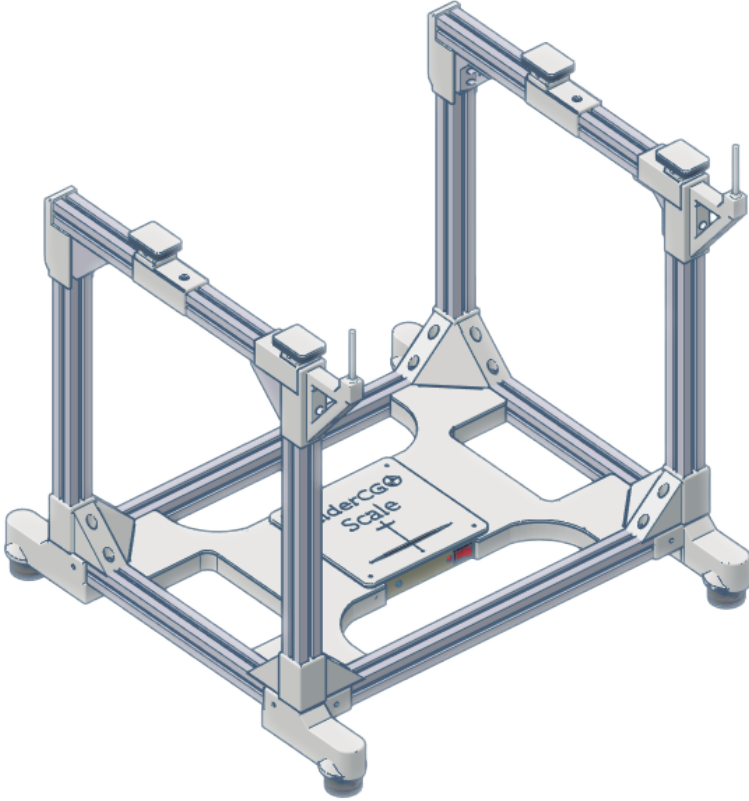


GliderCG Scale

Digital CoG Balancer



Eng Manual

Model Scale 2026.1.4

Introduction

GliderCG SCALE is a digital center of gravity balance for aircraft models of up to 40kg. It calculates the CG from the reaction forces measured by two load cells, so the model does not need to balance on a single sharp point.

Unlike the existing center of gravity balances based on the balancing of the model on a supporting point, GliderCG uses the barycenter formula of a hyperstatic surface with 4 weight sensors to obtain the precise calculation of our CG without the need for balancing our models with the risks to the Integrity of them.

Concept

The condition for Static Equilibrium of the model plane, that is, it is not rotating, imposes the model weight is splitted in two reaction forces p_1 and p_2 applied in the supports A and B respectively, such as their resultant force passes thru the Center of Gravity of the model.

The position of the CoG is calculated by solving the equations:

$$\begin{aligned} a \cdot p_1 &= b \cdot p_2 \\ a + b &= K \text{ constant} \\ K &\text{ is known for the} \\ &\text{manufacture of the scale.} \end{aligned}$$



With our constant desire for improvement, we have worked on all aspects of the device, both hardware and software, to offer an improved device in a compact form factor for easy transport and storage when not in use.

Main software features

- Home screen with large CG and weight readings.
- Ruler-style CG gauge with intermediate tick marks.
- Selectable units: Metric - gm, Metric - kg, Imperial - oz and Imperial - lb.
- Real CG and CG + Sweep display when a swept-wing model is selected.
- Six stored models with shared target CG and sweep settings.
- Preferences, Advanced settings and dedicated help pages.
- Backup and restore tools to protect calibration before filesystem updates.
- Checklist, Logbook and Balance Assistant field tools.
- Backup export and restore for calibration, models and preferences.
- English, French, German and Spanish web interface languages.

Characteristics

GliderCG is a precision equipment that has been carefully manufactured, assembled and calibrated before it reaches your hands.

GliderCG Scale structure is formed by a reinforced aluminum frame that provides great rigidity and strength with a low weight.

The rest of the mechanical elements have been manufactured using the 3D FDM printing process in PLA (Polylactic Acid), an environment friendly material.

Material: Reinforced aluminum and plastic parts in PLA (Polylactic Acid)

Dimensions Height x Width x Depth: 400x410x370 mm.

Maximum fuselage width: 310mm

Maximum wing chord : 400mm approx

Wing support point distance: Between 100mm to 290mm

Power: 800mAh. Lithium rechargeable battery.

Charging : USB-C Cable (not included)

Charging Time: About 2 Hour

Maximum recommended weight: 40Kg.

