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# Manual TimeboyIV

Flexible data collection with method



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## Alternations

### Alternation in this Dokument

Date	Chapter	Discription
04.07.2013	all	Revision the manual to new version 04.02.04.xx Please note that not all chapters are in English. We are working on it.

### Alternations of the version

With the device generation IV a new versioning scheme has been introduced. According to this scheme the file name of the device firmware and the setup program (DatafoxStudioIV) is composed as follows:

Product name	XX. Device genera- tion	YY. Compatibility (which versions can be used to- gether)	ZZ. Version number (functional exten- sion)	Build Troubleshooting (with a new version the Build number is reset)
z. B. AE-MasterIV	04.	02.	01.	04

The use of the manual depends on the version of the firmware and the DatafoxStudioIV or the DFComDLL. Gather from the following table which manual matches which version. For different combinations no support can be offered.

### Firmware StudioIV and DLL validity

Firmware: 4.02.04.xx.

Studio: 4.02.04.xx

Dll: 4.02.04.xx

The DatafoxStudioIV is backward compatible. This means that you can configure a device with a newer DatafoxStudioIV also older firmware, the device only supports the natural functions that are implemented in the older firmware version. I.e., relevant to the functions that are possible, is always the manual state that the firmware associated with the Setup equivalent. It is not possible to provide a centering firmware configured with a stand of DatafoxStudioIV to who is older than the firmware. recommendation:

If possible, use always the current version of DatafoxStudioIV.

What features are supported in which software versions, is from the file:

Datafox MasterIV, SW version xxx.pdf list as shown.

The file is located on the Datafox DVD and for download on the homepage. Please also note the instructions in each chapter in the manual. The updates are available on our website under [www.datafox.de](http://www.datafox.de) download.

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## 1. For Your Safety

### Safety Information for Datafox Products



The device must only be operated according to the instructions given in the manual.  
Do not insert any foreign objects into the openings and ports.  
The device must not be opened. All maintenance work must only be performed by authorized specialists.



Some devices contain a lithium ion battery or a lithium battery.  
Do not throw into fire!

#### Caution!

Supply voltage: up to 12 volts AC / DC of docking station  
See respective type label / technical data.  
The device must only be operated with a power-limited power supply according to EN 60950-1. If you do not observe these instructions, the device may be damaged.

The following temperature ranges must be observed:  
Working area / storage temperature: -20 °C (-4 °F) to +70 °C (158 °F)  
Cellular modem -20 °C (-4 °F) to +55 °C (130 °F)  
In areas with cellphone ban, GSM, WLAN and other cellular modems must be turned off.



Persons with heart pacemakers:  
When using the device, maintain a distance of at least 20 cm between the heart pacemaker and the device in order to avoid possible interferences.  
Turn the device off immediately if interferences are assumed.

**Protection class:** Observe the technical data of the respective device.



In case of laser devices of class 2, the eye is protected by the blink reflex and/or turning reactions if you briefly and accidentally look into the laser beam. The devices may be used without further protective measures. Nevertheless, avoid looking directly into the laser beam of the laser scanner.

**Please observe the additional instructions in chapter ["Intended Use and Environmental Protection"](#).**

## 2. Introduction

Real mobile data collection, especially for time and production data collection, requires a pocket-size device with high functionalities. These demands are fulfilled by Datafox Timeboy. Due to its small size and slim design, it fits into any pocket.

The graphic display provides a good overview and facilitates entering also complex data at the device. With the optionally available laser scanner, data can be collected quick and secure via bar code. The battery compartment is accessible from outside and contains 3 AAA batteries. Either normal or rechargeable batteries can be used (battery type has to be specified during the order process because of the charging circuit). Batteries are recharged at the docking station.

The low energy concept allows long run-times without recharging. Due to the solid and splash-proof design, the devices can also be used under harsh conditions, e.g. at building sites.

Because of the reasonable price, whole departments can be equipped with devices. Thus, optimal benefits can be achieved without straining you budget more than necessary.

### 2.1. Structure of the Documentation

The manual contains a change history as well as a general part with safety information, the introduction and information concerning system requirements and system structure.

The general part is followed by the main part of the manual. It contains the chapter Device. In this chapter, device-specific components are described as well as the device's functions.

The final part of the manual provides technical data about the device and a glossary whose purpose it is to ensure a consistent understanding between user and manufacturer.

### 2.2. Guarantee Restriction

All installers are responsible for the use of the device and its accessories in accordance with its intended purpose and in compliance with the applicable laws, standards and directives.

All data in this manual has been checked carefully. Nevertheless, errors cannot be excluded. Therefore, we offer no guarantee nor accept any liability for consequences that derive from errors of this manual. Of course we are grateful if you point out errors to us. We reserve the right to make modifications in respect of technical progress. Our general terms and conditions of business apply.

#### Note:



Due to DatafoxStudioIV, Datafox devices offer many functions and combinations of functions not all of which can be tested in the case of updates. This applies especially to setups defined by you as customer. Before updating your device, please ensure by tests that your individual setup works without any errors. If you encounter a problem, please inform us immediately. We will take care of the clarification of the problem on short notice.



## 2.3. Typography of the Documentation

FW.....	Abbreviation for firmware (software in the device)
SW .....	Abbreviation for software
HW .....	Abbreviation for hardware
GV .....	Abbreviation for global variable
<Name;Software Version.pdf> .....	File names



**Note:**

Useful information which helps you avoiding possible mistakes during the installation, configuration and commissioning is given here.



**Caution:**

Here, notes are provided which must be strictly observed. Otherwise, malfunctions of the system will occur.

## 2.4. Important General Notes



**Caution:**

Use the devices only according to regulations and follow the installation, commissioning and operating instructions. Installation and commissioning may only be performed by authorized specialists.

**Subject to technical alterations.**



**Caution:**

Due to technical development, illustrations, function steps, procedures and technical data may vary slightly.

The Datafox device has been developed for the purpose of creating a flexible and easily integrated terminal for data recording serving for a great variety of applications. The device is robust and easy to use. Due to the PC setup program, the device is quickly and easily configured for its application field so that you save time.

Numerous optional features, such as bar code reader, transponder reader, digital inputs etc., enable you to use the device for:

- PZE - Personnel time recording
- AZE - Order time recording
- BDE - Operating data recording (I/O-processing)
- ZK - Access control
- FZDE - Vehicle data recording / telematics

This manual describes the functionality of the TimeboyIV and explains its characteristic features. For example, installation, operation and equipment of the device are described.

In order to define the behavior of the device, a setup must be created. For this purpose, the DatafoxStudioIV has been developed.

With some practice it will be possible to create a complete compilation for the TimeboyIV within half an hour. If you need functions that are not available, please contact us.



**Note:**

If you need support for the compilation of setups, we offer you our services. Due to our extensive experience with the setup, we work very quickly and can make your setup even more efficient through useful advices, so that the input at the device can be performed quickly and securely.

**Note:**

Due to DatafoxStudioIV, Datafox devices offer many functions and combinations of functions not all of which can be tested in the case of updates. This applies especially to setups defined by you as customer. Before updating your device, please ensure by tests that your individual setup works without any errors. If you still encounter problems after thoroughly testing your setup, please inform us immediately. We will fix the error on short notice.

