4011 GPS Compass

User Manual

ppm GmbH Grube 39a | 82377 Penzberg | T. +49 8856 80309-80 | info@ppmgmbh.de | **www.ppmgmbh.de** |

English

Copyright

Printedt in Deutschland.

Part number: 4011GPS Compass Manual english Revision A

September 2013

Trademarks

All product and brand names mentioned in this publication are trademarks of their respective holders.

Software License Agreement

IMPORTANT - READ CAREFULLY BEFORE INSTALLING THIS PROGRAM BY CLICKING THE ACCEPTANCE BUTTON OR INSTALLING THE SOFTWARE, YOU ARE AGREEING TO BE BOUND BY ALL OF THE TERMS AND CONDITIONS OF THE C.A.D. SUPPORT GMBH (LICENSOR) SOFTWARE LICENSE AGREEMENT WHICH WAS PROVIDED WITH THIS COMPUTER PROGRAM INCLUDING, WITHOUT LIMITATION, THE USE RESTRICTIONS, WARRANTY DISLAIMER AND LIMITATION OF LIABILITY SET FORTH THEREIN. IF YOU DO NOT AGREE to be bound by all of the terms and conditions of the Agreement, you should immediately STOP INSTALLATION or use of the computer program and refer any questions in writing to:

ppm GmbH

Web site: www.ppmgmbh.de

LICENSE.

Under the Agreement, you have a limited, non-exclusive, personal license to install and operate a single copy of this computer program on a single computer and make one archival copy of the program for use with the same computer. Licensor and its third-party suppliers retain all rights to the program not expressly granted by the Agreement.

English

OWNERSHIP OF THE SOFTWARE AND COPIES OF IT.

This computer program and the accompanying documentation are copyrighted works of authorship and contain valuable secret and confidential information proprietary to Licensor and its third-party suppliers who retain the ownership of the information and all copyrights and other proprietary rights therein. You agree to exercise reasonable efforts to protect their proprietary interests..

TERMINATION.

The software license is effective until terminated. The license will terminate without any notice from Licensor if you fail to comply with any provisions of the Agreement. Upon termination, you must cease all use of the software program and documentation and return them, and any copies thereof, to Licensor. The Agreement is governed by and construed in accordance with the laws of Germany.

English

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

LICENSOR AND ITS THIRD-PARTY SUPPLIERS MAKE NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, REGARDING THE SYSTEM, PROGRAM, MEDIA, DOCUMENTATION, RESULTS OR ACCURACY OF DATA AND HEREBY EXPRESSLY DISCLAIM ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NONFINGRMENT. LICENSOR AND ITS THIRD PARTY SUPPLIERS DO NOT WARRANT THE PROGRAM WILL MEET YOUR REQUIREMENTS OR THAT ITS OPERATION WILL BE UNINTERRUPTED OR ERROR-FREE.

The liability of Licensor and its third-party suppliers for damages shall not exceed the actual amount paid for the License.

The foregoing sets forth only a summary of the Agreement and does not modify any term or condition set forth therein.

English

English

Copyright

Trademarks

PPM Products Limited Warrenty

All ppm global positioning system (GPS) receivers are navigation aids, and are not intended to replace other methods of navigation. Purchaser is advised to perform careful position charting and use good judgment.

READ THE USER GUIDE CAREFULLY BEFORE USING THE PRODUCT.

1. PPM WARRANTY

ppm warrants their GPS receivers and hardware accessories to be free of defects in material and workmanship and will conform to our published specifications for the product for a period of one year from the date of original purchase or such longer period as required by law.

THIS WARRANTY APPLIES ONLY TO THE ORIGINAL PURCHASER OF THIS PRODUCT.

In the event of a defect,ppm will, at its option, repair or replace the hardware product with no charge to the purchaser for parts or labor. The repaired or replaced product will be warranted for 90 days from the date of return shipment, or for the balance of the original warranty, whichever is longer. ppm warrants that software products or software included in hardware products will be free from defects in the media for a period of 30 days from the date of shipment and will substantially conform to the then-current user documentation provided with the software (including updates thereto). ppm's sole obligation shall be the correction or replacement of the media or the software so that it will substantially conform to the then- current user documentation.

ppm does not warrant the software will meet purchaser's requirements or that its operation will be uninterrupted, error-free or virus-free.

2. PURCHASER'S REMEDY

PURCHASER'S EXCLUSIVE REMEDY UNDER THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT, AT PPM'S OPTION, OF ANY DEFECTIVE PART OF THE RECEIVER OR ACCESSORIES WHICH ARE COVERED BY THIS WARRANTY.

REPAIRS UNDER THIS WARRANTY SHALL ONLY BE MADE AT AN AUTHORIZED PPM SERVICE CENTER. ANY REPAIRS BY A SERVICE CENTER NOT AUTHORIZED BY PPM WILL VOID THIS WARRANTY.

3. PURCHASER'S DUTIES

To obtain service, contact and return the product with a copy of the original sales receipt to the dealer from whom you purchased the product.

ppm reserves the right to refuse to provide service free-of-charge if the sales receipt is not provided or if the information contained in it is incomplete or illegible or if the serial number is altered or removed. ppm will not be responsible for any losses or damage to the product incurred while the product is in transit or is being shipped for repair. Insurance is recommended. ppm suggests using a trackable shipping method such as UPS or FedEx when returning a product for service.Purchaser assumes the entire risk of using the software.

4. LIMITATION OF IMPLIED WARRANTIES

EXCEPT AS SET FORTH IN ITEM 1 ABOVE, ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING THOSE OF FITNESS FOR ANY PARTICULAR PURPOSE OR MERCHANTABILITY, ARE HEREBY DISCLAIMED AND IF APPLICABLE, IMPLIED WARRANTIES UNDER ARTICLE 35 OF THE UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS.

