


Table of Contents

Introduction	1
 Husky MP2500 Palmtop: important keys	2
Choosing an installation site for the station	4
Preparing and starting up the station	5
Preparing and starting up the rover.....	8
Using the Logging function	12
Using the Stake out function.....	14
Using the Trajecto function.....	19
Reading survey results on the palmtop.....	20
Raw data recording	21
Checking the entered position at the station.....	23
Receiver: push-button and LEDs	24
Palmtop: Status bar.....	26
GPS antenna height.....	28
Using the GSM option	29

If the Husky has been left uncharged for quite a long time, connect it to the charger then re-initialize the Husky by simultaneously holding down the 3 keys $\uparrow + \uparrow + \odot$ for a few seconds. Let the battery be recharged for a few hours before use.

Introduction

This guide should help you carry out your first field surveys using a system from the 6500/6300 series.

Below are the main functions which can be performed:

- **Logging:** the rover will compute and save the position of any point in the working area once the antenna rod is placed on this point.
- **Stake out:** the rover will guide you to the planned points of the open job so that you can stake them out in the field. It will compute and save their positions for further comparison against the project points.
- **Trajectory:** the rover will automatically log points along a trajectory, at regular intervals of time or distance.
- **Raw data recording:** a function shared by rovers and stations for post-processing applications.

The following functions do not fall within the scope of this guide: surveying a profile, resorting to offset methods in logging and stake-out functions, computing distances and areas, creating points and lines, raw data recording according to programmed sessions, computing a local grid or altitude correction, loading a geoid...


For more information about these topics, please refer to the Reference Manual Part No. P0100386 provided on CD-ROM.


Please, do not throw away this guide once you get familiar with the system, but instead, use it as a memo.




Husky MP2500 Palmtop: important keys








 : ON/OFF key


 : “Shift” key (one on either side of the **Yes** key). Allows entry of characters printed above keys



 + **L** : Enables or disables screen back-lighting





 +  or  : Used for screen contrast setting

 +  : Under DOS, used for step-by-step scrolling-up in a list of files

   : When depressed simultaneously for about 5 seconds, allows the palmtop to be re-started after a fatal error (same as “CTRL+ALT+DEL” on a PC)

 : “Yes” or Enter key (same as Enter key on a PC)

  : Used to move the cursor on the screen from one field to another, from one menu option to another. Used to scroll up and down a list of points, jobs or files.

-   : If a Functions menu is displayed, selects respectively the next or previous Functions menu (i.e. on right- or left-adjacent icon). In other cases, moves the cursor respectively to the next or previous field.
- If a parameter is preceded or followed by ,  allows you to display respectively the parameter's possible options or characteristics.

F1 : Displays the context-sensitive Help menu

 **+F1** : Provides unconditional access to the Notes file

F2 : Displays the last computed position (on rover)

F3 : “Save” key

F4 : Allows you to quit the program

Esc : Allows you to come back to the previous screen, to remove the **Help** menu from the screen, to cancel all changes in progress on a parameter, or, right after the self-tests, to display the main menu

PgUp

& PgDn : Allow you to scroll up and down a list in a page-by-page mode, or a function that does not fit on a single screen. In stake out, allows you to zoom in (PgUp) or zoom out (PgDn) when guidance screen is displayed

Home : Displays beginning of list

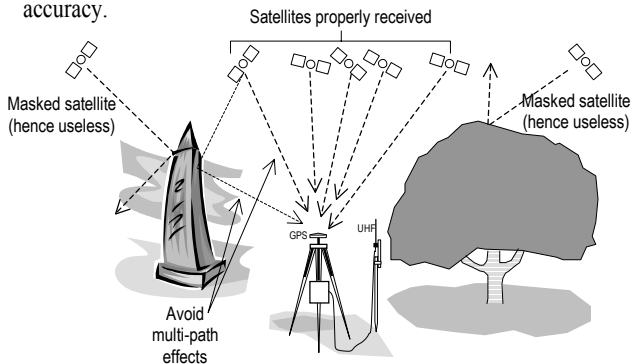
End : Displays end of list

Del : If a points list is displayed and a logged or staked out point is selected, cancels the coordinates computed for this point.

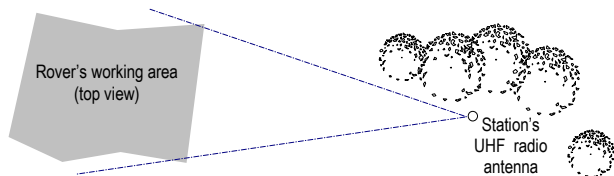
Choosing an installation site for the station

Choose a site whose position is accurately known and offering an open view of the sky in all directions. In fact, the presence of buildings or vegetation in the vicinity:

- will hinder GPS reception for low elevation angles, and so will reduce the number of satellites visible from the station
- will bring about multi-path effects likely to impair the system's accuracy.