Minimum weight: 200g

Maximum fuselage size: 360mm width x 350mm high

Basic operation

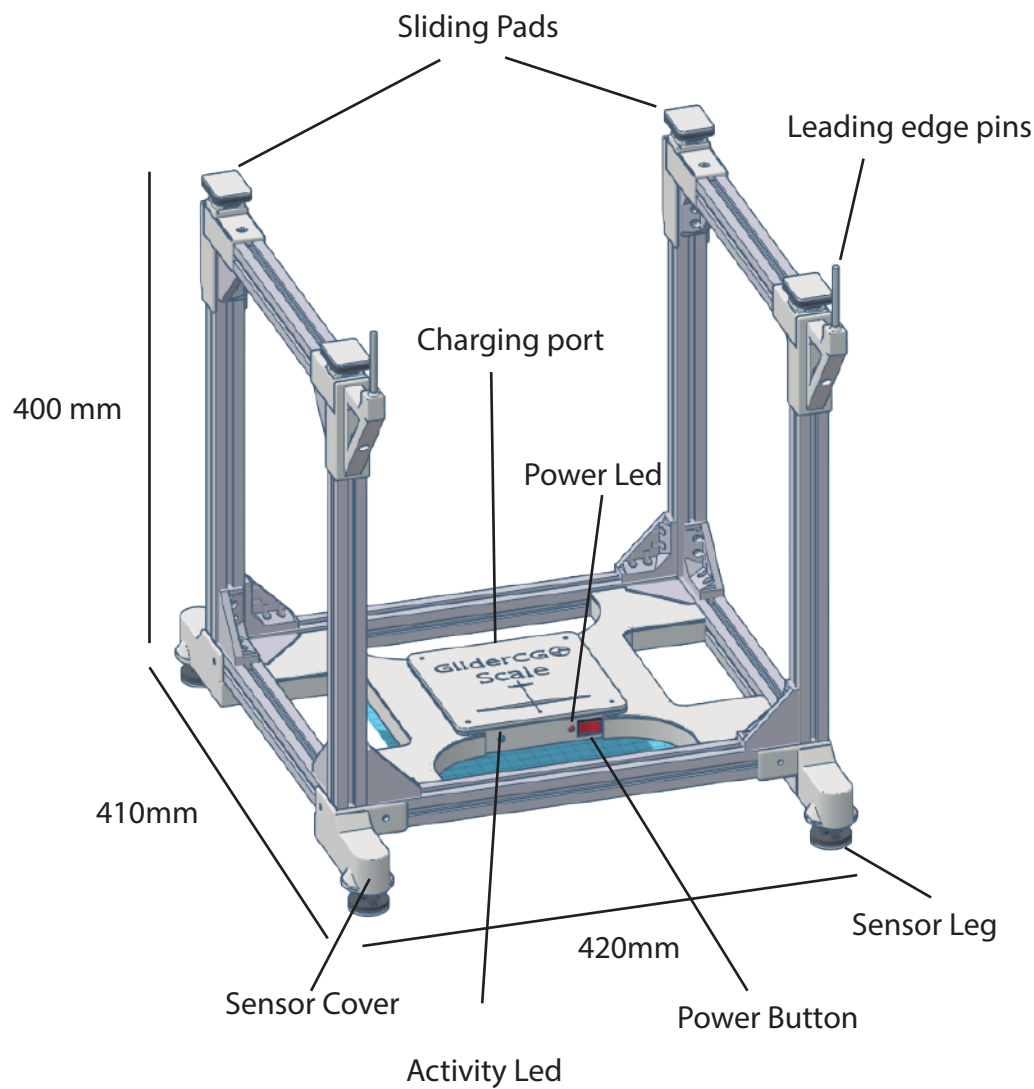
- Place the device on a smooth, stable and level surface.
- Verify that nothing is touching the supports.
- Turn on the device and connect WiFi interface.
- Place the model so the fuselage is between the supports and the wing leading edge touches the front pins.
- Read CG and weight on the web interface.

The web interface provides the most complete view, including selected model, target, sweep correction, units and maintenance tools.

If the reading does not return close to zero after removing the model, remove anything touching the supports and perform Scale Tare again.

Characteristics

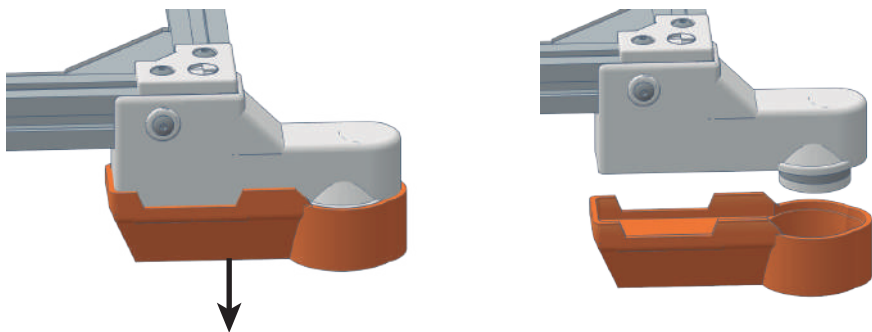
Device Dimensions Height x Width x Depth: 400x410x370 mm.



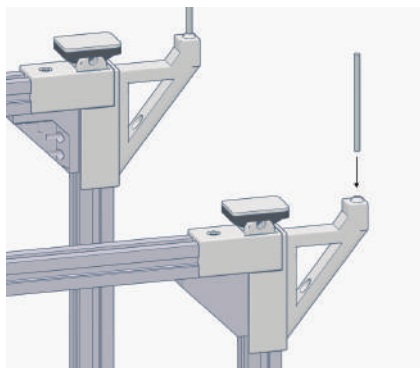
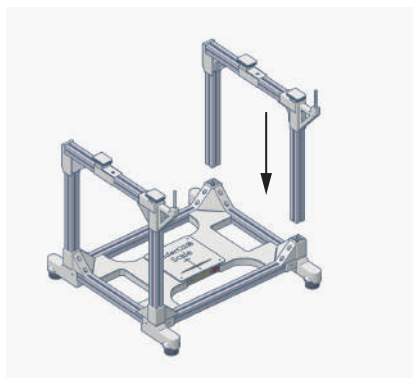
How to use

Make sure that the GliderCG Scale battery is fully charged, GliderCG Scale is a totally wireless device that uses a LiPo battery as a power source that must be recharged in order for it to work.

