ENTIREFLIGHT




# EF1 FLIGHT COMPUTER

## USER MANUAL

# CONTENTS


INTRODUCTION ..... 3
GETTING STARTED ..... 5
SETTINGS MENU ..... 6
- Set Time ..... 6
- Screen Display ..... 8
- Button Lighting ..... 9
- Unit Select ..... 10
- Patch Update ..... 11

TRIP MENU ..... 12
- Change Unit ..... 13
- Altitude ..... 14
- Ground Speed ..... 16
- Wind Correction ..... 18
- Estimated Time of Arrival ..... 20
- Compass Heading ..... 22
- Airspeed ..... 24
- Climb & Descent ..... 27
- Fuel Burn ..... 30
- Wind Component ..... 32
- Glide ..... 35
- Cloud Base ..... 38
- Interpolation ..... 40
- Standard Atmosphere ..... 44
- Reciprocal ..... 46
- Holding Pattern ..... 48

WEIGHT AND BALANCE ..... 50
- Aircraft Configuration ..... 51
- Weight and Balance Tool ..... 54
- Weight Shift ..... 62
- Percent of MAC ..... 64

CROSS-COUNTRY PLANNING ..... 67

ADDITIONAL TOOLS ..... 71
- Timer ..... 71
- Calculator ..... 73

TROUBLESHOOTING, SUPPORT, AND WARRANTY ..... 74

# INTRODUCTION

Thank you for choosing the EF1 Flight Computer. The EF1 is a modern, intuitive, and durable electronic flight computer designed for student pilots, active pilots, and flight instructors. It is intended to support flight planning, performance calculations, and cross-country preparation using standard aviation formulas and methods.

The EF1 Flight Computer may be used during FAA and Canadian aviation knowledge examinations. The EF1 complies with **FAA Order 8080.6** and **Advisory Circular (AC) 60-11, Test Aids and Materials That May Be Used by Airman Knowledge Testing Applicants. Acceptance of any electronic test aid is at the discretion of the testing proctor or examiner. Users are responsible for confirming approval prior to use.**




## BUTTON OVERVIEW

- Power
- Settings
- TRIP — Flight Calculations
- W/B — Weight & Balance
- X/C — Cross Country Plan
- Flashlight
- Memory
- C/U — Change Unit
- TIMER — Timer
- PREV — Previous Page
- DEL — Delete
- SELECT — Select/Enter
- CALC — Calculator
- C — Clear
- Scroll Up & Down

## INTENDED USE

The EF1 Flight Computer is intended for:

- Flight planning and cross-country calculations
- Performance and altitude computations

- Wind correction and heading calculations
- Weight and balance calculations

It is not a navigation device and does not provide real-time position, traffic, or weather information.

All calculations are based solely on values entered by the user. The EF1 does not verify the accuracy or applicability of inputs or results.

## POWER, MEMORY, AND DATA RETENTION

The EF1 Flight Computer is designed to operate as a stand-alone electronic flight computer using internal calculations only. Its power and memory behavior are intentionally limited to ensure predictable operation and compliance with aviation knowledge testing requirements.

## POWER SOURCE

The EF1 is powered by rechargeable AAA batteries located in the rear battery compartment. The device does not contain an internal rechargeable battery, capacitor-backed memory, or secondary power source.

> **Only Rechargeable Batteries Permitted.**

Because the EF1 relies solely on installed batteries for operation, all system functions cease immediately when power is removed.

## MEMORY AND DATA RETENTION

The EF1 does not retain user data after power loss. This includes, but is not limited to:

- Flight calculations
- Saved or recalled values
- Timer values
- Calculator entries
- Weight and balance data

When the EF1 batteries are removed, all stored values are cleared and the device resets to its default state upon the next power-on.

The EF1 does not include long-term storage, non-volatile memory for user data, or background data retention of any kind.

# GETTING STARTED

Before powering on, install (4) Rechargeable AAA batteries into the back compartment of the EF1 Flight Computer.

- Open the rear panel using light finger pressure.
- Insert the batteries, observing the polarity indicators.
- Replace the panel and press until it securely clicks into place.

> ⚠ **Only use AAA rechargeable batteries.** The included batteries need to be charged out of the box. With the included USB-C cord, place the device on charge for 4 hours.

## POWERING ON

- Press the Power button once to turn on.
- The EF1 logo will display briefly, followed by the **Trip** menu.

## EXPLORING THE EF1 TOOLS AND BUTTONS

| | |
|---|---|
| | Settings: Adjust time, theme, brightness, and more. |
| TRIP | Menu for most E6B flight calculations. |
| W/B | Menu for weight and balance calculations. |
| X/C | Menu to calculate and plan cross-country flights. |
| | Flashlight on/off (quick press for red, hold for white). |
| | Save any calculation number, and view saved calculations. |
| C/U | Converts any unit of measure to a different form. |
| TIMER | Track elapsed time or count down. |
| PREV | Previous Page: Press to return to the last page. |
| DEL | Delete: Press once to delete a single character, hold to delete the line. |
| SELECT | Select: Press to enter any menu or to enter any number. |
| CALC | Calculator: Standard calculator for quick math. |
| C | Clear: Use to clear the calculator. A single press also clears the entire menu screen. |
| | Up & Down Arrows: Use to scroll up and down through calculations or settings. |

**The remaining number buttons (0-9, decimal, and math symbols) function just like a standard calculator.**

# SETTINGS MENU

The **Settings** menu is accessed by pressing the **gear icon** on the EF1 Flight Computer. The Settings menu is used to configure time-related display preferences only. Settings do not affect calculation logic or results.

Use the **Up / Down** arrows to navigate through settings. Press **Select** to enter or confirm a setting. Press **Prev** to return to the previous screen.

## SET TIME

The Set Time screen allows configuration of UTC, local, and destination time references used throughout the EF1 interface. Settings are arranged from top to bottom as follows:

### UTC Time

- Adjusts the current Coordinated Universal Time (UTC).
- UTC serves as the reference time for all other displayed time values.

### Time Zone

- Sets the time zone offset used to calculate local time from UTC.
- Time zones are applied relative to UTC.

### Destination Time Zone

- Defines a separate time zone for the destination location.
- Destination time is calculated from UTC using the selected destination time zone.

### Local Time

- Displays and adjusts the current local time based on the selected time zone.
- Local time updates automatically when UTC or time zone values are changed.

### Header Time Display Options

- Allows selection of which time references appear in the header.
- UTC Time and Local Time may be independently enabled or disabled using check marks.
- Both UTC and Local Time may be displayed simultaneously.

Header display selections affect **display only** and do not change stored values or calculations.

## TIME VALUES WHILE DOING TIME CALCULATIONS

For any time-based calculation within the **Trip** or **Cross-Country Planning** menus, the **C/U (Change Unit)** button may be used to change how time values are displayed.

This allows calculated times to be viewed as:

- Local Time
- Destination Time (useful when flying across time zones)
- UTC Time

Changing the time display using the **C/U** button does **not** change the underlying calculation. It affects display only and is intended to assist with cross-country planning across different time zones.

# SCREEN DISPLAY

The Screen Display option controls how the EF1 screen appears in different lighting conditions.

### Day Mode

- Selecting Day Mode sets the screen background to a **white, high-contrast display.**
- Day Mode is intended for use in bright daylight conditions.

### Night Mode

- Selecting Night Mode sets the screen background to a **dark display.**
- Night Mode is intended to reduce glare and preserve night vision.

### Screen Brightness

- Screen brightness is adjusted using a percentage value.
- Press **Select** on the brightness percentage to begin adjusting brightness.
- Use the **Up / Down** arrows to increase or decrease brightness.
- Press **Select** again when finished to confirm the brightness setting.
- Press **Prev** to return to the Settings menu.

Screen display settings affect **display only** and do not change calculations or stored values.

# BUTTON LIGHTING

The Button Lighting option controls the backlighting of the EF1 buttons for visibility in various lighting conditions.

To access Button Lighting:

- From the Settings menu, highlight **Button Lighting** and press **Select.**

### Button Lighting On / Off

- Use the check boxes to turn button lighting **On** or **Off.**
- When unchecked, button backlighting is disabled.

### Button Light Color

- When button lighting is enabled, select the desired backlight color from the list below:
  - White
  - Red
  - Blue
  - Pink
  - Orange
  - Green
  - Purple
- Use the **Up / Down** arrows to highlight a color.
- Press **Select** to apply the selected color.
- Press **Prev** to return to the Settings menu.

> **Please Note:** Button lighting will reduce battery life faster when enabled.

# UNIT SELECT

The **Unit Select** menu controls how units of measurement are displayed throughout the EF1 calculation menus.

To access Unit Select:

- From the Settings menu, highlight **Unit Select** and press **Select.**

### Units System

- Choose between **U.S.** or **Metric** units.
- The selected system determines the default units shown across calculation menus.

### Change Unit Behavior

- Below the units system selection is **Change Unit,** which controls how the **C/U (Change Unit)** button behaves during calculations.

Available options:

- **Per Screen** (check box)
  - When enabled, pressing **C/U** changes all similar units of measure on the current screen at the same time.
- **Individual** (check box)
  - When enabled, pressing **C/U** changes only the currently selected line or value.

Use the **Up / Down** arrows to select an option and press **Select** to confirm. Press **Prev** to return to the Settings menu.

# PATCH UPDATE

The **Patch Update** menu provides version information for the EF1 Flight Computer and a reference link to check for the most recent software patch.

To access Patch Update:

- From the Settings menu, highlight Patch Update and press **Select.**

**Current Version**

- Displays the currently installed EF1 software version.

**Update Reference Link**

- Displays a reference URL where you can verify whether a newer patch is available:
  - www.entireflight.com/pages/ef1

The Patch Update menu is informational only and does not perform updates directly on the device.

Instructions for performing updates are provided on the reference URL listed above.

## HOW TO UPDATE DEVICE

When a new update is available, download the update file from our website.

