XC-trainer

- vario
- altimeter
- datalogger
- 20channel GPS

XC-TrainerEasy

XC-TrainerEasy+

AIRCOTEC

flight instruments

www.aircotec.com

Congratulations!

With the *AIRCOTEC XC-Trainer* you have purchased a Swiss Quality product that will put at your disposal not only the most advanced electronics but also a revolutionising user-friendliness and a ruggedness that all together will combine to make your flights more pleasurable.
We hope it will accompany you on many great flights!

AIRCOTEC XC-Trainer

All the information contained in this manual has been gathered with attention to detail and care. It is not however intended as a comprehensive product characteristics description, and *AIRCOTEC* is only liable to the extent stipulated in the sales conditions.

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Translated to English by Mads Syndergaard

Safety information

The **XC-Trainer** is equipped with an advanced 20 channel GPS receiver. With sufficient satellite coverage this will guarantee very high position accuracy.

Maps with inaccurate altitudes, incorrect altitude settings (pilot error) or simple instrument defects may lead to erroneous altitude indications. The pilot should always fly based on their own sound judgement and skills, and not rely solely on any instrument. This is particularly the case when flying with reduced visibility or when landing.

The manufacturer is not liable for damage incurred due to erroneous altitude or position indication by the instrument.

Consulting or even working with, the instrument should only be done when the situation allows it – otherwise please rely on the acoustic signals.

The **XC-Trainer** must be mounted in a way that does not endanger neither pilot nor tandem passenger (if applicable) in any way. Always make sure the XC-Trainer is mounted so that it does not impede the pilot's movements in the air on when launching/landing. Finally it is important to check that neither instrument nor part thereof may come loose, fall down and possibly hurt someone during the flight.

The **XC-Trainer** should always be secured using the safety lanyard, see illustration.

Before launching the pilot should verify that the instrument is working and that the rechargeable battery has sufficient power to last the entire flight.

The **XC-Trainer** is spray-proof but not waterproof. Should water manage to find it's way into the instrument we recommend opening the instrument and removing the batteries immediately. Then the innards may be dried carefully with a hair dryer (never attempt to dry in a microwave oven!). Should the instrument become flooded with seawater it must be thoroughly rinsed with fresh water before drying. Following this a comprehensive check at **AIR**COTEC is then required.

You use the **XC-Trainer** at you own risk. The manufacturer is not liable for damage or loss resulting from the use of the instrument, or the software included in the package.

Maintenance and care

The ***XC-Trainer*** is a technologically advanced and reliable instrument. With the proper maintenance and care it will give you many hours of trouble-free service. Not following these simple guidelines may severely compromise you flight instrument:

- Never drop the ***XC-Trainer*** or expose it to hard shocks/impacts

- Never drop in water. Ensure that water does not penetrate the instrument cover. It is NOT waterproof, and particularly salt water may lead to extensive damage to the electronics. Protect from salt-water spray, rain and humidity. Should the instrument get wet wipe it dry immediately? In case of water getting inside the instrument we suggest you let us check it for you at ***AIR**COTEC*.

- Protect the instrument from extreme temperatures. Both extreme highs and lows adversely affect battery performance and lifespan, and high temperatures in combination with humidity will accelerate any corrosion.

XC-TrainerEasy+   additional function

XC-TrainerEasy+ Hardware:

Temperatur sensor

XC-TrainerEasy+ Software:

Temperatur display
Temperature gradient display for thermal quality (page 21)
Wind direction in track UP in all 3 screens
Automatic altitudes calibrations over GPS on tack off

Include with your instrument

XC-trainerEasy or XC-trainerEasy+

- Instrument
- Quick charger fort he battery
- Bag
- Manual
- Software TN-Complete

Accessories:

Not included in the dvice order

Leg fixation

Paraglider fixation

Hanggliding fixation

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1. XC-Trainer Technical Specifications

1.0 Technical description XC-Trainer

Loudspeaker

XCT Fixation

Identification plate
with Serial number

Temperatur
sensor
(only Easy+)

Key (Key1- Key2 - Key3)

Safety lanyard
fixation

Speedboard USB and
Speed sensor

Charger connection

1. XC-Trainer Technical Specifications

1.1 Altitude display

-1000m to +8200m, resolution 1m

1.2 Vario display

Digital indication from -90.0 m/s to +90.0 m/s
Analog indication from 0 – 5m/s and 5 – 9,5m/s
Acoustic signal for climbing initiates at +0.1m/s
Acoustic signal for sink can be set to initiate
between –0.1m/s and –5m/s.s
Settings in MENU/SETTINGS/VARIO From –5m/s a sink alarm will be
heard regardless of settings

1.3 Speed

(Only with speed sensor connected) 0 – 160km/h

1.4 Temperature (only for Easy+)

The sensor is placed on the right hand side of the instrument. It
measures in centigrade from –25 to +75 degrees, resolution 0.1
degrees

1.5 GPS receiver

20 channel parallel, 2D/3D position (WGS84), Altitude, speed,
direction. Internal aerial

1.6 Data transfer protocols

XCTrainerEasy: USB connection over Speedbord
XC-TrainerEasy+: USB connection

1.7 Clock

Flight recording in UTC
Display shows local time and elapsed time since launch

1.8 Memory

Flight data: 1MB flash, 184 in the circular buffer

1.9 Power supply

Rechargeable Li-Ion 3.7V/1800mAh. Operating time per charging
app. 36 hours. The instrument is equipped with an "intellicharge"
system
To protect the Li-Ion battery the XC-Trainer will shut itself down before
the battery is completely flat, saving all flight data beforehand
Power consumption 50 mA

1.10 Dimensions

137x66x28mm, weight including battery 157g

2. XC-Trainer Firmware

2.1 Firmware Version XC-TrainerEasy V1.40 und XC-TrainerEasy+ V2.40

Info for version Firmware may be found at www.aircotec.com

2.2 Flight Recorder

The integrated flight recorder saves position, altitude, climb/sinkrate, SOG, TAS (with speed sensor), heading and temperature (only XCT-Easy+) every second for up to 18 hours

2.3 Waypoints

3 Waypoint can be stored

2.4 Available data in the display

2.4.1 Permanent displays

Speed SOG and TAS (TAS with sensor attached), altitude, climb/sinkrate and heading. Wind speed and –direction

Graphical speed distribution curve with head- and tailwind indication, distance to turnpoint, local time and elapsed time since launch

2.4.2 Additional information in the BaroCompass mode

Flight direction in Track UP, distance and bearing to next waypoint or to a MARK. Glide angle from the last 5, 10 or 30sec.
Show the Compass. Flight direction symbol in track UP.

2.4.3 Additional information in Thermal mode

Flight direction in Track UP, distance and bearing to next waypoint or to a MARK. Graphic climb rate distribution with wind drift compensation. Resolutions 1km x 1km, 2km x 2km.
Flight direction symbol in track UP.

2.4.4 Additional information in the Vario mode

Analogue vario bar with 0-5m/s and 5-9,5 m/s resolution, Digital Vario from +-25 m over pressure sensor and +- 90m over GPS altitude. Distance and heading to next waypoint or Mark. Large Digital Vario display, large altitude display, null able altimeter ALT0 average vario for the last 10, 20 or 30 seconds, Glide angle for the last 10 sec. Flight direction symbol in track UP.

