



RCATS

AK | PS - Pressure Sensor & Failsafe User Guide



Intro

Thank you for choosing our Air Pressure Telemetry Sensor and failsafe. Designed specifically for RC pilots using pneumatic retract systems, this device operates either as an **independent failsafe** or as a **failsafe with telemetry**, providing critical, real-time data to help prevent "gear-up" landings caused by air leaks or insufficient pressure. With a measurement range of **0–115 PSI** and a weight of less than **28 grams**, it offers professional-grade monitoring without compromising your aircraft's performance. This manual will guide you through the two distinct fail-safe programming modes—utilizing either the onboard potentiometer for manual limit-setting or the jumper-based sampling method for quick, accurate calibration based on your current tank pressure. Please refer to our website for the most up-to-date specs: www.rcatsystems.com

Absolute Maximum Pressure Warning: The internal sensor is rated to withstand up to **150 PSI** maximum. Never test, fill, or operate your retract system above 150 PSI. Doing so will permanently damage the sensor, render the telemetry readings unusable, and void the product warranty.

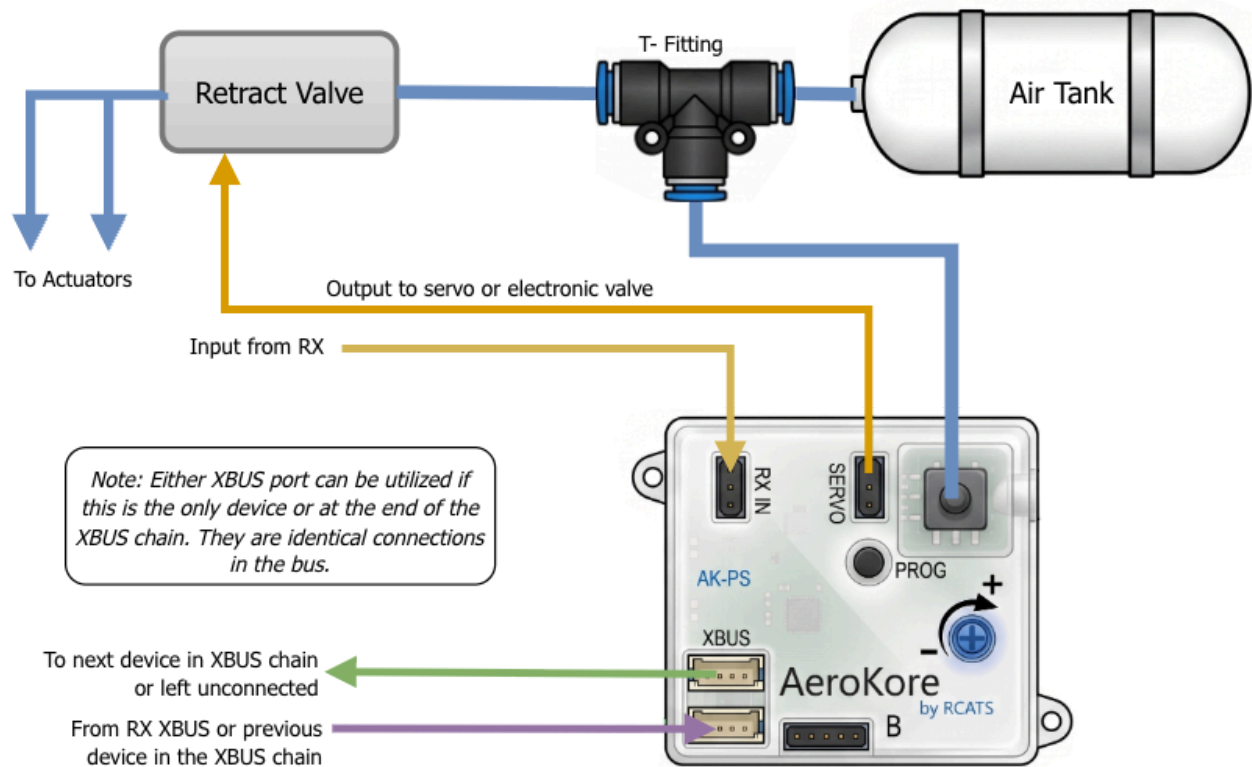
NOTE: The failsafe is intended to only operate when your pneumatic system has a single servo / channel being used. If you have a pneumatic system with additional servos operating gear doors, etc, the AK-PS failsafe will not provide the intended result.