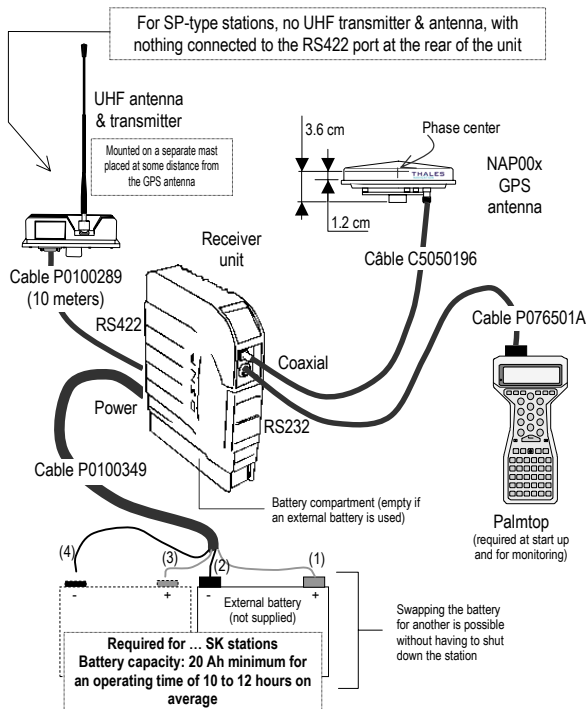


Check for the absence of obstacles in the direction of the working area. Their presence nearby is liable to reduce the coverage of the UHF radio link (U-LINK).





Preparing and starting up the station

1. Connect the various items of the station together (see below).



2. Measure the height of the GPS antenna phase center from the ground according to one of the three possible methods (see p. 28).

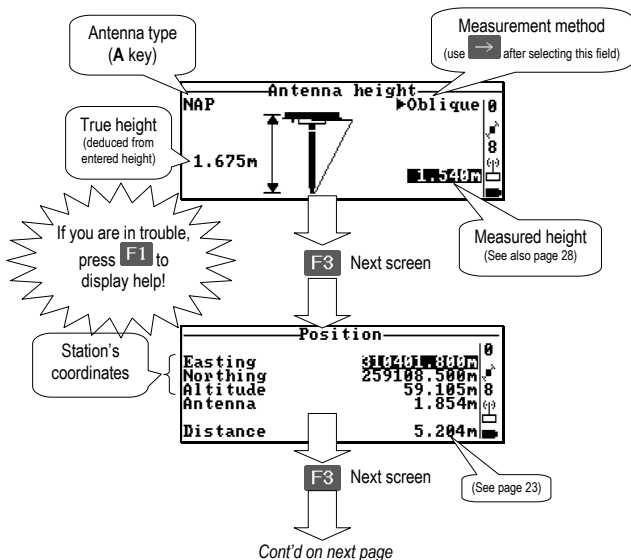
- Switch on the palmtop (red key).
- When « C:\> █ » is displayed, type in “t” then press .
- Select “Station” as shown below by pressing :

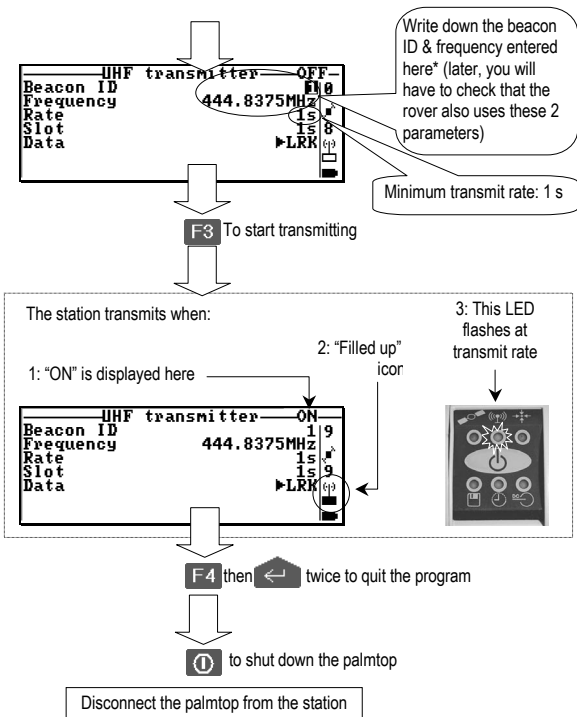
```

GNSS receiver
None
Rover
Station
  
```

then press .

- Follow the instructions below leading to having the station transmitting after entry of the required parameters (measured antenna height, coordinates and No. of station, carrier frequency, transmitted data type & transmit rate):



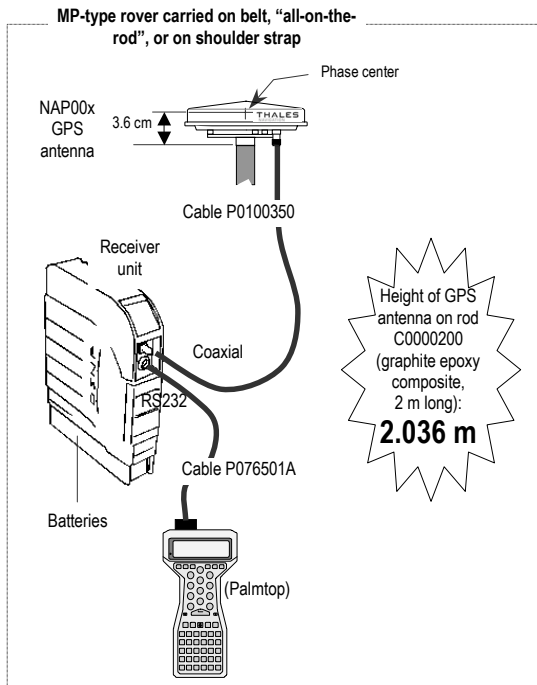


At the end of the survey, just hold down the receiver push-button depressed for a few seconds (see page 24) to shut down the station.

