Dual Fuel Level

(FL-2R, FL-2RH and FL-2C)

Operating and Installation Instructions

OI 0131941P

1/31/94
Rev. E: 3/21/96

You must read this manual before installing or operating the instrument. This manual contains warranty and other information that may affect your decision to install this product and/or the safety of your aircraft.

Model: _____

S/N: _____

Electronics International Inc. ®

63296 Powell Butte Hwy • Bend, OR 97701 • (541) 318-6060 • Buy-EI.com

FL-2
Important Notice

***** Must Read *****

"DO NOT SOLELY RELY ON THE FL-2 TO DETERMINE THE FUEL LEVELS IN THE FUEL TANKS." The use of the FL-2 does not eliminate or reduce the necessity for the pilot to use good flight planning, preflight and in-flight techniques for managing fuel.

The following requirements must be met with before operating the aircraft with the FL-2:

1. **All of the Operating Instructions must be read. There is important information in this manual which the pilot must understand before flying the aircraft.**

2. **A copy of this operating manual must be in the aircraft at all times.**

4. **The FL-2 must be calibrated to the aircraft fuel system and its accuracy must be verified before flying the aircraft.**

If you ever find an inaccuracy issue or any other problem with the FL-2, cover the face of the instrument with a note saying "DEFECTIVE". This will alert anyone flying the aircraft to the condition of the FL-2.

Contents

Warranty

1209921

Electronics International Inc. warrants this instrument and system components to be free from defects in materials and workmanship for a period of one year from the user invoice date. Electronics International Inc. will repair or replace any item under the terms of this Warranty provided the item is returned to the factory prepaid.

l. This Warranty shall not apply to any product that has been repaired or altered by any person other than Electronics International Inc., or that has been subjected to misuse, accident, incorrect wiring, negligence, improper or unprofessional assembly or improper installation by any person. **This warranty does not cover any reimbursement for any person's time for installation, removal, assembly or repair.** Electronics International retains the right to determine the reason or cause for warranty repair.

2. This warranty does not extend to any machine, vehicle, boat, aircraft or any other device to which the Electronics International Inc. product may be connected, attached, interconnected or used in conjunction with in any way.

3. The obligation assumed by Electronics International Inc. under this warranty is limited to repair, replacement or refund of the product, at the sole discretion of Electronics International Inc.

4. Electronics International Inc. is not responsible for shipping charges or damages incurred under this Warranty.

5. No representative is authorized to assume any other liability for Electronics International Inc. in connection with the sale of Electronics International Inc. products.

6. **If you do not agree to and accept the terms of this warranty, you may return the product in new condition, with receipt, within thirty (30) days for a refund.**

This Warranty is made only to the original user. **THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR OBLIGATIONS: EXPRESS OR IMPLIED. MANUFACTURER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PURCHASER AGREES THAT IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS OR LOSS OF USE OR OTHER ECONOMIC LOSS. EXCEPT AS EXPRESSLY PROVIDED HEREIN, MANUFACTURER DISCLAIMS ALL OTHER LIABILITY TO PURCHASER OR ANY OTHER PERSON IN CONNECTION WITH THE USE OR PERFORMANCE OF MANUFACTURER'S PRODUCTS, INCLUDING SPECIFICALLY LIABILITY IN TORT.**

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Operating Instructions
FL-2

Instrument:

The FL-2 is a fuel level instrument featuring dual 90 degree analog displays and a digital display. These two displays provide the primary indication of the fuel level for the left and right wing tanks and offer many advantages over conventional analog gauges, as described below. The digital display may be programmed to display in gallons, pounds or liters. This provides a method of monitoring fuel levels in 1 gallon, 6 pound or 4 liter increments for the left tank, right tank and the total fuel in both tanks. Since the FL-2 does not incorporate any moving parts (needles, bearings, springs, etc.) there is little to go wrong or wear out.

The FL-2 connects to two fuel level sensors mounted in the left and right wing tanks. The FL-2R was designed to be used with resistive fuel level sensors that decrease in resistance as fuel is added, the FL-2RH was designed to be used with resistive fuel level sensors that increase in resistance as fuel is added and the FL-2C was designed to be used with capacitive fuel level sensors.