Some national, state, or local laws do not allow limitations on implied warranty or how long an implied warranty lasts, so the above limitation may not apply to you.

5. EXCLUSIONS

The following are excluded from the warranty coverage:
(1) periodic maintenance and repair or replacement of parts due to normal wear and tear;
(2) batteries;
(3) finishes;
(4) installations or defects resulting from installation;
(5) any damage caused by
(i) shipping, misuse, abuse, negligence, tampering, or improper use;
(ii) disasters such as fire, flood, wind, and lightning;
(iii) unauthorized attachments or modification;
(6) service performed or attempted by anyone other than an authorized ppm Service Center;
(7) any product, components or parts not manufactured by ppm,
(8) that the receiver will be free from any claim for infringement of any patent, trademark, copyright or other proprietary right, including trade secrets
(9) any damage due to accident, resulting from inaccurate satellite transmissions. Inaccurate transmissions can occur due to changes in the position,health or geometry of a satellite or modifications to the receiver that may be required due to any change in the GPS.
(Note: ppm GPS receivers use GPS or GPS+GLONASS to obtain position, velocity and time information. GPS is operated by the U.S. Government and GLONASS is the Global Navigation Satellite System of the Russian Federation, which are solely responsible for the accuracy and maintenance of their systems. Certain conditions can cause inaccuracies which could require modifications to the receiver. Examples of such conditions include but are not limited to changes in the GPS or GLONASS transmission.). Opening, dismantling or repairing of this product by anyone other than an authorized ppm Service Center will void this warranty.

6. EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES

PPM SHALL NOT BE LIABLE TO PURCHASER OR ANY OTHER PERSON FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DAMAGES RESULTING FROM DELAY OR LOSS OF USE, LOSS OF OR DAMAGES ARISING OUT OF BREACH OF THIS WARRANTY OR ANY IMPLIED WARRANTY EVEN THOUGH CAUSED BY NEGLIGENCE OR OTHER FAULT OF PPM OR NEGLIGENT USAGE OF THE PRODUCT. IN NO EVENT WILL PPM BE RESPONSIBLE FOR SUCH DAMAGES, EVEN IF PPM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
Some national, state, or local laws do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

7. COMPLETE AGREEMENT

This written warranty is the complete, final and exclusive agreement between ppm and the purchaser with respect to the quality of performance of the goods and any and all warranties and representations.
THIS WARRANTY SETS FORTH ALL OF PPM‘S RESPONSIBILITIES REGARDING THIS PRODUCT.
THIS WARRANTY GIVES YOU SPECIFIC RIGHTS. YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM LOCALITY TO LOCALITY (including Directive 1999/44/EC in the EC Member States) AND CERTAIN LIMITATIONS CONTAINED IN THIS WARRANTY MAY NOT APPLY TO YOU.

8. CHOICE OF LAW.

This limited warranty is governed by the laws of Germany, without reference to its conflict of law provisions or the U.N. Convention on Contracts for the International Sale of Goods, and shall benefit ppm, its successors and assigns.
THIS WARRANTY DOES NOT AFFECT THE CUSTOMER'S STATUTORY RIGHTS UNDER APPLICABLE LAWS IN FORCE IN THEIR LOCALITY, NOR THE CUSTOMER'S RIGHTS AGAINST THE DEALER ARISING FROM THEIR SALES/PURCHASE CONTRACT.
Furtherher information concerning this limited warranty,
please call or write:

ppm GmbH
Grube 39a
D-82377 Penzberg
Phone: +49-8856-8030980
Mail: info@ppmgmbh.com

Introduction

What is 4011 GPS Compass?

Congratulations!
You have just acquired the latest 4011 GPS Compass system from ppm GmbH!

The 4011 GPS Compass is the successor of the 3011 mobile+ system which was original developed and produced by THALES Navigation GmbH from Germany. The Thales group sold the navigation department in 2006. THALES Navigation GmbH changed the name to Magellan Navigation GmbH. The product kept the name 3011mobile+ system.

In 2007 PPM GmbH took over the product 3011mobile+ from Magellan Navigation GmbH. In the same time the creators and developers of the 3011mobile+ system changed to ppm GmbH.

The development on the 4011 GPS Compass was done by the same people as on the 3011 mobile+. That means that the long term experience on that special system was the base for the new system.

Compared to its predecessor, 4011 GPS Compass is more compact and lightweight while integrating more technology and reduced the power consumption. The calculation of the azimuth is more than 3 times faster.

Content of this manual

This manual helps you to understand your new GPS System quickly. We show you all steps from getting the system to the usage in the field.

If you miss information or if you have any suggestion to this manual please let us know.

Just send an email to:

4011@ppmgmbh.de

Thank you!

Components Overview

English

The table below provides an overview of the different key items composing the 4011 GPS Compass system.

Basic Supply

Part Number	Item
404000	4011 GPS Compass Receiver
400184	Antenna pole with antennas
800996	Antenna bracket
400215	Antenna cable 5.0 m (dual)
702028 + 400213	Antenna cables 0.3m (2 with different connectors)
400210	Power supply cable
52542	Bluetooth module
NX301010	Nautiz X3
702031	Serial data cable for PDA (PocketLoox)
400220	Null modem cable
110284	Li-Ion battery
9000130	Charger for Li-Ion Battery
9000118	CD - documentation and software TnMob TnMob Office
S1841	Bag for 4011 GPS Compass
S1840	Bag for accessories

English

Equipment Description

4011 GPS Compass

ON/OFF: To turn on the 4011 GPS Compass press the Power button. The power LED lights up in red.
To switch of the unit press the Power button again.

