



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 **0–100 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: This failsafe is designed for systems using a single servo/channel. It will not work as intended with complex setups involving additional servos (e.g., gear doors). If your system includes these, you can achieve the same results by using a radio capable of triggering servos based on telemetry data, such as Jeti or FrSky.

In this Guide:

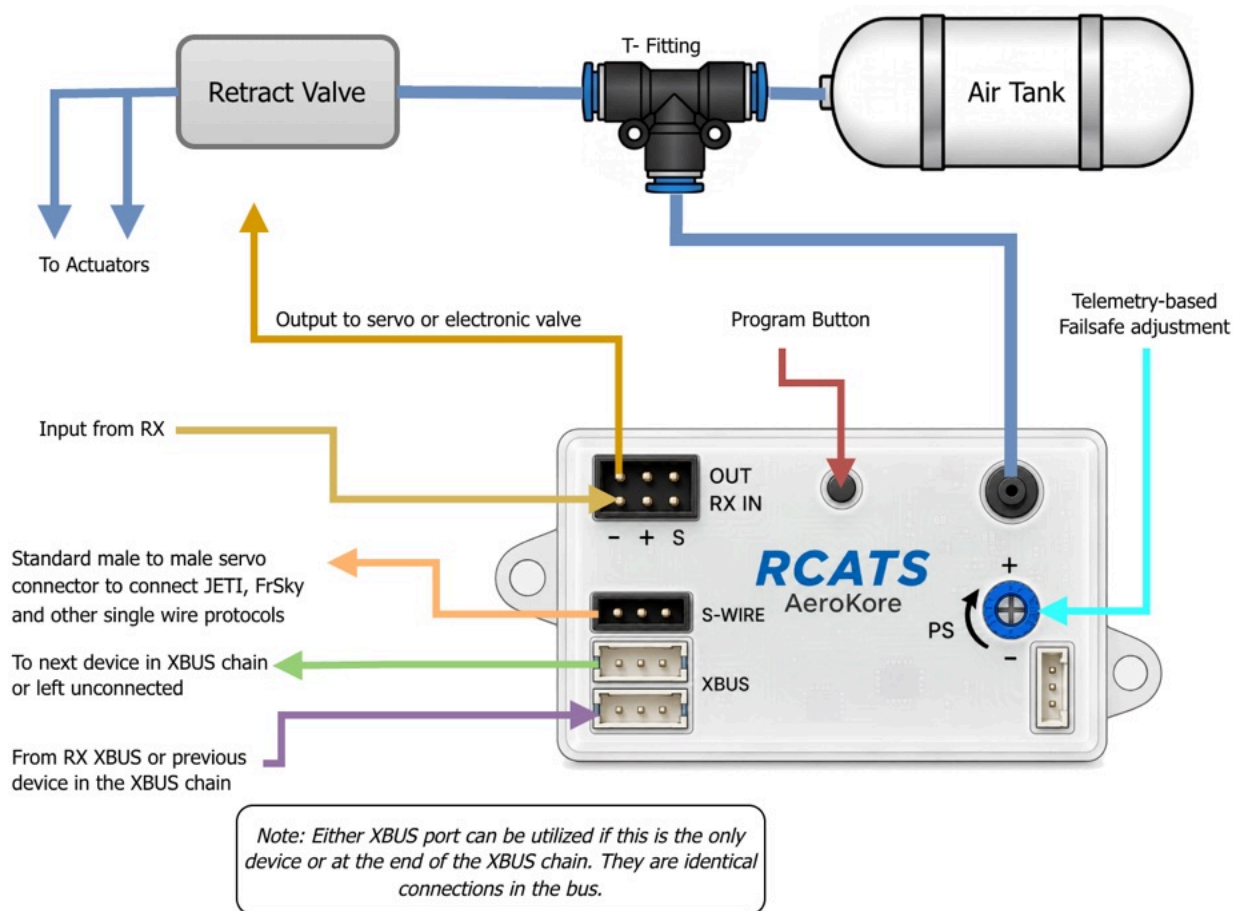
Intro.....	2
Technical Specifications.....	5
Installation.....	5
Selecting protocols and screens.....	6
Setting Failsafe Pressure with Telemetry.....	8
Setting Failsafe Pressure with Standalone (w/o Telemetry).....	10
Displayed Measurements.....	13
Normal Operations.....	13
Display Examples & Programming Modes.....	14
Alerts.....	15
IX Screen.....	16
DX/NX Screen.....	17
Configuring of Sensors in Spektrum Radios.....	18
Safety, Installation Warnings, & Limitation of Liability.....	22
FAQ.....	23

Technical Specifications

- **Weight:** 0.4 ounces / ~12 grams (without cables)
- **Dimensions:** 45mm x 28mm x 14mm (1.77" x 1.10" x 0.55") (without cables)
- **Input Voltage:** 5.0–9.6V DC regulated receiver/telemetry bus power

Installation

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



Selecting protocols and screens

Auto Protocol Selection

AeroKore PS units shipped after September 30th, 2026 include and default in **Auto Protocol Mode**. On every power-up, the unit detects the connected telemetry protocol and remains with that protocol until power is removed or the unit is reset.

