

EnGood Engine Monitor

Specification and Installation Instructions

Rev1.4

September 2026



Models

- Engine Monitor Sensors module **EM-02**
- Engine Monitor Display unit (optional if used with EFIS such as ELM310, ELM1000, ELM800 etc)

Note:

EnGood Engine Monitor is a non-TSO certified flight instrument.

Credits

This document has been written by **Vladimir Miloslavine**, author, designer, and developer of the **ENGGOOD Engine Monitor**. All pictures and other graphical materials are the sole property of the **360 Avionics Company**.

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Revision History

Below is the document's revision history.

Revision #	Revision Date	Comments
Rev 1.0	May 20, 2023	Initial Release of this document
Rev 1.1	June 02, 2023	Additional functionality
Rev 1.2	January 06, 2024	Changes and functionality
Rev 1.3	September 26, 2024	Changes and new functionality
Rev 1.4	September 26, 2026	Added support for Rotax 9xx iS

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1. Introduction

ENGGOOD is an Engine Monitor System designed for fixed-wing experimental airplanes. This compact module offers an additional layer of security for pilots by providing vital engine parameter information in real time.

ENGGOOD is a non-TSO certified flight instrument. The current system consists of the EnGood EM-02 Sensor Processing Unit and, when installed, the EnGood Mini Display Unit. The display unit is optional when engine information is displayed on a compatible 360 Avionics EFIS. The EM-02 acquires engine and aircraft-sensor data and communicates it to the display system.

The engine monitor display unit is available in a form factor that fits standard aviation panel openings of **3 1/8 inches**. This product manual is intended to describe the engine monitor's functionality, installation, and operation.

Please note: In this document, the terms “EnGood,” “engine monitor,” “device,” “unit,” and “instrument” are used interchangeably when referring to the EnGood engine monitor.

2. General Description

The **EnGood Engine Monitor System** consists of two distinct modules: the **EnGood Display Unit** and the **EnGood EM-02 Sensor Processing Unit**. Both units feature their own firmware and operate independently of each other, communicating at high speeds using dedicated protocols.

1. EnGood EM-02 Sensor Processing Unit

- This electronic device comprises a high-speed microcontroller, various components, ports, and an aluminum housing.
- Additionally, the EM-02 Sensor Processing Unit may include various external sensors that can be connected via appropriate ports.

2. EnGood Display Unit

The EnGood Mini Display Unit consists of a graphics processor, high-brightness LCD touchscreen, CAN and serial communication interfaces, and a single dual-concentric rotary control knob with push function.

Normal operation is performed using the touchscreen and the single dual-concentric control knob. The inner and outer knob sections rotate independently, and the knob has one push switch. The OUTER knob normally changes the primary operating page. The INNER knob is used for selections, lists, page-menu navigation and value changes. A SHORT press of the knob opens the context-sensitive Page Menu on normal operating screens and confirms the highlighted Page Menu item. A LONG press opens or closes the Main Menu from normal operating pages. When a Page Menu is already open, a long press closes that Page Menu without executing an item. Detailed behavior for each screen is provided in Section 7.

The EnGood Mini can operate in two modes:

EnGood Mode — the unit operates as a standalone engine monitor and maintains its own engine configuration, limits, warnings and calibration data. Settings are locally editable unless a particular item is intentionally reserved or unavailable for the selected configuration. This is most commonly used mode.

Slave Mode — the unit operates together with a compatible Main EFIS. Engine data continues to be received from the engine-monitoring system, while supported engine configuration, limits and warning settings are synchronized from the Main EFIS. Main-EFIS-owned settings remain visible but read-only on the EnGood Mini. Local sensor-conversion settings that are not synchronized remain available locally. If synchronization is lost, Slave-owned settings remain read-only and the Mini continues to display available engine data using its local fallback warning logic.

If an EFIS is used instead of the EnGood Display Unit, please refer to the EFIS user manual for information related to device operation.

Please note that for correct synchronization between EnGood Mini display and main EFIS both CAN bus and network connections are required.

3. Technical Specifications

Description	EnGood EM-02 and Display Unit
Input voltage	+10 to +28 Volts
Power consumption	2.0W
Current	1.1A at 12V
Unit size	87mm x 87mm x 85mm (with control knob)
Weight	150 g
Operation humidity	25% to 90%
GPU processor	ARM Multicore
Sensors processor	ARM
System startup time	26 sec
Display	3.5" ultra-bright 640x480px Touch capable
SD Card slot	Standard MicroSD
Panel opening	3.125" (79mm)
External communication	CAN bus, network and RS232
Manufacturer	360Avionics

4. EnGood EM-02 sensors processing unit

The **EnGood EM-02 Sensor Processing Unit** polls all sensors multiple times per second, analyzes the received data, and feeds the engine parameter information to the Display Unit or an external EFIS.

This unit allows for the connection of various sensors, including **Cylinder Head Temperature (CHT)**, **Exhaust Gas Temperature (EGT)**, pressure sensors, fuel flow sensors, and more.

5. EnGood Display Unit

The **EnGood Display Unit** features a **3.5-inch TFT LCD** with touch and a resolution of **640 x 480 pixels**, providing excellent color transmission and contrast. This display utilizes high-brightness, sunlight-readable technology, making it suitable for applications in direct sunlight.

Built into the front panel of the EnGood Display Unit are **ambient light sensors** that enable an **auto brightness** feature. This feature can be turned on or off in the **Settings menu** under **General Config > Disp Brg** submenu.

When the auto brightness feature is activated, the display's brightness automatically adjusts according to ambient light conditions—becoming brighter in direct sunlight and dimming at night.

⚠ Important: The EnGood Mini display is touch capable. Operate the touchscreen with a clean finger and avoid excessive pressure, sharp objects and abrasive or aggressive cleaning chemicals. Use only cleaning methods suitable for LCD touch displays.

6. Product installation

6.1 Space requirements

All dimensions are given in Millimeters (mm).

EnGood engine monitor consists of two parts:

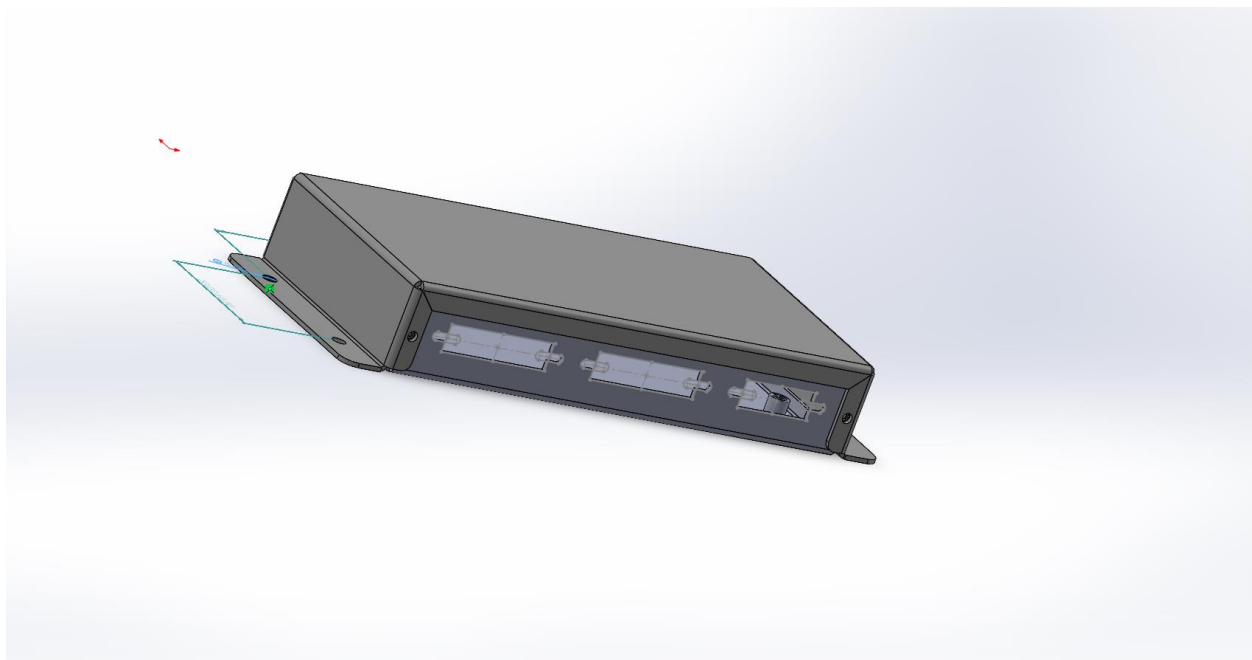
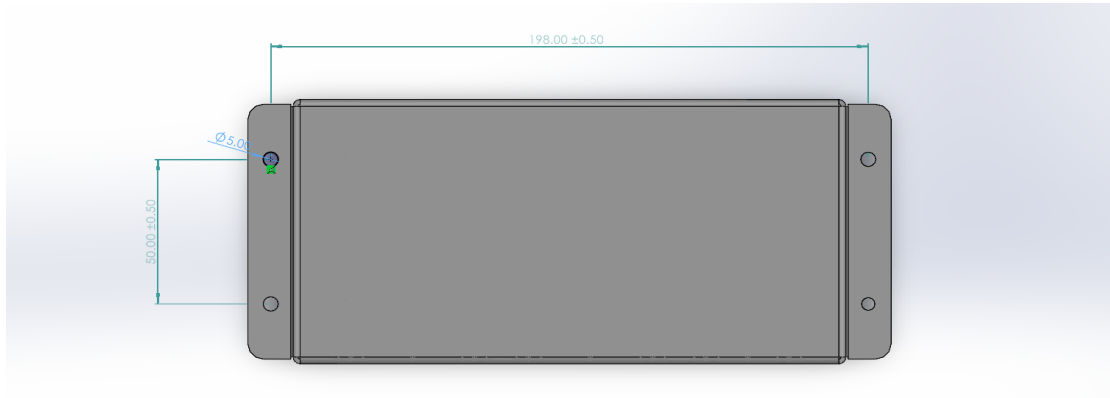
- EnGood EM-02 sensor processing unit
- EnGood display unit (optional)

EnGood EM-02 sensor processing unit

It is recommended that EnGood EM-02 sensor processing unit is installed behind the instrument panel. There are 4 mounting holes. Each hole has a diameter of 5mm.

Horizontally, the distance between the mounting holes is 198mm; vertically, the distance between the vertical mounting holes is 50mm.

⚠ Important: Please allow at least 85mm of clearance between the front panel of EnGood sensor processing unit and other parts for connectors and wires.



Recommended mounting hardware is #6-32 bolts. It is preferable to have a nut plates installed in the panel to simplify installation and removal of the EM-02 module.

