

Retract Safety System

Version 2.0

From: Wike RC Products

Overview:

The Retract Safety System monitors air pressure in the tank of the retract system. If the air pressure falls to or below a programmed value the landing gear are put down. This system is designed to put the gear down in the event of a leak or simply if your air pressure is too low. It also will not let you pull the landing gear up if your air pressure is too low. The retract safety system is a welcome addition to aircraft that may likely be damaged if attempted to land with the gear in the up position.

The new Version 2.0 of the Retract Safety System adds a LCD display that constantly displays air pressure in the system. Version 2.0 also adds a second LED for easier understanding of what is going on and programming. Additionally, the Retract Safety System has a Volt Meter in it where you can push the programming button on it and it will display the average voltage of the RX battery or supply. Since the volt meter takes an average voltage reading over time you can move the servos to place a load on your RX battery to see the loaded battery voltage.

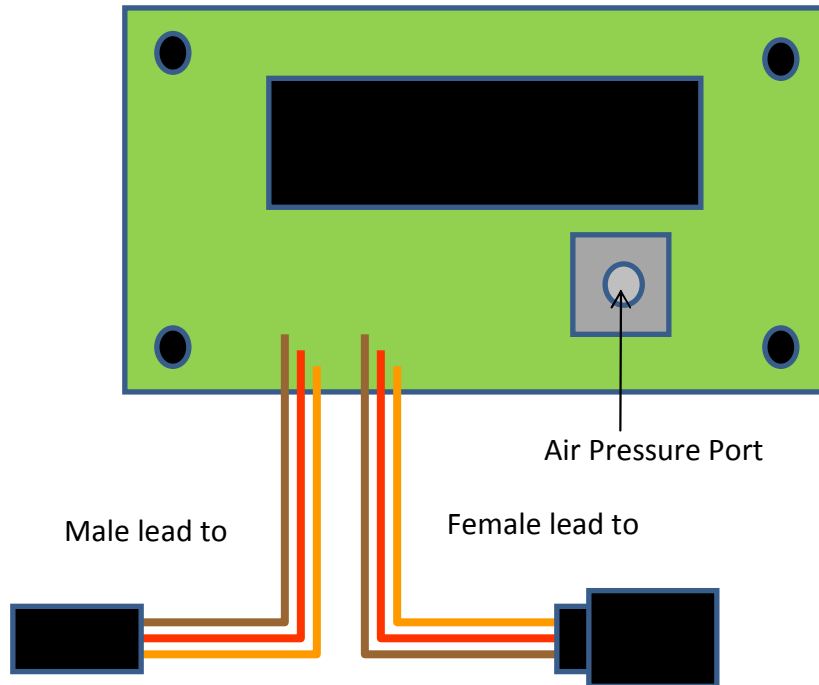
The retract safety system provided other fail safes as well. If the receiver is turned on without a transmitter signal the gear are held in the down position. Similarly, if transmitter signal is lost while the gear are up it will put the gear down. Also if you turn on the receiver with the transmitter set for gear up position the gear will be held in the down position until the gear switch is moved to the down position. No more gear up situations at power on. Once the gear switch is moved to the down position (if turned on in the up position) the gear can be operated as normal.

Installation:

The device is installed in the airplane between the receiver and the retract servo or retract electronic air valve. The device has a male plug that plugs into the receiver channel for the retracts. Then the retract servo or actuator plugs into the female plug on the device. A "T" should be installed near your airtank for the retracts and an air line should be run from the "T" to the safety system. Mount the unit so that the LCD, LEDs, and programming button are visible and accessible. The wires and air connection will be on the other side of the board. The board has mounting holes where screws can be used to mount it to rails or a tray. The pressure fitting is not a barbed connection which a few people have asked about. A drop of CA glue should be put on the airline connection after pressing the air hose firmly onto the fitting. This installation method has been tested to well over 150psi. If you need to remove the air hose you will realize

that this should not be a concern after getting the air line off the pressure sensor. To remove the air line from the sensor you should cut it off with razor. Do not try to pull the air hose off the pressure sensor or you could damage the sensor or pull it off the unit even though it is glued down. It takes quite a bit of force to remove an air hose from the pressure sensor.

See the figure below for connection details:



Operation:

When the unit is powered on there will be a solid Green LED if everything is functioning normal. The programmed “trip” pressure is displayed for 3 seconds after power on so that you can see what the “trip” pressure is set to. After three seconds the display will show the actual pressure in the air system.

