

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



Features

- Single and Dual Axis ± Trip Angles
- 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 Temperatures
- Rugged Hermetic Packaging
- Shockproof to 500g
- All Weather
- Mercury Free

Description

SlopeAlert is a reliable, low cost solution of determining in-range and out of range tilt conditions. 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. Multiple trip settings are factory calibrated and can be arranged in a single axis to indicate caution before final alarm. SlopeAlert is available in both Normally Open and Normally Closed outputs.

Applications

The SlopeAlert tilt indicator was designed for off-road, in-motion vehicles and equipment that operate in high vibration/shock, rough terrain environments. Two of the most common applications for this warning device are: 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.

Even though the SlopeAlert System was designed for monitoring vehicle inclination in off-road, rough terrain environments, it is well suited for any application where inclination needs to be limited. Other industrial applications include lawn and turf care equipment, irrigation controls, plough and grader hydraulic leveling controls, construction equipment, lift and earth moving equipment.



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	Default: Non-regulated: 8 to 30 VDC
	Optional: Regulated: 5 VDC
Current Consumption	30 mA typical (60 mA maximum)
Output Parameters	
Trip Setting	±1°
Actuation Repeatability	±2°
Continuous Collector Current	1.0 Amps
Output Saturation Voltage	0.4 V max.
Open Collector Switch Output	Default: 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°C to +75°C
Storage Temperature	-40°C to +85°C
Mechanical Characteristics	
Housing	Noryl Plastic, Epoxy filled (equivalent to IP67 Protection)
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 Setting, LED, Buzzer, Relay, Custom Cable Lengths (see Matrix Chart)	
If you have an application that requires alternative specifications, one of our engineers will be happy to discuss how to customize the SlopeAlert for your tilt needs.	

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

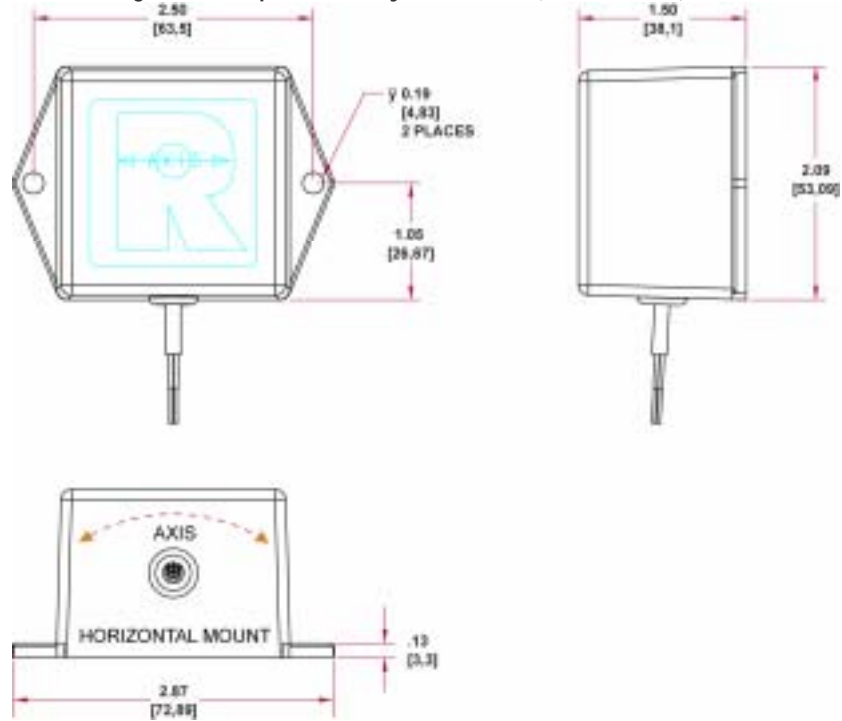


Figure 2: Dimensions for Dual Axis SlopeAlert Noryl Enclosure (inches / mm)