Before starting remove the protectors that cover the legs of the device and protect the sensors from impacts.



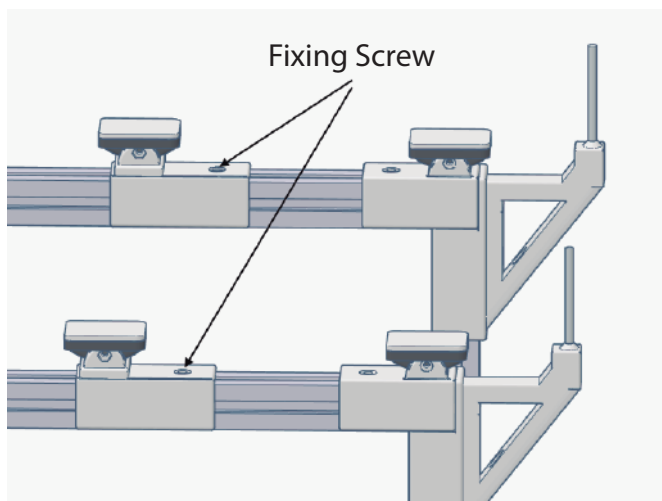
Insert the arms into the base and verify that the front pins are in the front position (towards the power button). Place the pins that serve as a stop to the leading edge of the wing in its position



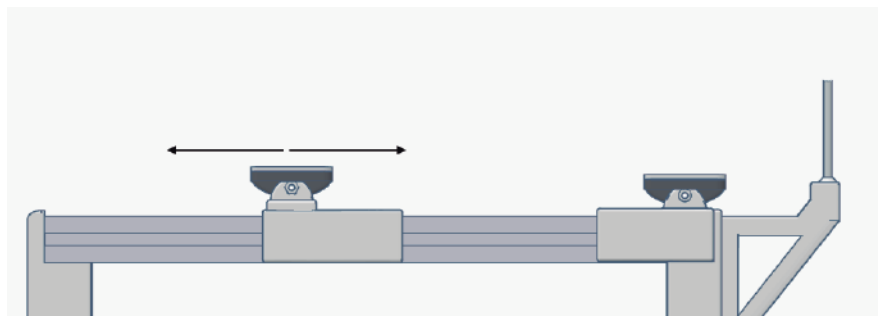
How to use

GliderCG Scale allows you to move the back supports to adapt different wing sizes, which will allow you to use your device with almost all models of your hangar from 200g.

To move the rear supports only loosen the fixing screws and move the supports to the desired point, repeating the process on both supports. Make sure that the distance between both supports and the front pin is the same using the engraved ruler.



If, during the use of the GliderCG Scale, you wish to vary the distance of the supports to change between different models, once the distance has been modified you must perform a tare of the device as explained below.



Power, battery and deep sleep

Battery charging is done through the USB-C port located on the rear of the device base. Charging will take approximately 2 hours to complete.

NOTE: Do not use Apple USB-C wires and chargers as they are not compatible.

Once charged, the charging light under the connector will turn from red to blue (seen through the wall).

Auto-off is set to 5 minutes by default. It does not switch off the power electronically; it places the controller into deep sleep, a minimum-consumption state intended to preserve battery life. The time can be changed or disabled from Preferences.

Any significant weight change resets the timer, so the device remains awake while a model is being positioned or adjusted. Activity in the web interface also keeps the device awake; however, simply being connected to the device WiFi is not enough.

If the browser is closed or no UI requests are being made, auto-off can still enter deep sleep.

To wake the device from deep sleep, turn the power switch off and then on again. If the device will not be used for a long time, store it switched off.

Please note that this feature does not replace turning off the device; rather, it limits battery drain in case you forget to turn it off. As soon as you realize you left the device on, be sure to turn it off.

Recommendations

- Measurements in windy locations are not recommended because they introduce additional loads on sensors that distort measurements and condition the accuracy of the device.
- Turn off the device after each use. Otherwise the battery can be discharged and will have to be replaced.
- Keep away from heat sources. The material of the device, Polylactic Acid (PLA) can deform if there are high temperatures so it is not recommended for example to leave it in the car on sunny or hot days.
- Keep away from any contact with water.
- Do not exceed the maximum weight supported.

Connect to the device WiFi

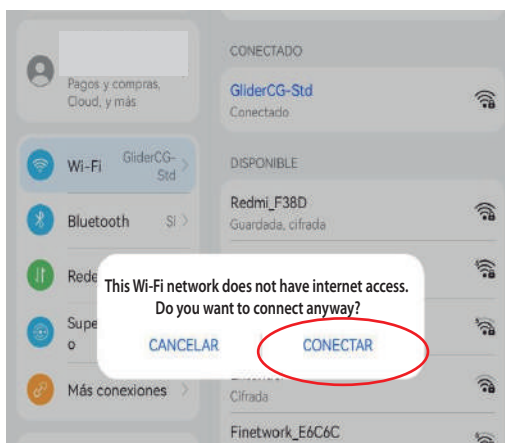
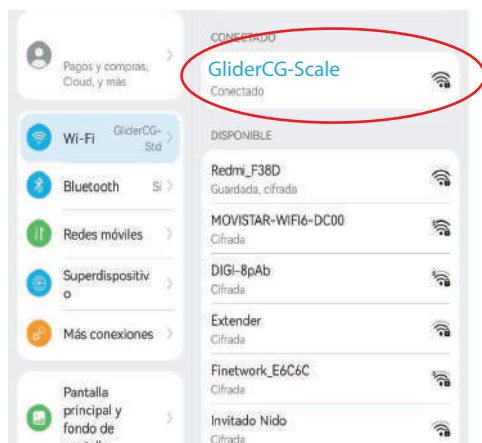
Search for a WiFi access point called "GliderCG-Scale" from your phone, tablet or computer.

