# 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 for the presence output.
- Selectable Presence or Pulse operation.
- 10 selectable sensitivity settings allow for a wide range of uses.
- Sensor monitoring provides a fault when the sensor is no longer functioning correctly.
- Fault memory gives a unique display when a fault has occurred but the system is currently functioning properly.
- Open Drain solid state output capable of sinking 250ma for easy interface to 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 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 has two selectable output configurations. In the presence mode, Output A provides an output the entire time a vehicle is in the detection zone and Output B provides a 250 millisecond pulse when the vehicle leaves (Pulse On Exit). In the pulse mode, Output A provides 250 millisecond pulse at the start of the detection (Pulse On Entry) and Output B provides an output the entire time a vehicle is in the detection zone.

Fail-safe or Fail-secure operation is selectable for the output operating in the presence mode. The pulse output 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.



DIABLO CONTROLS, INC.

*Pros Who Know Trust Diablo*

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

### SELECTABLE FEATURES

**Presence**: When the presence mode of operation is selected, Output A 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. Output B provides a 250 millisecond pulse when the vehicle leaves (commonly reffered to as Pulse On Exit).

**Pulse**: When the pulse mode of operation is selected and a vehicle is first detected, Output A is activated for a 250 millisecond period and then turned back off (commonly reffered to as Pulse On Entry). Output A will not output another pulse until the detection zone is clear of all vehicles. Output B provides a presence output in this mode.

**Fail Safe:** When an output is 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 an output is 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, 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 and 9 being the most sensitive setting. When the sensitivity setting is changed the detector will automatically reset.

### 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 off once every two seconds.

**Red Detect LEDs**: The red detect LED will indicate the status of Output A. 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. There currently is no indicator for Output B.

**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

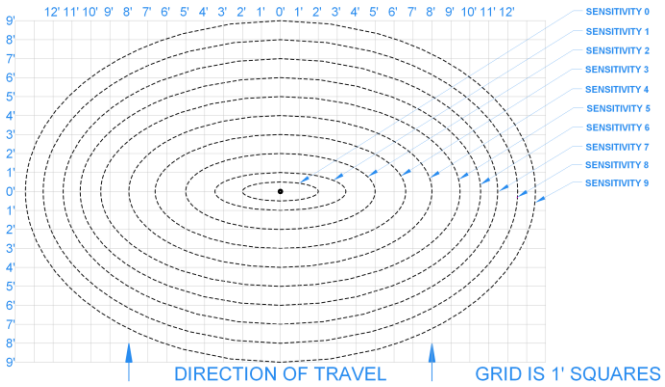
**Operating Temperature**: -35°F to 165°F (-37°C to 74°C)

**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 sensor.

**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**: Both outputs are an open-drain output rated for sinking over 500 milliamps. They are not an isolated output and are 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.

### CONNECTOR PINS

**DSP-13M (Master)**

1: Sensor connection
2: Sensor connection
3: Power (8 to 30 volts DC)
4: No connection
5: No connection
6: Output B – Open Drain
7: No connection
8: Output A – Open Drain
9: Power (8 to 30 volts DC)
10: Power and output common

### ORDERING INFORMATION

| | |
|---|---|
| **DSP-13-75** | Kit includes: 1 ea DSP-13M, 1ea DSP-13S with 75 feet of lead-in, and 1 ea RK1-R |
| **DSP-13-100** | Kit includes: 1 ea DSP-13M, 1ea DSP-13S with 100 feet of lead-in, and 1 ea RK1-R |