Configuration and Testing

Important Notice

Please read the entire contents of this document before beginning configuration. Configuration should only be carried out by a competent person familiar with aircraft systems and electronic instrumentation.

Bluetooth Range Notice

Note that the BLE (Bluetooth Low Energy) range on this device is short-range. For best results, maintain close proximity between the AeroSpy system and your BLE-enabled terminal or mobile device during configuration and monitoring.

Avoid physical obstructions or interference sources that may reduce signal strength.

BLE Terminal Requirements

To configure AeroSpy via Bluetooth, use a BLE-enabled device — for example, an iPhone 8 or newer. Install a compatible BLE terminal app; the free “Tiny BLE Terminal” is recommended for reliable communication.

Syntax

In this document and in the AeroSpy system help, we use angle brackets < > to show what you need to enter or do — for example: <Some Text or command>. The < and > symbols are not typed by you; they are used only to highlight the command or input.

In the help system, the vertical bar | means “or”. For example, parameterA|parameterB indicates that you can enter either parameter A **or** parameter B.

Stage 1 – App installation

Using a BLE Terminal App

Most BLE terminal apps are compatible with AeroSpy. We recommend using Tiny BLE Terminal for reliable communication and command entry.

Follow your device manufacturer's instructions to install the chosen app. Once the app is running, scan for available devices and connect to AeroSpy. You can then enter commands directly to configure or monitor the system.

No pairing is required.

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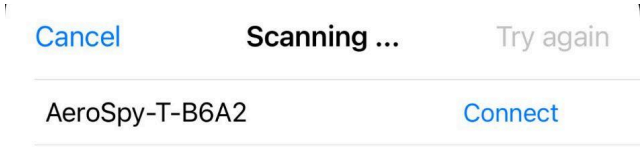
Stage 2 – BLE Connection

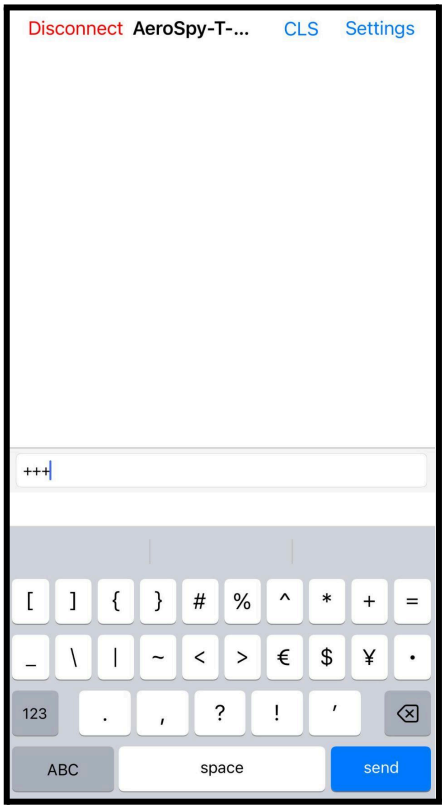
The following steps (3-5) MUST be completed within 60 seconds of powering on AeroSpy; if not, simply restart AeroSpy and retry!

1. Open Tiny BLE terminal
2. Power on AeroSpy
3. Select <Connect>

4. Select <Connect> next to your AeroSpy device.



5. Enter <+++> and use the <Send> button to enter command mode



6. You will now receive the following response, after which the 60 second timeout will be suspended until the next power cycle:

```
Hello from AeroSpy Temperature monitor,
command mode entered
Supported commands are:
setConfig <1led|2led>
factory (restore factory default values),
status [channel name|channel number] (channel is
optional, omit for full status),
set <channel name|channel number> <preference
name> <value|==> ( == sets the current value)
```

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Stage 2 – Configuration and calibration

- **Channel 1 (WaterTemp) will be calibrated first, thus we want to ensure that channel 1 is on and channel 2 is off:**
    - Enter <set OilTemp disabled 1>
    - Enter <set WaterTemp disabled 0>

- **Setting the Very Low Temperature Threshold (Flash Blue if Lower)**
    - Adjust the Water Temperature Potentiometer. Slowly turn the Channel 1 Water potentiometer until the water temperature gauge reads 50°C (or your chosen threshold). This value represents the point below which the engine is considered very cold.
    - **If the LED turns steady blue, proceed to the next setting.**
    - If it does not, set the very low threshold manually using the following command:
    - <set WaterTemp veryLowTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
    - "Setting preference 'WaterTemp veryLowTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is flashing blue and just above it is steady blue. If not, repeat this step

- **Setting the Low Temperature Threshold (Steady Blue if Lower, Steady Green if Higher)**
    - Adjust the Water Temperature Potentiometer. Slowly turn the Channel 1 Water potentiometer until the water temperature gauge reads approximately 90°C (or your chosen threshold). This value represents the point below which the engine is still considered cold and above normal.
    - **If the LED turns steady green, proceed to the next setting.**
    - If it does not, set the low threshold manually using the following command:
    - <set WaterTemp lowTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
    - "Setting preference 'WaterTemp.lowTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is steady blue and just above it is steady green. If not, repeat this step.