EnGood Display Unit:

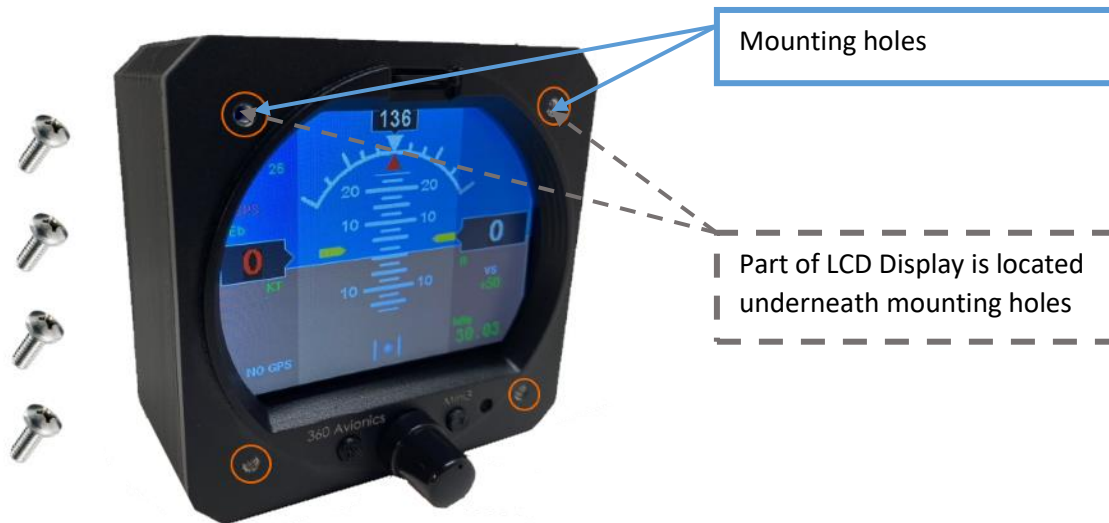
The **EnGood Display** is designed to fit seamlessly into a **3.125-inch opening** in the aircraft instrument panel. The mounting bracket features **four threaded #6-32 holes** for secure attachment. While using **three mounting points** is generally sufficient to firmly hold the instrument in place, it is recommended to utilize **all four** mounting points whenever possible for optimal stability and security.

⚠ Important installation warning: Excessive length of mounting screws may damage the LCD display. Carefully read section below to see what kind of screws are required for installation.



⚠ Important: There is a connector at the back of the EnGood Display Unit. Please allow at least 120mm of clearance between the rear wall of EnGood Display unit and other components for connectors and wires.

⚠ Important installation warning: Excessive length of mounting screws may damage the LCD display or internal board. Carefully read the section below to see what kind of screws are required for installation.



Mounting Screw Length Notice for EnGood Mini display

Due to the design of the EnGood Mini display, special attention must be paid to the length of the #6-32 machine screws used for mounting the instrument.

- For the **EnGood Mini Display**, the screw should not extend more than **5 mm (3/16" to 7/32")** into the EFIS front panel.

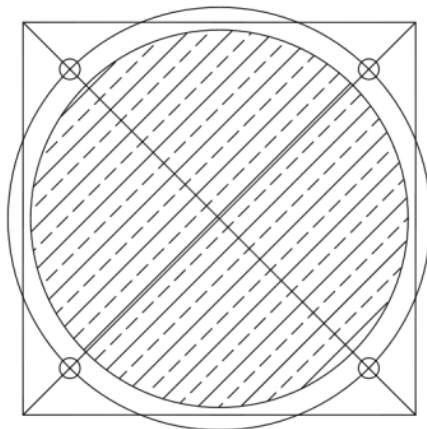
Example:

For a front panel with a thickness of **2 mm**, use:

- A **#6-32 machine screw no longer than 7 mm** for the ELM310

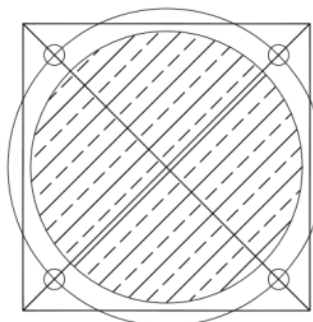
The use of longer machine screws for the mounting holes in EnGood Mini will likely cause the machine screw to reach the surface of the LCD display or internal board, and damage it.

Please note that such damage is not covered by warranty for the product!



3 1/8 (80mm) Instrument Hole

1. Draw a 3.25" X 3.25" Square
2. Scribe 2 diagonal lines corner to corner
3. Using the center of the lines, scribe a 3.5" diameter circle.
4. At the intersection of the diagonals and the 3.5" dia circle drill 4 holes to clear #8 screw (.170" dia.)
5. Using the center of the diagonal lines cut a hole with a hole saw 3.125" dia.



2 1/4 (57mm) Instrument Hole

1. Draw a 2.375" X 2.375" Square
2. Scribe 2 diagonal line corner to corner
3. Using the center of the lines, scribe a 2.625" diameter circle.
4. At the intersection of the diagonals and the 2.625 dia circle drill 4 holes to clear #8 screw (.170" dia.)
5. Using the center of the diagonal lines cut a hole with a hole saw 2.250" dia.

6.2 Pinout connectors Information

EM-01 and EM-02 Engine Sensor Processing Units

Please note that models EM-01 and EM-02 have some pin differences!



Connector J1 (DB25) *Match for both models*

1- CHT1+	11- CHT6+	21- EGT4-
2- CHT1-	12- CHT6-	22- EGT5+
3- CHT2+	13- GND	23- EGT5-
4- CHT2-	14- EGT1+	24- EGT6+
5- CHT3+	15- EGT1-	25- EGT6-
6- CHT3-	16- EGT2+	
7- CHT4+	17- EGT2-	
8- CHT4-	18- EGT3+	
9- CHT5+	19- EGT3-	
10- CHT5-	20- EGT4+	

Connector J2 (DB25) (EM-01)

1- Oil Temp+	11- Current Sens Input	21- Elevator Trim Sens
2- Oil Temp-	12- Flaps Pos Sens Input	22- 5V for Sens
3- Aux Temp+	13- Rudder Trim Sens Input	23- 5V for Sens
4- Aux Temp-	14- Left Door Sens In	24- 5V for Sens
5- RPM Sens Input	15- Fuel Meter Right Sens Input	25- Right Door Sens In
6- Fuel Flow Sens1 Input	16- GND	
7- Fuel Flow Sens2 Input	17- GND	
8- Oil Press Sens Input	18- GND	
9- Fuel Press Sens Input	19- Reserved	
10- MAP Sens Input	20- Fuel Meter Left Sens Input	

Connector J2 (DB25) (EM-02)

1- Oil Temp+	11- Current Sens Input	21- Elevator Trim Sens
2- Oil Temp-	12- Flaps Pos Sens Input	22- 5V for Sens
3- Aux Temp+	13- Rudder Trim Sens Input	23- 5V for Sens
4- Aux Temp-	14- Left Door Sens In	24- 5V for Sens
5- RPM Sens Input	15- Fuel Meter Right Sens Input	25- Right Door Sens In
6- Fuel Flow Sens1 Input	16- Analog Input 15	
7- Fuel Flow Sens2 Input	17- CO Sensor Input	
8- Oil Press Sens Input	18- Battery Voltage Input	
9- Fuel Press Sens Input	19- AUX5 Input	
10- MAP Sens Input	20- Fuel Meter Left Sens Input	

Connector J3 (DB15) (EM-01)

1- Power IN (12V)	11- CAN bus High
2- Reserved	12- Warn Lamp Output1 (Low Oil pressure)
3- Reserved	13- Reserved
4- Reserved	14- Baggage Door Sens In
5- Unused Input	15- Power Ground Input
6- Roll Trim Sens Input	
7- Reserved	
8- GND	
9- Warn Lamp Output2 (Master Warning)	
10- CAN bus Low	

Connector J3 (DB15) (EM-02)

- | | |
|-------------------------|--------------------------|
| 1- Power IN (12V) | 11- CAN bus High |
| 2- Reserved | 12- Warn Lamp Output1 |
| 3- Reserved | 13- Engine CAN High |
| 4- Reserved | 14- Baggage Door Sens In |
| 5- Engine CAN Low | 15- Power Ground Input |
| 6- Roll Trim Sens Input | |
| 7- Reserved | |
| 8- GND | |
| 9- Warn Lamp Output2 | |
| 10- CAN bus Low | |

6.4 Power bus:

EM-01/02 Sensor Processing Unit

Use AWG20 or less gauge of wires to connect power to the sensors unit (pins 1 and 15 of J3 connector). It is required to have 5A circuit breaker on power line for this module. This circuit breaker should be accessible from pilot's seat. Ground wire can be connected to chassis ground or directly to the battery negative terminal.

EnGood Display Unit

26-pin Main connector pinout:

1 – A/C Power +V (positive)	14 – RS-232 Tx2
2 - A/C Power +V (positive)	15 – RS-232 Rx2
3 – CAN bus Low	17,24 – GND (UART)
4 – CAN bus High	25 – A/C Power GND (negative)
7 – RS-232 Tx1	26 – A/C Power GND (negative)
8 – RS-232 Rx1	

Wiring Recommendations

It is recommended to use **22 AWG** wire for all power connections (pins **1, 2, 25, and 26**). For all other connections, **24 AWG** wire is acceptable. Ensure that **milspec wires** are used for all connections to guarantee high quality and robustness. For the **CAN bus** connection between the EnGood EM-01 Sensor Processing Unit and the Display Unit (or EFIS), a **twisted wire pair** must be utilized.

Connector Kit

The kit includes a **female D-SUB 26-pin connector header** with options for either soldering or crimping in pins. A **plastic enclosure** for the connector header is also provided. If soldering wires, ensure that the connections are secure and free from cold solder joints.

Additionally, the EM-02 installation kit includes:

- Two **DB25 connectors** (male/female) with crimping pins
- One **DB15 connector** for soldering or crimping pins

6.3 CAN Bus termination:

The EM-02 Sensor Processing Unit can be installed together with a compatible 360 Avionics EFIS or the EnGood Mini Display Unit and connected to the same avionics CAN line.

Install the required 120 Ohm CAN termination resistor as applicable to the aircraft CAN-bus topology. On the EM-02, CAN Low and CAN High are available at J3 pins 10 and 11 respectively.

6.4 Power bus:

EM-02 Sensor Processing Unit

Use AWG20 or less gauge of wires to connect power to the sensors unit (pins 1 and 15 of J3 connector). It is required to have 5A circuit breaker on power line for this module. This circuit breaker should be accessible from pilot's seat. Ground wire can be connected to chassis ground or directly to the battery negative terminal.

EnGood Display Unit

Use AWG22 or less gauge of wires to connect power to the EM-02 Sensor Processing Unit (pins 1,2 and 25,26 of 26-pin connector). It is required to have 3A circuit breaker on power line for this module. This circuit breaker should be accessible from pilot's seat. Ground wire can be connected to chassis ground or directly to the battery negative terminal.

Power line with circuit breaker is usually connected via Avionics master switch or via Main master switch depending on the airplane configuration.

6.5 Data communication bus:

EM-02 Sensor Processing Unit must be connected to *EnGood Display Unit* (or EFIS) using CAN bus for all data exchange between devices.

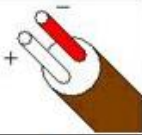
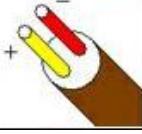
Use only twisted pair of milspec wire AWG22-24 for this connection.