3.Important Information

✋**Important!**

Please read before using the Instrument

3.1 Charging the integrated battery

The instrument must be charged before the first use. At the time of delivery, the battery is charged to 50% (this is the ideal condition for a Li-Ion battery)

Only charge using the charger delivered with your XC-Trainer. Charging is completed when the red light is extinguished. For your on-the-road needs we also provide a car charger (parts number: XC-CAR-charger).

3.2 Auto Off

The instrument will turn itself off after 8 minutes if no keys are activated. This feature will eliminate your risk of showing up on launch with an empty battery. During flight the automatic shut-down function is deactivated.

When the battery is almost empty the instrument will begin to turn itself off. Any running flight recording will be duly saved.

4. Key function - overview

Key 1 **K1**	Key 2 **K2**	Key 3 **K3**

Switch ON :
 	
By pressing for > 0,3sec
--------------------------------- 	
In Start Menu:
 	
> OFF:
Switch the instrument off
 	
--------------------------------- 	
In Flight mode:
 	
In BaroCompass Display:
> select bearing point
 	
In Thermal Display:
> Set Marks
 	
In Vario Display
> Set ALT0
 	
--------------------------------- 	
In Menu :
> Down / forwards
	In Start Menu:
	
	> Manual start
	  Flight recorder
	> Manual take over
	  barometric altitude
	  (only for Easy+)
	--------------------------------- 	
	In Flight mode:
	
	In BaroCompass Display:
	> select bearing point
	
	In Thermal Display:
	> Zoom 1 and 2km
	
	In Vario Display:
	> adjust sound volume
	
	--------------------------------- 	
	In Menu :
	> Up / Backwards
		In Start Menu:
		
		> MENU:
		In main menu
		
		--------------------------------- 	
		In Flight mode:
		
		> Toggle mode/screens
		
		--------------------------------- 	
		In Menu :
		> select
		> switch to other display
		> Back / Exit

	End of the flight recording	
K1	*Press both buttons about 3 sec.*	**K3**

In certain cases all keys may have other functions as well, indicated by the text in the display above each key. As an example, if you're about to delete a flight the XC-Trainer will ask you if this is really your intention, and you confirm by pressing Key 2 or deny by pressing Key 1

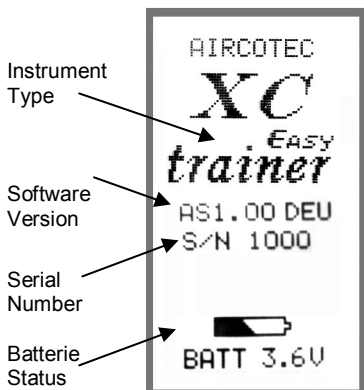NO   YES
K1   K2   K3

5.0 Switching the XC-Trainer ON/OFF

To switch on:

Press Key1 for app. 0.3 seconds -> The **SwitchOn display** is shown for 4 seconds, then it switches to the **Start Menu**

Switch ON Display   **Start Menu** (B0)

Instrument Type

Software Version

Serial Number

Batterie Status

ca.4sec

AIRCOTEC
XC
Easy
trainer
AS1.00 DEU
S/N 1000

BATT 3.6V

AIRCOTEC
XC
Easy
trainer
30.05.09
18:03:03
352m
411m 3D
410m AUTO
MOVE → →
OFF 10% MENU

Date

Time (with GPS)

Altitude
GPS Altitude

Temperature (only for XCT Easy+)

📄**INFO:** Automatic switch OFF
Bar decreases in size from right to left if no keys are activated the instrument shuts off after 8 minutes.
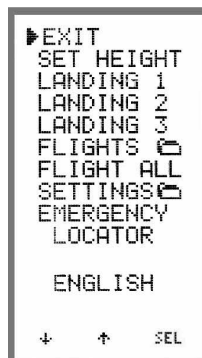
Key3 >

Switch OFF:

Press Key 1 briefly

📄**INFO:** Up until two seconds after the battery indicator appears the instrument may be switched off.

Starts a new flight recording:

Press Key 2 briefly

BaroCompass mode appears in the display

Main menu (B10) see 9.1

▶EXIT
SET HEIGHT
LANDING 1
LANDING 2
LANDING 3
FLIGHTS 📁
FLIGHT ALL
SETTINGS 📁
EMERGENCY
LOCATOR

ENGLISH

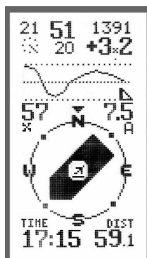↓   ↑   SEL

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6. *Flight recording menus*

6.1 Menus-displays overview:

The flight mode contains 3 screens.

NOTE: The following screenshots are examples from flight and do not match the screen at launch.

BaroCompass Display (III. 1)
(Details 8.4)

The default screen to appear when a new flight is initiated is the BaroCompass screen. Press the Key3 🔘 briefly to toggle between the BaroCompass, the Thermal and the Vario screens. When the instrument is set to manual in Settings, these three screens are displayed one after the other for each short click on Key3 🔘. In Auto mode (recognised by the small A in the centre right) the instrument automatically switches between BaroCompass and Thermal mode, when climbing to Thermal, when gliding to BaroCompass. Toggle to Vario to void the auto setting.
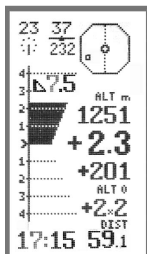
Thermal Display (III. 2)
(Details 8.6)
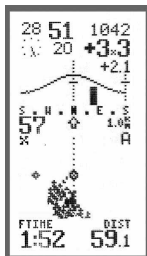
In this screen the thermals are visualised as clouds of pixels on the screen. After some thermalling the shape of the thermal should become apparent. The display is wind-drift compensated. After 1 full circle the wind distribution curve appears on the screen.

VARIO Display (III. 3)
(Details 8.7)

Main information in Vario display.
Large glide angle display
Analog Vario, Digital Vario, Average Vario
Altitude, Alt0

7. Key function in Flight Recording mode

7.1 General

Toggle between the available displays/screen by pressing Key3 .

7.2 Set MARK only in the thermal display

Any interesting spot (thermals etc.) can be instantly marked using Key1 . The Position Marks are consecutively marked from 1 through 3.
Press the Mark key in Thermal mode to set a Mark and switch to the BaroCompass

screen, where the instrument will suggest 'Mark1'. Use Key1 ↑ and Key2 ↓ to select another name (Mark 2, Mark3). Default is Mark1.
.

7.3 ZOOM Function in the Thermal display

Key2 changes the resolution (zooms) in screens 1x1km 2x2km and A 1x1km A2x2km. The A is for automatic Display-switching between BaroCompass display and Thermal display.

7.4 Altitude null in VARIO display (screen 3)

A short click on Key1 in VARIO mode nulls the Altitude. When launching this value is always set to 0.

7.5 Setting the volume level in Vario display

Short clicks on Key2 switch the volume from OFF ,1 ,2 and 3.
The little symbol in the digital vario display indicates the current setting
(OFF> ⚡, LOW> ▬ , MEDIUM> ≡, LOUD> ≣)

7.6 Ending a Flight Recording

Holding down K3 and K1 for about 2sec ends the flight.

- If no GPS position fix has been acquired:
  Using Key1 and Key3 to end results in the display text "OFF"", and no flight is recorded.

- Once a GPS position fix has been acquired:
  Using Key1 and Key3 to end results in the display text "Storing flight", then "AUTO OFF", whereupon the instrument shuts down.