Once the FL-2 is installed in the aircraft it is calibrated to the aircraft fuel tanks and sensors by filling the tanks in two gallon increments and storing the fuel level sensor output signals into the FL-2's permanent memory. This mapping of the tanks removes any non-linearity in the tanks and sensors.

Analog Display:

The dual 90 degree analog displays provide a quick reference of the left and right fuel levels. More precise information is provided in the digital display. An advantage of the analog display is its ability to emit a green, yellow or red light. With a quick glance you can determine if your fuel level is in the green, yellow, or red operating range. The FL-2 provides the following warnings:

1. **1/4 Tank Difference -** If there is more than 1/4 tank difference between the left and right tank levels, the left and right tank LED's will blink. This is intended to alert you that it's time to switch tanks.

2. **1/4 Tank Warning -** If the left or right tank level reaches 1/4 of a tank, the appropriate yellow LED will blink. This is intended to alert you that the fuel level is getting low.

3. **Low Fuel -** If the left or right tank reaches 1/8 of a tank or 2 gallons (whichever is greater), the appropriate red LED will blink. This is intended to alert you that the fuel level is getting dangerously low.

4. **"OPEN" -** If the wire to left or right fuel tank sensor becomes open on the FL-2C or the FL-2RH (or shorted on the FL-2R, the analog display for the tank with the problem will show an empty tank and the digital display will show "OPEN." This warning is intended to alerts you when the FL-2 has lost the signal from one or both of the fuel sensors.

Note: To acknowledge a blinking LED (i.e., to stop the blinking), change the position of the Tank Selector Switch. Once a blinking warning is acknowledged it will not occur again until the FL-2's power has been

turned off and back on. Although these blinking warnings are valuable, they can be annoying. For this reason we provide a way of shutting them off.

During night operation the analog lights may be too bright. If so, turn the panel light rheostat up and the analog lights (LED's) will dim. A LED Intensity Control Pot is available from Electronics International if you wish to control the intensity of the LED's independent of the panel light rheostat. The red LED's will always be displayed at full intensity.

Digital Display:

With the Tank Selector Switch in the left or right position the digital display will show the fuel level in the appropriate tank. With the Tank Selector in the center position the total fuel (left + right) will be displayed. Fuel levels below 2 gallons will be displayed as "0" in the left or right position. In the "Total" position, fuel levels below 3 gallons will be displayed as "0".

The signal generated by the fuel sensor will continuously change as the fuel sloshes back and forth in the tank. The FL-2 incorporates a unique filter to take out rapid fuel level changes and still provide a fast response to changes in the fuel level not associated with sloshing.

If the digital display backlight has been permanently powered up (as recommended), the digital display will be easier to see during low ambient light conditions and at night.

On power-up the FL-2 performs a self test and will sequence through all the LED's and display "8888" on the digital display.

***** MUST READ *****

Accuracy Limitations:

The accuracy limitations of the FL-2 are listed below. **It is the pilot/owner's obligation to make anyone flying the aircraft aware of these limitations.**

1. **Angle of Attack -** The FL-2 must be calibrated with the aircraft in a cruise angle of attack. If the aircraft is in a condition other than cruise, depending on the mounting location and type of sensor used, the FL-2 may display inaccurate fuel levels. If your aircraft does not sit at a cruise angle of attack when on the ground, it may not display accurate fuel levels. **Test your aircraft at different angles of attack and see what the effects are on the fuel level readings for the FL-2.**

2. **Full Fuel Readings -** As a tank is filled the fuel sensor may not be able to detect the fuel entering the upper corners of the fuel tank. If this is the case with your sensor, the FL-2 will display lower fuel levels than the actual fuel in the tanks when the tanks are full. When the fuel level drops to a point where the fuel sensors start to detect a change, the displayed fuel level should be accurate. **Check your system by comparing the displayed fuel levels on the FL-2 to the fuel levels listed in the flight manual at each fill up.**

3. **Low Fuel Readings -** **Do not rely on the FL-2 to determine the fuel in the tank for indicated tank levels below 1/8**. You should always fly the aircraft in such a manner as to at least maintain the FAA

minimum fuel requirements in the aircraft at all times. **Depending on the mounting location and type of sensor used, the FL-2 may not be able to accurately measure the last few gallons of fuel in the tanks.**

