GPS

u-center

GPS evaluation software

User's Guide

locate, communicate, accelerate

Abstract

This document leads you through the efficient use of the u-center evaluation software, the powerful and easy to use tool from u-blox for evaluating and testing GPS receivers.

www.u-blox.com

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Preface

Overview

u-center is u-blox' powerful GPS evaluation and visualization tool which can be downloaded free-of-charge from our website (www.u-blox.com). This user's guide provides a description of the features of this software. It allows end users to assess and test u-blox GPS receivers for navigation and positioning performance.

The purpose of u-center is to enable users to:

- Conduct performance tests on u-blox and other GPS receivers.
- Configure u-blox GPS receivers.
- Access and download Firmware updates.
- Test the added performance provided by u-blox' free AssistNow A-GPS service.

Using this Guide

This guide assumes, the user has basic computer skills and is familiar with the Windows Graphical User Interface (GUI) and GPS receiver environments.

The following symbols are used to highlight important information:

☞ An index finger points out key information pertaining to integration and performance.

⚠ **A warning symbol indicates actions that could negatively impact or damage the receiver.**

Technical Support

If you have questions about installing or using u-center please:

- Read this user's guide carefully.
- Check our homepage (http://www.u-blox.com) to ensure that your GPS receiver, firmware and the u-center software are the latest versions.
- Refer to our web based information service and database of Frequently Asked Questions (FAQ).

Worldwide Web

Our website (www.u-blox.com) is a rich pool of information. Product information, technical documents and helpful FAQ can be accessed 24h a day.

By E-mail

If you have technical problems or cannot find the required information in the provided documents, contact the nearest of the Technical Support offices by email. Use our service pool email addresses rather than any personal email address of our staff. This makes sure that your request is processed as soon as possible. You will find the contact details at the end of the document.

Helpful Information when Contacting Technical Support

When contacting Technical Support please have the following information ready:

- Receiver type (e.g. LEA-5H), firmware version (e.g. V6.00), and u-center release (e.g. u-center 5.07)
- Receiver configuration and short description of the application
- Your complete contact details

Contents

1 Features

u-center evaluation software provides system integrators and end users with a quick and simple way to interface with u-blox GPS chipsets, modules and boards. It enables easy evaluation, performance testing, development and debugging of GPS receivers. u-center allows easy connection to u-blox products and provides a suite of features to view, log, and analyze performance. The features include:

- Support for u-blox' latest receivers using u-blox 5 positioning technology. u-center can communicate with these receivers using either the UBX protocol, or the NMEA-0183 standard protocol.
- Support for receivers that utilize standard NMEA strings.
- u-center presents all the information collected during the operation of the GPS receiver. All aspects of GPS data (position, velocity, time, satellite tracking, etc.) can be monitored and logged under various test scenarios for the evaluation of a receiver. u-center software allows analysis of the collected data in order to investigate performance issues such as accuracy, road test position and trajectory, satellite tracking, time to first fix, etc. All processed data can be captured in ASCII format and ported into popular spreadsheets for creating additional plots and statistics.
- Camera View: photographic data can be stored in the log file together with the navigation data and later be replayed in the application.
- Export data files to Google Earth and Google Maps.
- Supports AssistNow Online and AssistNow Offline.
- Data recording and playback function.
- Structural and graphical data visualization in realtime.
- Cut and paste export to standard PC application software.
- Docking views (real-time cockpit instruments):
  Satellite constellation, compass, clock, altimeter, speedometer, GPS and satellite information views.
- Download firmware updates into GPS receivers

2 Getting Started

2.1 General Information about displayed values

- Longitude and latitude are displayed according to the datum selected in the GPS receiver (usually: WGS-84).
- Time is displayed with reference to UTC
- Elevation is displayed with reference to either MSL (Height above mean sea level or Orthometric Height) or to HAE (Height above WGS-84-Ellipsoid). The reference is controlled by the GPS configuration.

2.2 Connecting a GPS Receiver to the PC

This section assumes that you have purchased a u-blox 5 Evaluation Kit. Should you try to connect a GPS receiver to a PC without using the EvalKit, make sure you use appropriate RS-232 level shifters. Connect a serial cable between a communications port (COM-port) of a PC and the EvalKit.

2.3 Installing u-center

The u-setup installation program guides you through the necessary steps for a successful program installation.

u-center uses dynamic link libraries (DLL). The installation program will automatically install the required DLL's into the u-center program directory. Should you try to copy a u-center installation from one location to another after the installation, make sure you copy the DLL files as well.

After a successful installation, u-center will start up as shown in Figure 1:

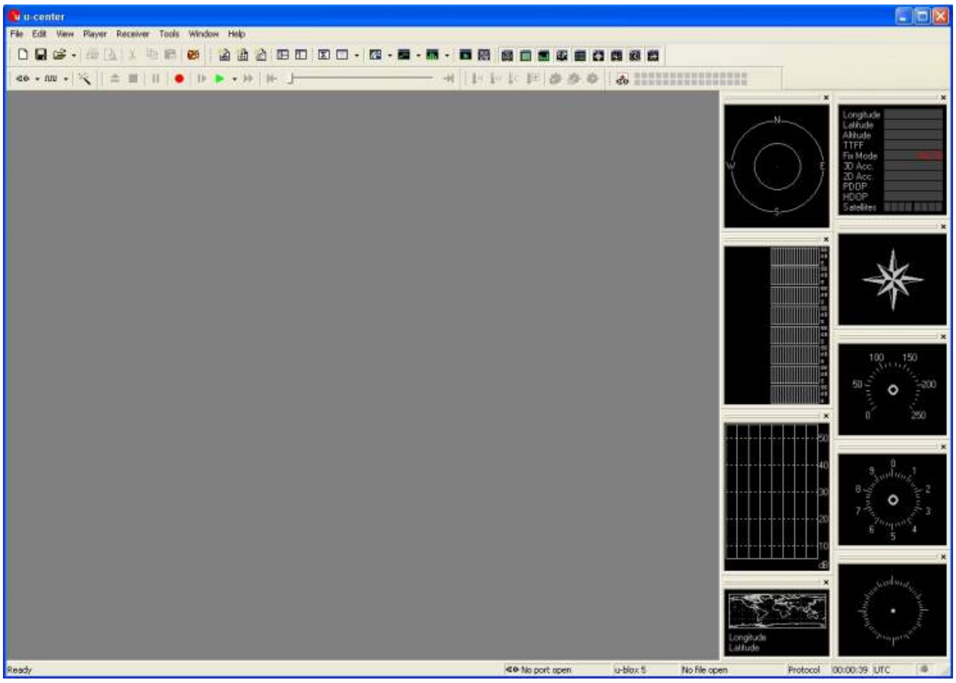
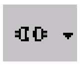


Figure 1: Start Display

2.4 Configuring the Serial Connection

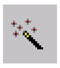
u-center stores the serial settings and uses the last configuration when started. When u-center is started for the first time, the COM port needs to be initialized. This is typically done in the Receiver Tool Bar (Figure 2).

Figure 2: Receiver Tool Bar



Connect/Disconnect-Button with COM-Port selection arrow

Baudrate-Button with baudrate selection arrow

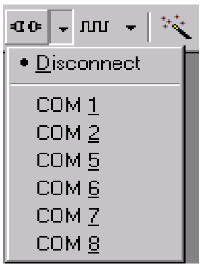


Autobauding-Button

u-center only supports the COM-Settings listed below. All u-blox GPS receivers are pre-configured this way.

- Parity: None
- Data Bits: 8
- Stop Bits: 1
- Flow Control: none

2.4.1 COM-Port

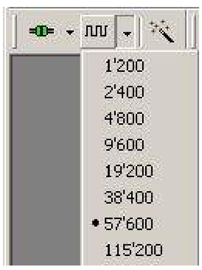


Press the arrow in the Connect/Disconnect-Button and select the used COM-Port

2.4.2 Baudrate

2.4.2.1 Manual Selection

Does not apply to USB.



The baudrate can be manually set or automatically detected by using the autobauding feature. Press the arrow in the Baudrate-Button to manually select the baudrate.

As soon as u-center is synchronized to the GPS receiver, the Connect/Disconnect-Button on the Receiver Tool Bar changes the color to green (*Figure 3*) and the display shows information about the satellite constellation, signal to noise ratio, time etc (*Figure 5*). If the baudrate of u-center and GPS receiver are not set to the same value, the "Communication Information" icon changes to red. Please refer to *section* 4 for further information.

Figure 3: COM-Port and Baudrate successfully detected

2.4.2.2 Autobauding

u-center support autobauding. If frequent break errors are detected, u-center will lower the baudrate, in case of framing errors, the baudrate is increased until no further errors are detected.

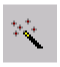


Figure 4 Autobauding Button

Some serial cards or adapters frequently generate errors. The u-center autobauding may not work reliably in this case. If you experience frequent errors, please set the baudrate manually.

If the GPS receiver is working correctly, the display will show information about the satellite constellation, signal to noise ratio, time etc (Figure 5)

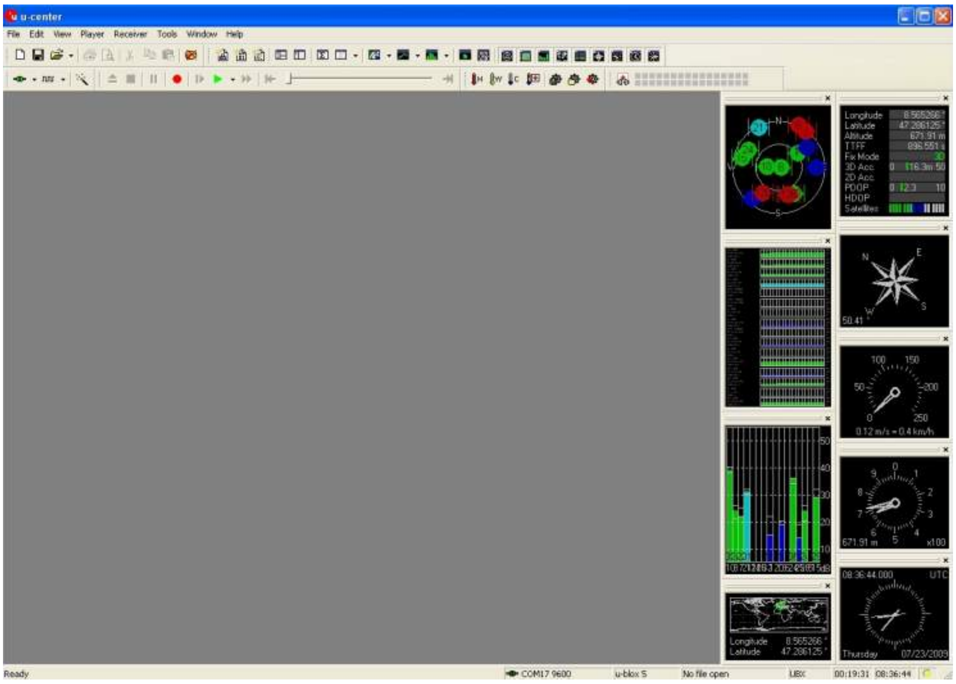


Figure 5: Start Display after a successful connection

3 Concept and Philosophy

Understanding the basic concept behind u-center is important in order to get the highest benefit out of this powerful GPS evaluation software. Figure 6 depicts the architecture of the software. The program gets a data stream either from a COM port or a logfile and splits this stream into protocol messages. From the messages, relevant parameters are extracted and inserted into the current dataset of the database.

In the current dataset statistical values of the parameters are calculated. Average, Minimum, Maximum and Standard Deviation are calculated for most parameters. If a protocol does not provide a parameter, u-center tries to calculate the parameter from the ones that are available. For Example if velocity-north and velocity-east are available, u-center calculates the Speed over Ground and Course over Ground, unless this data is already available in the protocol.

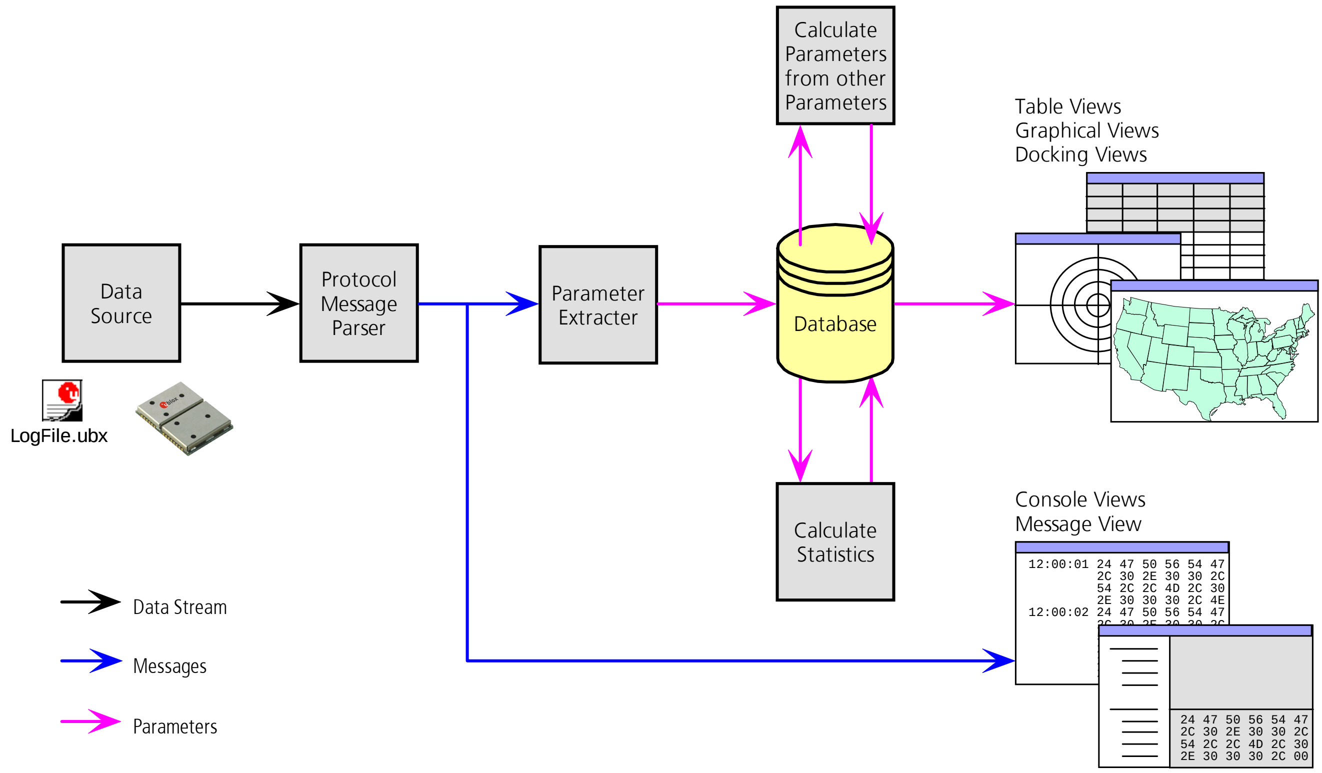


Figure 6: Engine Architecture

When a new epoch (change in time) is detected, the current dataset is stored as history in the database. This history has a limited size. If the Size is exceeded u-center keeps only the latest datasets and the oldest ones are removed. The history size may be adjusted. Refer to section 3.2.5 for the details

u-center provides various view classes for observation. Most of the views take their data from the database. But there are some views, which get their data directly from the message without using the database at all. The other views are updated when the database changes.

- **Message View** Displays a copy of every known message. This view allows observing a single message in detail. It may also be used to send and configure the GPS receiver.
- **Console Views** Display the messages in text form. They are particularly useful for users to develop GPS firmware code. There is also a wide range of information available, which is useful for evaluation and testing.

- **Graphical Views** Display parameters from the database in graphical form. Charts, Histograms and even a Map Overlay can be created. There are two more views (Deviation View, Sky View) that may be used for statistical performance and antenna pattern analysis.
- **Tabular Views** Show the parameters of the database in tabular form. They can be freely configured to allow customized tables.
- **Docking Windows** Can be docked to the frame of u-center. An analog watch, compass, world map, altitude and speed meter are available. There are also docking windows showing the current signal power and the constellation of the satellites received by the GPS receiver as well as a summary of the GPS status.

☞ Displaying various Views and Docking Windows requires lots of computing power. Minimizing or closing them may significantly reduce the CPU usage.

3.1 Color coding scheme

In the graphical views and some of the docking windows, colors are used to indicate the quality of the data. *Table 1* depicts the color-coding scheme parameters for graphical views depending on the quality of the navigation solution.

Color	Meaning
+ Yellow	Current value
+ Green	3D navigation solution
+ Cyan	2D navigation solution
+ Blue	Degraded navigation solution (e.g. Dead reckoning)
+ Red	No navigation solution

Table 1: Color-coding scheme for graphical views

Table 2 depicts the color-coding scheme for the Docking Windows and Sky View. It indicates the state of each satellite.

Color	Meaning
Green	Satellite used in navigation
Cyan	Satellite signal available, available for use in navigation
Blue	Satellite signal available, not available for use in navigation
Red	Satellite signal not available

Table 2: Color-coding scheme for the Docking Windows and Sky View

3.2 Operating Modes

u-center has different operating modes. The mode changes when you open or close a log file or when you make an action in the player. To be able to use the record mode you have to create a new file, save to a new file or open an existing file. The record and player mode are only available if you have created a new file or when you have opened a write-able file.

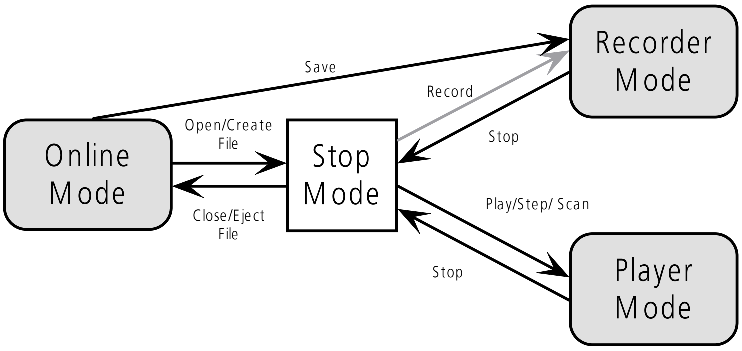


Figure 7: Relations between operating modes

3.2.1 Online Mode

In this mode a GPS receiver is directly connected to u-center via a serial port with. u-center can control and configure the receiver, it will display the data that the receiver is sending periodically.

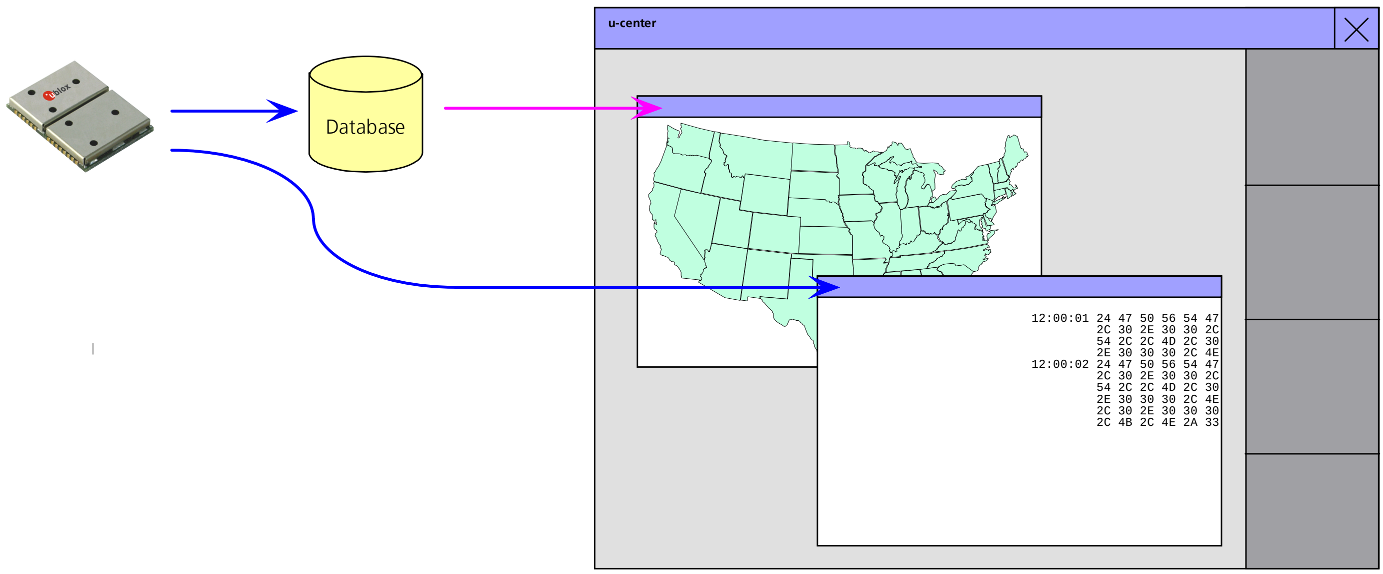


Figure 8: Dataflow in Online Mode

3.2.2 Stop Mode

In this mode no data from receiver or log file is forwarded to the database and views. u-center is in this mode when a log file is open but player and recorder are not active.

