



Rugged Tilt Warning Switch for Rough Terrain Vehicles & Equipment in Motion.

FEATURES

- Rugged All-Weather Housing
- Single or Dual Axis
- Open Collector (NPN transistor type)
- Relay Option (12 or 24VDC)
- Normally Open or Closed Output
- Lamp / Buzzer / Solenoid Driver
- Single Supply Input (8-30VDC)
- Reverse Polarity Protection
- Output Short Circuit Protected
- High Current-Sink Capability
- Inductive Load Protection
- -40° C to +75° C Operating Temperature Range
- Shockproof to 500g
- Mercury Free

DESCRIPTION

SlopeAlert is a reliable, low cost solution for determining in-range and out of range tilt conditions. Originally designed for off-road, in-motion vehicles and equipment that operate in high vibration/shock, rough terrain environments, it is well suited for any application where tilt angle needs to be limited.

Two of the most common applications for this warning device:

- 1) to help prevent vehicle or equipment rollover on steep slopes; and
- 2) to aid track vehicles that need protection for over rotation while in motion, especially in rough terrain.

Connected to a lamp, horn, or solenoid relay, this compact single or dual axis unit can indicate both safe and unsafe conditions as well as provide a control signal to help prevent equipment over rotation.

Trip settings are factory set based on customer specification, with trip points indicating side to side and front to back or two points along the same axis. For example first trip at 10° would be the “caution getting close” alert, the second trip at 15° would be the “danger possible roll-over condition” alert).

APPLICATIONS

- Safe-unsafe Level Alert
- Platform Out of Level
- Angle Limiting
- Roll Over Warning
- Process Controls Limit Switch

INDUSTRIES

- Aerospace & Defense
- Agriculture
- Construction
- Dump & Tip
- Earth Moving
- Irrigation
- Lawn & Turf Care
- Lift & Access
- Mining
- Offshore
- Transportation

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SlopeAlert™

Tilt Warning System Specification Brochure

INPUT PARAMETERS	
Standard Trip Point Settings	±5, ±10, ±15, ±20, ±25, ±30, ±35, ±40, ±45°
Non-Standard Trip Point	custom 1° increment settings available (min ±5°/max ±55° and 90°)
Power Supply	8..30 VDC Non-regulated
	Optional: 5 VDC Regulated
Current Consumption	30 mA typical (60 mA maximum)
OUTPUT PARAMETERS	
Trip Point Tolerance	±1°
Actuation Repeatability	±2°
Continuous Collector Current	1.0 Amps
Output Saturation Voltage	0.4 V max.
Open Collector Switch Output	Normally Open for out of range indication
	Optional: Normally Closed for in range indication
MAXIMUM RATINGS	
Supply Voltage	35 VDC (35 VDC+ Available upon request)
Reverse Battery Voltage	50 VDC
Output Voltage Collector	Emitter (V _{CE0}): 50 VDC
Output Transistor Collector	Base (V _{CBO}): 50 VDC
Output Transistor Emitter	Base (V _{EBO}): 5 VDC
Output Collector Current	1.5 Amps
Operating Temperature	-40°.. +75°C (-40°..+167°F)
Storage Temperature	-40° ..+85°C (-40°..+185°F)
MECHANICAL CHARACTERISTICS	
Housing	Noryl Plastic, Epoxy filled (IP67)
Mounting	Two #8 screws
Outline Dimensions	2.87" x 2.09" x 1.50" (72.6 x 52.8 x 38.1mm) - small single axis model
	3.88" x 3.09" x 1.50" (88.9 x 78.5 x 38.1mm) - large single or dual axis model
Electrical Connection	24 AWG wires
Weight	3 Ounces (Approximately 85 grams) - small single axis model
	12 Ounces (Approximately 340 grams) - large single or dual axis model
OPTIONS	
Custom Trip Angle, LED, Buzzer, Relay, Cable Length (see Matrix Chart)	
If you have an application that requires alternative specifications, contact one of our application experts who will guide you to the SlopeAlert best suited for your tilt sensing needs.	