All settings made during the flight, like volume, screen resolution etc. are stored as the instrument shuts down.

8.0 Automatic-Start Flight recording

8.1.1 Acquiring GPS signal

As soon as the instrument is switched on it begins acquiring GPS signal. First available is a 2D position fix, followed by 3D.

2 D Mode   < 4 Satellites and no GPS altitude

3 D Modus >= 4 Satellites, GPS altitude.

Once 3D is available the bottom display reads 'OFF'
10% MENU'.

8.1.2 Automatic altitude calibration(only Easy+)

Have the GPS 3D mode begins the system the automatic altitude calibrations over GPS.
After 2 min. is the precision about +- 10m.

If you wand barometric altitude press the Key2 🔋 before the auto start begins to run. It is a manual start.

The flight recording may be initiated as soon as the display reads 'OFF 10% MENU' ,.

8.1.3 Beginning the flight

🛫 **10 km/h or +1/-1m/s**
The recording starts when either of the following conditions is met:
a) 5 Seconds >= 10 km/h Groundspeed if GPS acquired.
b) 5 Seconds >= 1 m/s climb/sink barometric.

When the instrument commences recording it sets a position mark called Takeoff 🛫 and the flight duration begins at zero. These are visible in Thermal Mode.

8.2 Manual Start flight recording

The flight recording may also be initiated manually from the Switch-On menu,

8.2.1 Manual Start

The flight recording may also be initiated before the instrument has acquired a position fix

START flight recording:

Click Key2 🔘 to go to the flying screens

The actual recording will however only commence once the instrument has acquired a position fix

8.2.2 Setting the altitude manually

If the launch altitude is known it may be entered manually in **MENU / ALTI SET**

Use Key1 🔘 ↓ to decrease, Key2 🔘 ↑ to increase and Key3 🔘 to confirm

QNH display:

For the QNH display (in hPa) to be correct the current instrument altitude must be calibrated before the flight. Note that QNH is only relevant below app. 200m and will only be displayed up to this altitude. As the barometric sensor ages, different instruments may show different altitudes – the accuracy of the altitude measuring is not affected by this.

8.3 Ordinary Flight recording

The top half of the displays 1, 2 and 3 has the following info:

Speed Over Ground (SOG)

Alti (only screens 1 and 2)

Wind speed

Vario Digital
(only screens 1 and 2)

Wind direction
North up
(in this case SSE)

Volume indicator
(only screens 1 and 2)
The following symbols are used:
(off , low ─ , mean ≡,
loud ≣) Details 7.5

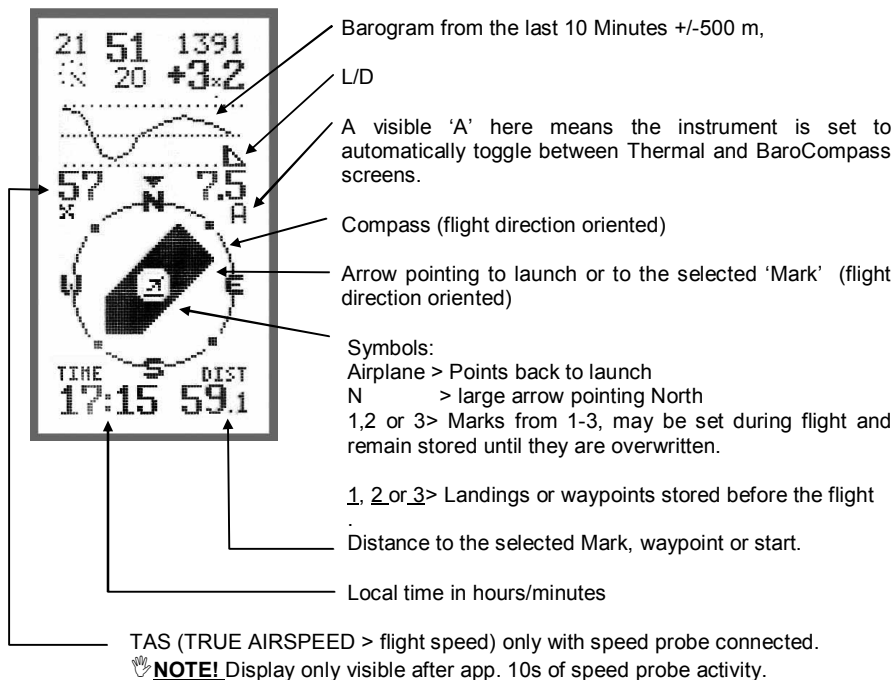Flight direction (heading)
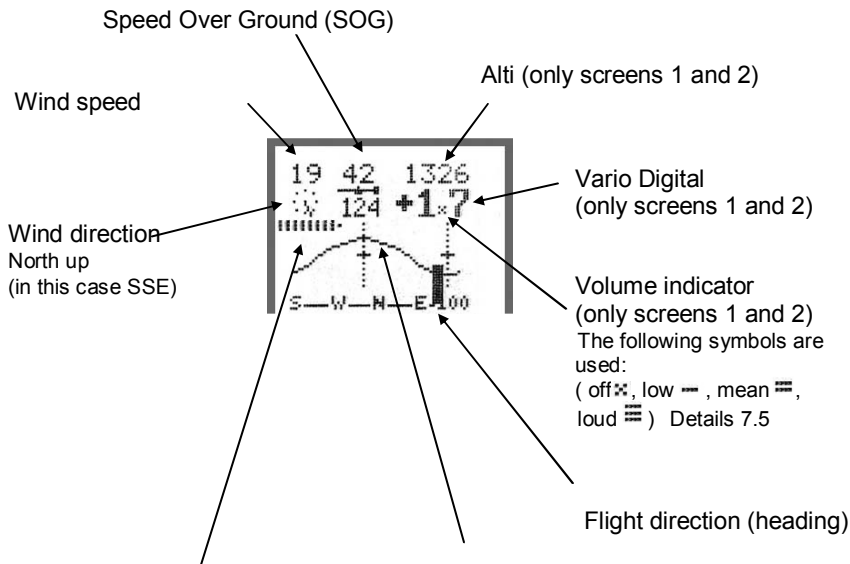
Battery indicator in Flight mode:

Only briefly visible after each screen toggle.

In all flight screens a battery indicator consisting of 1 to 9 short bars, corresponding to a battery voltage of 2.9 to 4.2V. Below 5 bars the 'Low Bat' symbol appears, this corresponds to 3,4V and app. 30minutes of remaining operation. At 2.8V the flight is stored and the instrument shuts down.
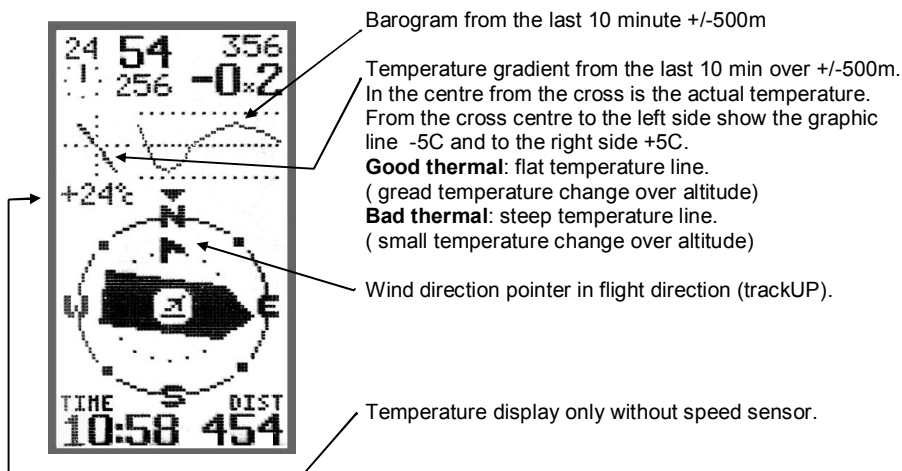
Speed distribution curve, with wind indicator and SOG bar
 (Details 8.5).

