

## DSP-13M and DSP-13S Tri-Axis Detection (TRIAD™) System

Patent Pending



### Features

- ❖ Easy installation. A single saw cut and cored hole is all you need.
- ❖ Indefinite vehicle detection, even through power interruptions.
- ❖ Advanced technology with superior noise tolerance.
- ❖ Selectable fail-safe or fail-secure operation.
- ❖ Selectable Presence or Pulse operation.
- ❖ 10 selectable sensitivity settings allow for a wide range of uses.
- ❖ Sensor monitoring provides a fault when a sensor is no longer detected.
- ❖ Fault memory gives a unique display when a fault has occurred but the system is currently functioning properly.
- ❖ Open Collector solid state output for easy interface to digital systems.
- ❖ Flicker display shows occupancy of the detection zone after a pulse output has been generated.

The TRIAD system is designed to be an accurate, reliable, and easy to install detection system. The system is comprised of two parts, a master unit (DSP-13M) and a sensor (DSP-13S). The advanced sensor's small size and high sensitivity make it ideally suited to vehicle detection applications.

The TRIAD system can be installed using a single saw cut and a single 1" core hole. The sensor is potted in epoxy to provide durability and small enough that it can be placed right in the cored hole. Using a three axis sensor eliminates any concerns about the orientation of the sensor during installation.

The TRIAD system is capable of holding vehicle detection for an indefinite period of time. It can even remember vehicle detections through power outages. Even if a vehicle parks in the detection zone while power is removed, when power is restored the detector will sense that there is now a vehicle in the detection zone. This gives you an extra level of safety not available with other detection systems.

The master can be configured to provide a presence or pulse output. The presence setting provides an output the entire time a vehicle is in the detection zone. The pulse setting provides a 250 millisecond pulse at the start of the detection (Pulse On Entry) followed by the Detect LED flickering until the vehicle leaves the detection zone.

Fail-safe operation is available when operating in the presence mode. The pulse mode is always fail-secure.

The master provides ten selectable sensitivity settings that allow the user to fine tune the system's detection zone to the installation.

## DSP-13M and DSP-13S Patent Pending Tri-Axis Detection (TRIAD™) System

### SELECTABLE FEATURES

**Presence:** When the presence mode of operation is selected, the output will remain activated as long as a vehicle is in the detection zone. The technology used in the sensor is capable of indefinite presence detection, even through power failures. Even if a vehicle arrives while power is removed, the vehicle will be detected when power is restored.

**Pulse:** When the pulse mode of operation is selected and a vehicle is first detected, the output is activated for a 250 millisecond period and then turned back off. The detector will not output another pulse until the detection zone is clear of all vehicles. The pulse mode used is commonly referred to as Pulse On Entry.

**Fail Safe:** When in the presence mode of operation and a sensor failure is detected, the output will activate for the duration of the failure. In gate applications this feature is used to automatically open the gate if a sensor fails.

**Fail Secure:** When in the presence mode of operation and a sensor failure is detected, the output will stay deactivated for the duration of the failure. In gate applications this feature is used to keep the gate closed if a sensor fails.

**Reset:** When the reset button is pressed the detector will clear any faults in memory, resend the sensitivity setting to the sensor(s), and command the sensor to use the current state of the detection zone as the reference for the no vehicle present condition. A lamp test sequence will also be displayed on both LEDs.

**Sensitivity:** There are ten selectable sensitivities (0 to 9) with 0 being the least sensitive setting and 9 being the most sensitive setting. When the sensitivity setting is changed the detect LED will begin flashing at a 5 Hz rate (100 ms on, 100 ms off) until the reset button is pressed to initiate the new setting or the sensitivity is returned to its original setting.

### INDICATORS

**Green Power LED:** The green power LED will be on whenever the input voltage is sufficient for proper operation and the detector is operating normally. It will flash one of three different flash rates when various types of failures have been identified. If a failure has occurred and was automatically recovered from, the LED will flash out once every two seconds.

**Red Detect LEDs:** The red detect LED will indicate the status of the sensor(s). In the presence mode, the LED will be on the entire time that a vehicle is in the detection zone. In the pulse mode, when a vehicle first enters the detection zone, the LED will turn on for 250 milliseconds and then off for 250 milliseconds. After that, the LED will flicker while the vehicle is still in the detection zone and go off when the vehicle finally leaves the detection zone.

**Indicator Test:** Both LEDs will turn on for 250 milliseconds and then off for 250 milliseconds as a lamp test each time the unit is reset.

### SPECIFICATIONS

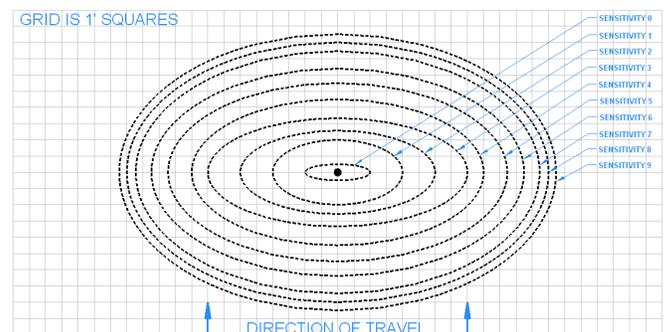
**Operating Temperature:** -35°F to 165°F (-37°C to 74°C)

**DSP-13M (Master) Operating Voltage:** 8 volts to 30 volts DC

**DSP-13M (Master) Operating Current:** 60 milliamps maximum and includes all current used by the sensors.

**Sensitivity:** There are ten sensitivities (0-lowest to 9-highest) selectable during presence or pulse modes of operation.

**Detection Range:** The type of vehicle will determine the actual point of detection. Larger vehicles will be sensed further away. The following chart is based on an SUV.



**Response Time:** Output activation within 55 milliseconds of the vehicle entering the detection zone. Output deactivation within 135 milliseconds of the vehicle leaving the detection zone.

**Solid State Output Rating:** The output is an open-collector output rated for sinking up to 50 milliamps. It is not an isolated output and is referenced to pin 10 (Common) of the DSP-13M.

**Pulse Output:** 250 ms on period followed by a 250 ms off period before the next pulse can begin.

**DSP-13S (Sensor) Operating Voltage:** 4 volts to 24 volts DC

**DSP-13S (Sensor) Operating Current:** 12 milliamps maximum

### CONNECTOR PINS

#### DSP-13M (Master)

- 1: Sensor connection
- 2: Sensor connection
- 3: Power (12 to 24 volts DC)
- 4: No connection
- 5: No connection
- 6: No connection
- 7: No connection
- 8: Detect output - Transistor connects pin 8 to common for detection
- 9: Power (12 to 24 volts DC)
- 10: Power and logic common

Visit our Website at [www.diablocontrols.com](http://www.diablocontrols.com) for the most current information on all of our products. Specifications are subject to change.



Veteran Owned & Operated

Toll Free 866-395-6677  
[www.diablocontrols.com](http://www.diablocontrols.com)  
[sales@diablocontrols.com](mailto:sales@diablocontrols.com)