Connect to "GliderCG-Scale" using the password:

123456789

The device creates its own local WiFi network. It does not provide internet access, and that is normal. If your phone, tablet or computer warns about no internet or limited connectivity, choose the option that keeps the connection to the device.

For the best response, use one phone, tablet or browser tab at a time. Several connected browsers can make the small controller respond more slowly.



WARNING: GliderCG Scale is a wireless device, however it will not present any damage if it is used in the flight field, both for the user and for other modelers, but **CAN CAUSE INTERFERENCE** to a receiver that is close to the transmitter. In the same way, in the presence of several stations, the functionality may be lost because it is an ISM device.

Open the web interface

The 2026 software opens from a direct local address. After connecting to the device WiFi, open your browser manually or scan the QR code on the device label. Enter this address exactly, including `http://`:

`http://192.168.4.1/`

If the browser says that there is no internet connection, stay connected to the GliderCG WiFi and type the address again. Do not use `https://` for this local interface. Safari, Chrome and Firefox can be used. If navigation feels slow, close extra tabs or disconnect other devices that may also be polling live readings.



Home screen

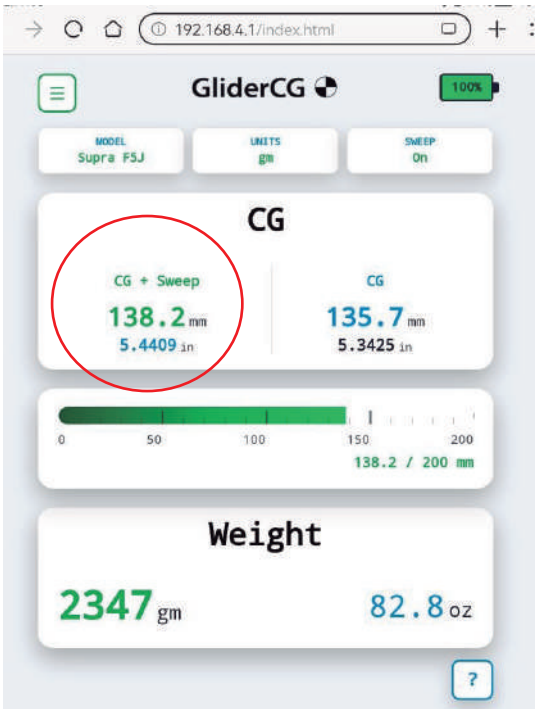
Home is the main measuring screen. It shows the current CG, total weight, selected model and battery level. The gauge behaves like a small ruler, with major marks and intermediate ticks to make movement easier to judge.

If no Sweep model is selected, the CG area shows the real measured CG. If a model with Sweep correction is selected, the CG block is divided into CG + Sweep and CG. CG + Sweep is the corrected reference for a swept wing; CG remains the real measurement from the device.

The gauge follows the corrected CG when Sweep is active, and the real CG when Sweep is not active.



CG



CG + Sweep

Menu and Scale Tare

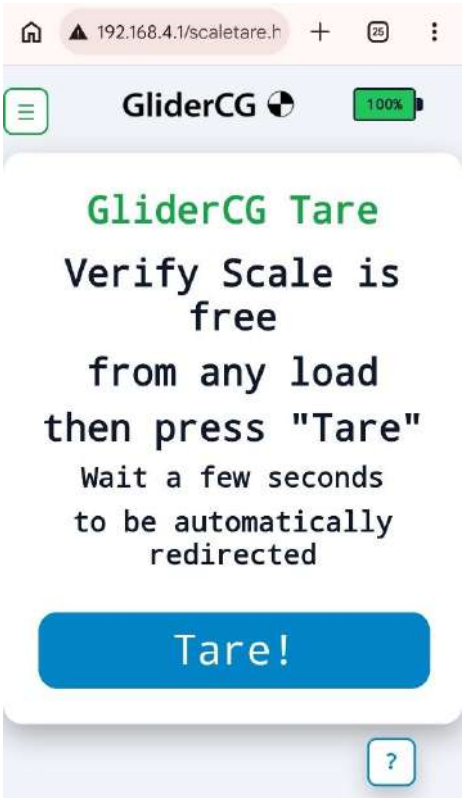
The menu gives access to Home, Scale Tare, Target View, Target Config, Sweep, Balance Assistant, Checklist, Logbook and Preferences.

Scale Tare zeros the load cells. It should be used with no aircraft on the supports and with the device in its normal measuring position.

Use Scale Tare only when the device is empty and resting on a stable, level surface.

Menu behavior

Menu items open full pages, not pop-ups. Each page follows the same visual style and includes a consistent navigation menu. Pages that need extra explanation include a small ? button leading to a built-in help page.