### 3. Intended Use and Environmental Protection

#### 3.1. Regulations and Notices

According to the current state of the art, measures were taken to ensure that the device meets the technical and legal regulations as well as safety standards. Nevertheless, malfunctions due to interferences through other devices can still occur.

Please observe local regulations when using the device.

#### 3.2. Power Supply

Only operate the device externally with a limited power source in accordance with EN 60950-1.

Supply voltage of the docking station: 9 to 12 volts AC/DC

If the devices run with rechargeable batteries, note the instructions in chapter "Rechargeable Battery".



#### Caution:

In the event of non-compliance with these instructions, the device or the battery (if any) can be damaged or destroyed!

In order to ensure maximum battery life, it is recommended to recharge the battery only after complete discharge.

#### 3.3. Environmental Influences

Extreme environmental influences may damage or destroy the device and should be avoided. This includes fire, extreme sunlight, water, extreme cold and extreme heat.

See respective type label of the device

#### 3.4. Maintenance / Repair

Except for the battery replacement in mobile devices, Datafox devices are maintenance-free and must only be opened by authorized professionals. In case of defects, please contact your dealer or the Datafox service hotline.

In order to remove impurities, only use a dry or at the maximum a slightly damp cloth.

Never use scouring or corrosive cleaning agents.



Impure laser scanning windows have to be cleaned to keep up the functionality. Use cotton swabs and water, or a gentle cleanser (no **scrubbing solution** or **acidic cleaner**) to clean the window. Never use **pointy** objects for cleaning. This may scratch the scanning window and effects the functionality of the laser.



#### CAUTION

Risk of explosion if batteries are replaced improperly.  
Dispose used batteries according to the instructions.

### 3.5. Further Notices

Do not expose the device to strong magnetic fields, especially during operation. Operate the slots and connections of the device only with the appropriate intended equipment. Ensure that the device is secured during transport. For reasons of safety, do not use the device while driving a vehicle. Also ensure that technical equipment of your vehicle is not compromised by the device.

In order to prevent SIM card misuse, have your SIM card blocked immediately in cases of loss or theft of the device.

### 3.6. Disposal

Observe local regulations concerning the disposal of packaging material, used batteries and scrapped electrical equipment.

This product complies with the EU Directive No. 2002/95/EC, its appendices and the Council Decision laying down the restrictions of the use of hazardous substances in electrical and electronic equipment.

The device is covered by the European Directive on Waste Electrical and Electronic Equipment which came into force on February 13, 2003 and was translated into the legislation of the Federal Republic of Germany on August 18, 2005.



Do not dispose the device in domestic waste!

As the user, it lies within your responsibility to dispose electrical and electronic equipment via the designated collection facilities. The correct disposal of electrical and electronic equipment protects human life and the environment.

For more information regarding the disposal of electrical and electronic equipment, please contact your local authorities or waste disposal companies.

## 4. System Requirements / Hardware

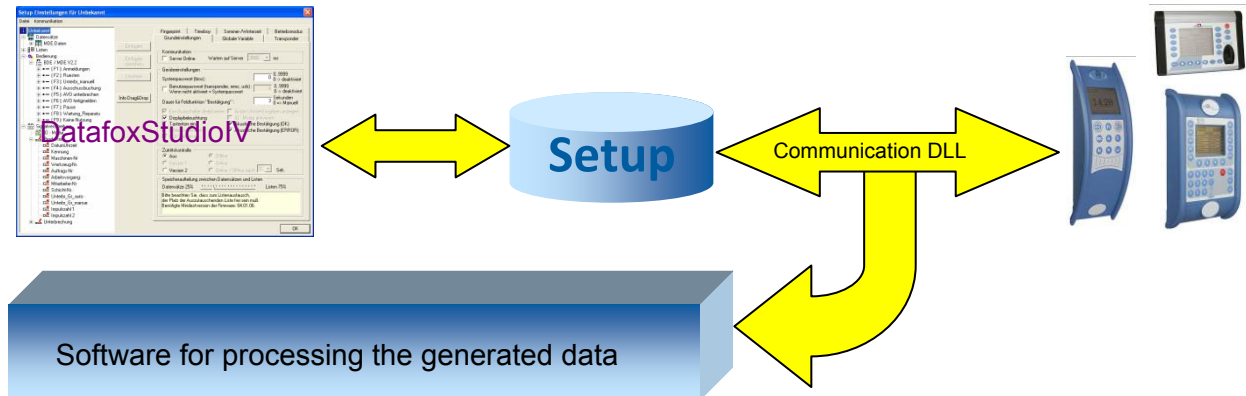
### 4.1. System Structure

The system consists of the Datafox device, the DatafoxStudioIV, the communication DLL and a software for processing the generated data.

#### Create setup

#### Save setup

#### Transfer setup to device



### 4.2. Requirements for Operating Datafox Devices

In order to operate the Datafox device, you need a 230 V power connection for the Datafox power supply. Depending on the main communication set, you need a corresponding transfer medium or connection cable.

Main communication:

- RS232 via modem > a serial null modem cable with D-sub 9-pin socket (see Connection Analog Modem).
- WLAN > a distortion-free channel to an access point (802.11 b/g) within reach (see Connection WLAN).
- GSM/GPRS > a distortion-free mobile connection (see Connection GSM).



**Note:**

With increasing demands on transfer rate and interference immunity, the demands on the transmission path increase as well with regard to quality (interference immunity).

### 4.3. Kompatibilität Compatibility

The compatibility must be observed urgently between:

- Datafox devices and the device firmware
- Device firmware and device setup
- Device firmware and communication DLL
- Communication DLL and DatafoxStudioIV
- DatafoxStudioIV and device setup

#### 4.3.1. Firmware File Archive (\*.dfz)

##### Description

Device files (\*.hex) of the MasterIV devices are delivered in a common firmware file archive. It has the file extension DFZ (stands for Datafox Zip). Now simply the firmware file archives (\*.dfz) are indicated instead of the device files (\*.hex). This applies to the DatafoxStudioIV and the DLL. The indication of device files (\*.hex) is still possible.

##### Function of the Archive

The transfer routine of the device file selects the right file from the firmware file archive on the basis of the hardware options available in the device. Thus, it is guaranteed that all hardware components available in the device are supported by the corresponding firmware.

##### Manual Selection of a File

If you do not want to integrate the archive in your installation, you have the possibility to add single device files from the archive to the installation.

The file format of the firmware file archive is ZIP. Hence, you can open the archive with every standard ZIP-program. Via the entry "Open With" in the context menu you can select an appropriate program for opening the file. If necessary, you can call up a program combined with this file format to open the file by renaming the file from DFZ to ZIP.

In the archive you find a file named "Inhalt.pdf"; it contains information which file (\*.hex) of the archive matches your device. Extract the desired device file (\*.hex) and rename it if necessary. A renaming of a file is possible at any time, because all information are in the file itself.

You can state the device file extracted before as device file in DatafoxStudioIV and at calling the DLL function. It is still tested if the file can be loaded into the chosen device before the transfer takes place.

#### 4.3.2. Datafox Devices and Device Firmware

Each Datafox device has an electronic flat module. The module has specific hardware equipment concerning the options (e.g. mobile radio, WLAN, fingerprint,...). Due to technical conditions, different options are mutually exclusive. Currently, not all hardware options can be supported in one firmware file due to limited program memory. This means that each device with specific hardware options needs a proper firmware to support the hardware options by the software.