3.2.3 Record Mode

Record Mode is the same mode as the Online Mode. But u-center additionally creates a log file on your disk, contacting all the messages sent by the receiver. You enter this mode by creating a new log file or opening an existing log file without write protection and pressing the record button. An example of using this mode would be to make overnight measurements and evaluate the data at a later time. u-blox customer support may request a log file from you when you are experiencing a problem with one of our receivers.

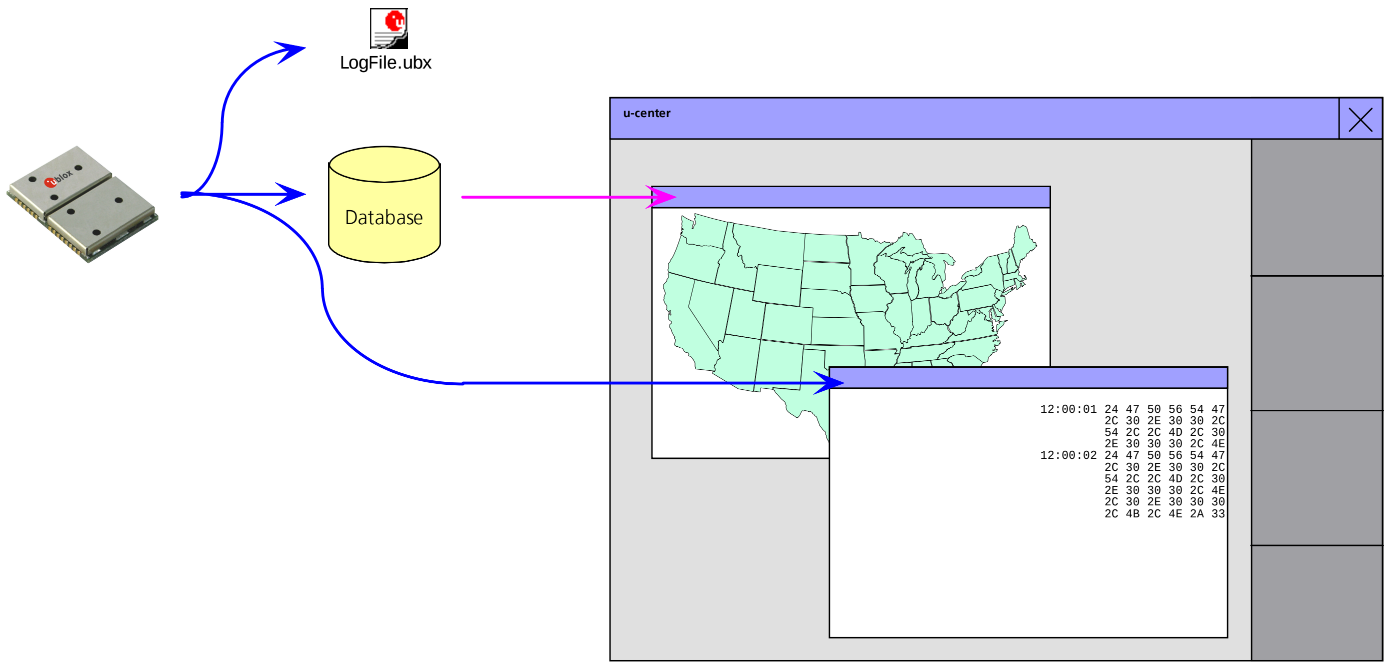


Figure 9: Dataflow in Record Mode

3.2.4 Player Mode

The Player Mode allows replaying a previously recorded log file step by step, in real-time or at an accelerated rate. You enter this mode by opening a file and pressing the play, step or scan button.

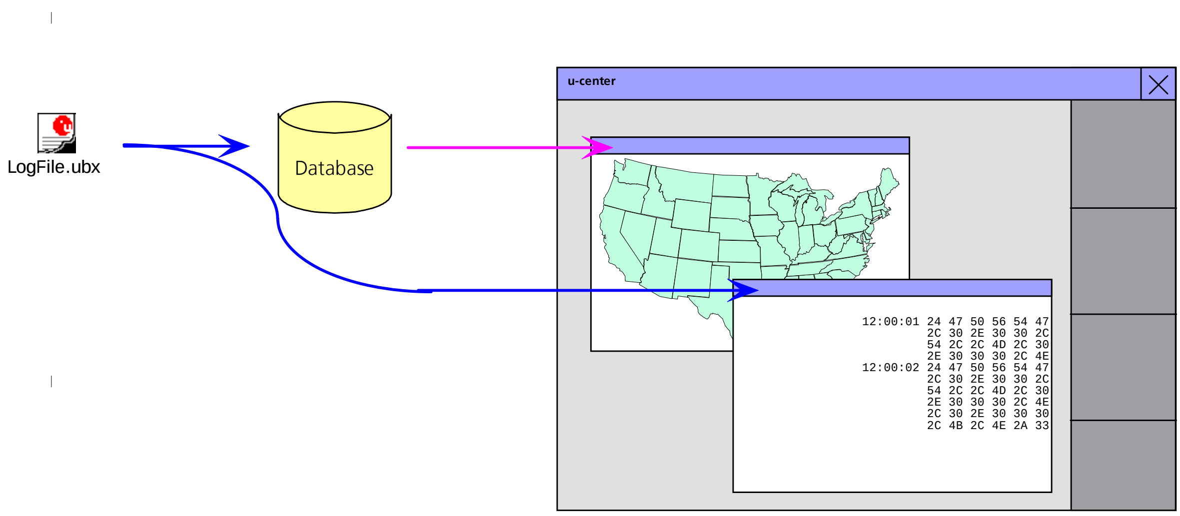
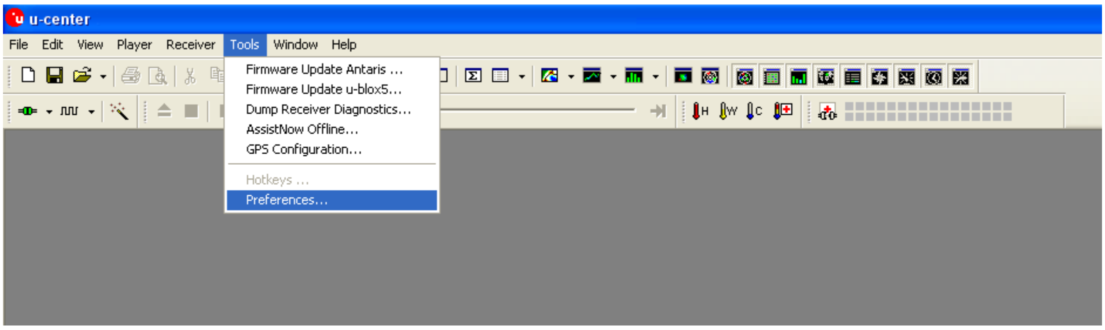
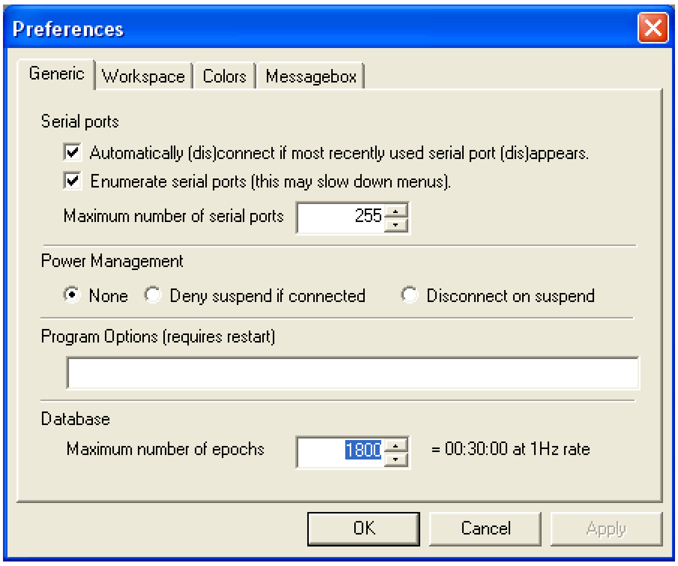


Figure 10: Dataflow in Player Mode

3.2.5 Database Limitation

The number of epochs displayed in u-center is limited in order to allow an efficient analysis of large log files. The limit is set to 1800 epochs by default. This means if an epoch is available every second you can analyze data for up to 30 minutes. After this time the oldest values are discarded. Data stored to a log file is not affected by the database limitation. The number of epochs displayed in u-center can be reset through the menu bar as follows:





For long-term observations, it's recommended to start recording a log file before analysis begins.

If a high value of epochs is selected, the display of data in real-time cannot be guaranteed, especially when graphical views are open.

3.2.6 Relations between Modes

The operating mode depends on the status of the log file player. Modes are changed by user actions. Each mode has different states that are changed by a user action or by an event (*Figure 7*).

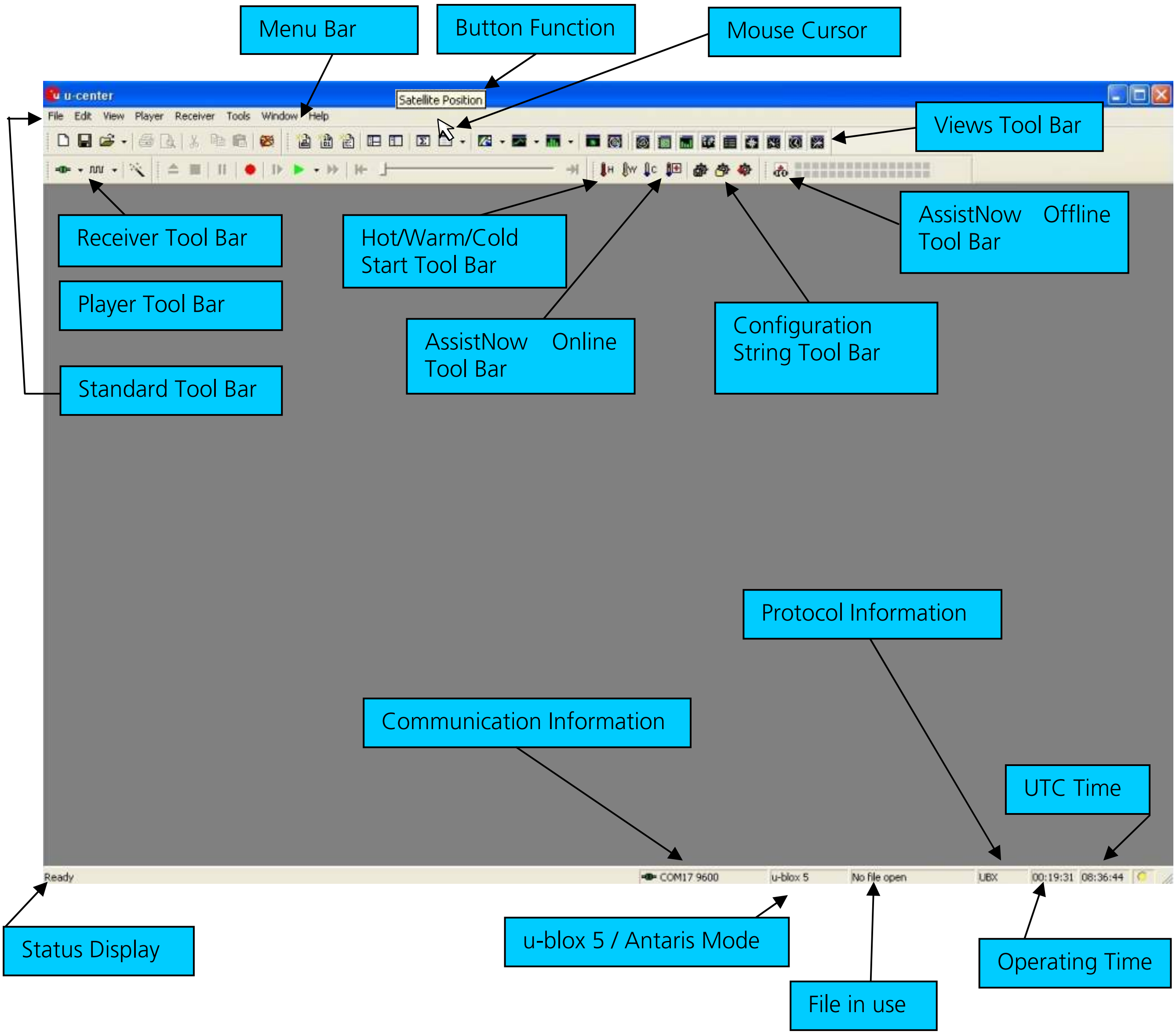
In the **Online** and **Record** modes, u-center displays data from the receiver. In **Player** mode data from a log file is displayed. Player mode has different states. In **Play** state messages are read and displayed periodically from the log file. The very intuitive user interface is derived from that of a CD player. u-center updates the views after each message. **Step** state only gets one message from the log file and immediately returns to paused **Play** state. **Scan** state also reads messages periodically but the display is only updated when paused or by changing the state. Position can be set in a log file. This behaves differently in the Player and Stop modes. In Stop mode the position is just set and no data is read and displayed. u-center will start recording or playing from that position when changing the mode. If position is set in **Player** mode, u-center will load the data up to this position from the log file and display the contents.

4 Menu Structure

4.1 Main Frame

The Main Frame is the primary display screen of u-center. It displays all tool bars and some of the information provided by the GPS receiver. In the status bar, information about communication, UTC time, Operating Time, used protocol (NMEA or UBX), used file, etc. is shown.

- **Button Function:** A description about each button in the tool bars can be obtained by holding the mouse cursor over the button for a few seconds. A Tool Tip message will appear near the Icon with additional information while a detailed description is displayed in the Status Display.



- **Status Display:** display the current action or the function of a button if the mouse cursor is over the button

- **u-blox 5 / Antaris Mode:** u-center automatically detects the type of GPS receiver connected and activates the appropriate mode of operation in order to take optimal advantage of the features. The mode can also be manually selected through the menu bar.
- **File in use:** As soon as a file is used (this file must first be opened) the name of the file will be displayed (xxxxxx.ubx)
- **Protocol Information:** This box indicates the current message set that is being used to communicate with the GPS receiver. This can be the NMEA-0183 standard or the UBX protocol. The UBX protocol provides more extensive information with the receiver. u-center can handle both protocols.
- **Operating Time:** The time elapsed since you started *u-center*
- **UTC Time:** The current time sent by the GPS receiver
- **Communication Information:** Shows the active COM port and baudrate.

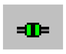
  Color-Coding of this icon: 
  - Green: data is being received at the correct baudrate
  - Dark Green: the last data received was valid, but there is no data to collect at this time.
  - Red: data is being received but errors are detected
  - Dark Red: no data is being received but errors have been detected in the past
  - Gray: waiting for first data

Figure 11: u-center and GPS receiver are synchronized (green plug)

Figure 12: u-center and GPS receiver mismatch (red plug)

4.2 Menu Bar

All u-center functions can be accessed through the Menu Bar, alternatively it may be easier to use the icons in the tool bars.

4.3 File Menu and Standard Tool Bar

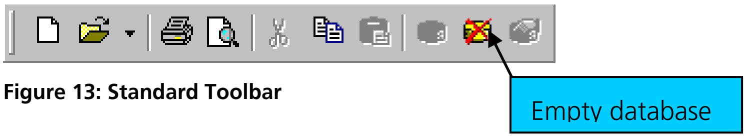


Figure 13: Standard Toolbar

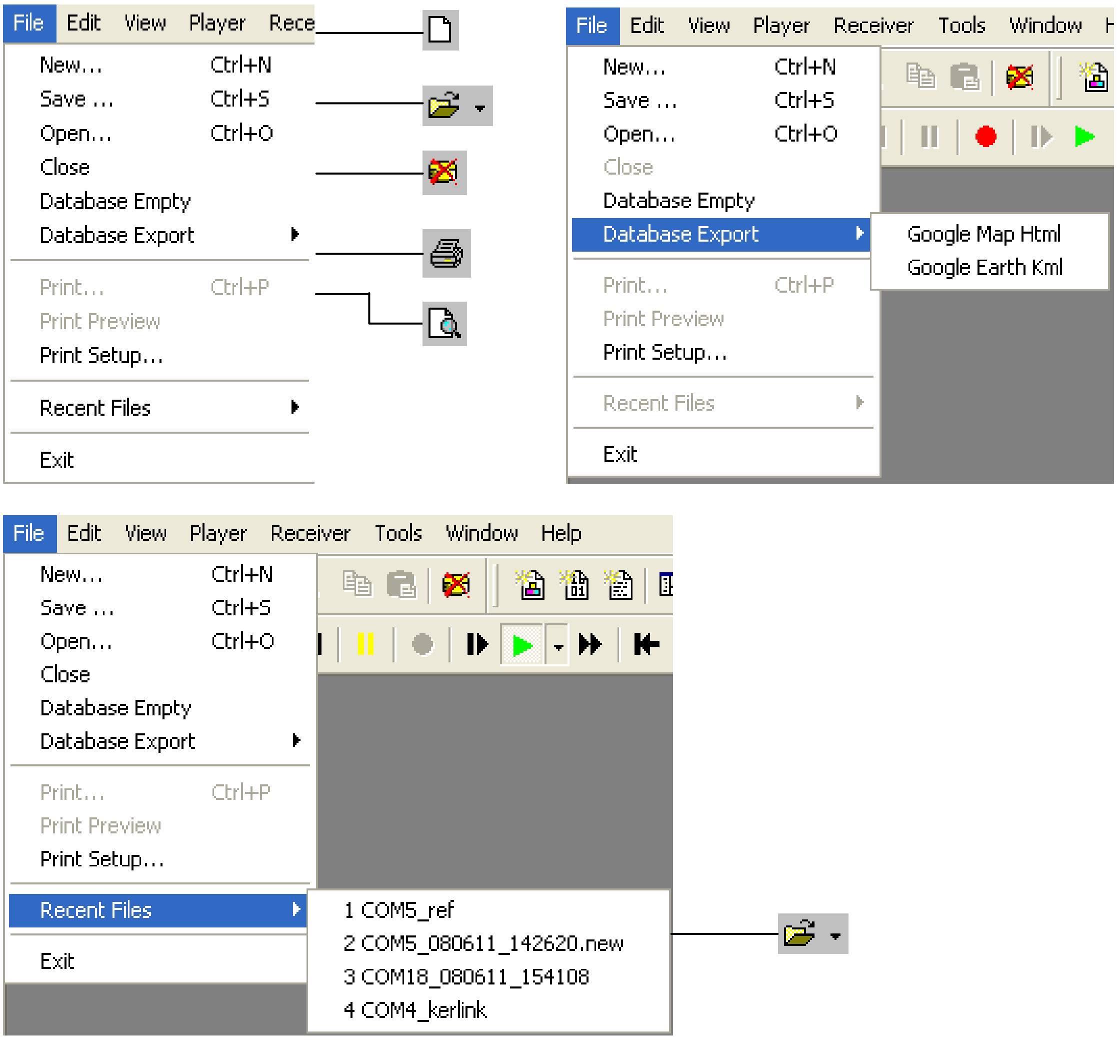


Figure 14: File Menu(s) with corresponding toolbar icons

New…	u-center can capture receiver output data into a logfile. However, logging will only start after Record in the Player Menu has been selected. The elapsed logging time is displayed in the field operating time. The log files have a 'ubx' extension.
Save…	Opens a new logfile, saves the data from a ring buffer to the logfile and immediately starts recording all newly received data. This is useful when error or an unexpected event occurred and no log file was recorded. The size of the ring buffer (4 MB) is large enough to retain the data for the last hour (approx.).
Open…	Opens a stored log file to be replayed.
Close	Closes the log file.