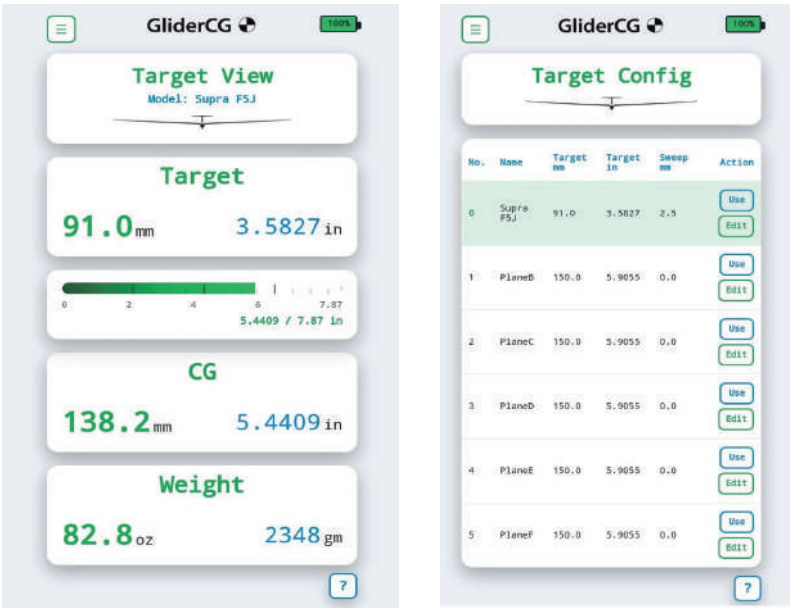
Target View and Target Config

Target View, allows us to visualize the settings of the position of the center of gravity that we have saved in the Target Select menu option that we will see later.

Target View shows the selected model name, its target CG and the difference between target and current reading. If Sweep is active, the corrected CG reference is used where that comparison is most useful.

Target Config also shows the Sweep value linked to each model, so the pilot can check at a glance which stored models use a sweep correction.

Target Config stores the model list. Each model has a name, target CG and linked Sweep data.



Actions

- Use: selects a model immediately without editing it.
- Edit: opens that row for changing name and target CG.
- Save: stores edited values and stays on the page.
- Save & Use: stores edited values and selects that model.
- Cancel: leaves the row unchanged.

Sweep correction

A straight wing uses the front pins as the leading-edge reference. On a swept wing, the leading edge at the fuselage root is behind that reference.

The missing distance must be added to the measured CG to obtain the correct root reference.

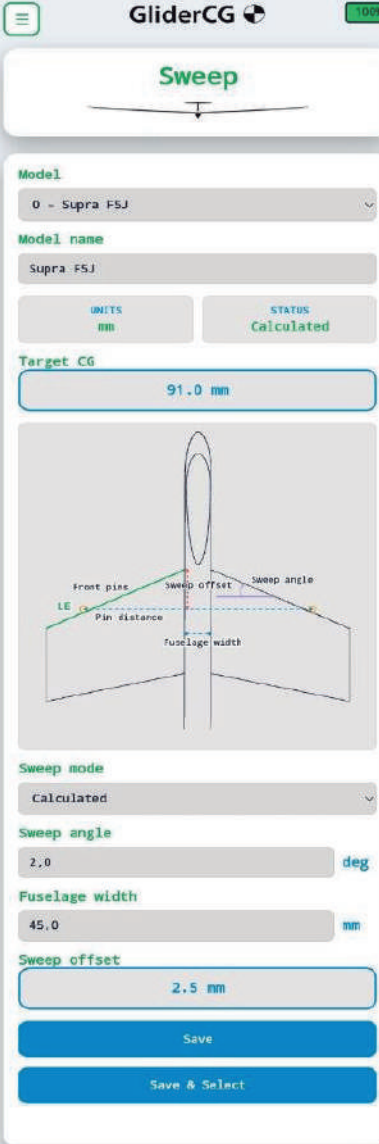
Sweep is stored per model, so each aircraft can keep its own correction.

The selected Sweep model is linked to the same model list used by Target Config.

- Disabled: no correction is applied.
- Calculated: enter sweep angle and fuselage width. The factory Pin-to-pin distance is used internally.
- Manual: enter the measured offset directly if it has already been measured on the aircraft.

Save stores the current values and stays on the page. Save & Select stores the values, selects that mode and returns to Home, where the CG area shows both real CG and CG + Sweep.

Always secure ballast mechanically and re-check the aircraft after adding or moving weight.



GliderCG 100%

Sweep

Model
0 - Supra FSJ

Model name
Supra FSJ

UNITS
mm

STATUS
Calculated

Target CG
91.0 mm

Sweep mode
Calculated

Sweep angle
2.0 deg

Fuselage width
45.0 mm

Sweep offset
2.5 mm

Save

Save & Select

?

Balance Assistant

Balance Assistant estimates how much ballast is needed to move the current CG to the target CG. It is intended as a practical setup aid, not as a replacement for normal airworthiness checks.

The page asks for the distances from the leading edge reference to the possible ballast positions, such as nose and tail. Using these distances and the current aircraft weight, it calculates an estimated ballast amount.

When both nose and tail positions are available, choose the option that reaches the target with the least practical added weight. In many cases this means placing ballast as far from the CG as safely possible.



