

# IDS TILT ALARM INSTRUCTION SHEET



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## C.E.L.- PRESET LIMITS, PROGRAMMABLE ZERO POINT

### Description

The IDS Tilt Alarm module is a tilt sensing system capable of discerning the angle of tilt in 2 axes from a programmable home position (i.e. level), and drives 1 digital output capable of sinking 1.5Amps (at Ground) when outside the specified tilt angle limit in EITHER axes. This output provides an open circuit (high impedance, no sourcing capability) when within the specified "good" angular range in BOTH axis. Two separate LED indicators are used to indicate operating states of the module.

The sensing axes are indicated on the unit label.

Unlike other mechanical tilt sensing systems, this module does not need to be installed level to earth ground. Instead, the unit can be "taught" where the level position is. Module tilt is then measured relative to the learned position. This allows for greater ease in installation of the system, as the unit may be installed several degrees off of true earth level.

### Connector Pinout

Pin	Color	Description
A	Black	Ground
B	Red	Power
C	White	Alarm output

### Electrical Characteristics

All outputs short circuit protected

Short circuit indicated by RED and Green LED on

Power	9 – 30 volt DC operation
Tilt limit indication	RED LED
Tilt OK indication	GREEN LED
Tilt accuracy	0.100 degree
Tilt threshold	+2.0 degrees Yaxis, +2.0 degrees Xaxis
Home position	±5 degrees from earth level
Alarm output (OK - range exceeded)	Open Circuit - Ground
Alarm Filtering	1.5 seconds

### Factory Installation

Units are shipped from IDS in "program" mode. This guarantees that on initial vehicle construction, a zero point must be programmed on-line in order to get the module to operate. This is indicated by both LEDs continually blinking. To program the zero point:

1. Secure baseplate (if applicable) to tilt platform
2. Secure tilt module to baseplate
3. Attached power harness to connector
4. Verify that unit is powered (red or green LED illuminated \ blinking)
5. Zero unit (teach unit home/level position)
  - a. Operate tilt platform until it has reached the desired home position (level)
  - b. Red and Green LEDs will be FLASHING.
  - c. Press and release button 3 times
  - d. Red and Green LEDs will turn on solid for 2 seconds, indicating the position is being learned

# Re-programming After Initial Factory Installation

To ensure no one "accidentally" re-programs the zero point of the unit a second step is added:

1. Verify that unit is powered (red or green LED illuminated \ blinking)
2. Zero unit (teach unit home/level position)
  - a. Operate tilt platform until it has reached the desired home position (level)
  - b. Press and hold the button on top of the module for 5 seconds (both LEDs will be OFF)
  - c. Red and Green LEDs will now FLASH. User now has 5 seconds to "program"
  - d. Press and release button 3 times within 5 second period
  - e. Red and Green LEDs will turn on solid for 2 seconds, indicating the position is being learned
  - f. If the 5 second period started in "c." expires prior to the user completing step "d." then the unit automatically exits "program" mode and returns to normal operation using the previously stored point.

## Operation

The unit senses tilt and drives the digital outputs whenever the system is powered. Tilt is always measured relative to the learned home position. To prevent unwanted activation of the limit circuit due to platform vibration, system response is dampened.

The following describes the system LEDs and what they indicate:

Green LED	Illuminated whenever tilt on both axes are within specified degrees of the learned home position. Flashes when transitioning in or out of tilt angle limits, but time delay debounce has not fully occurred.
Red LED	Illuminated whenever tilt on one or more axes is more than specified degrees out from the home position.
Green and Red LED	On together, no blinking when fault detected.

The following describes the alarm output and what it indicates:

Alarm Output- White Wire	Open- High Impedance: When true tilt is less than the threshold angle(s) in BOTH axes.  Ground: For all angles when true tilt in EITHER axis exceeds that axis' threshold angle and / or when a module fault is detected.
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