1. **Power on your EF1 Flight Computer.**
2. Connect the device to your computer using a **USB-C cable.**
3. Once the EF1 appears as a drive on your computer, **drag and drop the update file into the device folder.**
4. The device will **automatically power off. KEEP IT PLUGGED IN until it reboots and powers back on.**
5. After it restarts, **press the power button to turn on and off** again for the new update to launch.
6. Navigate to the Settings screen and select **Patch Update.**
7. Confirm that the version number **displayed matches the latest version shown on our website.**

You're all set.

# TRIP MENU

The **Trip** menu contains the core electronic flight computer functions of the EF1. This menu includes most standard E6B-style calculations used for flight planning, performance evaluation, and in-flight decision support.

The Trip menu is designed to allow pilots to quickly move between related calculations without re-entering common values.

## SAVING AND REUSING VALUES

Any value that you want to save for use in another calculation can be stored using the **Brain** button .

- Press the **Brain** button to save the currently selected value.
- The EF1 can store up to **four (4)** saved values at one time.
- Saved values may be loaded and reused across different Trip menu calculations by pressing the Brain button.

This feature reduces repetitive data entry and streamlines multi-step flight planning.

## TRIP MENU CALCULATIONS

The Trip menu includes the following calculation tools:

- Change Unit
- Altitude
- Ground Speed
- Wind Correction
- Estimated Time of Arrival
- Compass Heading
- Airspeed
- Climb & Descent
- Fuel Burn
- Wind Component
- Glide
- Cloud Base
- Interpolation
- Standard Atmosphere
- Reciprocal
- Holding Pattern

Each Trip menu calculation is described in the sections that follow.

# CHANGE UNIT

The **Change Unit** tool allows you to convert values between different units of measurement across multiple categories commonly used in flight planning.

The following measurement categories are supported:

- Speed
- Distance
- Pressure
- Temperature
- Volume
- Rate
- Weight
- Duration
- Rate of Climb / Descent
- Angle of Climb / Descent
- Angle
- Torque

## ENTERING A VALUE

1. Use the number keys on the calculator to enter a value.
2. Press Select to confirm the entry.
3. When the value is accepted, the entry border will highlight in green, indicating the value has been entered correctly.

## CHANGING UNITS

- Press the **C/U (Change Unit)** button to convert the entered value to another unit of measure.
- Each press of **C/U** cycles through the available units for that category.
- When the unit conversion is applied, the **borders across the calculator tools will turn green,** confirming the conversion has been completed.

The Change Unit tool allows fast unit conversions without re-entering values, making it useful for cross-checking calculations throughout the Trip menu.

# ALTITUDE

The **Altitude** tool is used to calculate **Pressure Altitude** and **Density Altitude** based on the values you enter. This tool is commonly used when planning aircraft performance and when calculating values affected by atmospheric conditions.

## WHAT YOU WILL SEE ON THE SCREEN

The Altitude screen displays the following fields:

| | |
|---|---|
| **Indicated Altitude (IAlt)** | The altitude shown on your altimeter, or the airport field elevation when on the ground. |
| **Barometer (Baro)** | The current altimeter setting (inHg) obtained from ATIS, AWOS, ASOS, or ATC. |
| **Pressure Altitude (PAlt)** | A calculated value used for many performance and airspeed calculations. |
| **Outside Air Temperature (OAT)** | The ambient air temperature at the airport or altitude (°F or °C, depending on unit settings). |
| **Density Altitude (DAlt)** | A calculated value that reflects aircraft performance conditions. |

## HOW TO USE ALTITUDE

1. Select **Trip → Altitude.**
2. Enter **Indicated Altitude (IAlt)** using the number keys, then press Select.
3. Enter the **Barometer (Baro)** value, then press **Select.**
4. The EF1 will display **Pressure Altitude (PAlt).**
5. If you also enter **Outside Air Temperature (OAT)** and press **Select,** the EF1 will display **Density Altitude (DAlt).**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO 1: PRESSURE ALTITUDE

You are planning to cruise at an indicated altitude of **5,200 ft,** and the current altimeter setting is **30.10 inHg.** What pressure altitude should you use?

### STEPS

1. Open **Trip** → **Altitude.**
2. Enter **IAlt = 5,200 ft,** press **Select.**
3. Enter **Baro = 30.10 inHg,** press **Select.**

**RESULT**
The EF1 displays **PAlt = 5,035 ft.**

## SCENARIO 2: DENSITY ALTITUDE

An airport has a field elevation of **3,600 ft,** the altimeter setting is **29.62 inHg,** and the outside air temperature is **86°F.** What density altitude should you expect?

### STEPS

1. Open **Trip** → **Altitude.**
2. Enter **IAlt = 3,600 ft,** press **Select.**
3. Enter **Baro = 29.62 inHg,** press **Select.**
4. Enter **OAT = 86°F,** press **Select.**

**RESULT**
The EF1 displays **PAlt = 3,880 ft** and **DAlt = 6,444 ft.**

Density altitude is one of the best quick indicators of how “hot and high” conditions may affect takeoff, climb, and overall aircraft performance.

# GROUND SPEED

The **Ground Speed** tool is used to calculate an aircraft's speed over the ground based on **distance traveled** and **time enroute.** This calculation is commonly used during cross-country planning and for verifying in-flight progress.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Ground Speed menu, the following fields are displayed:

| | |
|---|---|
| **Duration** | The elapsed or planned flight time. |
| **Distance** | The distance traveled or planned (NM, SM, or KM depending on unit settings). |
| **Ground Speed (GS)** | The calculated speed over the ground. |

These values are displayed together so you can clearly see how time and distance determine ground speed.

## HOW TO USE GROUND SPEED

1. Select Trip → **Ground Speed.**
2. Enter **Distance** using the number keys, then press **Select.**
3. Enter **Duration,** then press **Select.**
4. The EF1 will automatically calculate **Ground Speed (GS).**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: GROUND SPEED CALCULATION

You fly **10 nautical miles** in 5 **minutes.** What is your ground speed?

### STEPS

1. Open **Trip** → **Ground Speed.**
2. Enter **Distance = 10 NM,** press **Select.**
3. Enter **Duration = 00:05:00,** press **Select.**

**RESULT**
The EF1 displays a **Ground Speed of approximately 120 kts.**

## WHY THIS TOOL IS USEFUL

The Ground Speed tool helps pilots:

- ✓ Verify actual progress along a route
- ✓ Cross-check GPS or estimated groundspeed
- ✓ Evaluate wind effects during flight
- ✓ Improve time and fuel planning accuracy

# WIND CORRECTION

The **Wind Correction** tool is used to determine **wind direction, wind speed,** and **wind correction angle** based on known aircraft and ground track values. This calculation is commonly used to analyze wind effects during flight or to verify winds aloft.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Wind Correction menu, the following fields are displayed:

| | |
|---|---|
| **Ground Speed (GS)** | The aircraft's speed over the ground. |
| **True Course (TC)** | The intended course over the ground. |
| **True Airspeed (TAS)** | The aircraft's speed through the air mass. |
| **Wind Direction (WDir)** | The calculated direction the wind is coming from. |
| **Wind Speed (WSpd)** | The calculated wind velocity. |
| **Wind Correction Angle (WCA)** | The angle applied to the course to maintain the desired track. |
| **True Heading (TH)** | The aircraft's actual heading. |

These values are shown together so you can see how wind affects the aircraft's track and heading.

## HOW TO USE WIND CORRECTION

You may enter any combination of known values. Once sufficient inputs are provided, the EF1 will calculate the remaining wind values automatically.

1. Select **Trip → Wind Correction.**
2. Enter **Ground Speed (GS),** then press **Select.**
3. Enter **True Airspeed (TAS),** then press **Select.**
4. Enter **True Course (TC),** then press **Select.**
5. Enter **True Heading (TH),** then press **Select.**
6. The EF1 will calculate **Wind Speed, Wind Direction,** and **Wind Correction Angle.**

**TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: WIND CORRECTION CALCULATION

You are flying with a **true heading of 100°,** a **ground speed of 130 kts,** a **true course of 120°,** and a **true airspeed of 140 kts.** What are the wind conditions?

### STEPS

1. Open Trip → **Wind Correction.**
2. Enter **GS = 130,** press **Select.**
3. Enter **TAS = 140,** press **Select.**
4. Enter **TC = 120°,** press **Select.**
5. Enter **TH = 100°,** press **Select.**

**RESULT**

The EF1 displays approximately:

- **Wind Speed = 47.91 kts**
- **Wind Direction = 32°**
- **Wind Correction Angle = −20°**

A negative wind correction angle indicates a correction to the **left** of the true course.

## WHY THIS TOOL IS USEFUL

The Wind Correction tool helps pilots:

- ✓ Determine actual wind conditions during flight
- ✓ Verify forecast winds aloft
- ✓ Understand drift effects
- ✓ Improve heading accuracy on long legs

# ESTIMATED TIME OF ARRIVAL

The **Estimated Time of Arrival (ETA)** tool is used to calculate the time you will arrive at your destination based on a planned **departure time** and **flight duration.**

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Estimated Time of Arrival menu, the following fields are displayed:

| | |
|---|---|
| **Departure** | The planned departure time. |
| **Duration** | The planned flight time. |
| **ETA** | The calculated estimated time of arrival. |

These values are shown together so you can easily see how departure time and flight duration affect arrival time.

## HOW TO USE ESTIMATED TIME OF ARRIVAL

1. Select **Trip → Estimated Time of Arrival.**
2. Enter the **Departure** time, then press **Select.**
3. Enter the planned Duration, then press **Select.**
4. The EF1 will automatically calculate and display the **ETA.**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## TIME DISPLAY OPTIONS

While using the Estimated Time of Arrival tool, you may press the **C/U (Change Unit)** button to cycle between the time displays configured in the **Settings** menu.

