



User Manual

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UMFI — Universal Multi-Function Instrument

UASI — Universal Airspeed Indicator

RDAL — Radiant Digital Altimeter

Features: Digital Altitude / Analog Dial Altitude / Indicated Airspeed / True Airspeed / Analog Dial Airspeed / Digital VSI / Settable Kollsman / Outside Air Temperature / Density Altitude / G-Meter with Strip Chart

THIS UNIT IS NEITHER STC'd, TSO'd, OR BUILT IN A PMA FACILITY. Use ONLY in experimental, ultralight, and Light Sport Aircraft (with manufacturer approval).

INTRODUCTION

RADIANT Technology's updated instrument lineup (2026) brings three distinct products into a single family, all sharing a common hardware platform and a common user interface. Each unit displays multiple points of flight data simultaneously on one sunlight-readable, high-contrast color screen.

The family comprises three product variants, each available in two case sizes:

- UMFI — full multi-function instrument, combining altimeter and airspeed in one unit, with density altitude, VSI, OAT, and G-meter.
- UASI — airspeed-focused instrument, with digital altitude, true airspeed, VSI, OAT, and G-meter.
- RDAL — altimeter-focused instrument, with density altitude, VSI, OAT, and G-meter.

Each variant is available in a 2-1/4" case (for a compact panel installation) and a 3-1/8" case (for the standard round panel cutout). The fractional size and product type of the unit you purchased are shown on the top line of the setup screen — the MOD row.

The G-meter is included on every variant. It may be enabled or disabled in setup. See the G-METER section later in this manual.

Part Numbers

- UMFI, 2-1/4": UMFI-22-GEN2
- UMFI, 3-1/8": RI-2024-5
- UASI, 2-1/4": RUASI-22-GEN2
- UASI, 3-1/8": RI-2024-6
- RDAL, 2-1/4": RDAL-22-GEN2
- RDAL, 3-1/8": RI-2024-7-DAL

TECHNICAL SPECIFICATIONS

The following ranges apply across the product family. Features marked with a variant name apply only to that product.

Altimeter (UMFI, RDAL)

Display range	0 to 22,000 feet (verified), higher altitudes supported with accuracy typical of the MPL3115A2 pressure sensor
Resolution	1 foot digital; short (10,000 ft) hand and long (1,000 ft) hand on dial
Kollsman range	29.00 to 31.00 inHg, or 950.0 to 1050.0 hPa (user-selectable units). The hPa mode adjusts in 0.5 hPa steps.
Kollsman default	29.92 inHg / 1013.5 hPa
Kollsman reset	Briefly press both buttons simultaneously to reset the Kollsman value to standard pressure.
Update rate	4 Hz

Airspeed Indicator (UMFI, UASI)

Display range	0 to 100, or 0 to 200 (user-selectable TOP setting)
Units	Knots or MPH (user-selectable UNT setting)
Dial markings	User-settable arcs: white, green, yellow, and red. White and first-notch values are entered separately in setup. The screen row labels are VSO, VS1, VFE, VF1, VNO, and VNE.
Calibration	User-commandable zero, saved to non-volatile memory
Update rate	4 Hz

True Airspeed (UMFI, UASI)

Computation	Derived from IAS and density altitude. Density altitude is computed from pressure altitude and outside air temperature.
Display	Digital, in the TA box of the data stack
Units	Matches IAS (knots or MPH)

Density Altitude (UMFI, RDAL)

Display range	Verified to 27,000 feet density altitude in testing.
Computation	Pressure altitude referenced to standard pressure plus temperature correction from OAT.
Resolution	100-foot steps
Display	Digital, in the DA box of the data stack. DA is highlighted in red.

Outside Air Temperature (all variants)

Sensor	External probe, 2-meter harness (~80 inch)
Display range	-40°F to +180°F / -40°C to +80°C (B3950 NTC)
Units	°F or °C (user-selectable TMP setting). This affects displayed units only; internal calculations are unchanged.
Calibration range	±20°C (±36°F) via the CAL setup row
Update rate	2 Hz

Vertical Speed Indicator (all variants)

Display range	±9,999 feet per minute
Dead-zone	±30 fpm (displays 0 within this band)
Averaging window	6 seconds
Display	Digital, in the VS box of the data stack

G-Meter (all variants)

