TACTICAL ALTIMETERS

Military ALTITRACK™ and ALTISET™

Instruction manual

Rev. 12

Index:

1- Introduction 4
1.1 Features 4
1.2 Software & Functions 4
2 - Description 5
2.1 Analog Face 5
2.2 Digital Face 6
2.3 LCD Display 7
3 - Power ON 8
3.1 Before night jumping 9
4 - Jump Mode 9
5 - Power OFF 10
6 - Zeroing, Altitude Offset and mBar adjustment 11
6.1 Zeroing the Military ALTITRACK 11
6.2 Altitude Offset or mBar adjustment 11
7 - Backlight 12
8 - Battery Status 12
9 - Customize the Military ALTITRACK 13
9.1 SETUP Selector 13
10 - Main Setup Display 14
10.1 Turn the Military ALTITRACK OFF 15
10.2 Delete Jump 16
10.3 Set Total Number of Jumps 17
10.4 Set Total Freefall Time 18
10.5 Set Current Date 19
10.6 Set Current Time 20
10.7 Delete Logbook 21
10.8 MPH / KMH Selector 22
10.9 Feet / Meter Selector 23
10.10 (TAS) True Airspeed / (SAS) Skydiver's Airspeed 24
10.11 Canopy Log Enable / Disable 25
10.12 Dive Type Selector 26
10.13 Celcius / Fahrenheit Selector 27
10.14 Beep ON / OFF 28
11 - Main Selector 29
11.1 Logbook Screen # 1. (Main Information) 30
11.2 Important Notice About Speed Recordings 30
11.3 Logbook Screen # 2. (Playback, Jump Profile) 30
11.4 Logbook Screen # 3. (Date, Time and Dive Type) 31
11.5 Logbook Screen # 4. (View Current Time/Date, Temperature and Altitude) 32
12 - Remaining Logbook Storage 32
13 - Loosen and Fasten Unbrako Socket Screws 33
14 - Removing/Replacing the Velcro Wrist Mount 34
15 - Replacing the Battery 34
16 - Resetting the Military ALTITRACK 35
17 - Firmware Version 36
18 - Operational Hints and Trouble-shooting 36
19 - TAS and SAS 37
20 - Water jump and Air Filter 38
21 - Replacing the Air Filter 38
22 - ALTISET Remote Control 40
22.1 ALTISET Road Map 40
22.2. ALTISET Road Map 41
23 - Military ALTITRACK IrDA Transceiver 42

23.1 Enable the Military ALTITRACK IrDA port on the ground 42
23.2 Enable the Military ALTITRACK IrDA port in the aircraft..... 42
23.3 ALTISET Programming 42
23.4 ALTISET Data Transmission to Military ALTITRACK 42
24 - Replacing ALTISET Batteries..... 43
24.1 ALTISET Trouble-shooting..... 43
25 - Specifications, Military ALTITRACK..... 44
26 - Specifications, ALTISET..... 45
27 - Warranty..... 46
28 - Contact.....46

1 - Introduction

1.1 Features

45 deg. offset scale for easy line of sight viewing when mounted on hand or wrist
Altimeter casing in rugged, precision machined aircraft aluminum
Choice of symmetric or asymmetric scale graduation in either feet or meters
Adjustable electro-luminescent backlight for night jumping
Smooth, none erratic pointer movement… step motor controlled
Automatic calibration to local elevation
mBar adjustment to absolute value at Drop Zone (QFE)
Front OLED menu for mBar adjustment, backlight intensity, etc.
Two separate pressure sensing modules for maximum reliability
Freefall and canopy flight computer
IrDA communication with Altiset
Scratch proof lens made from high-impact etched glass
Shockproof and waterproof (5ft/24hrs)
Operating altitude 0 to 40,000 ft.(0 to 12,191 m)
Temp. range: -35°C to +80°C,
Continuous operation: Will operate at -50°C for 10 minutes
½ AA battery (2yr. battery life)

1.2 Software & functions

- Storing up to 15 minutes of data of each jump with a total of 6.5 hours recording time (e.g. 200 jumps with two minute profiles).
- Records and displays jump details from exit to landing, date, jump number, exit altitude, opening altitude, freefall time and complete speed statistics for maximum and average speeds in TAS or SAS
- Choice of readings in feet or meters, mph or kmh
- Accumulates the total number of jumps up to 19,999 jumps
- Replay of any jump stored in the logbook with true pointer movement and display of speeds, altitudes, etc.
- Long lasting ½ AA battery
- Velcro strap for fast and easy mounting

2 - Description

2.1 Analog Face

1. Right Front Button
    - Power ON
    - Enable / Disable and adjusting backlight intensity
    - Power OFF

2. Left Front Button
    - Power ON
    - Perform ACCESS
    - Adjust altitude or set QFE if the DZ elevation differs from that of the airport of take-off
    - Enable IrDa

3. “ACCESS” indicator

4. “LOW BAT” indicator

5. OLED
    - Displays transducer testing, mBar adjustment, backlight intensity and IrDA communication

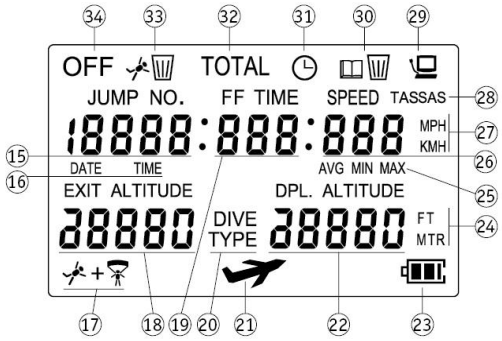
6. Serial number

7. IrDa transceiver

2.2 Digital Face

8. Air Filter
9. Battery compartment
10. LCD display
11. Left button
12. Mode button
13. Right button
14. Reset button (located below battery cover)

2.3 LCD Display



15. Jump Number in logbook
    Shows year when displaying date
    Shows hours when displaying time
16. Date / Time icons
17. Freefall and Canopy log indication
18. Exit Altitude in logbook
19. Freefall time in logbook
    Shows month when displaying date
    Shows minutes when displaying time
20. Dive Type icon
21. Jump Mode indicator
    Flashes when the ALTITRACK is in Jump Mode
22. Deployment altitude in logbook
    Displays current altitude when in “Altitude Screen”
23. Battery status
24. Feet / Meter status
25. Average / Minimum / Maximum speed in logbook
26. Speed in logbook
    Shows day when displaying date
    Shows seconds when displaying time
27. MPH / KPH status
28. True Airspeed / Skydiver´s Airspeed status
29. Not used
30. Delete logbook icon
31. Clock icon
    Used when displaying current time and total freefall time
32. Total icon
    Used when displaying total jumps and total freefall time
33. Delete current jump icon
34. OFF icon
    Used when turning the ALTITRACK OFF

3 - Power ON

1. Battery status

Note: The Military ALTITRACK must be switched ON prior to entering the airplane

Press Right or Left Front Button until “ACCESS” and “LOW BAT” flashes. Then release the button.