Connect pins as follows:

<i>Signal</i>	<i>EM-02</i>	<i>EnGood Display</i>
CAN Low	10 (J3)	3 (Main conn)
CAN High	11 (J3)	4 (Main conn)

6.6 Sensors

CHT, EGT, Oil Temperature, GearBox, Coolant and under Cowling Sensors:

Type	Material		Color Code	Range (°C)	
Thermocouple Grade	Positive Wire	Negative Wire		Minimum	Maximum
J	Iron	Constantan		0	750
K	Chromel	Alumel		-200	1250

Compatible Sensors

The CHT (Cylinder Head Temperature) and EGT (Exhaust Gas Temperature) sensors compatible with the EM-02 Sensor Processing Unit are K-type thermocouple sensors. J-type thermocouple support may be supplied only when specifically configured for that hardware; confirm the ordered configuration before installation.

By default, the kit includes **ungrounded K-type thermocouple** CHT and EGT sensors. Each sensor features two wires:

- “+” **positive** (yellow wire)
- “-” **negative** (red wire)

Temperature Sensor Connections

- For **Gearbox, Under Cowling, and Coolant Temperatures**, the **K-type thermocouple (ungrounded)** is used.
 - **Under Cowling Sensor:** This sensor cannot be used simultaneously with the gearbox temperature sensor when both functions share the AUX temperature input. Connect the selected thermocouple to the EM-02 AUX temperature input at J2 pins 3 and 4.
 - **Coolant Temperature Sensor:** This sensor should be connected instead of the CHT sensor 5 (Connector J1, pins 9 and 10). Note that this setup makes it impossible to use both the CHT5 and the coolant sensor at the same time.

⚠ Important: Please note that the sensor wires cannot be extended or replaced using any wires made of material other than specified in the table above. If extension of K-type thermocouple wires is required you, must source specific K-type extension wires.

It is recommended to use **crimp-on terminals** for the sensor wires and to join them using **bolts and nuts** with washers. Ensure that such connections are well insulated after the connection is made to prevent any electrical issues.

Important Considerations:

- Pay attention to **heat sources** such as exhaust pipes. Avoid routing sensor wires close to these sources to prevent melting or shorting of the wires.



The supplied **DB25 pin connector** and pins will require the avionics installer to perform appropriate crimping of the wires into the connectors. A description of this procedure is outside the scope of this manual and should be performed based on the installer's experience.

EGT Sensor Installation

1. **Drilling the Hole:**
 - Drill a hole of **5 mm (1/5")** in your exhaust pipe.
 - Position the hole **2" to 4"** from the cylinder exhaust port.
 - Ensure that the hole in each exhaust pipe is drilled at the same distance from the cylinder exhaust port to maintain equal temperature readings across the cylinders.
2. **Installing the Probe:**
 - Install a clamp over the pipe, then insert the probe and tighten the clamp.
 - Adjust the probe's end depth inside the exhaust pipe to be approximately in the middle.
 - Tighten the probe's nut on top.
3. **Final Checks:**
 - Ensure that after installation, the probe will not interfere with your cowling or other components of the engine.



CHT spring loaded sensor for Lycoming engines comes with special fitment adapter. Sensor is installed in the special port available in each cylinder head using the adapter. Sensor can be adjusted using the spring for correct depth.



Depends on engine model various CHT sensors can be used including ring type (under spark plug) sensors.



Pressure Sensors:

Pressure sensors for Oil and Fuel pressure used with the EM-02 Sensor Processing Unit are 5 Volt analog sensors.

Sensors threaded: *1/8"-27 NPT / 1/8" NPT*

Each sensor has three (3) wires:

Red – Positive Power +5V

Black – Negative GND

Green – Signal Output



Pressure sensors connections:

GND (black): connect to a designated EM-02/aircraft sensor ground according to the installation harness. IMPORTANT: J2 pins 16, 17 and 18 are NOT ground pins on EM-02; they are assigned to Analog Input 15, CO Sensor Input and Battery Voltage Input respectively.

Power (red): +5 V sensor power is available at J2 pins 22, 23 and 24 on EM-02.

Signal output of the sensor (green) should be connected to appropriate pin of J2 depending on sensor function:

(J2)

8 – Oil pressure

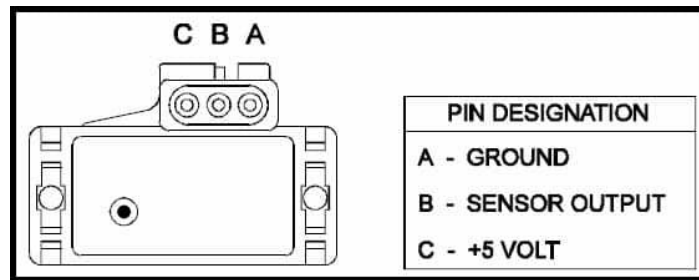
9- Fuel pressure

Both Oil and Fuel pressure sensors should have correct pressure limit spec for planned pressure. We provide sensors of 100PSI but may also provide higher or lower limit sensors upon request.

MAP Sensor:

MAP sensor used with the EM-02 Sensor Processing Unit is a 5V analog sensor.





Sensor connector may have the following colors:

(shown in the left picture)

Red — Power +5 V: connect to an appropriate EM-02 +5 V sensor supply such as J2 pin 22, 23 or 24.

Black — Negative/GND: connect to the designated sensor/aircraft ground used by the EM-02 installation. Do not use J2 pins 16–18 as ground on EM-02.

Blue — Signal Output should be connected to pin 10 of J2

(shown in the right picture)

Red — Power +5 V: connect to an appropriate EM-02 +5 V sensor supply such as J2 pin 22, 23 or 24.

Yellow — Negative/GND: connect to the designated sensor/aircraft ground used by the EM-02 installation. Do not use J2 pins 16–18 as ground on EM-02.

Blue — Signal Output should be connected to pin 10 of J2

Fuel Flow Sensor

Fuel flow sensor is not included with the kit but can be ordered separately. We recommend using a Floscan 201 but any other fuel flow sensor which uses PWM as an output can be used.



EM-02 Sensor Processing Unit can support single or dual fuel flow sensors configuration.

Floscan 201 has the following wire colors:

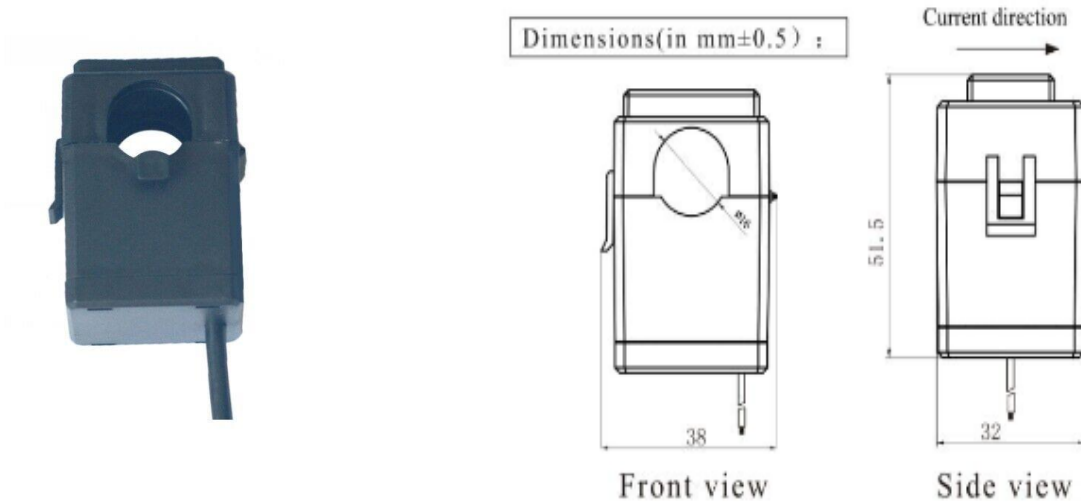
Red — Connect to +12 V. It may be connected to the protected aircraft supply or to EM-02 J3 pin 1 when the installation wiring and circuit protection are designed for that connection.

Black – *GND* (recommended to ground it near the sensor location)

White – *Signal output* connect to pin6 of J2 if this is a single Fuel flow sensor installation
*Connect White output of second Fuel Flow sensor to pin7 of J2 *(dual Fuel Flow install)*

Current Flow Sensor

The EM-02 Sensor Processing Unit supports an analog Hall-effect split-core current sensor. The HSTS016L 100 A sensor has been used with this system.



Sensor has the following wire colors:

Red — Power +5 V: connect to an appropriate EM-02 +5 V sensor supply such as J2 pin 22, 23 or 24.

Black — Negative/GND: connect to the designated sensor/aircraft ground used by the EM-02 installation. Do not use J2 pins 16–18 as ground on EM-02.

Yellow — Signal output should be connected to pin11 of J2

White – (not connected)

Current sensor should be installed around the main battery positive wire and secured. The best location for the sensor can be determined by installer, depending on the location of the battery.

Flaps Position, Rudder Trim and Elevator Trim Sensors

Sensors for Flaps, Rudder, Roll and Elevator trim are simple analog sensors with voltage output of 0V to 5V. We have successfully tested the following types of sensors and servo/sensor combos:

- Ray Allen POS-12
- Ray Allen T2-10A
- Other Ray Allen servo/sensor combos



Most of Ray Allen sensors or servo/sensor combos will have three (3) wires for sensing purposes:

Orange — Usually the +5 V sensor supply. If this conductor is not already powered by the trim/flap servo installation, connect it to an appropriate EM-02 +5 V sensor supply such as J2 pin 22, 23 or 24.

WARNING! Do not connect the +5 V conductor to a second power source if it is already powered by the servo/system installation.

Green — Position-signal output. Connect it to the appropriate EM-02 flap, rudder, roll or elevator position input identified in the connector pinout.

Blue — Usually sensor ground. If it is not already grounded by the servo/system installation, connect it to the designated sensor/aircraft ground used by the EM-02 installation. Do not use J2 pins 16–18 as ground on EM-02.

WARNING! Do not create a second or conflicting ground connection if this conductor is already grounded by the servo/system installation.

Fuel Tank Level Sensors

The EM-02 Sensor Processing Unit can read supported resistive fuel-level senders. Each installed tank sender must be calibrated in the EnGood fuel-tank calibration screen before the displayed quantity can be relied upon.

Connect the fuel-level sender signal to the appropriate EM-02 J2 input as shown in the connector pinout, then perform the tank calibration procedure described in the Calibration section.

Use pins:

15 (J2) – Right fuel tank

20 (J2) – Left fuel tank



Main and Baggage Door Sensors

You can use any sort of a trigger sensor for your doors. It can be a simple push button type sensor which has two contacts and acts as a simple button.

Connect one contact of the door switch to aircraft ground and the second contact to the appropriate EM-02 J2/J3 input shown in the connector pinout.

Use pins:

25 (J2) – Right door

14 (J2) – Left door

14 (J3) – Baggage door



Warning Lamp Outputs

EM-02 Sensor Processing Unit has two warning lamp outputs. These can be used to drive small 12V lamps in panel.

