User instruction

Introduction

Finch™ – is sound only variometer. This hi-tech, highly reliable instrument can be used as the main or as reserve vario. Small size and rich functionality allows enjoy **FINCH™** in free flights and also it could be invaluable helper in demanding competition conditions.

Operation

High sensitivity of 0.1 m/s allows **FINCH™** clearly indicate climb and sink by corresponding sound a signal. Specially designed sounds signals allow pilot easily estimate up/down speed.

Rich **FINCH™** parametrization allows individual adjustment to address each pilot preferences:
1. Volume control.
2. Operation range
3. Lift deadband
4. Regulation of switch-off of a signaling of rise
5. Sink deadband
6. Auto power off
7. Battery type

Power supply

FINCH™ uses standard lithium CR2032 battery (3v 235mAh) as main power supply, which allow more than 100h of operation. The CR2032 battery is the most widespread lithium battery. Also it is possible to connect external power supply to **FINCH™**. One external AAA battery (1.5v 1300mAh) will provide more than 1300 hours of operation.

During each power-on **FINCH™** checks remaining battery charge. In case of estimated battery life is shorter than 8 hours of operation audible warning will be played. Due to nature of operation of lithium batteries at low environment temperature remaining charge estimation is more conservative and warning could come earlier (i.e. more than 8h of operation remains).

Installation

Small size and weight allow place **FINCH™** almost anywhere. On helmet, on harness, on risers , etc. To help keep device in place it is supplied with "Velcro" allowing easy placement on cockpit.
Note: Please don't cover the hole in the centr of the device. It will lead to reduce volume and could affect accuracy.
Before first power-on please remove blue tape.

Settings

FINCH™ is operated by 1 button. There are three types of clicking to control device:

1. **Short pressing** (normal button click with holding less than a second). Click is confirmed by sound
2. **Medium pressing** (holding of the button more than a 1 second and less than 3 seconds). Click is confirmed by sound
   *Note: at first **FINCH™** confirms short press, and then medium press.*
3. **Long pressing** (holding button more than 3 seconds). Click is confirmed by sound
   *Note: at first **FINCH™** confirms short press, then average, and then long pressing.*

Power-on
✓ To switch device on please make "long press" (hold button more than 3 seconds). Power on is confirmed by sound signal. Device needs up to 10 seconds to boot and initialize, after which short loud sound signal indicate ready state.

   Note: Playing of sound can be stopped at any moment by pressing button.

Power off
✓ To power off please make long press. Power-off will be confirmed by sound

Setup of parameters
✓ To enter programming mode please make 3 "short clicks" + 1 "long click". Device will confirm programming mode by playing melody (Strauss – Marsh of Radetsky).
✓ To exit programming mode please make 1 "long click". Exit will be confirmed by playing melody.

   *Note: After 60 seconds of inactivity in programming mode, **FINCH™** will exit automatically. All parameters are stored in a non-volatile memory.*

Parameters.

Navigation between sections in programming mode performed by "short press"

✓ 1 short press – plays sound corresponding to current section and value of parameter.
   ○ *Note: short press stops sound.*
✓ 2 short presses – increase current value of parameter.
✓ 3 short presses – decrease current value of parameter
✓ 4 short presses – move to next section.

1. **Volume control.** (play signal with the current Volume)
   FINCH™ - has 3 levels of loudness. Default volume is 2. To change volume:
   2 short press: increase volume
   3 short press: decrease volume

   Note: the higher sound volume shorten battery life

2. **Operation range.** (Drive ©) (*imperial march – star wars*)
   FINCH™ - has 3 ranges of operation:
   1 - from 0 m/s to +10 м/s
   2 - from 0 m/s to +7.5 м/s   (default)
   3 - from 0 m/s to +5 м/s
   To change operation range:
   2 short press: moves down from 1 to 3
   3 short press: moves up from 3 to 1

3. **Lift deadband** ↥ *(plays rise)*
   There will be no "lift-sound" till lift exceed deadband value
   range: +0.1-1.0 m/s
   default value : +0.3 m/s.
   2 short press: "+0.1" m/s
   3 short press: "-0.1" m/s
   Adjustment is confirmed be sound signal

4. **Adjustment of shutdown of the alarm system of rise.** ↕ *(plays rise, then decrease)*
   range: 0.1-1.0 m/s
   default value : 0.1 m/s.
   2 short press: "+0.1" m/s
   3 short press: "-0.1" m/s
   Adjustment is confirmed be sound signal
   (example: 3 sound signals means 0.3 m/s threshold *If on inclusion are established +0.2 ↥ and shutdown 0.3 ↕ – means at a speed of more than +0.2 m/s FINCH™ will play rise. Rise plays speed so far there will be less difference of inclusion and switching off. ↥+0.2 - ↕0.3 =-0.1 in this example the alarm system of rise will be switched-off only at achievement -0.1 and more.*

5. **Sink deadband** ↧ *(plays decrease)*
   There will be no "sink-sound" till sink exceed deadband value
   deadband range: -1..-10 m/s
   default value : -3 m/s.
   2 short press: "+1" m/s
   3 short press: "-1" m/s
   Adjustment is confirmed be sound signal

6. **Automatic switching off.** *(5 symphonies of Beethoven)*
   FINCH™ - will auto power off after predefined time interval (default: 8h).
   interval: 1-10h
   default value: 8h
   2 shot press: "+1h"
   3 shot press: "-1h"
   Adjustment is confirmed be sound signal

7. **The firmware version** *("Ave Maria" plays)*
8. **Power supply type** *(play "mission impossible")*
   FINCH™ *can operate from 3.0V internal/external battery, or from the 1.5V external battery.*
   1 = 3.0 volts battery (default).
   2 = 1.5 volts battery.

Installation of factory settings.
Restore factory settings: 3 average + 1 long. **FINCH™** confirms settings reset (Flintstones)

Factory settings
1. Volume: 2
2. Operation range (**Drive ©**): 2 (0-7.5 м/с)
3. Climb deadband: ↥ 0.3 м/с
4. Value of shutdown of the alarm system of rise. ↕ = 0.1 м/с
5. Sink deadband: ↧-3 м/с
6. Automatic switch off : after 8 hours.
7. Battery type: 3.0V

Specifications
Temperature range	-40 ... +85 °C
Pressure range	300 ... 1100 hPa (+9000 ... -500 m)
Size	53.5x33.5x14.8 mm
Water proof	IP41
Vertical speed accuracy	0.1 m/s
Weight	18g.

Questions and Answers
Q. At power on device plays "funeral march" and switches off.
A. The battery's voltage is low for normal operation. Please replace battery.

Q. At power on device plays "decreasing sound" and switches off.
A. The battery's voltage is low even for device start-up. Please replace battery. In case of new battery please check battery type and installation.