COM1: On this port the PDA gets the data via serial cable. The 4011 GPS receiver support on that port this messages automatically:

GGA: Position data
GSA: Satellite data
GSV: Satellite data
HDG: Heading data (azimuth)

Power: Connector for the external battery. Please connect the power cable (400210) to that port. Red point to red point.

It's important to connect the first antenna to GPS 1 ! Otherwise the azimuth is 180° wrong.

GPS 1: Connector for the first GPS antenna. Please use the short antenna cable (702028 - female).

GPS 2: Connector for the second GPS antenna. Please use the short antenna cable (400213 - male)

LEDs: Status LED for :
GPS: GPS Signal recognized
POS: Position calculated
HDG: Heading (azimuth) calculated

English

Power Supply

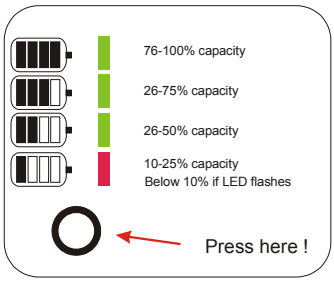
4011 GPS Compass system use an external Li-Ion battery. The system includes 1 rechargeable battery and 1 charger.

To connect the battery with the receiver please use the power supply cable (400210).

Battery:

The battery including in the system is a Li-ion battery with a capacity of 6600 Ah. With that battery the system runs more than 24 hours continuously.

The battery provides you the possibility to check the remaining capacity. To check it please press the button on the battery.



English

Power Supply

Battery Charger:

Within the standard delivery you will get the following parts:

- Charger unit for charging or calibrate the battery
- 3 different adapter for various battery types
- 24V, 2,5 Ampere - 230V transformer
- Power plug

Charging the battery:

Connect the cable from the AC Adapter to the battery charger

Give the battery the right orientation with respect to the charger and push it into the connectors. Battery charging starts immediately.

Charging time:

For a low battery that's being charged, it will take up to 4 h to fully charge the battery. The battery has SMB (Smart Battery) system installed. The battery communicate with the charger und transmit the internal parameters. The charger calculates with that information the right way to charge the battery.

Battery calibration:

The charger is able to calibrate the battery. We recommend you to do so once a month. Therefore you have to push the button in front of the battery slot after placing the battery inside. The calibration process takes up to 15 h.

The LED show the following status:

☼	Green flashing:	Battery charging
●	Green stay on:	Battery fully charged
☼	Blue flashing:	Battery calibration
●	Blue stay on:	Battery is calibrated
☼	Red flashing:	Battery has to be calibrated
●	Red stay on:	ERROR

Security Instruction
Power Supply

- Please do not use the charger and the AC adapter in the near of water or liquidity. The housings are not waterproof.
- Please do not open the charger or the AC adapter. There are no parts you can exchange or repair.
- Please do not cover the fan. Take care that there is enough space behind the fan. Otherwise the charge can over heat.
- Please use the original AC adapter only.
- Please do not use the charger on hot places.
- Please notice that the charger could be hot during a calibration process

Antenna clamp

The antenna mounting clamp allows to fix the GPS antennas on the base station antenna front. It ensures stable installation and accurate pointing of the antennas.

The mounting includes three components

The clamp allows a stable installation of the GPS antennas on the base station antenna front.

To fix the antenna perfectly to the base station antenna you should set (adjust) the clamp to fit exactly the shape of the base station antenna.

You will achieve that fast and easily by sliding the spring.

English

Control the accurate setup

Please be aware that an accurate measurement is only possible if the clamp fit exactly the shape of the base station antenna.

If the foam coating of the clamp is damaged please replace it immediately. Only intact coating ensures a perfect fit on the base station antenna.

Protect from fall

Protect your clamp from fall. Never fail to secure the clamp with safety stings.

Note: If you have to adjust extra large antenna or antenna with external arrays please contact us. We can offer you enhanced clamp systems.

Antenna pole with antenna

The antennas are pre-mounted and adjusted on the pole by delivery.

Press the release button and put the pole on the spike of the clamp. Slide the pole in place.

Connect the antenna cable with the receiver. The two connectors fit only to the corresponding connectors.

Use with care

Please handle the GPS antennas with greatest care. They include high quality electronic components.

.

English

Bluetooth module

The BlueRS+E module is an external Class 2 Bluetooth adapter. The 4011 GPS Compass has on the back of the housing a second serial port. On that port the Bluetooth module is connected.

Bluetooth Module

The module is ready to use. The configuration is pre-installed. The pass key is **0000**

Compability

The Bluetooth module of the 4011 GPS Compass look like the module form the old 3011 GPS Compass.

BUT: They are not compatible !!.

The old module for the 3011 needs to be powered from external source. The new module for the 4011 is powered via the serial cable. If you are using both systems do not change Bluetooth modules.

Serial cable and null modem cable

If the Bluetooth communication is not working you can use a serial cable connection. Plug the null modem cable to the serial port 1 of the receiver and connect it to the serial cable of the PDA.

The receiver provides on both ports all messages in parallel. It‘s possible to work with Bluetooth and via serial cable at the same time.

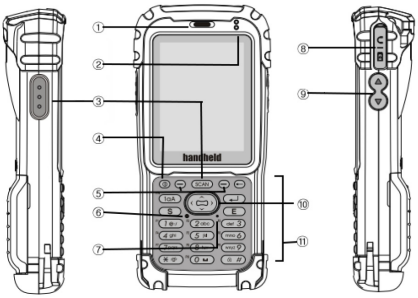
English

PDA NAUTIZ X3

A rugged and fied proven PDA: Nautiz X3

To run our TnMOB Software we recommand the Nautiz X3 PDA. The PDA offers a good combination of small size, big performance, extreme ruggedness and remarkable value.