Pins to connect are:

12 (J3) – Lamp1

9 (J3) – Lamp2

When triggered, warning lamp output will become internally grounded via transistor and allow up to 250mA of current to flow.

Connect one side of the warning lamp to aircraft +12V and the other side to the appropriate EM-02 warning-lamp output.

Lamp1 should be labeled on panel as “Oil Pressure”. This lamp will turn on if oil pressure is below the pre-set limit. Also this lamp will turn on upon powering of the EnGood Engine Monitor System and will immediately turn off during engine start as soon as engine’s oil pressure reaches the minimum trigger limit.

Lamp2 is unused at this time.



Rotax 91x iS series engine connection:

Rotax 91x iS series engines feature a modern, fully electronic engine management system with a dual-lane ECU architecture and integrated CAN bus communication designed specifically for aircraft avionics integration. Each ECU lane operates independently and continuously transmits engine data to the pilot display over a dedicated CAN bus interface. The system provides a comprehensive set of real-time parameters derived from engine-mounted sensors, including engine speed, fuel flow, manifold air pressure, oil pressure, oil temperature, coolant temperature, exhaust gas temperature for all cylinders, manifold air temperature, ambient air temperature and pressure, throttle position, ECU supply voltage, and additional parameters such as boost pressure, airflow, and wastegate position for turbocharged variants. The ECU also transmits system status, sensor status, and device health information, allowing full monitoring of engine condition and redundancy status. It should be noted that cylinder head temperature sensors are not part of the standard Rotax iS CAN interface and must be implemented externally if required.

The CAN bus interface for Rotax 91x iS engines is available through the HIC (Hybrid Ignition Circuit) connectors located in the engine bay, with separate connectors assigned to Lane A and Lane B of the dual ECU system. Each lane provides its own independent CAN interface to ensure redundancy, and both lanes should be connected to the avionics system for full functionality and fault tolerance. The CAN lines (Engine CAN High and Engine CAN Low) are routed through these HIC connectors and are internally terminated within the ECU, while the connected display system must provide proper bus termination as required by CAN standards. The exact physical location of HIC A and HIC B connectors is on the engine assembly near the ECU modules in the engine compartment, typically mounted on or adjacent to the ignition system housing. Pin assignments for CAN communication are defined per connector, with dedicated pins for CAN High and CAN Low on each lane, and care must be taken to maintain proper separation between Lane A and Lane B wiring to preserve system redundancy.

Rotax Engine Side

HIC Connector A (12 pin)
19428-0015 or 19428-0031

HIC Connector B (16 pin)
19428-0016 or 19428-0032

Pin 5 – CAN BUS LOW 1A
Pin 6 – CAN BUS HIGH 1A

Pin 7 – CAN BUS LOW 1B
Pin 8 – CAN BUS HIGH 1B

CAN BUS LOW 1A and CAN BUS LOW 1B are connected together and routed to EM-02 connector J3 pin 5 (Engine CAN Low).

CAN BUS HIGH 1A and CAN BUS HIGH 1B are connected together and routed to EM-02 connector J3 pin 13 (Engine CAN High).

Rotax 91xiS series HIC connector's pinout

HIC CONNECTOR A		HIC CONNECTOR B	
19428-0015 OR 19428-0031		19428-0016 OR 19428-0032	
ES-60013	1 •	ES-60014	1 •
	2 •		2 •
	3 •		3 •
	4 •		4 •
	5 •		5 •
WH-00124	6 •		6 •
	7 •		7 •
	8 •		8 •
	9 •		9 •
	10 •		10 •
	11 •		11 •
	12 •		12 •
			13 •
			14 •
			15 •
			16 •

When a Rotax 91x iS series engine is interfaced with the EM-02 via CAN bus, optional CHT sensors may be installed and connected to the EM-02 inputs CHT1 through CHT4.

For an EnGood Mini used in standalone EnGood Mode, set Settings → Config → Engine Type to “Rotax 91x iS”. In Slave Mode this engine configuration is owned by the Main EFIS and is displayed read-only on the Mini.

7. Normal Operation of the EnGood Engine Monitor

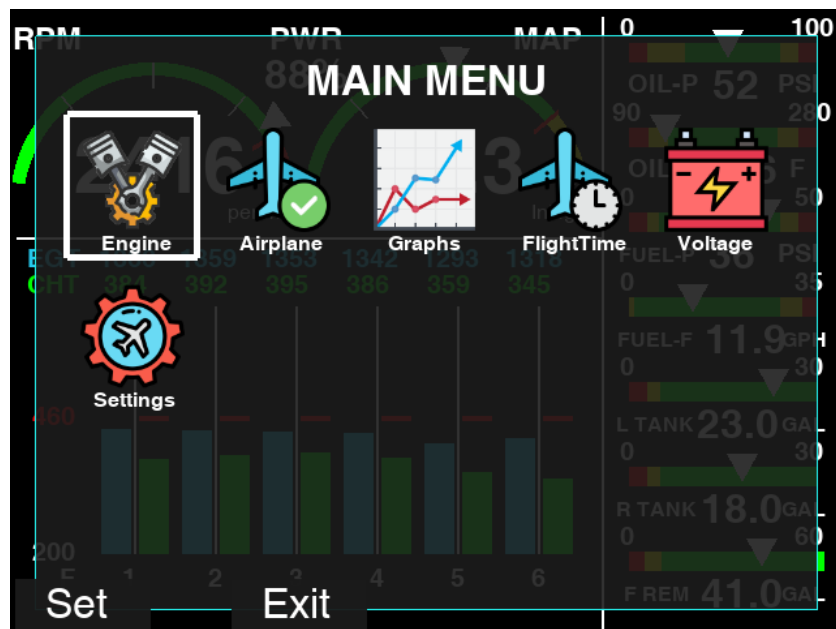
7.1 Modes of Operation

The EnGood Mini provides the following primary operating pages and system screens:

- Engine1 — primary engine page
- Engine2 — aircraft status and additional data
- Engine3 — CHT/EGT trend graphs
- Time — time, timer and calculated flight information
- Voltage — electrical-system voltage and System Information

Rotate the OUTER knob to move forward or backward through the primary operating pages. The touchscreen may also be used where on-screen controls are provided. No separate left/right front-panel buttons are used on the EnGood Mini.

Press and hold the knob to open the Main Menu from a normal operating page. Rotate the INNER knob to highlight a Main Menu item and short-press the knob to open it. A second long press closes the Main Menu. The current Main Menu provides Engine1, Engine2, Engine3, Time, Voltage, Settings and VPX when the corresponding function is available.



The Main Menu is an alternate way to select an operating page or enter Settings. Items that are unavailable for the installed configuration are shown inactive and cannot be opened.

Control Knob and Page Menu Operation

The EnGood Mini uses one dual-concentric control knob. The OUTER and INNER rings rotate independently and the knob itself can be pressed. The same physical knob is therefore used for page selection, menu navigation, value editing and confirmation.

Normal operating screens

OUTER knob — rotate clockwise or counterclockwise to step forward or backward through the enabled primary operating screens. The normal sequence is Engine1, Engine2, Engine3, Time, Voltage and VPX when VPX is enabled. Settings is intentionally skipped during normal OUTER-knob page stepping and is entered from the Main Menu.

SHORT knob press — opens the small context-sensitive Page Menu for the screen currently being displayed. When the Page Menu is open, rotate the INNER knob to move through the Page Menu choices and short-press the knob again to execute the highlighted choice.

LONG knob press — opens the Main Menu from a normal operating page. If the Main Menu is already displayed, another long press closes it. If a Page Menu is currently open, a long press closes only the Page Menu without executing the highlighted item.

INNER knob — while no Page Menu or special adjustment window is open, the INNER knob normally has no function on Engine1/Engine2/Engine3, Time or Voltage. When a Page Menu, fuel-setting window, System Information screen, software-update list, Settings menu or VPX selection is active, the INNER knob performs the context-specific selection or adjustment described below.

Screenshot shortcut — while holding the knob switch down, rotate the INNER knob one detent in either direction. A PNG screenshot is saved internally. Because this gesture combines a press with INNER-knob rotation, use it deliberately.

Main Menu

Press and hold the knob from a normal operating page to display the Main Menu. Rotate the INNER knob to move the selection and short-press the knob to open the selected item. The current Main Menu contains Engine1, Engine2, Engine3, Time, Voltage, Settings and VPX. Items not available for the installed configuration are shown inactive.

The Main Menu does not replace the OUTER-knob page stepping. It provides direct access to a specific page and is the normal entry point for Settings.

Context-sensitive Page Menus

Every normal operating screen that supports a Page Menu uses the same control pattern: short-press the knob to open the Page Menu, rotate the INNER knob to highlight an item, and short-press again to execute it. Selecting Back closes the Page Menu. Rotating the OUTER knob to another primary page also closes an open Page Menu.

Engine1 / Engine2 / Engine3 Page Menu: Back; Next Page; Set Fuel. Next Page cycles Engine1 → Engine2 → Engine3 → Engine1. Set Fuel opens the Onboard Fuel Quantity adjustment window.

Time Page Menu: Back; Timer Set; Timer Reset. Timer Set toggles the timer between running and stopped. Timer Reset sets the timer to 00:00:00.

Voltage Page Menu: Back; Information. Information opens the multi-page System Information display.

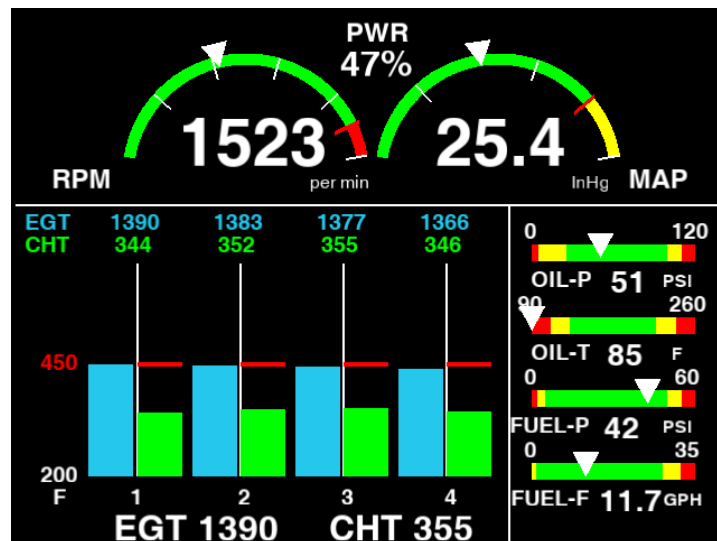
System Information Page Menu: Back; Volt; Reboot; TurnOff. Volt returns to the Voltage page. Reboot restarts the EnGood Mini application. TurnOff terminates the running application and shuts the display backlight down; use these service functions only when it is safe to do so.