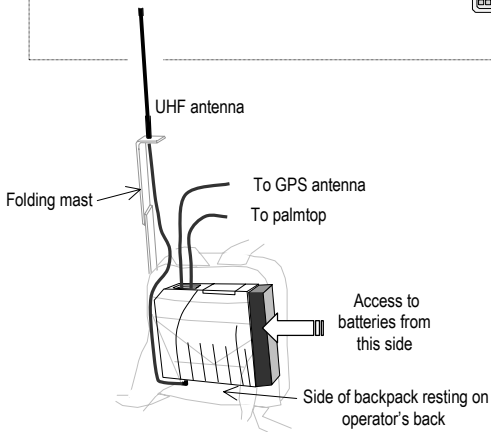
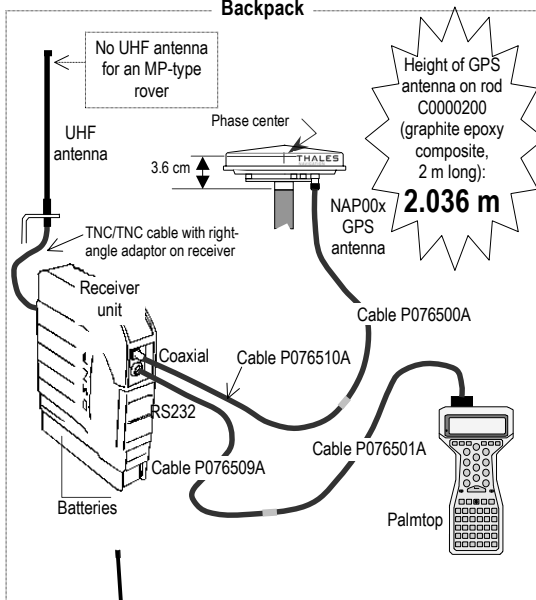
- * - Station number: choose any number between 1 and 99; specific to the station (it *must* not be used by another station operating nearby on the same frequency).
- Frequency: enter the value of the authorized UHF transmission frequency, in MHz.



Preparing and starting up the rover

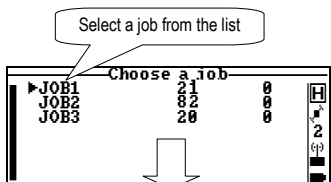
1. Connect the various items of the rover together according to rover type & carrying mode chosen (see below or opposite).



Backpack



- Switch on the palmtop (red key).
- When « C:\> █ » is displayed, type in “t” then press 
- Choose “Rover” and press 
- Wait for the screen to display **Choose a job**. Then:



If the list is empty, press **C** then **F3** to create an empty job.

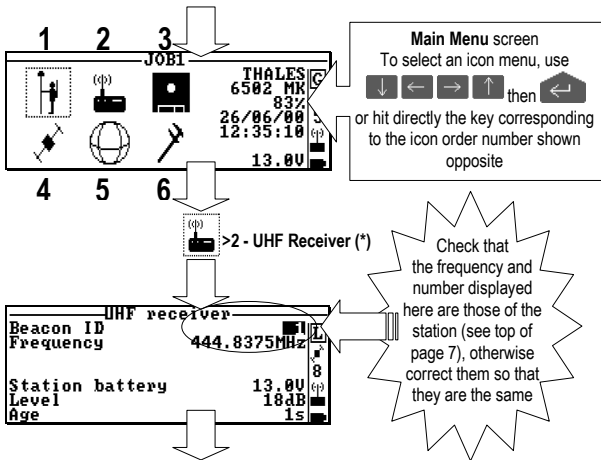
i This job **only allows you to use the logging function** in the coordinate system used by the unit (i.e. in WGS84 if you use the system for the very first time, or else in the coordinate system of the job last performed)



For any job opened for the first time, you are asked to create a new file. Complete the fields opposite (then hit **F3** to create this file and select the next screen)






(Cont'd on next page)