8.4 BaroCompass flying MODE

**Lower half of display** **BaroCompass screen shot**

Barogram from the last 10 Minutes +/-500 m,

L/D

A visible 'A' here means the instrument is set to automatically toggle between Thermal and BaroCompass screens.

Compass (flight direction oriented)

Arrow pointing to launch or to the selected 'Mark' (flight direction oriented)

Symbols:
Airplane > Points back to launch
N   > large arrow pointing North
1,2 or 3> Marks from 1-3, may be set during flight and remain stored until they are overwritten.

1, 2 or 3> Landings or waypoints stored before the flight
.
Distance to the selected Mark, waypoint or start.

Local time in hours/minutes

TAS (TRUE AIRSPEED > flight speed) only with speed probe connected.
NOTE! Display only visible after app. 10s of speed probe activity.

Additional function Easy+

Barogram from the last 10 minute +/-500m

Temperature gradient from the last 10 min over +/-500m. In the centre from the cross is the actual temperature. From the cross centre to the left side show the graphic line -5C and to the right side +5C.
Good thermal: flat temperature line.
(gread temperature change over altitude)
Bad thermal: steep temperature line.
(small temperature change over altitude)

Wind direction pointer in flight direction (trackUP).

Temperature display only without speed sensor.

8.5 Thermal flying Mode

8.5.1 Wind distribution curve

The wind distribution curve only becomes visible in the display once the pilot has flown at least a full circle, or a figure-eight. The instrument uses the SOG to calculate wind speed and –direction.
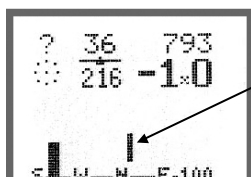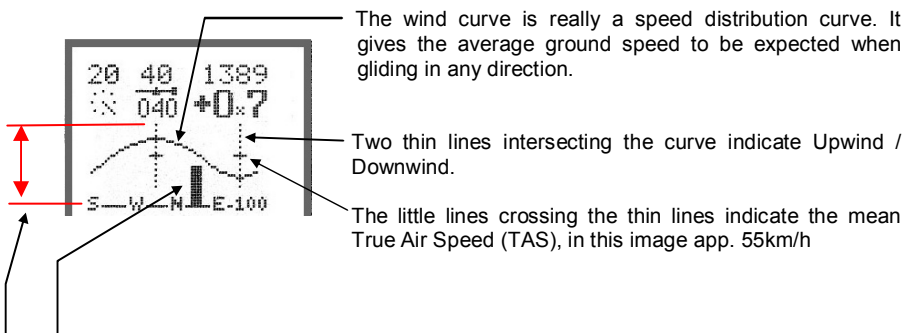
8.5.1 Basic Wind distribution curve

A thin vertical bar shows the compass direction still needed to calculate the wind direction. Fly in this direction to acquire the data needed.

This line shows a compass that has been 'opened up'. North is in the middle.
'S--W--N--E--S'.

8.6.2 Active Wind distribution curve

The wind curve is really a speed distribution curve. It gives the average ground speed to be expected when gliding in any direction.

Two thin lines intersecting the curve indicate Upwind / Downwind.

The little lines crossing the thin lines indicate the mean True Air Speed (TAS), in this image app. 55km/h

SOG-bar:
The bar height is used to indicate the current Speed Over Ground (SOG), and the bar sits on the compass rose at the position of the current heading (COG – Course Over Ground)

Scale:
The full height of the coordinate system corresponds to 100km/h. Where the curve touches the bottom line the SOG is 0km/h, where it touches the top it is 100km/h SOG.
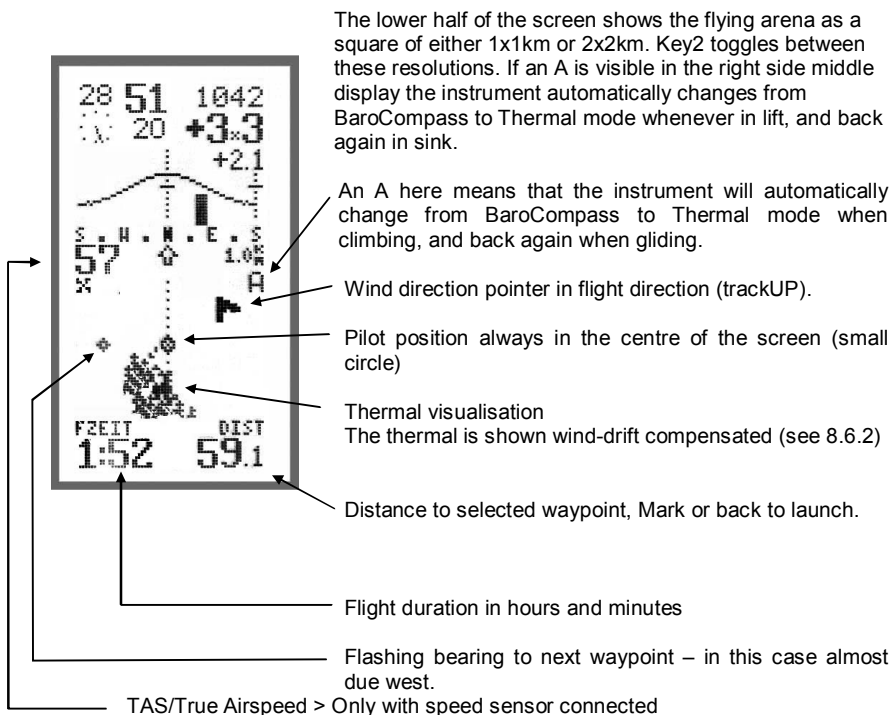In this example, flying NW will give a SOG of app. 75km/h (tailwind) whereas flying SO (headwind) will give 25km/H