Auto Protocol Mode supports:

- Spektrum XBUS and SRXL2
- FrSky S.Port, FBUS, and F.Port
- Jeti EX Bus

If you change the receiver's telemetry protocol, power-cycle the AeroKore PS so it can detect the new protocol.

Selecting a Fixed Protocol

Enter Protocol Programming Mode

1. Locate the recessed programming button on the top of the unit.
2. Using a non-metallic object, press and hold the button.
3. While holding the button, power on or reset the unit.
4. Wait for the blue LED and program LED to flash quickly two times.
5. Release the button.



Note: The selector begins at Mode 1. The LED blinks to indicate the currently selected mode.

Button Presses

- **Short tap:** Advances to the next mode. (Think of a short tap as a quick button click and the program LED then blinks the selected mode number)
- **Long hold:** Saves the selected mode. (The program LED flashes quickly)

LED Feedback

- On entry to programming mode, both LEDs flash quickly two times.
- After each valid short tap, the program LED blinks the selected mode number.
- When a save is accepted, both LEDs flash quickly two times again.
- The unit then waits for you to release the button and reboots into the saved mode.

Fixed Modes

Modes are read and stored upon bootup, and the unit will remain in that mode until it is powered down and the configuration is changed. You cannot 'hotswap' modes while the unit is active to change screens.

Note that upon entering program mode, it defaults back to Mode 1, so the number button presses corresponds with how many presses you need to get into that mode once you enter programming mode.

Mode	Protocol	Protocol	LED Flashes	Button Presses
1	Spektrum	XBUS	1	0
2	Spektrum	SRXL2	2	1
3	FrSky	S.Port/FBUS/F.Port	3	2
4	Jeti	ExBus	4	3

To change modes, you must power down the unit/RX first. It is also advisable to shut down or restart your transmitter after changing modes.

Example to set “Mode 3”

1. Hold the button during power-up or reset.
2. Release after the two quick confirmation flashes.
3. The selector is now at Mode 1.
4. Tap once to move to Mode 2. The program LED blinks twice.
5. Tap again to move to Mode 3. The program LED blinks three times.
6. Long Hold the button.
7. After the two quick save flashes, release the button.
8. The unit reboots and will now use Mode 3.

Return to Auto Protocol Mode

1. Enter Programming Mode.
2. Wait for the two quick confirmation flashes.
3. Release the button.
4. **Do not long-hold the button to save a numbered mode.**
5. Power the unit off, then turn it back on.

The unit will now remain in Auto Protocol Mode across future power cycles. Entering Programming Mode prepares Auto Protocol Mode as the fallback. If programming is entered accidentally, either complete the fixed-mode selection and save it or power-cycle the unit to use Auto Protocol Mode.

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 unit into either Spektrum XBUS port; both are interchangeable and allow for daisy-chaining devices. For single-wire connections (SRXL2, Jeti, FrSky), use the three-pin servo connector. Always verify correct polarity, ensuring the signal side faces toward the XBUS ports.
- **Connect the Receiver (RX):** Plug the lead from your RX into the **RX 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) to the **OUT** 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 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

- **Power On:** Turn on your receiver.
- **Enter Failsafe Programming Mode:** With the unit powered on, press the program button on the unit. The blue program 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 (The 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.
 - For Spektrum, active Input “C” will light up on your IX screen.
 - For Jeti or FrSky, each Lua script will provide a rich interface of details to help with programming, including failure to capture endpoints.
- **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 light flashes for 10 seconds after “save”, it means there was a program failure**, otherwise, your failsafe value is now set.

Save Failures:

- The programming light will flash for 10 seconds
- Spektrum: “Active Input E” will illuminate
- FrSky: Program Status bit is available, or using the Lua Script a message will be displayed on the widget.
- Jeti: Program Status bit is available, or using the Lua Script a message will be displayed on the widget.

Setting Failsafe Pressure with Standalone (w/o Telemetry)

Preparation & Tools

- **Required Tools:** Air Pressure Pump

Part 1: Wiring & Setup

- **Connect the Receiver (RX):** Plug the lead from your RX into the **RX 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) to the **OUT** 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 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

- **Power OFF:** Make sure your receiver is powered OFF.
- **Enter Failsafe Programming Mode:** With the unit powered on, press the program button on the unit. The blue 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 (The 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 issue**, otherwise, your failsafe value is now set.