The Military ALTITRACK runs a self-test.

The Military ALTITRACK can be used for jumping, if:
- The pointer moves from “6” to “0”.
- Battery capacity is sufficient (see paragraph 8)

The Military ALTITRACK **MUST NOT** be used for jumping, if:
- The LCD on the rear side displays an Error code (ex.: ERR2, ERR3, ERR4, ERR5, ERR100)
- The units sounds a beep every minute.
- Battery capacity is insufficient (see paragraph 8)

When the pointer has detected “0”, the Military ALTITRACK performs an automatic testing of the two barometric sensors (displayed on the OLED).

When the testing is completed the current mBar pressure is displayed for about 4 seconds.

If one of the sensors is defective the OLED shows, "*service required*". The Military ALTITRACK can still be used for jumping with only one sensor, however it must be returned for service at the next opportunity.

The unit displays “Logbook screen # 1”. (Main information)” on the LCD. The LCD automatically switches OFF after 15 sec. To switch ON the display, press any of the three buttons below the LCD.

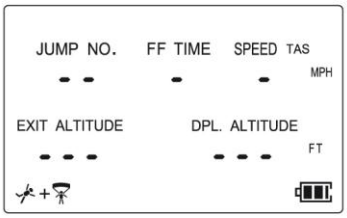


Fig. 1 - Logbook screen #1. No data stored

3.1 Before night jumping: Verify that the backlight is functioning (see paragraph 7)

4 - Jump Mode

- Entering Jump Mode: Shortly after take-off (at approx. 1,000 feet/300 meters) the Military ALTITRACK switches to Jump Mode and the pointer moves to the present altitude. On the rear side LCD the *“airplane icon”* starts to flash.

- Exiting Jump Mode: The Military ALTITRACK exits Jump Mode automatically within one minute after it senses ground level again. If the Military ALTITRACK has been preset to a different altitude it exits Jump Mode as described in paragraph 7.2.

5 - Power OFF

1. Press and let go of Right Front Button
2. When “ACCESS” lights, press immediately and let go again
3. When “ACCESS” lights, press immediately and let go again
4. When “ACCESS” lights, press immediately and let go again
   The pointer moves to “6” and unit switches OFF

Note: If the Military ALTITRACK is not manually switched OFF, it will automatically switch OFF 14 hours after the last jump or 14 hours after the last pressing of any button (28 hours in case adjustment of altitude or QFE has been performed without jumping with the Military ALTITRACK).

6 - Zeroing, Altitude Offset and mBar adjustment

6.1 Zeroing the Military ALTITRACK

The Military ALTITRACK continuously adjusts to the local elevation and the pointer is at the zero "0" position. If the pointer is not at "0" prior to jumping, the unit has not adjusted itself to the local elevation and it must be manually zeroed.
Turn the unit OFF and then ON.

6.2 Altitude Offset or mBar adjustment

If the elevation or barometric pressure at the DZ is different from that of the airport of take-off, then adjust the Military ALTITRACK by activating the "Altitude Offset" mode which also enables the "mBar adjustment" mode and is called "ACCESS".

ON THE GROUND

If the DZ elevation or the mBar pressure at the new DZ is known before entering the airplane:

1. Press Left Front Button and release quickly
2. When "ACCESS" lights, press the button immediately and keep it pressed
3. When "ACCESS" lights again, release the button immediately
4. The present QFE is displayed in the OLED window.
   Press the Right Front Button (+) or the Left Front Button (-) to set the QFE (200 to 1075 mbar) to the absolute mbar value at the new DZ location (QFE), or move the pointed to the selected altitude.

On the ground the selected altitude is displayed on the screen on the rear side of the altimeter as well.

When adjusting to a negative altitude on the ground, use the inner negative scale indication or the value displayed on the rear side of the altimeter.

***Note:** When performing a manual adjustment of altitude, the MilItary ALTITRACK enters "Jump Mode" and the altitude is stored in the memory for 14 hours if no jump is made. After 14 hours the Military ALTITRACK calibrates to the new elevation and displays "0" The Military ALTITRACK switches OFF automatically 14 hours after the recalibration. The altitude offset is not retained when the Military ALTITRACK is switched OFF.*

IN THE AIRPLANE

If the QFE is only known after take-off or if the DZ elevation changes during the flight:

Perform "ACCESS", point 1-3 as described in paragraph 10.2 and then by means of the Right Front Button (+) or the Left Front Button (-), set the DZ QFE in the OLED window (200 to 1075 mbar). To avoid any mistakes in this case, do not use the pointer as a reference when selecting the new altitude.

The Military ALTITRACK exits "Altitude Offset" or "mBar adjustment" mode if no button is pressed within 5 seconds.

7 - Backlight

Enable: Press and hold Right Front Button until “BACKLIGHT ON” and intensity level is displayed on the OLED.

Disable: Press and hold Right Front Button until “BACKLIGHT ON” and then “BACKLIGHT OFF” is displayed on the OLED.

Note: The backlight is automatically disabled when manually switching OFF the Military ALTITRACK.

Adjusting the backlight intensity: When “BACKLIGHT ON” is displayed on the OLED (by pressing the Right Front Button), click on the Right Front Button again to adjust the backlight intensity, 1 to 10 (1 = Low, 10 = High).

Note: If the backlight is turned ON while the Military ALTITRACK is not in Jump Mode, the backlight will automatically turn OFF after 2 hours.
If the backlight is turned ON while the Military ALTITRACK is in Jump Mode, the backlight will remain ON until the unit exits Jump Mode.

8 - Battery Status

Full capacity: Symbol shows two bars inside the icon.
The Military ALTITRACK can be used without any restrictions.
The two bars correspond to a battery capacity between 100 and 10%

Low capacity: Symbol shows one bar inside the icon.
Replace battery as soon as possible, however the altimeter can still be used for jumping as long as it is not used for night jumping or at temperatures below zero deg. C.