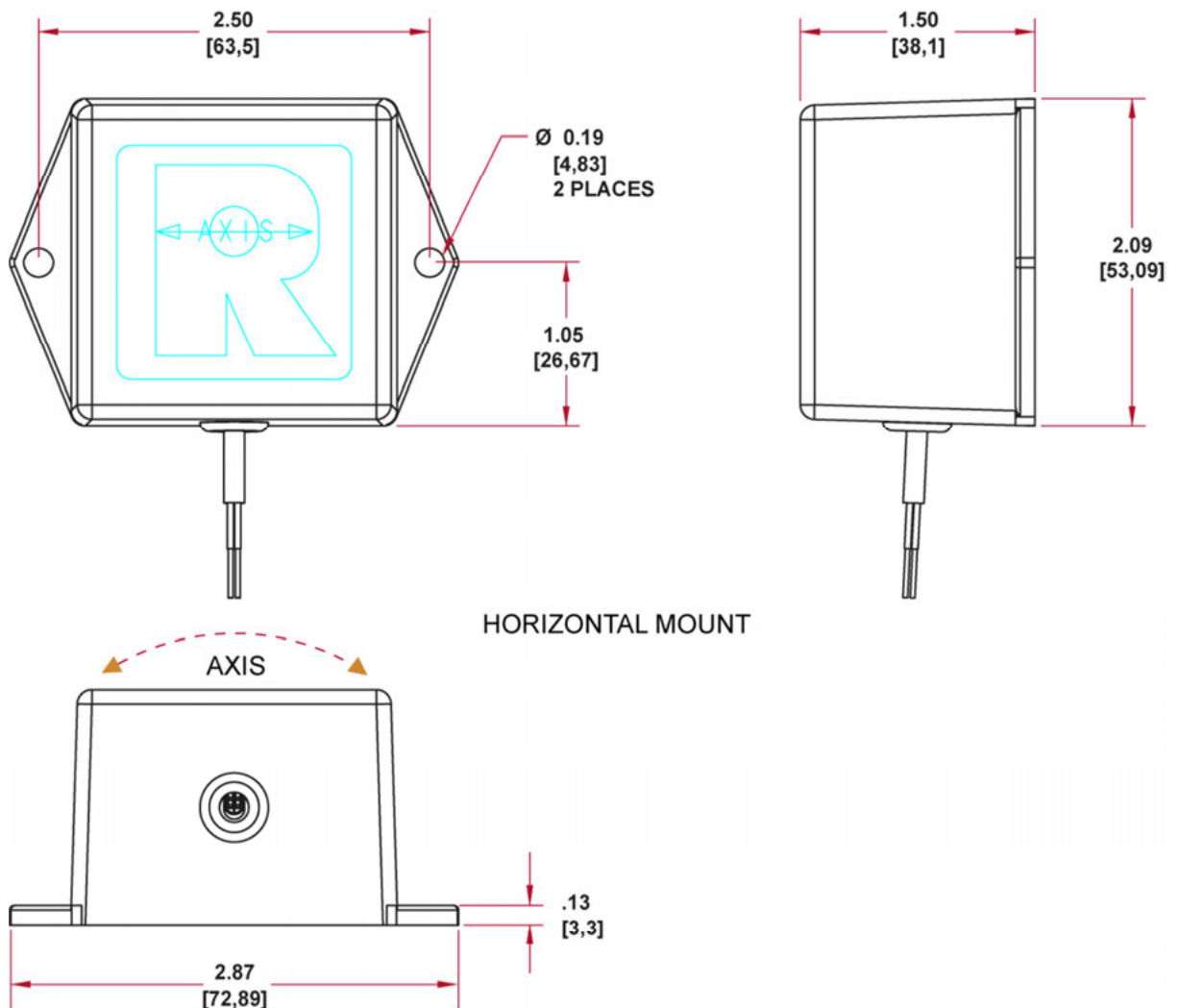
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GENERAL NOTES:

1. The SlopeAlert is a semi-custom sensor, although each model is available with multiple options certain options may not be available simultaneously.
2. SlopeAlert default Open Collector Output “sinks” current only (NPN Transistor type)
3. Noryl Plastic is a Polyphenylene Oxide-Styrene material, well suited for rugged all-weather environments.
4. Dual alarm option only available in dual sensor/same axis (RTC) models.
5. Dual axis units (RTA) with buzzer option - alarm activates when either axis trip setting achieved.