Verify Failsafe Without Telemetry

After a successful save, verify the behavior mechanically:

1. Return the pressure above the saved failsafe pressure and confirm the red LED is off.
2. Move the gear switch and confirm the output follows the normal commanded gear position.
3. Slowly reduce pressure below the saved failsafe pressure. After the built-in delay, the red LED should turn solid and the output should move to the saved failsafe/down position. You will not be able to cycle the gear until the pressure is increased to 10 PSI ABOVE your failsafe pressure.
4. Increase pressure back above the release point. The red LED should turn off and the output should return to following the gear input.

Without telemetry, there is no standalone indication for the +10 PSI warning band. The red LED indicates actual failsafe active, not the warning threshold.

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 10 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.

Display Examples & Programming Modes

Modes are read and stored upon bootup, and the unit will remain in that mode until it is powered down and the configuration is changed. You cannot 'hotswap' modes while the unit is active to change screens. Note that upon entering program mode, it defaults back to Mode 1, so the number button presses corresponds with how many presses you need to get into that mode once you enter programming mode.

Mode	Protocol	Screen Description	LED Flashes	Button Presses
1	Spektrum XBUS	Switch & Air on IX, Pressure & Switches on DX/NX	1	0
2	Spektrum SRXL2	Switch & Air on IX, Pressure & Switches on DX/NX	2	1
3	FrSky	Configurable at radio level	3	2
4	Jeti ExBus	Configurable at radio level	4	3

To change modes, you must power down the unit/RX first. It is also advisable to shut down or restart your transmitter after changing modes.

Alerts

This sensor integrates with multiple ecosystems, including Spektrum, Jeti, and FrSky. While the hardware provides the data, the user interface and display configuration are determined by your specific radio system manufacturer. We do our best to test against as many different radio versions as possible with all manufacturers. Jeti and FrSky are much more flexible with their displays and we also offer free LUA scripts on our website to help optimize your display.

Consult Your Radio Manual: For detailed, step-by-step instructions on navigating the telemetry alarm menus, please refer to the instruction manual for your specific transmitter brand (Spektrum, Jeti, FrSky).

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**.

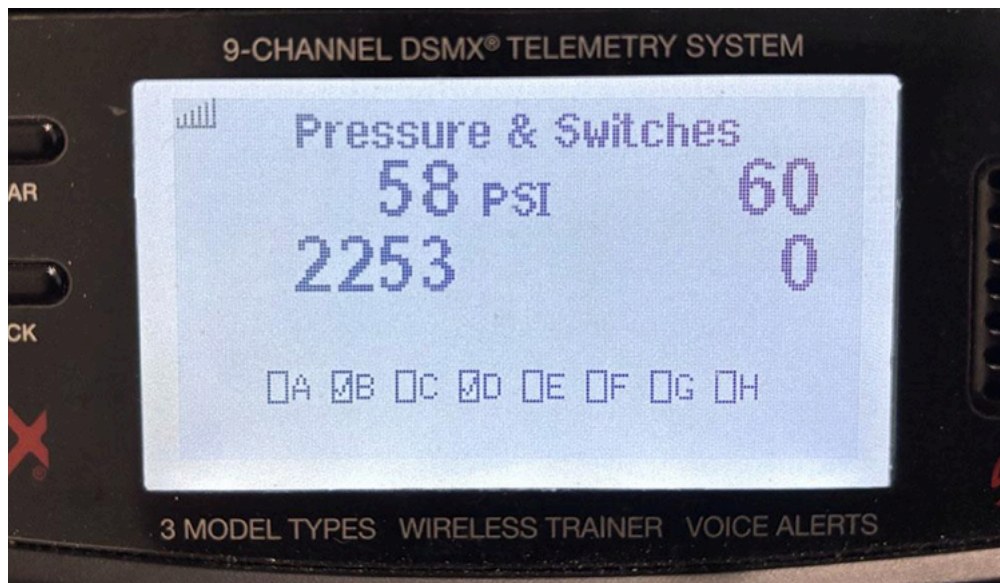


DX/NX Screen

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.