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Installation

Example block diagram for units utilizing the *telemetry setup*.



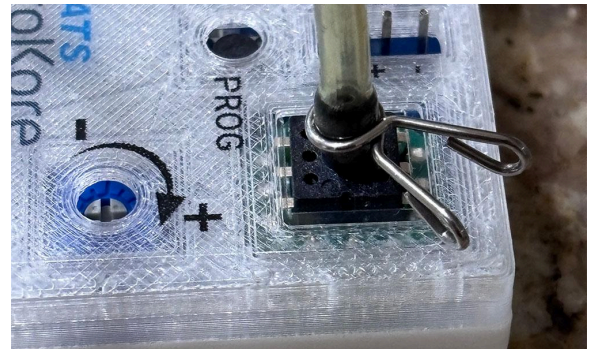
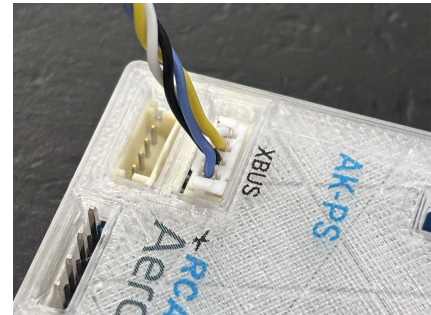
Setting Failsafe Pressure with Telemetry

Preparation & Tools

- **Required Tool:** A very small Phillips screwdriver (provided).

Part 1: Wiring & Setup

- **Connect the Telemetry Unit:** Plug the telemetry unit into the XBus cable. Either port is fine, there are two ports so you can chain multiple devices.
- **Connect the Receiver (RX):** Plug the lead from your RX into the **IN** port.
 - *Polarity Check:* The ground wire must face the outside of the case, and the signal wire must face the middle of the board.
- **Connect the Retracts:** Plug in your retract servo (or an electronic valve, such as a Xicoy V2s).
 - *Polarity Check:* The ground wire must face the outside of the case, and the signal wire must face the middle of the board.
- **Connect the Airline:** Attach the airline to the pressure port. Secure the tubing with the included line keeper as shown by the photo at right.
- **Power On:** Turn on your radio.
- **Verify Endpoints:** Ensure your radio endpoints are correctly configured for your gear channel.



Part 2: Programming the Failsafe

- **Enter Programming Mode:** Press the program button on the unit. The orange indicator light will turn solid.
- **Set the Gear Position:** Cycle the gear channel between **BOTH positions**. When ready to program, move your gear channel switch to the **"Down"** position (or whichever specific position you want the failsafe to trigger).
- **View Current Pressure:** Look at your telemetry screen; it will toggle to display the current failsafe pressure. Also, Active Input "C" will light up on your IX screen. *(Note: The factory default is 60 psi).*
- **Adjust the Pressure:** Use the Phillips screwdriver to adjust the potentiometer to your desired failsafe value:
 - **Turn Clockwise:** Increases the pressure (Maximum: 80 psi).
 - **Turn Counter-Clockwise:** Decreases the pressure (Minimum: 20 psi).

Save and Exit: Double-check that your retract switch is still in the "Down" position. Press the program button one last time to lock in your settings. **If the red light flashes for 10 seconds after “save”, it means there was a program warning,** otherwise, your failsafe value is now set.

Setting Failsafe Pressure with Standalone (w/o Telemetry)