4. **Improper Calibration -** If the FL-2 has not been properly calibrated it will not display accurate fuel levels in the tanks. It is important you verify the accuracy of the FL-2. **Always cross check your measured fuel levels in the tanks with the readings on the FL-2 before each flight.**

5. **Poor Connections -** Poor connections in the wires leading from the FL-2 to the fuel sensors can become intermittent with age. An intermittent connection will most likely show up as wandering or inaccurate readings on the FL-2. **Always cross check your measured fuel levels in the tanks with the readings on the FL-2 before each flight.**

6. **Defective Fuel Level Sensors -** Fuel sensors can become intermittent or change resistance with age. It is not uncommon to find intermittent problems even in new sensors. We recommend Stewart Warner F-385-CP05 resistive sensors be used with the FL-2R. An intermittent problem with a fuel sensor will most likely show up as wandering or inaccurate readings on the FL-2. **Always cross check the measured fuel levels in the tanks with the readings on the FL-2 at each fill up.**

If you ever find an inaccuracy issue or any other problem with the FL-2, cover the face of the instrument with a note saying "DEFECTIVE". This will alert anyone flying the aircraft to the condition of the FL-2.

***** MUST READ *****

Important Considerations:

"DO NOT SOLELY RELY ON THE FUEL LEVEL INSTRUMENT (FL-2) TO DETERMINE THE FUEL LEVELS IN THE AIRCRAFT". The use of the FL-2 does not eliminate or reduce the necessity for the pilot to use good flight planning, preflight and in-flight techniques for managing fuel. It is important the pilot adopt the practices listed below. If you are not familiar with these techniques, contact the FAA to acquire proper training.

1. **A copy of this operating manual must be in the aircraft at all times.**

2. **Flight Planning -** Always calculate the fuel requirement for each leg of the flight including any alternate plans for bad weather. Keep this information available in the aircraft during the flight. Keep a chart of the published fuel flows for various flight/engine conditions in the aircraft. Keep a chart of the measured fuel flows for various flights in the aircraft. Measured fuel flows can be considerably different from published figures. This is usually due to old inaccurate engine instruments.

3. **Preflight - Do not rely on the FL-2 to determine the fuel level in the fuel tanks. The pilot must visually check/measure the fuel levels in the tanks before every takeoff.** Cross-check the measured fuel levels with the displayed levels on the FL-2. Also, crosscheck these levels with the fuel requirements for the flight listed in your flight plan.

4. **In Flight -** Make the FL-2 part of your normal instrument scan. **Cross-check the fuel levels displayed on FL-2 with your flight plan at each leg of the flight or every 30 minutes** (if a leg is longer than 30

minutes). Calculate the fuel flows from the FL-2 displayed fuel levels and compare them with your charts of measured and published fuel flows for the aircraft. If there is a discrepancy, land the aircraft at the nearest airport and verify the fuel levels. Discrepancies should be taken seriously.

5. **New Pilot or Owner of the Aircraft - If there is a new pilot or owner of the aircraft, it is the previous aircraft pilot/owner's responsibility to insure the new pilot has read this manual and is aware of the accuracy limitations and other important considerations. All limitations and operating characteristics learned from operating the FL-2 must be passed on to the new pilot/owner.**

Installation Instructions
FL-2

Important Information and Initial Check Out:

1. **The installer and aircraft owner must read the Warranty before starting the installation**. There is information in the Warranty that may alter your decision to install this instrument. **If you do not accept the terms of the Warranty, do not install this instrument.**

2. **If you are not an FAA Certified Aircraft Mechanic familiar with the issues of installing aircraft fuel level instruments, Do Not attempt to install this instrument.**

3. Read the entire Installation Instructions and resolve any issues you may have before starting the installation. This may eliminate any delays once the installation is started.

4. **THIS INSTALLATION MAY REQUIRE SOME PARTS UNIQUE TO YOUR AIRCRAFT THAT ARE NOT SUPPLIED IN THE KIT.** Acquire all the parts necessary to install this instrument before starting the installation.