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8.6 Thermal flying MODE

8.6.1 Thermal display

The Thermal-display

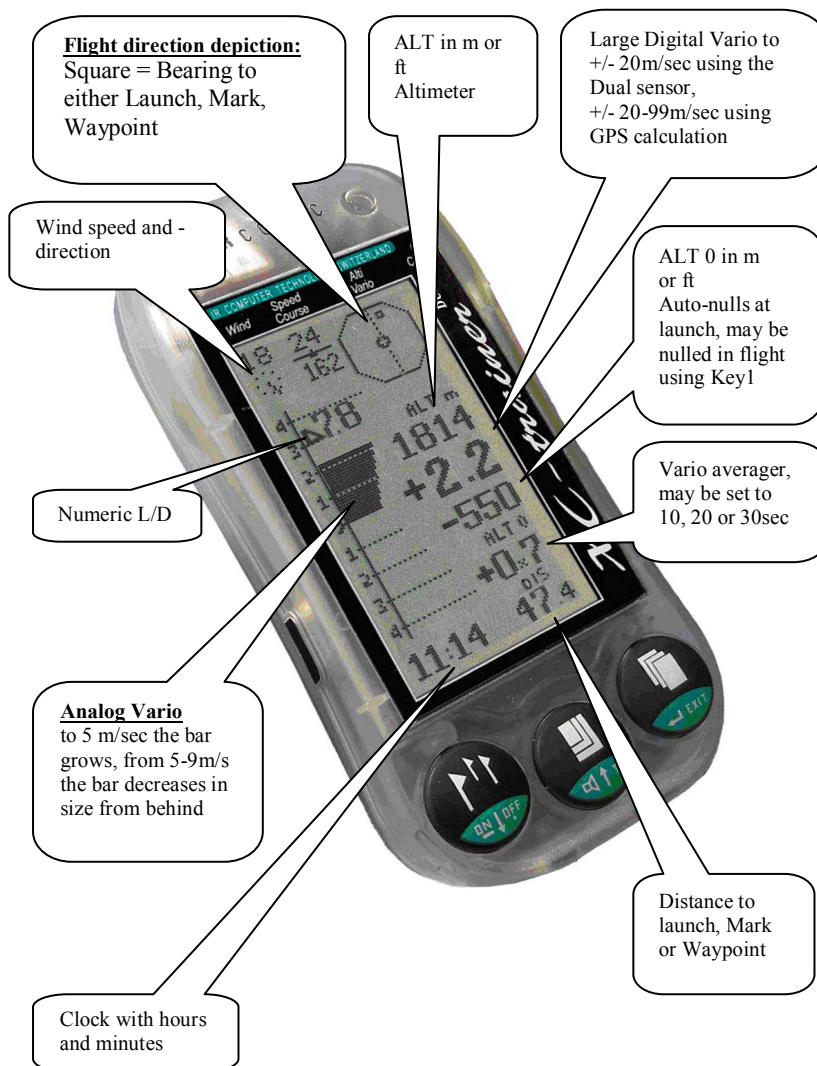The cloud-map of the thermal and the active waypoint is always shown in track up.

The lower half of the screen shows the flying arena as a square of either 1x1km or 2x2km. Key2 toggles between these resolutions. If an A is visible in the right side middle display the instrument automatically changes from BaroCompass to Thermal mode whenever in lift, and back again in sink.

An A here means that the instrument will automatically change from BaroCompass to Thermal mode when climbing, and back again when gliding.

Wind direction pointer in flight direction (trackUP).

Pilot position always in the centre of the screen (small circle)

Thermal visualisation
The thermal is shown wind-drift compensated (see 8.6.2)

Distance to selected waypoint, Mark or back to launch.

Flight duration in hours and minutes

Flashing bearing to next waypoint – in this case almost due west.

TAS/True Airspeed > Only with speed sensor connected

✋**NOTE!** Display only visible after app. 10s of speed probe activity.

8.6.2 Thermal display Centring aid

Wind-drift compensated visualisation of the lift area. In this display the instrument draws a track as soon as climb rates of more than 0m/s are encountered. Higher climb rates result in larger pixel points. If the pilot falls out of the thermal it is easy to fly back into it by looking at the display. This is particularly helpful on days with considerable wind drift, or for centring weak Föehn waves. The resulting map of the thermal is wind drift compensated in an intuitively correct manner, and lift is only drawn up to 150m above or below the pilot altitude from the last 5 minutes.

8.7 VARIO flying MODE
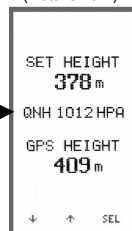
8.7.1 Large Vario display (B2)

Flight direction depiction:
Square = Bearing to either Launch, Mark, Waypoint

ALT in m or ft
Altimeter

Large Digital Vario to +/- 20m/sec using the Dual sensor,
+/- 20-99m/sec using GPS calculation

Wind speed and - direction

ALT 0 in m or ft
Auto-nulls at launch, may be nulled in flight using Key1

Numeric L/D

Vario averager, may be set to 10, 20 or 30sec

Analog Vario
to 5 m/sec the bar grows, from 5-9m/s the bar decreases in size from behind

Distance to launch, Mark or Waypoint

Clock with hours and minutes

9. Menu Descriptions

9.1 Menu screens overview

Manual altitude set
(Details 10.1)

```
SET HEIGHT
   378 m
QNH 1012 HPA

GPS HEIGHT
   409 m

↓    ↑    SEL
```

Select with Key1 🔵 ↓   or KEY2 🟢 ↑
confirm with, Key3 🔵

Settings menu

```
▶EXIT
 SET HEIGHT
 LANDING 1
 LANDING 2
 LANDING 3
 FLIGHTS 📁
 FLIGHT ALL
 SETTINGS📁
 EMERGENCY
  LOCATOR

 ENGLISH

 ↓    ↑    SEL
```

Landing search
(Details 11.1)

```
B  N E W  MARK 1
A  46°55.58
D  15°41.71
   STORED MARK 1
N  47°36.53
E  13°46.64
        N

    W       E

        S
            DIST
EXIT     163
```
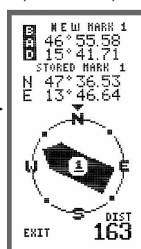
Store landing
(Details 11.2)

```
   N E W  MARK 1
N  46°55.58
E  15°41.71
   STORED MARK 1
N  47°36.53
E  13°46.64
        N

    W       E

        S
            DIST
EXIT SAVE 163
```
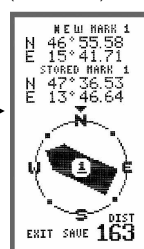
Emergency position
(Details 17.0)

```
  EMERGENCY
   LOCATOR

N 46°55.5
E 015°41.7

  TELEPHONE
   EUROPE
    112
DO NOT MISUSE
EXIT
```

Log book
(Details 12.1)

```
     2▲
▶29.05 09:48  0:42
 29.05 08:24  0:05
 28.05 12:01  1:28
 24.05 01:01  1:24
 27.05 13:06  0:31
 27.05 12:27  0:29
 27.05 08:13  3:24
     5▼
    29.05.09
 09:48 - 10:30
 LENGTH 0:42
 ↑ +6.2 ↓ -2.6
 ALTMX   354m
 SOGMX   81 kk
 ↓    ↑    SEL
```
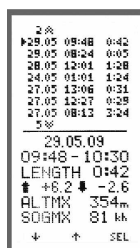
Send flight to PC
(Details 12.2)

```
   ZURÜCK
 MXP 1s 57K
 MXP 2s 57K
 MXP 4s 57K
 MXP 10s 57K

▶TNC 1s 57K
 TNC 1s 9.6



 TXD57600 BD
 ABBRUCH 01:26
```
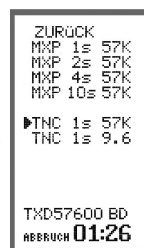
Flights, including deleted
(Details 16.0)

```
     2▲
▶29.05 09:48  0:42
 29.05 08:24  0:05
 28.05 12:01  1:28
 24.05 01:01  1:24
 27.05 13:06  0:31
 27.05 12:27  0:29
 27.05 08:13  3:24
     5▼
    29.05.09
 09:48 - 10:30
 LENGTH 0:42
 ↑ +6.2 ↓ -2.6
 ALTMX   354m
 SOGMX   81 kk
 DEL SEND EXIT
```

