY OUTPUTS
- UNIVERSAL CIRCUIT BOARD DESIGN

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.

The wide range of EDI 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.

ENHANCED FEATURES

Four Models Available:	LMA-400-12M operates on 12VDC and provides a Molex 10 pin Male connector LMA-400-24M operates on 24VDC and provides a Molex 10 pin Male connector LMA-400-12F operates on 12VDC and provides a Molex 10 pin Female connector LMA-400-24F operates on 24VDC and provides a Molex 10 pin Female connector
Ten (10) Levels of Sensitivity:	Ten (10) sensitivity levels may be selected, via the rotary switch, to optimize detection on varying loop and lead-in configurations.
Advanced Loop Diagnostics:	The Loop Fault Monitor continually checks the integrity of the loop and will report and store three types of loop faults; Open Loops, Shorted Loops, and 25% sudden changes of 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 POWER (Loop Fault) LED. A power loss or reset will not delete this memory. A MUST FOR TROUBLESHOOTING!
CALL (DETECT) Output Memory:	The detector will not drop a CALL (DETECT) state if power is lost for a minimum of 4 seconds or less.

STANDARD FEATURES

- | | |
|--|---|
| <input checked="" type="checkbox"/> Lightning & Surge Protection | <input checked="" type="checkbox"/> Sensitivity Boost |
| <input checked="" type="checkbox"/> Four (4) Frequency Levels | <input checked="" type="checkbox"/> Compatible with ALL Radio Controls & Remote Openers |
| <input checked="" type="checkbox"/> Automatic Tuning | <input checked="" type="checkbox"/> Separate Color-Coded LED Indicators |
| <input checked="" type="checkbox"/> 2 Second CALL Delay Timing | <input checked="" type="checkbox"/> Wide Loop Inductance Range: 20 to 2500 microHenries |
| <input checked="" type="checkbox"/> 2, 5, or 25 Second CALL Extension Timing | |

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LMA-400 SERIES INDUCTIVE LOOP VEHICLE DETECTORS

Single Channel with Dual Programmable Relay Outputs and Universal Circuit Board Design

SPECIFICATION

Controls: Board mounted DIP switches allow the user to set up operational parameters and frequency. A rotary switch allows the user to select one of 10 levels of sensitivity.

Reset (Power up):

Models LMA-400-12M & LMA-400-24M: When pin 6 (Reset) is connected to pin 8 (DC Power Common).

Models LMA-400-12F & LMA-400-24F: When pin 5 (Reset) is connected to pin 3 (DC Power Common).

Sensitivity (Rotary switch): One of ten settings may be selected to optimize detection on varying loop and lead-in configurations.

Sensitivity Boost (Sw. 1): This feature may be turned ON to increase sensitivity only during the CALL period. When a vehicle enters the loop, the detector sensitivity is boosted to a higher level than the vacant loop setting. The boosted sensitivity remains throughout the CALL 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 particularly useful in sliding gate situations.

Output Relay "A" Modes (Sw. 2): Two modes of Presence operation are selectable from DIP switch 2, Infinite Presence or Limited Presence. When ON, a presence output CALL will always be maintained. When OFF, the presence output CALL will be terminated after 30 minutes whether or not the vehicle has left.

2-Second CALL Delay (Sw. 3): This feature may be turned ON so the outputs A & B will be delayed for a period of 2 seconds after a vehicle has entered the detection zone. If the vehicle does not remain for the full 2 seconds the delay will terminate and no output call will be produced.

0, 2, 5, or 25 Second CALL Extension (Sw. 4 & 5): One of four extend times may be selected. The Output CALL on Relay A & B is held for the selected time after the vehicle has left the zone of detection (except Output B - pulse on entry mode, where only Output A CALL is extended).

Switch 4	Switch 5	Function
ON	ON	25 seconds extend time.
ON	OFF	2 seconds extend time.
OFF	ON	5 seconds extend time.
OFF	OFF	0 seconds extend time.

Output Relay "B" Modes (DIPs 6 & 7): Four modes of operation are selectable; Presence, Pulse on Entry, Pulse on Exit, or Fault.

Switch 6	Switch 7	Function
OFF	OFF	250 millisecond pulse on vehicle entry
ON	OFF	Duplicates operation of Output "A"
OFF	ON	250 millisecond pulse on vehicle exit.
ON	ON	Output is ON during loop fault condition.

Fail Safe / Fail Secure Operation (Sw. 8): Output "A" is fail safe with DIP switch 8 OFF (a constant CALL is produced during a power failure or during a loop fault condition). Output "A" is fail secure with DIP switch 8 ON (Output "A" does not produce a CALL during a power failure or during a loop fault).

Loop Frequency (Sw. 9 & 10): One of four settings (normally in the range of 20 to 60 kilohertz) may be selected to alleviate interference which may occur when loops connected to different detectors are located adjacent to one another.

Switch 9	Switch 10	Function
OFF	OFF	High Frequency
ON	OFF	Medium-High Frequency
OFF	ON	Medium-Low Frequency
ON	ON	Low Frequency

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, both the DETECT and FAULT LEDs continuously emit a sequence of flashes. 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% change in inductance.

If the fault condition is removed, the DETECT LED will return to normal operation. The fault LED 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 (possible loss of a loop within a series of loops), the unit will log the fault and return to the new inductance after a period of two seconds. The logged fault will be indicated by the fault LED emitting the flash sequence relating to the excessive inductance change fault.

High Intensity Color-Coded LED Indicators: Two indicators are used: the red DETECT LED indicates the detect state and the yellow FAULT LED indicates the status of the fault monitor. See Fault Monitoring.

Self Tuning: The detector will automatically tune to any loop and lead-in combination within the tuning range upon application of power. The unit may be retuned by adjusting the rotary sensitivity control and resetting to the desired value.

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 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 loop input and ground. The transformer isolation allows operation with a loop which is grounded at a single point.

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

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

Output Relay Rating(s): Contacts are rated 1A, 125 VAC, 30 VDC.

Construction: Printed circuit boards are double sided 2 oz copper with plated through holes. Circuit boards are 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: 4.14" (10.52 cm.) long x 2.71" (6.88 cm.) wide x 0.75" (1.91 cm.) tall
- Weight: 3.2 oz.

Power Supply:

- Models LMA-400-12M & LMA-400-12F: 10 to 15 VDC, 75 mA max.
- Models LMA-400-24M & LMA-400-24F: 18 to 28 VDC, 70 mA max.

Connectors:

- Models LMA-400-12M & LMA-400-24M: 10 pin male Molex P/N 26-61-4100
- Models LMA-400-12F & LMA-400-24F: 10 pin female Molex P/N 09-52-3101-P

Pin Assignment (Connections):

"Male"		"Female"	
Pin	Function	Pin	
1	Output Relay A Common	10	
2	Output Relay A Normally Closed (Fail Safe)	9	
	Output Relay A Normally Open (Fail Secure)		
3	Output Relay A Normally Open (Fail Safe)	8	
	Output Relay A Normally Closed (Fail Secure)		
4	Output Relay B Common	7	
5	Output Relay B Normally Open	6	
6	Reset (when connected to DC Power Common)	5	
7	DC Power +	4	
8	DC Power Common	3	
9	Loop	2	
10	Loop	1	

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

Default Settings:

- Sensitivity Level 3
- Output "A" Relay Limited Presence
- Output "B" Relay Pulse on Entry
- Sensitivity Boost OFF
- 2-Second CALL Delay OFF
- 0, 2, 5, or 25 Second CALL Extend 0
- Operation Fail Safe