5. Check that the instrument make and model are correct before starting the installation.

6. Before starting the installation make sure the unit will fit in the location you intend to install it without obstructing the operation of any controls.

7. **The FL-2 must be calibrated to the aircraft fuel system and its accuracy must be verified before flying the aircraft.**

8. **A copy of this manual must be presented to the pilot/owner.** It contains important information they must read.

Route The Circular Connector:

Starting from under the instrument panel, route the circular connector wire harness up to the instrument mounting location. (See the wiring diagram at the back of this manual). Place the circular connector about 8 inches back from the panel. Tie wrap the harness in place approximately 1 foot back from the circular connector. This will allow the harness to be flexible and accommodate varying lengths in instrument wires. **Be sure these wires do not obstruct the freedom of travel of any controls.**

Route the Power and Ground Wires:

In the wire harness are 3 foot red and black wires used for instrument power and ground. Route the 3 foot red wire in the harness to the aircraft's 12 or 24 volt main or emergency bus as applicable via an independent circuit breaker (five amps or less). An alternate method would be to route the red lead to the bus via a one amp in-line fuse. With this method a spare fuse should be kept in the aircraft.

Route the 3 foot black wire in the harness to a good ground . **Tie wrap these wires so they do not obstruct the freedom of travel of any controls.**

Route the Backlight Wires:

Connect the backlight wires as follows:

1. It is recommended to permanently power up the digital display backlight.

   a) For a 12-volt system connect the white/brown wire to the bus and connect the white/red wire to ground (see Wiring Diagram).

   b) For a 24-volt system leave the white/brown open and connect the white/red wire to the bus (see Wiring Diagram).

2. Connect the white/orange wire to the panel light rheostat. This wire will dim the analog LED's for night operation when the panel lights are turned on. If this line is left open, the analog LED's will remain at full intensity at all times. **Tie wrap all wires so they do not obstruct the freedom of travel of any controls.**

Route the (Optional) External Warning Control Line:

The white/yellow wire can be connected to a relay to control an external light, buzzer, etc. This wire grounds when the red warning light is on. The current in this line must be limited to 2/10 of an amp maximum. Exceeding this limit will damage the unit. If this feature is not used leave this line open. **Tie wrap this wire so it does not obstruct the freedom of travel of any controls.**

Route the Left and Right Fuel Tank Sensor Wires (FL-2R and FL-2RH Only):

In the wire harness are 6 foot brown and orange wires. Route and connect the brown wire to the left fuel tank resistive sensor and route and connect the orange wire to the right fuel tank resistive sensor. These wires may be spliced for extra wire length. **Tie wrap these wires so they do not obstruct the freedom of travel of any controls.** Note: For the FL-2R your resistive sensor must be of the type that **reduces** resistance as fuel is added to the tank and its resistance when the tank is empty must be between 90 and 270 ohms. For the FL-2RH your resistive sensor must be of the type that **increases** resistance as fuel is added to the tank and its resistance when the tank is full must be between 90 and 270 ohms.

Route the Fuel Tank Ground Sensor Wire (FL-2R and FL-2RH Only):

In the wire harness is a 6 foot green wire. Route and connect this wire to a good ground near the wing root or side of the aircraft. It should be connected inside the cabin area. It should not be connected to a ground used by other electronic equipment. **Tie wrap this wire so it does not obstruct the freedom of travel of any controls.**

Route the Left and Right Fuel Tank Sensor Wires (FL-2C Only):

Route and connect the group of wires marked "LEFT" to the left fuel tank sensor and the group of wires marked "RIGHT" to the right fuel tank sensor. These wires maybe spliced for extra wire length. **Tie wrap these wires so they do not obstruct the freedom of travel of any controls.**

Install the Instrument in the Panel:

Install the instrument from behind the instrument panel using 6 x 32 screws. These screws should not be any longer than 1/2".

Connect the Circular Connector to the Instrument:

1) Push the two mating connectors together and twist them until they snap into position.

2) Turn the locking ring on the instrument connector clockwise (1 1/2 turns) until it locks into position.

3) Tie wrap any loose wires as needed.

Calibrate the FL-2 to the Left and Right Fuel Tanks and Sensors:

The FL-2 is calibrated in gallons and must be calibrated to the Left and Right Tank separately. Let's start with the Left Tank.