Available time displays include:

- **UTC**
- **Local Time**
- **Destination Time**

Changing the time display does not change the calculation. It only changes how the time values are shown on the screen.

## SCENARIO: ESTIMATED TIME OF ARRIVAL

You plan to **depart at 11:30** for a flight with a **duration of 3 hours.** What is your estimated time of arrival?

### STEPS

1. Open **Trip** → **Estimated Time of Arrival.**
2. Enter **Departure = 11:30:00,** press **Select.**
3. Enter **Duration = 3 HR,** press **Select.**

**RESULT**
The EF1 displays an **ETA of approximately 14:30** in the selected time reference.

## WHY THIS TOOL IS USEFUL

The Estimated Time of Arrival tool helps pilots:

- ✓ Plan arrival times accurately
- ✓ Coordinate fuel stops and schedules
- ✓ Cross-check enroute timing
- ✓ Quickly adjust plans when departure times change

# COMPASS HEADING

The **Compass Heading** tool is used to convert between true, magnetic, and compass headings by accounting for **magnetic variation** and **compass deviation.** This calculation helps determine the heading that should be flown by reference to the aircraft's magnetic compass.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Compass Heading menu, the following fields are displayed:

| | |
|---|---|
| **True Heading (TH)** | The aircraft heading referenced to true north. |
| **Magnetic Variation (Var)** | The angular difference between true north and magnetic north. |
| **Magnetic Heading (MH)** | The heading referenced to magnetic north. |
| **Deviation (Dev)** | Compass error caused by magnetic influences within the aircraft. |
| **Compass Heading (CH)** | The heading indicated on the magnetic compass. |

These values are shown together so you can see how variation and deviation affect the final compass heading.

## HOW TO USE COMPASS HEADING

1. Select **Trip → Compass Heading.**
2. Enter **True Heading (TH)** using the number keys, then press **Select.**
3. Enter **Magnetic Variation (Var),** then press **Select.**
4. Enter **Deviation (Dev),** then press **Select.**
5. The EF1 will calculate and display **Magnetic Heading (MH)** and **Compass Heading (CH).**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: COMPASS HEADING CALCULATION

You are planning a flight and have determined a **true heading of 185°** from your navigation planning. The chart indicates a 5° **easterly magnetic variation,** and the aircraft's compass card shows a **2° deviation** on that heading. You want to know what heading to fly by reference to the magnetic compass.

### STEPS

1. Open **Trip** → **Compass Heading.**
2. Enter **TH = 185°,** press **Select.**
3. Enter **Var = -5°** (East is least, West is best), press **Select.**
4. Enter **Dev = 2°,** press **Select.**

**RESULT**
The EF1 displays the corresponding **Magnetic Heading 180°** and **Compass Heading 182°** based on the entered variation and deviation.

This allows you to determine the correct compass indication to maintain the desired true heading during flight.

## WHY THIS TOOL IS USEFUL

The Compass Heading tool helps pilots:

- ✓ Convert true headings into compass headings used in the cockpit
- ✓ Correctly apply magnetic variation and compass deviation
- ✓ Verify compass indications against planning data
- ✓ Build confidence using the magnetic compass as a primary reference

# AIRSPEED

The **Airspeed** tool is used to evaluate aircraft speed through the air by relating **airspeed, altitude,** and **temperature.** It can be used both during **flight planning** and to analyze **actual in-flight conditions,** depending on which temperature value is entered.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Airspeed menu, the following fields are displayed in order:

| | |
|---|---|
| **Outside Air Temperature (OAT)** | Ambient air temperature outside the aircraft. |
| **True Airspeed (TAS)** | Your actual speed through the air mass you're flying in. |
| **Total Air Temperature (TAT)** | Temperature measured by a probe exposed to airflow. |
| **Calibrated Airspeed (CAS)** | Airspeed corrected for instrument and position error. |
| **Mach** | Aircraft speed expressed as a ratio of the speed of sound. |
| **Pressure Altitude (PAlt)** | Altitude in the standard atmosphere. |

These values are shown together so you can see how temperature and altitude influence airspeed.

## HOW THE AIRSPEED TOOL IS USED

The Airspeed tool allows you to enter any known values. Once sufficient information is provided, the EF1 automatically calculates the remaining values.

In general:

- **OAT** is used for **planning** calculations.
- **TAT** is used for **actual in-flight** calculations.

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## PLANNING AIRSPEED (USING OAT)

This method is typically used during preflight planning.

**YOU ENTER:**

- Calibrated Airspeed (CAS)
- Pressure Altitude (PAlt)
- Outside Air Temperature (OAT)

**THE EF1 CALCULATES:**

- True Airspeed (TAS)
- Total Air Temperature (TAT)
- Mach

### SCENARIO: PLANNED AIRSPEED

You are planning a cruise segment and expect to fly at a **calibrated airspeed of 118 knots,** at a pressure altitude of **7,200 ft,** with an **outside air temperature of 20°F.**

**STEPS**

1. Open **Trip** → **Airspeed.**
2. Enter **CAS = 118 kts,** press **Select.**
3. Enter **PAlt = 7,200 ft,** press **Select.**
4. Enter **OAT = 20°F,** press **Select.**

**RESULT**

The EF1 will calculate the corresponding **true airspeed (129.52 kts), total air temperature (24°F),** and **Mach number (0.204).**

## ACTUAL AIRSPEED (USING TAT)

This method is typically used during flight when **total air temperature** is available from the aircraft.

**YOU ENTER:**

- Calibrated Airspeed (CAS)
- Pressure Altitude (PAlt)
- Total Air Temperature (TAT)

**THE EF1 CALCULATES:**

- True Airspeed (TAS)
- Outside Air Temperature (OAT)
- Mach

## SCENARIO: ACTUAL AIRSPEED

While enroute, you are flying at a **pressure altitude of 5,000 ft,** with a **calibrated airspeed of 145 knots,** and the aircraft indicates a **total air temperature of 25°F.**

### STEPS

1. Open **Trip** → **Airspeed.**
2. Enter **CAS = 145 kts,** press **Select.**
3. Enter **TAT = 25°F,** press **Select.**
4. Enter **PAlt = 5,000 ft,** press **Select.**

**RESULT**

The EF1 will calculate the corresponding **true airspeed (152.60 kts), outside air temperature (19°F),** and **Mach number (0.240).**

## WHY THIS TOOL IS USEFUL

The Airspeed tool helps pilots:

- ✓ Convert calibrated airspeed to true airspeed
- ✓ See how altitude and temperature affect performance
- ✓ Cross-check OAT and TAT values
- ✓ Monitor Mach number at higher altitudes

# CLIMB & DESCENT

The **Climb & Descent** tool is used to evaluate vertical performance by relating **altitude change, distance,** and **ground speed.** This tool can be used for both climbing and descending scenarios, including glide planning.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the **Climb & Descent** menu, the following fields are displayed:

| | |
|---|---|
| **Distance** | The total distance of the climb or descent. |
| **Descent** | The total altitude gained or lost. This value may be used for either climbs or descents. |
| **Ground Speed (GS)** | The aircraft's speed over the ground. |
| **Rate of Climb / Descent (RoC/D)** | The vertical speed in feet per minute. |
| **Angle of Climb / Descent (AoC/D)** | The vertical angle relative to the ground track. |
| **Glide Ratio** | The horizontal distance traveled for each unit of altitude lost. |

These values are displayed together so you can see how vertical and horizontal performance relate.

## HOW THE CLIMB & DESCENT TOOL IS USED

You may enter any known values. Once sufficient information is provided, the EF1 will automatically calculate the remaining values.

In general:

- **Distance** and **Descent** are used to evaluate **angle** and **glide ratio.**
- **Ground Speed** is used to calculate **rate of climb or descent.**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## GLIDE AND ANGLE EVALUATION

This method is commonly used for glide planning and descent analysis.

**YOU ENTER:**
- Descent
- Distance

**THE EF1 CALCULATES:**
- Angle of Climb / Descent
- Glide Ratio

### SCENARIO: GLIDE PERFORMANCE

During a descent, an aircraft loses **5,000 ft** over a distance of **11 nautical miles.** You want to evaluate the descent angle and glide performance.

**STEPS**

1. Open **Trip** → **Climb & Descent.**
2. Enter **Distance = 11 NM,** press **Select.**
3. Enter **Descent = 5,000 ft,** press **Select.**

**RESULT**
The EF1 calculates the corresponding **angle of descent (454.55 ft/NM)** and **glide ratio (13.4:1).**

## RATE OF CLIMB / DESCENT EVALUATION

This method is used when ground speed is known.

**YOU ENTER:**
- Descent
- Distance
- Ground Speed

**THE EF1 CALCULATES:**
- Rate of Climb / Descent

### SCENARIO: RATE OF DESCENT

Using the same descent profile as above, the aircraft's **ground speed is 95 knots.** You want to determine the rate of descent.

**STEPS**

1. Enter **Ground Speed = 95 kts,** press **Select.**

**RESULT**
The EF1 calculates the **rate of descent (719.70 ft)** in feet per minute.

## WHY THIS TOOL IS USEFUL

The Climb & Descent tool helps pilots:

- Plan climb and descent profiles
- Evaluate glide performance
- Estimate vertical speed requirements
- Improve energy management and situational awareness

# FUEL BURN

The **Fuel Burn** tool is used to evaluate fuel consumption by relating fuel quantity, time, and burn rate. This tool can be used for flight planning, endurance calculations, and fuel management.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Fuel Burn menu, the following fields are displayed:

| | |
|---|---|
| **Type** | The fuel type used for weight calculations. |
| **Volume** | The amount of fuel, displayed in the selected unit (such as gallons or liters). |
| **Duration** | The time period over which fuel is consumed. |
| **Rate** | The fuel flow rate over time. |
| **Weight** | The weight of the fuel based on the selected fuel type. |
| **Rate** | The fuel burn rate expressed by weight, if applicable. |

These values are displayed together so you can evaluate fuel usage by either volume or weight, depending on the planning requirement.