Very low capacity: Symbol shows no bars inside the icon.
The “Low Bat” light flashes every 15 sec on the altimeter scale.
Do not jump with the altimeter. Replace battery.

Empty battery: The battery icon flashes.
Do not jump with the altimeter. Replace battery.

9 - Customize the Military ALTITRACK

The Military ALTITRACK can be customized to your personal settings. Your settings will be stored and recalled also after replacing batteries. When you first get the Military ALTITRACK, we recommend you to go through the **SETUP Selector** to customize the unit.

9.1 SETUP Selector

In the **SETUP Selector** the following options can be selected:
- Main Setup display
- Turn the ALTITRACK OFF
- Delete jump
- Set total number of jumps
- Set total freefall time
- Set current date
- Set current time
- Delete logbook
- MPH / KMH
- Feet / Meter
- (TAS) True Airspeed / (SAS) Skydiver's Airspeed
- Canopy log Enable / Disable
- Dive Type
- Celsius / Fahrenheit
- Beep ON / OFF

To enter the SETUP Selector

Press and hold for 3 seconds.

To exit the SETUP Selector

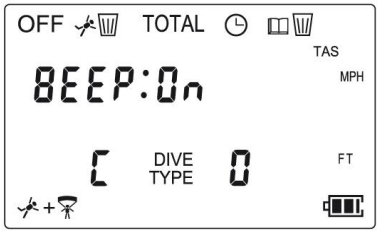
Wait until the display times out or, press or repeatedly until returning to the Main Setup Display, then press to exit.

NOTE: If no button has been pressed within 15 seconds after choosing any SETUP window, the LCD switches OFF. When again switching ON the LCD it will display "Logbook screen # 1". (Main information)"

10 - Main Setup Display

The Main setup display accesses to the following functions:

Turn the Military *ALTITRACK OFF- Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF*



Factory default set-up

Fig. 2 - Main display.
Displays all current settings

Press ▶ to move forward in setup options
Press ◀ to move backward in setup options

To return to *"Logbook screen # 1",* press ◀ or ▶ repeatedly to return to this screen, then press ■

Main Setup Display - **Turn the Military ALTITRACK OFF** - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.1 Turn the Military ALTITRACK OFF

Press ▶ to select **OFF**

This is a secondary method.
To turn the Military ALTITRACK OFF, use recommended method described in paragraph 5.

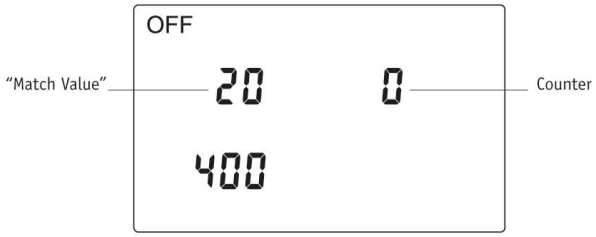


Fig. 3 - Turn the Military ALTITRACK OFF

Press ■ ("OFF" flashes)
Press ▶ to increase the counter "Match Value"
Press ◀ to decrease the counter "Match Value"

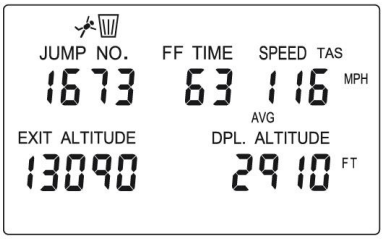
At "Match Value" press ■ The pointer moves to "6" and the unit switches OFF.

NOTE: When switched OFF the Military *ALTITRACK cannot be used for jumping. Customer settings and clock are not lost when switched OFF.*

Main Setup Display - Turn the Military ALTITRACK OFF - **Delete Jump** - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.2 Delete Jump

Press again to select Delete Jump



Example

Fig. 4 - Delete Jump.

Press ("Delete Jump Icon" flashes)
Press to increase the counter "Match Value"
Press to decrease the counter "Match Value"

At "Match Value" press to delete current jump

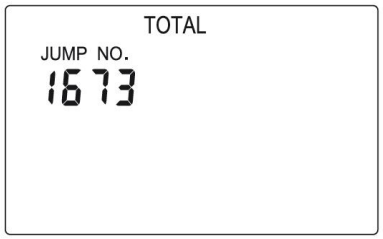
If you press before you select the match value, the delete jump action is cancelled.

*Note: At the same time the accumulated number of jumps and freefall time are updated **if** the deleted jump is the last jump logged.*

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - **Set total number of jumps** - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.3 Set Total Number of Jumps

Press again to select TOTAL



Example

Fig. 5 - Set Total Number of Jumps

Press ("TOTAL" flashes)
Press to increase the jump total
Press to decrease the jump total
Press to store the new total number of jumps and end

Note: Total number of jumps cannot be set to a value below the highest stored jump number.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - **Set total freefall time** - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.4 Set Total Freefall Time

Press again to select TOTAL FF TIME

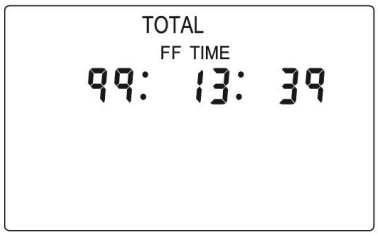


Fig. 6 - Set Total Freefall Time

Press ("TOTAL" flashes)
Press to increase total freefall time
Press to decrease total freefall time
Press to store the new total number of jumps and end

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - **Set current date** - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.5 Set Current Date

Press again to select "Clock/DATE"

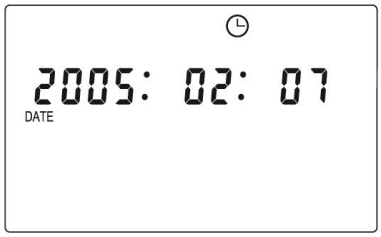


Fig. 7 - Set Current Date

Press ("Clock" icon flashes)
Press to increase date value
Press to decrease date value
Press to store the new date and end

Note: Date format is YYYY:MM:DD.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - **Set current time** - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.6 Set Current Time

Press again to select "Clock"/TIME"

