RADIANT TECHNOLOGY PLEASE READ THIS

Radiant Universal Multi Function Instrument (UMFI)

MANUAL AND FEATURES / SPECIFICATIONS UPDATE June 21, 2020

IF YOU WANT TO BE ADVISED OF FREE FIRMWARE UPDATES (for a period of time, up to one year past your purchase invoice date from us or our distributors), you need to send your information (name, serial number, email address, mailing address, phone number, date of purchase, place of purchase) to info@beliteaircraft.com. To get an update, we'll advise you that an update is available via email, and you'll need to mail your display unit back to us, and pay return shipping.

Your new UMFI is loaded with new features and improved quality. While it looks like our older MFI instruments in appearance, under the hood it has new sensor hardware and lots of software improvements.

This document is a supplement to the manual which we still include. Where applicable, this update supercedes the manual.

New features, upgrades, fixes:

1. The airspeed sensor is much more stable as compared to the old design. This was a significant change, as the sensor was upgraded to a Honeywell "true precision" series sensor. If you are interested in learning more about this sensor, go to: https://www.digikey.com/products/en?keywords=480-6643 or search on digikey.com for product 480-6643.
2. Airspeed range is selectable as 100, 160, 200. (200 is still pending the next firmware upgrade)
3. Airspeed units is selectable as MPH or Knots.
4. Pressure altimeter is selectable for Inches or Pascals.
5. Airspeed base setting can now be calibrated by the user.
6. Altimeter base setting can now be calibrated by the user.
7. Rapid airspeed changes are now captured very quickly.
8. Rapid altimeter changes are now captured very quickly.
9. Jitter on the VSI has been eliminated.
10. The VSI vertical column representation has been improved. It was a vertical column, now it is a moving dot.
11. A bug in the digital altimeter was eliminated: after descending through 10,000 feet, the display would briefly hiccup with a substantially incorrect value. That bug is gone. (No one ever reported it, but I had experienced it.)

12. The display head may be returned for service or firmware update without sending back the Airspeed sensor module.
13. When your airspeed exceeds the top of your range, the digital value on the bottom will keep showing the airspeed. For instance, if you have a 100mph unit, and you are actually overspeeding to 125 mph, the scale will show full to 100mph, the digital value will show 125 mph.
14. Slight problems in gridline boxes on the screen have been improved. There were a couple of missing pixels here and there.
15. You can now see how many times your unit has been power cycled.
16. The front 'splash' screen now says "Radiant" instead of "Belite". Radiant has been our instrument company for a long time.
17. The ASI sensor box aesthetics have been improved. It is now printed on our 3D MarkForged printer using nylon with chopped carbon fiber. The "S" and the "P" are very clearly marked.
18. Every unit comes with a dimmer potentiometer, pre-wired.
19. The top speed is approximately 195 mph Indicated Airspeed (168 Knots)!
20. The sensor I've selected will allow future increases to this top speed value. That is saved for a future firmware update.

Installation:

1. Please don't overtighten the 4 corner bolts, and don't overdrill the holes.
2. For low speed aircraft, I have never installed the static lines. There are two of them, one for the ASI, and one for the altimeter / VSI.
3. I've supplied barb adapters for all 3 lines. Please let us know if they don't work for you, we can obtain other sizes. McMaster.com has a great selection of barb adapters.
4. Cut the 9 volt connector off and wire to your avionics power and ground through a 1 amp fuse.
5. The instrument will work with anything between 10 and 28 volts.

Setup:

For the first 10 power cycles, the unit will display setup information. Ignore it if you've already set the unit up (or if we have done it for you.) Also, we have pre-configured units according to your requirement. Let the unit power up fully, and you can see how it is configured: knots or mph, range of 100, 160, 200, inches vs pascals.

1. The first screen shows KNOTS or MPH. Touch the one you want for one second. The screen will confirm your selection by removing the other one. If you do nothing, it will advance to the next screen, and use the value already saved in permanent memory.