## HOW THE FUEL BURN TOOL IS USED

You may enter any known fuel-related values. Once sufficient information is provided, the EF1 will automatically calculate the remaining values.

In general:

- **Volume** and **Duration** can be used to calculate **fuel burn rate.**
- **Rate** and **Duration** can be used to calculate **fuel required.**
- **Fuel Type** allows conversion between **fuel volume and fuel weight.**

> TIP When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: FUEL BURN RATE

You plan a flight segment lasting **1 hour and 45 minutes,** and the aircraft is expected to use **14 gallons of fuel.** You want to determine the fuel burn rate.

### STEPS

1. Open **Trip → Fuel Burn.**
2. Enter **Volume = 14 GAL,** press **Select.**
3. Enter **Duration = 01:45,** press **Select.**

**RESULT**
The EF1 calculates the corresponding **fuel burn rate (8 Gallons per hour).**

## SCENARIO: FUEL REQUIRED

An aircraft burns fuel at a rate of **8.5 gallons per hour,** and the planned flight time is **2 hours and 20 minutes.** You want to determine how much fuel will be used.

### STEPS

1. Open **Trip → Fuel Burn.**
2. Enter **Rate = 8.5 GAL/HR,** press **Select.**
3. Enter **Duration = 02:20,** press **Select.**

**RESULT**
The EF1 calculates the **total fuel volume required (19.83 US Gallons).**

## WHY THIS TOOL IS USEFUL

The Fuel Burn tool helps pilots:

- ✓ Estimate fuel required for a flight
- ✓ Calculate fuel burn rates
- ✓ Convert between fuel volume and weight
- ✓ Improve fuel planning accuracy

# WIND COMPONENT

The **Wind Component** tool calculates how wind affects a selected runway by determining:

- **Headwind or Tailwind** component
- **Crosswind component**

This tool is commonly used for takeoff and landing planning and provides a quick assessment of runway wind conditions.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Wind Component menu, the following fields are displayed:

| | |
|---|---|
| **Wind Direction** | The direction the wind is coming from (3-digit format). |
| **Wind Speed** | The reported or forecast wind velocity (in knots). |
| **Runway Number** | The runway number being used. |
| **Headwind / Tailwind** | The calculated **headwind or tailwind** component. |
| **Crosswind** | The calculated **left or right** crosswind component. |

The calculated fields are read-only and update automatically when valid inputs are entered.

## HOW THE WIND COMPONENT TOOL IS USED

1. Select Trip → **Wind Component.**
2. Enter the **Wind Speed (knots),** then press **Select.**
3. Enter the **Wind Direction in 3-digit format (000 to 360),** then press **Select.**
4. Enter the **Runway Number (01 to 36),** then press **Select.**

When all values are valid:

- The EF1 automatically calculates the wind components.
- Valid entries are highlighted with a **green border.**

## INPUT REQUIREMENTS

### Wind Speed

- Numeric only
- Whole numbers
- Fixed in knots (KTS)

### Wind Direction

- Must be entered in 3-digit format (e.g., 090, 270, 350)
- Valid range: 000 to 360

### Runway Number

- Enter the runway number only (e.g., 07, 27, 18)
- Valid range: 01 to 36
- Do not enter runway heading in degrees

Example: Enter 27, not 270.

**Wind Direction** and **runway heading** are compared to determine:

- **Headwind or Tailwind** component
- **Crosswind component** (Left or Right)

Results are displayed in knots to two decimal places and labeled clearly.

### Examples

| | |
|---|---|
| HEADWIND 12.00 KT | TAILWIND 4.00 KT |
| CROSSWIND 8.00 KT LEFT | CROSSWIND 10.00 KT RIGHT |

No negative numbers are shown.

## SCENARIO: RUNWAY WIND COMPONENTS

The reported wind is 090° at 15 knots. You plan to land on Runway 07.

### STEPS

1. Open Trip → **Wind Component.**
2. Enter **Wind Speed** = 15, press Select.
3. Enter **Wind Direction** = 090, press Select.
4. Enter **Runway** = 07, press Select.

**RESULT**

The EF1 calculates:

- **HEADWIND 14.10 KT**
- **CROSSWIND 5.13 KT RIGHT**

## UNDERSTANDING THE RESULTS

Headwind values indicate whether the wind is helping (headwind) or opposing (tailwind) your runway direction.

Crosswind values indicate whether the wind is from the left or right.

This allows you to quickly determine runway suitability and assess crosswind limitations before takeoff or landing.

# GLIDE

The **Glide** tool is used to evaluate glide performance by relating **glide ratio, altitude loss,** and **horizontal distance.** This tool is commonly used for glide planning, emergency descent analysis, and understanding aircraft efficiency.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Glide menu, the following fields are displayed:

| | |
|---|---|
| **Ratio** | The glide ratio, representing horizontal distance traveled for each unit of altitude lost. |
| **Descent** | The total altitude lost during the glide. |
| **Distance** | The horizontal distance traveled during the glide. |

These values are displayed together so you can evaluate glide performance from different known inputs.

## HOW THE GLIDE TOOL IS USED

You may enter any two values, and the EF1 will automatically calculate the third.

In general:

- **Ratio + Descent** → calculates **Distance**
- **Ratio + Distance** → calculates **Descent**
- **Distance + Descent** → calculates **Glide Ratio**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## EXAMPLE: MAXIMUM GLIDE DISTANCE

An aircraft has a best glide ratio of **28:1,** and you expect to lose **2,200 ft** during a glide. You want to know how far the aircraft can travel horizontally.

### STEPS

1. Open **Trip → Glide.**
2. Enter **Ratio = 28:1,** press **Select.**
3. Enter **Descent = 2,200 ft,** press **Select.**

**RESULT**
The EF1 calculates the corresponding **glide distance (10.14 NM).**

## SCENARIO: ALTITUDE LOSS OVER DISTANCE

An aircraft is expected to glide **14 nautical miles** with a glide ratio of **24:1.** You want to know how much altitude will be lost.

### STEPS

1. Open **Trip → Glide.**
2. Enter **Ratio = 24:1,** press **Select.**
3. Enter **Distance = 14 NM,** press **Select.**

**RESULT**
The EF1 calculates the required **altitude loss (3,544 ft).**

## SCENARIO: GLIDE RATIO EVALUATION

During a glide, an aircraft travels **8.5 nautical miles** while losing **1,800 ft** of altitude. You want to determine the glide ratio.

### STEPS

1. Open **Trip → Glide.**
2. Enter **Descent = 1,800 ft,** press **Select.**
3. Enter **Distance = 8.5 NM,** press **Select.**

**RESULT**
The EF1 calculates the **glide ratio (28.7:1).**

## WHY THIS TOOL IS USEFUL

The Glide tool helps pilots:

- ✓ Estimate reachable distance during an engine-out scenario
- ✓ Evaluate aircraft glide efficiency
- ✓ Plan emergency options more effectively
- ✓ Understand how altitude translates into distance

# CLOUD BASE

The **Cloud Base** tool is used to estimate the height of the cloud base above ground level **(AGL)** using surface temperature and dew point. This calculation is commonly used for weather awareness and preflight planning.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Cloud Base menu, the following fields are displayed:

| | |
|---|---|
| **Outside Air Temperature (OAT)** | The surface air temperature at the departure location. |
| **Dew Point** | The surface dew point temperature. |
| **AGL** | The calculated height of the cloud base above ground level. |

These values are displayed together so you can quickly estimate cloud formation height based on surface conditions.

## HOW THE CLOUD BASE TOOL IS USED

1. Select **Trip → Cloud Base.**
2. Enter the **Outside Air Temperature (OAT),** then press **Select.**
3. Enter the **Dew Point,** then press **Select.**
4. The EF1 will calculate and display the **cloud base height AGL.**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: CLOUD BASE ESTIMATION

At your departure airport, the surface temperature is **78°F** and the dew point is **42°F.** You want to estimate the height of the cloud base above the field.

### STEPS

1. Open **Trip → Cloud Base.**
2. Enter **OAT = 78°F,** press **Select.**
3. Enter **Dew Point = 42°F,** press **Select.**

**RESULT**
The EF1 calculates the **estimated cloud base AGL (8,182 ft).**

## USING CLOUD BASE RESULTS

- The cloud base value is displayed above **ground level (AGL).**
- To determine the cloud base above **mean sea level (MSL),** add the **airport field elevation** to the calculated AGL value.

## WHY THIS TOOL IS USEFUL

The Cloud Base tool helps pilots:

- ✓ Estimate cloud base height before flight
- ✓ Improve weather awareness
- ✓ Assist with VFR decision-making
- ✓ Visualize atmospheric conditions near the surface

# INTERPOLATION

The Interpolation tool allows you to calculate a value that lies between two known reference points.

This feature is designed specifically for aviation performance planning. It is commonly used when working with aircraft performance charts, fuel tables, winds aloft data, or any published values that fall between charted points.

The EF1 performs one-axis linear interpolation only and does not allow extrapolation outside the reference range.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Interpolation menu, the following fields are displayed:

| | |
|---|---|
| **TYPE** | Selects the variable family for the reference values **(Altitude, Distance, Speed, Temperature, Pressure, Weight, Volume).** |
| **Lower Reference** | The known lower value from the chart or table. |
| **Lower Result** | The performance value associated with the lower reference. |
| **Upper Reference** | The known upper value from the chart or table. |
| **Upper Result** | The performance value associated with the upper reference. |
| **Target Value Needed** | The value within the range for which a result is needed. |
| **Interpolated Result** | The calculated value between the two reference points (read-only). |

**Each field must be entered before a result is calculated.**

## SELECTING UNITS

The **TYPE field** determines the unit family for:

- **Lower Reference**
- **Upper Reference**
- **Target Value Needed**

Press the **C/U (Change Unit)** button to cycle through available units within the selected **TYPE.**

| **TYPE options include:** | |
|---|---|
| **Altitude** | FT, M |
| **Distance** | NM, SM, KM, FT, M |
| **Speed** | KTS, MPH, KPH |
| **Temperature** | °C, °F |
| **Pressure** | INHG, HPA |
| **Weight** | LBS, KG |
| **Volume** | US GAL, L, QT |
| **Wind Direction & Speed** | ---@-- WND |

The unit selected for **Lower Result** defines the unit family for all Result fields.

| **Lower Result units:** | |
|---|---|
| **NUM** | A plain number, for chart values with no unit below (for example ground roll in feet or fuel burn in GPH) |
| **Wind** | WND |
| **Speed** | KTS, KPH, MPH |
| **Temperature** | °F, °C |
| **Pressure** | INHG, MB |
| **Weight** | LBS, KG |

Upper Result and Interpolated Result must use the same unit family.