Database Empty All stored values are deleted.

Database Export Stored u-center logfiles can be converted into HTML or KML data formats for display with Google Map and Google Earth.

Recent Files A list of the most recent log files.

Exit Terminates *u-center*.

4.4 Edit Menu

The Edit Menu is fully Windows® compliant.

4.5 View Menu and Views Tool Bar

4.5.1 Text Console

The Text Console displays the content messages in textual form such as UBX-INF or NMEA messages.

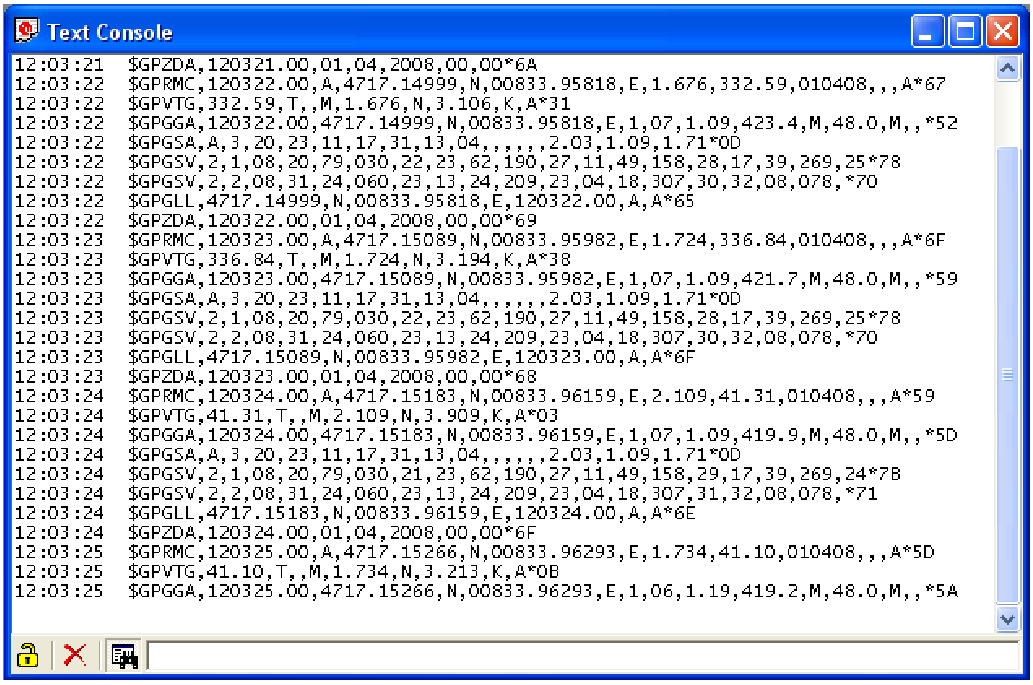


Figure 15: Text Console displaying UBX-INF and NMEA messages

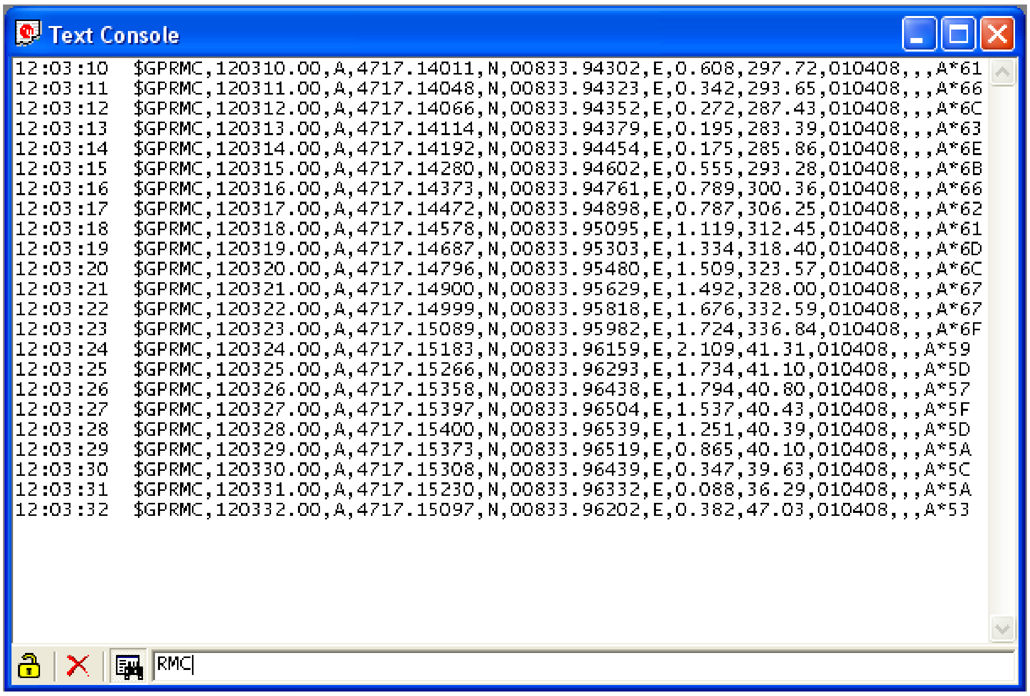


Figure 16: Text Console displaying only RMC messages

Element	Name	Description
	Lock	Prevents the Text Console from being updated with new data when locked.
	Clear All	Erases all data in the Text Console
	Filter On/Off	Filter unwanted data from the data stream. This allows searching for certain expression, e.g. all RMC messages (Figure 16).

Table 3: Description of the buttons of the different Consoles

4.5.1.1 Regular Expression Evaluation

Normally, when you search for a sub-string in a string, the match should be exact. So if we search for a sub-string "abc" then the string being searched should contain these exact letters in the same sequence for a match to be found. We can extend this kind of search to a case insensitive search where the sub-string "abc" will find strings like "Abc", "ABC" etc. That is, the case is ignored but the sequence of the letters should be exactly the same. Sometimes, a case insensitive search is also not enough. For example, if we want to search for numeric digit, then we basically end up searching for each digit independently. This is where regular expressions come in to our help. Regular expressions are text patterns that are used for string matching. Regular expressions are strings that contain a mix of plain text and special characters to indicate what kind of matching to do. Here's a very brief tutorial on using regular expressions.

Suppose, we are looking for a numeric digit then the regular expression we would search for is "[0-9]". The brackets indicate that the character being compared should match any one of the characters enclosed within the bracket. The dash (-) between 0 and 9 indicates that it is a range from 0 to 9. Therefore, this regular expression will match any character between 0 and 9, that is, any digit. If we want to search for a special character literally we must use a backslash before the special character. For example, the single character regular expression "*" matches a single asterisk. In the table below the special characters are briefly described. A regular expression search is case sensitive.

Character	Description
^	Beginning of the string. The expression "^A" will match an 'A' only at the beginning of the string.
[^	The caret (^) immediately following the left-bracket ([) has a different meaning. It is used to exclude the remaining characters within brackets from matching the target string. The expression "[^0-9]" indicates that the target character should not be a digit.
$	The dollar sign ($) will match the end of the string. The expression "abc$" will match the sub-string "abc" only if it is at the end of the string.
|	The alternation or logic OR character (|) allows either expression on its side to match the target string. The expression "a|b" will match 'a' as well as 'b'.
.	The dot (.) will match any character.
*	The asterisk (*) indicates that the character to the left of the asterisk in the expression should match 0 or more times.
+	The plus (+) is similar to asterisk but there should be at least one match of the character to the left of the + sign in the expression.
?	The question mark (?) matches the character to its left 0 or 1 times.
( )	The parenthesis affects the order of pattern evaluation.
[ ]	Brackets ([and]) enclosing a set of characters indicates that any of the enclosed characters may match the target character.

4.5.1.2 Example

Let's assume that the following lines would appear in the NMEA console without filtering.

```
14:00:03 $GPGGA,140003.242,4717.1126,N,00833.7862,E,1,06,1.3,543.0,M,,,,0000*09
14:00:03 $GPGLL,4717.1126,N,00833.7862,E,140003.242,A*34
14:00:03 $GPGSA,A,3,06,17,25,22,30,10,,,,,,,2.9,1.3,2.6*3A
14:00:03 $GPGSV,2,1,07,06,58,062,44,17,52,161,44,25,45,239,44,22,35,301,44*7F
14:00:03 $GPGSV,2,2,07,30,31,123,44,10,17,059,39,01,05,316,*4E
14:00:03 $GPRMC,140003.242,A,4717.1126,N,00833.7862,E,0.03,80.59,010201,,*36
14:00:03 $GPVTG,80.59,T,,M,0.03,N,0.1,K*56
14:00:04 $GPGGA,140004.242,4717.1126,N,00833.7862,E,1,06,1.3,542.0,M,,,,0000*0F

14:00:04 $GPGLL,4717.1126,N,00833.7862,E,140004.242,A*33
14:00:04 $GPGSA,A,3,06,17,25,22,30,10,,,,,,,2.9,1.3,2.6*3A
14:00:04 $GPGSV,2,1,07,06,58,062,45,17,52,161,44,25,45,239,44,22,35,301,44*7E
14:00:04 $GPGSV,2,2,07,30,31,123,44,10,17,059,39,01,05,316,*4E
14:00:04 $GPRMC,140004.242,A,4717.1126,N,00833.7862,E,0.02,152.96,010201,,*0D
14:00:04 $GPVTG,152.96,T,,M,0.02,N,0.0,K*6B
```

In the following examples the characters marked red match the regular expression.

Example 1: Searching for the RMC with a valid position and all GGA Messages
"GP(GGA|RMC,.*,A,)"

```
14:00:03 $GPGGA,140003.242,4717.1126,N,00833.7862,E,1,06,1.3,543.0,M,,,,0000*09
14:00:03 $GPRMC,140003.242,A,4717.1126,N,00833.7862,E,0.03,80.59,010201,,*36
14:00:04 $GPGGA,140004.242,4717.1126,N,00833.7862,E,1,06,1.3,542.0,M,,,,0000*0F
14:00:04 $GPRMC,140004.242,A,4717.1126,N,00833.7862,E,0.02,152.96,010201,,*0D
```

Example 2: Searching for all GSV with the message index of '2' or '3'
"GSV,.*,[2-3],"

```
14:00:03 $GPGSV,2,2,07,30,31,123,44,10,17,059,39,01,05,316,*4E
14:00:04 $GPGSV,2,2,07,30,31,123,44,10,17,059,39,01,05,316,*4E
```

Example 3: Searching for all messages starting with $GP, which have a 'G' in the message identifier but not at the first position
"^\$GP.+G.*,"

```
14:00:03 $GPGGA,140003.242,4717.1126,N,00833.7862,E,1,06,1.3,543.0,M,,,,0000*09
14:00:03 $GPVTG,80.59,T,,M,0.03,N,0.1,K*56
14:00:04 $GPGGA,140004.242,4717.1126,N,00833.7862,E,1,06,1.3,542.0,M,,,,0000*0F
14:00:04 $GPVTG,152.96,T,,M,0.02,N,0.0,K*6B
```

Example 4: Searching for all message having a checksum of which the higher nibble is 3
"*3.$"

```
14:00:03 $GPGLL,4717.1126,N,00833.7862,E,140003.242,A*34
14:00:03 $GPGSA,A,3,06,17,25,22,30,10,,,,,,,2.9,1.3,2.6*3A
14:00:03 $GPRMC,140003.242,A,4717.1126,N,00833.7862,E,0.03,80.59,010201,,*36
14:00:04 $GPGLL,4717.1126,N,00833.7862,E,140004.242,A*33
14:00:04 $GPGSA,A,3,06,17,25,22,30,10,,,,,,,2.9,1.3,2.6*3A
```

4.5.2 Packet Console

The Packet Console lists all incoming messages and provides information about message length and type.

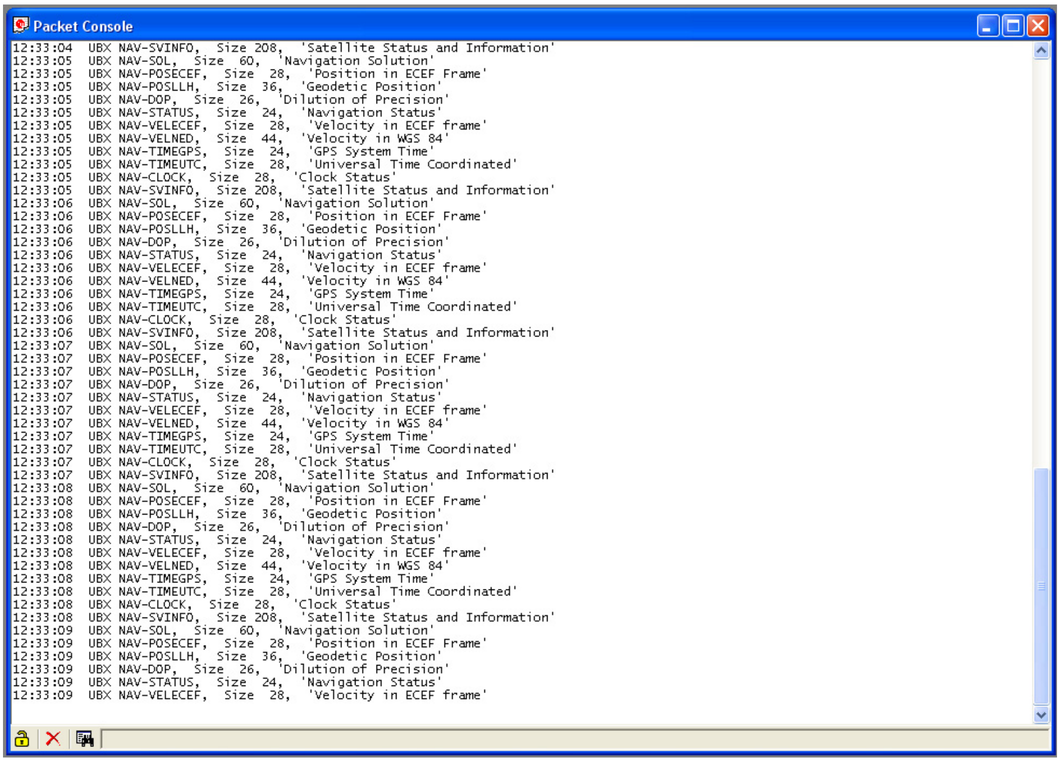


Figure 17: Packet Console

Refer to Section 4.5.1 for an explanation of the icons and text fields.

4.5.3 Binary Console

The Binary Console lists all incoming messages in binary and ASCII format.

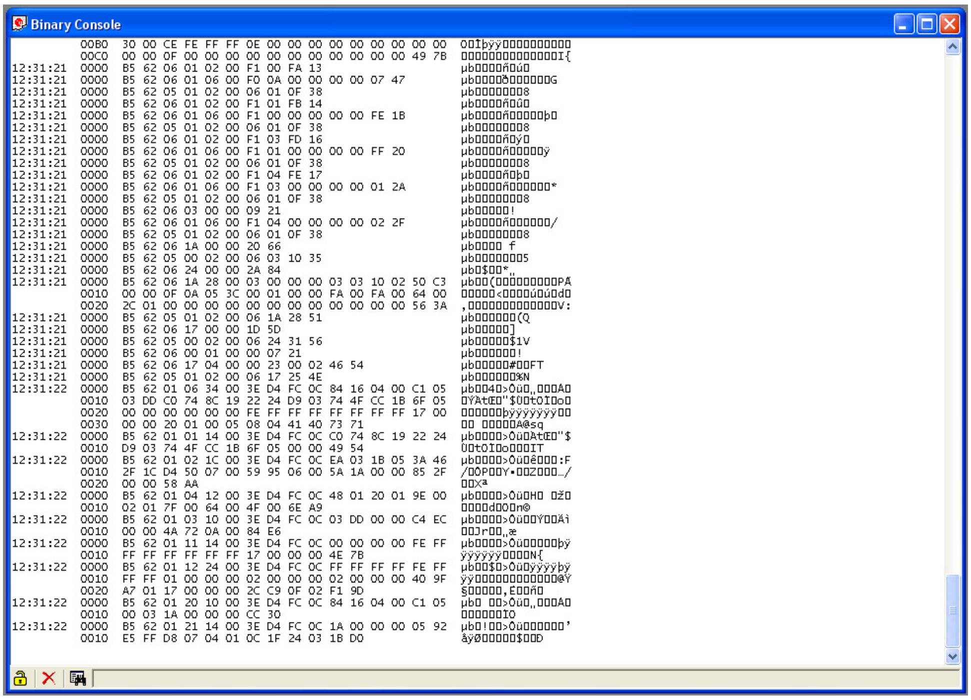


Figure 18: Binary Console

Refer to section 4.5.1 for an explanation of the icons and text fields.

4.5.4 Message View

The Message View is utilized to communicate with the GPS receiver. Receiver output messages (e.g. navigation output, status and debug information) are displayed; input messages (e.g. configuration messages) can be sent. There are different sections for NMEA and UBX protocol.

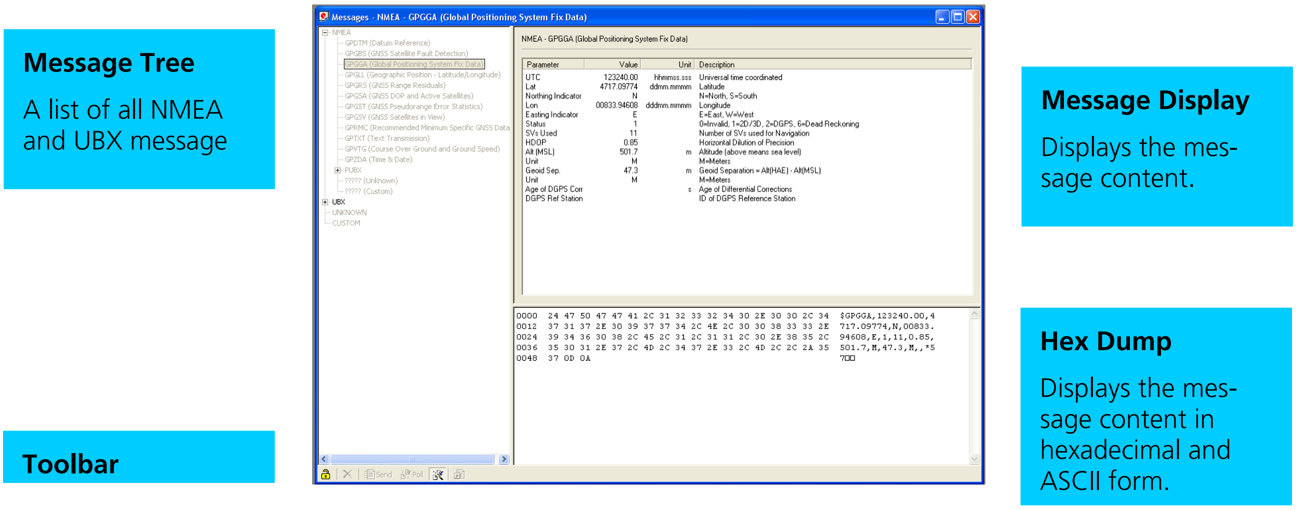


Figure 19: Message View

Element	Name	Description
	Lock	Prevents the Message View from being updated with new data when locked.
	Clear All	Erases the entire Message View.
	Send	Sends the current message to the GPS receiver.
	Poll	Polls the selected message once.
	Auto poll	Automatically polls a newly selected message once
	Message Hotkey	Assigns a hotkey to the selected message

Table 4: Description of the buttons in the Message View

4.5.4.1 Receiver Output Messages

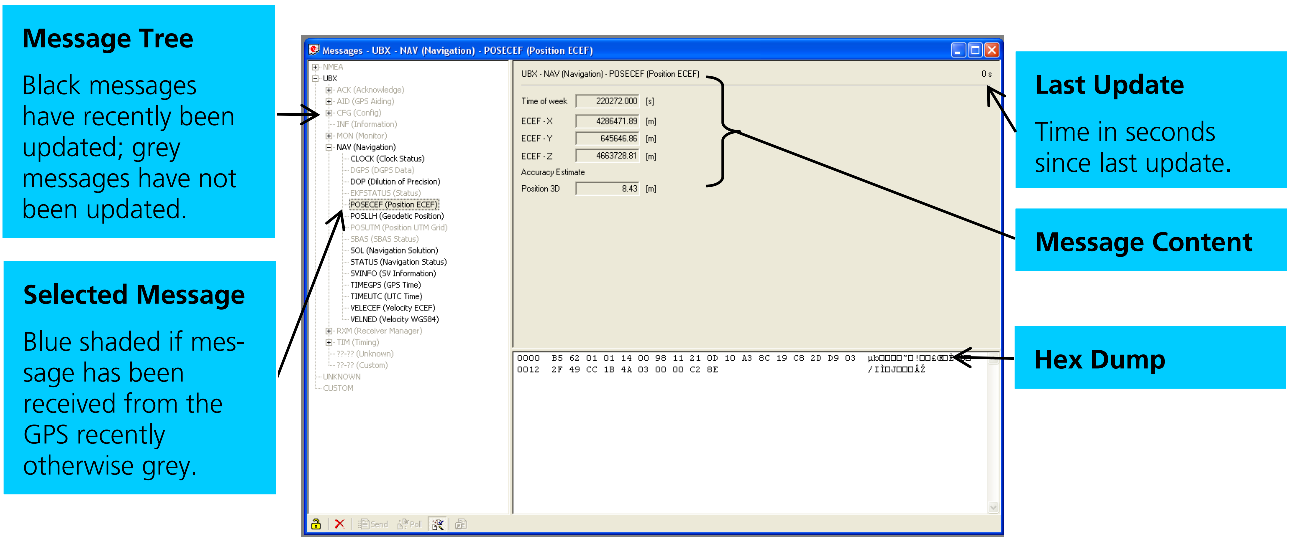


Figure 20: Message Display of an output message

☞ Double-clicking on an output message enables or disables the periodic message update if the communication protocol is active. This feature is currently only supported for the UBX protocol.