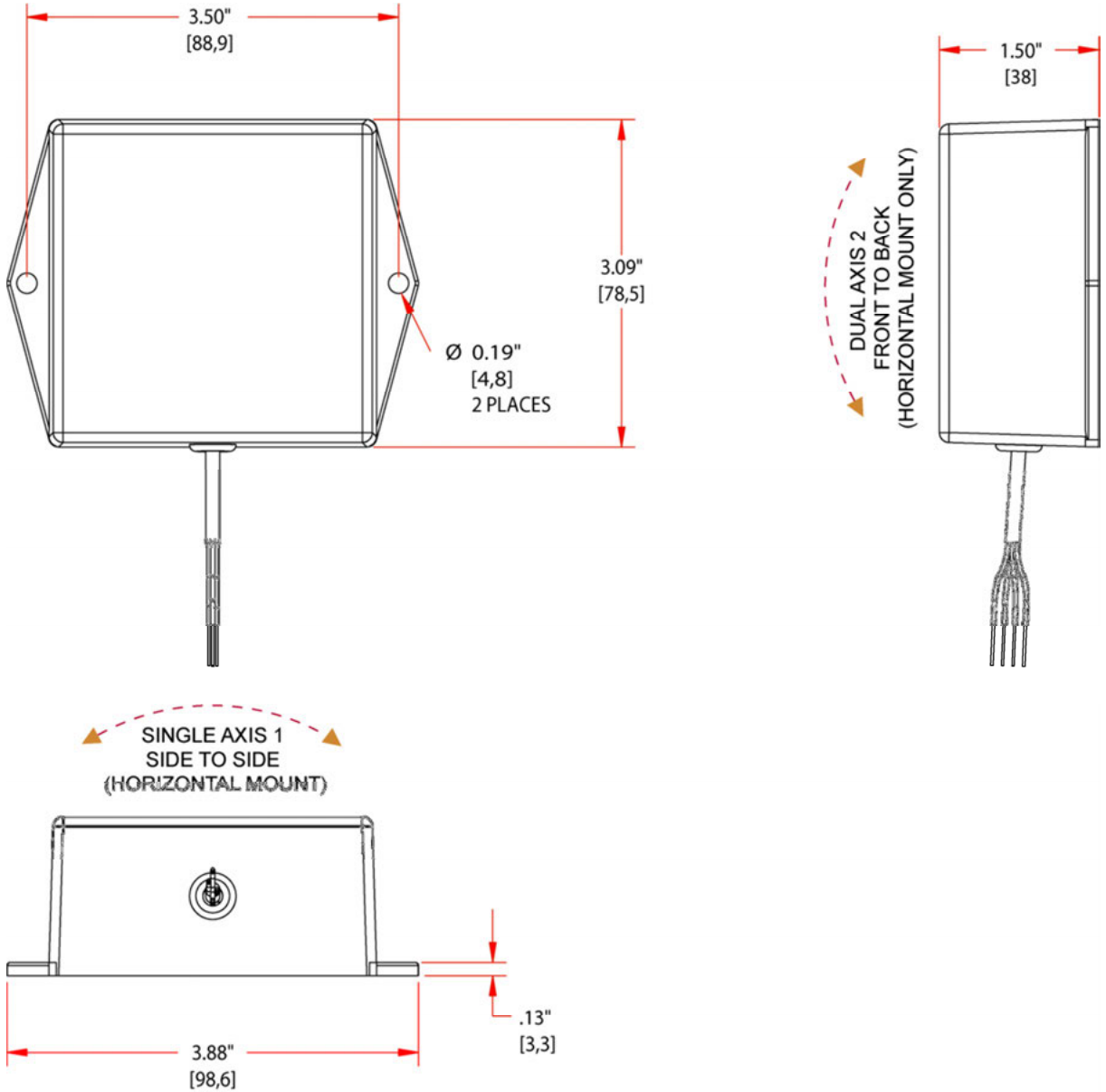
FIGURE 1: Dimensions for Single Axis SlopeAlert Noryl Enclosure (inches / mm)



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FIGURE 2: Dimensions for Dual Axis SlopeAlert Enclosure (inches / mm)