The Nautiz X3 comes with pre-installed TnMob Software and with pre-installed BT connection to the 4011 sensor.



English

Ref	Component	Description
1	Speaker	Omits sound when using cellular function
2 Upper	Indication LED´s	Flashes slow blue to indicate cellular network coverage Flashes quick blue while searching for cellular networks
2 Lower	Power LED	Turned off means battery is not charging Red indicated battery is charging Green indicates charging is complete
3	Scan Key	Hold down to enable scanner
4	Power Button	Hold down to turn device on/off
6	Reset Button	Use stylus to trigger reset
7	Microphone	Audio for cellular function or record
8	20Pin Universal Connector	Charging, USB Data, Handsfree.
9	Volume Keys	Use to turn volume up and down
10	Misc. Keys	(←)Backspace (1aA/FN)key (keypad function change)

Barcode Scanner

The Nautiz X3 provides a barcode scanner. To collect serial numbers or product numbers activate the field in TnMOB and just press the SCAN button.

Active Sync

Please take care that **ActiveSync** or **Mobile device center** software from Microsoft are installed on your office PC. The software is necessary to have a proper data communication. The software is free of charge and you can download the latest version from the web page of Microsoft. On the 4011 system CD both software versions are available.

If you do not want to install that software you can exchange the data via SD card.

Battery Life

The Nautiz X3 do not switch off complety. If you switch off the unit it will go into a sleep mode only.
To increase the battery life we recommand that you release to battery for a few seconds after the switch off.

English

4011 System CD

Please insert this CD into the CD/DVD reader of your PC. Our program installer software should start automatically.

If not, please open the Windows Explorer and switch to the CD device. Double click on:

CD-Start.exe

Here you can find all installation files for the mobile software for the PDA and the office software. In addition all configuration files for the system are on that CD.

GPS receiver configuration

If you want to configure the GPS receiver on your own you should be a computer professional. We recommend that this should be done only from trained service engineers.

Description of the CD folder:

4011 Sensor	Includes the configuration and firmware file for the 4011 GPS receiver.
3011 Sensor	Includes the configuration and firmware file for the 3011 GPS receiver.
Acroread	Includes Adobe software to read the PDF files.
ActiveSync	Includes ActiveSync for Windows95 to WindowsXP (32bit).
Bluetooth	Includes the configuration tools for the Bluetooth module.
ConfigPack 3.33	Includes the configuration tools for the 3011 GPS receiver.
Manual	Includes all manuals.
Mission Planning	Includes software for a prediction of the satellite coverage.
SoftLoad	Includes the configuration software for the 3011 GPS receiver.
TnMob	Includes the field software to collect the measurement data.
TnMobOffice	Includes the Office software to organize the measurement data.

Windows Mobile Device Center	Includes the Data communication software for Windows Vista or Windows7 (32bit only)

All other folders and files are for the start program of the CD.

English

Software description

TnMob Software

The TNmob terminal Software was designed for mobile pocket computers (also PDA - Personal Digital Assistant or PocketPC) with the operating system Windows Mobile.

TNmob from version 3 onwards requires:

"Windows Mobile® 2003 or "Windows Mobile® 5.0 or higher

Installation

As usual for PDAs you do not install the TNmob software directly on your unit, but connect your PDA to your desktop computer using Microsoft ActiveSync®. You will find ActiveSync® on the CD which you received together with your PDA. Alternatively a free download of the most recent ActiveSync® version is available from the Microsoft® homepage. For details how to connect and synchronize the unit please refer to the user manual of your PDA.

After successfully synchronizing your PDA, start the TNmob setup program on your desktop computer. Please read and agree to the user terms and conditions. Then the TNmob terminal software will be installed automatically on your PDA.

The software is pre-installed on the Nauiz X3.

License

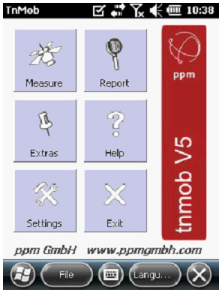
TnMob Software is copy protected. If you install the software on a different device you have to license the software. You have to install the TnMOB Office software on a PC. Then connect the Nautiz to that PC. The PC must be online to the internet.
In TnMOB Office go to EXTRA - License TnMOB and follow the steps.
The requested TAN number will be provided by your dealer or ppm GmbH.

The TnMOB-Software on the Nautiz X3 is already licensed

English

Program Start

After starting the TNmob program the options menu will open.



By clicking in the menu on the required option the program leads you to the next step.

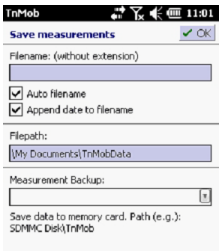
You can also choose the dialogue language. Following languages are available.
Due to a OS problem this option menu is only avaialble by hard key below the touchscreen.

German - English

Settings

Output

In this screen you define where your measurements will be saved and under which name.



File name: All your measurements will be saved as a TMB file under the name entered in this field until your redefine the name.

The TMB data format cannot be changed. It determines the data output into a binary encoded file. In TNmobOffice you can view and edit this type of file, export it into ASCII or EXCEL and print it.

Auto file name: If you Choose this option all files will be save in this format:

tnmob.tmb

Data storage

All data will be saved in one single file.

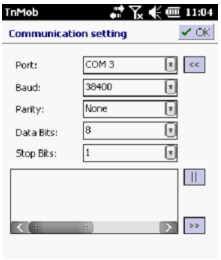
Append date to file name: If you choose this option a date of the measurement will be added to the file name.

Measurement Backup: You can add an additional folder to save the data twice.

English

Port

In this menu you determine which data port on your PDA will be used to receive data from the GPS sensor.