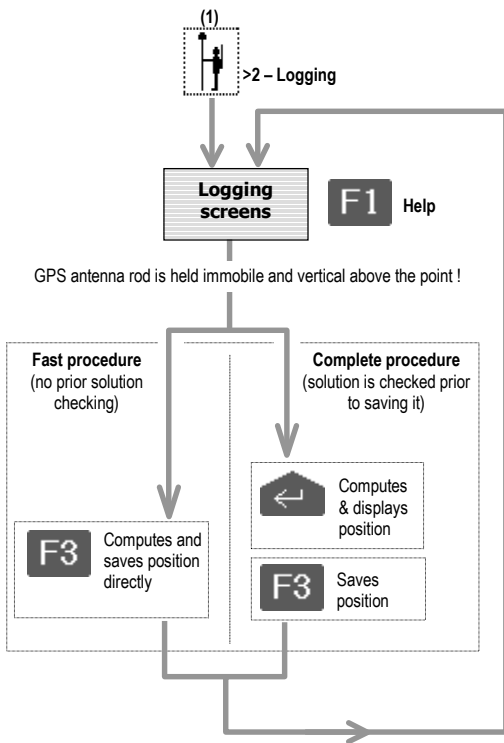
6. Before undertaking the job itself, read the indications in the status bar: wait for the letter **L** (LRK), or **K** (KART) to appear and check that the **UHF reception level** and **Battery** states are good (see also page 27).

Later, to change the job:

1. Select  > **1 – Choose a job**
2. Select the desired job in the displayed list, then hit ,
3. Select the desired file in the displayed list, then hit .

(*) : The number ahead of the function name (here “2”) means that, after selecting the icon, you can access the function directly by hitting the corresponding key (here key “2”). This remark applies to all functions in menus. The “>” symbol means that you must successively select the icon, and then the function. This frequently-used symbol has the same meaning throughout this guide.

Using the Logging function



Screen examples in Logging:

(If the complete procedure is used)

Currently available accuracy in logging

```
0.01m Logging 1/3
Name N2Point
Geocode (1) >150
Count of measurements 1
Antenna LRR (A) 8
State LRR (A)
Uncertainty 0.02m
```

Point name

First geocode associated with point

Number of measurements before computing a solution (*)

GPS antenna height

Computation mode used and accuracy obtained for computed position, before saving it

PgDn PgUp

```
0.01m Logging 2/3
Geocode (2) >200
Geocode (3) >300
Geocode (4) >400
Comment
Default geocode >150
```

The other 3 geocodes associated with the point

Comment on computed position may be added in this field

PgDn PgUp

```
0.01m Logging 3/3
Easting 310401.800m
Northing 259108.500m
Altitude 10.000m
σ Horizontal 0.011m
σ Vertical 0.015m
```

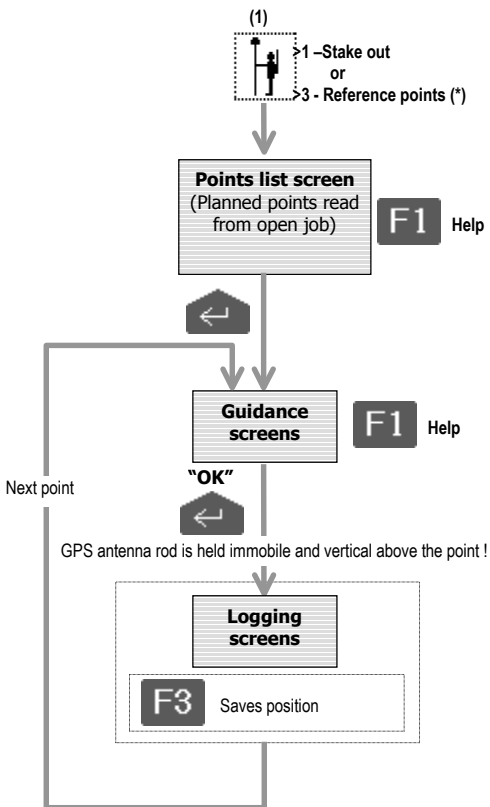
Coordinates of computed position

Components of accuracy for computed position

(*) : =1 : a single measurement is performed to compute the position
>1 : several measurements are made before computing the position. The result is obtained by averaging the measurements made.

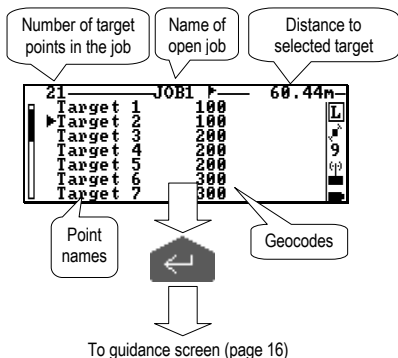
Warning! the larger this number, the longer the computation time.

Using the Stake out function



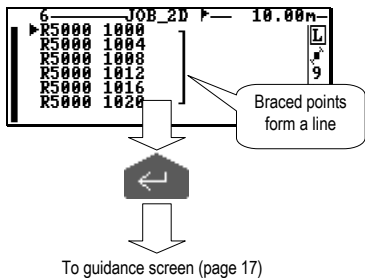
(*) : For a seismic job, the function "3 – Reference points" is removed from the icon menu.

Screen example showing a list of points (topo):



Screen example showing a list of points (seismic):

Same as above plus indications below.