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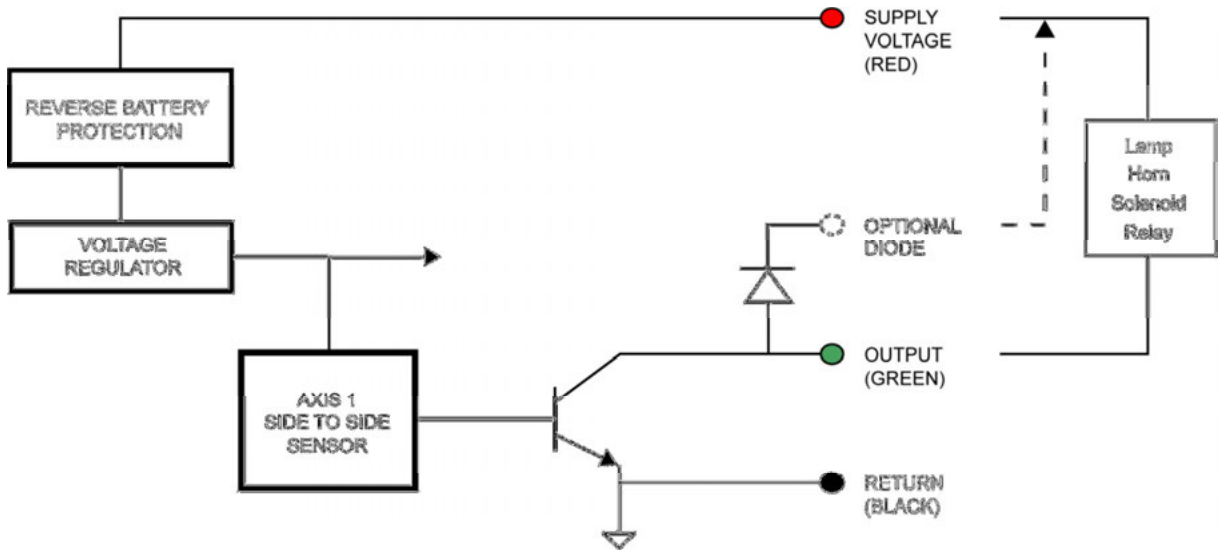
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WIRING NOTES:

1. CONNECT DIODE TO SUPPLY VOLTAGE WHEN USING INDUCTIVE LOADS.
2. BASIC UNIT IS SUPPLIED WITH A 4-CONDUCTOR NON-SHIELDED CABLE.
3. OPTIONS SELECTED WILL DETERMINE IF ADDITIONAL CONDUCTORS SUPPLIED.

FIGURE 3: Basic Wiring Diagram Single Axis

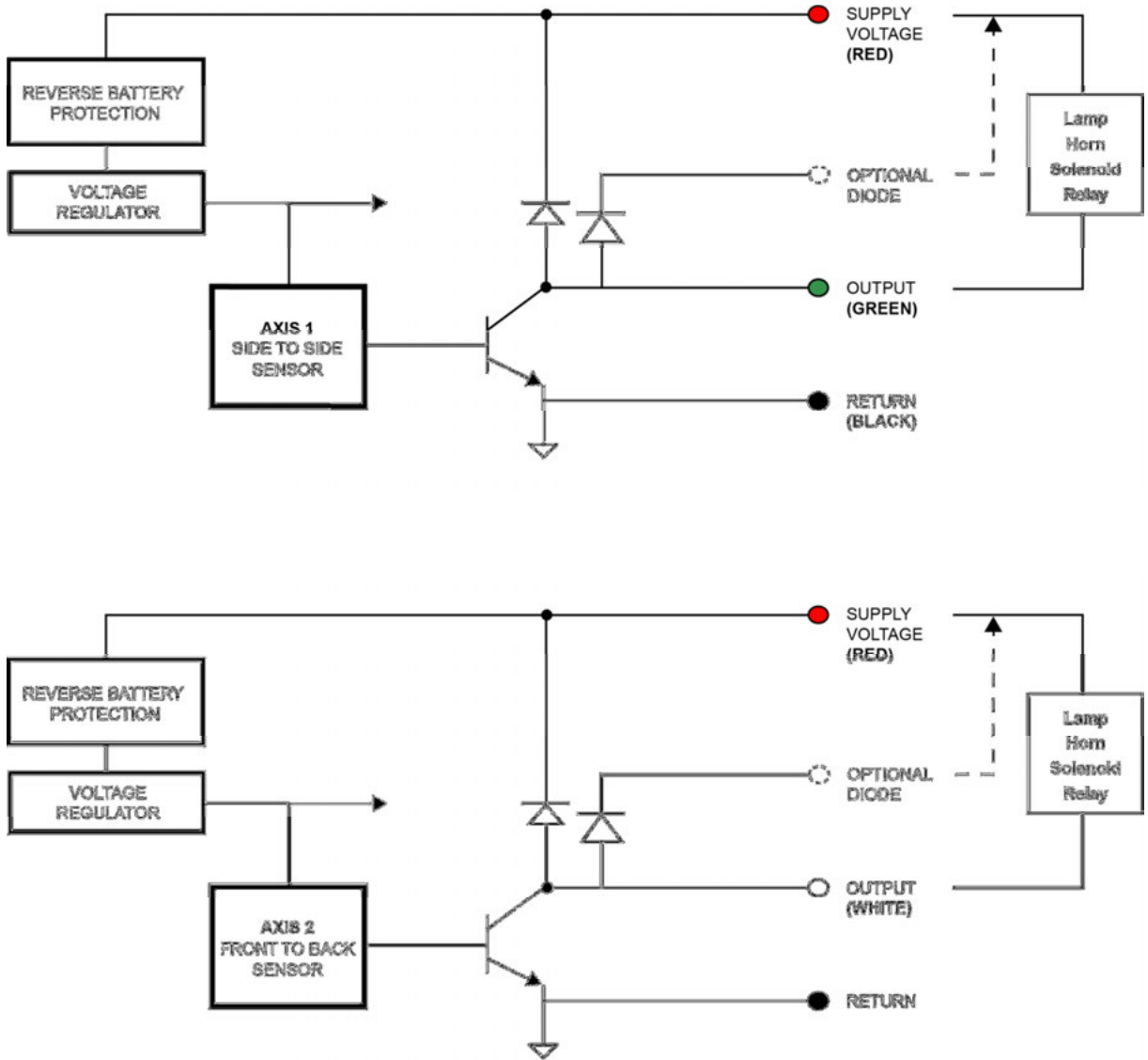
- specific wiring instructions included with each unit depending on options selected