Sensor full-scale	±4 G
Displayed range	-2.0 G to +4.0 G
Digital readout	Signed, one decimal place (tenths of G), updated at 2 Hz
Strip chart sweep	Approximately 113 seconds across the display width
Grid	1 G per horizontal line. The trace updates every 0.5 seconds and sweeps across roughly 113 seconds of recent history.
Trace	Green min/max "candle" bar per 0.5-second update period

Electrical & Physical

Power	+9.0 to +16 VDC, approximately 0.110 A
Fuse	1 A (user-supplied, recommended)
Dimming	Internal, 8 steps, advanced by long-press of the left button
Display	Sunlight-readable, high-contrast color
Case	Black nylon with chopped carbon fiber, 3D printed
Mounting	2-1/4" rectangular or 3-1/8" round panel cutout (hardware included)
Operating temperature	-20°C to +70°C (nominal)

INSTALLATION

- Install the instrument in the appropriate panel opening for the case size you purchased.
- Attach the black wire (ground) to ship ground.
- Attach the red wire (power) to ship power, +9.0 to +16.0 volts DC. Do not exceed 16 volts. Use an appropriate fuse (1 amp recommended) and an avionics master switch for operation.
- Attach the temperature probe (via the included 2-meter cable) to a shaded location on the aircraft, such as the underside of a wing, away from engine heat, exhaust, and direct sunlight. The temperature probe harness is not polarized.
- UEFI and RDAL use an internal static source vented to the cabin for altitude-related measurements.
- UEFI and UASI include a pitot/static dongle for the differential airspeed sensor. Using the included adapter tubes, connect this to the aircraft pitot and static lines as applicable.

SETUP

The setup screen is common to all three products in this instrument family. Most users will only need to set up the instrument once, though setup can be re-entered at any time. Factory defaults are already applied, and the unit will operate out of the box.

Entering the Setup Screen

- With power off, press and hold the right-hand button.
- While continuing to hold the right button, turn the power on. After a brief splash, the setup screen will appear. You may then release the button.
- To commit and exit setup, press and hold the right button (ADVANCE) from the last row.
- To abort setup and revert any unsaved changes, press and hold the left button (ABORT).

Navigating the Setup Screen

The setup screen lists configuration rows. The currently-active row is highlighted. Brief presses of the left or right button adjust the value on the active row. A long press of the right button (ADVANCE) commits the current row and moves to the next. A long press of the left button (ABORT) exits setup without committing the current row.



Setup screen, 3-1/8" case. The MOD row is highlighted yellow.



Setup screen, 2-1/4" case. Identical layout, different form factor.

Setup Rows

The setup rows are presented in the following order:

- **MOD** — Displays the product variant you purchased: UMFI, UASI, or RDAL. This is the top line of the setup screen and reflects the fractional product identity on this unit.
- **GMT** — **G-meter ON/OFF. Set to ON to include the G-meter in the dial rotation; set to OFF to remove it. Factory default: ON.**
- **TOP** — Airspeed dial top-of-range. Choose 100 or 200. Affects UMFI and UASI only; RDAL ignores this setting.
- **UNT** — Airspeed units. Choose KTS (knots) or MPH.
- **KOL** — Kollsman window units. Choose INHG (inches of mercury) or HPA (hectopascals / millibars).
- **TMP** — **Temperature display units. Choose °F or °C. This affects the displayed OAT units only; internal calculations are unchanged.**
- **CAL** — Temperature calibration. Shows live OAT as the probe reports it. Use the left and right buttons to nudge this value up or down in small increments to match a known-good thermometer.
- **VSO** — Bottom of the white arc on the airspeed dial (stall speed, flaps extended). UMFI and UASI only.
- **VS1** — **Bottom of the green arc (stall speed, clean). UMFI and UASI only.**
- **VFE** — Top of the white arc (maximum flaps-extended speed). UMFI and UASI only.
- **VF1** — **End of the first-notch arc / beginning of the yellow region. UMFI and UASI only.**
- **VNO** — Top of the green arc (normal operating speed). UMFI and UASI only.
- **VNE** — Top of the yellow arc / beginning of the red arc (never-exceed speed). UMFI and UASI only.

After the last row, the unit commits your settings to non-volatile memory and begins normal operation. You can re-enter setup at any time by power-cycling with the right button held.

OPERATION

Turn the unit on using an external switch. The front bezel switch must also be turned on. The unit consumes slight power even when this switch is on; it is primarily an aid for intentional in-flight shutdown.