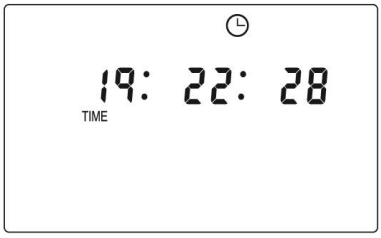


Fig. 8 - Set Current Time

Press ("Clock" icon flashes)
Press to increase time value
Press to decrease time value
Press to store the time and end

Note: Time format is 24 hours

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - **Delete logbook** - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.7 Delete Logbook

Press again to select "Delete Logbook"

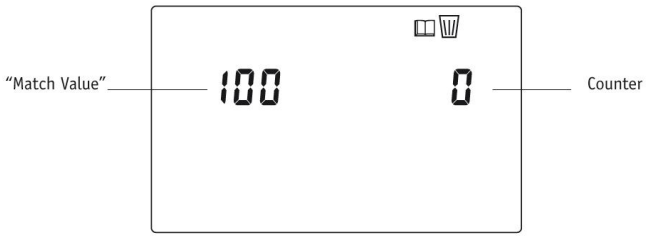


Fig. 9 - Delete Logbook

Press ("Delete Logbook" icon flashes)
Press to increase the counter "Match Value"
Press to decrease the counter "Match Value"
At "Match Value" press to delete logbook

Caution: The accumulated number of jumps and freefall time are also erased.
Warning: Once *is pressed at match value, there is no way to restore the information.*

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - **MPH / KMH** - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.8 MPH / KMH Selector

Press again to select "MPH/KMH"

Fig. 10 - MPH / KMH Selector

Press to toggle between MPH and KMH

NOTE: Jump data are continuously stored in mph and kmh. At any time stored information may be displayed in either unit of measurement by selecting the respective mode.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - **Feet / Meter** - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.9 Feet / Meter Selector

Press again to select "FT/MTR"

Fig. 11 - Feet / Meter Selector

Press to toggle between FT and MTR

NOTE: Jump data are continuously stored in both feet and meters. At any time stored information may be displayed in either unit of measurement by selecting the respective mode.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - **(TAS) True Airspeed / (SAS) Skydiver's Airspeed** - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.10 (TAS) True Airspeed / (SAS) Skydiver's Airspeed

Press again to select "TAS/SAS"

Fig. 12 - (TAS) True Airspeed / (SAS) Skydiver's Airspeed

Press to toggle between TAS and SAS

Definitions:

True Airspeed (TAS) and **Skydiver's Airspeed (SAS)** are two methods of calculating the airspeed of a moving/flying/falling object.

TAS is a term used in aviation: It is the speed of an object relative to the surrounding air, regardless of the altitude.

SAS is a new concept developed by LARSEN & BRUSGAARD: **SAS** is the speed of a skydiver calculated from measurements of air pressure and temperature and converted to a fixed air pressure (875.3 mb) and a fixed temperature (+7.080C) which corresponds to 4,000 feet ASL.

TAS
A skydiver's True Airspeed (TAS) relative to the ground changes as a function of the altitude (air pressure) and temperature which makes it difficult to compare fall-rates.
Example: A skydiver (in a fixed freefall position) who has a terminal fallrate of
62 meters/sec at 10,000 feet will have a terminal fallrate of 50 meters/sec at 3,000 feet.
It will be seen that the difference in altitude (air pressure) makes it difficult to
compare the fall-rates when measured using TAS.

See paragraph 19 for more information about TAS and SAS.

NOTE: Jump data are continuously stored in both TAS and SAS. Stored information may be displayed in either unit of measurement by selecting the respective mode.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - **Canopy log Enable / Disable** - Dive Type - Celsius / Fahrenheit - Beep ON / OFF

10.11 Canopy Log Enable / Disable

Press again to select "Freefall+Canopy"

: Logging freefall profile
: Logging freefall *and* canopy profiles

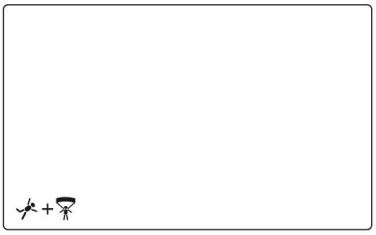


Fig. 13 - Canopy Log Enable / Disable

Description

Choice of storing freefall profile, or freefall and canopy profiles. More jumps can be stored in memory when choosing freefall profile only.

Press to enable / disable canopy profile log

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - **Dive Type** - Celsius / Fahrenheit - Beep ON / OFF

10.12 Dive Type Selector

Press again to select DIVE TYPE

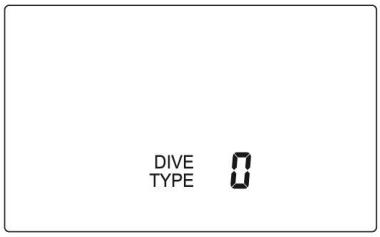


Fig. 14 - Dive Type Selector

Description

This mode can be used to:

1. Store the Dive Type to be performed on the next jump
The selected Dive Type is displayed in the Logbook Screen #3
2. Change freefall sensitivity
Only when Dive Type is set to STu or SLO. See below.

Press ("DIVE TYPE" flashes)
Press to scroll forward through the Dive Type list
Press to scroll backward through the Dive Type list
Press to store your selection before moving to another menu

Dive Types:
0 = (factory default)
1 = 1 (User selectable in JUMP-TRACK)
2 = 2 (User selectable in JUMP-TRACK)
AFF = (Accelerated Free Fall)
TAn = (Tandem)
STu = (Student)*
PHO = (Photo)
4 = (4-way)
8 = (8-way)
FrE = (Freestyle)
SLO = (Slow) **

* **Dive Type, STu (Student).** In STu the descent rate parameters are changed to allow detection of short freefalls, (2 sec).

**** Dive Type, SLO (Slow).** In SLO the exit fallrate and deployment calculation parameters are changed to fit very slow falling types of dives, like wing suit dives, etc.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - **Celsius / Fahrenheit** - Beep ON / OFF

10.13 Celsius / Fahrenheit Selector

Press again to select "C"

Fig. 15 - Celsius / Fahrenheit Selector

Press to toggle between Celsius and Fahrenheit.