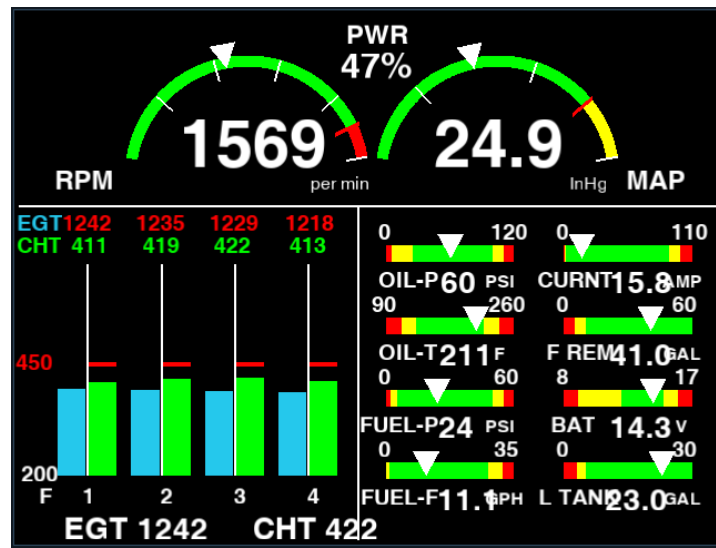
VPX Page Menu: Back; VPX Page; CB Info; CB Enbl/Dsbl (or CB Clear when the selected device reports a fault); CB ON/OFF. These items are described in the VPX section below.

Software Update Page Menu: Back; Select; Search; Update (changes to Restart after a completed update); Exit. These controls are described in Section 9.

Fuel Calibration Page Menu: Back; Exit. Back closes only the small Page Menu. Exit leaves the Universal Fuel Tank Calibration screen, saves captured calibration points and returns to Settings.

Engine1 — Primary Engine Page





Main Screen Overview

Upon power-up, the EnGood Mini normally opens the configured Start Mode. Engine1 is the primary engine-monitor page and shows the principal engine parameters. The exact gauges and values depend on the Engine Type, enabled sensors and synchronized configuration.

- **Top Part of the Display:**
 - Displays information about **RPMs** (Revolutions Per Minute), **MAP** (Manifold Absolute Pressure, optional), and the **current power setting** (available only when both RPM and MAP are in use).
- **Bottom Part of the Display:**
 - Provides readings for **CHT** (Cylinder Head Temperature) and **EGT** (Exhaust Gas Temperature) temperatures of the engine.
- **Right Side of the Display:**
 - Shows pressures, temperatures, fuel/electrical data and other enabled gauges. The number and arrangement of gauges depend on the selected Main View and installed configuration; additional information is available on Engine2.

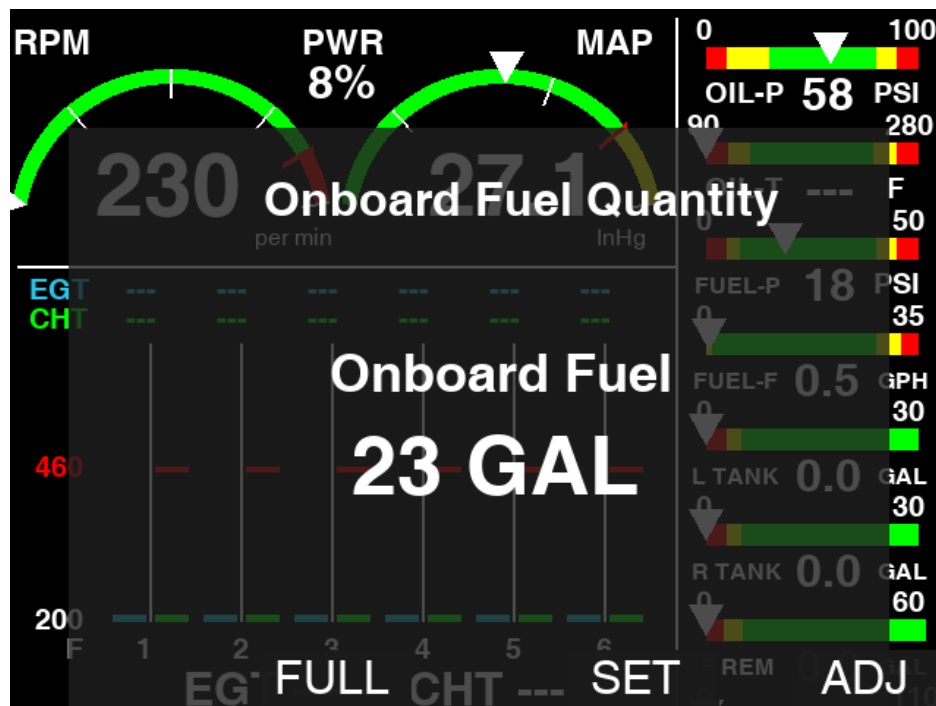
Setting fuel quantity in tanks

The EnGood system can display fuel quantity from calibrated tank senders and can also maintain a calculated remaining-fuel value from fuel-flow information. After refueling, verify that the fuel-on-board value matches the actual fuel carried before using calculated remaining fuel for flight planning.

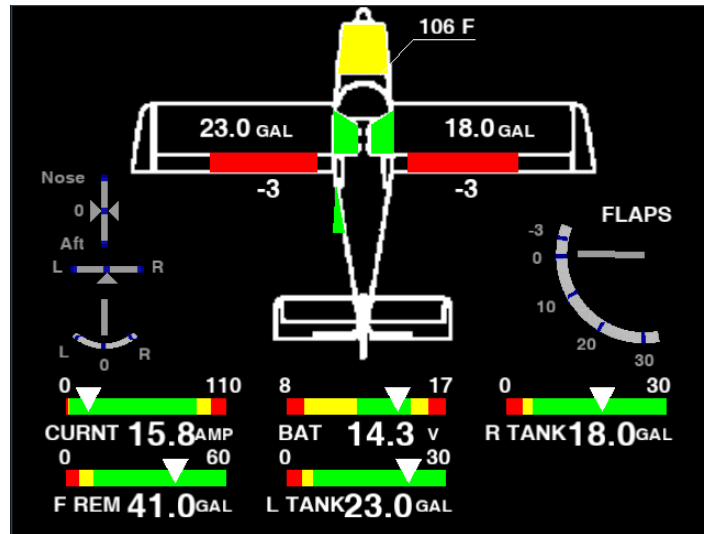
⚠ Important: Fuel quantity information is advisory. Verify actual fuel on board by an approved/appropriate method for the aircraft and use the aircraft operating documentation as the controlling reference.

To set calculated fuel-on-board from any Engine page, short-press the knob to open the Page Menu, rotate the INNER knob to Set Fuel and short-press the knob. The Onboard Fuel Quantity window opens. Rotate the INNER knob to change the quantity in whole-unit steps within the configured tank capacity. Short-press the knob to accept the displayed value; the value is sent to the engine-monitor system and the adjustment window closes.

This Set Fuel function changes the calculated fuel-on-board value used by the remaining-fuel calculation. It does not calibrate the physical left/right fuel tank senders; sender calibration is performed separately in Settings → Calibrations.



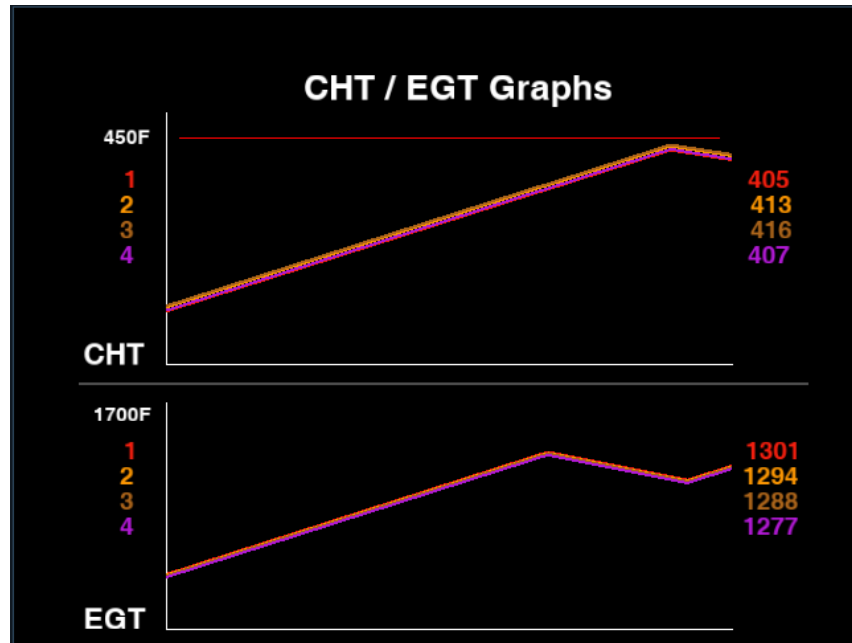
Engine2 — Aircraft Status / Additional Data



Engine2 displays aircraft-status information supported by the installed configuration, including items such as doors, baggage door, flap and trim positions, together with additional active gauges that are not shown on Engine1.

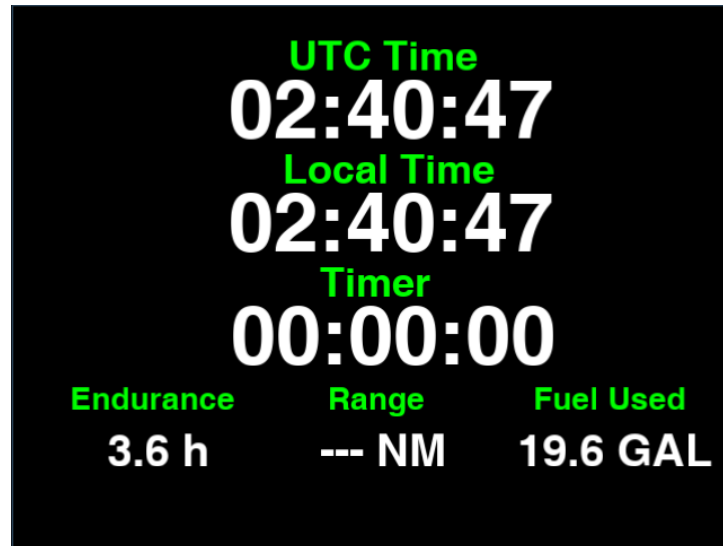
The exact contents of Engine2 depend on enabled sensors and optional equipment. Parameters that are not installed or enabled are omitted or shown inactive.

Engine3 — CHT/EGT Graphs



Engine3 shows live CHT and EGT trend graphs for recent engine operation. This page is useful for observing cylinder-temperature trends during leaning, climb, descent and troubleshooting. Rotate the OUTER knob to move to another primary page, or use the page menu to advance to the next engine page.

Time



The Time page shows current UTC and Local time together with the built-in timer and calculated endurance/range/fuel-used information when the required fuel data is available. Short-press the knob to open the Time page menu. Use the INNER knob to highlight Timer Start/Stop or Timer Reset, then short-press the knob to execute the selected command. Press and hold the knob from the Time page to open the Main Menu. Timer reset is performed from the Time page menu using Timer Reset.

In addition, you may find Endurance time, Range and Fuel used information at the bottom. It is calculated based on the current fuel flow and quantity of fuel available for flight.