Brightness may be adjusted at any time by pressing and holding the left-hand button. A long press advances the brightness through eight internal dim steps, wrapping from the brightest step back to the dimmest. If the button remains held, the brightness will continue stepping through the available levels.

All three products share a common right-column data stack listing the following points of flight data:

- AL — Indicated altitude, in feet, adjusted for Kollsman.
- KO — Kollsman window setting, in inches of mercury or hectopascals.
- AS — Indicated airspeed.
- TA — True airspeed, derived from IAS and density altitude.
- °F or °C — Outside air temperature.
- VS — Vertical speed, feet per minute.
- DA — Density altitude, always highlighted in red.

The main dial area to the left of the data stack is variant-specific and switchable (see Dial Switching below).

Airspeed Dial (UMFI and UASI)

The airspeed dial shows current indicated airspeed in analog format, with color arcs defined by the VSO, VS1, VFE, VF1, VNO, and VNE values from setup. The unit label in the dial center shows KTS or MPH based on the UNT setup value.



Airspeed dial, 3-1/8" case.



Airspeed dial, 2-1/4" case.

Airspeed Calibration (Zeroing the ASI)

The airspeed sensor may drift slightly with temperature or over time. To set the current reading as zero (with the pitot fully at rest and no airflow or residual pressure), switch to the airspeed dial view and press and hold both buttons simultaneously for about one second, then release. The center of the airspeed dial will briefly blink to confirm that the calibration committed and was saved to non-volatile memory.

If the calibration does not commit (no blink), the pitot may still be seeing airflow or residual pressure. Let the unit settle fully, then try again. Important: a brief simultaneous press of both buttons does not zero the ASI; it resets the Kollsman setting to standard pressure.

Altimeter Dial (UMFI and RDAL)

The altimeter dial shows current indicated altitude in classic round format, with a short 10,000-foot hand and a long 1,000-foot hand. Digital altitude appears in the AL box in the right-column data stack.



Altimeter dial, 3-1/8" case.



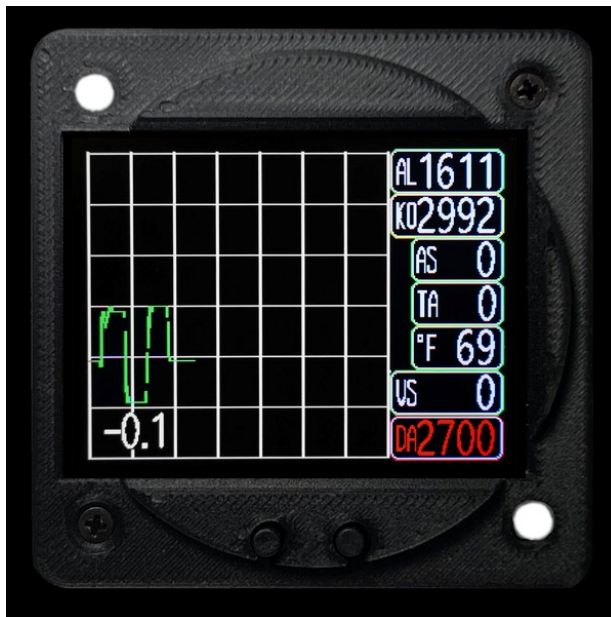
Altimeter dial, 2-1/4" case.

Setting the Kollsman Window

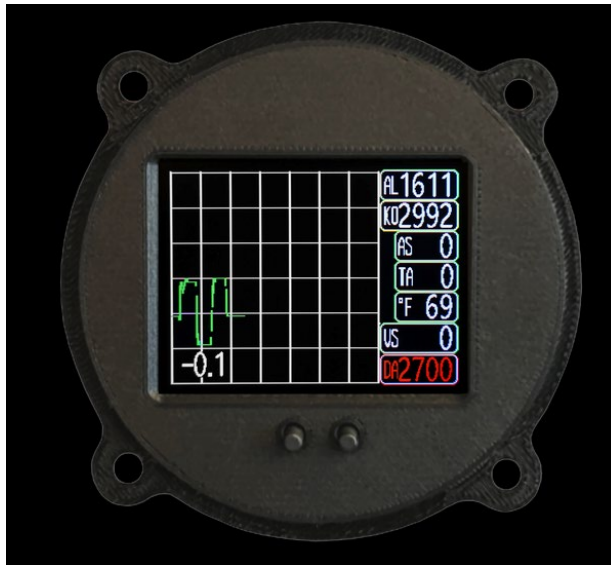
You set the Kollsman window using the left and right buttons. Briefly press the left button to decrease the setting or the right button to increase it. Briefly press both buttons together to reset the value to standard pressure: 29.92 inHg or 1013.5 hPa, depending on the selected unit mode. The altitude will be recalculated and shown both digitally and on the dial.