COM9: serial port for Nautiz (connection via cable)

COM2 bis COM8 : Bluetooth interfaces

COM3: Pre-installed BT port for Nautiz X3

GPS Offline: Demo data

Attention:

With that button you have to activate the selected port.

As soon as a connetion is established you will see the incoming data in this window

Stop view (not the transmission)

Store raw data.

Stop raw data storage.

Measure (Measurement)

Alignment:

Use camera: If this option is activated the software will start the camera after every registration of a measurement.

Recording:

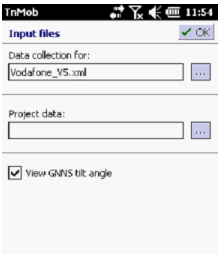
Automatic measurement saving means the measurement values will save automatically after reaching the minimum number of measurements that is defined in the settings. If that function is not activated, the measurement values will be logged until the minimum number is reached, and then released for manual measurement saving

Default values:

If values are exceeded the measurement will be cancelled and restarted automatically..

- Minimum number of measurements: 25
- Measurement errors to ignore: 2
  (defines the allowed number of successive measurement errors)
- Maximum difference from set value: 2
- Max. deviation from average value: 3
  (defines the highest allowed difference between measurement and current average value)
- Max. standar deviation for heading and position: 2
  (defines the highest allowed difference between measurement and current average value)

Input



Data collection for:

The input fields of the location screens can be adjusted to the requirements of the user. These settings are defined in the XML file.
Pre-installed are forms for Vodafone, E-Plus, Standard German and Standard English. If you are not forced froma proto use a special template then a Standard form.

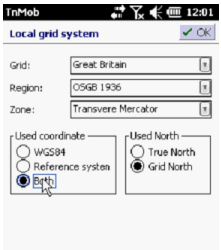
Project Data:

You can choose a project file where the data fields be pre-entered.

View Tilt Angle:

By activating this function the tilt angle as determined by the GPS sensor will be displayed in the TILT menu. This value is only a control value. It may differ for technical reasons from the exact tilt angle.

Coor.-System



GPS always uses the earth-fixed WGS84 datum where as in practice mostly metric coordinate systems are used. Because of their projection as a plane* they are limited to a particular region. In this menu you can determine to display and save the measured data and the heading reference in a local grid system.

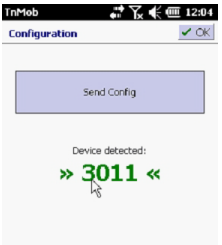
The Zone field allows selecting a particular strip in the respective local grid. Natural strip means automatic strip selection.

English

Only an experienced user with geodetic knowledge, however, should edit this file.

The definitions of the local coordinate system and the transformation parameter are determined in the TNmobSYS.xml file and can be extended or changed.

GPS



This page is reserved for initial setup and configuration of the receivers.

The GPS receiver will be detedted automatically. You can send the original TnMOB configuration to the receiver.

For service staff only!

These procedure is for technical staff from the manufacture only.

Report

Single Record

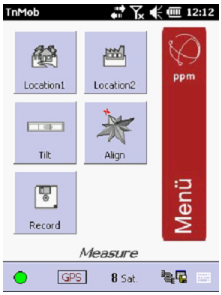
In this menu the individual measurements, which were saved in the TMB file, are displayed as clear text.

By a click on the valid box individual measurements can be deselected. Thus you can mark invalid measurements

List

Display of your measured values, not encoded, in ASCII format, line by line.

Measurement



The program offers two screens to enter your location information. The input fields can be adjusted according to individual company requirements. 8 fields per screen with properties as follow can be defined:

- **Obligatory fields (marked red)**:
  Only if you enter the required information the measurement can be performed.
- **Auto Name**:
  The entry in this field will define the name of your TMB measurement file, if Auto name is activated in the Save Measurements screen. Combined entries of several fields may as well define the file name.
- **Input field:**
  Free text input
- **Pull down menu field:**
  Allows selecting entries from a predefined list. The options are defined in the previously entered DAT file .
- **Combined input field and pull down menu field**
- **Predefined fields:**
  Entries, which appear automatically in the fields when starting the program. You can define them yourself in the xyz.dat file

The design of the location screens and the definition of their fields are determined in the xyz.xml file

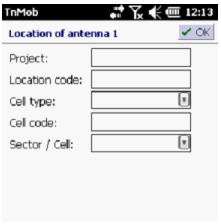
If you wish to have the location screens adjusted to your individual requirements please contact your dealer.

User Input:

On the lower left of the first location screen you will find this button. It opens a submenu where you can enter the user name and the company name. These entries will be stored in the system registry and appear automatically when you restart the program

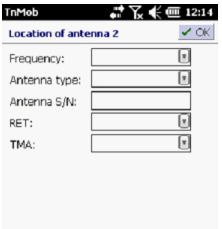
English

Location 1



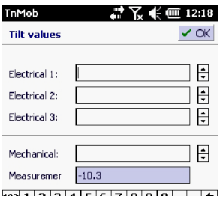
In this fields you can select the requested data.

Location 2



In this fields you can select the requested data.

Tilt

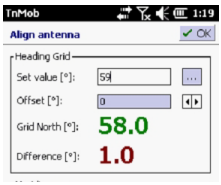


The program allows entering up to three electrical tilt values ranging from 0 to 15 degrees, and one mechanical tilt value, ranging from -20 to 20 degrees. The mechanical tilt value has to be entered manually.

Note: Leave these fields blank, if you do not wish any input. „Zero“ is a logical value and will be saved as entry.

If the Show tilt measurement function in the Input menu is activated the program will display the tilt value calculated by the GPS Sensor. That value is only a control value as it may show GPS typical variation. It is possible that it deviates from the actual tilt angle.

Alignment



This menu shows the alignment of your GSM antenna.