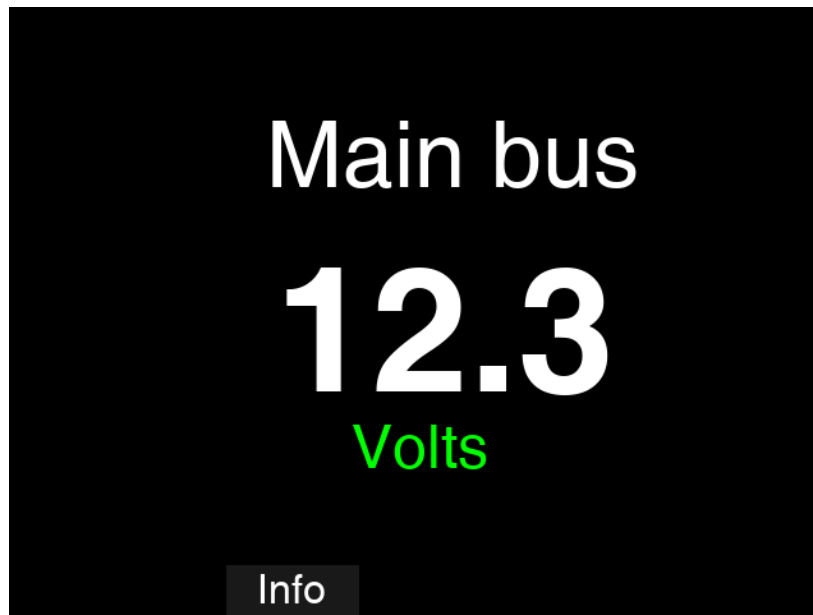
Time Page Controls

The Time page displays UTC Time, Local Time, Timer, Endurance, Range and Fuel Used. Endurance and Range are available only when the required fuel-flow and fuel-quantity information is available.

Short-press the knob to open the Time Page Menu. Timer Set toggles the timer between RUN and STOP. Timer Reset sets the timer to zero. Back closes the Page Menu without changing the timer.

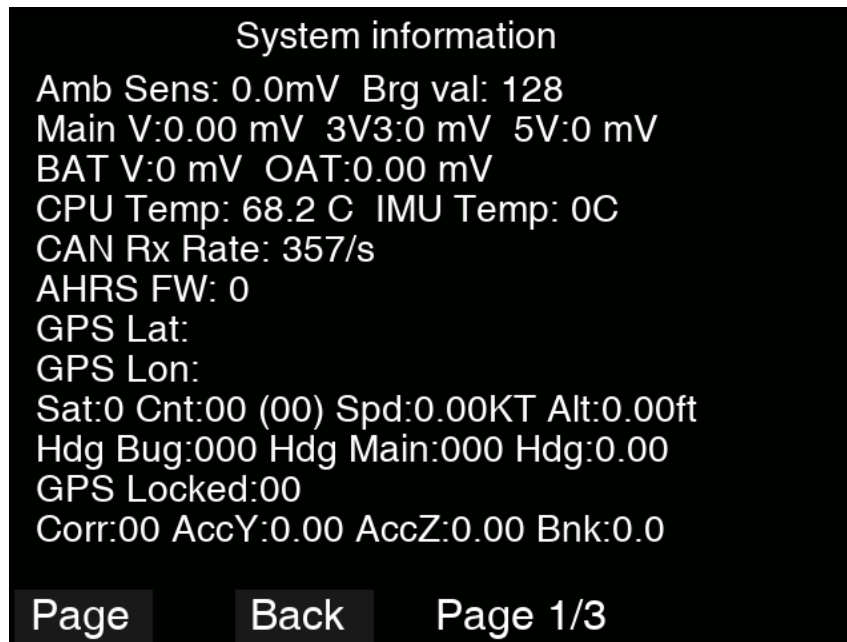
The OUTER knob continues to move to the next or previous primary operating page. Press and hold the knob to open the Main Menu.

Voltage



The Voltage page shows the aircraft electrical-system voltage measured by the EnGood system.

Short-press the knob to open the Voltage page menu and select Information to open the System Information pages. In System Information, rotate the INNER knob to change information pages. The current software also shows the EnGood Mini Unit Mode (NGOOD or Slave), synchronization/connection status and other diagnostic information used for installation and support.



Voltage Page and System Information

The Voltage page shows the aircraft main-bus voltage measured by the EnGood system. Short-press the knob and select Information to open System Information.

System Information contains five pages. Rotate the INNER knob clockwise or counterclockwise to move through Pages 1–5. The page number is shown at the lower part of the screen.

Page 1 — display and hardware status. Shows ambient-light sensor value, automatic brightness value, monitored internal voltage rails, CPU/IMU temperature, CAN receive rates, SD-card path, USB path and the unit serial number.

Page 2 — module and engine-monitor status. Shows communication status for supported modules, flight-recorder number, door inputs, main battery voltage, fuel-flow/RPM diagnostic data, RPM pulse length and filter information.

Page 3 — raw engine/sensor inputs. Shows MAP, oil-pressure, fuel-pressure and current-sensor voltages, flap/trim sensor voltages, coolant/fuel-flow information, CHT/EGT values, oil/AUX/gearbox temperatures and left/right fuel-tank sender voltages.

Page 4 — TPMS diagnostic data. Shows the configured TPMS sensor identifiers together with received pressure, temperature, battery and alarm fields.

Page 5 — EnGood Mini network and synchronization status. Shows the Mini IP/subnet, Unit Mode (NGOOD or Slave), LAN discovery status, discovered EFIS count, Engine Sync state, EFIS CAN heartbeat,

selected Main EFIS information in Slave Mode and the list of discovered EFIS/EnGood Mini peers.

Short-press the knob while System Information is displayed to open its Page Menu. Volt returns to the Voltage page. Reboot restarts the application. TurnOff stops the running application and turns off the display backlight. These two service actions should not be used in flight or while an update is running.

VPX Page

VPX is shown in the Main Menu only when the VPX function is enabled for the installation. It provides status and control of supported VP-X electrical-system devices.

With the VPX page displayed and no Page Menu open, rotate the INNER knob to select a VPX device. On the normal circuit-breaker page the selection cycles through the available breaker/device positions. On the alternate VPX control page the selection cycles through Flaps, Roll Trim and Pitch Trim.

Short-press the knob to open the VPX Page Menu. VPX Page switches between the normal circuit-breaker page and the Flaps/Roll Trim/Pitch Trim page. CB Info enters the control context for the currently selected device. CB Enbl/Dsbl toggles whether the selected device is enabled when device control is active. CB ON/OFF commands the selected device on or off.

If the selected VPX device reports a fault, the Page Menu label changes from CB Enbl/Dsbl to CB Clear. In the software build documented by this revision, the VPX fault-clear transmission is not enabled in the user-interface handler; therefore do not rely on CB Clear as an operational fault-reset method. Follow the VP-X manufacturer procedure or 360 Avionics support instructions for a faulted circuit.

If VPX communication is not available, the display shows a VPX communication/error indication. VPX control commands must be used only when the aircraft electrical installation and the selected device are known and it is safe to change their state.

7.2 Fuel Alarm

When configured by the active warning system, the EnGood Mini can display warning/reminder messages. A short press of the knob acknowledges the currently displayed message and advances through any additional active messages. In Slave Mode, Main-EFIS-owned warning configuration is read-only on the Mini; if Main EFIS synchronization is lost, the Mini continues to use available local engine data and fallback warning logic.



If a compatible external audio/VICS module is installed and configured, supported audible annunciations may also be generated.

7.3 Print Screen Functionality

A screenshot of the currently displayed image can be saved internally in PNG format for maintenance, troubleshooting or later review.

To capture a screenshot, press and hold the knob switch and rotate the INNER knob one detent in either direction. The screenshot is saved internally and can later be exported using Settings → BlackBox → Scrn USB Export.

8. Maintenance and Repair

The EnGood Mini and EM-02 do not contain routine field-serviceable electronic parts. Periodically inspect the display, control knob, wiring, connectors, CAN wiring, sensor wiring and installed probes/senders for security, damage, contamination, heat damage and chafing. Verify sensor calibration and configured limits whenever a sensor, sender, wiring, engine configuration or display/EM-02 unit is replaced or altered.

If the unit develops a malfunction that cannot be corrected by installation checks, configuration verification or an authorized firmware

update, return the affected unit to 360 Avionics or follow instructions from 360 Avionics technical support. Do not open or modify the display or EM-02 enclosure unless specifically authorized.

9. Firmware Update Procedure

The EnGood Mini display software and supported connected-device firmware are managed by the Software Update function. The current software can search supported local update sources and, when internet access is available, can also check the 360 Avionics online update source. The update screen reports the source and status of the update package and lists available components.

⚠ Important: Maintain stable aircraft power for the entire update. Do not remove power, disconnect the update media or intentionally reboot the unit while an update is being applied.

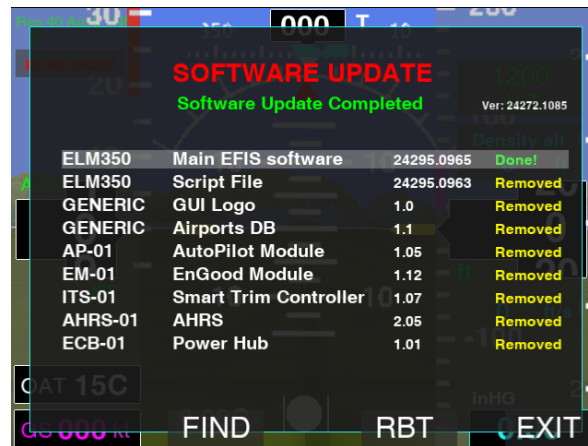
To perform a software update:

1. **1. Obtain the update package from 360 Avionics or use the online-update function when the EnGood Mini has working internet access.** www.360avionics.com
2. **2. For a USB update, place the supplied update package in the Updates folder on the USB media and connect the media to the EnGood Mini using the supported USB connection. The software also checks a supported SD source when present.**
3. **3. Power the EnGood Mini from a stable source and allow the unit to complete normal startup.**
4. **4. Open Main Menu → Settings → BlackBox → Software Update.**
5. **5. Select Software Update.** The Software Update screen opens. The update list can be navigated with the INNER or OUTER knob when no Page Menu is open. Short-press the knob to open the Software Update Page Menu, then use Select, Search, Update/Restart or Exit as required.
6. **6. When update items are listed, rotate either knob to move through the list. Short-press the knob to open the Page Menu, choose Select, and short-press again to select/deselect the highlighted update. Search starts a new search for available packages. Update starts the selected update(s). After completion the same Page Menu position is labeled Restart and restarts the application. Exit closes the update screen when an update is not in the completed/restart state.**
7. **7. Start the update using UPDT/Proceed. Leave the unit powered until the display reports that the Software Update has completed.**

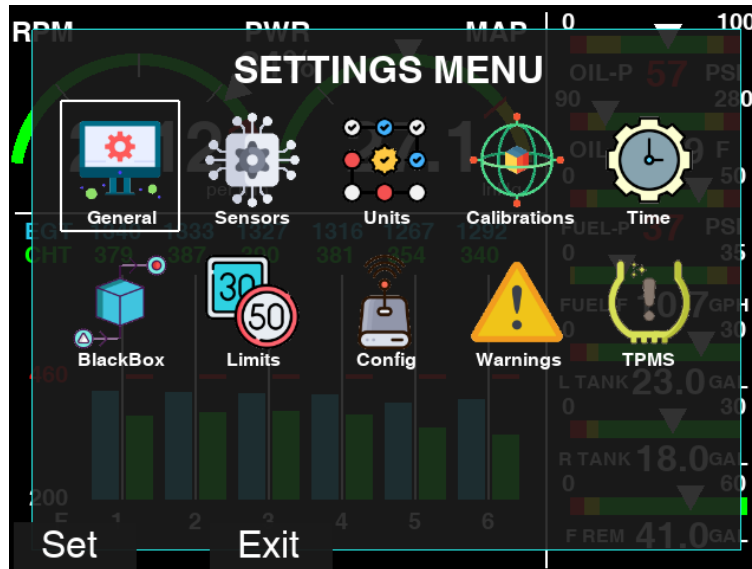


8. 8. After a successful update, use RBT/Reboot when offered. The application restarts and the new software becomes active. Verify the displayed software version after restart.