Main Setup Display - Turn the Military ALTITRACK OFF - Delete Jump - Set total number of jumps - Set total freefall time - Set current date - Set current time - Delete logbook - MPH / KMH - Feet / Meter - (TAS) True Airspeed / (SAS) Skydiver's Airspeed - Canopy log Enable / Disable - Dive Type - Celsius / Fahrenheit - **Beep ON / OFF**

10.14 Beep ON / OFF

Press again to select "BEEP"

Fig. 16 - Beep ON / OFF

Press to toggle between BEEP ON / OFF

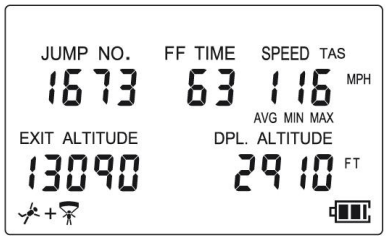
11 - MAIN Selector

In the **MAIN SELECTOR** press ▪ repeatedly to scroll through the menu functions in this order:

▪ logbook screen # 1. (Main information)
▪ logbook screen # 2. (Playback, Jump Profile)
▪ logbook screen # 3. (Date, Time and Dive Type)
▪ Main Display (Time/date, temperature and altitude)

Press ▪ (only necessary when in Jump Mode)

11.1 Logbook Screen # 1. (Main information)



Example
Fig. 17 - Logbook Screen # 1. (Main information)

The information includes:
- Jump number
- Freefall time
- Speeds (scrolls automatically through AVG, MAX and MIN)
- Exit altitude
- Deployment altitude

To scroll through the previous jumps, press ▪.
To scroll forward, press ▪
To go to highest jump #, press and hold ▪ for 3 seconds
To go to lowest jump #, press and hold ▪ for 3 seconds

The Military ALTITRACK will display three different terminal speed informations in mph and kmh.

1. Average speed, 2. Max speed, 3. Min speed
All speeds are calculated from 15 sec after exit to 7 sec before deployment.

If the freefall lasted between 20 and 30 sec. the display only shows:
- Min speed
- Max speed
If the freefall lasted more then 30 sec. the display shows:
- Average speed
- Min speed
- Max speed

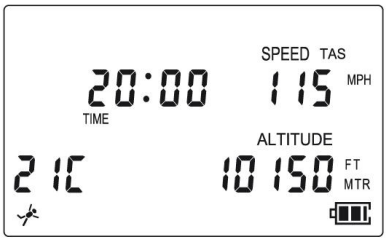
NOTE: If the freefall lasted less than 20 sec. the display shows no speed information. Speed information is available in scroll mode, if freefall lasted more than 6 sec.

11.2 Important Notice About Speed Recordings:

Experience has shown that when mounting the Military ALTITRACK on the hand or belly, different air pressures induced by hand or body movements may result in incorrect recordings of speeds.

Press again

11.3 Logbook Screen # 2. (Playback, Jump Profile)



Example

Fig. 18 - Logbook Screen # 2. (Playback, Jump Profile)

The information on the display includes:
- Time after exit in seconds
- Speed at time
- Temperature inside instrument at exit and then updated every 30 sec.
- Altitude at time
- Freefall and canopy status

Press to playback the jump profile at ¼ speed
Press twice to playback in real time
Press three times to playback at 2x speed
Press four times to playback at 5x speed

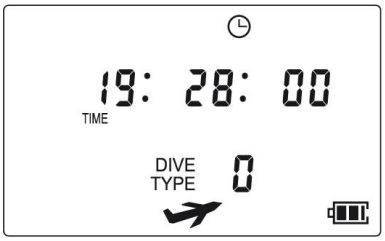
Press to playback the jump profile in reverse at ¼ speed
Press twice to playback in reverse in real time
Press three times to playback in reverse at 2x speed
Press four times to playback in reverse at 5x speed
Press to stop playback

Press and to playback jump on analog face.
Wait for pointer to go to EXIT point, then press “Left Front Button” to start playback.
Press “Right Front Button” to stop playback.

Note: For safety reasons, playback is disabled when in Jump Mode.

Press ▪ again

11.4 Logbook Screen # 3. (Date, Time and Dive Type)



Example

Fig. 19 - Logbook Screen # 3. (Date, Time and Dive Type)

The information on the display includes:
- Jump Date
- Jump Time
- Dive Type

To scroll through the previous jumps press ▪
To change direction, press ▪

Press ▪ again

11.5 Logbook Screen # 4. (View Current Time/Date, Temperature and Altitude)

Example

Fig. 20 - Logbook Screen # 4. (view current time/date, temperature and altitude)

The information includes:
- Current time (24 hours' format) or current date (yyyy:mm:dd)
- Current temperature inside instrument in Celsius or Fahrenheit
- Altitude
- Freefall and canopy log status

Press ◀ or ▶ to toggle between current time and date

12 - Remaining Logbook Storage

The Military ALTITRACK flash memory can store 400 minutes of data (e.g. 200 jumps with two minute profiles or 26 jumps with 15 minute profiles)

The Military ALTITRACK flash storage is organized in ½ minute sectors; meaning that a 20 sec. profile will fill up ½ minutes storage and a 61 second profile will fill up 1½ minutes storage.

When the storage is full, the Military ALTITRACK ***automatically*** erases the first jump(s) stored to make sure it always has 15 minutes of storage for the next jump.

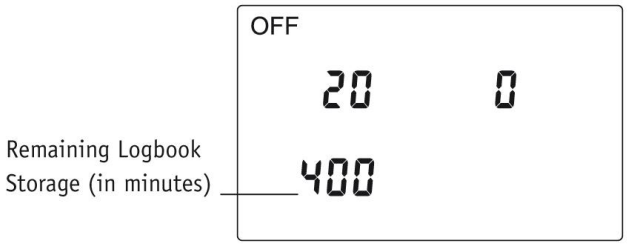


Fig. 21 - Remaining Logbook Storage

13 - Loosen and Fasten Unbrako Socket Screws

General

Before replacing the Velcro Wrist Mount, resetting the Military ALTITRACK and replacing the battery cover with integrated Air Filter, it is necessary to loosen several Unbrako socket screws.

Do not use an Allen Key to remove or fasten screws. Use LARSEN & BRUSGAARD “WERA” 140 cNm fixed Torque screw driver (accessory) or equivalent.

Fig. 22 - Torque screwdriver

Fig. 23 - Note: Four sealed screws must not be removed.

14 - Removing/Replacing the Velcro Wrist Mount

Fig. 24 - Wrist Mount

The velcro wrist mount assembly is fastened to the Military ALTITRACK with 4 Unbrako socket screws.