- **Set Value:**
  You can enter a set value for the alignment with your keyboard. It will be used to calculate the deviation from the measured value.
  Click on to open a submenu that allows entering enter the set value in alternative angle measurement units.

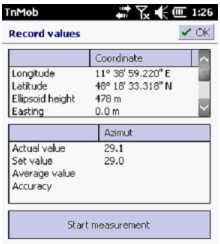
- **Offset**:
  If the GPS antennas are mounted at the respective turn to the alignment of the GSM antenna the turn (value) has to be entered in the Offset field. The software will take it into account and display the measured value in relation to the set value.

- **Grid-North:**
  Value of the current alignment

- **Difference:**
  Current deviation between Set Value - Grid North

If you select in the Local Grid System menu a local coordinate system it will be in most cases connected to the heading orientation Grid North. The software will then supply an additional geographic orientation and the meridian convergence (heading difference), which will be displayed in the lower third of the screen.

Record Measured Values



Into this menu you will save the accurate measured values together with date, time, position as well as all the entries from the location menu and the tilt values.

After starting the measurement the program will process a certain number of individual measurements according to the previously defined defaults (default = 100)

After starting the measurement the program will process a certain number of individual measurements according to the previously defined defaults. During the recording of values you can interrupt the measurement. When the predefined number of measurements has been reached, the measurements will be

automatically saved, or the Save button will be activated. In the second case the measurements will be recorded until you save manually.

If you have acitvate the usage of the camera, the camera starts automatically after the measurment.

You have to press the ENTER key on the keyboard to take the picture.
The OK button under the viewer will cancel this step.

Status bar

This is the part on the button. This information are always shown during a measurement.

GPS compass is not yet initialized, not enough satellites tracked - no heading measurement possible

GPS compass is initialized, but not enough satellite data has been received**, heading measurement is blocked**

GPS Compass is initialized, and receives enough satellite data, **heading measurement is possible**

GPS:
Position not yet available

GPS:
Position equals a stand-alone GPS fix with a horizontal accuracy of approx. 5 m (15 feet)

DGPS:
Position is a differential GPS fix; the system uses correction signals like EGNOS or WAAS for a horizontal accuracy of approx. 1 m (3 feet)

9 Sat. Number of satellites used to calculate the heading

Green: connection established

Red no connection

Demo mode, the program uses data from a file

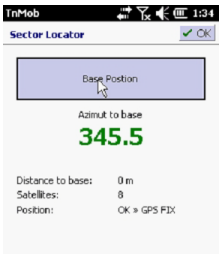
The Connection Button is also used to retrieve the data interface, if lost.

English

Extras

Sector Locator

This additional feature was integrated on customers' requirements.



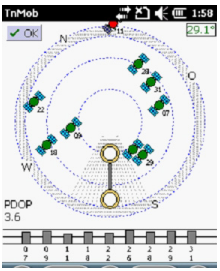
It's a determination of the sector around a base station antenna.

If you have a PDA with integrated GPS please activate this GPS under Settings port.
(Nautiz X3 - internal GPS = Port COM4 with 115200 baud
Please check that in Windows OS in Settings GPS Power is on)

If you are at the base station click on „Base Position" and the measurement starts. The current GPS position will be stored. If you move with the PDA the „Azimuth to base" value shows you the current azimuth from the base station to your current position.

That allows you even far away from a base station to measure the performance of each sector.

Sky



This graphic show all satellites, which are momentarily above the horizon in a dynamic display i.d. the satellites are plotted with respect to the Compass antennas' orientation. The perspective is that of an observer standing behind the antennas. The master antenna (the one closest to the mounting bracket) defines the sky plot centre. The grey fields in the graphic indicate areas where satellites are not used. Those include the area close to the horizon and the area obstructed by the GSM antenna.

- **green satellites:**
  satellites used for GPS positioning
- **red satellites:**
  satellites, which are not used (e.g. satellites below the angle of elevation defined in the GPS sensor, satellites behind obstructions or deactivated satellites)
- **PDOP:**
  This parameter is used to rate the GPS position quality (position dilution of precision). It is determined by the number and positions of satellites used. The value should be between 1 and 4. If the value is beyond that range the GPS fix may be unusable.

English

Software individual settings

It‘s possible to change and to configure the entry fields on your own. Everything is configured within the TnMob-xx.xml

TnMob-en.xml: Configuration for the entry fields.

An example:
You have to collect the frequency bands of a base station antenna.
There are 4 values and „UMTS“ should be the standard value.

Open the TnMob-en.xml file:

```
<tnmob>
 <pages>
  <page>
    <name>Location1</name>
    <title>Location of antenna1</title>
      <controls>
      <ctrl>
       <name>Project</name>
       <required>false</required>
       <dropdownlist>false</dropdownlist>
       <autoname>false</autoname>
      </ctrl>
 </controls>
....
  </page>
  <page>
    <name>Location2</name>
    <title>Location of antenna 2</title>
    <controls>
      <ctrl>
        <name>Frequency</name>
        <required>false</required>
        <dropdownlist>true</dropdownlist>
        <autoname>false</autoname>
      </ctrl>
```

Explanation about the fields and the options:

<name> The colored values in between (e.g. Frequency) could be modified. You can add or rename.

<required> Two options possible:

- false:
  You can enter a value.
- true:
  You have to enter a value.

<dropdownlist> Two options possible:

- false:
  There will be just a text entry line.
- true:
  There will be a drop down menu. You can enter pre-defined values in the DAT file.

<autoname> Two options possible:

- false:
  This entry will be not used for the file name.
- true:
  The entry of this field will be used as file name.

As previously mentioned the input boxes in the location screens can have different definitions.

Regardless of those definitions default values can be allocated to the individual fields. These values are in the DAT file.