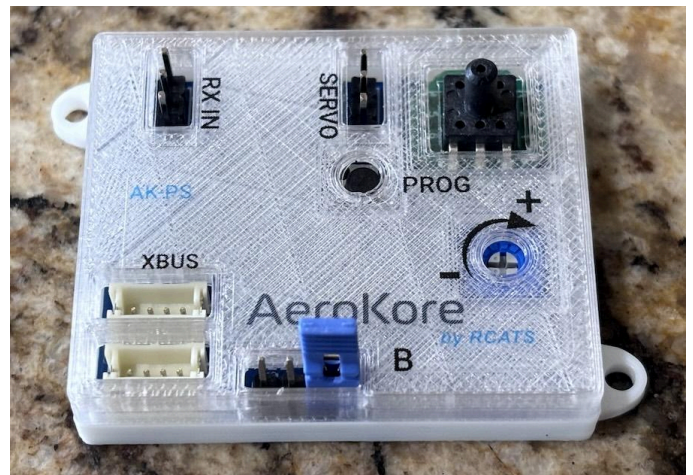
Preparation & Tools

- **Required Tools:** Jumper (provided), Air Pressure Pump

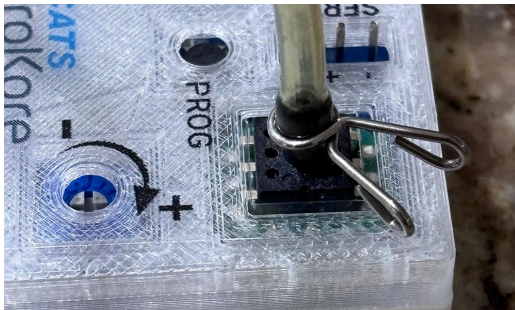
Part 1: Wiring & Setup

- **Connect the Receiver (RX):** Plug the lead from your RX into the **IN** port.
 - *Polarity Check:* The ground wire must face the outside of the case, and the signal wire must face the middle of the board.

- **Set the Board's Jumper:** Add the jumper to the two right-most pins on the configuration pins. These are the two pins furthest away from the XBUS connector inputs and you'll see a "B" designating the side of the board to use. The image at right shows the correct jumper position:



- **Connect the Retracts:** Plug in your retract servo (or an electronic valve, such as a Xicoy V2s).
 - *Polarity Check:* The ground wire must face the outside of the case, and the signal wire must face the middle of the board.
- **Connect the Airline:** Attach the airline to the pressure port. Secure the tubing with the included line keeper.



- **Power On:** Turn on your radio.

Verify Endpoints: Ensure your radio endpoints are correctly configured for your gear channel.

Part 2: Programming the Failsafe

- **Enter Programming Mode:** Press the program button on the unit. The orange indicator light will turn solid.
- **Set the Gear Position:** Cycle the gear channel between **BOTH positions**. When ready to program, move your gear channel switch to the **"Down"** position (or whichever specific position you want the failsafe to trigger).
- **Adjust the Pressure:** Pump up your retracts to your desired air pressure setting. You'll need to rely on the pressure shown on the gauge of your pump, or an onboard pressure indicator.

CAUTION: The absolute maximum overpressure limit of this device is **150 PSI**. Any pressure applied beyond 150 PSI will permanently damage the sensor. Ensure your pump is regulated and do not over-pressurize the system.

Save and Exit: Double-check that your retract switch is still in the "Down" position. Press the program button one last time to lock in your settings. **If the red light flashes for 10 seconds after "save", it means there was a program warning**, otherwise, your failsafe value is now set.

Displayed Measurements

This sensor integrates directly with the Spektrum ecosystem. While the hardware provides the data, the user interface is determined by Spektrum. Our team has optimized and tested these settings specifically for the DX, NX, and iX radio platforms with currently available options. We do our best to test against as many different radio versions as possible.

Normal Operations

During Normal Operations, the AeroKore PS acts as a transparent bridge, passing the gear commands from your receiver directly to your retract servo or electronic valve. This allows you to cycle your landing gear using your transmitter switch as usual. However, if the sensed air pressure drops to or below your programmed failsafe threshold, the module immediately overrides your transmitter input and forces the gear to the "Down" position to prevent a gear-up landing. While this failsafe is active, the Red LED on the unit will remain solid. To ensure the gear does not "chatter" or cycle rapidly if the pressure fluctuates near the limit, the system logic requires the pressure to rise at **least 5 PSI above your setpoint** and remain there for a continuous about ½ of a second before it releases control back to your transmitter. You can monitor these states in real-time on your telemetry screen: the "A" indicator provides an early warning when you are within 10 PSI of the limit, while the "B" indicator flags that the failsafe override is currently active.

NOTE: During a gear-up cycle, the controller briefly ignores the normal pressure drop that happens while the gear is moving, so it does not trigger a false failsafe. This special evaluation window only applies during the **gear-up retract transition**. Once the pressure has recovered, or after a maximum of 3 seconds, full low-pressure protection returns. Any pressure drop outside the gear-in-transit period is detected much more quickly. Please read the FAQ note on "[Can this unit detect a line popping off in my system?](#)"

The unit is designed for flexible power management and can be powered through either the XBus cable or the RX IN lead from your receiver. Specifically, the unit will operate the gear without an XBUS cable as long as the SERVO IN is connected from your RX.

