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MODEL H2

SINGLE CHANNEL LOOP DETECTOR

OPERATING INSTRUCTIONS

I General

The Model H2 is a single channel detector with a solid state Presence output and a solid state Fail output. ***Please verify source voltage before applying power.*** The Model H2 will operate on voltages between 8 and 30 VDC.

II Indicators and Controls

i Power / Detect / Fail LEDs

The detector has one green and two red LED indicators that are used to provide an indication of the detector's power status, output state, and/or loop failure conditions. The table below lists the various indications and their meanings.

Status	POWER LED (Green)	DETECT LED (Red)	FAIL LED (Red)
Off	No power	Output Off	Loop OK
On	Normal power to detector	Output On	N/A
Flash	N/A	2 Hz (50% duty cycle) Delay activated 4 Hz (50% duty cycle) Extension activated	1 Hz (50% duty cycle) Loop Failure One flash every five seconds Prior Loop Failure

ii Rotary Switch (Sensitivity)

The eight-position rotary switch selects one of eight (8) sensitivity levels as shown in the table below. 0 is lowest and 7 is highest, with normal (factory default) being 3. Use the lowest sensitivity setting that will consistently detect the smallest vehicle that must be detected. Do not use a sensitivity level higher than necessary.

Position	0	1	2	3	4 *	5	6	7
-ΔL/L	2.56%	1.28%	0.64%	0.32%	0.16% *	0.08%	0.04%	0.02%
Response Time	60 ±20 ms							
Current Consumption	45 mA maximum, 40 mA typical							

* Factory default setting.

NOTE: After changing the sensitivity setting, the detector must be reset by momentarily changing the position of DIP switch 3 (Fail-Safe / Fail-Secure) or by removing and reapplying power.

iii DIP Switches

Switch	ON	OFF	Factory Default
1	Frequency (See table in Frequency section)		OFF
2			ON
3	Fail-Secure	Fail-Safe	OFF
4	Sensitivity Boost	No Boost	OFF
5	Output Delay (See table in Output Delay section)		OFF
6			OFF
7	Output Extension (See table in Output Extension section)		OFF
8			OFF

Frequency (DIP Switches 1 and 2)

In situations where loop geometry forces loops to be located in close proximity to one another, it may be necessary to select different frequencies for each loop to avoid loop interference, commonly known as crosstalk. DIP switches 1 and 2 can be used to configure the detector to operate at one of four frequencies corresponding to **Low**, **Medium / Low**, **Medium / High**, and **High** as shown in the table below.

NOTE: After changing any frequency DIP switch setting(s), the detector must be reset by momentarily changing the position of DIP switch 3 (Fail-Safe / Fail-Secure) or by removing and reapplying power.

Switch	Frequency			
	Low (0)	Medium / Low (1) *	Medium / High (2)	High (3)
1	ON	OFF *	ON	OFF
2	ON	ON *	OFF	OFF

* Factory default setting.

Fail-Safe / Fail-Secure (DIP Switch 3)

When DIP switch 3 is in the **OFF** position, the detector will operate in Fail-Safe mode during a loop fault condition. If a loop fault condition occurs while Fail-Safe mode is selected, the Presence output will activate. When DIP switch 3 is in the **ON** position, the detector will operate in Fail-Secure mode during a loop fault condition. If a loop fault condition occurs while Fail-Secure mode is selected, the Presence output **will not** activate. The factory default setting is **OFF** (Fail-Safe mode).

NOTE: Changing the setting of this DIP switch will reset the detector.

Sensitivity Boost (DIP Switch 4)

DIP switch 4 can be turned **ON** to increase sensitivity during the detect period without changing the sensitivity during the no detect period. The boost feature has the effect of temporarily increasing the sensitivity setting by up to two levels. When a vehicle enters the loop detection zone, the detector automatically boosts the sensitivity level. As soon as no vehicle is detected, the detector immediately returns to the original sensitivity level. This feature is particularly useful in preventing dropouts during the passage of high bed vehicles. The factory default setting is **OFF** (no Sensitivity Boost).

NOTE: After changing the setting of this DIP switch, the detector must be reset by momentarily changing the position of DIP switch 3 (Fail-Safe / Fail-Secure) or by removing and reapplying power.