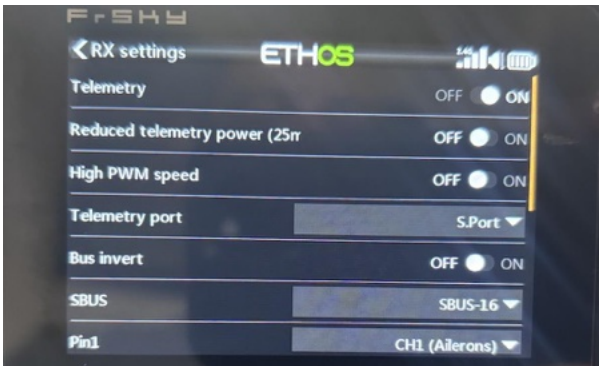
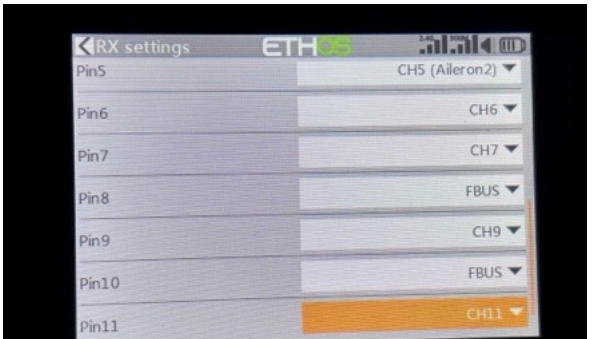
- From the main Spektrum AirWare dashboard, tap on Model Setup.
- Tap on Telemetry.
- Tap the Auto-Config button.
- The system will scan for active sensors and automatically populate them into your telemetry list.

FrSky:

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

Note that any modules shipped after August 2026 will auto-discover the correct FrSky protocol if configured in FrSky mode on the PS Module. Prior versions only discovered S.Port. Contact RCATS support if you would like it upgraded.

The telemetry module must be connected to a port that is configured for any of the following protocols: S.Port, F.Port, or FBUS of your FrSky RX. The connected port must be configured as a telemetry port. If you are configuring multiple devices on multiple ports, it is often best to configure the ports using the same protocol (either S.Port or FBUS). Note that when using F.Port, only a single sensor is supported. Change to S.Port or FBUS when using multiple sensors. You may also use a Y harness to link multiple sensors.

Wire plugged into S.Port on Archer Plus R8 	R8 RX Telemetry Port setting as "S.Port" 
Multiple types of sensors plugged individually into ports 10/8 of TD R12 	Multiple ports of the TD R12 configured as FBUS for telemetry. 

Configuring the sensor

- Go to Model Setup
- Telemetry
- Discover new sensors
- The following 4 sensors need to be mapped as “DIY Sensors”:
 - Select Create DIY Sensor
 - Select Auto Detect and you’ll see the following values that can be mapped to ports:
 - 0x52F0 (Pressure)
 - 0x52F1 (Failsafe PSI)
 - 0x52F2 (Status)
 - 0x52F6 (Gear Down)
 - Once selected, Change the name and set the Pressure and Failsafe PSI units
 - Protocol Decimals / unit: Select “PSI”
 - Set the Range to the max PSI Range on the “Pressure” sensor.
 - Repeat the process for the other remaining sensor. The Status and Gear Down sensors do not need additional configuration.
- The sensors are now ready to be mapped to your configured screens. We suggest the LUA Script which is provided on our support website which is a feature rich screen to show items such as programming help, current pressure and failsafe status.

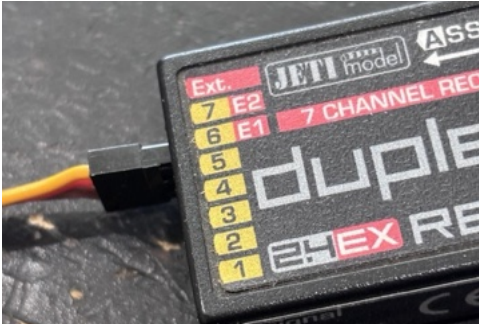
Example LUA Script Screen:



Jeti:

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

The telemetry module must be connected to an “Ex” configured port, and the transmitter must be configured as well. See images below as examples:

Wire plugged into the E1 Port we want to config:	TX Pin Config Screen showing E1 as “EX Bus”
	

- Go to Menu and then Timers/Sensors
- Select “Sensors/Logging Setup”
 - All relevant sensors from the AeroKore PS module will be shown. Configure the display from the available options:
 - Pressure
 - Failsafe (pressure)
 - Status
 - Program
 - FS Active
 - Warning
 - Gear Down
 - Firmware Version
- Once completed, go to Displayed Telemetry
 - Click “+” and select “Telemetry”
 - Select each AeroKore TS: Temp[x] [unit] you want to be displayed. Repeat this for each.
- To use a custom LUA script
 - Follow Jeti’s instructions on loading scripts onto your radio.
 - Applications → User Applications → +
 - Select the AeroKorePS file and click “OK”.

NOTE: When connecting multiple AeroKore sensors with Jeti, set them up one at a time, and then add the sensors one by one.

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.
- **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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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 or Single Wire Servo Connector, 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
 - **Orange:**
 - Blinking: Sending data to your RX
 - **Blue:**
 - SOLID: Program Mode
 - Blinks during protocol-select mode and mode-count confirmation