##### Caution:

Hardware generation V 3 is supported from version 04.02.00.x onwards. The DatafoxStudioIV is compatible up to and including firmware version 04.01.x.y. Older versions 04.00.x.y are not supported any more.

#### 4.3.3. Device Firmware and Device Setup

The firmware (operating system) of the device and the device setup (\*.aes data file = application program) form a unit. By the device setup, the runtime behavior of the device (the firmware) is determined. This means the response of the device to input events by the user or the environment (e.g. digital inputs). In principle, only those functions of the device are executed that are supported by the firmware and defined via the setup. Prior to the productive commencement, you should there-

fore test each setup with the corresponding device or on a device with the same hardware options and firmware.

#### 4.3.4. Device Firmware and Communications DLL

A firmware supports certain functions, dependent on the hardware options. The communication DLL is the interface between the firmware and the DatafoxStudioIV or your processing software. Therefore, the firmware must always have the same or a lower version number as the communication DLL.



**Note:**

If your application uses a newer version of the DLL than the firmware does, you can only use functions that are supported by the firmware. Otherwise, you will receive an error message (e.g. function not supported) which has to be analyzed.

#### 4.3.5. Communications DLL and DatafoxStudioIV



**Note:**

The DatafoxStudioIV and the communication DLL are developed and released as a bundle. Therefore, they have to be used as a bundle. A newer version of DatafoxStudioIV does not work with an older DLL.

#### 4.3.6. DatafoxStudioIV and Device Setup

With the DatafoxStudioIV, you create a device setup (application program) for the Datafox device. That means that in the setup only those functions were defined which were available in the DatafoxStudioIV version at the time of the setup creation. The DatafoxStudioIV you use for opening a device setup may thus only be newer but never older than the DatafoxStudioIV version you used to create the device setup.



**Note:**

The updates are always available for download on our homepage [www.datafox.de](http://www.datafox.de).



**Caution:**

When new devices are delivered, the latest firmware is loaded on the devices. If you wish to work with an older firmware version, please perform a downgrade. Please observe the compatibility notes in the release notes of the respective firmware version.

The data file <Device name>, Software Versionen Stand <version number>.pdf shows which functions are supported by which software release. You will find the file on the product CD. Please also follow the instructions given in the chapters of the manual.

### 4.3.7. Update / Downgrade

A firmware update or downgrade is a very sensitive process. Possibly, a reset of the main communication to RS232 may occur. In any case, consider the information regarding the compatibility in the software version list.

## Firmware Update

**Caution:**

Before starting a firmware update, please check on the basis of the software version list whether there are any version dependencies that must be observed.

For example: when changing from Version 04.00.xx to version 04.01.xx, at least version 04.00.23.769 or higher must be present in order to run the update to version 04.01.xx successfully.

## Firmware Downgrade

A firmware downgrade is not recommended.

We are constantly working towards improving the software/firmware; all functionalities are still included in new versions. New software always offers better functionalities and possible bugs are fixed.

**Caution:**

When performing a firmware downgrade the firmware has to be transmitted to the device twice. This has technical reasons. Errors shown on the display of the device after the first transfer can be ignored.



## 5. Device



### Hinweis:

It has to be taken care of a suitable protection from direct sunlight because the synthetic materials are not 100% UV resistant. Fading simply is an optical defect which does not restrict the function of the device.



### Caution:

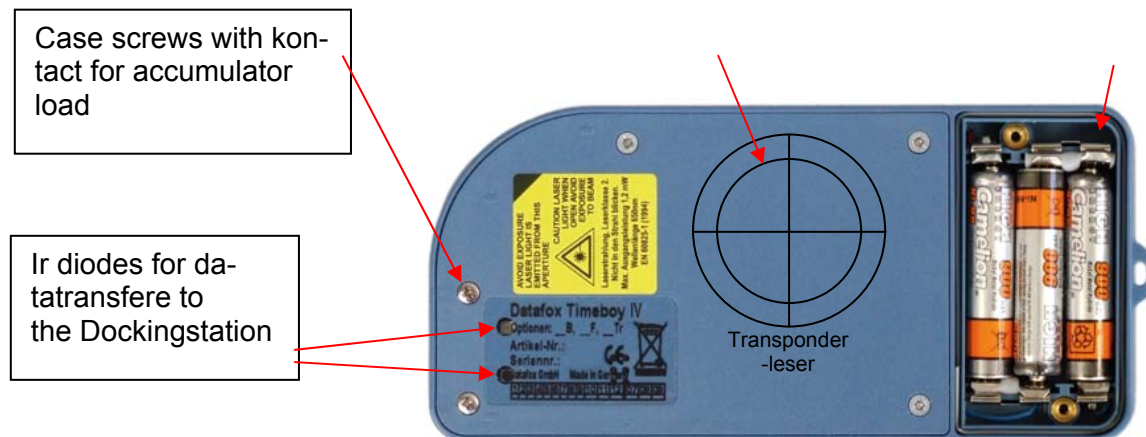
Please keep in mind that MasterIV terminals use a flash memory. According to the manufacturer each memory sector (512 byte) can be written to a maximum of 100,000 times. The firmware of the terminals distributes the access to the memory sectors, this technique is called wear levelling. Bad blocks in case of write or read failures are not used anymore. However, despite this technique it is not advisable to write the memory too frequently. The application should initialize a new list transfer only after a change of the list data but not cyclically.

Keep in mind the message - FlashService - in the display of the device. It means that the live time of the flash memory according to the manufacturer instruction will be reached soon. Then the device has to be sent to Datafox for service.

### 5.1. Constuktion

In the picture you see the back site of the TimeboyIV.

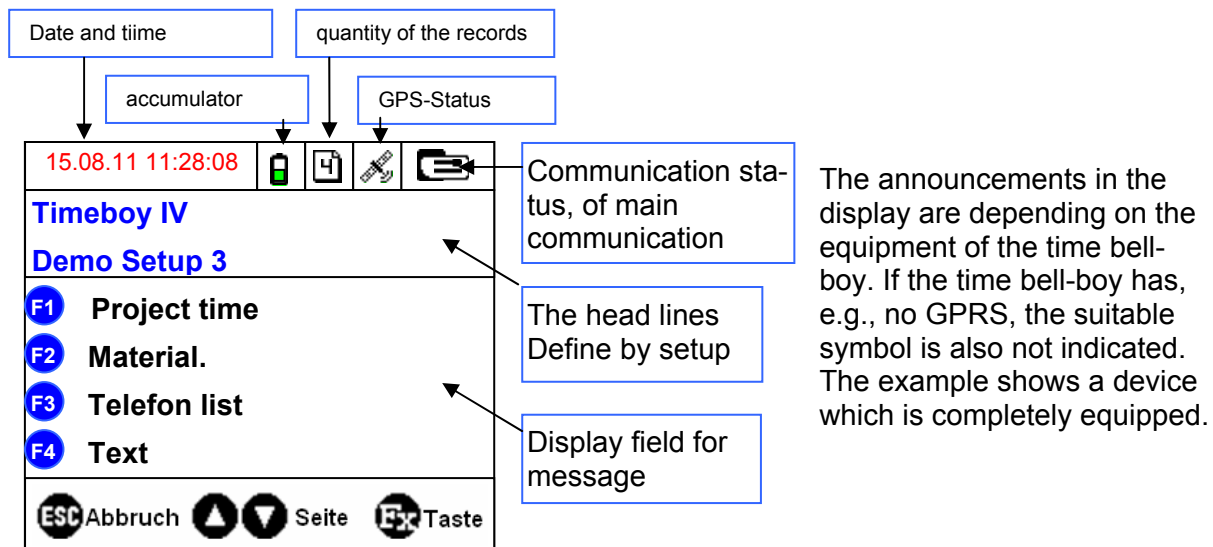
The reading area for the transponder to see how here in the picture is at the back. However, he can be also mounted alternatively in such a way that the transponder can be also read on the front side.