4.5.4.2 Receiver Input Messages

Input messages can be edited and sent to the GPS receiver from the Message View. It is also possible to poll the current receiver settings.

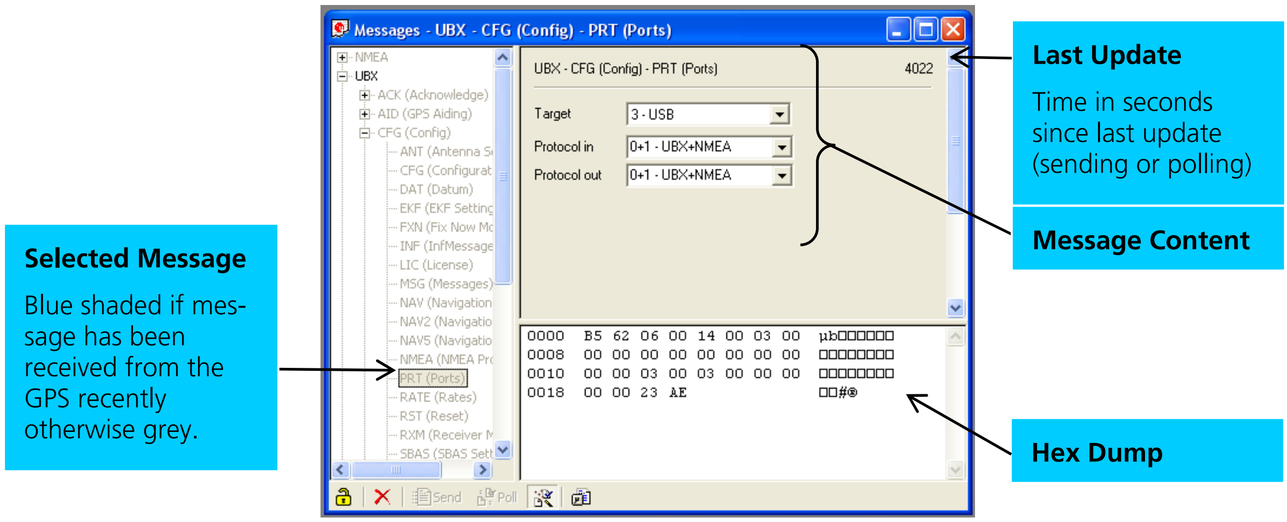


Figure 21: Message Display of an input message

☞ u-center performs some range checks on input messages. If an input value exceeds the permitted range, u-center will highlight the field in red but it is still possible to send the value to the receiver. However, the receiver is likely to reject such a message.

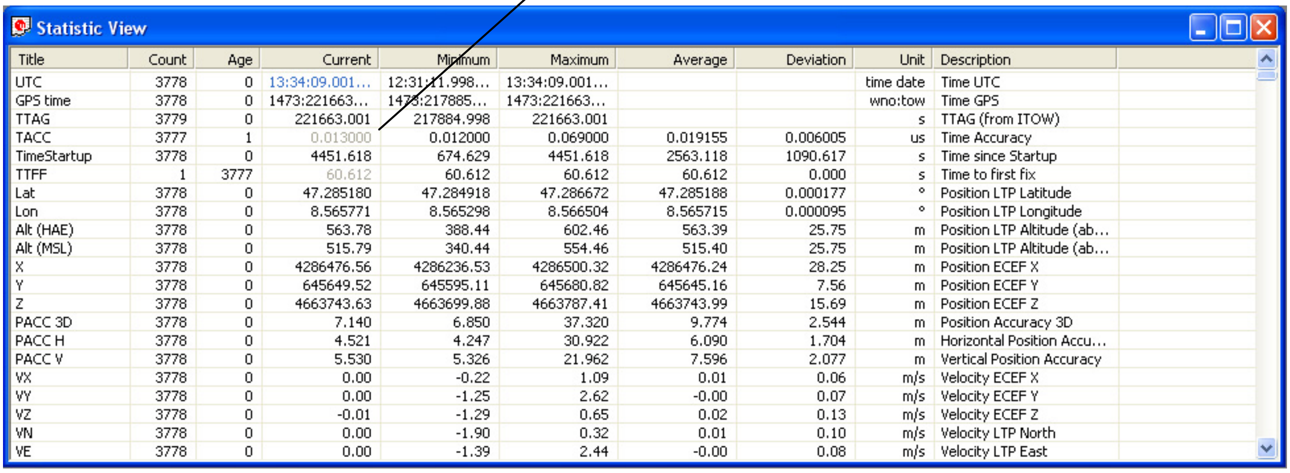
4.5.5 Statistic View

All available GPS values (transmitted from the GPS receiver or calculated by *u-center*) are displayed. The following statistics are displayed:

- Current Value
- Minimum Value
- Maximum Value
- Average Value
- Standard Deviation

Grey color: the value was not set for the current epoch

Empty field: data is not available



Title	Count	Age	Current	Minimum	Maximum	Average	Deviation	Unit	Description
UTC	3778	0	13:34:09.001…	12:31:11.998…	13:34:09.001…			time date	Time UTC
GPS time	3778	0	1473:221663…	1473:217885…	1473:221663…			wno:tow	Time GPS
TTAG	3779	0	221663.001	217884.998	221663.001			s	TTAG (from ITOW)
TACC	3777	1	0.013000	0.012000	0.069000	0.019155	0.006005	us	Time Accuracy
TimeStartup	3778	0	4451.618	674.629	4451.618	2563.118	1090.617	s	Time since Startup
TTFF	1	3777	60.612	60.612	60.612	60.612	0.000	s	Time to first fix
Lat	3778	0	47.285180	47.284918	47.286672	47.285188	0.000177	°	Position LTP Latitude
Lon	3778	0	8.565771	8.565298	8.566504	8.565715	0.000095	°	Position LTP Longitude
Alt (HAE)	3778	0	563.78	388.44	602.46	563.39	25.75	m	Position LTP Altitude (ab…
Alt (MSL)	3778	0	515.79	340.44	554.46	515.40	25.75	m	Position LTP Altitude (ab…
X	3778	0	4286476.56	4286236.53	4286500.32	4286476.24	28.25	m	Position ECEF X
Y	3778	0	645649.52	645595.11	645680.82	645645.16	7.56	m	Position ECEF Y
Z	3778	0	4663743.63	4663699.88	4663787.41	4663743.99	15.69	m	Position ECEF Z
PACC 3D	3778	0	7.140	6.850	37.320	9.774	2.544	m	Position Accuracy 3D
PACC H	3778	0	4.521	4.247	30.922	6.090	1.704	m	Horizontal Position Accu…
PACC V	3778	0	5.530	5.326	21.962	7.596	2.077	m	Vertical Position Accuracy
VX	3778	0	0.00	-0.22	1.09	0.01	0.06	m/s	Velocity ECEF X
VY	3778	0	0.00	-1.25	2.62	-0.00	0.07	m/s	Velocity ECEF Y
VZ	3778	0	-0.01	-1.29	0.65	0.02	0.13	m/s	Velocity ECEF Z
VN	3778	0	0.00	-1.90	0.32	0.01	0.10	m/s	Velocity LTP North
VE	3778	0	0.00	-1.39	2.44	-0.00	0.08	m/s	Velocity LTP East

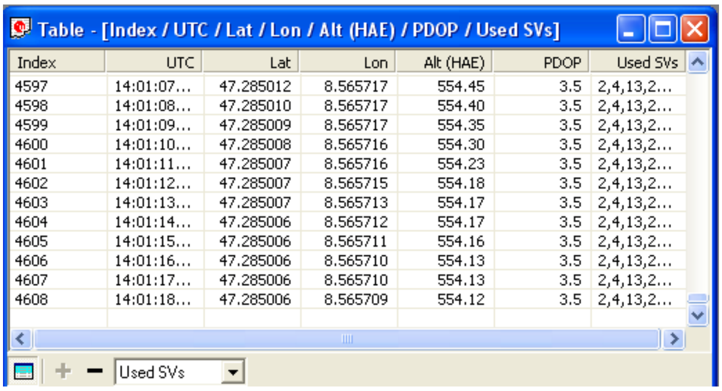
Figure 22: Statistic View

☞ Choosing Database Empty in the File Menu or pressing the Button deletes the Statistic View.

☞ The content of the Statistic View can easily be exported to other programs using Copy/Paste.

4.5.6 Table View

All values from the database can be displayed in a tabular form (Figure 23). This is very useful when analysing logfile in detail.



Index	UTC	Lat	Lon	Alt (HAE)	PDOP	Used SVs
4597	14:01:07…	47.285012	8.565717	554.45	3.5	2,4,13,2…
4598	14:01:08…	47.285010	8.565717	554.40	3.5	2,4,13,2…
4599	14:01:09…	47.285009	8.565717	554.35	3.5	2,4,13,2…
4600	14:01:10…	47.285008	8.565716	554.30	3.5	2,4,13,2…
4601	14:01:11…	47.285007	8.565716	554.23	3.5	2,4,13,2…
4602	14:01:12…	47.285007	8.565715	554.18	3.5	2,4,13,2…
4603	14:01:13…	47.285007	8.565713	554.17	3.5	2,4,13,2…
4604	14:01:14…	47.285006	8.565712	554.17	3.5	2,4,13,2…
4605	14:01:15…	47.285006	8.565711	554.16	3.5	2,4,13,2…
4606	14:01:16…	47.285006	8.565710	554.13	3.5	2,4,13,2…
4607	14:01:17…	47.285006	8.565710	554.13	3.5	2,4,13,2…
4608	14:01:18…	47.285006	8.565709	554.12	3.5	2,4,13,2…

Figure 23: Table View

To add a new column, first select the desired value (*Figure 24*) and click the **+** Button. To remove a displayed value, click the **–** Button. To see the Table header click the Button.

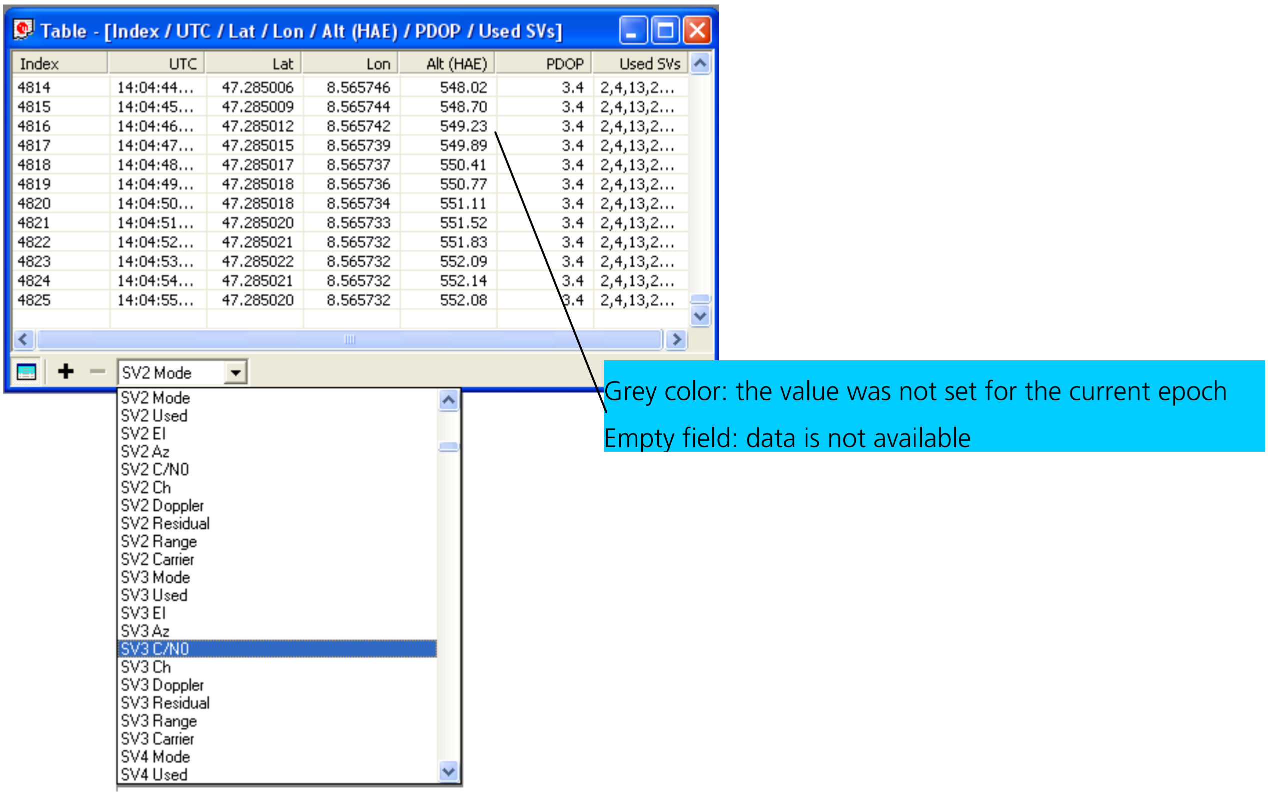


Figure 24: Selecting a new value

The number of displayed epochs is set to 1800 by default (see also *section 3.2.5* Database Limitation).

Choosing Database Empty in the File Menu or pressing the Button deletes the Table View.

The content of the Statistic View can easily be exported to other programs using Copy/Paste.

With the function **Recent Table View** one of the last 8 used tables can be selected (Figure 25) and displayed.

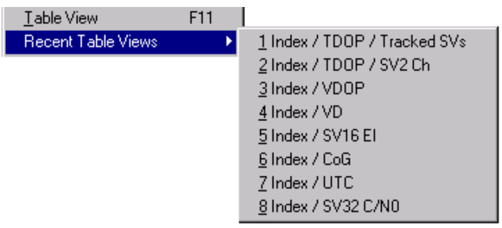


Figure 25: Recently used tables

4.5.7 Chart View

Chart View allows the user to conveniently view GPS-Data records in graphical form. The data can be scaled in many different ways and formats. It's even possible to print the entire chart.

The examples below illustrate 3 different typical applications

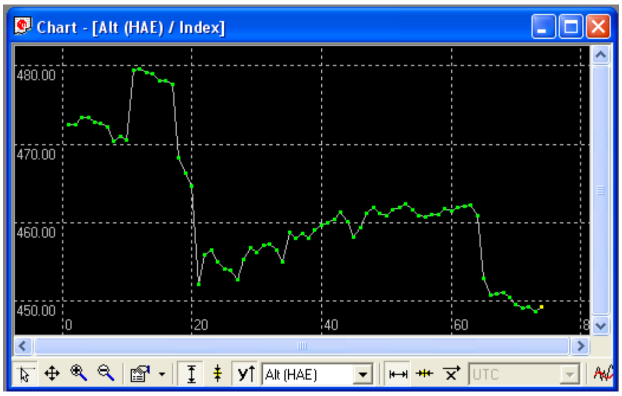


Figure 26: Altitude as a function of Index (X = Index, Y = Alt)

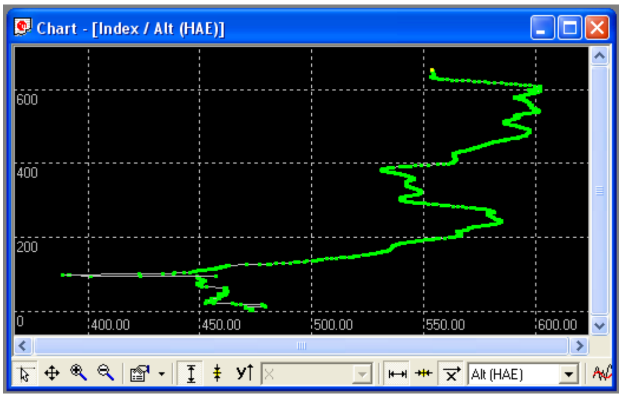


Figure 27: Index as a function of Altitude (X = Altitude, Y = Index)

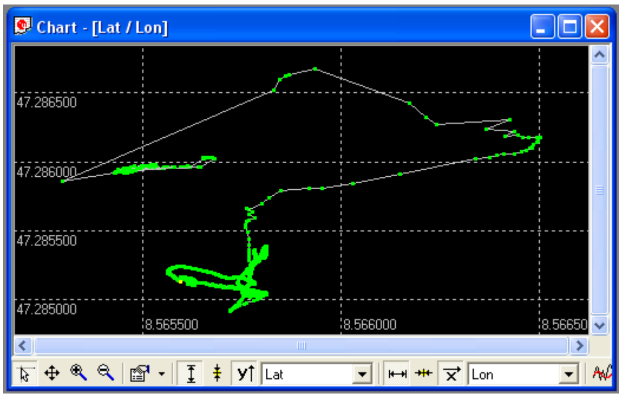


Figure 28: Latitude as a function of Longitude (X =Longitude, Y = Latitude)

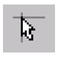
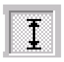
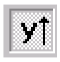
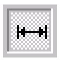
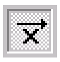
Element	Name	Description
	Cursor	The cursor position is shown in the lower left edge of the u-center windows. Click the right button mouse and hold the button down to measure differences.
	Move	The chart is moved inside the Chart View Window. Click and Drag/Drop the Chart.
	Zoom In	Drawing a rectangle enlarges the chart to the new view. To zoom in the Chart 2x click on the chart
	Zoom Out	Drawing a rectangle decreases the chart to the new view. To zoom out the Chart 2x click on the chart
	Drawing Mode	The size and form of the displayed values can be changed in the menu points; the connection line between the values can be selected in the menu Connect. For viewing the statically values (average, minimum, maximum, standard deviation) directly in the chart select the Statistics Menu
	Fit Y	Fit the Y Range
	Follow Y	Follow the most current Y-Value (the most current Y-value is always in the middle of the chart)
	Index or Y Value	Switch between the Index and the Y Value
	Y Value	Select the Y Value to be displayed
	Fit X	Fit the X Range
	Follow X	Follow the most current X-Value (the most current X-Value is always in the middle of the chart)
	Index or X Value	Switch between the Index and the X Value
	X Value	Select the X Value to be displayed
	Moving Average	Adds a moving average. The average is calculated over the number of most recent values, specified with the parameter.