Settings menu
(Details 14.0)

```
▶EXIT
 VARIO 📁
 LOCAL 01:59
 UNIT  m  Km
 CONTRAST 6
 IMPELLER N
 C-VARIO 200
 MEMORYDUMP
 FACTORYSET




 ↓    ↑    SEL
```

Vario-Menu
(Details 15.0)

```
▶EXIT
 SINKTONE Y
 SINK - 1.5M/s
 SINK MOD N
 SINK INV Y
 VAR TC 1 s
 VOLUME  3
 VARIO NULL
 PITCH     5
 PERIOD    7
 VAR AVG10 s

 SOUNDCHECK
 ↓    ↑    SEL
```
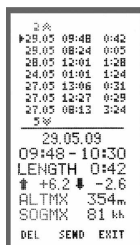
9. Menu Descriptions

9.2 Text descriptions

Key functions:

1. Use Key1 🔘 or Key2 🔘 to place Cursor
2. Use Key3 🔘 to call a particular setting
3. Use Key1 🔘 or Key2 🔘 to increase or reduce values, or for Y/N
4. Use Key3 🔘 to confirm and activate changes

Main Menu:	Description	Factory setting
▶ EXIT	Back to Init menu	
ALTI SET	Manual altitude setting	
LANDING . 1	1 Landing	
LANDING . 2	2 Landing	
LANDING . 3	3 Landing	
FLIGHTS ##	Flight overview	
ALL FLIGHTS	Flight overview including deleted flights	
SETTINGS ##	Settings-Menu	
EMERGENCY COORDINATES	Shows current coordinates and emergency number	
ENGLISH	Select language (until 16 languages)	

SETTINGS Menu:	Description	Factory setting
▶ EXIT	Back to main menu	
VARIO ##	Vario sub Menu	
UTC HH:MM	Local time or UTC time	UTC
UNITS m km	Units m/ft km/nm	m km
CONTRAST 8	Screen contrast setting 1-19	8
SPEED SENSOR Y	Switch off speed sensor	N
C-VARIO 200	Vario calibration over 100 seconds	
MEMORYDUMP	Aircotec function for full memory download	
FACTORY SET	Return to Factory settings	

VARIO Menu:		Factory setting
▶ EXIT	Back to SETTINGS Menu	
SINKTON Y	Sink tone on/off	Y
SINK -1.0m/s	Sink tone on from 0 to-5m/sec	-1.0 m/s
SINK MOD N	Sink tone modulation	No
SINK INV N	Sink ton Invert	No
VAR TC .5 s	Vario Time constant	0,5 – 4sec Integraltime
VOLUME. 0	Acoustic volume from 0-3	2
VARIONULL	Vario Nulling	
SOUND	Vario pitch from 0-9	5
FREQUENZ	Beeb frequency 0-9	7
VAR AVG 20%	Vario integrator from 10-30	20sec
SOUNDCHECK	VARIO Sound check	

10. Setting altitude manually
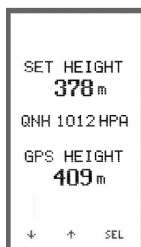
10.1 Alti-set

Provided the launch altitude is known it may be calibrated before launch in **MENU / ALTI SET**

QNH display:

For the QNH-display (in hPa) to be correct, the altitude must be calibrated before launch. QNH is only displayed up until app. 2000m, as QNH per definition looses significance above this altitude. Due to ageing pressure sensors it is possible that different instruments show varying altitudes – the accuracy of the sensor is however not influenced by this.

11. Landings
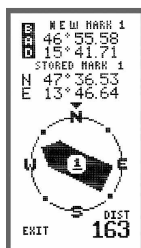
11.1 LANDING search 1 – 3

3 landings may be entered before the launch
Select LANDING 1 – 3 to see the Menu.
In the top 1/3 of the display the new coordinates will be displayed. As long as the GPS signal remains insufficient the text BAD appears in the upper left screen corner. Below this the currently stored landing or waypoint is shown.
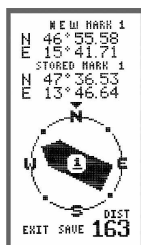
11.2 Storing LANDINGS 1 – 3

Once the instrument has acquired satellite data to calculate a position the current position coordinates will be displayed. The large arrow points towards the latest stored position, and shows the distance to it. There is also a SAVE option, where the new position may be stored.

12.0 Log book

12.1 Select flight

Go to a flight using Key1 🔵 and Key2 🟡 select with Key3 🟢.
In the lower half of the display the key data of the flight are displayed.

EXIT: Return to the main menu by moving the cursor to the top or the bottom of the list, or by holding Key3 🟢 for a few seconds.

```
   2 ☁
►29.05 09:48  0:42
 29.05 08:24  0:05
 28.05 12:01  1:28
 24.05 01:01  1:24
 27.05 13:06  0:31
 27.05 12:27  0:29
 27.05 08:13  3:24
   5 ☁
 ─────────────────
     29.05.09
 09:48 - 10:30
 LENGTH  0:42
 ↑ +6.2 ↓ -2.6
 ALTMX    354m
 SOGMX   81 kh
   ↓    ↑    SEL
```
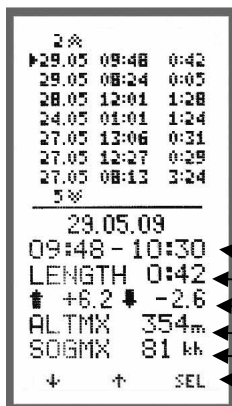
Upon entry into the FLIGHTS menu the latest 7 flights are listed, with date, start time and duration. The instrument stores up to 128 flights.
In the lower half of the screen the following data is visible for the indicated flight:

Date ← Date
09:48 - 10:30 ← Start time and Land time
LENGTH 0:42 ← Duration
↑ +6.2 ↓ -2.6 ← max. climb/ max. Sink
ALTMX 354m ← max. altitude
SOGMX 81 kh ← max. speed SOG

```
 ↑ +6.2 ↓ -2.6
 ALTMX    354m
 SOGMX   81 kh
 DEL  SEND  EXIT
```
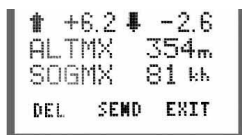
12.2 Delete or send flight

Once a flight is selected the following options become available at the bottom of the screen: „DEL   SEND   EXIT"

DEL > Deletes the flight
The flight is deleted from the log book, but can still be found and restored under ALL FLIGHTS (as long as it hasn't been replaced by new flights in the 18h circular memory)-

```
   EXIT
 MXP  1s 57K
 MXP  2s 57K
 MXP  4s 57K
 MXP 10s 57K

►TNC  1s 57K
 TNC  1s  9.6




   ↓    ↑    SEL
```

SEND > to PC via:
XC-TrainerEasy+ > USB connection
XC-TrainerEasy > via Speedboard USB
Click on Key2 🟡 to view the Protocol Menu. Use this menu to select transfer speed as well as the upload protocol used by the PC software.
Two protocols are available:
MXP > for the free program „MAX Punkte"
TNC > Aircotec Software TN-Complete
Details from page 33

EXIT > Back to main menu

Page 28
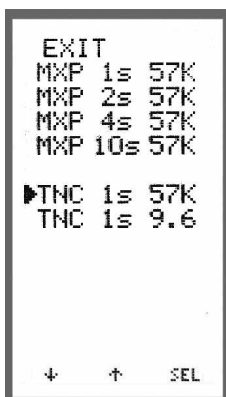
13.0 ALL FLIGHTS menu

Go to this menu to view all flights, even those deleted from the log book. The flights remain visible here until they are pushed out by new flights in an 18h circular storage. A maximum of 124 flights may be stored, after that the oldest ones are pushed out by new flights.