## HOW THE INTERPOLATION TOOL IS USED

1. Select Trip → **Interpolation.**
2. Select **Interpolation TYPE,** using the C/U button.
3. **Press C/U to create Lower Reference, Upper Reference, & Target Value Needed unit of measure family.**
4. Enter **Lower Reference** and press **Select.**
5. **Press C/U on Lower Result to select its unit of measure** (this sets the unit for all Result fields), then enter **Lower Result** and press **Select.**

6. Enter **Upper Reference** and press **Select.**
7. Enter **Upper Result** and press **Select.**
8. Enter **Target Value Needed** and press **Select.**

When all values are valid:

- The **Interpolated Result** will appear automatically.
- Valid entries are highlighted with a green border.

If any input is changed:

- The result **clears immediately.**
- The EF1 recalculates only when all inputs are valid again.

## IMPORTANT NOTES

- The EF1 automatically changes references if entered in reverse order. Lower has to be lower and higher has to be higher.
- The Target Value Needed must be between the Lower and Upper Reference.
- The EF1 does not calculate values outside the reference range.
- Interpolated Result remains blank if inputs are incomplete or invalid.

## SCENARIO: PERFORMANCE INTERPOLATION

A performance chart shows:

- Fuel burn of **10.5 GPH** at **4,000 ft**
- Fuel burn of **9.0 GPH** at **8,000 ft**

You want to estimate fuel burn at **6,000 ft.**

### STEPS

1. Open Trip → **Interpolation.**
2. Select TYPE with **C/U button** = **Altitude.**
3. Press **C/U button** on **Lower Reference for FT** = Input **4,000 ft.**
4. Press **C/U button** on **Lower Result for NUM** = Input **10.5.**
5. Input **Upper Reference** = **8,000 ft.**
6. Input **Upper Result** = **9.0.**
7. Input **Target Value Needed** = **6,000 ft.**

**RESULT**
The EF1 calculates Interpolated Result = **9.75** (GPH).

## SCENARIO: WIND INTERPOLATION

### STEPS

1. Select TYPE **with C/U button = Altitude.**
2. Press **C/U button on Lower Reference for FT =** Input **4,000 ft.**
3. Press **C/U button on Lower Result for WND =** Input **330°@10.**
4. Input **Upper Reference = 8,000 ft.**
5. Input **Upper Result = 300°@25.**
6. Input **Target Value Needed = 6,000 ft.**

**RESULT**

**The EF1 calculates the Interpolated wind Result of: 315° @18 knots.**

## WHY THIS TOOL IS USEFUL

The Interpolation tool helps pilots:

- ✓ Estimate performance between charted values
- ✓ Improve accuracy when planning fuel and performance
- ✓ Reduce guesswork when working with POH tables
- ✓ Interpolate winds aloft between altitude layers

# STANDARD ATMOSPHERE

The **Standard Atmosphere** tool displays the **standard atmospheric conditions** associated with a given altitude. This allows pilots to compare real-world conditions to standard values commonly used in performance planning and aviation calculations.

This tool is based on internationally accepted standard atmosphere assumptions and is valid across the normal operating altitudes encountered in general aviation.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Standard Atmosphere menu, the following fields are displayed:

| | |
|---|---|
| **Altitude** | The altitude for which standard conditions are being evaluated. |
| **Barometer** | The standard atmospheric pressure at the selected altitude. |
| **Outside Air Temperature (OAT)** | The standard temperature at the selected altitude. |

**The Outside Air Temperature** field is **automatically calculated** and cannot be manually edited.

## HOW THE STANDARD ATMOSPHERE TOOL IS USED

1. Select **Trip** → **Standard Atmosphere.**
2. Enter the desired **Altitude,** then press **Select.**
3. The EF1 will automatically calculate and display the corresponding **standard pressure** and **standard outside air temperature** for that altitude.

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: STANDARD ATMOSPHERE AT A PLANNING ALTITUDE

You are reviewing aircraft performance data and want to understand the **standard atmospheric conditions** at a cruise altitude of **9,000 ft.**

### STEPS

1. Open **Trip** → **Standard Atmosphere.**
2. Enter **Altitude = 9,000 ft,** press **Select.**

**RESULT**

The EF1 displays the **standard barometric pressure (21.39 inHg)** and **standard outside air temperature (27°F)** associated with 9,000 ft.

## WHY THIS TOOL IS USEFUL

The Standard Atmosphere tool helps pilots:

- ✓ Understand baseline atmospheric assumptions used in charts and calculations
- ✓ Compare actual conditions to standard conditions
- ✓ Support performance planning and altitude-based evaluations
- ✓ Cross-check pressure and temperature references used elsewhere in the Trip menu

# RECIPROCAL

The **Reciprocal** tool is used to determine the opposite (reciprocal) direction of a given course. This is commonly used when working with radials, courses, bearings, or headings where the direction **to** a point is the opposite of the direction **from** that same point.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Reciprocal menu, the following fields are displayed:

| | |
|---|---|
| **From** | The original course or direction referenced from a point. |
| **To** | The reciprocal course or direction toward that same point. |

These two values are linked so that entering either one will automatically calculate the other.

## HOW THE RECIPROCAL TOOL IS USED

1. Select **Trip → Reciprocal.**
2. Enter the **From** value using the number keys, then press **Select.**
3. The EF1 will automatically calculate and display the **To** value.

You may also enter a value in the **To** field to calculate the corresponding From value.

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: RADIAL AND COURSE RELATIONSHIP

You are navigating using a ground-based reference and are positioned on a **150°** radial from a station. You want to determine the course **toward** that station.

### STEPS

1. Open **Trip** → **Reciprocal.**
2. Enter **From = 150°,** press **Select.**

**RESULT**
The EF1 displays the reciprocal **To** course of **330°.**

## WHY THIS TOOL IS USEFUL

The Reciprocal tool helps pilots:

- ✓ Quickly determine opposite courses or headings
- ✓ Work with radials, bearings, and navigation references
- ✓ Reduce mental math when reversing directions
- ✓ Improve accuracy when planning or interpreting navigation data

# HOLDING PATTERN

The **Holding Pattern** tool is used to determine the proper **holding pattern entry, inbound course,** and **turn orientation** based on the aircraft's current heading and the assigned holding course.

This tool is designed to match standard FAA holding entry guidance and reduce ambiguity when entering a hold.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Holding Pattern menu, the following fields are displayed:

| | |
|---|---|
| **Turn Direction** | Selects whether the holding pattern uses Right or Left turns. |
| **Heading** | The aircraft's current heading at the time the hold is entered. |
| **Hold** | The assigned holding course or radial. |
| **Pattern Entry** | The recommended holding entry procedure. |
| **Inbound** | The calculated inbound course for the holding pattern. |

These values are displayed together so you can clearly see how your current heading relates to the assigned hold.

## HOW THE HOLDING PATTERN TOOL IS USED

1. Select **Trip → Holding Pattern.**
2. Set the **Turn Direction** to **Right** or **Left,** then press **Select.**
3. Enter the aircraft's current **Heading,** then press **Select.**
4. Enter the assigned **Hold** course or radial, then press **Select.**
5. The EF1 will calculate and display:
   - The recommended **Pattern Entry**
   - The corresponding **Inbound** course

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## UNDERSTANDING HOLDING PATTERN ENTRIES

The EF1 evaluates your aircraft's heading relative to the inbound course and turn direction to determine the appropriate entry.

Possible pattern entries include:

- **Direct**
- **Parallel**
- **Teardrop**

The displayed **Pattern Entry** reflects the standard entry method recommended for the given geometry.

### SCENARIO: HOLDING PATTERN ENTRY

You are flying on a heading of **155°** and are instructed to hold on the **270°** course using **standard right turns.** You want to determine the proper entry and inbound course.

#### STEPS

1. Open **Trip → Holding Pattern.**
2. Set **Turn Direction = Right,** press **Select.**
3. Enter **Heading = 155°,** press **Select.**
4. Enter **Hold = 270°,** press **Select.**

**RESULT**

The EF1 displays:

- The recommended **holding pattern entry (Direct)**
- The calculated **inbound course (090°)** for the hold

This allows you to quickly visualize how to enter and fly the holding pattern correctly.

## WHY THIS TOOL IS USEFUL

The Holding Pattern tool helps pilots:

- ✓ Quickly determine the correct holding entry
- ✓ Reduce mental workload during high-task phases of flight
- ✓ Improve consistency with FAA-recommended holding procedures
- ✓ Build confidence when entering and flying holding patterns

# WEIGHT AND BALANCE

The **Weight and Balance** section of the EF1 Flight Computer is designed to help pilots evaluate aircraft loading, balance, and center-of-gravity considerations in a clear, structured way.

Rather than requiring manual moment calculations or handwritten tables, the EF1 organizes weight-and-balance data into logical steps that mirror how pilots think about aircraft loading. This allows you to quickly verify whether an aircraft is within allowable limits and understand how changes in loading affect balance.

The Weight and Balance tools are intended for **planning and educational use** and are based on values entered by the user. Pilots are responsible for ensuring that all inputs match the specific aircraft's approved weight-and-balance data.