Table 5: Description of the buttons and displays in Chart View

☞ The number of displayed epochs is set to 1800 by default (see also *section 3.2.5*).

4.5.8 Histogram View

Histogram Views allow the user to view GPS-Data and probability distributions (Figure 29) and print the entire histogram if desired. The number of bins (storage containers) can be set by the user.

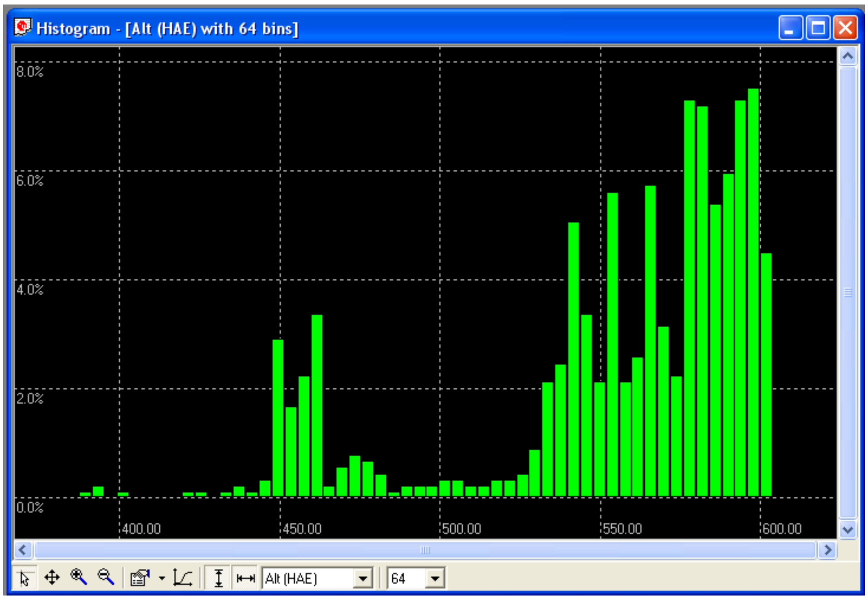


Figure 29: Altitude Histogram View

Figure 30: Probability Chart

The number of displayed epochs is set to 1800 by default (see also *section 3.2.5*).

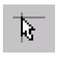
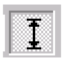
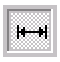
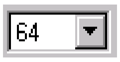
Element	Name	Description
	Cursor	The cursor position is shown in the lower left edge of the u-center windows. Click the right button mouse and hold the button down to measure differences.
	Move	The Histogram is moved inside the Histogram View Window. Click and Drag/Drop the Histogram.
	Zoom In	Drawing a rectangle enlarges the Histogram to the new view. To zoom in the Histogram 2x click on the Histogram
	Zoom Out	Drawing a rectangle decreases the Histogram to the new view. To zoom out the Histogram 2x click on the Histogram
	Drawing Mode	The size and form of the displayed values can be changed in the menu Points. The connection line between the values can be selected in the menu Connect. For viewing the statically values (average, minimum, maximum, standard deviation) directly in the Histogram select the Statistics Menu
	Probability	Display the probability Histogram (Figure 30)
	Fit Probability	Fit the Probability Range
	Fit X	Fit the X Range
	Y Value	Select the Y Value to be displayed
	Bins	The number of Bins

Table 6: Description of the buttons and displays in Histogram View

4.5.9 Camera View

The Camera View function enables photographs, taken during recording of log files, to be linked to the GPS data stored in the corresponding log files. This allows a video depiction of the test, with a picture assigned to a specific point of GPS data.

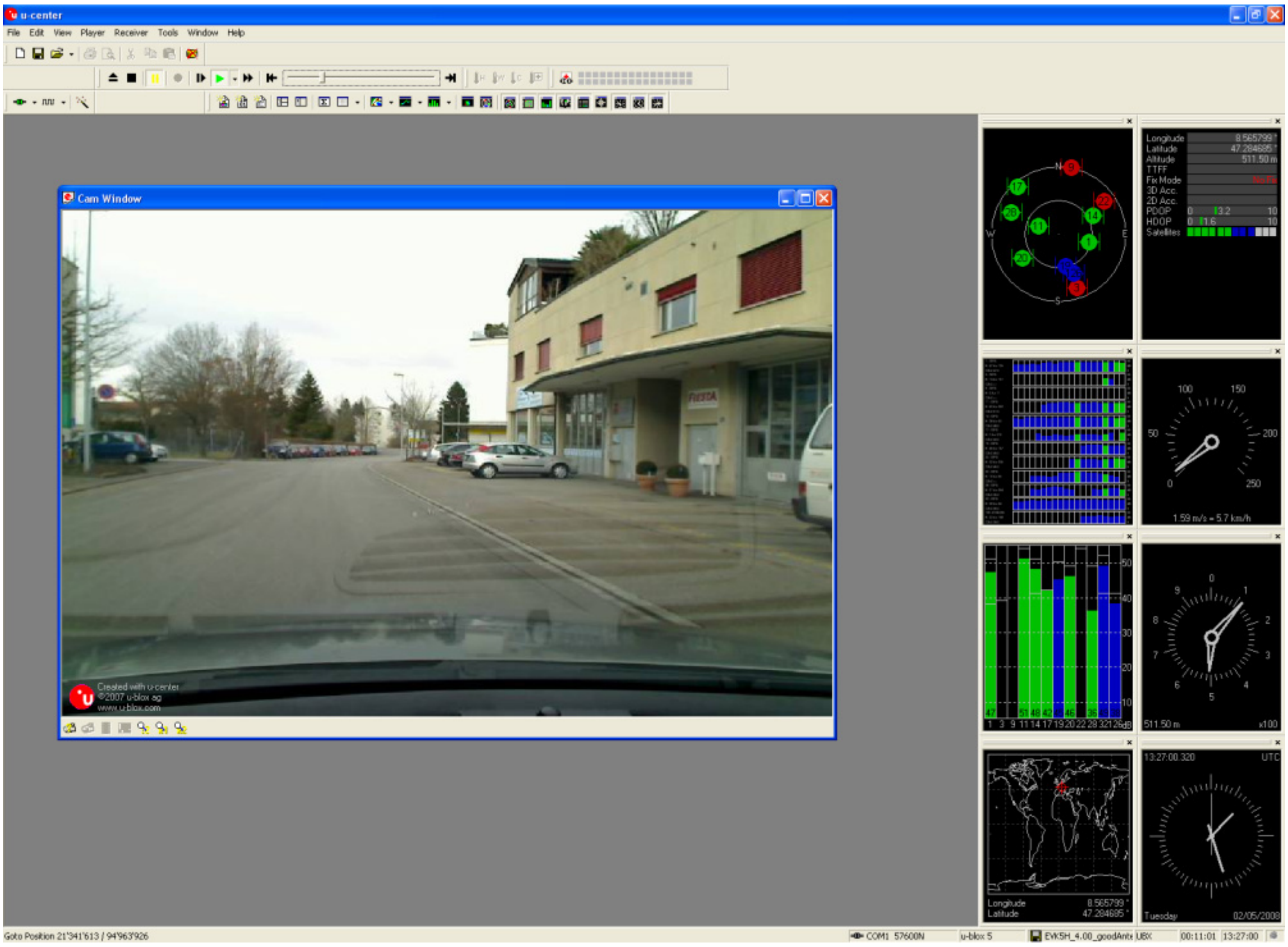


Figure 31: Camera View

☞ Using Camera View can result in very large logfiles and can slow down u-center when playing such files.

4.5.10 Deviation Map

The Deviation Map displays positions in longitude and latitude relative to a defined reference position.

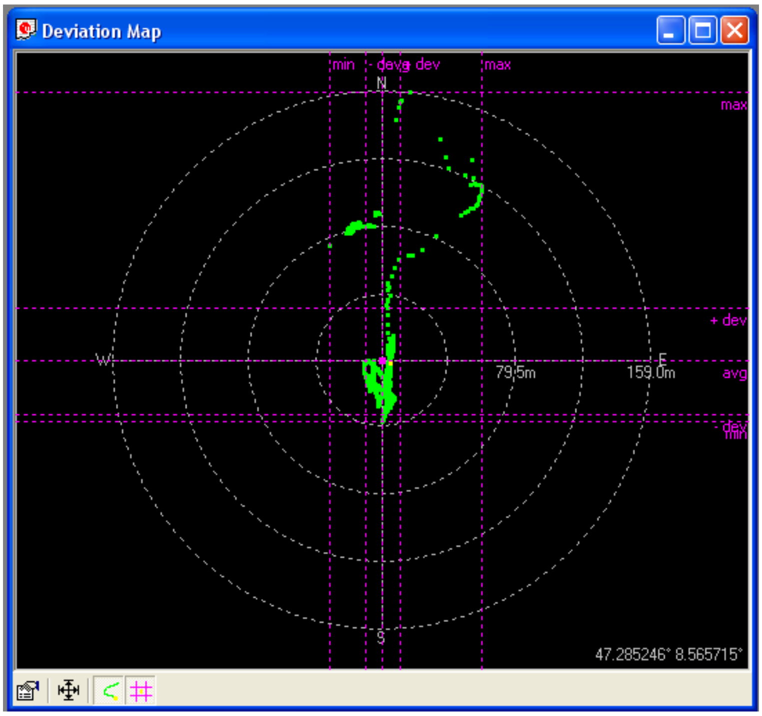


Figure 32: Deviation Map

Element	Name	Description
	Properties	The Reference Position can be defined as: The average of all previously measured positions The current position A fixed, predefined value The radius of the outer circle can be adjusted with the Max. Deviation parameter.
	Fit	Automatically adjusts the Reference Position and the Max. Deviation to fit all positions into the Deviation Map.
	Track	
	Statistics	

Table 7: Description of the buttons and displays in Deviation Map

☞ The number of displayed epochs is set to 1800 by default (*Section 3.2.5*).

4.5.11 Map View

u-center can display positions on pre-calibrated maps (Figure 33). This allows a basic analysis of road tests.

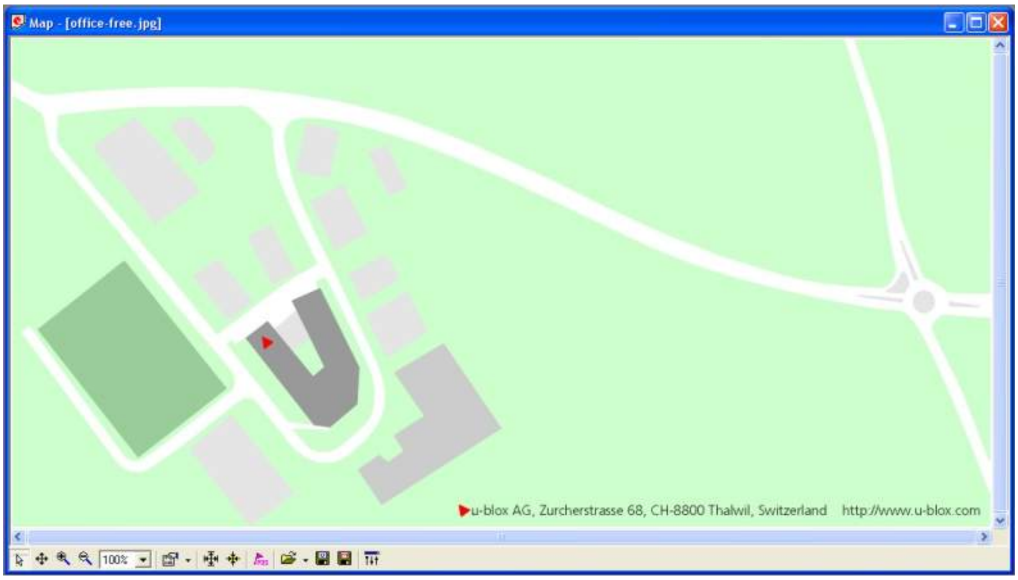
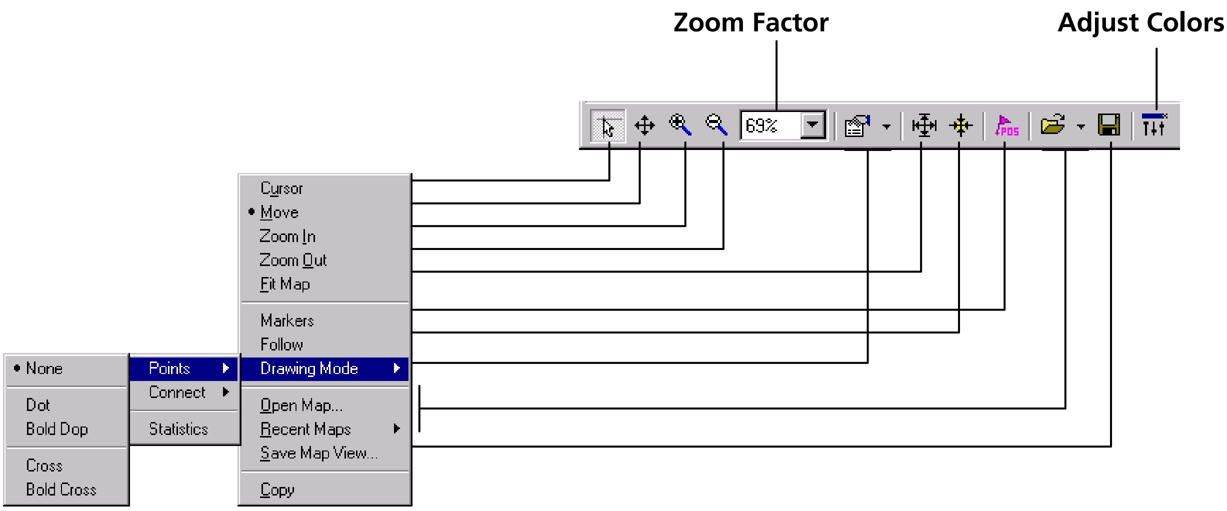


Figure 33: Displaying a position

4.5.11.1 Using Map View

You can access the view specific commands in two different ways:

- Using the command in the Tool Bar below the Map View.
- Holding the cursor inside the Map View and pressing the right mouse button will. This will open a context menu:



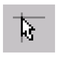
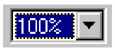
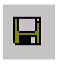
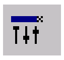
Element	Name	Description
	Cursor	The position of the cursor is shown on the lower left edge of the u-center screen (Longitude, Latitude and Pixel-Position). By holding the left mouse button and moving the cursor over the map you can measure distance from one position to another
	Move	The map inside the Map View Window can be moved
	Zoom In	The map is enlarged by selecting a rectangle
	Zoom Out	The size of the Map is decreased
	Zoom Factor	Different specific zoom level can be selected
	Drawing Mode	The size and form of the displayed position can be changed; the connection line between the points can be selected in the menu Connect. To see statically values (average, minimum, maximum, standard deviation) directly in the map, select the Menu Statistic.
	Fit Map	The map size is adjusted to fit the Map Window
	Follow	Center the map on the current GPS position
	Markers	Add or remove the defined markers (see also *4.5.11.3 Map Calibration)*
	Open Map	Load a new or one of 8 recently used maps.
	Save Map View	The current display can be stored in different formats
	Adjust Colors	Brightness, contrast and color saturation of map can be adjusted by moving the glides

Table 8: Description of the buttons and displays in Map View

☞ Map Views can be copied to the clipboard using the 'Print Screen' function.

☞ Choosing Database Empty in the File Menu or pressing the Button  deletes all recently displayed positions and routes.

4.5.11.2 Application example: Reviewing a road test

- Open a u-center logfile (refer to Section 4.3).
- In the **Player Menu** or player Tool Bar select the menu **Play** or click the button . Deactivate in the **Player Menu** Pause or click the button .
- Now, the stored positions are displayed (Figure 34).

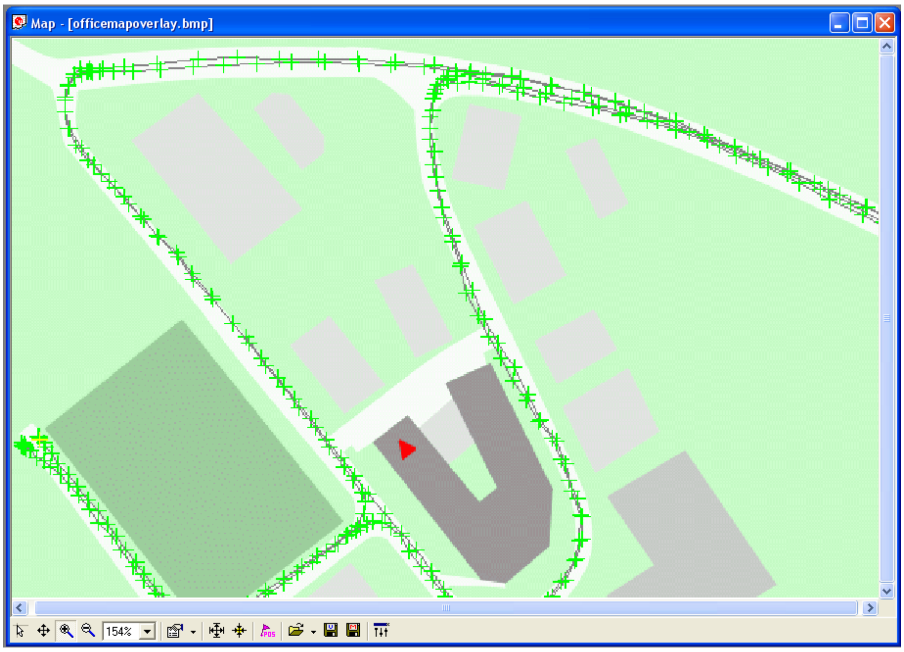


Figure 34: Logfile from a road test

4.5.11.3 Map Calibration

To create your own map you will need a digitized map or pictures with orthogonal projection in one of the following pixel graphics formats.

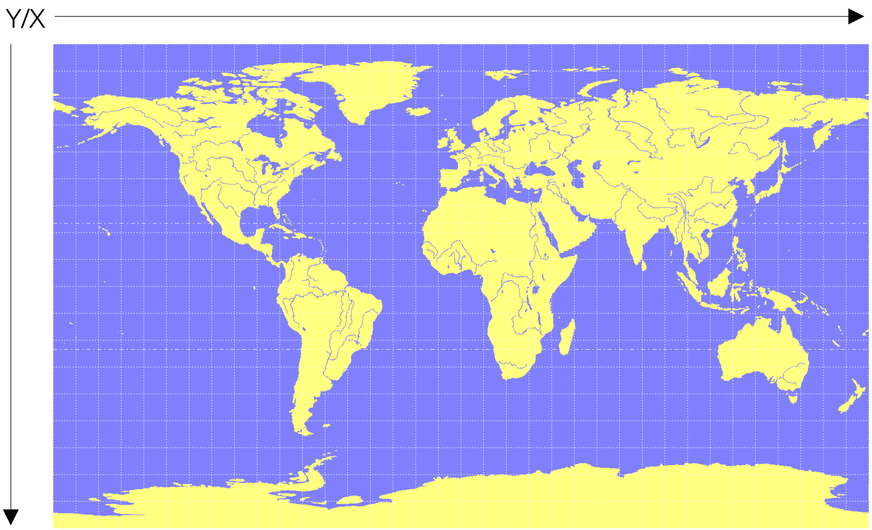
- **png** Portable Network Graphics,
- **bmp** Windows Bitmap
- **dib** Device Independent Bitmap
- **gif** Graphics Interchange Format
- **jpg/jpeg** Jpeg File Interchange Format
- **pcx** PC paintbrush
- **tif** Tag Image File Format

If your map is not in one of the above formats, you can simply convert it in one of the supported formats by a third party program. u-blox provides two sample maps. Office.png is a small map of the surroundings of the u-blox headquarters. World.png is a map of the whole world but with limited resolution.

To use a map in u-center, three calibration points are needed. For these points you have to know the pixel coordinates and the according WGS84 coordinates in the latitude/longitude format in degrees (longitude: -180.0 to 180.0, latitude: -90.0 to 90.0). These points are stored in the map calibration file. The calibration file must be stored at the same location as the bitmap itself. It has the same name but a different extension (*.mcf). The Format of the calibration file is very simple and can be edited in a simple editor like notepad.