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- **Setting the Normal Temperature Threshold (Steady Green if Lower, Flashing Amber if Higher)**
    - Adjust the Water Temperature Potentiometer. Slowly turn the Channel 1 Water potentiometer until the water temperature gauge reads approximately 110°C (or your chosen threshold). This value represents the top end of the green LED range, typically just over halfway up the green zone on the gauge.
    - **If the LED begins flashing amber, proceed to the next setting.**
    - If it does not, set the normal threshold manually using the following command:
    - <set WaterTemp normalTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
    - "Setting preference 'WaterTemp.normalTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is steady green and just above it is flashing amber. If not, repeat this step.

- **Setting the High Temperature Threshold (Flashing Amber if Lower, Flashing Red if Higher)**
    - Adjust the Water Temperature Potentiometer. Slowly turn the Channel 1 Water potentiometer until the water temperature gauge reads approximately 120°C (or your chosen threshold). This value represents the point above which the engine is considered to be overheating.
    - **If the LED begins flashing red, proceed to the next Oil channel setting.**
    - If it does not, set the high threshold manually using the following command:
    - <set WaterTemp highTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
    - "Setting preference 'WaterTemp.highTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is flashing amber and just above it is flashing red. If not, repeat this step.

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- **Channel 2 (OilTemp) will be calibrated next, thus we want to ensure that channel 2 is on and channel 1 is off:**
    - Enter <set OilTemp disabled 0>
    - Enter <set WaterTemp disabled 1>

- **Setting the Very Low Oil Temperature Threshold (Flash Blue if Lower)**
    - Adjust the Oil Temperature Potentiometer. Slowly turn the Channel 2 Oil potentiometer until the oil temperature gauge reads approximately 50°C (or your chosen threshold). This value represents the point below which the engine oil is considered too cold for safe operation.
    - **If the LED turns steady blue, proceed to the next setting.**
    - If it does not, set the very low threshold manually using the following command: <set OilTemp veryLowTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
      "Setting preference 'OilTemp veryLowTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is flashing blue and just above it is steady blue. If not, repeat this step.

- **Setting the Low Oil Temperature Threshold (Steady Blue if Lower, Steady Green if Higher)**
    - Adjust the Oil Temperature Potentiometer. Slowly turn the Channel 2 Oil potentiometer until the oil temperature gauge reads approximately 88°C (or your chosen threshold). This value represents the lower bound of the normal operating range.
    - **If the LED turns steady green, proceed to the next setting.**
    - If it does not, set the low threshold manually using the following command: <set OilTemp lowTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
      "Setting preference 'OilTemp.lowTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is steady blue and just above it is steady green. If not, repeat this step.

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- **Setting the Normal Oil Temperature Threshold (Steady Green if Lower, Flashing Amber if Higher)**
    - Adjust the Oil Temperature Potentiometer. Slowly turn the Channel 2 Oil potentiometer until the oil temperature gauge reads approximately 110°C (or your chosen threshold). This value represents the upper bound of the normal operating range.
    - If the LED begins flashing amber, proceed to the next setting.
    - If it does not, set the normal threshold manually using the following command: <set OilTemp normalTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
      "Setting preference 'OilTem. normalTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is steady green and just above it is flashing amber. If not, repeat this step.
- **Setting the High Oil Temperature Threshold (Flashing Amber if Lower, Flashing Red if Higher)**
    - Adjust the Oil Temperature Potentiometer. Slowly turn the Channel 2 Oil potentiometer until the oil temperature gauge reads approximately 130°C (or your chosen threshold). This value represents the point at which the engine is approaching an overheat condition.
    - If the LED begins flashing red, proceed to the next setting.
    - If it does not, set the high threshold manually using the following command: <set OilTemp highTemp == >
    - This sets the threshold to the current gauge value. The system will confirm with a message similar to:
      "Setting preference 'OilTemp.highTemp' to the current value 'XXX'"
    - The setting can be checked by moving the potentiometer and ensuring that below the set level the LED is flashing amber and just above it is flashing red. If not, repeat this step.

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Stage 4 – Enabling Both Channels and the Optional Second LED

- **Enabling Both Channels**
  - **Enter the following commands to enable both temperature monitoring channels:**

    <set OilTemp disabled 0>

    <set WaterTemp disabled 0>

    Note: If using only one channel, enable only the channel required.