The DAT file is a simple ASCII text file, which can be opened and customized with any text-processing program.

The predefined values in that ASCII text file will be selectable from pull down menus.

The DAT file contains one data block per location screen box.

The first line of each block contains in square brackets the name of the location screen and the field name.

The next line contains the field variable <list=>.

After the field variable <list=> all the required default values are listed, separated by semicolon.

Additionally you can define the variable <wert> (=value) in the third line.

At the start of the program the allocated value will be written as a standard default in the respective box.

Example:

[location2][Frequency]
<list=>700;900;1800;UMTS
<wert=>900

Further there is a predefined block „User“

After the variable <list=> the standard users are listed.

The variable <wert=> does not exist for this block.

The program memorizes the name of the last user, which it will offer automatically together with the company name.

Example:

[User] <list=>Mark Miller;Frank Jones;Terry Smith

English

TnMobOffice Software

TNmobOffice is a program that runs on your office PC. It is a complement to the 3011mobil+GPS Compass' TNmob software, and designed to comfortably process the data collected in the field.

TnMobOffice allows you:

- Import the TMB measurement files generated by TNmob directly from the PDA, from the SD card or any other memory of your choice.
- View and correct the binary coded TMB measurement data without violating their documentary evidence (measured GPS values cannot be changed, all changes are documented)
- Decode and export the measurement data into ASCII- and Excel readable formats.
- Print your measurement records.

System requirements and installation

Processor:
AMD/Intel® Processor (300 MHz or higher)

Operating System: Microsoft® Windows® 2000/XP/Vista /7

Required software: Microsoft® ActiveSync®

ActiveSync

TNmobOffice uses for data exchange with the PDA functions of Microsoft®ActiveSync®. TNmobOffice will not start without this application. You will find Microsoft®ActiveSync® on the TNmobOffice program CD, or download free of cost the most recent version from www.microsoft.com/downloads..

Required Software Option:
Internet Browser (like: Microsoft® Internet Explorer, Opera or Firefox)

The records of your measurement data are created in HTML Format. For viewing and print-outs TNmobOffice uses the standard browser on your desktop computer.

Installation:

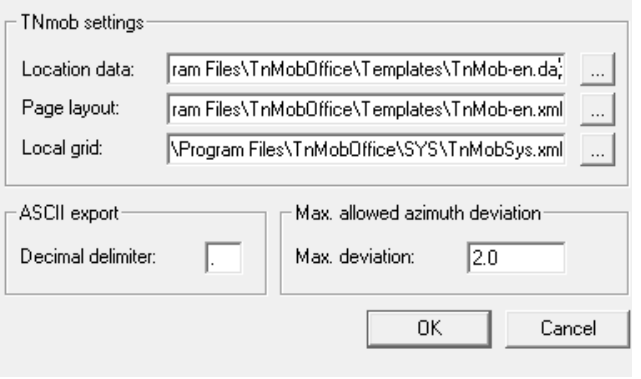
Start the installation program of TNmobOffice on your computer and follow the installation instructions.

English

Settings

To make full use of all the features of TNmobOffice you should customize it according to your individual requirements. Usually you have to do this only once.

You will find the program setting in the EXTRAS menu-> SETTINGS.



Location data, page layout and local grids define the system files that are used in common by TNmob and TNmobOffice. Only if your system files are identical your measurement files will be read and processed correctly. Therefore copy the following files from your PDA (\\WinCE_Device\Programme\TnMob2) to your PC application (C:\Programme\TnMobOffice\Templates):

Location data: xyz.dat (includes default and selectable value for the input masks in TNmob. This file can be defined and renamed by user.)

Page layout: xyz.xml (defines input masks and format of TMB file in TNmob.)

Local grid: TNmobSys.xml (defines transformation parameter between coordinate systems.)

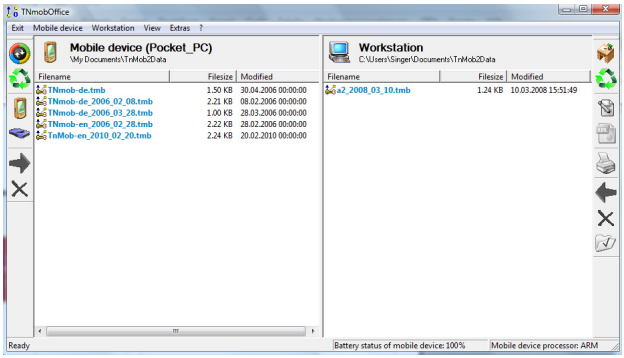
The **Max allowed azimuth deviation** field defines the threshold value. If the difference between measured and set heading exceed that value, the software will mark it as error.

The **Decimal delimiter** setting assures the smooth conversion of your data into the respective export formats and is necessary for printing your records.

Language

In **EXTRAS** you will find an option to select the TNmobOffice dialogue language. Presently you can choose between German English and French. The language of your choice will be activated after restarting the program.

Program structure



TNmobOffice offers two screens for viewing your data.
he Mobile Device screen shows the data on your PDA or your SD card. The Workstation screen shows where the data is stored on your office PC.

Mobile device

Connects TNmobOffice to your PDA

Opens your PDA directories

Reads SD card or any other any other drive available on your PC

Updates view, re-reads in directory

Synchronize the PDA folder and the PC folder

English

Work station

Selects workstation directory

Updates view

Converts your TMB file into TMA (ASCII) or CSV (Excel) format

Converts coded TMB file into XML format

Prints your measurement data

Copies selected file from workstation to mobile device

Deletes selected files

marked files will be transfered to Vodafone Germany

marked folder will be transfered to Vodafone Germany

establishing connection

To connect your PDA to your office PC use the USB cable included in the delivery. If you have already installed Microsoft®ActiveSync® the devices will connect automatically. When this symbol appears in the task bar at the bottom right on the screen the connection is active.