### 5.2. Take into operation






The device is almost ready for use by the delivery. Merely the coordinated accumulators must be still inserted by you ([see the Chapter „akku“](#)). After the insertion of the accumulators, the clock is to be set in the device. With the delivery a demo set-up is on the device.

### 5.3. The display



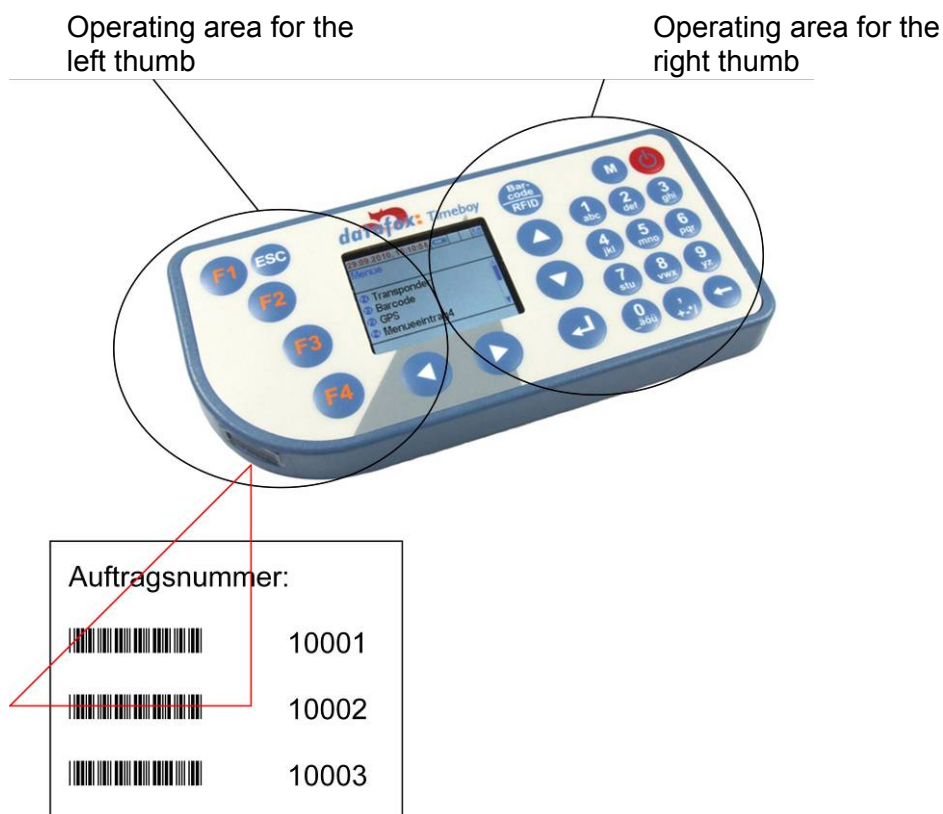
- **Date time** corresponds to the system time of the device which is also used for the records.
- **Announcement of accumulator** – more in addition in the chapter Accumulator.
-  **quantity of the records** in the memory (announcement to 99, afterwards 99 +).
- **GPS-Status:**
  -  GPS module activates, GPS A data are available.
  - No symbol: GPS module deactivates or not available.
  -  GPS module activates, but no GPS A data are available.
  - 4 = The number in this field brags how many satellites are used.
- **Communication field with symbols for:**
  -  = Dockingstation for RS232 if device is pocketed. With active communication this additional symbol is faded in (≡).
  -  GSM mit Statusanzeige z.B.[10].
  - GPRS with status announcement, e.g., [33] see „status announcements in the display“.
    -  Mobile radio modem is over
    -  Mobile radio modem is switched, but no connection with the provider.
    -  Mobile radio modem is switched on, connection with the provider exists.
- **Name of the Setups**
  - In the main menu the head lines 1 and 2 of the set-up are indicated.
  - In menus and input chains the head lines deposited in the set-up 3 and 4 are indicated.
  - During the transference of a set-up or update FW, the device goes to the system stop and shows this symbol „ System stop“ in this window.

Announcement in the left area of the window:

-  = Transponder input (value take over from transponder).
-  = Key barrier activates.
- 12 = Value input above key field.
-  = Value input about barcode reader or key field
-  = Value input about transponder.
-  = Value input about barcode.

## 5.4. Handling

The first time the handling of the device might be a bit confusing, because it is not constructed like most devices with the display at the top, the keys below it and the scanner at the front side. If you use both hands for operation, the handling becomes very easy. The device has been designed in such a manner that the keys can be operated with both thumbs. This is faster and safer. Gaming consoles function according to the same principle and many actions can be performed in a short period of time. The aim is to quickly record data and continue working with both hands.



### Scanning Bar Codes

In order to scan a bar code, you take the left hand away from the device and swivel the device to your body with the right hand. The scanner window must be horizontally above the bar code. Distance about 15 cm.

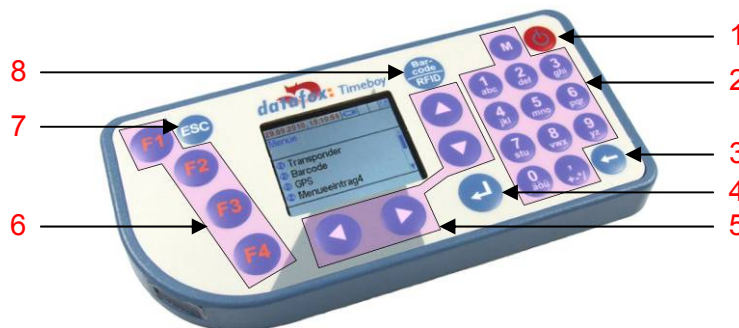
In case of highly reflecting surfaces, the device should be hold in a slightly inclined position so that the reflection of the surface has no effect.

If the bar code cannot be read, the value can be entered via the number/letter key block provided that the keyboard entry has not been deactivated for the field.

## 5.5. Operation

### 5.5.1. Keyboard

The keyboard of the TimeboyIV is designed as follows:



- 1 Power switch
- 2 Numeric pad or alphanumeric keys
- 3 Backspace key for deleting an entry
- 4 ENTER key for confirming an entry or action
- 5 Arrow keys for navigating in a line or list
- 6 F1 – F4 for input chains
- 7 ESC key for canceling an action
- 8 Bar code/RFID key for starting a bar code scan or reading a transponder

### 5.5.2. Key Combinations



**Note:**

Keep to the given order of the key sequences. Otherwise, you will switch to an input chain and the desired function will not be available.