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FIGURE 4: Basic Wiring Diagram Dual Axis
 - specific wiring instructions included with each unit depending on options selected



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SLOPEALERT PART NUMBER MATRIX									
	RT	C	15	25			K	Z	6
	OPTION CODE								
AXIS CONFIGURATION									
SINGLE AXIS WITH NORYL ENCLOSURE (Default)	S								
DUAL AXIS WITH NORYL ENCLOSURE	A								
DUAL SENSORS SAME AXIS WITH NORYL ENCLOSURE	C								
SIDE TO SIDE SWITCHING ANGLE IN DEGREES									
"XX" = 5, 10, 15, 20, 25, 30, 35, 40, 45	"XX"								
<i>Note, custom angles available upon request</i>									
FRONT TO BACK SWITCHING ANGLE IN DEGREES									
SINGLE AXIS SWITCH (Default)	BLANK								
"XX" = 5, 10, 15, 20, 25, 30, 35, 40, 45	"XX"								
<i>Note, insert higher switch setting if both sensors measure same axis. Custom angles available upon request.</i>									
INPUT POWER									
8 TO 30VDC (Default)	BLANK								
5VDC	V								
OUTPUT CONFIGURATION									
NORMALLY OPEN (Default)	BLANK								
NORMALLY CLOSED	C								
LED OPTION									
NO LED (Default)	BLANK								
ONE RED LED	G								
ONE GREEN LED	H								
ONE YELLOW LED AND ONE RED LED	K								
BUZZER OPTION									
NO BUZZER (Default)	BLANK								
CONSTANT ALARM	X								
PULSING ALARM	Y								
PULSING ALARM AND CONSTANT ALARM	Z								
INTERNAL LOAD RESISTOR OPTION									
NO LOAD	BLANK								
LOAD (Switching ground or power)	P								
INTERNAL RELAY 12 VDC	E*								
INTERNAL RELAY 24 VDC	F*								
CABLE LENGTH									
1 FOOT (0.3 METER - Default)	BLANK								
4 FEET (1.3 METER)	3								
6 FEET (1.9 METER)	4								
10 FEET (3 METER)	6								
20 FEET (6 METER)	7								
30 FEET (9 METER)	8								

As shown above the part number RTC1525KZ6 represents a unit with dual sensors measuring the same axis, Noryl enclosure. The first trip setting is $\pm 15^\circ$, the larger trip setting is $\pm 25^\circ$. The box uses an 8 to 30VDC input, works in a normally open configuration (warns at out of range), has one yellow and one red LED, and one pulse and one constant tone alarm. The yellow LED and pulse tone buzzer activate when $\pm 15^\circ$ is exceeded; the red LED and constant tone buzzer will activate when $\pm 25^\circ$ has been exceeded. A cable length of 10 feet has also been requested.

**E* and *F* RELAY options have the relay wiper internally connected to 12VDC or 24VDC respectively. Consult factory for optional external wiring of relay wiper.

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