GliderCG 

 100%

BALANCE ASSISTANT



MODEL

Supra F5J

TARGET CG

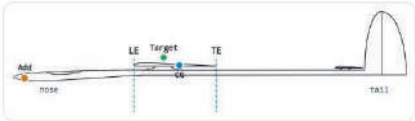
91.0 mm

CURRENT CG

138.2 mm

DIFFERENCE

+47.2 mm



LEADING EDGE TO NOSE (MM)

400

LEADING EDGE TO TAIL (MM)

1250

AVAILABLE BALLAST (G), OPTIONAL

Example: 20

SUGGESTED CORRECTION

CG is behind target.

Minimum ballast: 225.6 g at the nose

Position: 400.0 mm ahead of LE.

?

target with the least practical added weight
ballast as far from the CG as safely possible



Glider

Checklist and Logbook

Checklist provides a simple pre-flight style list inside the device interface. It is useful for repeated setup habits such as battery check, wing bolts, control direction, range check and CG verification.

Logbook stores quick notes for model setup sessions. It can be used to record measured CG, ballast changes, battery position, wind conditions or flight comments.

Individual logbook entries can be selected and deleted, so the user does not have to clear the whole history to remove one note. This is useful when testing several ballast or battery positions in the same session.

Checklist and Logbook are convenience tools in the web interface. Critical aircraft setup decisions should still be verified physically.



GliderCG 

 100%

CHECKLIST



MODEL

Supra F5J

CHECKED

4/6

☒ Correct model selected



☒ CG within target range



☐ Battery secured



☒ Wing bolts or joiners checked



☐ Control surfaces checked



☒ Failsafe checked



Reset checks

Add item





GliderCG 

 100%

LOGBOOK



MODEL

Supra F5J

CURRENT

2348 g / 138.1 mm

Notes, battery, ballast, setup...

Save reading

Delete selected

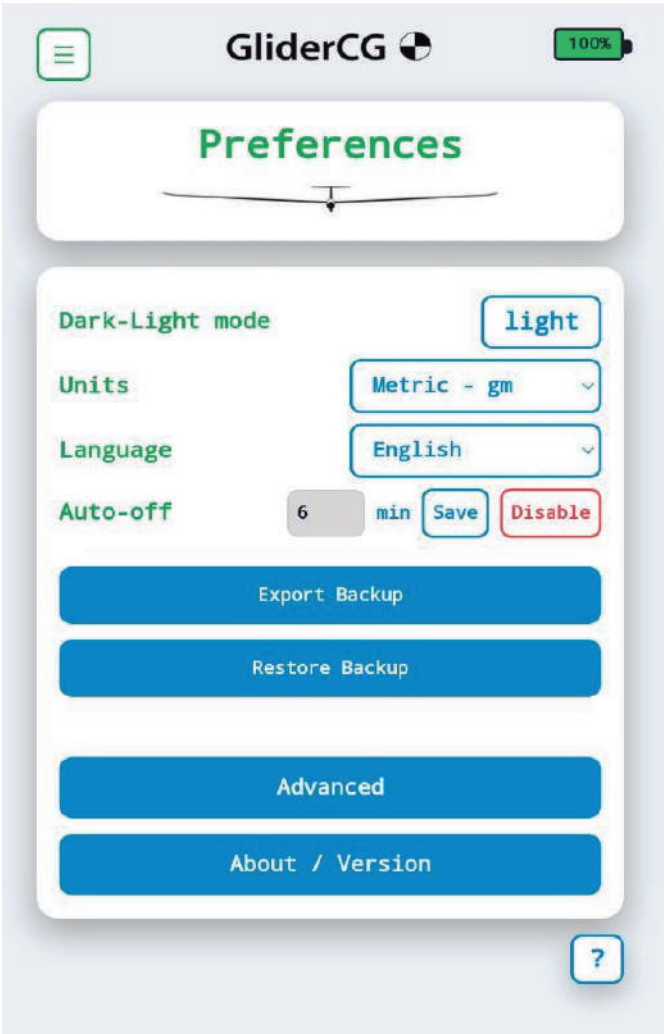
DATE	WT	CG	NOTE
☐ 7/8/2026, 18:48:25	2351 g	138.0 mm	Current flying mode



Preferences and Advanced

Preferences contains the settings that a pilot may adjust during normal use: visual theme, units, interface language, auto-off time and backup/restore. Auto-off is set to 5 minutes by default and can be changed or disabled by entering 0 minutes. The Version button is the last Preferences option and opens the software identification page.