If the connection cannot be established, please read the respective parts in the instructions for your Pocket PC or in those for Microsoft® ActiveSync®.

Start TNmobOffice and click on the connection button . Use the respective buttons to select your data source and destination directory

Press the Synchronize button ans alle data will be transfered to the PC.

English

Editor

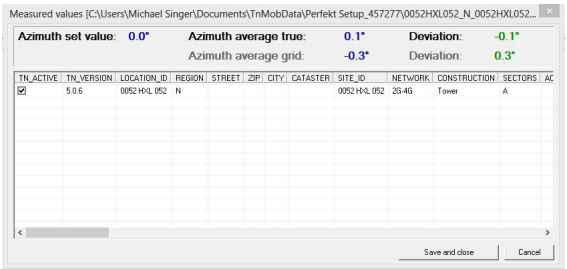
The TMB files, which are generated by TNmob, are binary coded, and you cannot just open and modify them. That makes them documentary evidence of your measurements, and you can use them to account for your work.

The TNmobOffice embedded editor allows to view the TMB files and make limited modifications. That means you can only edit the entered values but not GPS measurement data. Further, all the original data records will be preserved. Your edited new version will be saved in a copy of the respective data record.

Highlight the TMB measurement file that you wish to edit in the workstation screen and select

Open file

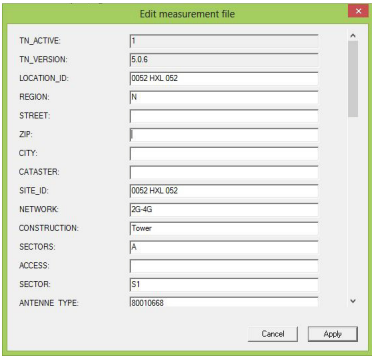
The Measured Values screen opens and displays all locations where you took measurements.



In the upper part of the screen you will see a survey of the highlighted data record showing heading value, the set value and the resulting deviation. The color (green – OK, red – exceeds threshold value) of the deviation value indicates whether the measured value is within the allowed deviation.

In the Measures Values screen you can activate or deactivate a particular data record. Only activated records will be considered a valid measurement and show in your final record.

If you double click on a data record the Edit Measurement screen opens.



In this screen you can edit or complete all the information, which you entered in TNmob manually.

All information in grey fields including date, time, azimuth value, down tilt value, geographical coordinates, GPS quality and settings for the measured values cannot be edited.

By clicking on Apply your modifications will be transferred to the measurement file

The un-edited original data record will be preserved but deactivated, and is marked grey. Your edited data record will appear automatically below that record, and is marked green.

Click Save and Close to finally save your modifications.

English

File-Export

For further processing you have to convert your measurement data into a readable format.

TNmobOffice offers two options:

ASCII - Export:

The program offers to export formats. You can create a text editor readable TMA file or an Excel compatible CSV file. Both the TMA and the TMB file are marked blue, and can be edited in the TMB Editor.

XML-Export:

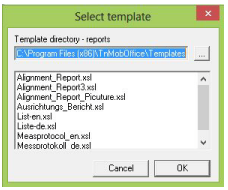
TNmobOffice was designed to transfer your measurement data into GIS systems. A common data exchange format is XML.

Highlight the measurement file you want to export and select the button for the required format.

Report

English

To print your record please highlight the measurement file you wish to print, and click on the print button. The window below will open, and you can select a print template.



TNmobOffice will now convert your measurement data into a browser compatible format (HTML) according to the selected template (see also 3.), and open automatically the standard browser on your PC displaying your data.

Web browser problem

After sending the first print job, the browser may not start automatically. Therefore send the print job once more. (Problem from Internet Explorer)

Reporting -Template

Please note, that only a record template that matches the layout definition (TNMob.xml) of your terminal program assures correct print-outs. If you wish a different record template please contact your dealer.

How to make a measurement

1. Pre-adjust antenna mounting clamp.
2. Slide clamp sideways on base station antenna
3. Fasten SAFETY STRING
4. Put antenna bar on spike on top of clamp
5. Fasten SAFETY STRING
6. Connect the antenna cables
7. Switch on GPS Compass
8. Switch on PDA
9. The BT connection is pre-installed.
   If you want to use another PDA you should make a BT connection like this:
   - Start Bluetooth manager
   - Bluetooth available
   - Devices - new partnership
   - click on 4011_RS232-BT... + activate serial Port
   - Passkey = 0000
   - COM-Ports: new outgoing port
   - f.g. COM4
   - no secure connection !!

   Start TnMob Software
   - Settings - Port:
     COM1 = connection via cable
     COM3 = Bluetooth
   - Settings - System:
     Grid: choose your country
     Region: choose your region
     Zone: choose your zone
     used coordinate: Both
     used north: Grid North
10. Now and for the next usage you can start TnMob Software direct:
    - Measurement: enter antenna location data
    - Measurement- Align: enter direction value
    - Adjust Antenna until Difference value shows 0 .
    - Maesurement - Rec: Record your values
      if camera option is on - take a picture and store it with the ENTER key

    Store measurements - READY !!

English

CE Declaration

Under the Directive 2004/108/EC
the manufacturer

ppm Precise Positioning Management GmbH
Grube 39a
82377 Penzberg

declares that the product

ppm 4011 GPS Compass Sensor

match the following guidelines:

2004/108/EG	**Directive on electromagnetic compatibility**
2002/96/EG	**Directive on the electrical and electronic equipment**
2002/95/EG	**Directive to restrict the use of hazardous substances in electrical and electronic equipment.**

Applied standards

EN 301 489-V1.6.1

Penzberg, 17.09.2009

Michael Singer
Managing Director

English