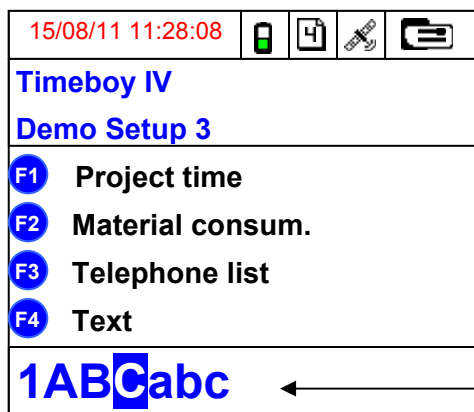
- You can access the start-up options via the ENTER key during booting.
- You can access the device BIOS via the key combination upward arrow + downward arrow or via ESC + ENTER.
- You can access the [transponder menu](#) via the combination ESC + Bar Code.
- Use the keys and the menu navigation to [select functions](#). Confirm with the ENTER key.
- If you press [ESC](#) a [return](#) takes place in accordance with the settings in the setup program.
- In order to select a list entry, scroll with the arrow keys and confirm your selection with the function keys.
- To [reboot](#) the device, use the following key combination: F1 + F4 + M
- [Activate Bootloader](#): During to insert the battery, press ENTER+ESC

### 5.5.3. Entering Texts via the Keyboard

Texts can only be entered in ASCII fields.

Press the number key and the corresponding number is shown on the display.

At the bottom-left corner of the display the letters are shown which are available at this number. By pressing and releasing the number key again you can choose the desired letter.



The key assignments with the respective letters are displayed here.

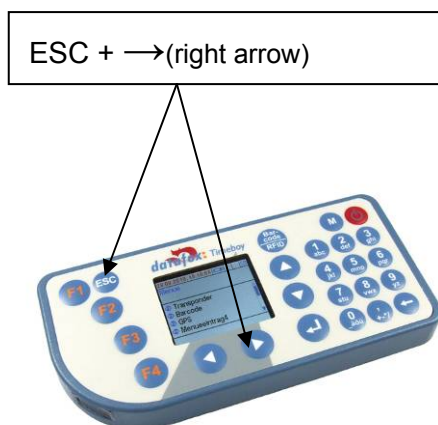


**Note:**

The German umlauts Ä, Ö, Ü and ä, ö, ü are available at the 0 key. The period ( . ) is the third character at key 9.

### 5.5.4. Keyboard Lock

Press the following key combination to switch the keyboard lock on and off.



If you press a key when

### 5.5.5. Device switch ON/OFF

To switch on the Timeboys press the power button. At the start of the unit sounds a tone (ascending tone sequence). Press the Power button to switch off please, "switch off" to display in the first line of the script is shown. After releasing the power button, the device switches off. During the breaking (descending tone sequence), the start-up tone sounds backwards.

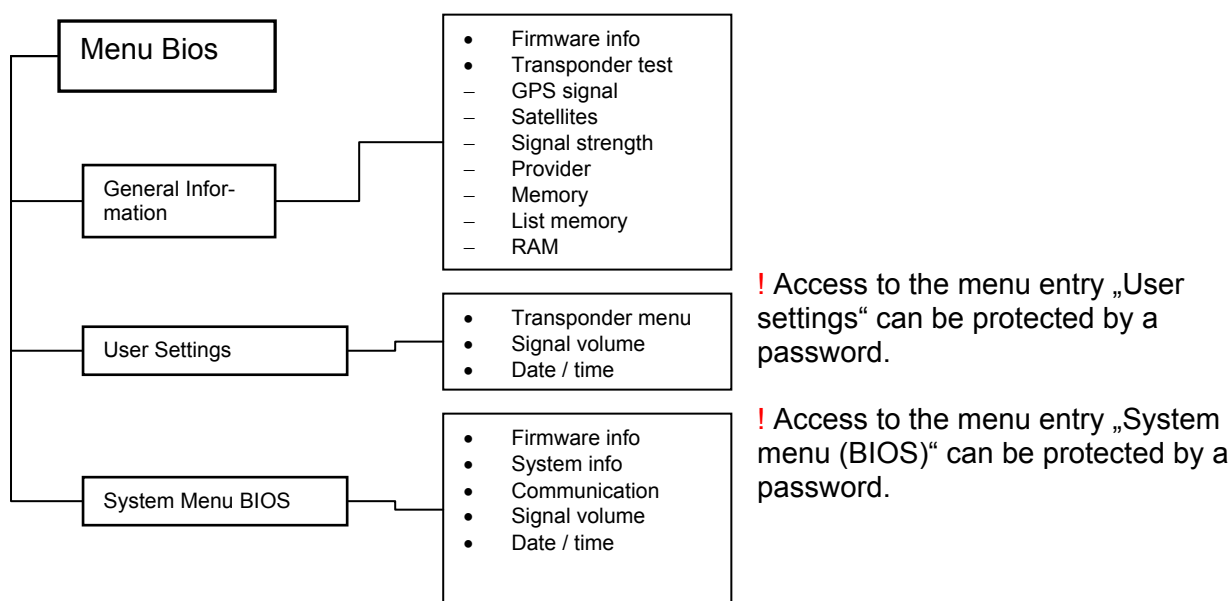
If the switch - button disabled in Setup, you can use the device via the switch off inter-Bios menu. To do this, "Gerät parken" "User Settings" and turn off the device.

### 5.5.6. Menu (Bios)

In the menu (BIOS) you can make various basic settings directly at the Timeboy. All settings – except the type of communication – can also be made via the DatafoxStudioIV. You access the menu (BIOS) via key combinations:

- ▲ + ▼, or
- ESC + ENTER

The options displayed depend on the hardware equipment of the TimeboyIV. Structure of the menu (BIOS)



Via the function keys F1, F2 etc. you can select:

- A) General information,
- B) User settings or
- C) System menu BIOS

## A) General Information

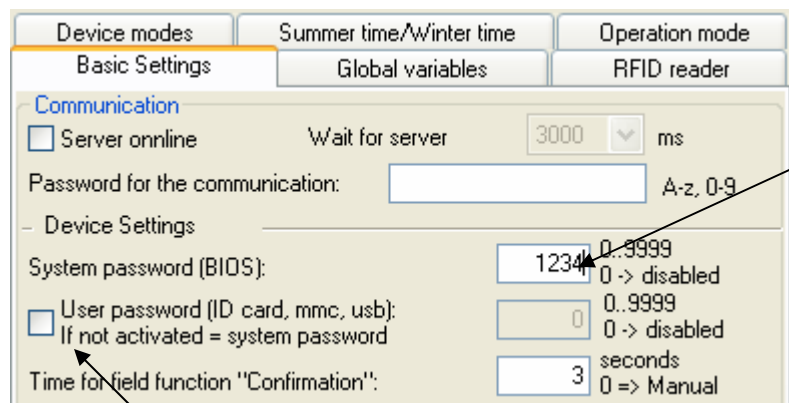
- Under menu entry "General information" all important device data are shown.
  - Firmware information like:
    - Serial number of the device
    - Firmware version
    - Creation date of the firmware
    - Password (if the number is 0000000..., no password was set for communication; otherwise, a password is needed for communication)
    - Name of the setup
    - Creation date of the setup
  - Transponder test (function test)
  - GPS signal strength
  - Satellites, (3/5) (the first number shows how many satellites are used for locating; the second number shows how many satellites are available.)
  - Signal strength
  - Provider (name)
  - Memory
  - List memory
  - RAM occupied

## B) User Settings

In the user settings you can make various settings.