Note that you can also operate the module solely as a pressure sensor without plugging your retract servo in.

Alerts

Consult Your Radio Manual: For detailed, step-by-step instructions on navigating the telemetry alarm menus, please refer to the Spektrum AirWare™ Transmitter Instruction Manual specific to your model (DX, NX, or iX). You can find the latest digital versions on the [Spektrum RC Manuals page](#).

iX Series "Change" Alert Limitation: Please be aware of a specific software behavior within the Spektrum iX interface: while the "Change" alert option (intended to notify you of rapid pressure drops) may appear in the telemetry setup menu, it is not currently supported by the Spektrum software for pneumatic systems.

Beyond simple monitoring, the integrated hardware failsafe serves as a critical layer of protection for your aircraft, ensuring your system remains secure even in the event of an unexpected pressure drop.

IX Screen

Left Pressure Shows the current measured tank pressure.	Right Pressure* Shows the failsafe pressure setting.			
Active Inputs (Note, these do not show up by default and need to be added in the IX screen)				
A — Pressure Warning Turns on when pressure is within 10 PSI above the failsafe setting. **	B — Failsafe Active Turns on when the system has entered failsafe.	C — Program Mode Turns on while the programming button mode is active.	D — Gear Down Turns on when the controller sees the gear as down, based on the saved failsafe pulse direction.	E — Program Error Flashes for 10 seconds after an attempt to program fails.

*In normal/run mode: shows the saved failsafe pressure. In program mode: shows the value currently being adjusted or captured.

** Example: If failsafe is set to **50 PSI**, A (Warning) turns on from **60 PSI down to 50 PSI**.

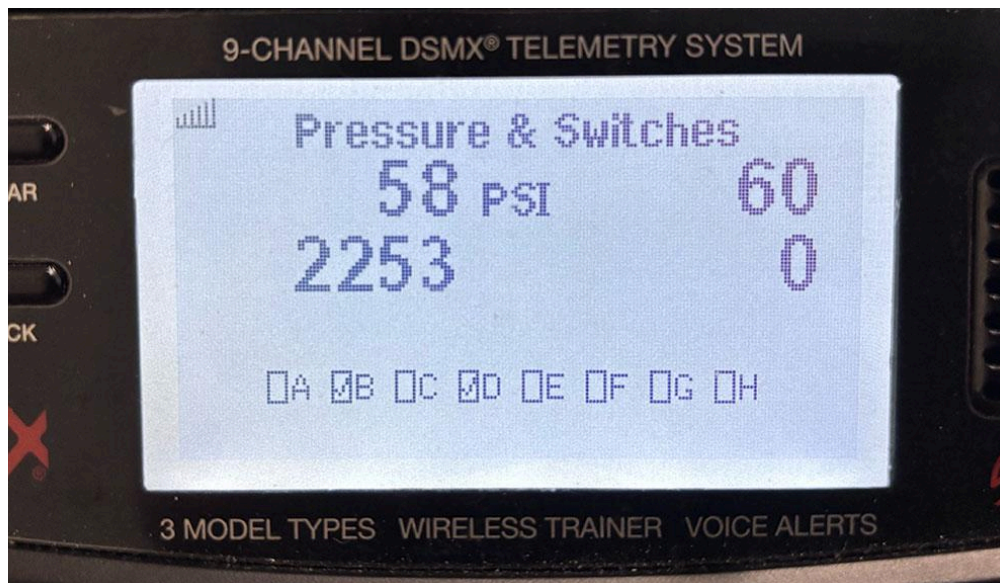


DX/NX Screen

Left Pressure Shows the current measured tank pressure.		Right Pressure* Shows the failsafe pressure setting.		
Active Inputs (Note, these do not show up by default and need to be added in the IX screen)				
A — Pressure Warning Turns on when pressure is within 10 PSI above the failsafe setting. **	B — Failsafe Active Turns on when the system has entered failsafe.	C — Program Mode Turns on while the programming button mode is active.	D — Gear Down Turns on when the controller sees the gear as down, based on the saved failsafe pulse direction.	E — Program Error Flashes for 10 seconds after an attempt to program fails.

*In normal/run mode: shows the saved failsafe pressure. In program mode: shows the value currently being adjusted or captured.

** Example: If failsafe is set to **50 PSI**, A turns on from **60 PSI down to 50 PSI**.



This example shows “B” and “D” Flagged. B Designates it is in failsafe mode (58 psi is below the 60psi threshold, and D is because the gear switch is in the stored “Down” position).

