DSP-222
170/2070/TS2 Rack Mount
2-Channel Vehicle Detector

The DSP-222 vehicle detector has been specifically designed to meet CalTrans TEES 2009 and NEMA TS2 2003. This detector is a standard, 2-channel, inductive loop vehicle detector with solid-state open-collector outputs. The detect outputs are optically isolated.

The DSP-222 has two distinct modes of operation that can be selected via a PCB jumper.

- Freeway Mode: This mode provides very fast response times that can increase accuracy in travel speed and occupancy applications. This mode should only be used in applications where the improvement in response time provides noticeable benefits. Using this mode may produce unstable operations at sites that are experiencing noise or crosstalk issues. This mode is selected when the J2 jumper is removed.

- Intersection Mode: This mode provides more noise tolerance. Proprietary noise mitigation algorithms significantly increase the detectors' ability to function correctly in electrically noisy environments. This mode is recommended for most applications and especially at intersections. This mode is selected when the J2 jumper is installed. This is the factory default mode of operation.

A minimum presence feature is available to ensure that the detect output is on for at least 125 milliseconds every time it is activates. This can help ensure that the traffic control will see detector activations when short loops are used in high speed traffic areas.

This detector provides the core features needed to be the cost-effective workhorse detector for your inductive loop detection needs in traffic signal and traffic monitoring applications.

Features

- ❖ Compatible with CalTrans 170/2070 and NEMA TS 2 detector racks.

- ❖ Scanning operation to reduce crosstalk issues.

- ❖ Configurable for faster response for freeway applications.

- ❖ Works on any in-ground inductive loop from 50 to 750 microhenries.

- ❖ Fail safe operation.

- ❖ Separate Fail and Call LEDs for each channel.

- ❖ Wide DC voltage operation (8 to 30 volts DC).

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SELECTABLE FEATURES

Sensitivity: DIP Switches S1, S2, and S4 are used to set the operating sensitivity of each detector channel or to disable the channel. The response time is determined by the setting of jumper J2. With J2 installed the detector operates in intersection mode. With J2 removed the detector operates in the faster response mode. The response times below assume that both channels are set to the same sensitivity setting.

S1	S2	S4	ΔL/L	Response Time with J2	
				Removed	Installed
OFF	OFF	OFF	OFF	NONE	NONE
ON	OFF	OFF	0.64%	3.2 +/- 1.1 ms	7.5 +/- 1.1ms
OFF	ON	OFF	0.32%	3.2 +/- 1.1 ms	7.5 +/- 1.1ms
ON	ON	OFF	0.16%	6.3 +/- 2.1 ms	14.7 +/- 2.1ms
OFF	OFF	ON	0.08%	12.2 +/- 4.1 ms	20.5 +/- 4.1ms
ON	OFF	ON	0.04%	24.2 +/- 8.0 ms	56.4 +/- 8.0ms
OFF	ON	ON	0.02%	48.1 +/- 16.0 ms	112.2 +/-16.0ms
ON	ON	ON	0.01%	96.0 +/- 32.0 ms	224.0 +/- 32.0ms

Pulse / Presence: DIP Switch PULS is used to select the pulse or presence operating mode for each channel. With this switch turned on, the channel output will activate for a 125 ms pulse each time a vehicle enters the loop detection area. If the vehicle remains within the loop for two seconds, the detector will automatically retune the channel. If this switch is turned off the channel will activate the output when there is vehicle presence in the loop detection area.

Frequency: DIP Switches FREQ1 and FREQ2 are used to select one of four operating frequency ranges.

FREQ 1	FREQ 2	Frequency Range
OFF	OFF	High
ON	OFF	Medium High
OFF	ON	Medium Low
ON	ON	Low

NOTE: Changing any DIP switch setting for a channel automatically resets that channel, which cancels any active output.

Minimum Presence: Jumper MIN PRES (J1) on the PCB enables a minimum presence output of 125 ms. This feature ensures that all presence outputs (even on high-speed arterials) will be at least 125 ms.

Alternate: Removing jumper ALTERNATE (J2) on the PCB enables the faster response mode of operation for the detector. In this mode the response time is about twice as fast as the standard mode but provides less stable operation in noisy environments.

INPUTS

External Reset: The entire detector may be externally reset by holding pin C on the edge connector low for 15 microseconds.

INDICATORS

Green Fail LED: The green fail LED will be off when the channel is operating normally.

Fault	Display
No Fault Detected	OFF
Loop Open	1 flash every second
Loop Shorted	2 flashes every second
Excessive Change	3 flashes every second

Red Call LED: The red call LED will show the status of the output for each channel.

SPECIFICATIONS

Loop Inductance: 20µH to 1500µH (including lead-in inductance)

Operating Temperature: -35°F to 165°F (-37°C to 74°C)

Operating Voltage: 8 to 30 VDC, 100 mA maximum

Dimensions: 4.5" (H) x 6.875" (W) x 1.12" (D)
11.43 cm (H) x 17.46 cm (W) x 2.84 cm (D)

Channel Status Outputs: NEMA TS-2 outputs are solid-state and are output on Pin 7 (Channel 1) and Pin 20 (Channel 2).

Channel Detect Outputs: The channel detect outputs are open-collector, solid-state outputs. 50 mA maximum, 30 VDC maximum. These outputs are optically isolated.

Fail Safe Operation: During normal detection or a loop failure the detect output will activate (conduct between collector and emitter pins).

Connector: Standard 2 x 22 pin edge card connector with key slots located between B & C, E & F and M & N.

Pin Assignments			
1		A	DC – (Common)
2		B	DC +
3		C	Reset
4	Ch 1 Loop	D	Ch 1 Loop
5	Ch 1 Loop	E	Ch 1 Loop
6		F	Ch 1 Output Collector
7	Ch 1 TS-2 Status	H	Ch 1 Output Emitter
8	Ch 2 Loop	J	Ch 2 Loop
9	Ch 2 Loop	K	Ch 2 Loop
10		L	Chassis Ground
11		M	
12		N	
13		P	
14		R	
15		S	
16		T	
17		U	
18		V	
19		W	Ch 2 Output Collector
20	Ch 2 TS-2 Status	X	Ch 2 Output Emitter
21		Y	
22		Z	

Visit our Website at www.diablocontrols.com for the most current information on all of our products. Specifications are subject to change.

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