14.0 SETTINGS Menu

```
▶EXIT
 VARIO    ▱
 LOCAL 01:59
 UNIT  m  Km
 CONTRAST 6
 IMPELLER N
 C-VARIO 200
 MEMORYDUMP
 FACTORYSET



 ↓    ↑    SEL
```

14.1 Vario Menu
Vario settings menu, Details 15.0

14.2 UTC or LOCAL Time

Set the Local time for the Display clock.
Range is +/- 12 hours in either direction of the current setting
The internal clock and the data storage is always on UTC.

If the GPS time is not actualised the display shows UTC xx:xx
Changes to local time gives: LOCAL xx:xx

14.3 Units „UNIT m Km"

SETTINGS	m	Km	Meter / Km
	FT	Km	Feet / Km
	M	NM	Meters / Nautical Miles
	FT	NM	Feet / Nautical Miles

14.4 Contrast „CONTRAST 8"
Setting the scrren contrast in increments of 0 – 19 (Factory setting 8)

14.4 Speed sensor „SPEED SENS N"
If you have a speed sensor connected set to Y.

14.5 Vario calibration „C-VARIO 200"
If you start this function the Vario calibration begins over 100 seconds.
For example: Please drive up or down with cable railway about 2 minute.

14.6 Memory Dump
This function is only for Aircotec for full memory download.

14.7 Factory settings
Instrument asks if all flights should be deleted – select
„EXIT YES NO"
Select YES to reset the instrument to factory settings and delete all flights. Select NO only reset to factory settings without deleting flights.

15.0 VARIO-SETTINGS

General SETTINGS

1. Bring the cursor to the desired position using Key1 🟢 or Key2 🟢
2. Use Key3 🟢 to call a particular field to set
3. Use Key1 🟢 or Key2 🟢 to increase/decrease values or to confirm/ cancel (Y/N)
4. Use Key3 🟢 to store and activate changes

```
▶EXIT
 SINKTONE Y
 SINK - 1.5m/s
 SINK MOD  N
 SINK INV  Y
 VAR TC  1 s
 VOLUME   3
 VARIO NULL
 PITCH    5
 PERIOD   7
 VAR AVG10 s

 SOUNDCHECK

  ↓    ↑    SEL
```
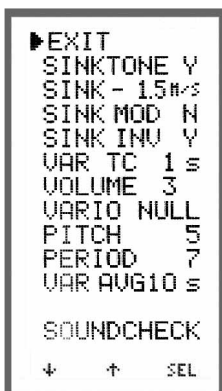
15.1 Sink acoustic ON / OFF

This is of particular relevance for acro pilots as the sink tone is set to commence at -5m/s. With this setting, this function may be deactivated.
„SINK TONE   Y"   Sink tone active
„SINK TONE   N   all Sink tones off

15.2 Sink tone threshold „SINK – 1.0m/s"

Use this function to set the sink tone threshold from 0,0 - 5,0m/sec. When set to -5,0m/s the Sinktone is off, as from. -5 m/sec the sink alarm sets in.

15.3 Sink tone modulation „SINK MOD N"

If set to N
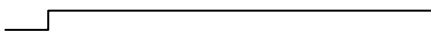
If set to Y

15.4 Sink tone Invers „SINK INV N"
If set to N – the greater the sink, the deeper the tone
If set to Y – the greater the sink, the higher the tone

15.5 Vario sensitivity „VAR TC .5s"

Adjustable from 0,5 – 4sec Integrated (cumulative Vario values as function of the time set).

15.6 VOLUME „Volume 2"

Adjustable from 0 – 3 , where 0 = OFF   1 = LOW 2 = MEAN   3 = LOUD
May also be set during flight by going to VARIO mode (see 7.5).

15. VARIO-settings

15.7 Vario- null

NOTE!

Only perform the Vario Nulling in a closed room!
Wait app. 5 minutes after switching the instrument on – this allows the instrument to stabilise.

Analog display from +/- 0 – 1m

Digital Vario with 1cm resolution

Actual barometric altitude

Vario correction value from 0-100

VARIO NULLING
Use Key1 or Key2 to toggle the correction value until the vario value is close to 0,00.

Back to INIT Menu
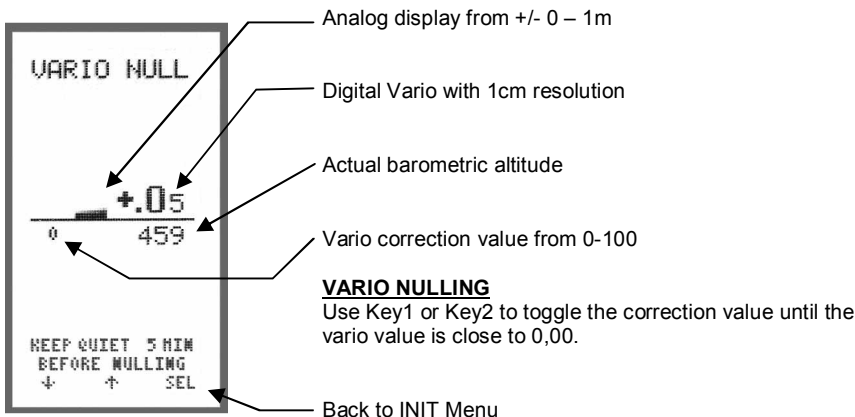
INFO:

This display is often used to demonstrate the sensitivity of the instruments' baro sensor.

15.8 Sound setting „SOUND 5"

Use this setting to adjust the sound pitch.
Adjustable from 0 – 9 (Factory setting 5).

15.9 Frequency setting „FREQUENCY 7"

Use this setting to adjust the frequency of the vario beep (adjustable from 0–9, factory setting 7).
Example: Set to 7 > Vario beebs 6 times/sec when in 2m/s climb
         Set to 2 > Vario beebs 3 times/sec when in 2m/s climb

15.10 Sound check

With this function you may check that the new settings are satisfactory. Use Key1 and Key2 to test the new settings.

16. Emergency Coordinates

```
EMERGENCY
  LOCATOR
N 46°55.5
E015°41.7

TELEPHONE
 EUROPE
 112
DO NOT MISUSE
EXIT
```

16.1 Coordinates

In case of an emergency, or simply for information, the instrument has the option to display coordinates to be passed on via telephone.

The same screen displays the joint European emergency telephone number.

✋NOTE!

Only for emergencies!

17. Load flights to PC using Aircotec TN-Complete

17.1 Step 1, establish connection to PC:

Connect the cable to the Windows PC

PC with serial port:

The serial - RS232 cable is automatically detected.
Only for XCT befor 2010.

PC with USB-port:

When using the USB cable (XC-TrainerEasy+)

or the Speedboard-USB cable
(XC-TrainerEasy)

please install the enclosed driver from the CD – you may also find the driver
under www.aircotec.com .

17.2 Step 2, Install TN Complete:

Initiate the Setup process by double clicking on
SetupTNC2-6-0.exe .