Configuring of Sensors in Spektrum Radios

This is a basic overview for how to get your sensors to display in your Spektrum radio. Please follow Spektrum's official instructions for a more detailed setup.

Spektrum DX and NX Series

Prerequisites: Ensure the transmitter and receiver are bound. The receiver and all connected telemetry sensors must be powered on before starting this process.

- From the main transmitter screen, press the scroll wheel to access the Function List.
- Scroll down and select Telemetry.
- Select Auto-Config.
- Note: On older DX firmware versions, you may need to scroll down to Settings first, and then select Auto-Config.
- The screen will briefly flash "Configuring..." for a few seconds while the transmitter pings the receiver.
- Once the scan is complete, your active sensors will automatically populate in the telemetry list.

Spektrum iX Series (iX12, iX14, iX20)

Prerequisites: Ensure the transmitter and receiver are bound. The receiver and all connected telemetry sensors must be powered on before starting this process.

- From the main Spektrum AirWare dashboard, tap on Model Setup.
- Tap on Telemetry.
- Tap the Auto-Config button.
- The system will scan for active sensors and automatically populate them into your telemetry list.

Safety, Installation Warnings, & Limitation of Liability

Any addition to your radio system—including telemetry modules, electronic valves, or extended wire leads—can introduce new variables to your RF environment. To ensure the highest level of safety and performance, please observe the following guidelines. **Note that the user assumes full and sole responsibility for the safe operation of their aircraft and all actions taken during use.**

Installation Guidelines

- **RF Interference & Long Leads:** The addition of long servo extensions or telemetry leads can occasionally act as antennas, potentially picking up or radiating interference. Always route your wiring away from your receiver antennas and ignition systems to minimize signal noise. When power and signal lines are located in close proximity, crossing these leads at 90 degree angles is best practice to help prevent interference.
- **System Integrity & Power:** Ensure your power system is capable of handling the additional load of any connected telemetry modules and the simultaneous operation of your retract servos.
- **Polarity Verification:** Before applying power, double-check all connections; the ground wire must face the outside of the case, and the signal wire for both the RX IN and SERVO ports.
- **Mandatory Range Testing:** You should always perform a comprehensive ground range test after installing any new hardware or changing your aircraft's wiring configuration. Verify that the system operates correctly with the engine/motor both off and running.

Assumption of Risk & Liability

Failure to verify the integrity of your radio link and power system after installation could result in a loss of control or unexpected failsafe activation. By using the AeroKore PS, you agree to the following:

1. **User Responsibility:** The operator is exclusively responsible for the airworthiness of the aircraft and the safety of the flight environment.
2. **Limit of Liability:** In no event shall **RCAT Systems** be liable for any direct, indirect, or consequential damages arising from the use of this product. **RCAT Systems** is not responsible for any crashes, collisions, or damages to the aircraft, surrounding property, or persons, regardless of the cause. This includes, but is not limited to, operator error, hardware failure, or environmental interference.

Always prioritize a "safety-first" approach by confirming system behavior on the ground before flight. Use of this product constitutes acceptance of these terms.

Trademark Notice

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Hobby, LLC. The use of these names does not imply any affiliation with, or endorsement by, the respective trademark holders.

FAQ

- How does the unit operate without being plugged into the telemetry?
 - Telemetry functions as an independent output. The unit will still monitor pressure and execute its failsafe override without an XBUS cable, provided the device is inserted inline with the receiver and retract circuitry via the RX IN and SERVO ports.
- Where do I place it in the system?
 - For the most accurate sensing, the “T” off to the failsafe module should be as close to the input of the air tank as possible.
- Can this unit detect a line popping off in my system?
 - While this unit can detect a line popping off and react to it, whether the failsafe can move the gear to a safe Down position depends on how much pressure remains in the system at that moment. If too much pressure has already been lost, there may not be enough left to complete the gear cycle. Note that a lost air line during an up-cycle may take slightly longer to detect, because a normal pressure sag is expected during gear retraction and the system uses a longer evaluation window during that transition.
- What do the LED indications on the unit mean?
 - Red:
 - SOLID: Failsafe mode active
 - Flashes for 10 seconds after a failed programming attempt.
 - Orange:
 - Blinking: Sending data to your RX
 - Solid: Program Mode