1. Drain the Left Tank with the aircraft angle of attack (nose up or down) such that the least amount of fuel is left in the tank. This fuel left in the tank is considered unusable and the FL-2 should read "0" (Empty) for this fuel level.

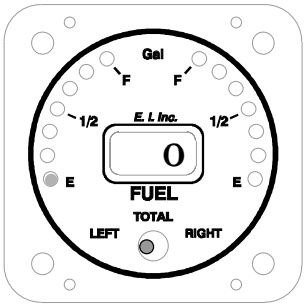
Note: Gasoline is explosive and can be very dangerous. It should be handled in a well ventilated hangar or outdoors. Keep it away from any flames, heat sources or electrical equipment. Always store gasoline in a closed container. If you are not familiar with all of the issues of working with gasoline, contact your local fire department for important safety advice.

2. Set the aircraft angle of attack for cruise flight.

3. Turn the power to the FL-2 off. Set the Tank Selector Switch to the left position.

4. Push and hold the Enter Button on the back of the unit. Turn on the power. Wait 3 seconds and release the Enter Button. Only the Left Empty LED should be lit and the digital display should read "0".

The Tank Selector Switch and Enter Button (on the back of the unit) will perform the following functions when calibrating the FL-2.



5. Set the FL-2 Tank Selector Switch to the center position and **wait for the display to stabilize**. This may take 30 seconds or longer depending on inter-tank baffling and/or cross-over tubes. **Its important you**

Tank Selector Switch Position	Enter Button	Display or Function
Left	Open	Displays the fuel level to which the tank should be filled.
Center	Open	Displays the sensor output. This allows you to see when the fuel level has stabilized in the tank and you can chart the sensor output for the given fuel levels.
Right	Open	Displays "End". If the Enter Button is pushed, the calibration routine will be ended.
Left	Pushed	After 3 seconds the sensor output for the displayed fuel level will be stored into permanent memory and the next level will be displayed (i.e., 2, 4, 6, 8, etc.)
Center	Pushed	Nothing will happen.
Right	Pushed	After 3 seconds the calibration routine will end.

wait for the sensor readings to stabilize. If the readings do not stabilize, check your resistive fuel sensors with an ohmmeter. It is not uncommon to have problems with resistive fuel sensors. E.I.'s capacitive fuel sensors are much more stable, repeatable and reliable than resistive sensors.

In the calibration chart on page 13, record the sensor output displayed on the FL-2. Note: A reading of 4095 for a FL-2C or FL-2RH (0 for a FL-2R) indicates an open in the fuel sensor or in the wire from the unit to the fuel sensor.

6. With the Tank Selector Switch in the left position, push and hold the Enter Button on the back of the FL-2 until the display increases by 2 gallons. This step stores the previous fuel level into memory and increments the display to the next level. If a mistake is made, you must restart the calibration process from the beginning.

7. Pour two gallons of fuel into the Left Tank so the quanity in the tank matches the reading on the FL-2. **Repeat steps 5 and 6 for each 2 gallons of fuel added to the tank.** If you cannot get a **full 2 gallons** of fuel into the tank (i.e. the quanity of fuel in the tank is less than the level displayed on the FL-2), end the calibration routine as described in step 8. As fuel is added to the tank, the fuel sensor reading must increase.

8. To end the calibration routine put the Tank Selector Switch into the right position (the display will read "End") and push and hold the Enter Button for 3 seconds. The Microprocessor will evaluate the Left and Right Tank calibration data and display an error code if it detects any errors. The error codes are as follows:

9. The Left Tank must not have any reported Error Codes before you can start calibrating the Right Tank. To calibrate the Right Tank, turn the power off to the FL-2, set the Tank Selector Switch to the Right

Error Code L = Left Tank r = Right Tank	Comment
"L1" or "r1"	The full fuel level is less than 8 gallons.
"L2" or "r2"	Not Used.
"L3" or "r3"	The sensor output reads more than 3096 counts when the fuel level in the tank is 0 gallons.
"L4" or "r4"	The sensor output between empty and full is less than 200 counts.
"L5" or "r5"	The sensor output reads more than 4080 when the fuel level in the tank is full.