Examples:

As an example we will have a closer look at the provided map 'world.png' and its calibration file 'world.mcf'.



Digital Map File: world.png

The Map has 1765 Pixels (0 to 1764) in the horizontal and 1046 Pixels (0 to 1045) in the vertical direction. The origin is the upper left corner. To calibrate this map we will use the following three calibration points (#1 to #3).

		Pixel		**WGS84 Coordinate**	
Reference Point	#	X	Y	Longitude	Latitude
Upper Left Corner	1	0	0	-180.0	90.0
Lower Right Corner	2	1764	1045	180.0	-90.0
Upper Right Corner	3	1764	0	180.0	90.0

To determine the exact pixel position you can use Microsoft Paint (mspaint.exe) or any other pixel-editing program.

The calibration file is a plain ASCII text file. The file may contain comments. The file consists of two sections, which start with keywords encapsulated in braces.

The REFERENCE section, which is mandatory, contains the three points used to calibrate a map. Each reference point is on a single line and has the following syntax:

```
“# = <x>, <y>, <lon>, <lat>”
```

where # is the index of the reference point <x> is the horizontal and <y> is the vertical image coordinate and <lat> is the Latitude and <lon> is the Longitude in degrees and WGS84.

The MARKER section, which is optional, defines additional points on the map. Each point is on a single line with the syntax:

```
“# = i, <x>, <y>[, <text>]” or “# = c, <lat>, <lon>[, <text>]”
```

where # is the index of the marker point <x> is the horizontal and <y> is the vertical image coordinate or <lat> is the Latitude and <lon> is the Longitude in degrees and WGS84. <text> is a optional string in quotes labeling the marker point. The points must have a unique index from 1 to <num>. The maximum marker point index <num> is written to the same section on a separate line with the syntax “Count = <num>”.

```
; I N F O
; ------------------------------------------------------------
; File:   world.mcf
; Source: (sample data set)


; R E F E R E N C E
; ------------------------------------------------------------
; 3 Points must be defined to calibrate a Map
; Parameters:
;   #       = index of the point (1 to 3)
;   x,y     = image coordinates
;   lat,lon = world coordinates
; Syntax:
;   # = <x>, <y>, <lon>, <lat>

[REFERENCE]
1 =    0,     0,  -180.0,  90.0
2 = 1764,  1045,   180.0, -90.0
3 = 1764,     0,   180.0,  90.0


; M A R K E R
; ------------------------------------------------------------
; You can add points (image or world coord) to the map
; Parameters:
;   num     = number of markers that follow
;   #       = index of the point (1 to num)
;   type    = c for world or i image coordinates
;   x,y     = image coordinates
;   lat,lon = world coordinates
;   text    = quoted text decription to the marker (optional)
; Syntax:
;   Count = <num>
;   #     = <type>, <x|lon>, <y|lat>[, <text>]

[MARKER]
Count = 1
1 = c, 8.56525, 47.28519444, "u-blox ag"
```

Map Calibration File: world.mcf

4.5.11.4 Map Calibration Tool

u-center includes a built-in calibration tool for providing coordinates to maps and photographs in supported data formats to create u-center maps. To use the tool open the Map View window as seen in Figure 35 and then as seen in Figure 36 open the file of the map to be calibrated (in our example GoogleScreenShot.bmp).

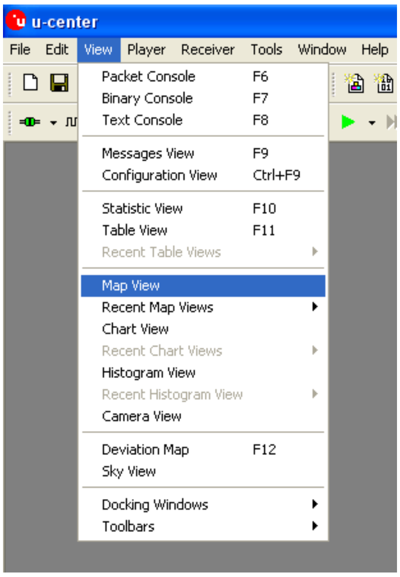


Figure 35: Opening Map View Window

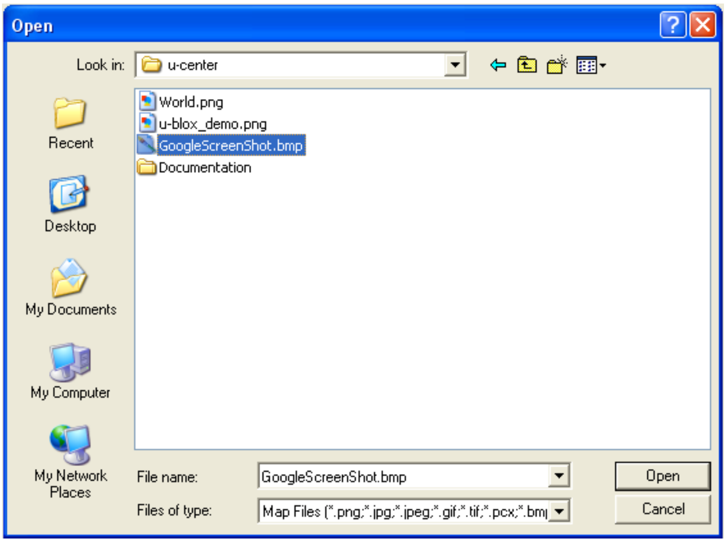
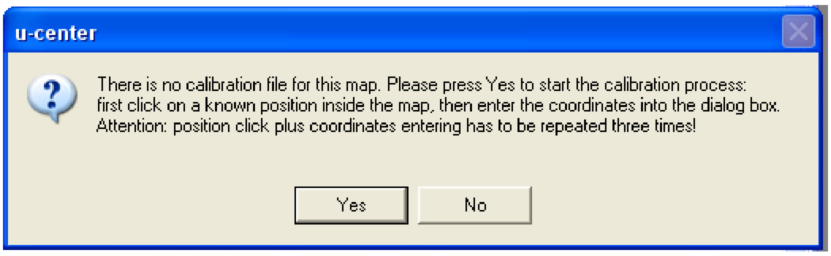


Figure 36: Opening the file of the map to be calibrated

If the file to be opened has not been calibrated, the following message will appear:



Select three points on the map and enter the calibration coordinates in the specified format as seen in Figure 37, Figure 38 and Figure 39.

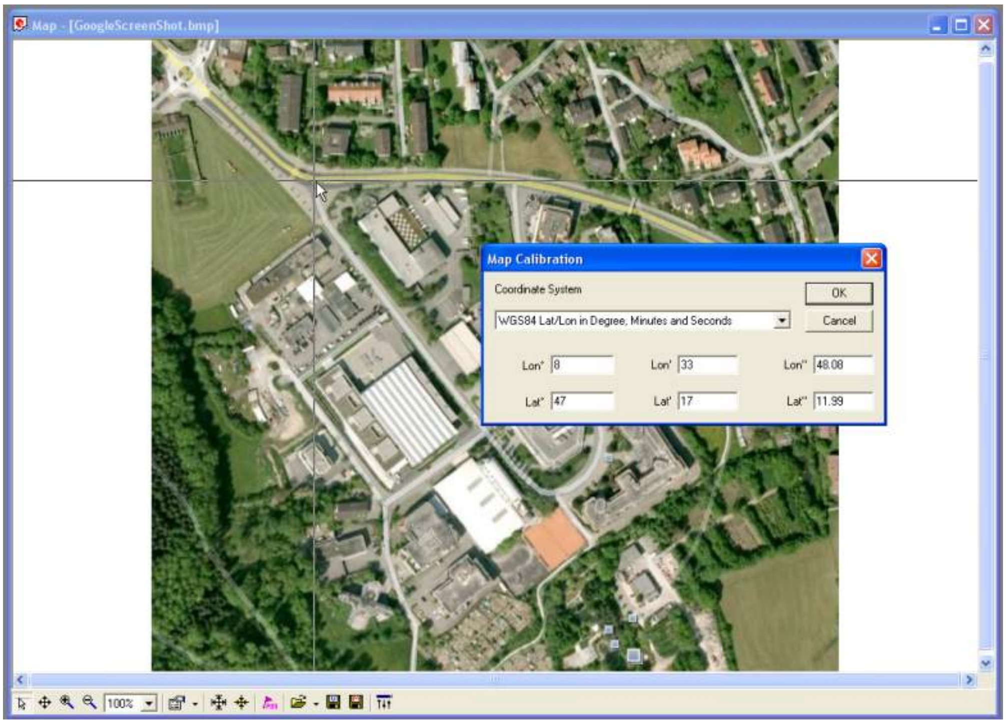


Figure 37: Calibrating a Map Using Calibration Tool (position 1)

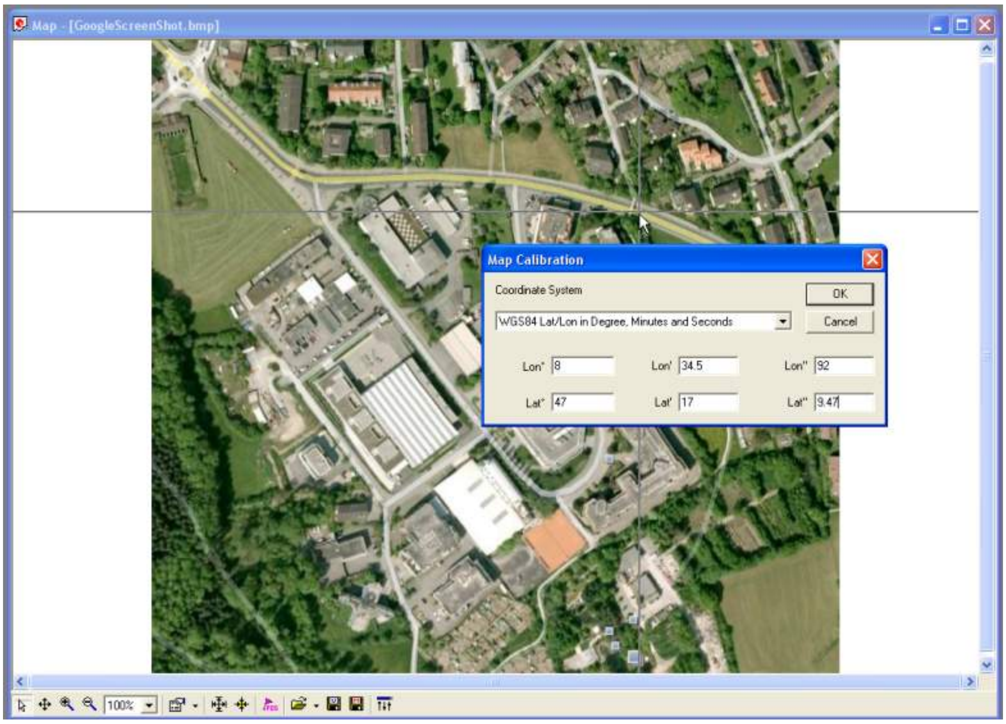


Figure 38: Calibrating a Map Using Calibration Tool (position 2)

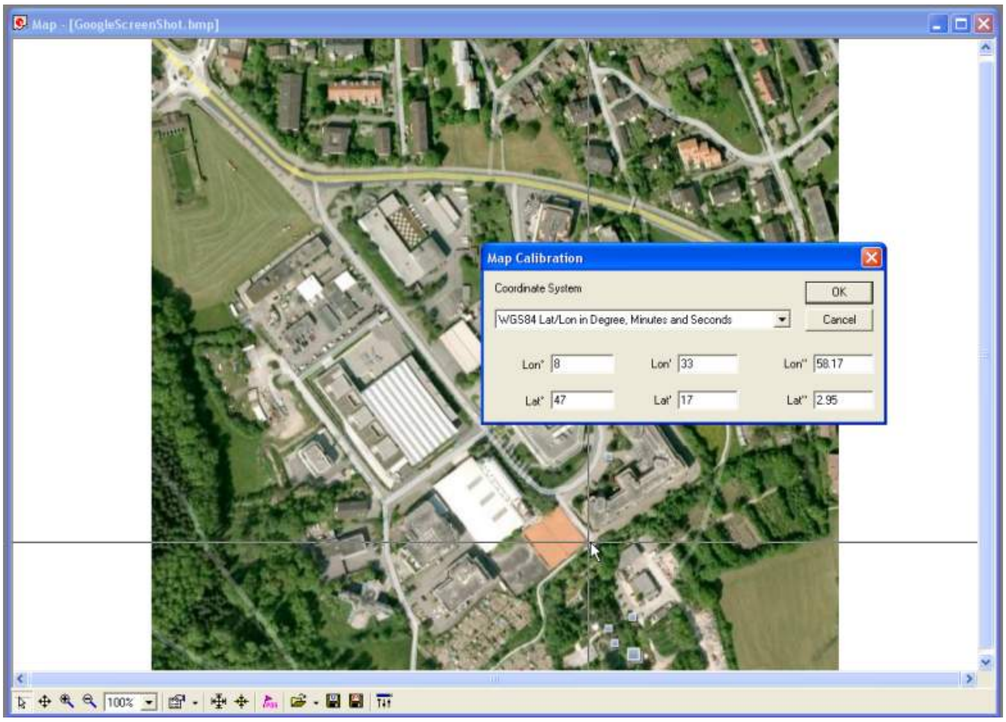


Figure 39: Calibrating a Map Using Calibration Tool (position 3)

Following these steps the map is now calibrated and can be used with u-center for visualizing road tests etc.

4.5.12 Sky View

Sky View is an excellent tool for analyzing the performance of antennas as well as the conditions of the satellite observation environment. The polar plot graphically displays the averaged relative satellite signal strength (Figure 40), the position of satellites in the sky, identifies satellites by number and indicates which satellites are being used in the receiver calculation (see Section 3.1). Right-clicking the mouse on Sky View allows the copying of C/No values in tabular form to another program.

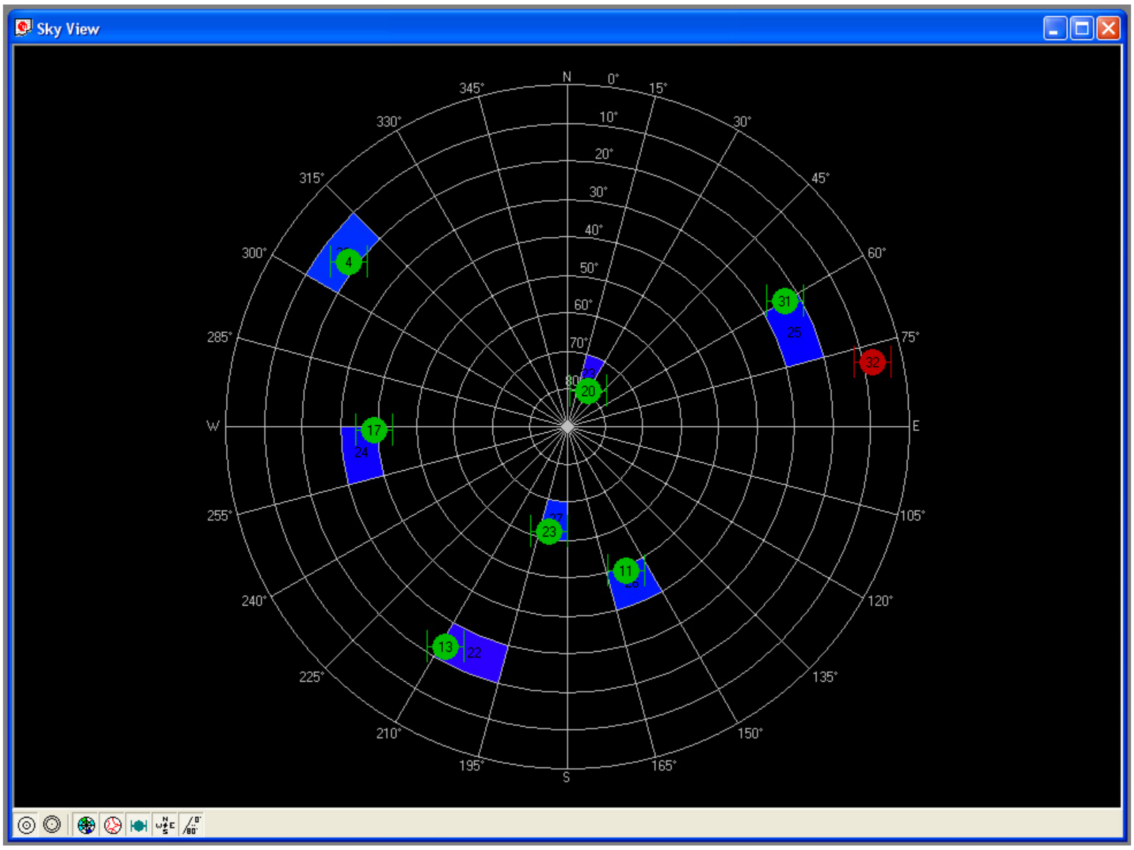


Figure 40: Sky View

Element	Name	Description
	Linear	Selects a linear projection of the Sky View
	Sine	Selects a sinusoidal Projection of the Sky View
	C/No	Displays the averaged C/No values
	Orbits	Displays the orbits of the satellites
	SVs	Displays the current position of the satellites
	Coord.	Adds a caption for the azimuth
	Elevation	Adds a caption for the elevation

Table 9: Description of the toolbar in Sky View

4.6 Receiver Menu and Receiver Toolbar

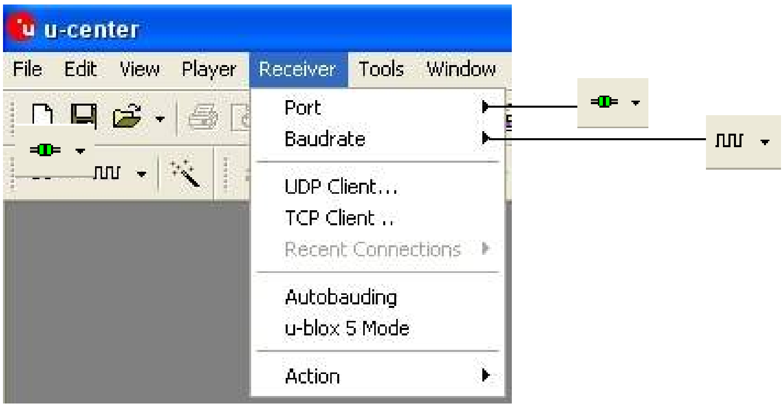
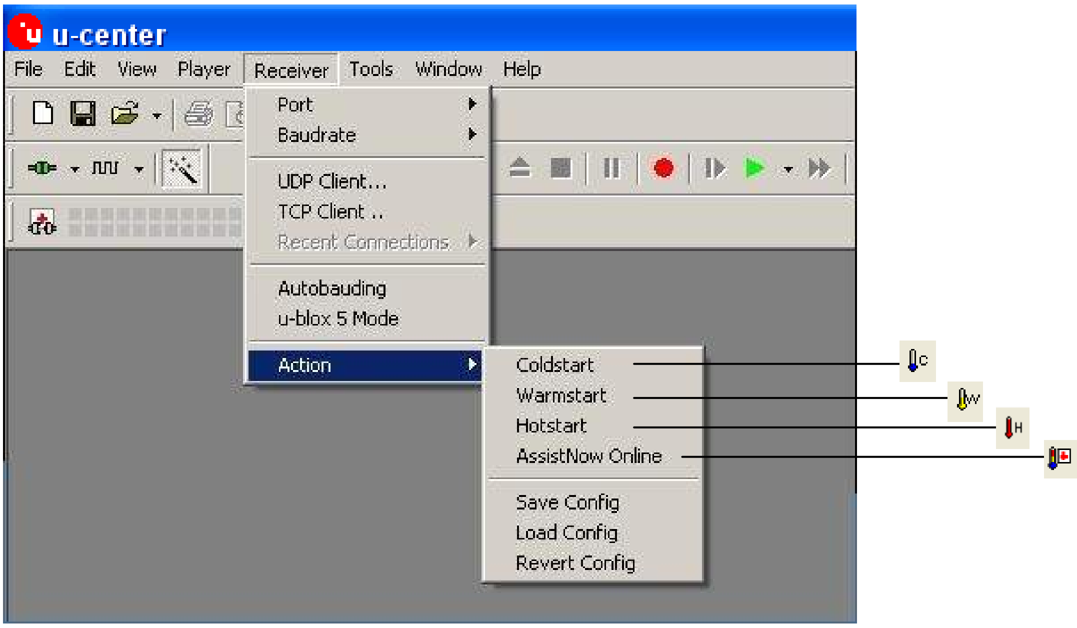


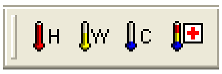
Figure 41: Receiver Menu with corresponding icons from Receiver Toolbar

In order to communicate with a GPS receiver, u-center must have the correct COM port settings. Please refer to *Section 2.4* for a description of the settings.