15 - Replacing the Battery

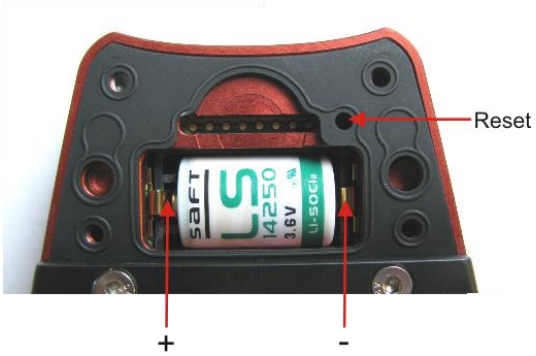


Fig. 25 - Replacing the battery

1. Loosen the 4 Wrist Mount screws and remove assembly. See Fig. 26
2. Loosen the 4 battery cover screws and remove cover. See Fig. 27
3. Remove old battery
4. Install new battery noting polarity. Use SAFT LS 14250 (3.6V) or equivalent
5. Press a paperclip into the tiny (Reset) hole next to the battery and release
   The unit restarts
6. Put battery cover back into place and fasten the 4 screws. Pay attention that the surfaces underneath and on the black rubber sealing are clean.
7. Put Wrist Mount assembly back into place and fasten 4 screws

After battery replacement, the battery system requires 2 minutes to calibrate itself before showing the correct status. While calibrating, the battery icon toggles between full and low.

Note: Customer settings are not lost when removing battery. However, the built-in clock may need to be reset to the current time.

16 - Resetting the Military ALTITRACK

The reset button is located inside the battery compartment.
To gain access to the reset button, remove the wrist mount and the battery cover.

Follow step 1 to 5:

Fig. 26

Step 1. Loosen the 4 wrist mount screws and remove assembly.

Fig. 27

Step 2. Loosen the 4 battery Cover screws and remove cover

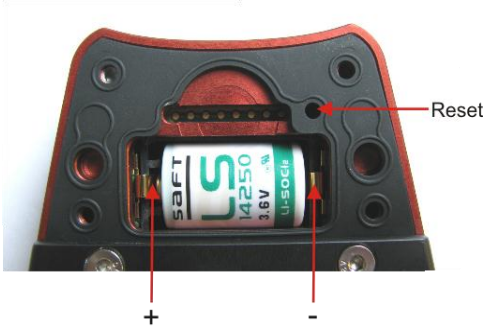


Fig. 28

Step 3. Press a paperclip into the tiny (Reset) hole next to the battery and release.
The unit restarts.
Step 4. Put battery cover back into place and fasten the 4 screws. Pay attention that the surfaces underneath and on the black rubber sealing are clean.
Step 5. Put Wrist Mount assembly back into place and fasten 4 screws.

After resetting, the battery system requires 2 minutes to calibrate itself before displaying the correct status. While calibrating, the battery icon toggles between full and low.

Note: Reset the unit after battery replacement, when troubleshooting and when verifying software version number.

17 - Firmware Version

Perform reset or turn the unit OFF and then ON
The version number is displayed in the upper part of the screen.
The number displayed in the lower part of the screen is the scale type

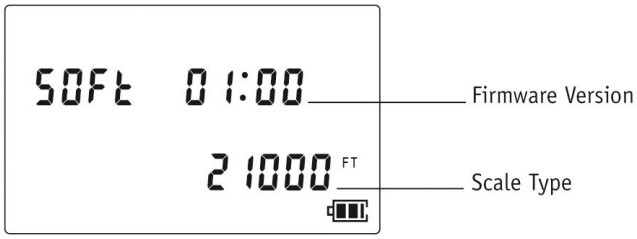


Fig. 29 - Firmware version

18 - Operational hints and Trouble-shooting

When the Military ALTITRACK detects a fault, an error (“ERR”) symbol and trouble shooting numbers 2 to 5 and 100 are displayed in the upper part of the LCD screen. At the same time the unit beeps every minute.

The “ERR” trouble shooting codes are as follows:
ERR 2 (both transducers are defective)
ERR 3 (both transducers are out of range)
ERR 4 (crystal defective)
ERR 5 (communication error to flash)
ERR 100 (flash defective).

Remedy: perform reset

If the unit still does not function correctly even after peforming reset and replacing the battery, then perform following:
Press and hold ▪ while resetting.
The Military ALTITRACK resets to factory settings and sounds three beeps.

If the unit is still faulty, please contact LARSEN & BRUSGAARD.

19 - TAS and SAS

Definitions
True Airspeed (TAS) and **Skydiver's Airspeed (SAS)** are two methods of calculating the airspeed of a moving/flying/falling object.
TAS is a term used in aviation: It is the speed of an object relative to the surrounding air, regardless of the altitude.
SAS is a new concept developed by LARSEN & BRUSGAARD: **SAS** is the speed of a skydiver calculated from measurements of air pressure and temperature and converted to a fixed air pressure (875.3 mb) and a fixed temperature (+7.080C) which corresponds to 4,000 feet ASL.

TAS
A skydiver's True Airspeed (TAS) relative to the ground changes as a function of the altitude (air pressure) and temperature which makes it difficult to compare fall-rates.
Example: A skydiver (in a fixed freefall position) who has a terminal fallrate of 62 meters/sec at 10,000 feet will have a terminal fallrate of 50 meters/sec at 3,000 feet.
It will be seen that the difference in altitude (air pressure) makes it difficult to compare the fall-rates when measured using TAS.

SAS
The SAS formula calculates airspeed (using the same metrics used with TAS) as though the complete skydive had been performed at a fixed air pressure and a fixed temperature which corresponds to 4,000 feet ASL.. 4,000 feet is chosen as the reference altitude by LARSEN & BRUSGAARD since this is the average altitude at which the working time of a skydive is normally ended.

Conclusion
Using **SAS**, skydivers in any body position can express their vertical speed by a number (**SAS**). This number remains virtually constant regardless of altitude with little or no variance due to temperature differences and can be compared with the airspeeds of other skydivers. This means that regardless of the elevation of the DZ you are jumping at, **SKYDIVER'S AIRSPEED (SAS)** will be the same for the same body position.

SAS is very useful when doing big formation skydiving. If using TAS, it will seem like the base is slowing down the fall rate during the entire skydive.

