

RC T1000 BASIC

Telemetry system for RC Altimeter with variometer function



Manual version: 1.1

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Introduction

The RC T1000 BASIC was designed especially for use with the RC Altimeter. It is a telemetry system to track current altitude, climb/sink speed, maximum altitude achieved in flight and battery voltage of radio controlled (R/C) aircraft in real time. All flight data is displayed on high contrast LCD display.

How it works

The RC T1000 BASIC system uses a 433MHz two way link to transfer data from your R/C plane via RC Altimeter module to the ground unit. Data transfer is digital so there won't be any noise or wrong data reception.

Vario works on principle that the RC Altimeter logger detects small changes in altitude and transmits them to the RC T1000 BASIC. Changes small as 10 cm/s will be indicated by change in tone. Sinking produces a continuous tone which becomes deeper with increasing sink rate. Climbing gives a pulsed rising sound. The pulse frequency rises as the rate of climb increases.

If the RC T1000 BASIC detects that the battery in your R/C plane is low, it alerts you with low battery announcement. If there is no reception, "----" is displayed and audio is on mute.

Key features

- Variometer with audio tone for lift or sink.
- Mute function – train your eye for weak thermals.
- Alarm signal for low battery of yours R/C plane.
- Download flight data from RC Altimeter via RF link.
- Sets all settings for RC Altimeter.
- Onboard 350mAh LiPo battery for up to 8 hours working time.
- Two way digital data transition at 10 channels.
- Set RC Altimeter to zero – opening of canopy is not needed any more.
- Strong and durable casing.
- Long range - more than 1 km.
- Small and lightweight at only 20 grams (ready to fly with RC Altimeter).

Specifications

Board Dimensions	59 mm x 42 mm x 17 mm 2.32" x 1.65" x 0.67"
Weight	63 grams
Temperature Range ¹	-10°C ~ +60°C
Onboard Battery	1 cell Kokam LiPo 3.7 V 350 mAh
Duration	8 hours
Displayed Altitude Resolution	0.1 meter.
Displayed Battery Resolution	0.1 volts.
Displayed Vario Resolution	0.1 m/s.

¹ Specifications are taken from component ratings and system limits and may not have been tested to the full extent of the specified ranges.

NOTE:

For charging the RC T1000 BASIC, set your charger for:
1 LiPo cell 3.7V, charging current max. 350 mA.

Physical overview

Figure 1 shows the RC T1000 BASIC module. To turn the module ON, press and hold the Left/ON button for 2 s. To turn it OFF, press and hold the Right/OFF button for 4 s.

The module consists of LCD display, three pushbuttons, 3 pin connector that is used for charging, 4 pin connector used for PC interface (download altitude data) and 3.5 jack phone connector for audio tone.

For charging you will get 3 pin cable with red wire soldered to middle pin and black wire soldered to side pins, so it doesn't matter how you turn it when you charge the RC T1000 BASIC.

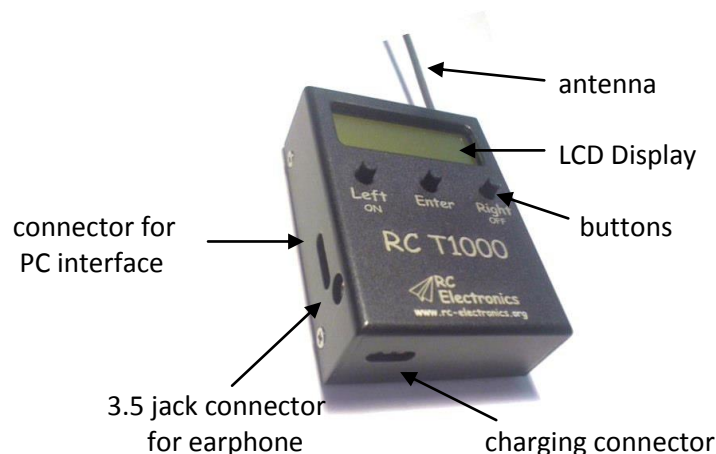
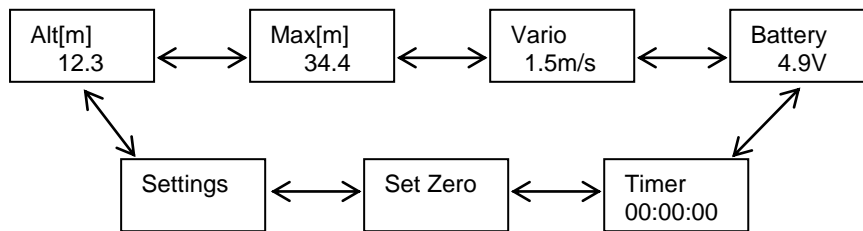


Figure 1: The RC T1000 BASIC module.