2. The second screen shows 100 or 160. Touch the one you want for one second. The screen will confirm your selection by removing the other one. If you do nothing, it will advance to the next screen, and use the value already saved in permanent memory.
3. The third screen shows INCHes or PASCal. Touch the one you want for one second. The screen will confirm your selection by removing the other one. If you do nothing, it will advance to the next screen, and use the value already saved in permanent memory.
4. The fourth screen shows a green number, such as 0028. (The airspeed indicator, while in operation, will show RED values until it reaches this number). If your minimum flyable speed is 42 (for example), change this value to 0042 by holding the up button. When you have the value you want, stop pushing the up / down buttons. The value will save in a few second and move onto the next screen.
5. The fifth screen shows a yellow number, such as 0063. This is the bottom number of your airspeed caution range. Change it to your liking.
6. The sixth screen shows a red number, this is your Do Not Exceed or redline number. Change it to your liking.
7. The seventh screen shows a CALIBRATE ALT number. It has a factory set value which will be between the range of 0 and 200. Don't change it now (you can do it later, if you have need.) If your altimeter was reading 30 feet too high, you would reduce this number by 30.
8. The eight screen shows a CYCLE count number. This is how many times your unit has been powered up and down.

You've got 10 cycles to program your unit. Don't be anxious, you can reset the CYCLE count back to zero anytime you want, and re-setup your unit.

How to reset the CYCLE count:

1. Before powering up, hold the LEFT button. Keep it pressed in!
2. Apply power.
3. Wait five seconds.
4. Release the button.

Your CYCLE count will now be zero, and your unit can be setup for the next 10 cycles.

Usage:

1. Turn power on and let the unit stabilize. This takes a minute or so.
2. Press the UP and DOWN buttons to change your pressure setting.
3. Press both simultaneously for TWO SECONDS and it will reset the setting to 29.92 (or 1013 – pascals). DO NOT EXCEED FIVE SECONDS. **(The reason is in calibration section, below).**

4. Vary the potentiometer to dim / brighten the screen.

Calibration of ASI and Altimeter:

1. Power the unit up on the ground, in a location where absolutely no variation in airspeed will occur (for instance, a calm day or in a hangar). Also, if you are calibrating the altimeter, a calm day is also best, with your field pressure close to 29.92. You are wasting your time if you attempt calibration on a day when pressure is rapidly changing.
2. Allow the unit to be powered up for 10 minutes, for voltage and temperature stability.
3. Note your current altimeter reading, as adjusted for field pressure. How many feet is it off? If it is too high or too low, determine the difference you want. IF it is high, you want to reduce the calibration number by that amount, if it is too low, you want to increase the calibration number by that amount. For example, my current field pressure is 29.94, which I have dialed into the instrument. The value of altitude shown is 1443, and I know that I am at a surveyed altitude of 1425. Therefore, the difference is 18 feet (too high), and I want to reduce the value by 18.
4. Press the UP and DOWN buttons simultaneously, for a minimum of 10 seconds. Then release both of the buttons.
5. CALIBRATE ASI will show, with YES NO on the bottom of the screen. You have to make a selection, or the screen will just stay there forever. If you want to calibrate the ASI, push YES. Otherwise, push NO. This action resets the ZERO point of the ASI, and is most likely to be needed as your flying season changes from warm weather to cold weather and back again. The sensor is very linear and very accurate over a long time, so the recalibration does not affect that. Push the button of your choice.
6. CALIBRATE ALT will show a value, for instance, “0070”. We noted that we wanted to reduce this value by 18, to correct our altimeter. Push the up and down buttons as needed to get the value you want, then stop pushing them. If you do nothing, it will advance to the next screen.
7. CYCLES will show up, simply providing you the cycle count.
8. The unit will automatically advance back through to the main screen.
9. Power the unit down. It’s ready to go
10. If you want to see your CYCLE count, do the calibration sequence. Press “NO” on the ASI, and do nothing on the ALT, it will advance through to your CYCLE count.
11. Should you accidently enter calibration mode in flight, simply press “NO” and the unit will cycle back to operational mode.