User Manual

Introduction

COLIBRI™ is a variometer with sound only indication. This hi-tech reliable device can be used as a main or backup unit. The small size and rich functionality will let you enjoy the flight and help win competitions.

Acoustic measurement scale

Even though **COLIBRI™** has no visual presentation of the vertical speed, it will use sound to indicate changes in the vertical speed. The device varies the pitch of the sound with a step of 0.1 m/s depending on the speed of ascent or descent thus making it possible to estimate the vertical speed by ear.

There are several sound settings:

1. Volume change.
2. Intensity of the sound scale.
3. Descent speed threshold.
4. Ascent speed threshold.
5. Virtual shift of the zero point in the real scale.
6. Three levels of sensitivity.
7. Shut off timeout.

Device programming

COLIBRI™ can be connected to a computer to view or change settings and for firmware upgrades. Follow the steps below to switch into the programming mode:

1. Extract the battery.
2. Wait for at least 10 seconds.
3. Press and hold the button.
4. ***While pressing button*** insert the battery.
5. Wait for 5 seconds. If the device turns on and makes a sound, then step 2 has not been completed and all the steps need to be repeated from the beginning.

Power supply

COLIBRI™ works from a standard CR2032 battery (3 v, 235 mAh). The CR2032 battery is available worldwide. The run time can last over 100 hours from a single CR2032 cell. If necessary, an external power source can also be connected to this device. Two AAA type cells (1.5 v, 1300 mAh) would power the device for more than 1100 hours. A single AAA cell provides more than 550 hours of flight time.

Once powered on, **COLIBRI™** makes regular checks of the battery charge level. The device will warn of the low battery with sounds approximately 8 hours before the battery completely runs out. The device may start signaling prematurely when used with Li batteries at low temperatures (more than 8 hours before shutoff).

IMPORTANT!

When changing the battery do not press the button. It would make **COLIBRI™** enter into the programming mode (with the boot loader of version 1.3 or higher the device will leave the programming mode automatically after the 30 seconds timeout)

To exit the programming mode:

1. Extract the battery.
2. Wait for at least 10 seconds.
3. ***Do not press button!*** Insert the battery.
4. Switch on the device.

If device did not produce the turning on sound, check the battery and repeat from the beginning.

Mounting

COLIBRI™ is very small and lightweight and therefore can be secured anywhere: outside or inside the helmet, on the cockpit, or at the free ends.

Settings

COLIBRI™ is controlled with just one button. There are three types of button operations:

1. Click. Press and immediately release the button. Powered on device will make a sound.
2. Brief pressing. Press and hold the button for more than one second and less than three seconds. Powered on device will produce two sounds: one as in the click and another one in a second after the first sound.
3. Prolonged pressing. Press and hold the button for more than three seconds. Powered on device will make a series of three sounds: one as in the click, then another one as in the brief pressing, and one more sound to indicate the prolonged pressing.

- ✓ Powering on
  - Perform the prolonged pressing to switch the device on. Once the device is powered on it will play three musical notes. The button has to be released with the sounds of music; otherwise the device will misinterpret the button operation and perform the shutdown operation. When the device is powered off it does not respond to a click or brief pressing of the button.
- ✓ Powering off
  - Perform the prolonged pressing to switch the device off. The device will make a sequence of three sounds and play a short musical fragment. Release the button when the music starts to play.
- ✓ Setting the acoustic menu
  - Enter the programming mode to set up **COLIBRI™** parameters. To do that, execute the following sequence on the powered on device: perform three clicks, then one prolonged pressing. When device enters into the programming mode it will play a short musical fragment. Also it will make a sound indicating the current acoustic setting. Click the button to hear the sound again.
    - Perform the extended pressing to exit from the programming mode. Otherwise the device will leave the programming mode automatically after one minute of inactivity.

Acoustic menu description

Perform four clicks to move to the next menu item. Selecting a menu item will produce the sound indicating the currently configured value. A single click will repeat the sound.

1. Sound level.
   COLIBRI™ has 5 sound volume levels. Perform two short clicks to change the volume. The sound volume changes from quiet to loud in a cycle.
   Factory setting is level 2.

2. Intensity of the acoustic scale (Drive ©).
   COLIBRI™ has 3 levels of intensity of the acoustic scale. It indicates dependency of the signal tone and its length on the vertical speed.
   Changes to Drive © can be made with two short clicks.
   1 - from 0 m/s to +10 m/s
   2 - from 0 m/s to +7.5 m/s
   3 - from 0 m/s to +5 m/s
   Selecting 2 or 3 will virtually compress the acoustic scale. The sound stops changing once the limit has been reached (10 m/s in #1, 7.5m/s in #2, and 5 m/s in #3).
   Factory setting is option 1.

3. Descent threshold.
   The threshold of at which **COLIBRI™** begins indicating a descent can be configured. Two short clicks change the integer part of a value. Three short clicks change the fractional part in 0.2 m/s increments.
   Factory setting is -2.8 m/s

4. Ascent threshold.
   The threshold at which **COLIBRI™** begins indicating an ascent can be configured. Two short clicks change the integer part of a value. Three short clicks change the fractional part in 0.2 m/s increments.
   Factory setting is +0.2 m/s

5. Virtual zero offset.
   The virtual zero can be shifted to the negative area. Two short clicks change the integer part of a value. Three short clicks change the fractional part in 0.2 m/s increments.
   Factory setting is 0 m/s

6. Sensitivity level.
   COLIBRI™ has 3 digital filters.
   The digital filter is similar to the average function but described with more complex mathematical formula.

   Digital filter 1 is the smoothest filter
   Digital filter 2 is an intermediate filter
   Digital filter 3 is the most sensitive filter

   Factory setting is 1 (smooth filter)

7. Automatic power off function.
   COLIBRI™ has a function of automatically powering off. This function starts immediately once the device is powered on.
   0 – the function is switched off
   1 – automatic power off in 2 hours
   2 – automatic power off in 4 hours
   3 – automatic power off in 6 hours
   4 – automatic power off in 8 hours
   5 – automatic power off in 10 hours
   Factory setting is 4 (automatic power off in 8 hours)

Reset to factory settings.

To reset the settings back to the factory defaults, enter the programming mode and then perform the sequence of four brief clicks. **COLIBRI™** will make a sound and wait for a confirmation. An additional click would make **COLIBRI™** reset all the settings to the factory defaults.

1. Sound level = 2
2. Acoustic scale (**Drive ©**) = 1 (0-10 m/s)
3. Descent threshold = -2.8 m/s
4. Ascent threshold = +0.2 m/s
5. Virtual zero shift = 0 (virtual scale is equivalent to real)
6. Sensitivity = 1 (very smooth digital filter)
7. Automatic power off = 4 (8 hours)

Specifications

Temperature range	-40 ... +85° C
Pressure range	300 ... 1100 hPa (+9000 ... -500 m)
Size	53.5 x 33.5 x 14.8 mm
Water proof	IP41
Vertical speed accuracy	0.1 m/s
Weight	18 g