Examples of guidance screens (topo):

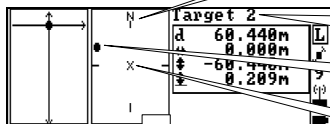
Geographic North

Name of selected target

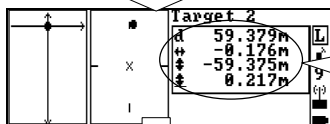
Target

Your position

At the very beginning

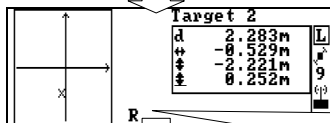


After a few steps toward the target



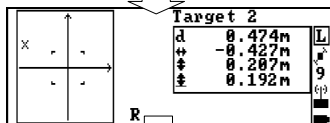
Distance (d) still to go + transverse, longitudinal & vertical components

Zoom ± 5 meters (automatic selection)



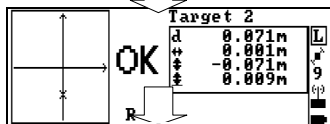
Point used for guidance (R : Real time or A : Accurate)

Zoom ± 0.5 meters (automatic selection)



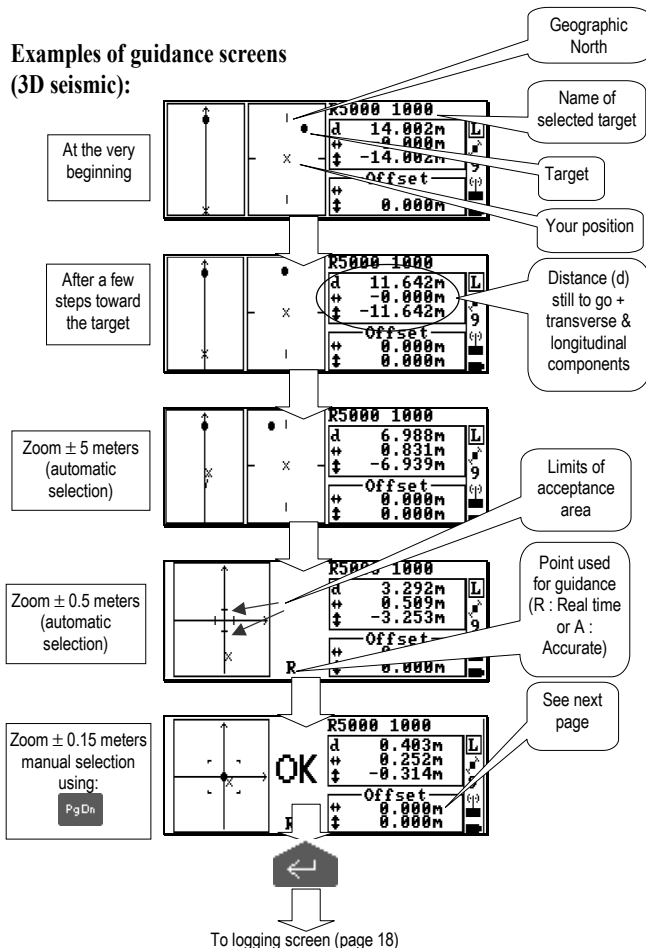
Zoom ± 0.15 meters manual selection using:

PgDn



To logging screen (page 18)

Examples of guidance screens (3D seismic):



The "Offset" fields are used to cancel artificially the distance to an inaccessible target. Use the T key (in 3D only) or L key (3D & 2D). In each field, type in the corresponding component (↕ or ⇔) displayed above. This causes the "OK" message to appear allowing you to complete the survey of the target.

Screen examples when logging a target (topo or seismic surveying):

Same as "Using the Logging function" except for the following:

From guidance screen on which « OK » is displayed

Target name (read-only)

```

0.01m Logging 1/3
Name Target 2
Geocode (1) >100
Count of measurements 1
Antenna 2.045m
State LRK (A)
Uncertainty 0.01m
± 0.050m ⇔ 0.022m OK
    
```

PgDn PgUp

```

0.01m Logging 2/3
Geocode (2) >200
Geocode (3) >300
Geocode (4) >400
Comment 9
± 0.050m ⇔ 0.022m OK
    
```

PgDn PgUp

```

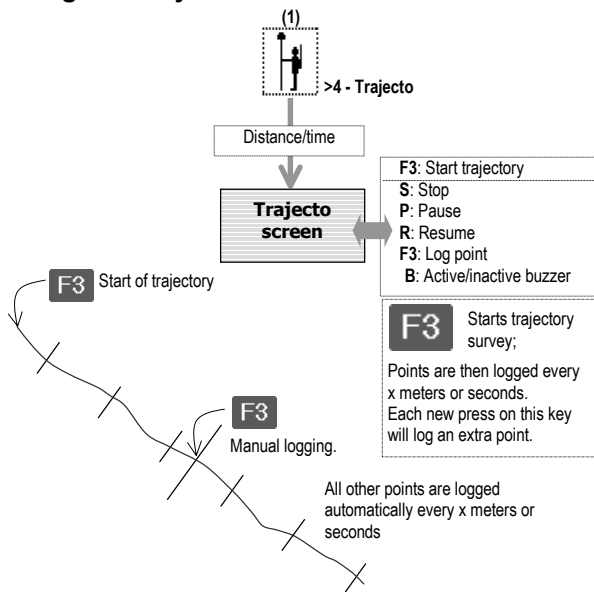
0.01m Logging 3/3
Δ Easting 310108.500m
Δ Northing 259401.800m
Δ Altitude 10.080m
σ Horizontal 0.011m
σ Vertical 0.010m
± 0.050m ⇔ 0.022m OK
    
```