☞ Only the COM Ports, that are available on your computer, will show up in the COM Port drop down list. If a COM Port is grayed out, another application on the computer is using it.

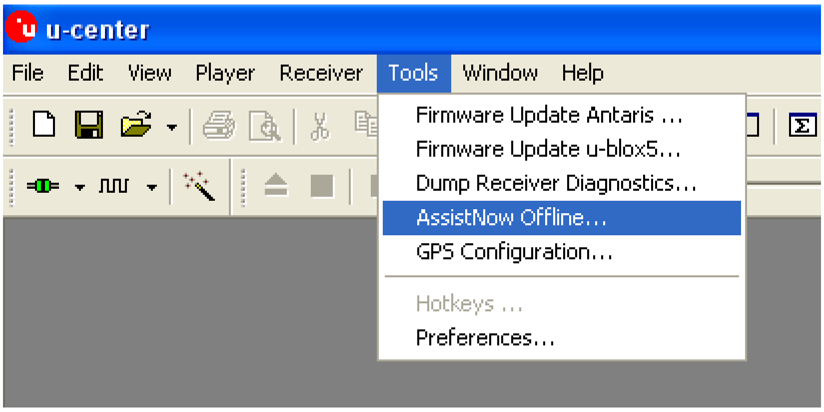
4.7 Action Toolbar and Menu





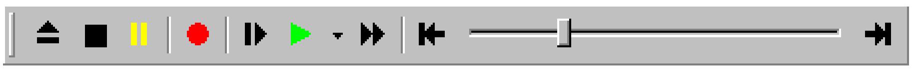
The Action toolbar and menu are used to command the receiver to perform a Cold-, Warm- or Hotstarts, or to implement the AssistNow Online Aiding (A-GPS) function. More information about AssistNow Online is available from our website at: http://www.u-blox.com/services/assistnow_online.html. In order to take advantage of AssistNow Online, customers must register with u-blox. Please contact your nearest u-blox sales office to get access details.

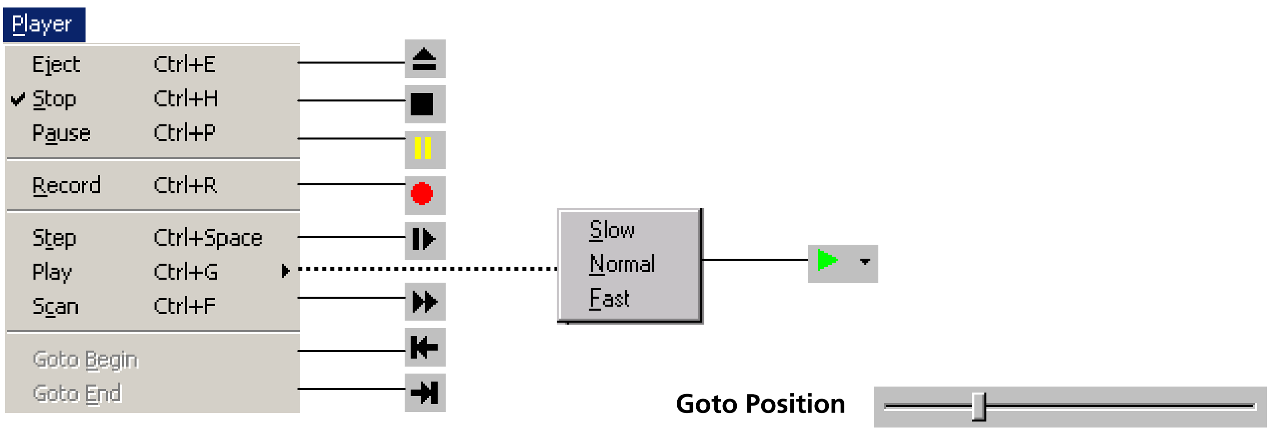
4.8 AssistNow Offline Toolbar and Menu



The AssistNow Offline Toolbar and menu is used to download AlmanacPlus aiding data for A-GPS. AlmanacPlus data files are available in various sizes to provide aiding for periods of 1 to 14 days. More information about AssistNow Offline is available from our website at: http://www.u-blox.com/services/assistnow_offline.html.

4.9 Player Menu and Player Toolbar





The primary function of the Player is to display previously recorded GPS data from a file. Refer to Section4.3 for a description on how to create or open a log file. Using the player controls, you can step through or play all messages from the log file. The series of buttons in the player toolbar can be used to navigate through the log file. The records will be displayed on the navigation display window, in the same way that live GPS data is displayed when using u-center. The current file that is being displayed is shown in the box "File in use".

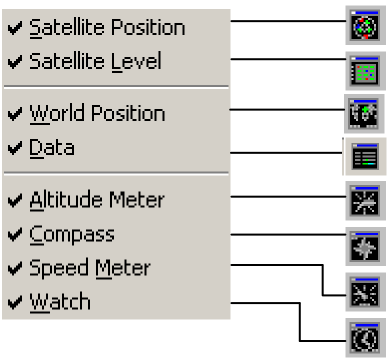
Element	Name	Description
	Eject	Close the active log file
	Stop	Stops displaying or recording to the active log file
	Pause	Pauses displaying or recording to a log file
	Record	Starts recording to the previously created logfile. Please note this function is only available if a logfile has been opened before.
	Step	Single step function, the next message is read
	Play	Starts to display a log file. You can select the speed of the action. After each message the display is updated as required
	Scan	Reads the entire log file into the database and updates the display at the end of the scan period
	Go to Begin	Set the read path to the begin of the log file
	Go to End	Go to the end of the log file
	Go to Position	This slider bar is used to shuttle back and forth through the history log. Pulling the slider to the right will fast-forward the playback, and pulling it to the left will rewind the playback

Table 10: Description of the buttons and the slider in the Player Toolbar

4.10 View Menu: Docking Windows

The Docking Windows are graphic displays, which provide real-time information about the GPS receiver. These are the most commonly used windows for u-center users. Eight different panes can be displayed: receiver status, satellite and signal strength information, position on a world map and 4 analog dials. The windows can be resized, closed or moved anywhere on the screen. Refer to Section 3.1 for an explanation about the color codes.

To open these windows, select ***Docking Windows*** from the ***View*** menu, or simply click on the icons on the View tool bar.



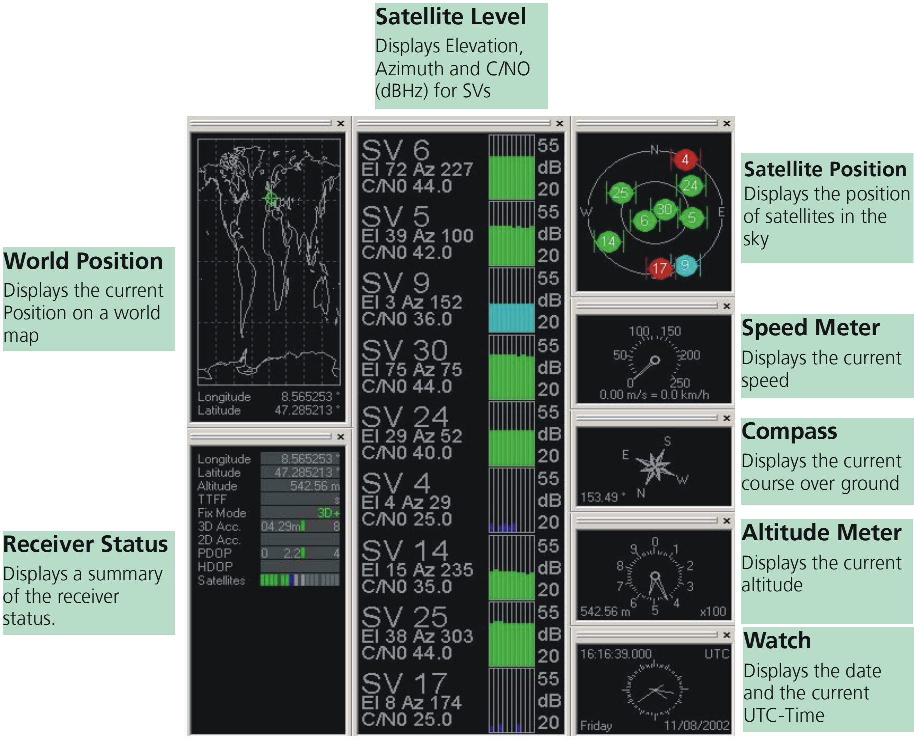


Figure 42: Docking Windows

4.11 Tools Menu

4.11.1 Firmware Update (u-blox 5)

The receiver firmware can be updated with the firmware update function in the Tools Menu.

- Establish the serial communication between u-center and the GPS receiver (see also section 2.4).
- Start the Firmware update tool under u-center menu "Tools" and then "Firmware update u-blox 5".
- Select the path of the Firmware image and Flash definition file (see Figure 43)
- Select the update mode "ROM3 over USB" if you're using the USB port or "Enter Safeboot before update" with USART.
- Select the download baudrate. etc.
- Select "Erase whole Flash" only if you want to delete all stored configuration and factory settings.

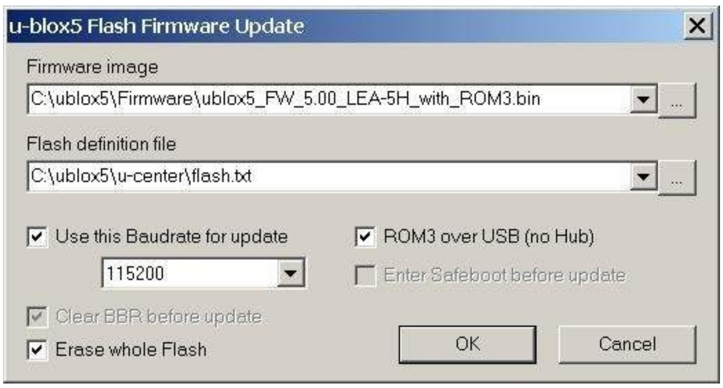


Figure 43: u-blox 5 Firmware update window

4.11.2 Firmware Update (ANTARIS 4)

The receiver firmware can be updated with the firmware update function in the Tools Menu.

- Establish the serial communication between u-center and the GPS receiver (see also *section 2.4*).
- Start the Firmware Update Tool
- Select the path of the 'prodstub' (ATR0620I.exe) and the firmware image.
- Select the 'Production Mode'. ANTARIS® based GPS receivers can be put into boot mode by sending a UBX protocol command. If the GPS receiver connected to u-center is configured for UBX protocol input, choose the 'use serial port' option. Otherwise, select 'use bootmode pin' and put the receiver manually into boot mode.
- Check the COM port (u-center automatically initializes the COM port with the u-center COM port).
- Select the download baudrate. This is the baudrate used during the firmware download. The default value is 115200 baud. The lower this baudrate, the longer a firmware update takes.
- If 'Production Mode' is set to 'serial port with UBX protocol', check the UBX protocol baudrate(u-center automatically initializes it with the u-center baudrate.). The UBX protocol baudrate is only used to enter the download process.
- Initiate the download by pressing the 'Update' button. The GPS receiver will be reset automatically after the download.

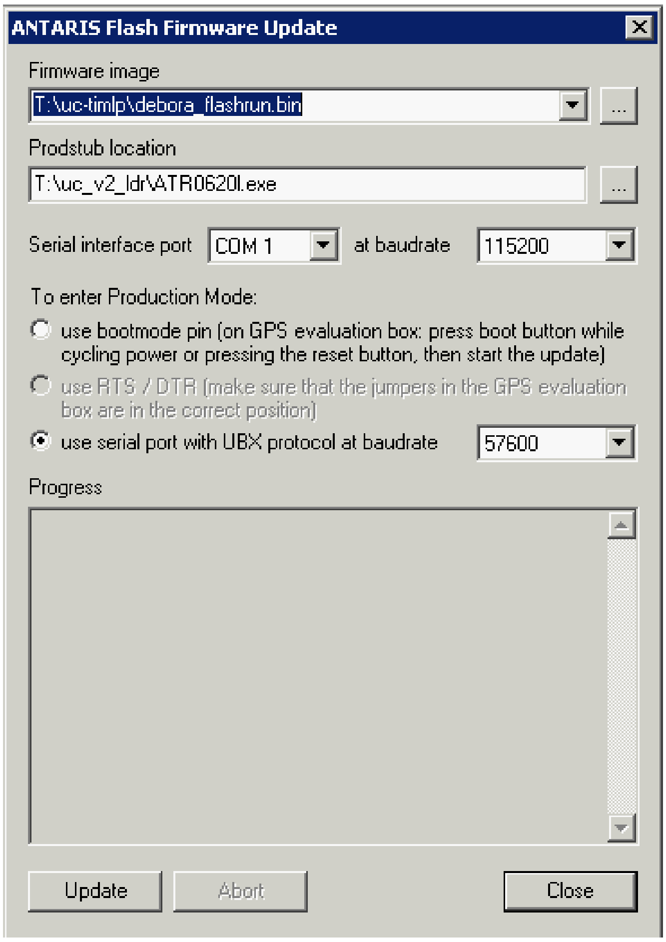


Figure 44: ANTARIS Firmware update window

4.11.3 Dump Receiver Diagnostics

4.11.4 GPS Configuration

u-center is capable of getting the actual configuration of a u-blox GPS receiver and storing it to an ASCII text file containing hexadecimal records. Such a file can be edited and stored to an u-blox GPS receiver again. By clicking the menu "`Tools->GPS Configuration…`" of u-center, the GPS Configuration dialog opens. The following functions are available:

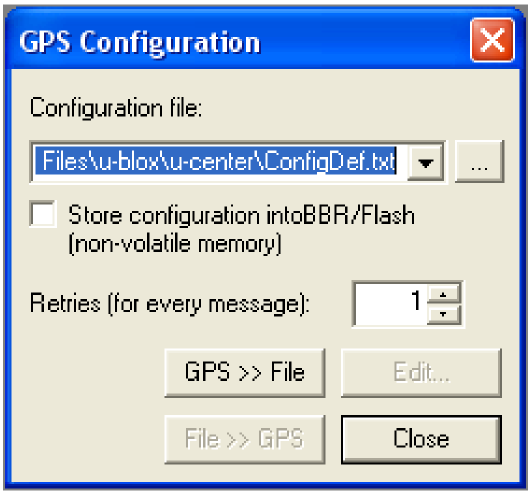


Figure 45: Screenshot, u-center GPS configuration

- Specify the name of a new configuration file to store current configuration from the u-blox GPS receiver
- Specify the name of an existing configuration file and load this configuration into the u-blox GPS receiver
- A flag can be set to force storing the configuration into the Battery Backed RAM (BBR) or Flash EPROM.

If reading or writing configuration data fails too frequently, try to increase the number of retries u-center should do on a single message if one fails.

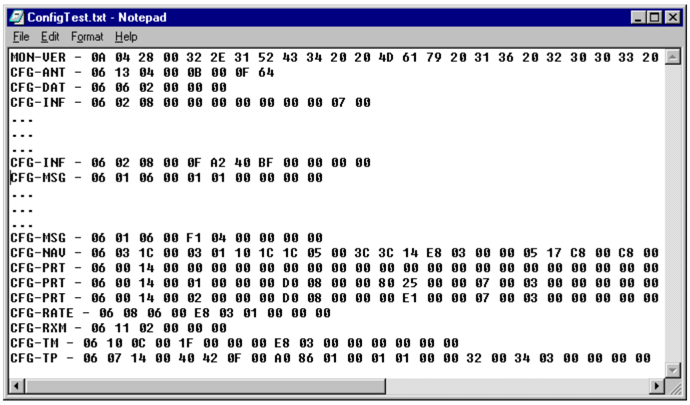
☞ Sending a configuration to a u-blox GPS receiver may fail due to a baud rate change on the current serial port of the receiver where sending this configuration to. If this happens, simply change the u-center baud rate and send the configuration again.

A window shows the progress of data transfer to/from u-blox GPS receivers. Clicking "GPS >> File" closes this dialog box and opens the progress window showing configurations being polled and stored into a local file.

Clicking "File >> GPS" opens the same progress window showing the configurations that are sent to the receiver. This progress window closes after having finished transfer without any error.

The user can abort the transfer by clicking the "`Abort`" button. It's not possible to close the window unless transfer has completed or the user aborted it.

☞ It is not recommended to read/write configuration while the GPS receiver is in sleep mode.




```
MON-VER - 0A 04 28 00 32 2E 31 52 43 34 20 20 4D 61 79 20 31 36 20 32 30 30 33 20
CFG-ANT - 06 13 04 00 0B 00 0F 64
CFG-DAT - 06 06 02 00 00 00
CFG-INF - 06 02 08 00 00 00 00 00 00 00 07 00
...
...
...
CFG-INF - 06 02 08 00 0F A2 40 BF 00 00 00 00
CFG-MSG - 06 01 06 00 01 01 00 00 00 00
...
...
...
CFG-MSG - 06 01 06 00 F1 04 00 00 00 00
CFG-NAV - 06 03 1C 00 03 01 10 1C 1C 05 00 3C 3C 14 E8 03 00 00 05 17 C8 00 C8 00
CFG-PRT - 06 00 14 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
CFG-PRT - 06 00 14 00 01 00 00 00 D0 08 00 00 80 25 00 00 07 00 03 00 00 00 00 00
CFG-PRT - 06 00 14 00 02 00 00 00 D0 08 00 00 00 E1 00 00 07 00 03 00 00 00 00 00
CFG-RATE - 06 08 06 00 E8 03 01 00 00 00
CFG-RXM - 06 11 02 00 00 00
CFG-TM - 06 10 0C 00 1F 00 00 00 E8 03 00 00 00 00 00 00
CFG-TP - 06 07 14 00 40 42 0F 00 A0 86 01 00 01 01 00 00 32 00 34 03 00 00 00 00
```

Figure 46: Content Configuration File

When clicking the "Edit" button in the GPS Configuration dialog, the Notepad editor opens (standard Windows software). Configurations are stored the following way:

- 1st line: it contains the version of the ANTARIS® based GPS receiver where the configuration is from. **Never change this line!**
- For the 2nd line and following each line contains the same: <class ID>-<message ID> - <hexadecimal byte code of the message>. The byte code consists of class and message IDs (2 bytes), payload length (2 bytes), payload (payload length bytes). The sync characters and the checksum are not included. They will be calculated automatically.

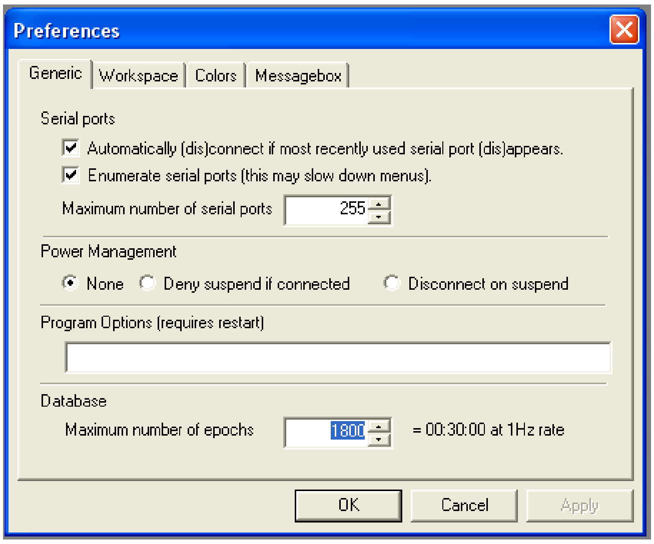
Please refer to *ANTARIS® Protocol Specification [8]* for detailed information and ranges.