- **Enabling 2 LED Mode**
  - To enable dual LED output mode, enter the following command:
  - <setConfig 2led>
  - This activates the second LED output, allowing AeroSpy to display independent temperature status for both channels.
  - Note: If only one LED is connected, use <setConfig 1led> to revert to single LED mode. Ensure both channels are enabled before using 2 LED mode.

- **Resetting the Overheat Flash Following the Red, Green, Blue and White Start Sequence**

  - The system will flash LED 1 red twice if the highest temperature condition has been triggered by either channel. This visual alert can be cleared using the command below:

  - <resetAlarms>

  - Note: This command resets the flashing indicator but does not reset the internal alarm count. To track whether the alarm has been manually cleared, refer to the alarmCount value shown in the status output. Keeping a record of this number allows you to verify if a reset has occurred.

Stage 5 – Final Hardware Reconnection and Airworthiness Restoration

- Remove the test calibration module and reconnect the temperature senders/thermistors to their original points. Ensure all wiring is secure, routed safely, and free from interference or abrasion.
- Return the aircraft to a full airworthy state in accordance with your maintenance procedures and documentation requirements. Record the completion of calibration and reconnection in the aircraft log.

Final Step – Ground Run and LED Status Check

Your AeroSpy system is now fully configured. It is recommended that you perform a ground run to bring the engine up to **normal** operating temperatures. During this process, observe the LED statuses to confirm that each temperature threshold behaves as expected.

This step helps verify correct calibration and ensures the system responds appropriately across the lower temperature ranges before flight.

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TemperatureSpy Alert summary

🔴 Flashing Red — VERY HOT (P1)

🟠 Flashing Amber — GETTING HOT (P2)

🔵 Flashing Blue — TOO COLD (P3)

🔵 Dim Blue — COLD BUT ABOVE MINIMUM (P4)

🟢 Dim Green — NORMAL (P5)

Highest priority dictates LED status when 2 channels are used with a single LED

“Check gauges when flashing”

Audible Alert:

🔊 Fast buzz in P1

🔊 Slow buzz in P2

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Status Command Overview

The <status> command provides a full snapshot of the AeroSpy system configuration, including temperature channels, warning logic, LED behaviour, and digital outputs. It lists each channel's preferences, current values, update intervals, and assigned pins.

This output is especially useful for reviewing system setup without needing to connect the calibration module. For example, if a threshold needs fine-tuning, such as adjusting normalTemp from 365 to 370. You can simply enter:

<set WaterTemp normalTemp 370>

This allows quick, precise changes directly from the command interface, ideal for field adjustments or refining performance after initial calibration.

It is recommended to print the status output and retain a copy with the aircraft documentation. This provides a clear reference for future maintenance and troubleshooting.

Values shown in parentheses () are the factory defaults.

Example status output:

TEMP CHANNEL
  Number: 101
  Name: WaterTemp
  Prefs:
    disabled = 0 (0)
    highTemp = 240 (240)
    lowTemp = 480 (480)
    normalTemp = 365 (365)
    slug = 15 (15)
    tolerance = 35 (35)
    veryLowTemp = 752 (752)
  Interval: 1000
  Pin: 2
TEMP CHANNEL
  Number: 102
  Name: OilTemp
  Prefs:
    disabled = 0 (0)
    highTemp = 304 (304)
    lowTemp = 480 (480)
    normalTemp = 352 (352)
    slug = 15 (15)
    tolerance = 35 (35)
    veryLowTemp = 752 (752)
  Interval: 1000
  Pin: 3
WARN STATE
  Number: 201
  Name: TempWarn
  Prefs:
    alarmCount = 0 (0) [SYSTEM ONLY]
    alarmFlashCount = 2 (2) [SYSTEM ONLY]
    buzz1 = 1000 (1000)
    buzz2 = 200 (200)
    resetAlarmCount = 0 (0) [SYSTEM ONLY]
  Interval: 1000
  Inputs: 101, 102
  LedOutput: 301
  DigitalOutput: 303
LED OUTPUT
  Number: 301
  Name: ExternalLED
  Pin: 22
  Pattern: RGB
DIGITAL OUTPUT
  Number: 303
  Name: AlarmPin
  Pin: 1

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Restoring Factory Defaults

To reset all AeroSpy preferences and thresholds to their original factory settings, enter the following command: <factory>

This command clears any custom calibration, threshold adjustments, or configuration changes made during setup or operation. It is useful when reinitialising the system, preparing for a new installation, or troubleshooting unexpected behaviour.

Note: After running factory, all temperature thresholds and channel states will revert to default values. Recalibration will be required before returning the system to service.

The LED mode 1 or 2 is preserved.