Tank position and push and hold the Enter Button on the back of the unit. Turn on the power. Wait 3 seconds and release the Enter Button. Only the Right Empty LED should be lit and the digital display should read "0." Preform steps 5-8 for the right tank. Note: When the Tank Selector Switch is in the right position, the FL-2 will display the fuel level to which the tank should be filled. When the Tank Selector Switch is moved to the left position, the FL-2 will display "End."

Program the Display for Gallons, Pounds or Liters:

The digital display may be programmed to read in gallons, pounds or liters. The FL-2 makes all its measurements in gallons and converts to pounds (using a x6 multiplier) or converts to liters (using a x3.75 multiplier). To program the FL-2 for gallons, pounds or liters, perform the following steps:

1. Turn the power to the FL-2 off. Set the Tank Selector Switch to the Total position.

2. Push and hold the Enter Button on the back of the unit. Turn the power on. Wait 3 seconds and release the Enter Button. The display will read "gAL".

3. Use the Tank Selector Switch to select "gAL" (to display in gallons), "Lb" (to display in pounds) or "Ltr" (to display in liters).

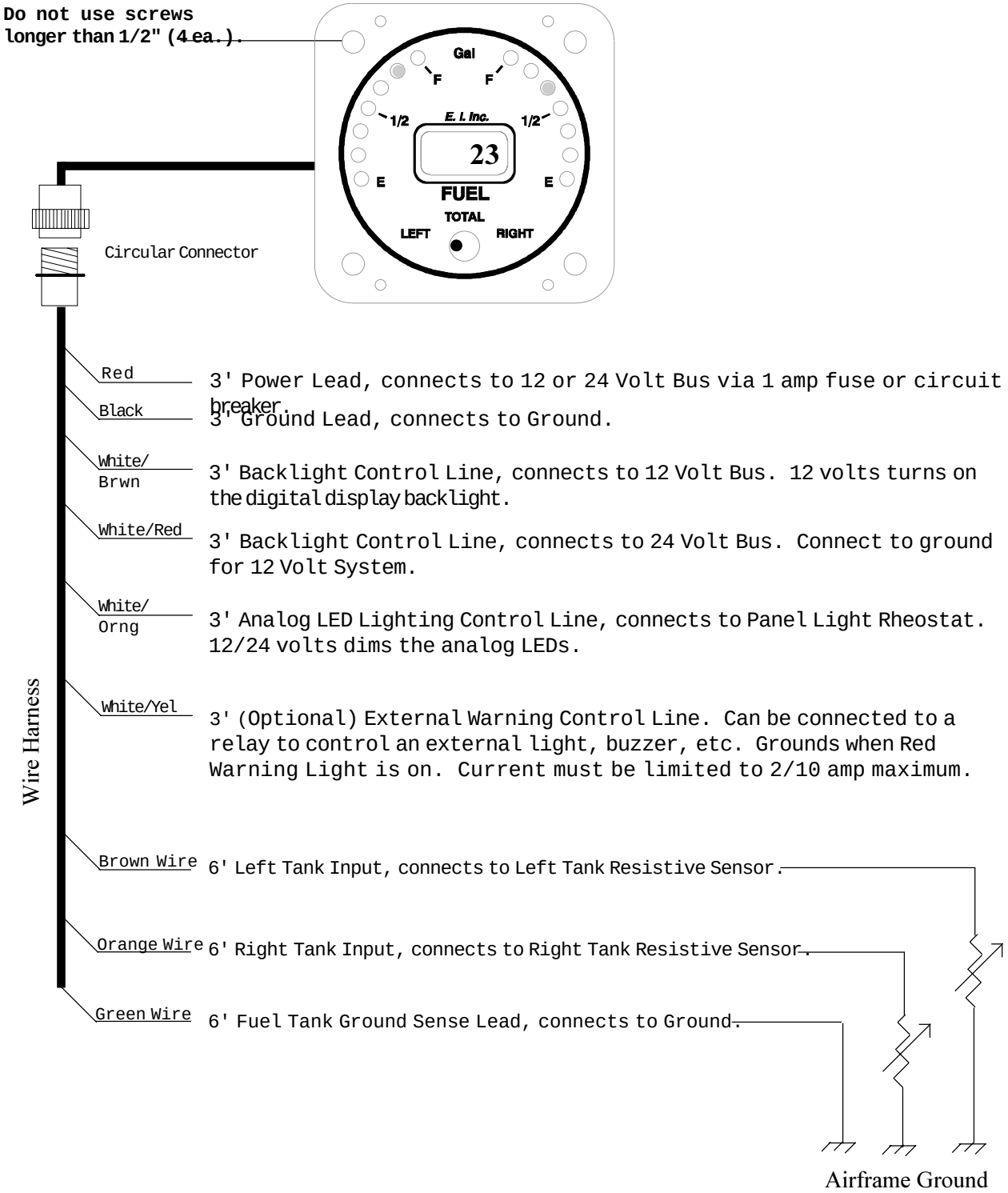
4. Push and hold the Enter Button (on the back of the unit) for 3 seconds.