Deviation from theoretical point (vertical & horizontal components for 3D point)

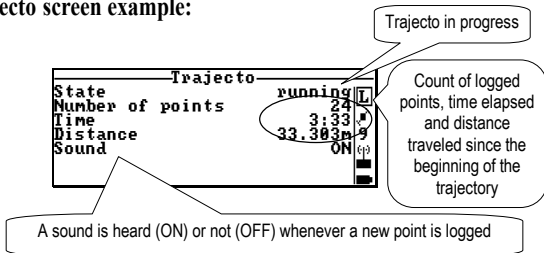
F3 to save the point

For a seismic job, on screen 2/3, no geocodes (2), (3) & (4). Press the U key to read the stake-out tolerance displayed in the "Acceptance circle" field.

Using the Trajecto function



Trajecto screen example:



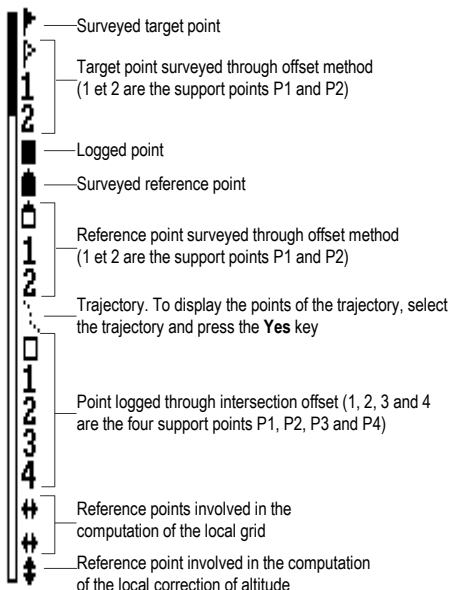
Reading survey results on the palmtop

(3)



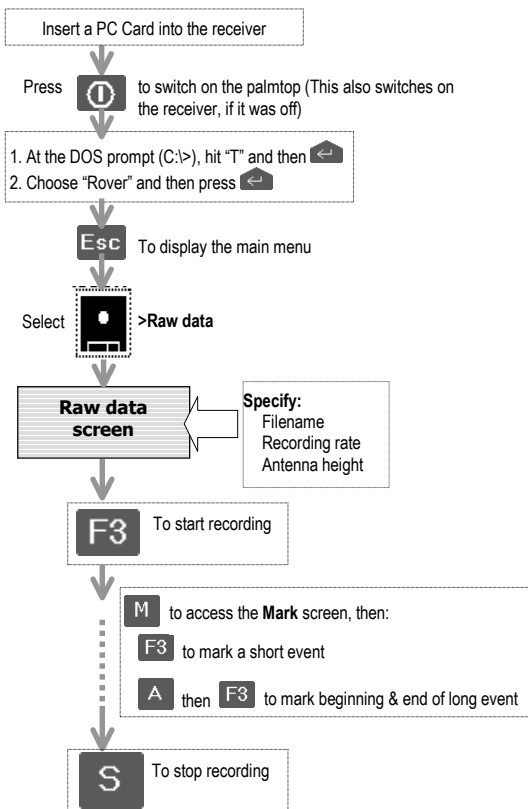
> 3 - Result points.

Result points are represented as follows:

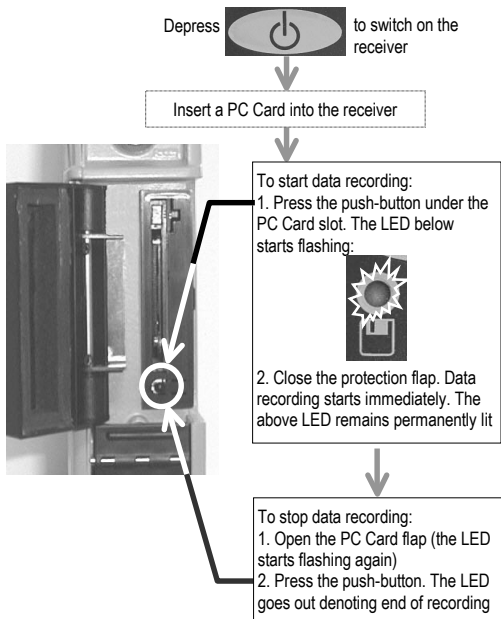


Raw data recording

With palmtop:



Without palmtop:



During data recording, opening inadvertently the flap will only suspend recording. As soon as you close the flap again, recording will continue automatically, **though in another file!!** It is therefore worth noting that this event will inevitably introduce discontinuity in the post-processing of the recorded raw data.

During recording, with the flap properly close, the above LED starting to flash means that the PC Card is **full**.