To set TAS / SAS see paragraph 10.10

20 - Water jump and Air Filter

Fig. 30 - Air filter

PRIOR TO A WATER JUMP:

Make sure the batteri screws are tightened to 1,4 Nm and no foreign objects hinders the working of the cover

The Military ALTITRACK is water resistant down to 5 ft for 24 hours.
After jumping into (salt) water the Air Filter may be contaminated with particles (salt and dirt) and must be rinsed in fresh water or replaced.

21 - Replacing the Air Filter

General: After jumping into (salt) water, the small holes in the Air Filter may have become contaminated with particles (salt and dirt) which could prevent the sensors inside the instrument from reading the air pressure correctly on the next jump.

If no particles can be seen after rinsing the instrument in fresh water then replacement of the Air Filter should normally not be necessary and the unit can be put aside to dry. However, for safety reasons, LARSEN & BRUSGAARD recommends that the Air Filter is replaced after each water jump.

After rinsing the Military ALTITRACK thorougly in fresh water, replace the battery cover which has the Air Filter integrated and test the unit is a vacuum chamber.

Note: Wrist Mount assembly must be removed before rinsing

.

1. Loosen the 4 battery cover screws and remove cover.
2. Place new battery cover with integrated Air Filter into place and fasten the 4 screws.
   Pay attention that the surfaces underneath and on the black rubber sealing are clean.
3. Put Wrist Mount assembly back into place and fasten 4 screws

Fig. 25 - Pay attention that the surfaces underneath and on the black rubber sealing are clean.

22 - ALTISET Remote Control

Description

The ALTISET Remote Control is an optional accessory. It can be used to adjust the Military ALTITRACK mBar, to switch backlight ON/OFF and to set the backlight intensity, either at the same time or individually.

To transmit the commands, the ALTISET must be in line of sight and within 30 cm/10 inches of the IrDA transceiver.

Fig. 39 - ALTISET front view

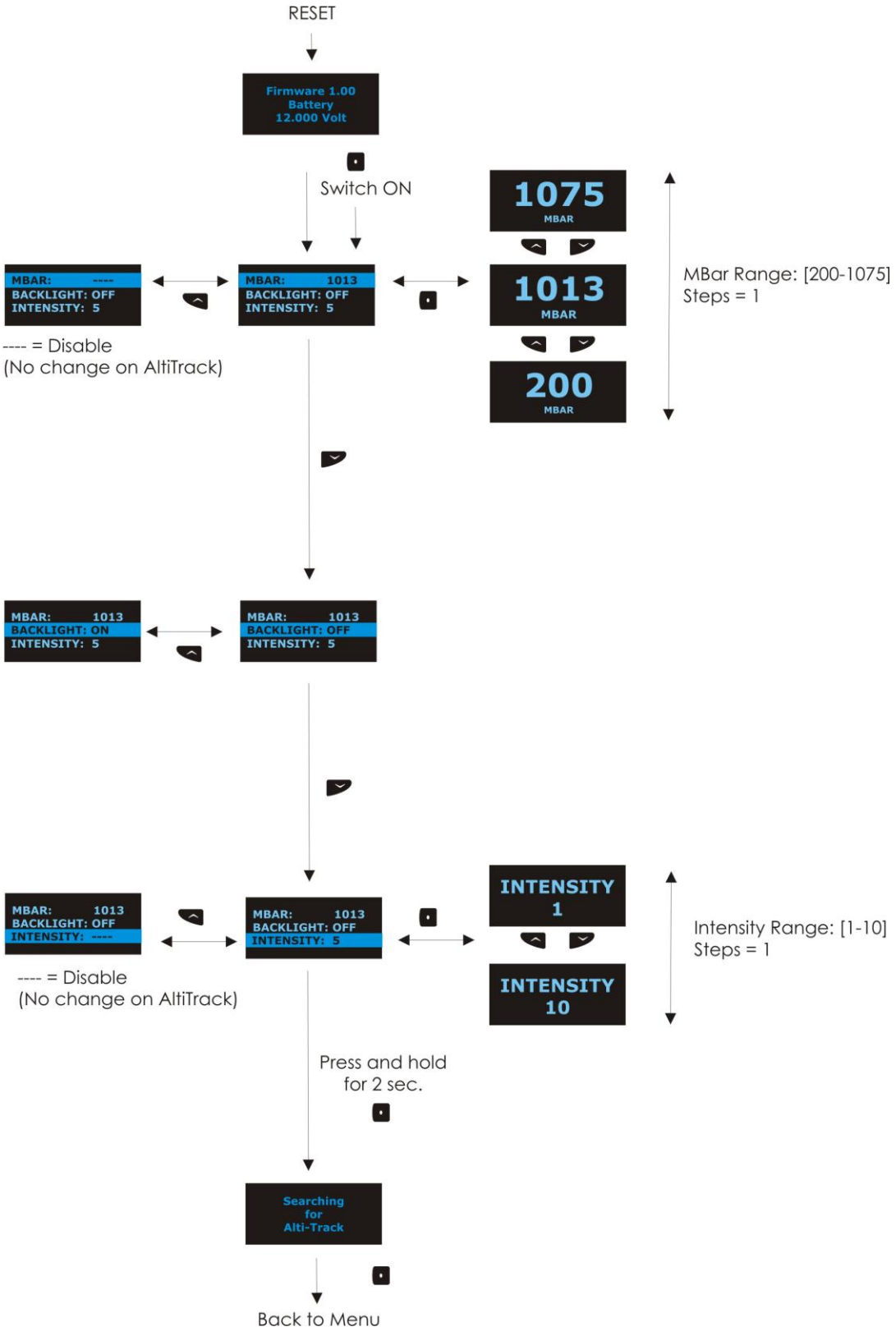
Fig. 40 - ALTISET rear view

1. “Linked” flashing LED when IrDA is searching for Military ALTITRACK
2. OLED displaying data for transmission to Military ALTITRACK
3. Left button
4. Mode button
5. Right button
6. IrDA port
7. Reset
8. Battery compartment

22.1 ALTISET Road Map

It is recommended that you familiarize yourself with the **ALTISET ROAD MAP** which is a very helpful tool when using the **ALTISET** for the first time. See paragraph 22.2

22.2 ALTISET ROAD MAP



23 - Military ALTITRACK IrDA Transceiver

23.1 Enable the Military Altitrack IrDA port on the ground

Military Altitrack in Sleep Mode

Press and hold Left Front Button for 3 sec.

The OLED displays *"IR Active"* and communication is enabled for 2 minutes. During this period the ALTISET can be used to transmit data.

