Item#: RTCC-020

RADIANT TURN COORDINATOR

Specifications, Installation and Operation Instructions for the Belite RADIANT Turn Coordinator

LAST UPDATED: September 2016

The Belite RADIANT RTCC is designed to show simultaneous turn (yaw) and bank (roll) information. Yaw information is derived from a solid state gyroscope. Roll information is derived from a solid state accelerometer.

All of this information is presented digitally and graphically on a single vivid LCD screen. The instrument fits in a standard 2.25" enclosure.

This instrument will automatically stabilize and provide the pilot with information regardless of initial position, acceleration, or attitude.

FEATURES

- Brilliant daylight readable LCD display
- Provides current yaw in illustrative (airplane) format, along with degrees per second in digital format.
- Comes out of reset from any flight attitude – gyroscope does not lose reference lock.
- Provides current roll via an illustrative bubble format.
- Display is "sunglass friendly" -- bright; readable with polarized glasses.
- Works between -20C and +60C

SPECIFICATIONS

- Weighs 1.6 ounces (50 grams)
- Requires 10 to 36 volts < 100ma @ full screen brightness. When screen is dim, power consumption of unit is approximately 15ma @ 28V.
- Screen is non-polarized color LCD display TFT Active Matrix with resolution of 240 x 320 pixels across a 2.4" display. Some corner and side areas of the display are not visible due to enclosure requirements.
- Unit operating temperature between -20 and +60C, including LCD screen.
- Unit uses solid state gyroscope and accelerometer.
- Maximum turn rate for airplane illustration is 5.0 degrees per second.
- Maximum turn rate for digital yaw is > 10.0 degrees per second.
- Dimensions for screen cutout are shown below, see Figure 1.
- Unit dimensions are 2.35" square with a thickness of 0.75", not including connector height.
- Screen display mode is transmissive, normally deep black. This means that in the absence of backlighting, you will not be able to read the screen.
- Screen contrast ratio is minimum of 640.
- Screen luminance is minimum of 450 cd/M2 at full brightness.
- Screen viewing angle is up to 80 degrees.
- Tactile switch input is provided for calibration.
- Voltage level information is provided for ship power. Voltage range is provided between 10 and 36 volts.
- Two connectors are provided for attaching power, probes, and dimming input.

DISCLAIMER:
Products from Belite Electronics 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, they are suitable only for use in experimental and ultralight aircraft, and in Light Sport Aircraft, if meeting the requirements of the respective manufacture.

WARRANTY:
Your new Belite Avionics instrument carries a one year warranty. Please contact us at info@beliteaircraft.com should your product need warranty service. International warranty service will be charged $50.00 US for repairs, which includes return shipping after repair. Payment must be received before service begins.

Ship to: Belite Aircraft
8610 East 34th St. North #1
Wichita, KS 67226

RETURN/REFUND INFORMATION:
Must be returned in new, resalable condition within 14 days

RADIANT INSTRUMENTS

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T: 316-253-6746
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RADIANT INSTRUMENTS

SPECIFICATIONS CONT.

- FIVE PIN CONNECTOR:
  - GROUND, NC, NC, POWER INPUT, BACKLIGHT DIMMER
- SEVEN PIN CONNECTOR:
  - GROUND, NC, NC, +5V REGULATED POWER OUTPUT, DNC x 3 (DO NOT CONNECT x 3)
  - WARNING: DO NOT ATTACH ANY EXTERNAL POWER INPUT TO THE +5V OUTPUT on the seven pin connector. DOING SO WILL DAMAGE OR DESTROY YOUR UNIT.

APPLICATIONS

- May be used to display turn rate and roll coordination information in experimental and ultralight aircraft; also in LSA aircraft with manufacturer approval.
- NON-TSO'd; non-PMA'd.

INSTALLATION

- Fits any standard 2.25" mounting hole.
- Use only the screws provided. DO NOT DRILL OUT HOLES FOR LARGER SCREWS. Doing so will void warranty!
- Requires a voltage source between 10 and 36 volts.
- Power draw is <100 milliamps (backlight full on).
- Use with an external avionics power switch (not supplied).
- Use with an external dimmer potentiometer (supplied with unit).

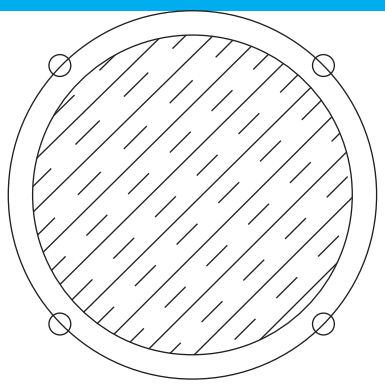

Figure 1: 2.25" Main Cutout. Four 0.170" mounting holes are on 2.625" diameter circle. Inner circle is 2.25".

INSTALLATION DETAILS

- The rear main external electrical connector has five wires: ground, none, power, and backlight input. A harness is supplied with the unit. The ground must be connected to avionics (system) ground. The power must be connected to a voltage source between 10 and 36 volts. The backlight input may be connected to a variable voltage source, providing between 0 and 5 volts. Typically, this is supplied from the wiper of a potentiometer (included.) If left unconnected, the display will be dim.

NOTE: DO NOT DRILL OUT THE CORNER HOLES. THIS WILL DAMAGE THE LCD MODULE AND VOID YOUR WARRANTY!

SWITCHES & INDICATORS

- The main color LCD screen provides continuous graphic information to the pilot.
- A tactile switch allows unit calibration.

FUNCTIONALITY

- This gauge provides real time roll and yaw information. The yaw information is shown with an illustrative airplane model and also in digital degrees per second format. Roll information is shown with a classic bubble illustration.
- The unit is calibrated so that a 2 minute turn will match the left or right deflection hash marks. This is equivalent to a rate of 3.0 degrees per second.

OPERATION

- Turn the unit on. A splash screen will display containing your model number and serial number. The screen will also show our company name, 'Belite', along with the part number.
- If the display is dim, turn up the brightness using the included potentiometer.
- After a few seconds, the display will show the main screen. It looks like this. (See figure at right.)
- Initialization may take up to one minute.
- The top of the screen shows current yaw rate in degrees per second.
- The middle of the screen shows the airplane illustration, with Left and Right turns indicated.
- The bottom of the screen shows inclination in roll axis with an illustrative bubble.
- The upper right shows current system voltage. The value is yellow if below 12 volts; green otherwise.
- The left LEDs are defined as follows:

  Top: General flag; red if instrument is resetting or in error condition.

  Middle: Yaw rate caution; normally white. Yellow if yaw is slewing faster than software can indicate. Red if the airplane illustration is at end of range (however, digital readout continues to show greater values of yaw.)

  Bottom: Normally off. This LED flashes red if calibration is attempted when voltage is below 12 volts.

CALIBRATION

- When in straight and level flight, press and hold the calibration button for five seconds. The unit will reset and reboot.

TROUBLESHOOTING & SPECIAL TIPS

Here are some things to ponder when things aren't working right, from basic to advanced.

1. Is the display turning on? If not, check to make sure that you are providing power and ground.
2. My screen is too dim…. Turn up the brightness on the potentiometer. If the potentiometer is disconnected, your display will be very dim.
3. I'm flying in low light or dusk conditions, and my screen is too bright… Turn the brightness down on the potentiometer.
4. The bubble doesn't center... Calibrate your unit.
5. The turn rate shows as a turn, and I'm not turning... Calibrate your unit.

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