Checking the entered position at the station



>2 – UHF transmitter

Press the S key to stop transmitting



>1 – Position

The screen now shows the distance deviation between the position you entered and the conventional GPS position computed by the station. Example:

Position	
Easting	310401.800m
Northing	259108.500m
Altitude	59.105m
Antenna	1.594m
Distance	3.510m

Deviation between entered position and computed position

The position you entered may be regarded as the right one if the deviation is in the order of the possible accuracy in conventional GPS, namely less than 30 m in absence of SA (*), which is currently the case (July 2001), or less than 100 m if the SA was re-activated.

If the deviation is too large, check the coordinates of the point on which the station is installed as well as the coordinate system used.

If or when the deviation is correct, re-enable transmission :



>2 – UHF transmitter

Press **F3**.

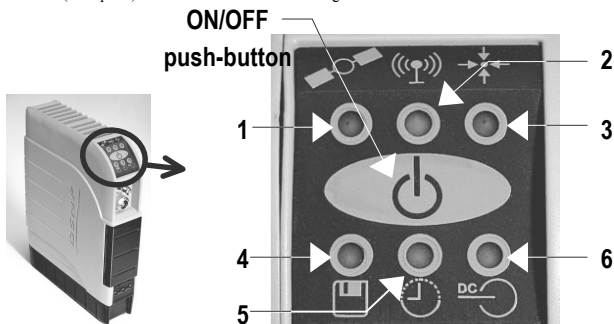
NOTE : This checking procedure only allows you to detect glaring errors.

(*) SA=*Selective Availability*. Intentional GPS signal degradation under control of USA Department of Defense.

Receiver: push-button and LEDs

ON/OFF push-button

- If the receiver is off, a short press on this button will switch it on.
- If the receiver is on, a long press (4 s approx.) will switch it off (after you release the push-button, the Session LED (5) may flash for a while informing you that switching off is in underway). The receiver OFF condition is effective when the LED is extinguished.
- May also be used to load the default configuration:
 - . The receiver unit being OFF, depress the push-button for about 3 seconds. When releasing the push-button, the session LED (5) will start flashing at a fast rate.
 - . Within the next 2 seconds, before the LED (5) remains lit, depress the push-button again (brief press). This will load the default configuration into the receiver.



1: SV constellation indicator light

- Lights up when switching on
- Flashes during initialization (self-tests, searching for SVs).

- Then produces a series of flashes corresponding to the number of received SVs on L1 and L2 (or L1 only if single-frequency).
- If indefinitely ON, denotes a reception problem.

2: UHF data link indicator light

- Station: Flashes whenever a corrections message is transmitted.
- Rover: Flashes whenever a corrections message is received & decoded.

3: Position processing indicator light

- OFF: unable to work in the requested operating mode.
- Flashing : in the process of switching to the requested operating mode.
- ON: now working in the requested operating mode.

4: Raw data recording indicator light

- OFF: No recording in progress, no recording session pending
- Flashing: At least one recording session is pending.
- ON: Data recording in progress.

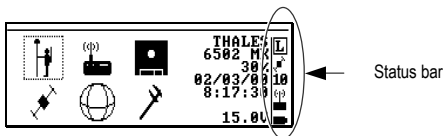
5: Session indicator light

- OFF: Non-powered receiver, no planned session
- ON: Receiver is ON
- Flashing (slow rate): At least one session is pending
- Flashing (equal ON/OFF times): Switching off in progress (see ON/OFF push-button).
- Flashing (fast rate): Default configuration loading being requested; confirmation needed (see ON/OFF push-button)