## ACCESSING WEIGHT AND BALANCE

From the main menu, select **Weight and Balance** to enter the Weight and Balance section.

Within this section, the following tools are available:

- Aircraft Configuration
- Weight and Balance
- Weight Shift
- Percent of MAC

Each tool focuses on a different aspect of aircraft loading and balance and is described in the sections that follow.

## WEIGHT AND BALANCE OVERVIEW

The EF1 Weight and Balance tools allow you to:

- Define the aircraft configuration being used
- Enter weights and arms for individual items
- Evaluate total weight and balance
- Analyze how moving weight affects center of gravity
- Express center of gravity as a percent of mean aerodynamic chord (MAC), when applicable

The EF1 does not assume standard weights or aircraft-specific values. All weights, arms, and reference data must be entered by the user based on the aircraft's approved documentation.

This approach ensures flexibility across different aircraft while maintaining a consistent and easy-to-follow workflow.

# AIRCRAFT CONFIGURATION

The **Aircraft Configuration** tool is used to define the baseline configuration and reference data for a specific aircraft. This configuration serves as the foundation for all **Weight and Balance** calculations performed within the EF1.

Aircraft Configuration allows you to enter aircraft-specific constants such as empty aircraft data, fuel reference arms, and seating or cargo arm locations. Once configured, this data can be enabled or disabled as needed for planning.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Aircraft Configuration menu, the following sections are displayed from top to bottom.

### Instrument Calibration

### Temperature Correction (Recovery Factor)

The Instrument Calibration factor represents the temperature recovery characteristics of the aircraft's temperature probe. It is used when converting between **Total Air Temperature (TAT) and Outside Air Temperature (OAT).**

This value is aircraft-dependent and may vary based on probe design and airspeed effects. The default value is **1.0.** If aircraft-specific calibration data is available, this value may be adjusted accordingly.

### Configuration In Use

- **Configuration In Use** may be set to **On** or **Off.**
- When set to **On,** the aircraft configuration data entered on this screen is applied to Weight and Balance calculations.
- When set to **Off,** the configuration is stored but not applied.

This allows aircraft data to be retained without affecting calculations unless intentionally enabled.

> Aircraft Configuration values stay stored when the EF1 is turned off with the Power button. Removing the batteries clears them.

### Empty Aircraft

This section defines the baseline empty aircraft values.

| | |
|---|---|
| **Reduction Factor** | A scaling value used for moment. (RF 100 means each moment is divided by 100.) |
| **Weight** | The aircraft's empty weight. |
| **Arm** | The arm associated with the empty aircraft. |
| **Moment** | The calculated moment based on the entered values. |

All values should be entered directly from the aircraft's approved weight-and-balance documentation.

### Fuel

This section defines the reference arm and fuel characteristics for usable fuel.

- **Type:** Select the applicable fuel type by pressing **Select:**
  - **AvGas:** 6.0 lbs/gal
  - **Jet Fuel:** 6.84 lbs/gal
  - **Oil:** 7.50 lbs/gal
- **Arm:** Enter the fuel arm used for weight-and-balance calculations.

Fuel weight is calculated later during Weight and Balance entry based on quantity and selected fuel type.

### Fuel Auxiliary

This section defines the reference arm for auxiliary or optional fuel tanks.

- **Type:** Select the applicable auxiliary fuel type.
- **Arm:** Enter the auxiliary fuel arm.

If the aircraft does not use auxiliary fuel, this section may be left unused.

### Pilots, Passengers, and Cargo Arms

This section defines arm locations for occupants and cargo.

Available entries include:

- **Pilot/s / Row 1**
- **Passenger/s / Row 2**
- **Passenger/s / Row 3**
- **Cargo 4**
- **Cargo 5**
- **Custom 6**
- **Custom 7**
- **Custom 8**

Each entry allows an arm location to be defined and later referenced when entering weights in the Weight and Balance tool. Custom entries may be used for aircraft-specific seating positions, baggage compartments, or other loading stations not listed above.

**Please Note: The menu display is not defined by its title, each row is just a station you can use. If not in use, just mark as a zero.**

## WHY AIRCRAFT CONFIGURATION IS IMPORTANT

The Aircraft Configuration tool helps pilots:

- ✓ Establish accurate, aircraft-specific reference data
- ✓ Reduce repetitive data entry during planning
- ✓ Maintain consistency across Weight and Balance calculations
- ✓ Quickly enable or disable a defined aircraft profile

Once Aircraft Configuration is complete and enabled, you can proceed to the Weight and Balance tool to enter actual loading values.

# WEIGHT & BALANCE

The **Weight and Balance** function operates in **two different modes** depending on whether an **Aircraft Configuration profile** is enabled.

- When **Aircraft Configuration is ON,** the EF1 presents a structured, aircraft-specific loading view.
- When **Aircraft Configuration is OFF,** the EF1 provides a flexible, station-based layout that allows manual creation and removal of loading stations.

This design allows the EF1 to support both **configured aircraft profiles and custom or instructional scenarios.**

## WEIGHT AND BALANCE WITH CONFIGURATION ON

When **Configuration In Use** is set to **On,** the Weight and Balance screen is organized using the aircraft stations defined in **Aircraft Configuration.** In this mode, arms and reference data are applied automatically.

You will just need to enter in the fuel/oil volume and the pilot/s, passenger/s, and cargo weights.

### WHAT YOU WILL SEE ON THE SCREEN (AIRCRAFT CONFIGURATION ON)

- **Fuel**
- **Fuel / Oil Extra**
- Allows entry of fuel/oil quantity and selection of unit of measure
- Fuel weight is calculated automatically based on the selected fuel type

**Pilots, Passengers, and Cargo Weights**

The following stations are displayed for weight entry:

- **Pilot/s Row 1**
- **Passenger/s Row 2**
- **Passenger/s Row 3**
- **Cargo 4**
- **Cargo 5**
- **Custom 6**
- **Custom 7**
- **Custom 8**

Each station uses the arm defined in Aircraft Configuration. You only need to enter the **weight.**

### Totals

The Totals section displays the combined results of all entered stations:

- **Reduction Factor**
- **Total Weight**
- **Center of Gravity**
- **Total Moment**

Totals update automatically as weights are entered or adjusted.

## HOW THIS MODE IS USED

1. **Ensure Configuration In Use** is set to **On.**
2. Open **Weight and Balance.**
3. Enter **volume** for fuel/oil, and **weights** for occupants and cargo.
4. Select the desired **unit of measure where applicable.**
5. Review totals and center of gravity.

This mode is ideal for routine planning using a known aircraft configuration.

## EXAMPLE: WEIGHT AND BALANCE USING AIRCRAFT CONFIGURATION ON

This example demonstrates how to fully configure an aircraft profile, enable it, and then perform a complete weight and balance calculation using the EF1 Flight Computer.

### STEP 1 ENTER AIRCRAFT CONFIGURATION

From the main menu:

1. Select **Weight and Balance**
2. Select **Aircraft Configuration**

### STEP 2 ENABLE CONFIGURATION

- **Configuration In Use: ON**
- Press **Select** to confirm.

This ensures the configuration data will be applied during weight and balance calculations.

### STEP 3 INSTRUMENT CALIBRATION

- **Instrument Calibration (Recovery Factor): 1.0**

This is the default value and is appropriate for most aircraft unless otherwise specified in approved documentation.

## STEP 4 EMPTY AIRCRAFT DATA

Enter the following example values:

- **Reduction Factor: 1**
- **Weight: 1,650 lb**
- **Arm: 39.5 in**

After entering the arm, the EF1 will calculate:

- **Moment: 65,175 lb-in** (1,650 × 39.5)

Press **Select** after each entry. Green borders confirm acceptance.

## STEP 5 FUEL CONFIGURATION

Under Fuel:

- **Type: AvGas (6.0 lbs/gal, volume is entered later)**
- **Arm: 48.0 in**

Press **Select** to confirm.

## STEP 6 FUEL AUXILIARY CONFIGURATION

Under **Fuel Aux:**

- **Arm: 60.0 in**

(If the aircraft does not have auxiliary fuel, this may still be entered as a reference or left unused.)

## STEP 7 PILOT, PASSENGER, AND CARGO ARMS

Enter the following arm values. If a station is not applicable, enter **0.00 inches.**

- **Pilot/s Row 1: 37.0 in**
- **Passenger/s Row 2: 73.0 in**
- **Passenger/s Row 3: 0.00 in**
- **Cargo 4: 95.0 in**
- **Cargo 5: 0.00 in**
- **Custom 6: 0.00 in**
- **Custom 7: 0.00 in**
- **Custom 8: 0.00 in**

Press **Select** after each entry.

## STEP 8 EXIT AIRCRAFT CONFIGURATION

Press **Prev** to return to the **Weight and Balance** menu.

The aircraft configuration is now complete and active.

## STEP 9 ENTER WEIGHT AND BALANCE

From the Weight and Balance menu, select Weight and Balance. Because the configuration is ON, predefined stations will appear.

## STEP 10 ENTER FUEL QUANTITY

- **Fuel: 50 gallons**

The EF1 converts this to weight automatically:

- 50 gal × 6.0 lbs/gal = **300 lb**

Leave Fuel/Oil Extra at 0 and Press **Select.**

## STEP 11 ENTER OCCUPANT WEIGHTS

- **Pilot / Row 1: 330 lb** (Two pilots combined)
- **Passenger / Row 2: 165 lb**
- **Passenger / Row 3: 0.00 lb** (Not used)

Press **Select** after each entry.

## STEP 12 ENTER CARGO WEIGHTS

- **Cargo 4: 50 lb (Baggage door)**
- **Cargo 5: 0.00 lb**
- **Custom 6: 0.00 lb**
- **Custom 7: 0.00 lb**
- **Custom 8: 0.00 lb**

Press **Select** after each entry.