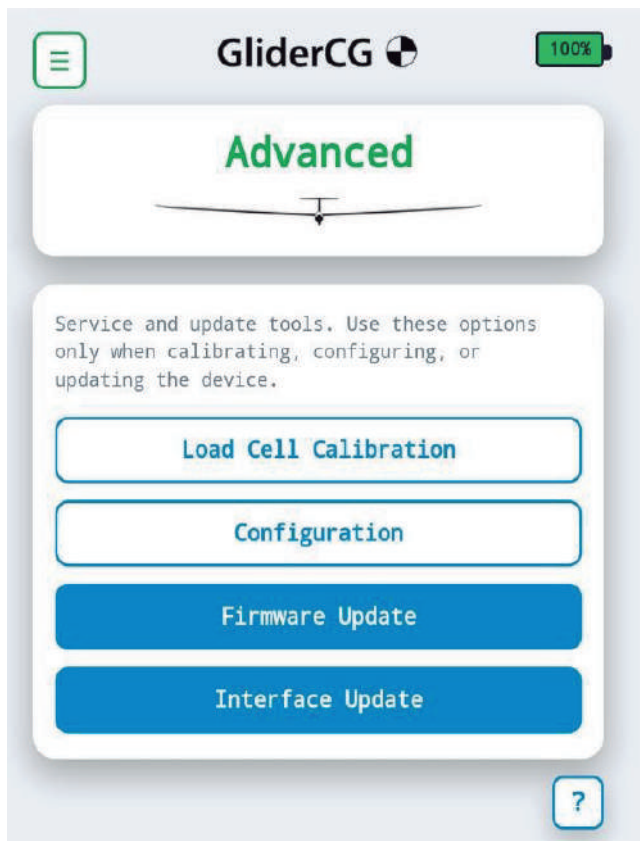
The Advanced button opens a separate page for maintenance functions that are normally used less often. This keeps calibration and update tools away from the normal weighing workflow.



Advanced page

- **Load Cell Calibration:** recalibrates each sensor using known weights.
- **Configuration:** stores mechanical constants and service values: Wing Support Distance, LE Stopper to Front Support, Pin-to-pin distance, Calibration Weight (gm), Battery Maximum and Battery Minimum.
- **Firmware Update:** uploads firmware .bin files and complete LittleFS filesystem .bin files.
- **Interface Update:** uploads individual web interface files such as HTML, JavaScript, CSS or images.

Before using FileSystem update, export a backup from Preferences. A complete filesystem image can replace stored text files such as calibration, model targets and preferences. Version is useful after updating because it confirms the installed software version and firmware install date.



Units and language

The Units selector allows four working modes: Metric - gm, Metric - kg, Imperial - oz and Imperial - lb. Small models are often easier to weigh in ounces, while larger models are often discussed in pounds. Metric users can choose grams or kilograms.

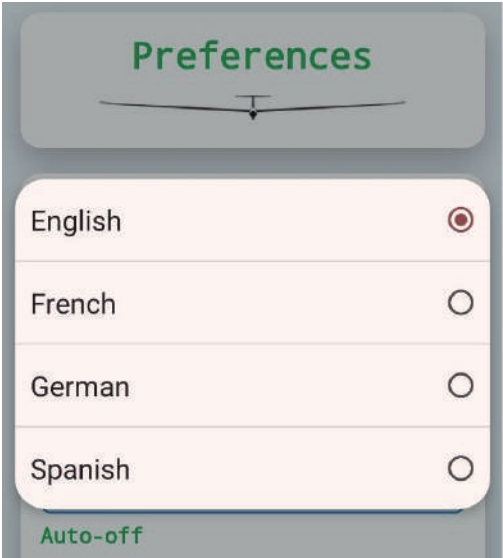
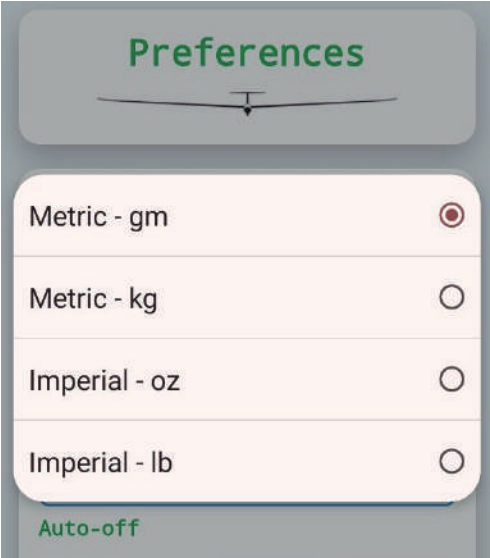
The web interface keeps useful secondary references visible, so the user can still see the equivalent metric or imperial value when needed. On OLED models, imperial CG uses four decimal digits in inches so 0.1 mm resolution is not lost.

Sweep distance fields follow the selected unit system. Metric modes use millimeters; imperial modes use inches.

Language

The web interface can be set to English, French, German or Spanish from Preferences. The language setting is stored in the device and is restored after restart or filesystem update backup/restore.

On models fitted with OLED, the display is intentionally simple. Recent firmware uses compact weight and CG icons to leave more room for the numeric readings.



Backup and restore

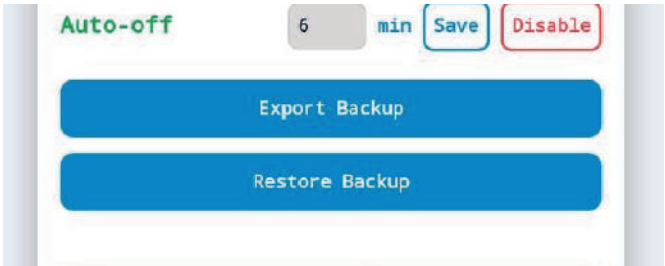
Backup Export downloads a text file containing the stored calibration, configuration, model targets, sweep values, selected units, language, auto-off setting and preferences.

Use Backup Export before uploading a complete filesystem/interface image, because a filesystem update can replace stored text files. Restore Backup uploads the saved file again and restarts the device after a short countdown so calibration coefficients and model data are loaded cleanly.

Keep one backup file for each device, especially after calibration or after creating model targets. The file name includes device information and date when available, making it easier to identify later.

