DSP-21

Directional Counting Vehicle Detector

Features

- High Accuracy Directional Counting. Tailgating, back-outs, and parking maneuvers are identified and handled correctly.
- Analyzes every vehicle to train itself to count vehicles. The more vehicles traveling over the loops, the more accurate it gets.
- Vehicle analysis information is automatically saved in case of power loss and re-used on power up.
- Selectable counting modes allow the user to adjust the counting algorithm to different situations.
- Counting test mode allows easy data collection system verification.
- Advanced channel scanning technology with superior noise tolerance.
- Single low voltage unit for AC or DC.
- Flicker display shows occupancy of the detection zone after a pulse output has been generated.

The DSP-21 Series is intended to be an 'all-in-one' vehicle detector designed for the parking industry. The DSP-21 Series Detector was developed for systems that need accurate vehicle count information. This detector is designed to operate utilizing a dual inductive loop configuration typical in the parking industry. The small packaging comes without sacrificing performance.

The DSP-21 Series Detector was designed to retrofit into existing locations that may require a detector upgrade. Sophisticated algorithms offer plug-n-play operation when using one of the counting modes.

The DSP-21 Series offers models with either contact closures (normally open or normally closed contacts can be ordered) or solid state (optically isolated open-collector) outputs.

This device can operate in one of four selectable modes:

- Two Channel Directional Counting
- Directional Logic Operation in Presence or Pulse
- Two Independent Channels Operating in Presence or Count
- Two Independent Channels Operating in Presence or Pulse

The two channel directional counting mode is the real differentiator for this product. Directional Counting was designed as a Plug-n-Play operation. Only the loop frequency setting is required. All other needed information is discovered by the detector automatically when it is first installed. This detector is designed to count passenger vehicles (cars, SUVs, and pickups) very accurately.

The detector includes a count testing mode that forces a channel to output a known number of counts every minute. This can be very useful during system start-up and troubleshooting.

The detector continually analyzes vehicles to better improve itself and automatically adjust for changes in vehicle traffic. Today's electronics allow us to take advantage of the technology to provide a small package with many functions. This allows us to achieve accuracies not previously possible in this form factor.

Multiple counting modes allow technicians to adjust for different vehicle counting situations to achieve the best accuracies possible.

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DSP-21 Directional Counting Vehicle Detector

SELECTABLE FEATURES

Presence: The channel output will remain activated as long as a vehicle is detected over the loop. This feature is activated for each channel individually.

If the detector is in the directional logic mode, the first channel to detect the vehicle will activate its output when the second loop detects the vehicle while the first channel is still detecting the vehicle.

Pulse: The pulse mode used is commonly referred to as Pulse On Entry. If the channel is in one of the independent channel mode, the channel will output a pulse when the vehicle is first detected and will not output again until the loop is no longer occupied.

If the detector is in the directional logic mode, the first channel to detect the vehicle will output a pulse when the second loop detects the vehicle while the first channel is still detecting the vehicle. The detector will not output another pulse until both loops are no longer occupied.

Count: The channel will output a pulse when a new passenger vehicle is detected. Tailgating vehicles will generate a count pulse.

If the detector is in directional counting mode, the first channel to detect the vehicle will output a count pulse.

Fail Safe: When a channel is in the presence mode of operation and a loop failure is detected on that channel, the output for that channel will stay activated during the failure. In gate applications this feature is used to automatically open the gate if a loop fails. This feature is activated for both channels at the same time.

Fail Secure: When a channel is in the presence mode of operation and a loop failure is detected on that channel, the output for that channel will stay deactivated during the failure. In gate applications this feature is used to keep the gate closed if a loop fails. This feature is activated for both channels at the same time.

Sensitivity Boost: Increases the sensitivity of a channel after initial detection. This feature is useful in the detection of high-bed vehicles. This feature is activated for both channels at the same time.

Mode: DIP switches 1 and 2 select the detector's operating mode.

1	2	Operating Mode
OFF	OFF	Independent channels in presence or pulse
ON	OFF	Independent channels in presence or count
OFF	ON	Directional logic in presence or pulse
ON	ON	Directional counting

SELECTABLE FEATURES (Continued)

Sensitivity: Selectable per channel. Overridden in count modes.

Low	Hi	-ΔL/L	Sensitivity	In Count Modes
OFF	OFF	0.50%	Low	Cars & pick-ups
ON	OFF	0.10%	Medium Low	Cars, pick-ups, & buses
OFF	ON	0.05%	Medium High	Cars & pick-ups
ON	ON	0.02%	High	Test Mode

Frequency Settings: There are two settings per channel. The actual loop frequency is dependent on loop circuit inductance. The detector uses a channel scanning technology to minimize channel to channel interference.

INDICATORS

Green Power LED: The green power LED will be on whenever the input voltage is sufficient for proper operation. It will blink if the voltage is too low for reliable operation.

Red Channel LEDs: The two red LEDs will indicate the status of each channel. Occupancy, Pulse outputs, Loop Failures, and Past Failures are all displayed on a per channel basis.

Indicator Test: All three LEDs will turn on and then off momentarily as a lamp test each time the unit is reset.

SPECIFICATIONS

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

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

Operating Voltages:

Relay	DC - 10.5 volts to 35 volts
	AC - 9 volts to 28 volts
Solid-State	DC - 7.5 volts to 35 volts
	AC - 6 volts to 28 volts

Operating Current:

Relay	120 milliamps maximum. 25 milliamps typical.
Solid-State	65 milliamps maximum. 25 milliamps typical.

Output Ratings:

Relay	1 amp @ 125 volts
Solid State	50 milliamps @ 30 volts

Pulse Output: 150 ms on period followed by a 150 ms off period before the next pulse can begin.

Response Time: 150 ms ±25 ms

Housing Size: 2.36" (H) x 1.75" (W) x 4.09" (D)
59.94 mm (H) x 4.45 mm (W) x 10.39 mm (D)

ORDERING INFORMATION

DSP-21-NO-LV DSP-21 with Normally Open Relay Output
DSP-21-NC-LV DSP-21 with Normally Closed Relay Output
DSP-21-SS-LV DSP-21 with Solid State Output

Versions with RS-485 communications or Ethernet built-in are also available. Contact Diablo Controls for more information on these options.

Pins	DSP-21-NO-LV	DSP-21-NC-LV	DSP-21-SS-LV
1	Power	Power	Power
2	Neutral	Neutral	Neutral
3	Ch 2 Common	Ch 2 Common	Ch 2 Emitter (-)
4	Earth Ground	Earth Ground	Earth Ground
5	Ch 1 Common	Ch 1 Common	Ch 1 Emitter (-)
6	Ch 1 Normally Open	Ch 1 Normally Closed	Ch 1 Collector (+)
7	Ch 1 Loop	Ch 1 Loop	Ch 1 Loop
8	Ch 1 Loop	Ch 1 Loop	Ch 1 Loop
9	Ch 2 Loop	Ch 2 Loop	Ch 2 Loop
10	Ch 2 Loop	Ch 2 Loop	Ch 2 Loop
11	Ch 2 Normally Open	Ch 2 Normally Closed	Ch 2 Collector (+)

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

Veteran Owned & Operated

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