## STEP 13 REVIEW TOTALS

Scroll to the **Totals** section.

The EF1 will display:

| | |
|---|---|
| Reduction Factor: 1 | Total Weight: 2,495 lb |
| Center of Gravity: 43.52 in | Total Moment: 108,580 lb-in |

(Calculated automatically from all entered values)

**Interpretation**

- Verify **total weight** is within aircraft limits
- Verify **center of gravity** falls within the approved CG envelope
- If required, proceed to **Percent of MAC** for further evaluation

# WEIGHT AND BALANCE WITH AIRCRAFT CONFIGURATION OFF

When **Configuration In Use** is set to **Off,** the EF1 switches to a **manual station-based layout.** This mode allows full flexibility in defining stations without relying on stored aircraft configuration data.

## WHAT YOU WILL SEE ON THE SCREEN

**Reduction Factor**

**Station 1 ADD**

**TOTALS**

- **Weight**
- **Moment**
- **CG**

**Add Station**

- Adds a new station to the list
- Each added station can also be removed

This allows you to build a custom weight-and-balance scenario from scratch.

**Totals**

Displays combined weight, moment, and center of gravity for all defined stations.

Totals update automatically as stations are added, removed, or edited.

## HOW THIS MODE IS USED

1. Set **Configuration In Use** to **Off.**
2. Open **Weight and Balance.**
3. Enter values for **Station 1.**
4. Use **Add Station** to create additional stations as needed.
5. Enter **Weight** and **Arm** for each station.
6. Review totals and center of gravity.

This mode is useful for:

- Instructional scenarios
- Generic aircraft examples
- Custom loading exercises
- Situations where no predefined configuration is available

## EXAMPLE SCENARIO: WEIGHT AND BALANCE WITH AIRCRAFT CONFIGURATION OFF

This example demonstrates how to perform a complete weight and balance calculation without using Aircraft Configuration. All weights, arms, and moments are entered manually by station.

This method is useful when:

- Flying multiple aircraft
- Using a rental with no saved profile
- Performing one-off calculations
- Verifying calculations independently

### STEP 1 OPEN WEIGHT AND BALANCE (CONFIGURATION OFF)

From the main menu:

1. Select Weight and Balance
2. Ensure Aircraft Configuration is OFF
3. Select Weight and Balance

The screen will initially display Station 1.

### STEP 2 SET REDUCTION FACTOR

At the top of the screen:

- **Reduction Factor: 1**

Press **Select** to confirm.

### STEP 3 ENTER STATION 1, EMPTY AIRCRAFT

**Station 1**

- **Weight: 1,650 lb**
- **Arm: 39.5 in**

The EF1 automatically calculates:

- **Moment: 65,175 lb-in**

Press **Select** after each entry. Green borders confirm accepted values.

### STEP 4 ADD STATION 2, FUEL

Select **Add Station.**

**Station 2**

- **Weight: 300 lb** (50 gallons × 6.0 lb/gal AvGas)
- **Arm: 48.0 in**

Calculated:

- **Moment: 14,400 lb-in**

Press **Select** to confirm.

### STEP 5 ADD STATION 3, PILOTS (ROW 1)

Select **Add Station.**

**Station 3**

- **Weight: 330 lb** (Two pilots combined)
- **Arm: 37.0 in**

Calculated:

- **Moment: 12,210 lb-in**

Press **Select.**

### STEP 6 ADD STATION 4, PASSENGER (ROW 2)

Select **Add Station.**

**Station 4**

- **Weight: 165 lb**
- **Arm: 73.0 in**

Calculated:

- **Moment: 12,045 lb-in**

Press **Select.**

### STEP 7 ADD STATION 5, CARGO

Select **Add Station.**

**Station 5**

- **Weight: 50 lb**
- **Arm: 95.0 in**

Calculated:

- **Moment: 4,750 lb-in**

Press **Select.**

### STEP 8 REMOVE UNUSED STATIONS (IF ADDED)

If any additional stations were added accidentally:

- Highlight the station
- Select **Remove Station**

Only stations with entered data should remain.

### STEP 9 REVIEW TOTALS

Scroll to the **Totals** section.

The EF1 will display:

| | |
|---|---|
| Reduction Factor: **1** | Total Weight: **2,495 lb** |
| Total Moment: **108,580 lb-in** | Center of Gravity: **43.52 in** |

(All values calculated automatically.)

**Interpretation**

- Verify **total weight** is within aircraft limits
- Verify **center of gravity** falls within the approved CG envelope
- If required, continue to **Percent of MAC** for further analysis

## KEY DIFFERENCES FROM CONFIGURATION ON

With **Aircraft Configuration OFF:**

- Arms must be entered **manually for each station**
- Stations can be **added or removed dynamically**
- No predefined structure is assumed
- Ideal for ad-hoc or instructional calculations

## WHY TWO MODES EXIST

Providing both configuration-based and manual station modes allows the EF1 to:

- ✓ Support aircraft-specific planning and generic instruction
- ✓ Reduce setup time for frequently flown aircraft
- ✓ Maintain flexibility without forcing predefined profiles
- ✓ Adapt to training, testing, and real-world use cases

# WEIGHT SHIFT

The **Weight Shift** tool is used to evaluate how moving weight within the aircraft affects the **center of gravity (CG).** This tool is useful when redistributing existing weight, such as passengers, baggage, or cargo, rather than adding or removing weight from the aircraft.

Weight Shift allows you to determine:

- How much the **center of gravity changes** when a known weight is moved, or
- How much **weight must be moved** to achieve a desired change in center of gravity

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Weight Shift menu, the following fields are displayed:

| | |
|---|---|
| **Item Weight** | The weight being moved within the aircraft. |
| **Total Weight** | The total weight of the aircraft. |
| **Delta Center of Gravity** | The resulting change in center of gravity. |
| **Delta Arm** | The distance the weight is moved forward or aft. |

These values are displayed together so you can clearly see the relationship between weight movement and CG change.

## HOW THE WEIGHT SHIFT TOOL IS USED

You may enter any **three** of the four values. Once sufficient information is provided, the EF1 will automatically calculate the remaining value.

In general:

- **Item Weight + Total Weight + Delta Arm** → calculates **Delta CG**
- **Total Weight + Delta CG + Delta Arm** → calculates **Item Weight**
- **Item Weight + Total Weight + Delta CG** → calculates **Delta Arm**

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: FIND THE AMOUNT OF WEIGHT (ITEM WT) THAT MUST BE MOVED TO SHIFT THE AIRCRAFT'S CENTER OF GRAVITY TO A DESIRED POSITION

Given:

- **Total aircraft weight: 2,900 lb**
- **Change in center of gravity: 0.75 in**
- **Distance the weight is moved: 100 in**

### STEPS

1. From the **Weight and Balance** menu, select **Weight Shift.**
2. At **Total Weight,** enter **2,900 lb,** then press **Select.**
3. At **Delta Center of Gravity,** enter **0.75 in,** then press **Select.**
4. At **Delta Arm,** enter **100 in,** then press **Select.**

As each value is entered, the field border will highlight **green,** confirming the input.

**RESULT**
The EF1 calculates and displays **Item Weight: 21.75 lb.**

This indicates that approximately 22 pounds must be moved 100 inches to shift the center of gravity by 0.75 inches.

## WHY THIS TOOL IS USEFUL

The Weight Shift tool helps pilots:

- ✓ Evaluate CG changes without adding or removing weight
- ✓ Determine whether redistributing load is sufficient
- ✓ Understand the relationship between weight, distance, and CG movement
- ✓ Make informed loading decisions before flight

# PERCENT OF MAC

The **Percent of MAC (%MAC)** tool is used to express the aircraft's **center of gravity (CG)** as a percentage of the **Mean Aerodynamic Chord (MAC).** This format is commonly used for aircraft that define CG limits in terms of %MAC rather than inches or centimeters.

This tool converts linear CG values into a percentage-based reference that can be directly compared to aircraft documentation.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Percent of MAC menu, the following fields are displayed:

| | |
|---|---|
| **MAC** | The length of the Mean Aerodynamic Chord. |
| **Center of Gravity** | The aircraft's current CG location. |
| **LMAC** | The location of the Leading Edge of the Mean Aerodynamic Chord. |
| **%MAC** | The calculated center of gravity expressed as a percentage of MAC. |

These values are displayed together so you can clearly see how the CG relates to the aerodynamic reference of the wing.

## HOW THE PERCENT OF MAC TOOL IS USED

1. Select **Weight and Balance → Percent of MAC.**
2. Enter the **MAC** value, then press **Select.**
3. Enter the **Center of Gravity,** then press **Select.**
4. Enter the **LMAC** value, then press **Select.**
5. The EF1 will calculate and display the **%MAC** value.

> **TIP** When a value is accepted, the field border will highlight **green,** confirming the entry.

## SCENARIO: CALCULATING PERCENT OF MAC

You are flying an aircraft that specifies its center-of-gravity limits in **percent of Mean Aerodynamic Chord (%MAC).** After completing your weight and balance calculation, you have determined the aircraft's center of gravity and now want to express it as a percentage of MAC to verify it is within limits.

From the aircraft's approved documentation, you have the following information:

- **Mean Aerodynamic Chord (MAC): 900.0 in to 1,090.0 in**
- **Leading Edge of MAC (LMAC): 900.0 in**
- **Calculated Center of Gravity: 975.0 in**

### STEPS

1. Open **Weight and Balance → Percent of MAC.**
2. At **MAC,** enter **1090-900** select = **190.0 in.**
3. Enter **Center of Gravity = 975 in,** then press **Select.**
4. Enter **LMAC = 900 in,** then press **Select.**

**RESULT**
The EF1 calculates **%MAC = 39.5%.**

This means the aircraft's center of gravity is located **39.5% aft of the leading edge of the mean aerodynamic chord.**

## HOW TO USE THIS RESULT

You can now compare the calculated %MAC to the aircraft's published CG limits.