To disable the IrDa port within 2 minutes, press and hold Left Front Button for 5 sec.

23.2 Enable the Military Altitrack IrDA port in the aircraft

Military Altitrack in Jump Mode.

The Military ALTITRACK IrDA port is always active in Jump Mode.

23.3 ALTISET Programming

Press to activate ALTISET

Adjusting mBar, Backlight and Backlight Intensity

Press again to select mBar. Press or to adjust the mBar. Then press
Press to go to the next menu point (Backlight)
Press to select Backlight ON/OFF
Press to select next menu point (Backlight Intensity)
Press and then or to set Backlight Intensity. Then press

23.4 ALTISET Data Transmission to Military ALTITRACK

Press and hold 3 seconds. "LINKED" light starts flashing and display shows *"Searching for AltiTrack".* The ALTISET is searching for connection with Military ALTITRACK every 4 seconds.

Point ALTISET towards the IrDA transceiver and within 4 seconds the data will be transmitted and briefly confirmed on the Military ALTITRACK OLED.

The ALTISET will keep searching for IrDA transceivers for 2 minutes each time it has transmitted data.
ALTISET enters sleep mode if no IrDA transceivers are found within 2 minutes.

24 - Replacing ALTISET Batteries

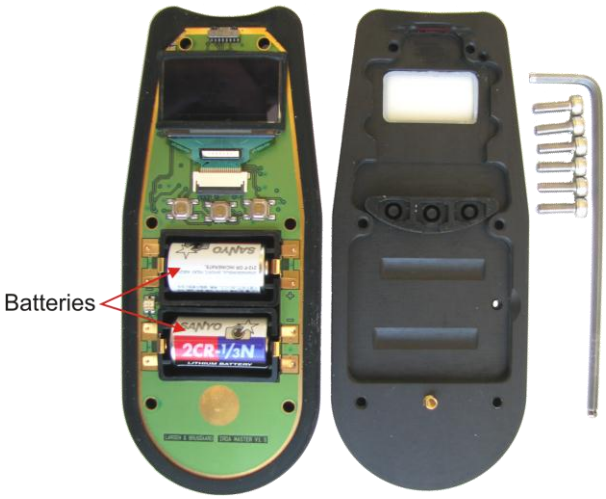


Fig. 41 - ALTISET batteries

When LOW BAT lights, batteries must be replaced.

1. Use Allen Key (enclosed with spare batteries) to remove six Unbrako Socket Screws from back side of unit
2. Place the ALTISET on a table and carefully remove front cover to expose circuit board
3. Replace batteries and note polarity. Use SANYO 2CR-1/3N (6V) or equivalent
4. Put front cover back into place and fasten screws
5. Use a pencil to press on “RESET” button. The unit restarts

24.1 ALTISET Trouble-shooting

If the ALTISET does not respond when pressing the buttons or if the display shows wrong symbols, perform RESET.

If the unit does not respond after performing RESET, then replace the batteries

If the unit is still faulty, please contact LARSEN & BRUSGAARD

25 - Specifications, Military ALTITRACK

Mechanical

Dimensions: 85 x 69 x 25 mm
Weight: 238 g
LCD viewing area: 9.5 cm^2
OLED viewing area: 4.2 cm^2

Logbook

Maximum display indication:

Profile storage: 400 minutes
Accumulated number of jumps: 19,999
Exit altitude: 39,999 feet (12,191 m)
Accumulated freefall time: 999 hours

Tolerances:

Exit altitude: +/- 1.2%
Deployment altitude: +/- 1.2%
Freefall time: +/- 1 sec
Speed (TAS/SAS): +/- 3 mph (+/- 5 kmh)

Datalogger

Continued storage of freefall profiles: Last 400 minutes
Maximum logging altitude: 39,999 feet (12,191 m)
Maximum logging time: 15 minutes per jump
Sampling rate: 4/sec.

Other

IrDa transmission range: Maximum 30 cm
Present altitude: +/- 10 ft
Operating altitude: 0 to 40,000 ft (0 to 12,191 m)
Clock: +/- 4 min/month
Storing Temperature: -20C to +70C
Operating Temperature Range: -35C to +80C continuous operation. Will operate at -50C for 10 minutes
Storing Pressure: 200 to 1075 mBar
Maximum allowable humidity: Up to 99,9% rel humidity
Waterproof: 5 feet for 24 hours
Altitude Adjustment Range: 200 to 1075 mBar (20,67 to 31,74 In.Hg)
Function Period: 14 hours
Maintenance: 4 and 8 years from date of manufacture
Battery type: SAFT Lithium LS 14250 (3.6V) or equivalent
Battery Life Time (at normal use): approximately 2 years
L&B part no.: 308210
NATO Stock no. 6675-22-616-5036

26 - Specifications, ALTISET

Mechanical

Dimensions: 120 x 50 x 18 mm
Weight: 136 g
OLED viewing area: 4.2 cm^2

Other

IrDa transmission range: Maximum 30 cm
Storing Temperature: -20C to +70C
Operating Temperature Range: -35C to +80C continuous operation
Operating altitude: 0 to 40,000 ft (0 to 12,191 m)
Storing Pressure: 200 to 1075 mBar
Maximum allowable humidity: Up to 99,9% rel humidity
Battery type: SANYO Lithium 2CR-1/3N (6V) or equivalent
Battery Life Time (at normal use): approximately 2 years
L&B part no.: 801000
NATO Stock no. 5820-22-616-5040

27 - Warranty

The following conditions apply to the Military ALTITRACK and ALTISET warranty:
If within 24 months of the purchase of Military ALTITRACK or ALTISET a defect or damage is identified by faulty manufacture, LARSEN & BRUSGAARD will repair the unit at no cost the the end user.
To make a claim under this warranty, send the unit to an authorized dealer or directly to LARSEN & BRUSGAARD together with the dated purchase invoice or receipt.
The warranty becomes void if damage is caused by external circumstances or if the unit has been serviced or repaired by third parties unauthorized by our national agents or LARSEN & BRUSGAARD.
All further claims, especially for defects after skydiving accidents, are excluded.
LARSEN & BRUSGAARD has no obligation to honor any extension of warranty granted by any national agent.

Waiver of Liability

The buyer and user of the Military ALTITRACK and ALTISET indemnify the manufacturer and vendor from any liability for damage incurred before, during and after skydiving with the instrument.

28 - Contact

www.LBAltimeters.com
info@LBaltimeters.com