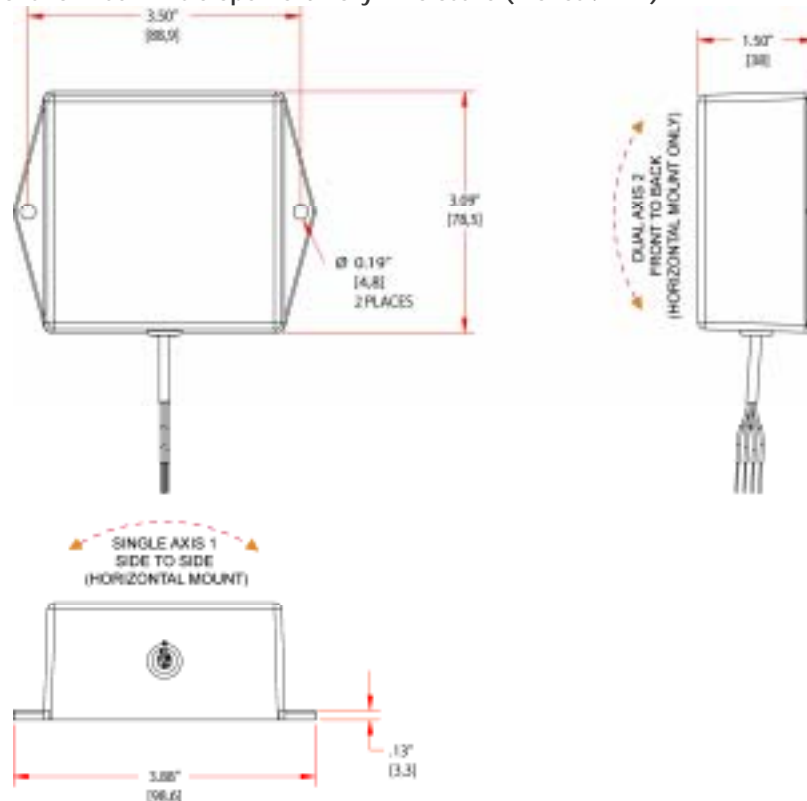
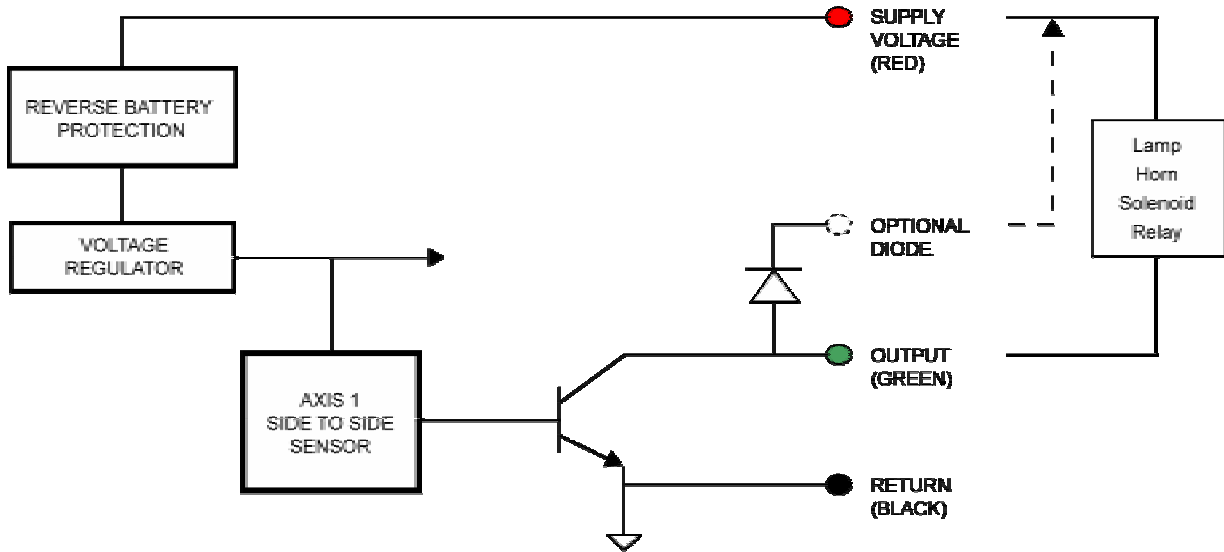


Figure 3: Basic Wiring Diagram: Single Axis

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



WIRING NOTES:

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

GENERAL NOTES:

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



SlopeAlert™

Tilt Warning System Specification Brochure

Product Part Number Matrix

	RT	C	15	25					K	Z		4
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 <i>Note, custom angles available upon request</i>	XX											
FRONT TO BACK SWITCHING ANGLE IN DEGREES												
SINGLE AXIS SWITCH (Default)	BLANK											
"XX" = 5, 10, 15, 20, 25, 30, 35, 40, 45 <i>Note, insert higher switch setting if both sensors measure same axis. Custom angles available upon request.</i>	XX											
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											
OTHER	*											

As shown above the part number **RTC1525KZ4** 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.