For example:

- If the allowable CG range is **25% to 45% MAC,**
- A result of **39.5% MAC** confirms the aircraft is **within limits.**

## WHY THIS MATTERS

Using percent of MAC allows pilots to:

- ✓ Work with aircraft that do not use inches for CG limits
- ✓ Compare CG location directly to aerodynamic limits
- ✓ Avoid manual conversions and math errors
- ✓ Quickly confirm loading safety before flight

Weight and balance calculations provided by the EF1 are intended for planning and educational purposes only. Pilots must verify all loading data against the aircraft's approved weight and balance documentation prior to flight. The EF1 does not replace required aircraft documentation or operational judgment.

# CROSS-COUNTRY PLANNING

The **Cross-Country Planning** menu is used to plan, track, and evaluate a multi-leg flight. It allows you to build a trip using individual **checkpoints,** calculate navigation and fuel data for each leg, and automatically combine those values into **trip totals.**

This tool is designed to support both **preflight planning** and **in-flight tracking,** while keeping all calculations transparent and easy to follow.

The EF1 allows up to **ten (10) checkpoints** per trip.

## CROSS-COUNTRY MENU OVERVIEW

When you enter the Cross-Country Planning menu, you will see:

- **Startup Fuel**
- **Trip Totals**
- **Checkpoint 1** (Add)
- Once a checkpoint is added:
  - **Edit Checkpoint**
  - **Remove Checkpoint**
  - **Add Next Checkpoint**

You can return to the main Cross-Country screen at any time to manage checkpoints or review trip totals.

## CHECKPOINTS

Each checkpoint represents one **leg of flight.** You enter planning data for the leg, and the EF1 calculates navigation, time, and fuel values automatically.

### Checkpoint Input Fields

When you enter a checkpoint, the following **input fields** are displayed:

- **True Course**
- **Distance**
- **Wind Direction**
- **Wind Speed**
- **True Airspeed**
- **Variation**
- **Deviation**
- **Fuel Rate**
- **Departure Time**

These are the values you plan or obtain from charts, forecasts, or aircraft data.

### Calculated Checkpoint Values

Based on the entered inputs, the EF1 automatically calculates and displays:

- **Ground Speed**
- **Compass Heading**
- **Magnetic Heading**
- **True Heading**
- **Wind Correction Angle**
- **Fuel Burn**
- **Estimated Time Enroute**
- **Estimated Time of Arrival**
- **Actual Time Enroute** (optional to fill in)
- **Actual Time of Arrival** (optional to fill in)

Calculated values update automatically as inputs are entered or changed.

## TIME DISPLAY OPTIONS

For all time-based values, you may press the **C/U (Change Unit)** button to cycle between:

- **UTC**
- **Local Time**
- **Destination Time**

This applies to:

- **Departure Time**
- **Estimated Time of Arrival**
- **Actual Time of Arrival**

Changing the time does **not** affect calculations: it changes time only.

### Actual Time Entries (Optional)

- **Actual Time Enroute** and **Actual Time of Arrival** are optional.
- These fields allow you to compare **planned vs. actual** performance.
- If entered, actual times are included in Trip Totals.
- If left blank, Trip Totals will use estimated values only.

## ADDING ADDITIONAL CHECKPOINTS

After completing a checkpoint:

1. Return to the main Cross-Country screen.
2. Select **Add Checkpoint** to create the next leg.
3. Each new checkpoint automatically:
   - **Uses the previous checkpoint's ETA** as its starting reference
   - Rolls timing forward leg-by-leg

This continues until all checkpoints are entered (up to ten).

## TRIP TOTALS

The Trip Totals screen combines data from all entered checkpoints into a single summary view.

### Trip Totals Fields

The Trip Totals screen displays:

| | |
|---|---|
| **Total Distance** | Sum of distances from all checkpoints |
| **Estimated Time Enroute** | Combined estimated enroute time for all legs |
| **Estimated Time of Arrival** | Final planned arrival time for the entire trip (Use C/U to switch between UTC, Local, and Destination time) |
| **Actual Time Enroute** | Sum of all entered actual enroute times |
| **Actual Time of Arrival** | Final arrival time based on actual times entered |
| **Estimated Fuel** | Total estimated fuel burn from all checkpoints |
| **Estimated Fuel Remaining** | Startup Fuel minus the fuel burn from each checkpoint |

Estimated times and fuel values are projections only and may differ from actual results due to weather, aircraft performance, routing, and operational factors.

## FUEL PLANNING NOTE

**Estimated Fuel Remaining** is provided for **planning reference only.**

Actual fuel usage may vary due to:

- Aircraft performance differences
- Power settings
- Winds and weather
- Altitude changes
- Pilot technique

Pilots should always verify fuel requirements using approved aircraft data and conservative planning practices.

## WHY CROSS-COUNTRY PLANNING IS USEFUL

The Cross-Country Planning tool helps pilots:

- ✓ Plan multi-leg flights efficiently
- ✓ Reduce repetitive calculations
- ✓ Track planned vs. actual performance
- ✓ Manage fuel usage across legs
- ✓ Visualize how changes affect the entire trip

It is especially useful for:

- › Student pilot cross-country planning
- › Long VFR trips
- › Flight instruction and debriefing
- › Time and fuel management practice

# TIMER

The **Timer** tool provides a simple stopwatch-style timer that can be used for time tracking during flight planning, training, or in-flight reference.

The Timer is intentionally minimal and easy to operate so it can be started, stopped, or reset quickly without navigating through multiple screens.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Timer menu, the following options are displayed:

- **Start / Stop**
- **Restart**
- **Reset**

The current elapsed time is shown prominently on the screen.

## HOW TO USE THE TIMER

**Start / Stop**

- Press Select on Start / Stop to begin the timer.
- Press Select again to pause or stop the timer.
- The timer will retain the elapsed time while stopped until restarted or reset.

**Restart**

- Press Restart to start the timer again from zero immediately.
- This is useful when timing consecutive legs or repeated events.

**Reset**

- Press Reset to clear the timer back to 00:00.
- Reset does not automatically start the timer.

**Countdown Clock**

- Enter the countdown time, then select Start to begin.

## TYPICAL USES

The Timer can be used for:

- Timing flight legs or checkpoints
- Holding practice
- Fuel checks

- Training exercises
- General time tracking during flight planning or instruction

## IMPORTANT NOTES

- The Timer and clock keep working when the EF1 is powered off or times out.
- Removing the batteries will reset the timer.
- The Timer operates independently from Trip and Cross-Country Planning calculations.

# CALCULATOR

The **Calculator** provides a standard arithmetic calculator for quick, general-purpose calculations. It is designed to mirror a familiar handheld calculator layout while remaining simple and fast to use.

## WHAT YOU WILL SEE ON THE SCREEN

When you enter the Calculator, the screen displays:

- A **numeric entry field**
- The **current calculation** or **result**

Arithmetic operations are performed using the calculator buttons located below the screen.

## AVAILABLE CALCULATOR FUNCTIONS

The Calculator supports the following basic arithmetic functions using the physical buttons:

- **Addition (+)**
- **Subtraction (–)**
- **Multiplication (×)**
- **Division (÷)**
- **Square Root (√)**
- **Time Function by pressing C/U Button**

## HOW TO USE THE CALCULATOR

1. Enter numbers using the **number keys.**
2. Press the desired operation button **(+, –, ×, ÷).**
3. Enter the next number, if required.
4. Press the **equal** sign to display the result.

For square root calculations:

- Enter the number first, then press the Square root button to compute the square root.

## TYPICAL USES

The Calculator can be used for:

- Quick arithmetic checks
- Fuel, time, or distance math
- Cross-checking manual calculations
- Training and instructional use

# TROUBLESHOOTING, SUPPORT, AND WARRANTY

This section provides basic troubleshooting steps, customer support information, and warranty details for the EF1 Flight Computer.

## TROUBLESHOOTING

If the EF1 does not power on or appears unresponsive, try the following steps:

1. Remove the batteries from the device.
2. Leave the batteries removed for at **least 20 seconds.**
3. Reinsert the batteries, ensuring correct orientation.
4. Press the **Power** button to turn the device on.

This process performs a full power reset and resolves most startup-related issues.

## ADDITIONAL SUPPORT

If the EF1 still does not power on after performing a battery reset, or if you experience any other issues, questions, or concerns, please contact our support team directly.

| | |
|---|---|
| Email Support: | support@entireflight.com |

For quicker customer service, please include:

- A brief description of the issue
- Your device serial number (if available)
- Proof of purchase or registration information

## PRODUCT REGISTRATION

We recommend registering your EF1 Flight Computer after purchase. Registration isn't required for your warranty.

| | |
|---|---|
| Device Registration: | www.entireflight.com/pages/ef1 |

Registration helps us provide faster support.

## LIMITED WARRANTY

EntireFlight warrants the EF1 Flight Computer to the original purchaser against defects in materials and workmanship for a period of seven (7) years from the date of purchase.

This warranty does not cover batteries, normal wear, misuse, unauthorized modifications, or damage resulting from improper installation or operation.

At EntireFlight's discretion, defective units will be repaired or replaced with a new or refurbished unit of equal functionality. Replacement units assume the remaining warranty period of the original device.

EntireFlight shall not be liable for loss of use, incidental, or consequential damages arising from the use of this product. Customers may be responsible for shipping costs associated with warranty service.

## FINAL NOTE

The EF1 Flight Computer is designed to support pilots with reliable calculations and intuitive workflows. Always verify calculations against approved aircraft documentation, performance charts, and official flight planning resources.

The EF1 Flight Computer is an instructional and planning aid and is not an installed avionics instrument.

Thank you for choosing **EntireFlight.**

Scan the QR code to register your EF1 Flight Computer and stay up to date for any new Device Updates

# THANK YOU FOR CHOOSING ENTIREFLIGHT

Inspired by pilots and designed for all that love aviation

www.EntireFlight.com
support@entireflight.com