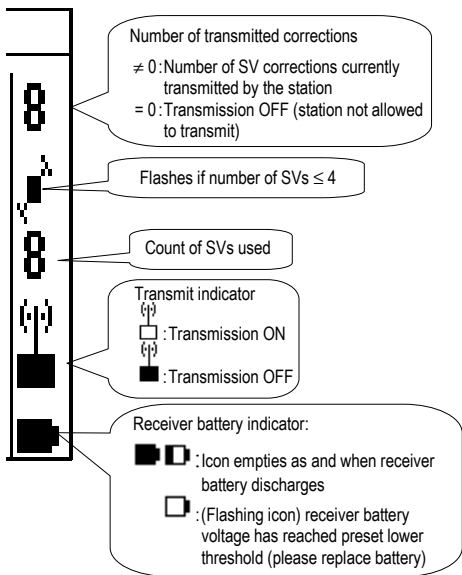
6 : Not used

Palmtop: Status bar

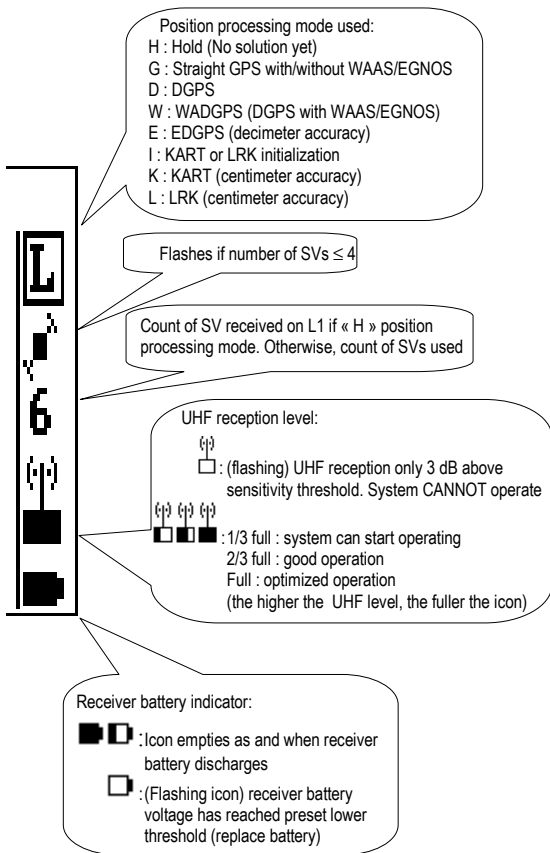
The status bar allows you to monitor the operation of the system.



Status bar at the station



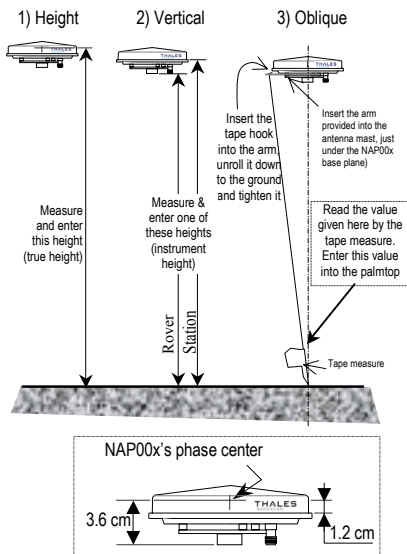
Status bar at the rover



GPS antenna height

The system *must* accurately know the coordinates of the GPS antenna's phase center above the ground, at both the station and the rover. Three different measurement methods are possible:

- 1. Height:** phase center height is measured directly from the ground.
- 2. Vertical:** height of antenna base is measured with respect to ground. As the height of the phase center above the antenna base is known (3.6 cm for a NAP00x), the system can deduce the resulting height by adding the two values. Method suitable for the rover.

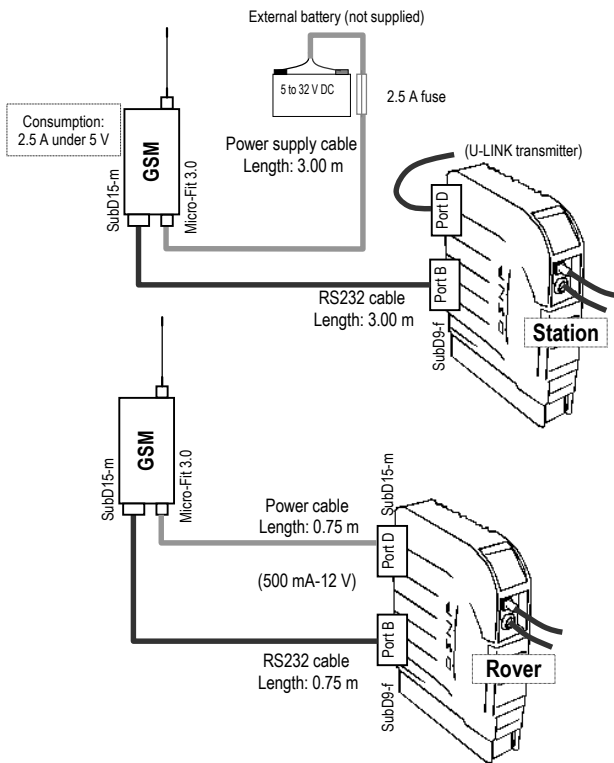


- 3. Oblique:** oblique measurement performed using the tool provided. The system deduces automatically the phase center height with respect to ground. Method suitable for the station.


Using the GSM option

The GSM can be used to complement the U-LINK radio.


Setup



At the station:

- Select  > **4 - Connection** and choose “port B” in line 4:





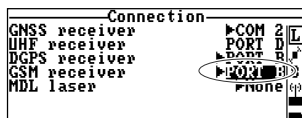
- Select  > **3 - GSM Transmitter** and then press **F3** to allow the station to use the GSM (“ON” then appears top right).

The station will actually use the GSM only on rover request. The parameters displayed on this screen (station No., data rate and type) are normally the right ones as they were chosen earlier to operate with the U-LINK radio.




At the rover:

- Select  > **4 - Connection** and choose “port B” in line 4:
- Select  > **1 - Operating mode**, select “GSM receiver” (line 2) and dial the station GSM call number (line 7):



- Press the **Q** key to read the GSM reception level (it should be “1” minimum, otherwise the GSM CANNOT be used)
- Press **F3** to call the station. In the status bar, check that the requested operating mode is available after a few seconds, which demonstrates that the GSM link operates normally. Go back to the survey as such.

...

To restore operation with the U-LINK radio, select  > **1 - Operating mode**, press the **S** key to terminate the communication via GSM, and then choose “UHF receiver” (line 2).