A good habit is to export a backup immediately after calibration, after changing factory configuration constants, and before any firmware or filesystem maintenance.

A restored backup can change calibration coefficients, mechanical constants and model data. Use only a backup created for the same device.



Firmware and interface updates

Firmware Update is for firmware .bin files.
FileSystem update is for complete 1 MB LittleFS/UI .bin files.
Interface Update is for replacing individual web files such as HTML, CSS, JavaScript or images.

The update page checks the selected file type and reports progress in the browser.
During the update, keep the device powered and do not close the browser tab.

OLED models show a full-screen Updating message during firmware or filesystem update.

- Firmware .bin: updates the program running on the controller.
- FileSystem/LittleFS .bin: replaces the complete web interface stored in flash.
- Interface file upload: replaces only selected interface files.

A restored backup can change calibration coefficients, mechanical constants and model data. Use only a backup created for the same device.



Built-in help pages

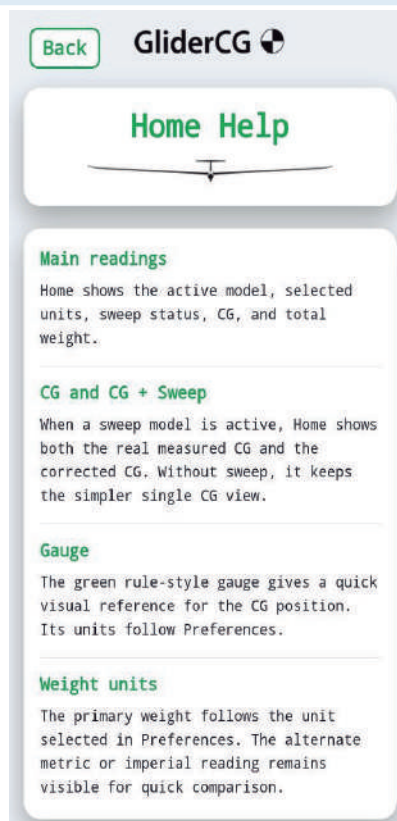
Most setup pages include a small ? button near the lower-right area of the page. It opens a dedicated help page for that function.

The help pages explain what each option does and when it should be used. They are stored inside the device, so they work without internet access.

Help pages are especially useful for less frequent tasks such as calibration, configuration, firmware update, interface update, backup/restore, sweep and balance assistant.

Technical users and optional accessories can also read live device data through status.-json when available. The JSON status includes device name, selected model, battery, units, weight, real CG, corrected CG, target and sweep data. Older firmware remains compatible through legacy GET readings.

The help system follows the selected interface language where translation is available.



Safety and Security

GliderCG is a precision measuring instrument for radio-control aircraft setup. It is not a toy and must only be used by adults or under responsible adult supervision. Use it only on a stable, level and dry surface, within the maximum weight specified for the model.

Keep the device away from water, excessive humidity, heat sources and prolonged direct sunlight.

Do not use it if the enclosure, supports, wiring, battery compartment, USB connector or display is damaged. Do not modify the mechanical or electronic parts unless instructed by GliderCG, as this may affect calibration and measurement accuracy.

Disposal Used batteries:

Batteries and rechargeable battery packs must not be disposed of with unsorted household waste. In the European Union, waste batteries must be collected separately for safe treatment and recycling.

Take exhausted, damaged or unusable batteries to an authorised battery collection point, municipal recycling centre or shop collection point. If the battery is removable, remove it before disposing of the appliance where this can be done safely.

Do not puncture, crush, short-circuit, burn, charge or reuse damaged batteries. Lithium batteries that are swollen, leaking, damaged or wet must be handled with special care and taken to an appropriate collection point according to local instructions.



—

Appliance:

At the end of its service life, this product must not be disposed of with unsorted household waste. It is electrical and electronic equipment and should be delivered to a separate collection facility for WEEE/RAEE.

Separate collection supports correct treatment, recycling and recovery of materials, and helps reduce possible effects on human health and the environment. Use municipal recycling centres, authorised WEEE collection points or retailer take-back services where available.



—

**Konformitätserklärung
Declaration of Conformity
Déclaration de conformité
Dichiarazione di conformità
Declaración de conformidad**

**Hersteller / Verantwortliche Person
Manufacturer / responsible person
Fabricant / Personne responsable
Fabbricante / Persona responsabile
Fabricante /Persona responsable**

GliderThrow / Marco A. Moreno

**erklärt, dass das Produkt
declares that the product
déclare que le produit
dichiara, che il prodotto
declara que el product**

GliderGC

2014/53/UE
2006/66/CE
2014/30/UE
2001/95/CE

**folgenden Normen entspricht:
complies following standards:
correspond aux suivantes norms:
corrisponde alle seguenti norme:
cumple las siguientes normas**

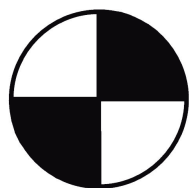
Anschrift / Address / Adresse / Indirizzo / Dirección

Marco A. Moreno, Alonso Zamora Vicente, 5 28702 Madrid; +0034661808239

Email: GliderCG.info@gmail.com

**Ort, Datum / Place and date of issue / Lieu et Date / Data e luogo /Fecha y lugar
Madrid, 28-Oct. 2018**

GliderCG



Tools for competition gliders, modelists and enthusiasts

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