- Transponder
- Signal volume (volume of the piezzo buzzer)
- Date/time

Access to the user settings can be protected by a password. See figure:



The screenshot shows a settings menu with several tabs: "Device modes", "Summer time/Winter time", "Operation mode", "Basic Settings", "Global variables", and "RFID reader". The "Basic Settings" tab is active. Under the "Communication" section, there is a "Server online" checkbox and a "Wait for server" field set to 3000 ms. Below this is a "Password for the communication" field. Under the "Device Settings" section, there is a "System password (BIOS)" field with the value 1234 and a "User password (ID card, mmc, usb)" checkbox which is currently unchecked. Below the user password checkbox is the text "If not activated = system password". At the bottom, there is a "Time for field function 'Confirmation'" field set to 3 seconds.

If a password was set for the system menu (BIOS), a query appears. The password can be entered via the number keys of the Timeboy.

By activating the check box, an extra password can be set for the menu entry "user settings".



### C) System Menu BIOS

Here, important settings are displayed and made.

- Firmware info
- System info
- Communication
- Signal volume
- Date/time

The following information is displayed under "Firmware info":

- Serial number of the device
- Number of the firmware of the device
- Creation date of the firmware
- Password
- Name of the setup
- Creation date of the setup

Under the menu entry "System info" global variables and their values are displayed.

Via the menu entry "Communication" you can access the communication settings. Here, the type of communication and speed are set.

Under "Signal volume" the volume of the piezzo buzzer is set. Press F1 and set the desired volume via the keys ◀ ▶. Confirm your settings with ENTER.

Under "Date/time" the date and time can be set. Use the number keys and the keys ▲, ▼, ◀, ▶ for this purpose.

## 5.5.7. Battery

### 5.5.7.1. Inserting Battery / Changing Battery

Loosen the screws of the battery compartment on the back side of the Timeboy and insert the batteries. Observe the polarity markings when inserting the batteries. The charging circuit (10% charge) for the batteries is designed in such a manner that constant charging is possible. The batteries are charged with about 70 mA via the charging circuit in the docking station. Therefore, NiMH batteries with at least 700 mAh have to be used. If you use batteries with a lower capacity, the batteries may become hot during charging. If you use batteries with a higher capacity, the charging takes longer in order to obtain full battery performance. If the NiMH batteries are completely empty, they should be charged for 20 hours.

You must turn off the device before removing the batteries. Press the power switch until "Power off..." is displayed in the first line of the display. After releasing the power switch, the device is shut down.

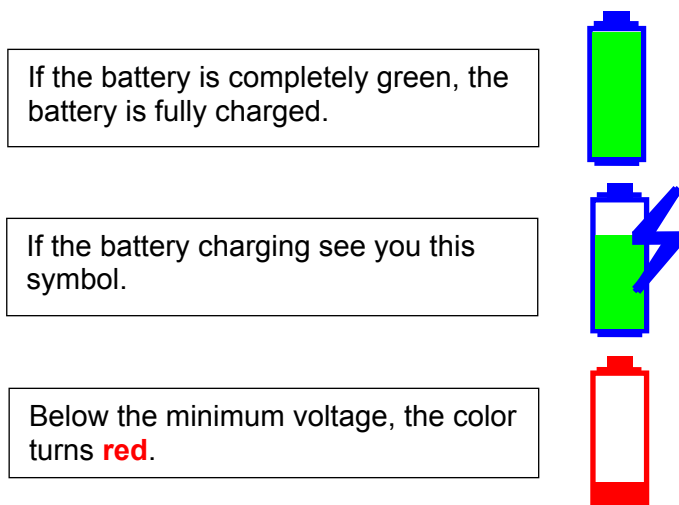


#### Caution:

Direct sunlight can reduce the lifetime of the battery. When not using the device, do not expose it to direct sunlight.

### 5.5.7.2. State of Charge

The state of charge of the battery is displayed in form of a battery. Depending on the state of charge, the battery on the display is filled with a green bar.



If the state of charge is not sufficient for operating the device, the battery indicator flashes.

#### Checking the battery:

If despite a long charging time the battery indicator does not become green, at least one of the batteries is damaged. If you determine the battery concerned, you can save costs.

Possible measures:

- Remove the batteries and charge them in a charger with refresh function. Such devices normally show whether a battery still has enough capacity.

Measure battery voltage with a multimeter. The voltage must be at least 1.25 V after charging.

### 5.5.7.3. Charge the battery

The battery charge is controlled by the TimeboyIV itself. Depending on how to load the TimeboyIV charging duration varies.

#### Charge with the Dockingstation:

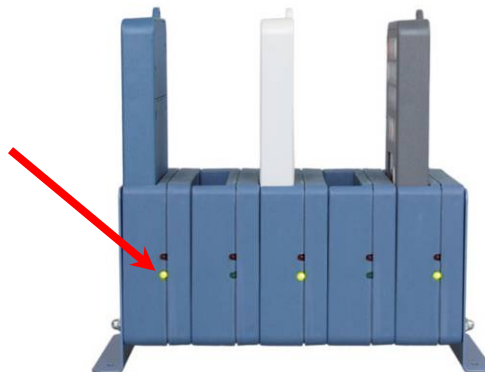
If the TomebolIV to charge, see you on the green LED.

Charge Symbol



The green LED should light up.

If the green LED not light, please check the contacts.



The Charge Time is 10 h.

#### Charge with 5V connector:

You see here also the charge symbol.

If the TimeboyIV off, is the charge also active.

230V Power a-  
dapter with round  
connector  
Art.Nr.: **200092**



USB Universal Car  
charge  
Art.Nr.: **200093**



USB cabel 5V  
Art.Nr.: **200094**

or



5V round connec-  
tor integrated in  
the device  
Art.Nr.: **103402**

The Charge Time is 4 h.

### 5.5.7.4. Battery Operation and Battery Drain

The Timeboy is powered by 3 AAA/micro batteries.

Ordered batteries are included in the delivery, but are not delivered inserted in the device.

The performance of the batteries is 1000mAh.

Module des TimboyIV		current needs			
		ON Operation mode	Saving mode if available	OFF	during switch on
CPU		8,4 mA	2 mA	1 mA	not relevant
Kommuni- cation	WLAN	85 mA	33 mA	0	125 mA / 25s
	Mobilfunk	92 mA	~6 mA <small>in Status 30, average</small>	0	113 mA / 30-90s
	RS232	not relevant	-----	0	not relevant
Barcode scanner		86 mA <small>At the scanning ca.3s</small>	30 mA <small>wait for scanning in a input field</small>	0	not relevant
RFID reader / TSR21		26 mA	-----	0	not relevant
GPS - Modul		56 mA	-----	0	72 mA / 30s
Display hi 2 (very bright)		45 mA	-----	0	not relevant
Display low 1 (dimmed)		5 mA	-----	0	not relevant

\* This column shows the values which are required during the power-on or the connection. The following time, is a rounded average, how long the power-and the connection generally lasts.

