

Butterfly Vario

AHI Lockout Manual

Document name: 18.T275T276.3-0.91-EN
Document version: 0.91
Release date: 02/05/2013

Notes

Document Information

Document identification / revision status

This manual supports the following product types:

- P/N T275 / T276 "Butterfly Vario"

Actual version: **Vario AHI Lockout Manual • 18.T275T276.3-0.91-EN, Version 0.91(192)**

Version history

Revision	Date	Status	Author	Changes, comments	Approved
0.9	May 2nd 2013	DRAFT	M. Foerderer	Initial Draft	-
0.91	May 6th 2013	DRAFT	M. Foerderer	more precise info on GPS Fix	-

Referenced documents

Reference	Title	Version	Date	Author
Butterfly Vario Pilot's Manual	1.0	18.T275T276.2	Summer 2012	Butterfly

Contents

1	General Information about lockable features	1
1.1	Butterfly Vario and AHI System	1
1.2	AHI Features	1
2	Locking Feature	2
2.1	Firmware	2
2.1.1	Required Firmware Versions	2
2.1.2	Upgrades/Downgrades	2
2.2	Security	2
2.2.1	Hardware	2
2.2.2	Software security	2
2.3	Activation	2
2.3.1	Setting up the AHI locking timeframe	2
2.4	Behavior when AHI lock is active	3
2.4.1	Locked out features	3
2.5	Determining if lock is active	3
2.5.1	During the set timeframe	3
2.5.2	During and after the set timeframe	4

1 General Information about lockable features

1.1 Butterfly Vario and AHI System

Butterfly Vario is a high precision ADAHRS with display unit and acoustic system.

Butterfly Vario contains features (AHI Features) that allow flying without ground reference. Depending on regulation it may not be allowed to use equipment that enables flying without ground reference in gliding competitions.

Butterfly Vario contains a special mechanism, that allows for tamper-proof locking of all such software features (AHI Features) that enables flying without ground reference. A Butterfly Vario unit with locked AHI Features can not be used for flying without ground reference.

1.2 AHI Features

Features allowing flying without ground reference:

- Attitude Indicator (Artificial Horizon page)
- True Heading Indicator (Navigation page or numerical value in info boxes)

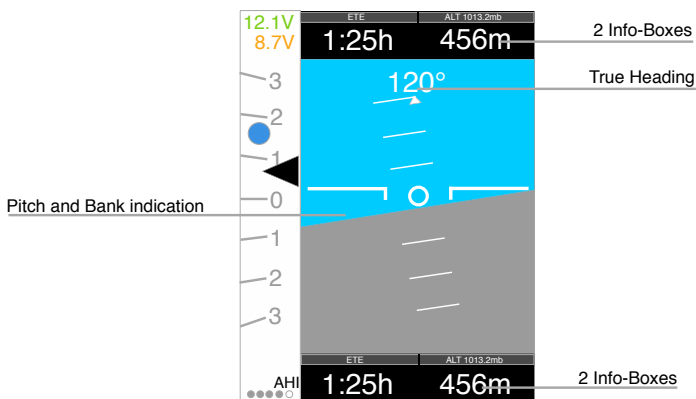


Figure 1: Artificial horizon Page (not locked)

2 Locking Feature

2.1 Firmware

2.1.1 Required Firmware Versions

The AHI Feature locking mechanism requires Butterfly Vario Firmware 1.06 or later. It is recommended to always use the latest software release.

Using earlier software does not compromise lockout security.

2.1.2 Upgrades/Downgrades

Software updates and downgrades do not affect the locking mechanism.

2.2 Security

2.2.1 Hardware

The lockout mechanism is applied to all units in a Butterfly Vario installation. AHI Locking can not be circumvent by interchanging single components of a Butterfly Vario installation.

2.2.2 Software security

The lockout mechanism amongst others is stored in the secure part of the Butterfly ISU which is a secure fully IGC certified flight recorder with tamper proof enclosure and tamper proof encrypted software.

2.3 Activation

2.3.1 Setting up the AHI locking timeframe

In order to use the AHI Lockout function, go to *Menu* then *Setup* then *Flightrecorder* and here to *AHRS Lock*. Here you can set a locking timeframe. Locking can only be enabled for a timeframe following the current time.

GPS 3D Fix is required. Without GPS fix Butterfly Vario is unable to determine exact timing and therefore the locking mechanism can not be set up. This process may take up to 10 minutes. Without GPS Fix neither the locking mechanism nor the AHRS (AHI) itself will work.

No data allowing flight without ground reference is displayed prior to obtaining a 3D GPS fix, therefore in case of an active lock it is not possible to use such data before the locking mechanism takes effect.

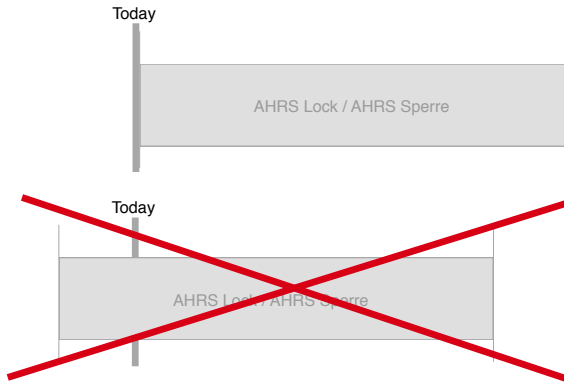


Figure 2: Possible timeframes for AHI locks

|| **BE VERY CAREFUL:** *It is not possible to unlock a locked system*

2.4 Behavior when AHI lock is active

2.4.1 Locked out features

When AHI lock is active, all features allowing flying without ground reference are locked and can not be displayed. For displayed heading data, a 5Hz GPS signal is used.

2.5 Determining if lock is active

2.5.1 During the set timeframe

During the timeframe the AHI-lock is enabled the user or e.g. a competition staff can at any time review the set up locking interval and thus is able to judge if the AHI lock has been enabled for the correct time in a competition.

When locked, on the AHI page an amber colored cross is shown instead of the artificial horizon indicator.

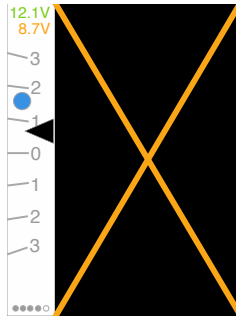


Figure 3: Artificial horizon Page (locked)

2.5.2 During and after the set timeframe

AHI lock status is additionally documented in the IGC Flightlogs of the Butterfly Vario IGC approved flight recorder. Even after the locking-interval users and competition staff is able to review locking status of flights through IGC files.

Notes