4.11.5 Hotkeys

The Tools Menu allows administrating the Hotkeys defined in the Message View. Please refer to Section 4.5.4 for more information on the Hotkeys.

4.11.6 Preferences

The Preferences tool can be used to configure a number of u-center parameters.



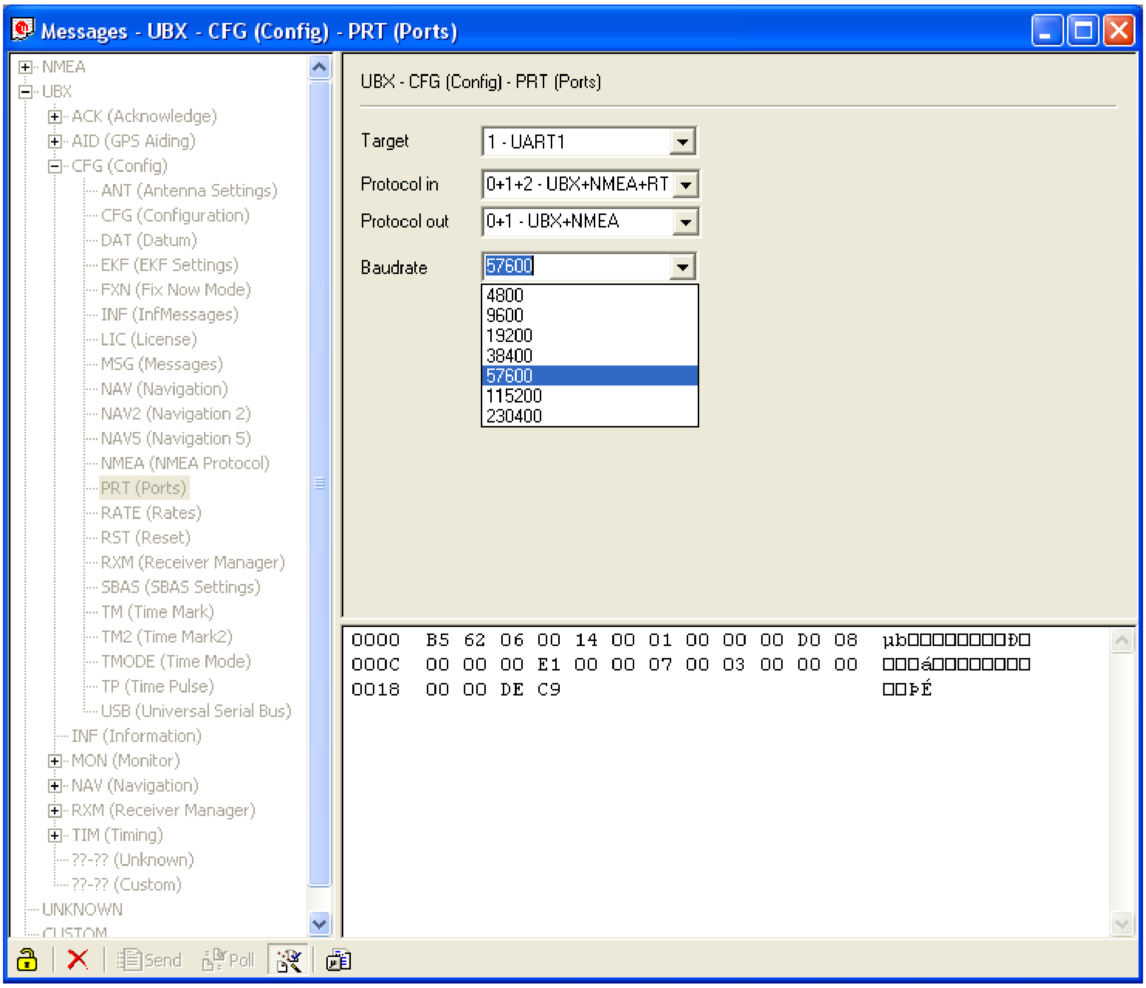
4.12 Windows Menu

The Windows Menu is Windows® compliant.

5 How To

5.1 Change Parameters (Baudrate)

- Connect to receiver.
- Open Message View.
- Select UBX – CFG - PRT



5.2 Save Parameters to receiver non-volatile memory (BBR/Flash)

There are 2 ways to save parameters to the receiver's non-volatile memory (BBR/Flash).

5.2.1 Saving Parameters with UBX-CFG-CFG

- Connect to receiver.
- Open Message View.
- Select UBX-CFG-CFG window.
- Select "save current configuration" (see Figure 47).

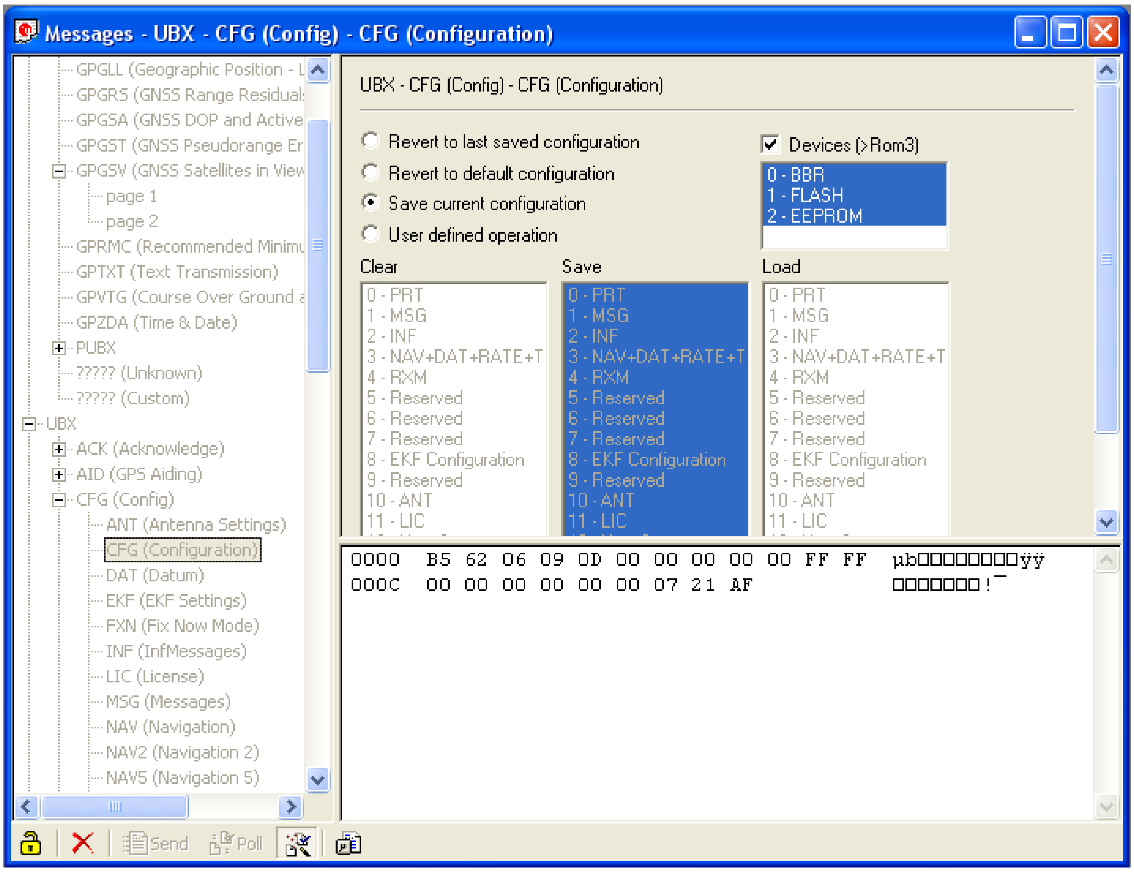


Figure 47: Saving Parameters (UBX-CFG-CFG)

5.2.2 Saving Parameters with GPS Configuration

- Connect to receiver.
- Open Tools / GPS Configuration.
- Select "store configuration into BBR/Flash" checkbox (see Figure 48).

This only applies when sending configuration files to the receiver.

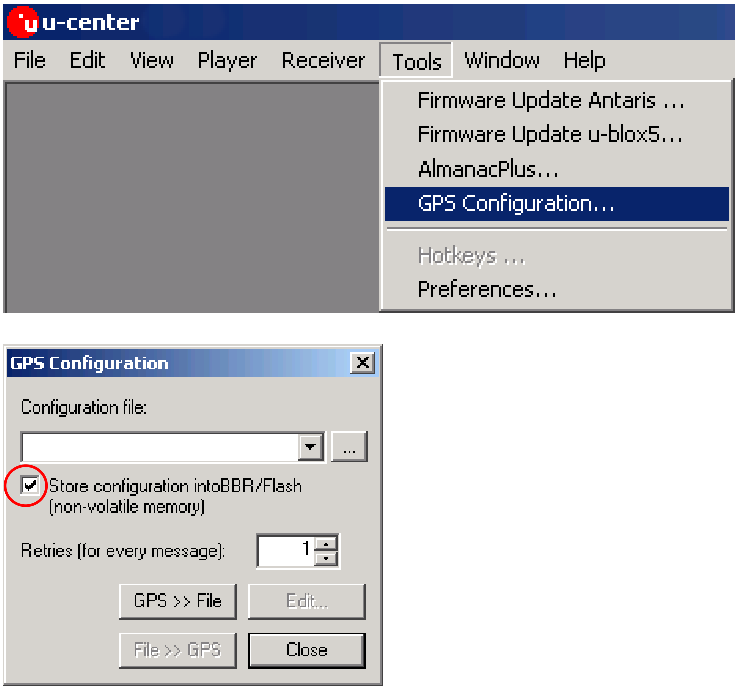


Figure 48: Saving Parameters (GPS Configuration)

5.3 Recording/Playing a Log File

u-center allows recording and playing log files. Use the player controls, to record or playback a log file. Select the log file to be opened through the File Menu tool bar. The series of buttons in the player toolbar can be used to navigate through the log file. The records will be displayed on the navigation display window, in the same way that live GPS data is displayed when using u-center.

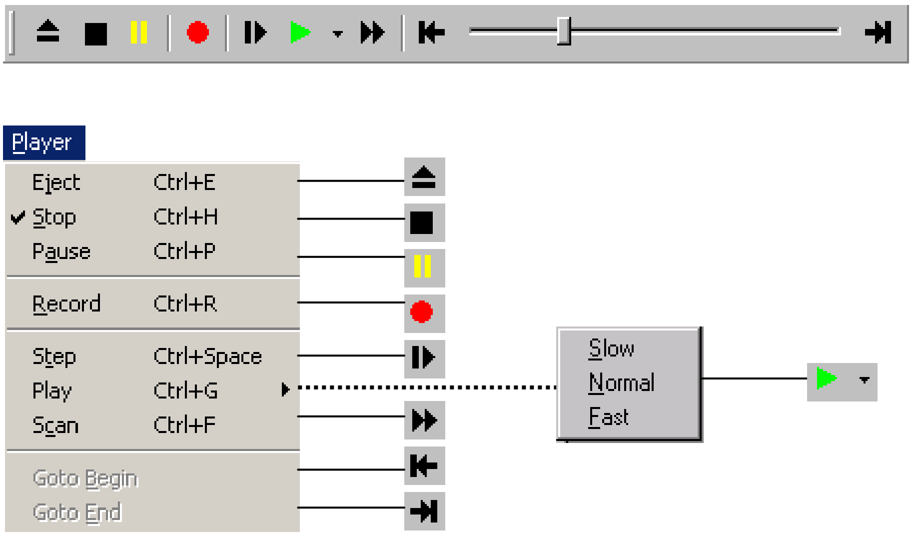


Figure 49: u-center player toolbar

New log files can also be created through the menu bar by selecting File/New. Figure 50 shows an example of a log file.

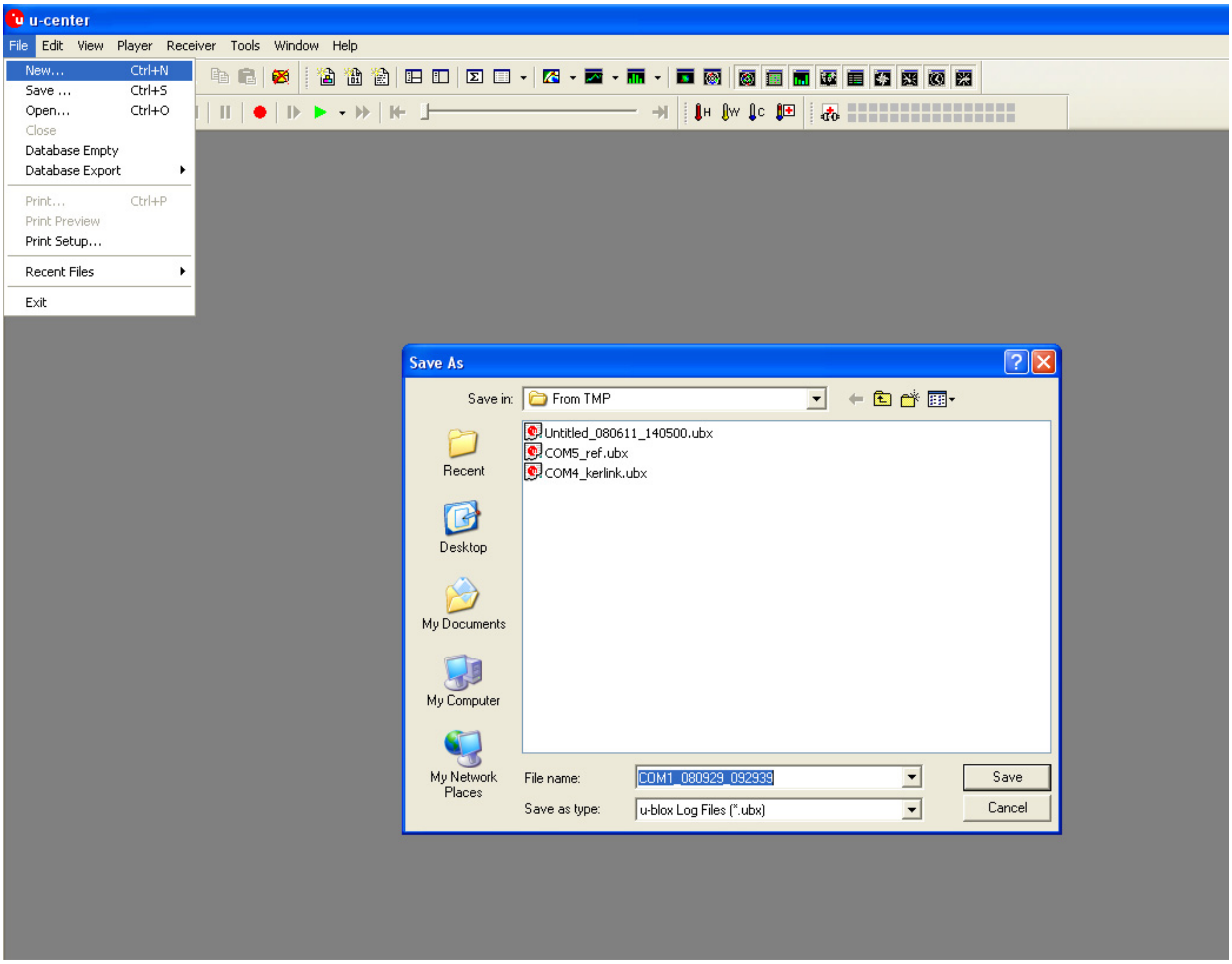


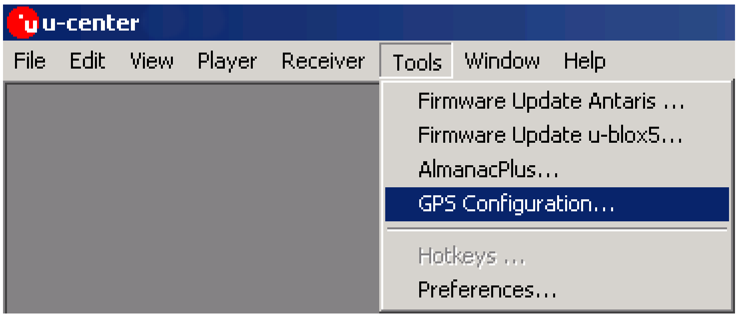
Figure 50: Example of a Log File

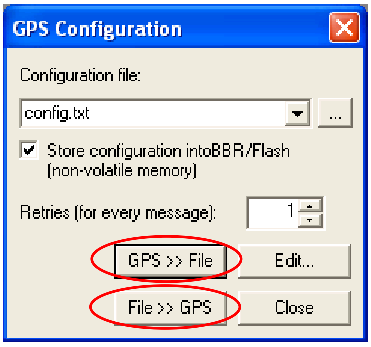
5.4 Conduct Sensitivity Tests

u-center is a useful tool for conducting sensitivity tests of GPS receivers and receiver designs. To do so record a log file under open sky conditions of the receiver to be tested and an Evaluation Kit as reference. Make sure that the log files are recorded under the same conditions. Using the Statistic View or Table View windows from u-center, compare the C/N0 values of the five strongest satellites. When using Table view, export the values to a spreadsheet for analysis.

5.5 Read/Write Configuration Files

- Connect to receiver.
- Open Tools / GPS Configuration.
- select the name of the configuration file to be read or written.
- Select "File>>GPS" button to read or"GPS>>File" to write configuration files.





6 Troubleshooting

NMEA or UBX protocol is not available in the Message View

u-center uses dynamic link libraries (DLL). The installation program will automatically install the required DLL's into the u-center program directory. Should you try to copy a u-center installation from one location to another, make sure you also copy the DLL files. Verify, the version of u-center matches the DLL version.

u-center doesn't display all messages

Make sure the baudrate is sufficient. If the bandwidth is insufficient, GPS receivers based on the ANTARIS™ GPS Technology will skip excessive messages.

Some serial port cards/adapters (i.e. USB to RS232 converter) frequently generate errors. If a communication error occurs during while u-center receives a message, the message will be discarded.

u-center loses the connection to the GPS receiver

u-center u-blox GPS receivers have an autobauding feature. If frequent communication errors occur (i.e. due to problems with the serial port), the connection may be lost as u-center and the GPS receiver will autonomously try to adjust the baudrate. Do not enable the u-center autobauding feature if the GPS receiver has the autobauding enabled.

Some COM port are not shown in the port list

Only the COM Ports, that are available on your computer, will show up in the COM Port drop down list. If a COM Port is grayed out, another application in the computer is using it.

PC is very slow when u-center runs

If a high value of epochs is selected, the display in real-time can not be guaranteed, especially when many graphical Views are open. u-center does not update minimized Views and Console in real-time. Close or minimize as many of the graphical Views and Consoles as possible and u-center will run faster.

Logfile / Data are only partly displayed

The number of epochs displayed in u-center is limited in order to allow an efficient analysis of larger logfiles. The limitation is set to 1800 epochs by default. That means if an epoch is available every second you can analyze data for as much as 30 minutes. After this time the oldest values are discarded. Data stored to a logfile are not affected by the database limitation. Please refer to section 3.2.5 Database Limitation for instructions on how to increase this limit.

When planning long-term observations, it's recommended to start recording a log file before analysis begins.

Output messages are not updated in the Message View

Make sure, the protocol you'd like to receive is enabled. If so, double-click on the desired output message. Double-clicking on an output message enables or disables the periodic message update if the respective protocol is active. Alternatively, select the desired input or output message and press the 'Poll' button.

If you would like to get UBX-INF () messages in the log file, configure the receiver accordingly with the UBX-CFG-INF input message.

No logfile is recorded

After a new logfile is created, logging will not automatically start but only after selecting the Record button in the Player Toolbar.

Related Documents

[1] GPS Compendium, Doc No GPS-X-02007

[2] u-blox 5 Receiver Description including Protocol Specification, Docu. No GPS.G5-X-07036

All these documents are available on our website (www.u-blox.com).

☞ For regular updates to u-blox documentation and to receive product change notifications please register on our homepage.

Revision history

Revision	Date	Name	Status / Comments
-	08/10/2008	tgri	Initial release
A	22/07/2009	tgri	New CI

Contact

For complete contact information visit us at www.u-blox.com

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