Main menu



Alt

Displays current altitude of your R/C plane. Displayed units are in brackets. Maximum displayed altitude: ± 3100.0 (meters, yards, feet).

Max

Displays maximum reached altitude in current flight. Displayed units are in brackets. Maximum displayed altitude: ± 3100.0 (meters, yards, feet).

Vario

Displays current lift or sink. Maximum displayed vario: ± 999.9 (m/s, y/s, f/s). If you press Enter and you select MUTE function, M will appear in right upper angle. To deselect MUTE function press Enter again in this screen and letter M will disappear.

Battery

Displays voltage of the onboard battery. Maximum displayed battery is 18.8 V. If you press Enter, battery voltage will be announced.

Timer

To start/stop the stopwatch, press Enter. To clear it, press and hold Enter until it shows 00:00:00. Every time you turn module ON, stopwatch will reset to 00:00:00. Stopwatch has precision of 1 s.

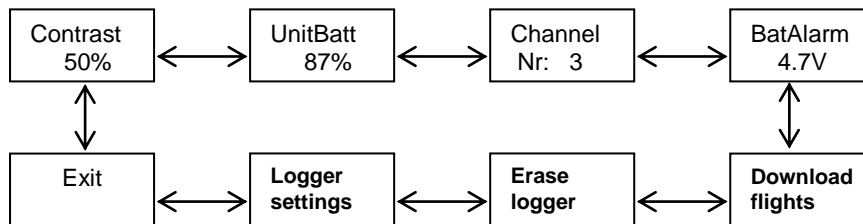
Set Zero

Press Enter button and RC Altimeter will set altitude to zero, create a new flight in logger and reset maximum altitude reached in last flight. If Error! appears on screen, please try it again. After setting RC Altimeter to zero you will get max menu on screen to check if it is set to 0.0.

Settings

Press Enter button to enter the Settings menu.

Settings menu



Contrast

Displays contrast of LCD. To change it press Enter and > < markers will appear. Change value with the left/right button. To confirm it press Enter button again and > < markers will disappear.

UnitBatt

Displays percentages of the RC T1000 BASIC unit battery left.

Channel Nr

Displays on which of 10 available channels, is telemetry operating on. To change channel number you can connect the RC TRX10 as shown on figure 2 to the RC T1000 BASIC. Press Enter and you are able to select new channel with left/right button. Press Enter again to confirm. Disconnect the RC TRX10 and you are ready to operate on a new channel.

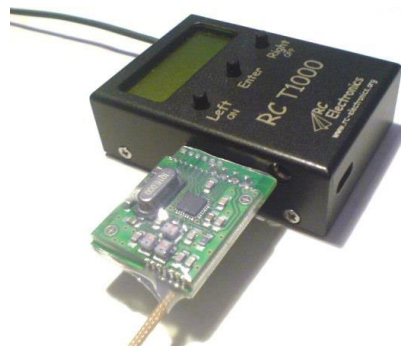


Figure 2: The RC T1000 BASIC with the RC TRX10 connected to it.

BatAlarm

Displays the voltage threshold to activate low battery alarm. To change the voltage press Enter and > < markers will appear. Change value with the left/right button. To confirm it press Enter button again and > < markers will disappear. Alarm will turn ON when battery voltage in your R/C plane will reach the threshold voltage and will stay there for more than 15 seconds. It is low frequency pulse audio alarm that overrides vario tone. In battery screen appears: LOW! signal.

Download flights

When pressing Enter in this menu, the RC T1000 BASIC will start downloading flight data. All functions are disabled at that time until download reaches 100%. Download can last up to 3 minutes if RC Altimeter logger is full. After the RC T1000 BASIC has finished downloading flight data from RC Altimeter, you can connect RS232 interface to the module as shown on figure 3. Now you are able to download this data from the RC T1000 BASIC to PC.