G-Meter (all variants)

The G-meter is available on each of these instruments. It shows vertical acceleration as a scrolling strip chart, with a large live digital G value in the lower-left corner. It may be enabled or disabled in setup.



G-meter view, 2-1/4" case.



G-meter view, 3-1/8" case.

The strip chart uses a white grid. Each horizontal line represents one G. The trace updates every 0.5 seconds and sweeps across approximately 113 seconds of recent history.

The green trace is drawn as a short vertical bar spanning the minimum and maximum G seen during each 0.5-second update interval. This format preserves brief spikes that a single sampled point might miss.

The large digital G value at the lower left is live, updated at two hertz. It includes a sign (+ or -), a leading digit, a decimal point, and tenths. The current displayed range is -2.0 G to +4.0 G.

The G-meter is read from an internal accelerometer. It measures vertical-axis acceleration perpendicular to the panel, corresponding to aircraft vertical load factor when the instrument is installed upright in the panel.

If you do not wish to see the G-meter in your dial rotation, set the GMT setup row to OFF.

Dial Switching

The main dial area can be switched between multiple views by pressing and holding the right button for about one second (a long press). The rotation depends on the product variant and the GMT setting:

- UEFI with GMT=ON: Altimeter → Airspeed → G-meter → Altimeter (three-way cycle).
- UEFI with GMT=OFF: Altimeter ↔ Airspeed (two-way).
- UASI with GMT=ON: Airspeed ↔ G-meter (two-way).
- UASI with GMT=OFF: Airspeed only (no switching).
- RDAL with GMT=ON: Altimeter ↔ G-meter (two-way).
- RDAL with GMT=OFF: Altimeter only (no switching).

The right-column data stack (AL, KO, AS, TA, temperature, VS, DA) remains visible in all dial views.

TROUBLESHOOTING

Unit reads airspeed at rest

If the unit shows non-zero airspeed when the aircraft is at rest and the pitot is not exposed to airflow, run the Airspeed Calibration procedure described under the Airspeed Dial section. The unit will zero the airspeed at its current reading and save the calibration to non-volatile memory.

Altitude is slightly off

Minor altitude offsets are usually due to the Kollsman window being set incorrectly. Obtain the current altimeter setting from a nearby weather reporting station and adjust the Kollsman value with the left and right buttons. If the field elevation still does not match with the Kollsman at the reported value, the sensor may need a small fixed offset; contact Radiant Technology for service.

Temperature reads high or low

The temperature probe should be mounted in a shaded location on the airframe, away from engine heat, exhaust, and direct sunlight. The underside of a wing or inside a cool air intake are good locations. If the probe location is correct and the reading is still off by a consistent amount, use the CAL row in setup to apply a small calibration offset.

Density altitude reads noticeably different from expectation

Density altitude is computed from pressure altitude and current OAT. Verify that the Kollsman setting is correct and that the temperature probe is reading accurately. On a hot day, density altitude will be significantly higher than indicated altitude; on a cold day, it will be lower.

Brightness is too low or too high

Adjust using the internal dim function: press and hold the left-hand button to step through the eight dim levels. If you continue holding the button, the brightness will continue rolling through the levels until you release it.

DISCLAIMERS

Products from Radiant Technology are not designed to be used in applications where their failure would endanger safe flight or human life in any way.

They are intended solely for use in VFR conditions. They are not certified to meet any Technical Standard Order and are not produced under a Parts Manufacturing Authority (TSO / PMA). As a result, if installed in the aircraft, they are suitable only for use in experimental and ultralight aircraft, and in Light Sport Aircraft, if meeting the requirements of the respective manufacturer.

WARRANTY

Your new Radiant Technology instrument carries a three-year warranty from the invoice date. Please contact us at support@radiantinstruments.com should your product need warranty service. There is an additional charge for international warranty service.

RETURN / REFUND INFORMATION

Must be returned in new, uninstalled, resalable condition within 60 days after receipt. Ship to Radiant Technology, PO Box 20690, Wichita KS 67208.