17.3 Step 3, setting up TN Complete
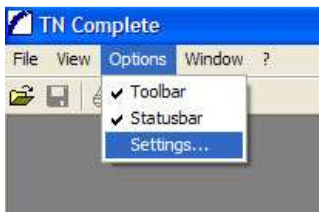
Use the Menu
Options-Settings to alter all
settings in TN_Complete

17. Load flights to PC using Aircotec TN-Complete
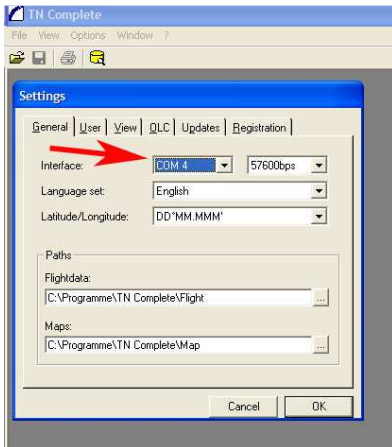
Use the menu **General** – **Interface** to enter the COM port allocated to the transfer by your operating system.

Find the Com Port for your cable

- USB

XCT for 2010
- Serial RS232
- Speedboard-USB

as follows:
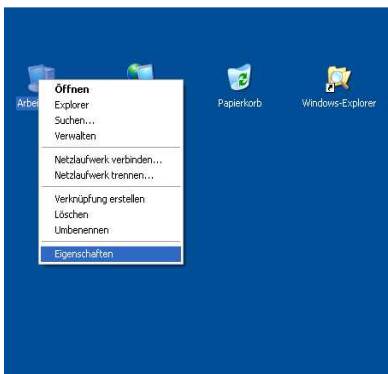
Right-click on the desktop and select **Properties**

17. Load flights to PC using Aircotec TN-Complete
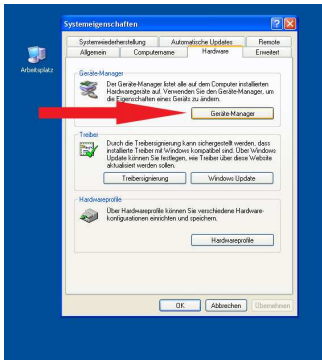
Open the **Device** Manager in the popup window
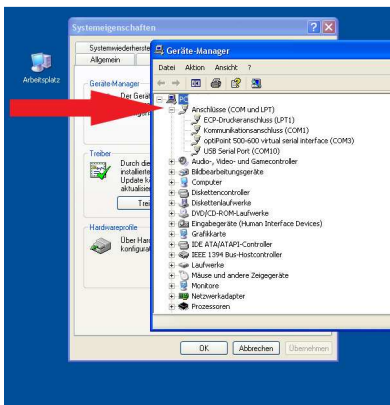
The actual COM port may be found under **USB control units** (laptops)

Try to disconnect, then reconnect the USB cable to see how a new connection appears in the USB control units list
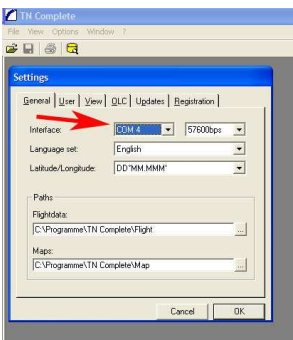
Enter this new COM Port number into **TN-Complete**

17. Load flights to PC using Aircotec TN-Complete
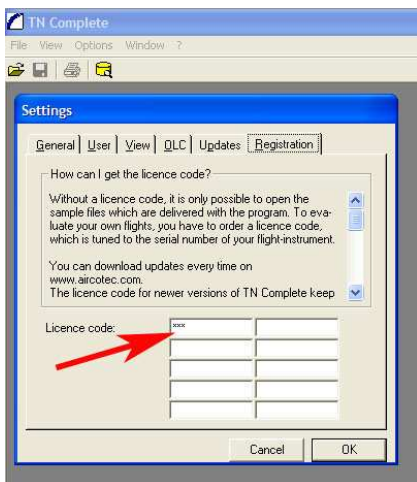
Now the only thing missing is the nine-digit software license number – enter this number

17.4 Step 4, transferring a flight to TN-Complete:
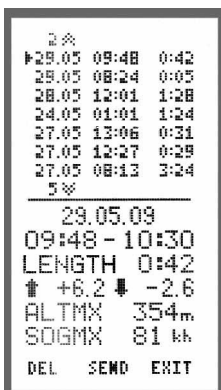
- Start the XC-Trainer
- Go to MENU/FLIGHTS and select the flight you wish to analyse using SEL

- The screen shows DEL   SEND   EXIT

17. Load flights to PC using Aircotec TN-Complete
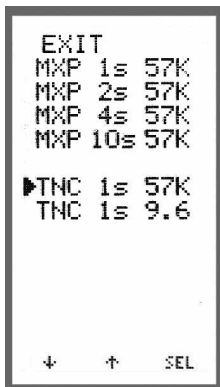
- Press SEND, the transfer protocol appears
- To transfer to TN-Complete select **TNC 1s 57K**.
  The format 9,6 K will also work, albeit slower

  For other software select the
  MXP-Protocol
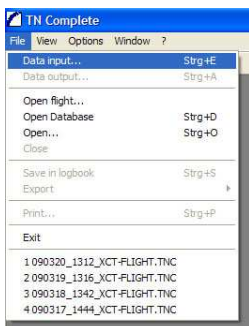
In TN-Complete, go to Data/Import
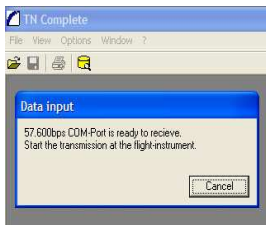
TN-Complete is now ready to receive the flight

17. Load flights to PC using Aircotec TN-Complete

Use **Key3** 🔘 to initiate the transfer

The system shows the transfer progress on the lower screen line
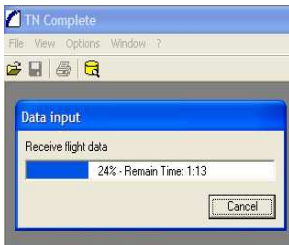
Enter a name for the flight data (for ex.. XCT-FLIGHT).

Confirm with **OK**
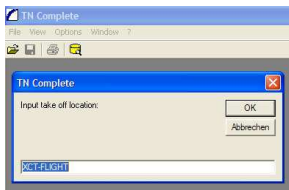
TN-Complete stores in the folder of your choice and adds the following data to the flight name:
092905_0948_XCT-FLIGHT
Date   2009.29.05
Time   09:48
Flight name XC-FLIGHT
It is also possible to store using ONLY the name. Confirm with **Save**

17. Load flights to PC using Aircotec TN-Complete

The flight is loaded into **TN-Complete** and displayed.
The exact descriptions of the many functions may be found in the software manual, accessible under Menu/Open Manual, or by pressing F1

The flight may also be viewed in GoogleEarth (if installed), simply click on the GE icon

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18. Accessories

Type:	Description:
XC_BH	XC-leg fixation
XC_DH	XC-hangglider fixation
XC_GZH	XC-pg harness fixation
XC-Etui	XC-instrument bag
TN-Complete	license
XC-Speed-USB	**USB cable via Speedboard**
XC-SS-DGH-K **XC-SS-DGH-L**	Speed sensor with attachment for hang- and paraglider with short cable **K** (50cm) or long cable **L** (120cm)
XC-SS-mS 200cm)	Speed sensor with stabiliser (cable
SS-DGH	Speed sensor-attachment for paraglider

A I R C O T E C
flight instruments