Figure 3: The RC T1000 BASIC with USB interface.

Erase Logger

Press Enter button and you will erase RC Altimeter logger. If error message appears, please try it again.

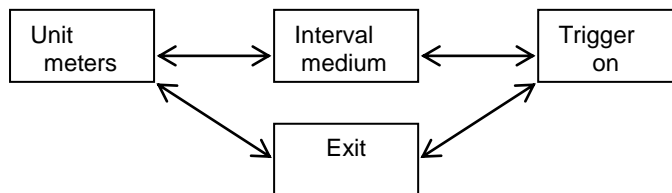
Logger Settings

Press Enter button and you will enter logger settings menu.

Exit

Press Enter button to return to the main menu.

Logger settings menu



Unit

Displays altitude unit. To change it press Enter and > < markers will appear. Change unit with the left/right button. You can choose between meters, yards and feet. If ---- is displayed, RC T1000 BASIC does not receive a signal from the RC Altimeter and you should check the RC Altimeter and RC TRX10. To confirm selected unit press Enter button again and > < markers will disappear. After new flight is created in logger, flight data will be saved in new units.

Interval

Displays saving interval of the RC Altimeter. To change it press Enter and > < markers will appear. Change interval with left/right button. You can choose between high, medium and low.

High – altitude will be saved three times per second.

Medium – will save altitude once per second-

Low – will save data once every ten seconds.

If ---- is displayed, RC T1000 BASIC does not receive a signal from the RC Altimeter and you should check the RC Altimeter and RC TRX10. To confirm selected interval press Enter button again and > < markers will disappear. After new flight is created in logger, flight data will be saved in new interval.

Trigger

Displays the RC Altimeter logger trigger. To change it press Enter and > < markers will appear. Change trigger option with the left/right button. You can choose between on, off, alti and RC.

On – logging option is on and data is logging every time RC Altimeter is ON.

Off – logging option is OFF and no flight data will be recorded.

Alti – the RC Altimeter will start recording flight data when your R/C plane is above altitude entered in the TriggerAlt2 menu. If your plane is lower flight data won't be recorded.

If ---- is displayed, RC T1000 BASIC does not receive a signal from the RC Altimeter and you should check the RC Altimeter and RC TRX10. To confirm selected trigger option press Enter button again and > < markers will disappear. After new flight is created in logger, flight data will be saved with selected trigger option.

RC TRX10 module

Figure 4 shows the RC TRX10 module. Connect it to the RC Altimeter via 4-pin connector as shown on figure 5.

The RC TRX10 is based on RF module which operates at 433MHz to communicate with the RC T1000. Antenna is 17 cm long and should hang down of fuselage to get maximum range.

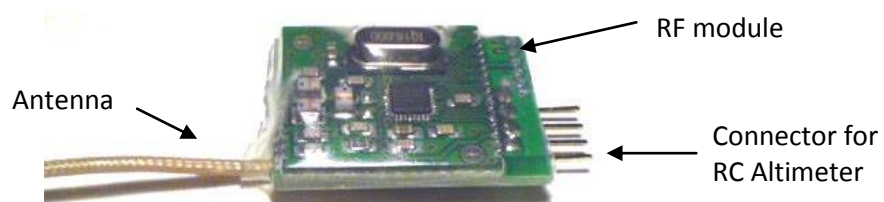


Figure 4: The RC TRX10 module.

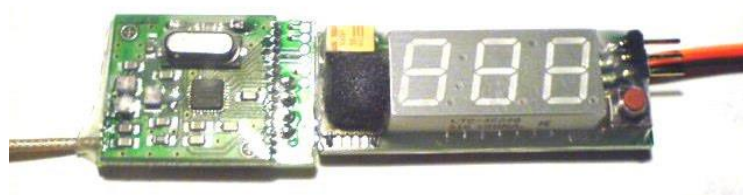


Figure 5: The RC TRX10 and RC Altimeter module.

Specifications

Board Dimensions	31 mm x 22 mm x 10 mm 1.22" x 0.86" x 0.39"
Weight	8 grams
Temperature Range ¹	-10°C ~ +60°C
Output Power	Up to 10mW (10dBm) at 433MHz
Range	More than 1 km (depends on antenna installation)
Input Current	26 mA

¹ Specifications are taken from component ratings and system limits and may not have been tested to the full extent of the specified ranges.