#### Note:



- Prerequisite for the battery lifetime given above is that the batteries are fully charged and own their full performance.
- When using the scanner, a sufficient high voltage is necessary, because quite much power is drained during scanning. Empty or low batteries might not be sufficient in this case. It may be necessary to recharge the batteries sooner.
- The LCD backlight consumes much energy. It is recommended to use the automatic turn-off of the backlight in order to increase battery life.
- Frequent use of the buzzer and the scanner shorten the battery life.
- If the device is not used for a longer period of time, the batteries must be removed or the device has to be charged from time to time in order to avoid exhaustive discharging. Exhaustive discharging damages the batteries and can lead to their destruction.
- No warranty is given for batteries as they are wearing parts and their lifetime depends heavily on the user behavior.

### Example for operating time:

In the following examples we assume that batteries are inserted with a capacity of 1000mAh. The batteries can be a performance of approximately 70% is removed. After that, is the voltage for the operation of Timeboys not enough. This results in a performance of 700mAh.

#### Example 1 TimeboyIV with Barcode / RFID-Reader:

The input needs around 45 sec.; equal to:

- Display hell = 45 mA
  - Barcode = 86 mA
  - CPU = 8,4 mA
- 
- = 139 mA x 45 s = 6255 mAs x 100 inputs / 3600  
= 175 mAh

45s and 100 inputs is a operating time of 1,25 h.

Switch after 100 inputs from very bright (15 s) -> to (15 s)-> dimmed light, Saving mode:

- CPU = 8,4 mA 30 s = 252 mAs
  - Display hell = 45 mA 15 s = 675 mAs
  - Display gedimmt = 5,0 mA 15 s = 75 mAs
- 
- = 1002 mAs x 100 inputs / 3600  
= 28 mAh

30s switch and 100 inputs is a operating time of 0,8 h.

Standby time (communication „off“):

- CPU Sleepmode = 2 mA x 250h
- 
- = 500mAh

Akkuleistung:

- 175 mAh
  - + 28 mAh
  - + 500 mAh
- 
- = 702 mAh ~700mAh

This is a complete operating time of 227 hours.

## Example 2 TimeboyIV with Barcode / RFID and Mobile radio, GSM / GPRS- Modul:

The input needs around 30 sec.; equal to:

- Display hell	= 45 mA
- Mobilfunk	= 92 mA
- Barcode	= 86 mA
- CPU	= 8,4 mA
	= 231 mA x 30s
	= 6930 mAs x 100 Eingaben / 3600
	= 193 mAh

30s and 100 inputs is a operating time of ~ 1 h.

Switch after 100 inputs from very bright (15 s) -> to (15 s)-> dimmed light, Saving mode:

- CPU	= 8,4 mA x 30s	= 252 mAs
- Mobilfunk	= 92 mA x 30s	= 2760 mAs
- Display hell	= 45 mA x 15s	= 675 mAs
- Display gedimmt	= 5,0 mA x 15s	= 75 mAs
		= 3762 mAs = 104 mAh

Standby time, Saving mode (communication on):

- Mobilfunk Status 30	= 6 mA
- CPU Sleepmode	= 2 mA
	= 8 mA x 50h
	= 400 mAh

30s switch and 100 inputs is a operating time of 0,8 h.

Akkuleistung:

	193 mAh
+	104 mAh
+	400 mAh
=	697 mAh ~700mAh

This is a complete operating time of 52 hours.

### Note:



You can set in the Saving mode the communication on „Record“

	Communication	Record	60
---	---------------	--------	----

After the sending the last Record to switch the modem „OFF“.

This saving current.

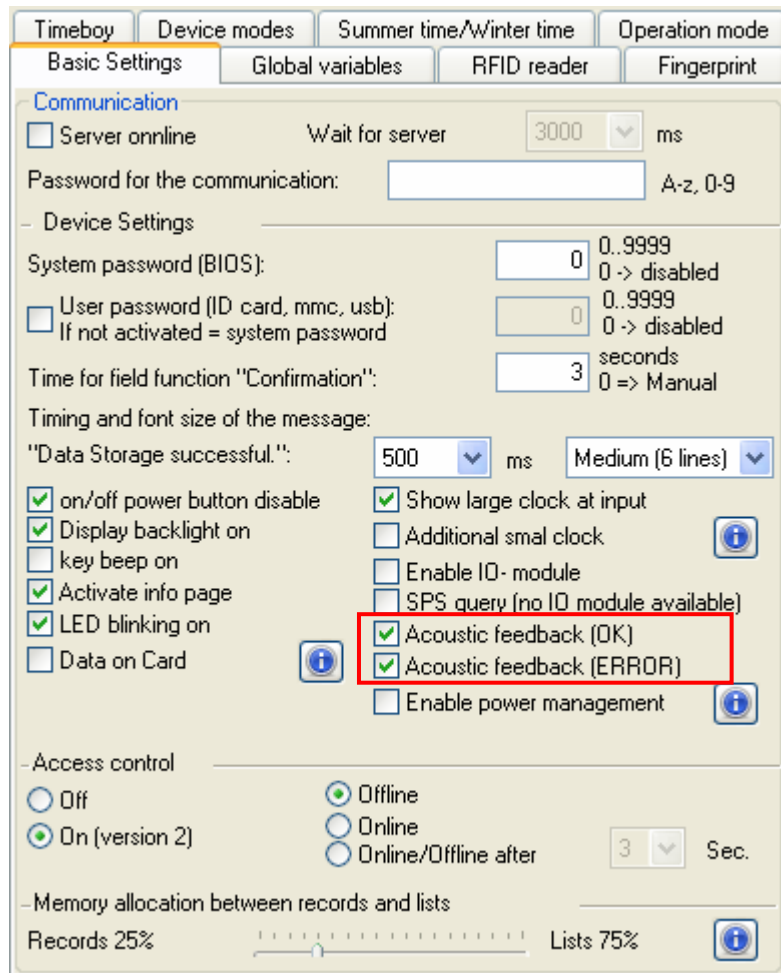
## 5.6. Buzzer

The buzzer gives a response to the data input.

1 beep = correct input.

2 beeps = input error

Condition for that is, you have enabled the buzzer in the setup Basic Settings.



The buzzer loudness can to modulate in the device BIOS menu.

More details are given in the caption "Menu(Bios)".



## 5.7. Bar Code Laser Scanner

The bar code reader has an own intelligence and is delivered with default settings. The default settings allow the reading of the bar code types UPC-A, EAN 8, EAN 13, Code 128, Code 39 and Interleaved 2/5. The scanner has various additional functions. Please observe the manual "SE 955 - Scan Engine Integration Guide.pdf" on the DVD or in the download area of our website. Settings are made by scanning the corresponding bar code in the manual.

The most important configuration bar codes, which are necessary for standard use of the Timeboy, are summarized subsequently. The scanner beam turns off when the configuration bar code was read. The display shows no information as configuration bar codes are processed directly by the scanner. The input field must be configured in the setup correspondingly so that scanning is possible. Alternatively, you can make the settings needed via the system menu Scanner Test.