To measure the voltage of the Receiver battery simply push the programming button and hold it after the unit has been powered up. Do not hold the programming button down while turning power on unless you wish to reprogram the unit. The volt meter function of the Retract safety system takes an average of the receiver battery voltage over a one-half second period and displays it every one-half second. This allows you to move the servos to provide a load on the battery to do a “loaded test” (i.e. measure the battery voltage while current is being drawn).

The green LED will flash while measuring battery voltage. After releasing the button the display will go back to displaying air pressure after a half of a second.

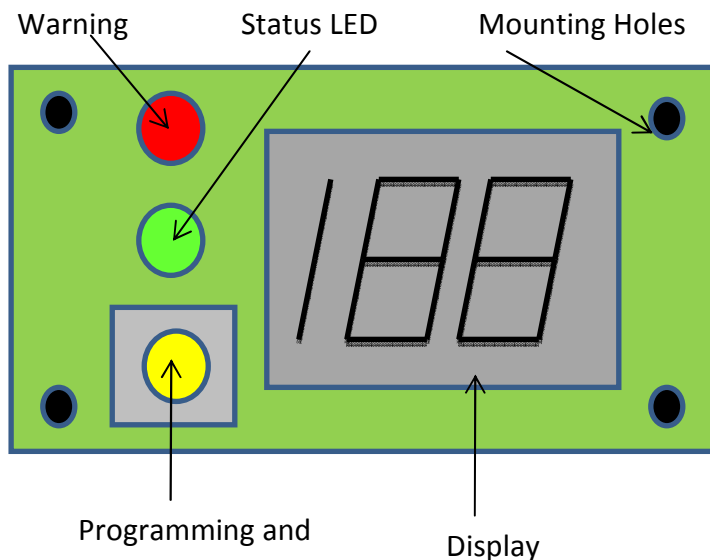
If an event occurs where by the unit is holding the gear down the red LED will constantly flash. There are three conditions that can cause the unit to hold the gear down which are the following:

1. No Transmitter signal (Display flashes "RD" or "A0" for radio)
2. Unit powered on the with the gear switch in the UP position (Display flashes "GS" or "65" for gear switch)
3. Low System Pressure while gear switch is up (Display flashes "PR" or "PA" for pressure)

Note that if the transmitter is on putting the gear switch in the down position will clear the Error. However if your pressure is low then the gear can still not be raised. Increasing pressure by adding air to the system will not clear a low pressure warning. Power must be turned off and back on after the pressure is increased to be above the trip point.

while the transmitter is in the up position the RED LED with flash constantly. This indicates that either the pressure is too low, unit was powered up with the gear switch in the up position, or no transmitter signal. If the unit holds the gear down because the pressure is too low the receiver power must be turned off and back on to reset the system. In other words, one air pressure goes to low the unit is going to hold the gear down until power is turned off and back on.

See figure below for the display side or the unit:



Programming:

There are three things that can be programmed into the unit. In order, these are the gear down position, then the gear up position, then the fail safe air pressure level. The factory default for gear up and gear down is set to 100% throw on a Futaba radio.

To program the unit press and hold the programming button while turning power on. When the unit powers up the green LED will flash once per second. This indicates that the gear down position is being programmed. The display will show the gear down endpoint as a percentage of throw (0-150%). Adjust the transmitter so that the retract channel is in the down position with the proper end point. Press the programming button again and the down endpoint will be stored in the unit. If power is turned off before the button is pressed the down endpoint will not be changed.

After the button is pushed, the green led will flash twice per second and the unit is ready to program the gear up position. The display will show the gear up endpoint as a percentage of throw (0-150%). Press the programming button again and the up endpoint will be stored in the unit. If power is turned off before the button is pressed the up endpoint will not be changed.

After the gear up endpoint is programmed, the green led will flash three times per second indicating that the "trip" pressure is being programmed next. Adjust the air pressure in the system to the desired "trip" pressure. If the air pressure in the system ever gets to or below the "trip" pressure the landing gear will be put or held in the down position. The display will display the air pressure in the system and the green led will flash three times per second. Pressing the programming button again will store the trip pressure and the green LED will turn on solid and the unit will return to normal operating mode.

Warranty and Support

The Wike RC Products Retract Safety System is designed and manufactured by Wike RC Products located at the following address for warranty or repair:

Wike RC Products
215 Preston Pines Drive
Cary, NC 27513

Wike RC Products guarantees the unit against defects or workmanship for 180 days from the date of purchase. Wike RC Products is not responsible for any damage and is liable only for the Retract Safety System unit to be working and functional as described in this manual. Support is available by emailing billw@nc.rr.com.