Provide the Operating and Installation Manual to the Pilot:

A copy of this manual must be presented to the pilot/owner. It contains important information which must be read. A copy of this manual must be kept in the aircraft at all times.

FL-2 Calibration Chart			
Fuel Level	Left Tank Sensor Reading	Right Tank Sensor Reading	Comments
0			**At Empty:** *** The Sensor Output reading must be less than 3096 counts when the tank is empty.**
2			**As Fuel is Added:**
4			* Look for an increasing sensor reading when the first 2 gallons of fuel is added.
6			If there is a problem you may have to reposition your fuel sensor.
8			* The sensor readings must increase as each 2 gallons of fuel is added.
10			
12			
14			
16			
18			
20			
22			
24			
26			
28			
30			
32			
34			
36			
38			
40			
42			
44			
46			
48			**At Full Tank:**
50			* The Sensor Output readings between full and empty must be greater than 200 counts. * The Sensor Output reading must be less than 4080 when the tank is full.

FL-2R and FL-2RH
Wiring Diagram

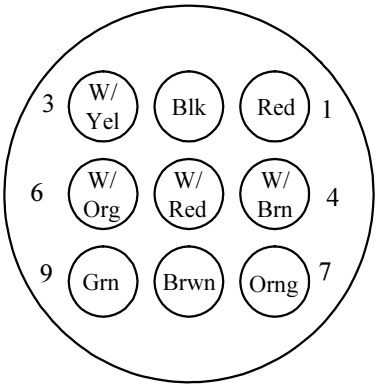


FL-2R and FL-2RH
Circular Connector

Connecting Cable Harness, Back View (wire side)

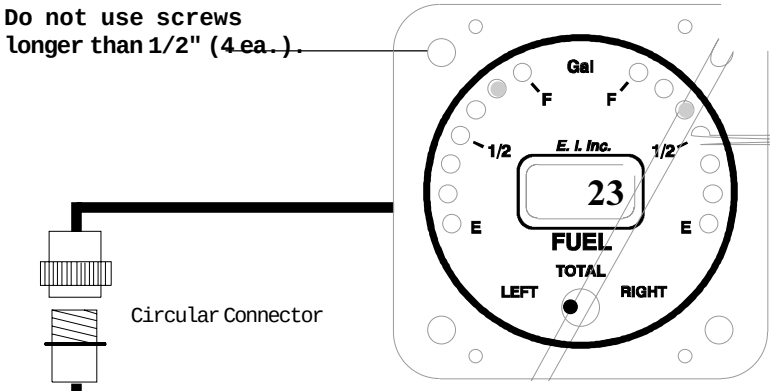
OR

Instrument Connector, Front View



Note: See Wiring Diagram for hook up information.