Output Delay (DIP Switches 5 and 6)

One of four output delay times can be selected to delay the signal on the Presence output. Delay intervals of zero, two, five, or ten seconds can be selected by setting DIP switches 5 and 6 as shown in the table below.

Switch	Output Delay Interval			
	Zero (0) Seconds *	Two (2) Seconds	Five (5) Seconds	Ten (10) Seconds
5	OFF *	ON	OFF	ON
6	OFF *	OFF	ON	ON

* Factory default setting.

Output delay timing controls how long a vehicle must be continually detected before the detector output is turned on. If the vehicle leaves the loop detection zone during this interval, the delay timing interval will be aborted and the next vehicle entering the loop detection zone will begin a new full two, five, or ten second delay time. The detector provides an indication that the delay interval is currently timing by flashing the **DETECT** LED at a two Hz rate with a 50% duty cycle.

NOTE: After changing the setting of either of these DIP switches, the detector must be reset by momentarily changing the position of DIP switch 3 (Fail-Safe / Fail-Secure) or by removing and reapplying power.

Output Extension (DIP Switches 7 and 8)

One of four output extension times can be selected to extend the signal on the Presence output. Extension intervals of zero, two, five, or ten seconds can be selected by setting DIP switches 7 and 8 as shown in the table below.

Switch	Output Extension Interval			
	Zero (0) Seconds *	Two (2) Seconds	Five (5) Seconds	Ten (10) Seconds
7	OFF *	ON	OFF	ON
8	OFF *	OFF	ON	ON

* Factory default setting.

Output extension timing controls how long the detector output is extended after a vehicle exits the loop detection zone. When the specified amount of time passes, and the loop detection zone is still vacant, the detector output will be turned off. If another vehicle enters the loop detection zone during this interval, the extension interval will be reset and the vehicle currently occupying the loop detection zone will initiate a new full two, five, or ten second extension time once it exits the loop detection zone. The detector will indicate that the extension interval is currently timing by flashing the **DETECT** LED at a four Hz rate with a 50% duty cycle.

NOTE: After changing the setting of either of these DIP switches, the detector must be reset by momentarily changing the position of DIP switch 3 (Fail-Safe / Fail-Secure) or by removing and reapplying power.

III Reset

Changing the position of DIP switch 3 (Fail-Safe / Fail-Secure) will reset the detector. The detector can also be reset by momentarily pulling Pin 3 (Reset pin) to ground or by removing and reapplying power. After changing the sensitivity setting, frequency selection, sensitivity boost setting, output delay time, or output extension time, the detector must be reset.

IV Failed Loop Diagnostics

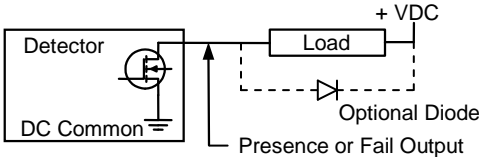
The **FAIL** LED indicates whether or not the loop is currently within tolerance. If the loop is within tolerance, the **FAIL** LED will be **OFF**. If the loop is out of tolerance, the **FAIL** LED indicates a current loop failure condition by flashing at a one Hz flash rate with a 50% duty cycle. If and when the loop returns to within tolerance, the **FAIL** LED will flash at a rate of one flash every five seconds to indicate that an intermittent loop failure has occurred and has been corrected. This flash rate will continue until another loop failure occurs, the detector is reset, or power to the detector is interrupted.

V Pin Connections

Pin	Function
1	Loop
2	Loop
3	Reset
4	No Connection
5	No Connection
6	Fail Output Collector
7	Fail Output Collector
8	Presence Output Collector
9	DC +
10	DC Common

NOTES: Pins 6 and 7 (Fail Outputs) are in a conducting state when power is applied and a functioning loop is connected to the detector. If power or the loop fails, the Fail Output will open to provide an indication of the failure.

The Presence and Fail Outputs are FET devices that sink current to DC Common (i.e. the FET Output switches the load to DC Common). To operate properly, the output must be connected as shown below:



If the output is being used to turn on an inductive device such as a relay, a snubber diode should be wired in parallel with the relay coil.