9. If no update is available, the update screen reports that condition. If an update fails, do not repeatedly remove power; record the displayed status and contact 360 Avionics technical support.



10. Settings Menu



Settings Root Menu

The Settings root contains the following menu icons: General, Sensors, Units, Calibrations, Time, BlackBox, Limits, Config, Warnings and TPMS. Depending on Unit Mode and installed configuration, some icons or individual items are shown gray/read-only. Gray items can still be passed over by the selector but cannot be edited or opened when the function is disabled.

Settings Menu Navigation

The EnGood Mini includes a Settings Menu for display, sensor, unit, calibration, time, logging, limit, engine-configuration, warning and TPMS settings. Some values are stored locally in the display and others are maintained by the EM-02 or synchronized from a Main EFIS, depending on Unit Mode.

Accessing the Settings Menu

1. To access the Settings Menu:

- Press and hold the single control knob to open the Main Menu.
- Rotate the INNER knob to highlight Settings, then short-press the knob. Settings may also be selected directly using the touchscreen.

Navigating the Settings Menu

The navigation through the **Settings menu** is straightforward:

- **Scrolling Through Menus:**
 - Rotate the INNER knob clockwise or counterclockwise to move the selector through menu items. The OUTER knob normally changes primary pages and is not used to edit Settings values.
- **Entering a Menu or Submenu:**
 - Short-press the knob, or touch the on-screen item, to open the highlighted menu/submenu.
- **Background Color Indicators:**
 - A blue selector indicates normal menu-navigation mode. Gray text/items indicate a function that is unavailable or read-only in the current mode/configuration.
 - Short-press an editable setting to enter value-change mode; the selected field changes to the active edit indication used by the current software.
- **Changing Settings:**
 - In value-change mode, rotate the INNER knob to change the selected value.
 - Short-press the knob to apply/confirm the value and return to menu-navigation mode. Where a setting requires communication with the EM-02, an “Updating. Please Wait” message may be shown until the change has been processed.
- **Exiting a Submenu:**
 - Select the “...” item at the top of a submenu and short-press the knob to return to the Settings root menu.
- **Exiting the Settings Menu:**
 - Press and hold the knob to exit Settings and return to the primary engine display. The touchscreen Exit/Back controls may also be used where shown.

△ Slave Mode: EnGood-owned configuration, limits and warning items remain visible but read-only. Calibration and TPMS menus may be unavailable in Slave Mode. Local sensor-conversion settings that are not synchronized can remain editable. Returning to EnGood/NGOOD standalone mode restores local editing of the applicable settings.

11. Settings menu items and their respective settings:

Submenu: General



Set Defaults — selects which group of settings is returned to factory/default values: display + EnGood, display only, or EnGood only. Use this only when intentionally resetting configuration.

Disp Brg — controls display brightness. The current menu supports Minimum/Maximum, manual brightness values, Auto brightness, and ambient-light adjustment points (Adj Min, Adj Max and Reset Adj). In Slave mode the display can follow the synchronized brightness command where applicable.

Unit Config — selects EnGood standalone operation or Slave operation. In EnGood mode the Mini owns its local engine-monitor configuration. In Slave mode applicable configuration, limits and warnings are owned by the Main EFIS and are displayed read-only on the Mini.

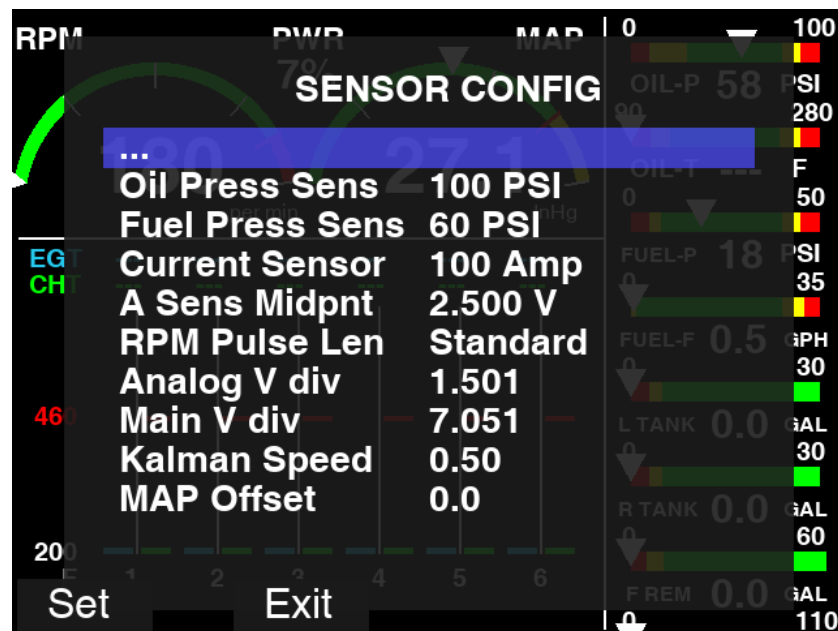
Start Mode — selects the page shown after startup. Current choices correspond to Engine, Airplane/Engine2, Time, Voltage and Graph/Engine3 start pages.

DevCtrl — service/development control used only as directed by 360 Avionics technical support.
Demo Mode — enables or disables demonstration operation and should normally remain Disabled in an installed aircraft.

COM1 Speed / COM1 Mode — configures COM1 baud rate and operating mode. **COM2 Speed / COM2 Mode** — configures COM2; the current COM2 mode includes support for the HT-10 TPMS interface.

Main View — selects Classic or Alternate presentation of the primary engine page. **Touch Calibrate** — starts touchscreen calibration; use it if touch positions no longer align correctly with on-screen controls.

Submenu: Sensors



Oil Press Sens / Fuel Press Sens — set the full-scale pressure range of the installed analog pressure sensor. These are local sensor-conversion settings and must match the installed sender.

Current Sensor — sets the full-scale current-sensor range. **A Sens Midpnt** — sets the analog midpoint/reference used by the current sensor; a typical Hall sensor midpoint is approximately 2.5 V, but use the actual installed sensor specification/calibration.

RPM Pulse Len — selects the RPM input pulse/noise handling required by the installed ignition/RPM source. **RPM Factor** — scales incoming RPM pulses to actual engine RPM.

Analog V div / Main V div — voltage-divider calibration constants. Do not change these factory values unless directed during calibration or technical support.

Kalman Speed — controls the response of the sensor filtering. Change only when a different filtering response is specifically required.

MAP Offset / MAP Sensor — configures manifold-pressure sensor type and correction offset.

FF1 K-Factor / FF2 K-Factor — calibration factors for fuel-flow sensor 1 and optional sensor 2. Enter the K-factor appropriate for the installed transducer.

Submenu: Units



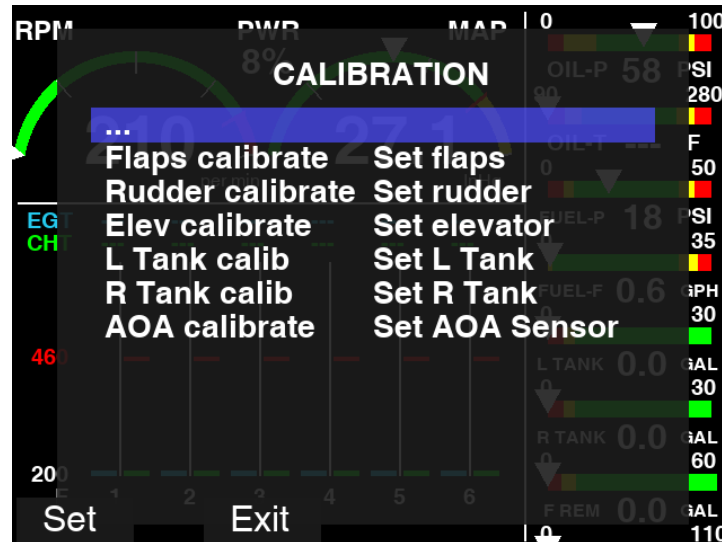
Press Units — selects the pressure-unit presentation supported by the current software.

Temp Units — selects Celsius or Fahrenheit for general temperature display.

Fuel Units — selects Gallons or Liters.

Eng Temp Units — selects Fahrenheit or Celsius for engine-temperature display.

Submenu: Calibration



Flaps Calibration — captures the sensor voltage for the required flap positions. Move the flap system to the requested physical position, select the corresponding calibration point, and confirm the capture.

Rudder Calibration — captures the rudder-trim sensor values for the defined center/left/right positions.

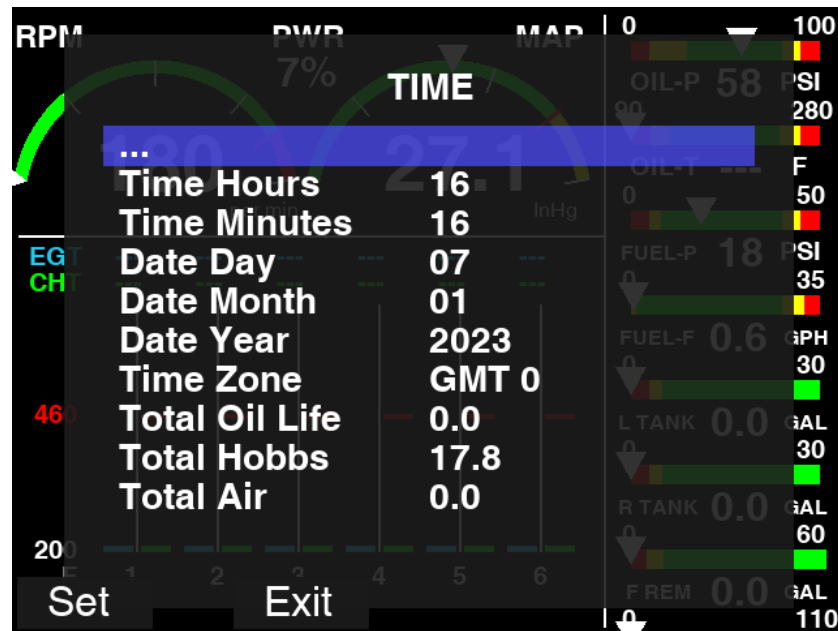
Elevator Calibration — captures the elevator-trim sensor values for the defined center/nose-up/nose-down positions.