FL-2C
Wiring Diagram



Wire Harness

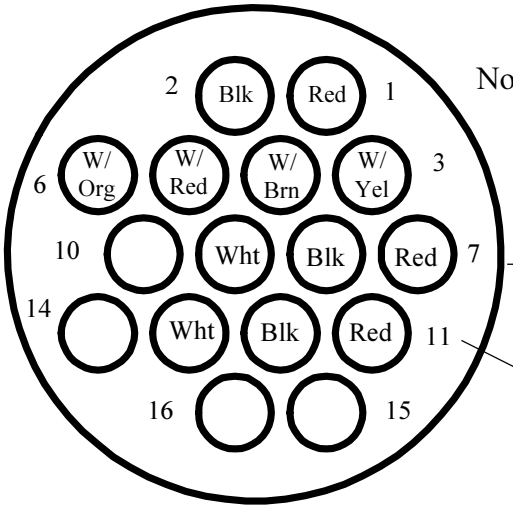
Red	3' Power Lead, connects to 12 or 24 Volt Bus via 1 amp fuse or circuit breaker.
Black	3' Ground Lead, connects to Ground.
White/ Brwn	3' Backlight Control Line, connects to 12 Volt Bus. 12 volts turns on the digital display backlight.
White/Red	3' Backlight Control Line, connects to 24 Volt Bus. Connect to ground for 12 Volt System.
White/ Orng	3' Analog LED Lighting Control Line, connects to Panel Light Rheostat. 12/24 volts dims the analog LEDs.
White/Yel	3' (Optional) External Warning Control Line. Can be connected to a relay to control an external light, buzzer, etc. Grounds when Red Warning Light is on. Current must be limited to 2/10 amp maximum.
Red Wire	6' Grouped wires marked "Left", connects to Left Tank Capacitive Sensor.
Black Wire	
White Wire	
Red Wire	6' Grouped wires marked "Right", connects to Right Tank Capacitive Sensor.
Black Wire	
White Wire	

FL-2C
Circular Connector

Connecting Cable Harness, Back View (wire side)

OR

Instrument Connector, Front View



Note: See Wiring Diagram for hook up information.

7 to 9 (Left Fuel Level Input).

11 to 13 (Right Fuel Level Input).

Specifications and Operating Features

Model:

FL-2R (Dual Fuel Level Instrument for use with resistive sensors that decrease resistance as fuel is added to the tank and the resistance is between 90 and 270 ohms when the tanks are empty.)

FL-2RH (Dual Fuel Level Instrument for use with resistive sensors that increase resistance as fuel is added to the tank and the resistance is between 90 and 270 ohms when the tanks are full.)

FL-2C (Dual Fuel Level Instrument for use with E.I.'s capacitive sensors from 125Hz to 5KHz.)

Case Size and Weight:

2.5" x 2.5" x 3.65" depth, 2 1/4" Bezel.
10 Oz. Unit Only.

Power Requirements:

7.5 to 35 Volts, 1/10 Amp.

Analog Display:

Two sets of 7 High Intensity Light Emitting Diodes (LEDs) in 90 degree arcs with Intensity Control Line available for dimming. Sequential flash test on power up. Microprocessor eliminates LED hunting (flicker).

LED Warnings:

1. **1/4 Tank Difference -** If there is more than 1/4 tank difference between the left and right tank levels, the left and right tank LED's will blink.

2. **1/4 Tank Warning -** If the left or right tank level reaches 1/4 of a tank, the appropriate yellow LED will blink.

3. **Low Fuel -** If the left or right tank reaches 1/8 of a tank, the appropriate red LED will blink.

4. **"OPEN" -** If the wire to left or right fuel tank sensor becomes open on the FL-2C or the FL-2RH (or shorted on the FL-2R, the analog display for the tank with the problem will show an empty tank and the digital display will show "OPEN."

Note: To acknowledge a blinking LED (i.e., to stop the blinking), change the position of the Tank Selector Switch.

Digital Display:

The digital display may be programmed to read in gallons, pounds or liters. The FL-2 makes all its measurements in gallons and converts to pounds (using a x6 multiplier) or converts to liters (using a x3.75 multiplier). The FL-2 uses an LCD display (viewable in direct sunlight), with 12 and 24 volt backlight control wires for night operation. Displays "8888" on power up.

Max, Min and Resolution:

Maximum fuel level for each tank: 50 gallons. Minimum fuel level for each tank: 8 gallons.
Resolution: 1 Gallon (Fuel levels below 2 gallons will be displayed as "0" in the left or right position. In the "Total" position, fuel levels below 3 gallons will be displayed as "0").

External Warning Control Line:

Grounds when any Red Warning Light is on or blinking. Current should be limited to 2/10 amp.