L Tank calib / R Tank calib — opens the Universal Fuel Tank Calibration screen for the selected tank. Calibration is no longer restricted to fixed 5-gallon steps. Begin with an empty tank and capture the first point at 0.0 quantity. Add a known amount of fuel, adjust the displayed calibration quantity with the on-screen -1.0, -0.1, +0.1 and +1.0 controls as required, and press CAPTURE. Repeat at progressively higher known quantities. Use SET FULL at the actual full-tank quantity to complete the calibration. UNDO removes the most recent point. RESET requires confirmation before clearing the active tank calibration. COPY L→R or COPY R→L may be used only when the two tanks and senders are equivalent and the source tank has a valid calibration.

AOA Calibrate — reserved/not used by the EnGood Mini engine-monitor function in the current configuration.

Roll Calibration — captures roll-trim sensor values for the defined center/left/right positions.

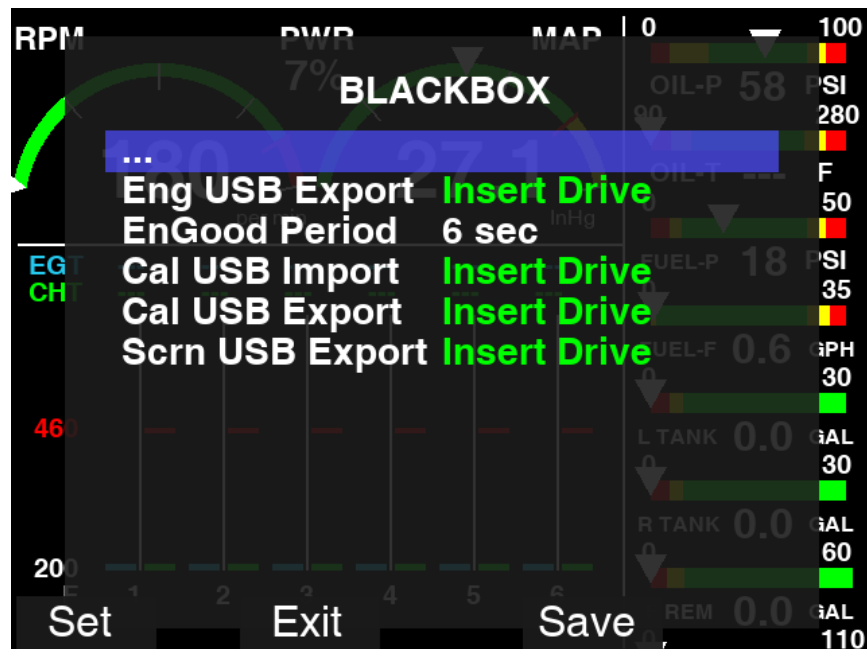
Submenu: Time



Time Hours / Time Minutes and Date Day / Date Month / Date Year — set the local clock and calendar. **Time Zone** — defines the offset used to derive UTC/local time presentation.

Total Oil Life / Total Hobbs / Total Air — displays or adjusts the stored counters as supported. **Reset Oil Life**, **Reset Hobbs** and **Reset Air** provide explicit reset actions. **Sync Time** synchronizes the clock using the supported system time source.

Submenu: BlackBox



Eng USB Export — exports internally stored engine-monitor log data to attached USB media.

EnGood Period — sets the interval used for writing EnGood engine-monitor log data.

Cal USB Import / Cal USB Export — imports or exports calibration/configuration data using the USB Config/calibrations.ini file used by the current software. Use these functions when transferring calibration data or as directed by technical support.

Scrn USB Export — exports internally stored PNG screenshots to USB media. Software Update — opens the software-update screen described in Section 9.

Screenshots are captured with the single knob by holding the knob switch down and rotating the INNER knob one detent in either direction. The older two-button screenshot command does not apply to EnGood Mini.

Submenu: Limits



Limits defines the minimum and maximum values used by the warning and gauge logic. Current entries include CHT Low/High, Engine Min/Max RPM, Oil Pressure Min/Max, Oil Temperature Min/Max, Fuel Pressure Min/Max, Cowling Temperature Max, GearBox Temperature Min/Max, Coolant Temperature Min/Max and the additional pressure limits shown by the installed software. Set values from the engine/aircraft/component documentation. In Slave Mode these Main-EFIS-owned limits are shown read-only.

Submenu: Configuration



Configuration contains the engine and installation definition used by the EnGood system.

Current items include: Eng Cyl (2/4/6 cylinders); MAP Sensor (not installed or 1/2/3-bar); Fuel Qty Sens; Fuel OnBoard; FF1/FF2 K-Factor; RPM Factor; ECU Defaults; Fuel Flow 1/2; MAP Offset; Fuel Units; Eng Temp Units; CHT limits; Engine RPM limits; Oil/Fuel pressure and oil-temperature limits; Cabin Door and Baggage Door sensors; Cowling Temperature sensor/limit; Fuel Pressure and Current sensors; CHT/EGT/Oil/Cowl temperature chip type; Engine Type; CO PPM limit/factor; Coolant, GearBox and Intercooler temperature sensors; Internal Analytics; and Monworkz MZ30 backup-alternator support.

Engine Type is separate from cylinder count. Current Engine Type choices shown by the software are Standard, Rotax 91x iS and ULPower. Cylinder count is set by Eng Cyl. In Slave Mode the Configuration menu remains visible so the synchronized values can be inspected, but Main-EFIS-owned items are read-only.

Submenu: Warning Setup



Warnings enables or disables the individual warning categories used by the EnGood engine-monitor logic. Current categories are CHT, Oil Pressure, Oil Temperature, Fuel Pressure, Fuel Flow, Fuel Quantity, Door/Canopy, Baggage Door, Cowling Temperature, Battery Voltage, RPM Limit, Fuel Lean, GearBox Temperature, Coolant Temperature, VPX System, TPMS Pressure and CO Warning.

The warning thresholds themselves are defined by the applicable Limits and Configuration values. In Slave Mode the warning enable/disable items are synchronized/owned by the Main EFIS and remain read-only on the EnGood Mini.

Submenu: TPMS SETUP

TPMS Mode — enables or disables the supported TPMS interface; the current software identifies the supported mode as HT-10. TPMS setup is unavailable in Slave Mode.

Sensor1 A/B/C, Sensor2 A/B/C and Sensor3 A/B/C — define the three-byte identifier for each configured TPMS sensor.

Assign the sensor IDs to the aircraft wheel positions according to the installed TPMS system and verify the displayed tire positions/pressures after configuration.

Print Screen Functionality

During EnGood operation, a screenshot of the current display can be saved internally in PNG format for review or troubleshooting.

Hold the knob switch down and rotate the INNER knob one detent in either direction. The screenshot is stored internally and can later be exported through Settings → BlackBox → Scrn USB Export.

12. Operation Limitations

- Information from airplane's POH always supersedes information provided in this manual
- This unit is non-TSO certified and cannot be installed on the certified airplane unless special permission is obtained from regulatory agency/airplane manufacturer.

13. Warranty coverage and limitations

360 Avionics company provides the warranty for this product against defects in materials and workmanship for the duration of 24-month (2 calendar years) from the date of retail purchase of this product by end user ("Warranty Period"). If a hardware defect arises and a valid claim is received within the Warranty Period, at its option and as the sole and exclusive remedy available to Purchaser, 360 Avionics company will either (1) repair the hardware defect at no charge, using new or refurbished replacement parts, or (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or, at its option, if (1) or (2) is not possible (as determined by 360 Avionics company in its sole discretion), (3) refund the purchase price of the product. Prior a refund is given, the product for which the refund should be provided must be returned to 360 Avionics and becomes 360 Avionics's property.

This Limited Warranty applies only to hardware products manufactured by 360 Avionics company that have the "360 Avionics" trademark, tradename, or logo attached to them at the time of manufacture by 360 Avionics company. The Limited Warranty does not apply to any non 360 Avionics hardware products or any software, even if packaged or sold with 360 Avionics hardware. Manufacturers, suppliers, or publishers, other than 360 Avionics company, may provide their own warranties to the Purchaser, but 360 Avionics and its distributors provide their products AS IS, without warranty of any kind. Software distributed by 360 Avionics company (with or without the 360 Avionics's brand name including, but not limited to system software) is not covered under this Limited Warranty. Refer to the licensing agreement accompanying such software for details of your rights with respect to its use. This warranty does not apply: (a) to damage caused by use with non 360 Avionics company products; (b) to damage caused by accident, abuse, misuse, flood, fire, earthquake or other external causes; (c) to damage caused by operating the product outside the permitted or intended uses described by 360 Avionics; (d) to damage caused by service (including upgrades and expansions) performed by anyone who is not a representative of 360 Avionics or an 360 Avionics Authorized Reseller; (e) to a product or part that has been modified to significantly alter functionality or capability without the written permission of 360 Avionics company; (f) to consumable parts, such as batteries, unless damage has occurred due to a defect in materials or workmanship; or (g) if any 360 Avionics serial number has been removed, altered or defaced.

To the extent permitted by applicable law, this warranty and remedies set forth above are exclusive and in lieu of all other warranties, remedies and conditions, whether oral or written, statutory, express or implied, including, without limitation, warranties of merchantability, fitness for a particular purpose, non-infringement, and any warranties against hidden or latent defects. If 360 Avionics cannot lawfully disclaim statutory or implied warranties then to the extent permitted by law, all such warranties shall be limited in duration to the duration of this express warranty and to repair or replacement service as determined by 360 Avionics in its sole discretion. 360 Avionics does not warrant that the operation of the product will be

uninterrupted or error-free. 360 Avionics is not responsible for damage arising from failure to follow instructions relating to the product's use. No 360 Avionics reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty, and if any of the foregoing are made, they are void with respect to 360 Avionics company.

14. TSO approval and Liability limitations

This product does not yet have any TSO approvals as a flight instrument. 360 Avionics company as a manufacturer of this product will not help and responsibility for any sort of damage or destruction which can be caused by use of this product to any part of airplane caused by operation of this product.

To the extent permitted by applicable law, 360 Avionics company is not responsible for indirect, special, incidental or consequential damages resulting from any breach of warranty or condition, or under any other legal theory, including but not limited to loss of use; loss of revenue; loss of actual or anticipated profits (including loss of profits on contracts); loss of the use of money; loss of anticipated savings; loss of business; loss of opportunity; loss of goodwill; loss of reputation; loss of, damage to or corruption of data; or any other loss or damage howsoever caused including the replacement of equipment and property, any costs of recovering, programming, or reproducing any program or data stored or used with 360 Avionics company products and any failure to maintain the confidentiality of data stored on the product. Under no circumstances will 360 Avionics company be liable for the provision of substitute goods or services. 360 Avionics company disclaims any representation that it will be able to repair any product under this warranty or make a product exchange without risk to or loss of the programs or data. Some jurisdictions do not allow for the limitation of liability for personal injury, or of incidental or consequential damages, so this limitation may not apply to you.

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