**If the scanner is reading but nothing is displayed at the Timeboy, the settings of the scanner have possibly been altered. In this case, please restore the basic settings.**

Einstellbarcodes für Standardkonfiguration des Scanners		
<b>Grundeinstellung:</b> Falls der Scanner vorstellt wurde und Sie die Grundeinstellung wieder herstellen möchten, scannen Sie die beiden Barcodes rechts. Der erste Barcode versetzt den Scanner in die Werks-einstellung. Der zweite Barcode aktiviert die Senden eines Abschluß-Symzeichens, welches unbedingt benötigt wird, damit das Timeboy den Barcode annimmt.	 	
<b>Grundeinstellung zusätzlich bei der SE955</b> Reduziert den Scanwinkel für den Einsatz im Timeboy.		
<b>Buchstabe für den gelesenen CodeTyp:</b> Der Scanner kann einen Erkennungsbuchstaben für den gelesenen BarcodeTyp senden, z.B. B=Code39, D=Code128, etc. Tabelle siehe BarcodeScannerHandbuch Seite 5-20. Der Buchstabe kann mit abgesperrt, oder über die Einstellung im Timeboy-Setup auch wieder entfernt werden. Der linke Konfigurationsbarcode aktiviert das Senden des Buchstaben Scanner und der rechte deaktiviert es.	 	
<b>Barcodelänge bei Code 39:</b> Die Grundeinstellung des Scanners für Code 39 erlaubt BarcodeLängen 2-55 Zeichen. Der Barcode rechts gibt das Lesen für eine beliebige Länge frei. Sollten nur bestimmte Längen zugelassen werden, finden Sie die entsprechenden Einstellmöglichkeiten im Handbuch des BarcodeScanners.	 	
<b>Barcodelänge bei 2/5:</b> Die Grundeinstellung des Scanners für Code 2/5 erlaubt BarcodeLängen 1-14 Zeichen. Der Barcode rechts gibt das Lesen für eine beliebige Länge frei. Sollten nur bestimmte Längen zugelassen werden, finden Sie die entsprechenden Einstellmöglichkeiten im Handbuch des BarcodeScanners.		
Testbarcodes in Code 39		
12 Punkte	14 Punkte	16 Punkte
max. Anforderung = Funktionstest Fertigung		

You can find this sheet with bar codes on the DVD under < Datafox DVD\Timeboy II und IIIDatafox\_TimeboyII\Handbuch, Doku>.

**Please observe the notes in the chapter "For Your Safety" when using the laser scanner.**

## 5.8. Transponder Reader (RFID)

The transponder reader is integrated in the device. The type plate and the label at the back side of the device show you whether the option is available. The transponder reader is enabled via the settings in Datafox Studio.

When the transponder reader is active, a beeper signal is sent. Hold the transponder close to the transponder label of the Timeboy. Whether the transponder reader is to be activated automatically or manually via the key Barcode/RFID, can be set in the setup.

### Transponder Reader TS-21 125kHz:

- Unique, Hitag1, Hitag2, HitagS, Titan/Hewi/EM4450

### Transponder Reader ISO 13,56 MHz R/W:

- ISO14443 u. ISO15693 (Mifare-DESFire, MF Plus, ICode...)

### Transponder Reader for Legic Advant

- Legic Advant

## 5.9. Digital Inputs

Optionally, the Timeboy can be equipped with a connection cable and digital inputs. Please observe the power requirements in the chapter "Technical Data".

The digital inputs can be used to save the state in a data record, to change power schemes, or to achieve the state "vehicle drives".

For information on possible configurations see the manual "Datafox Studio".

## 5.10. GPS Receiver

The Timeboy can be equipped with a GPS receiver. It allows localization via satellite signals. The GPS antenna is integrated in the Timeboy at the top of the casing above the display. Also an external GPS module is available, which can be connected via the digital inputs. Thus, the GPS module can be placed at a spot suitable for reception.

During GPS reception, very small signals received from various satellites must be processed. This requires a certain amount of time, depending on different factors.

If you want to use GPS localization, please observe the following notices:

- The Timeboy / antenna must have a clear view of the sky.
- The reception is worse during bad weather conditions (clouds, rain, etc.).
- The reception is worse in deep street canyons because often there is no unobstructed path to the satellites and reflections may lead to distortions.
- The worse the reception, the longer it takes until valid coordinates can be determined.
- In houses, parking ramps and generally under roofs, often no reception is possible.
- After valid coordinates have been determined, the receiver is more sensible. The initial determination of the coordinates requires a stronger signal.  
So if your vehicle has a good GPS reception and drives under a roof, valid coordinates can still be received. If the determination of coordinates must be restarted under a roof, it might not be possible.
- The GPS module consumes quite much current (ca. 30 mA at battery operation). The power consumption is higher at no or bad reception (e.g. inside a building) than at good reception.
- If the GPS module is turned off for more than 3 or 4 hours or is without reception, it has to be restarted. It can take 3-5 minutes to determine valid coordinates. This has to be taken into account when the device switches to power saving mode. It is also important if the Timeboy often has no reception and is used outside only for a short time.

For a description of possible settings see the manual "Datafox Studio".

## 5.11. Types of Communication

### 5.11.1. Single Docking Station

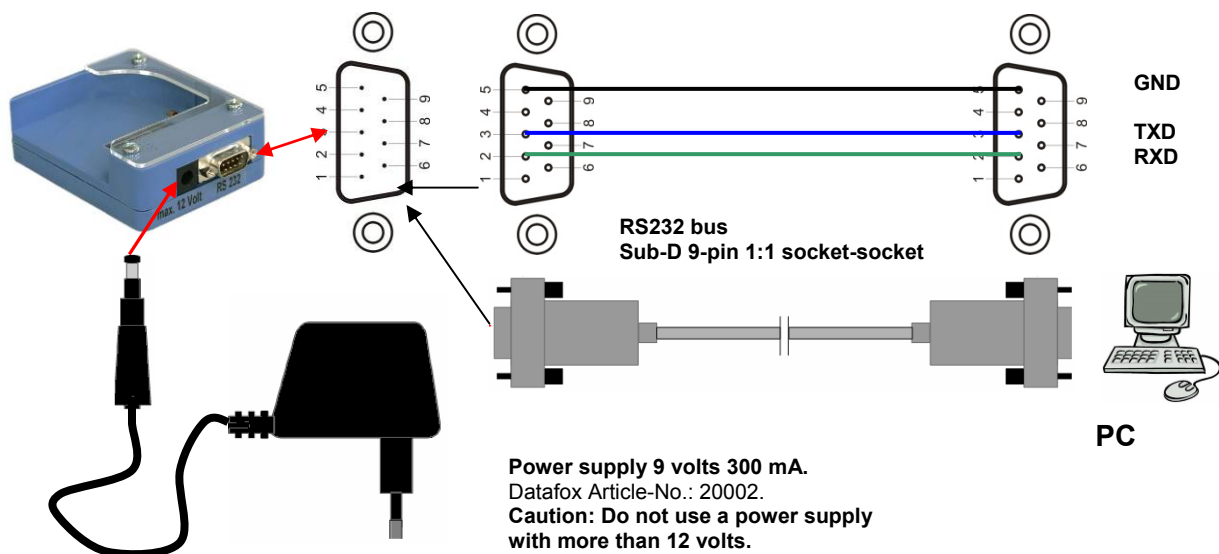
Purpose:

- a.) Transfer data via RS232.
- b.) Charge batteries in the Timeboy.

#### Single Docking Station to the PC via PS232 Data Line

The single docking station solely has an RS232 port.

Thus, it can be connected only directly to the RS232 of a PC.



#### Caution:



For use, the power supply has to be connected. This also applies if data is only to be transferred. For data transfer and charging of batteries, insert the Timeboy until the charging contacts snap into place and the green LED at the front side of the docking station lights up. The green LED only shows that the batteries are being charged. It does not give any information regarding communication.

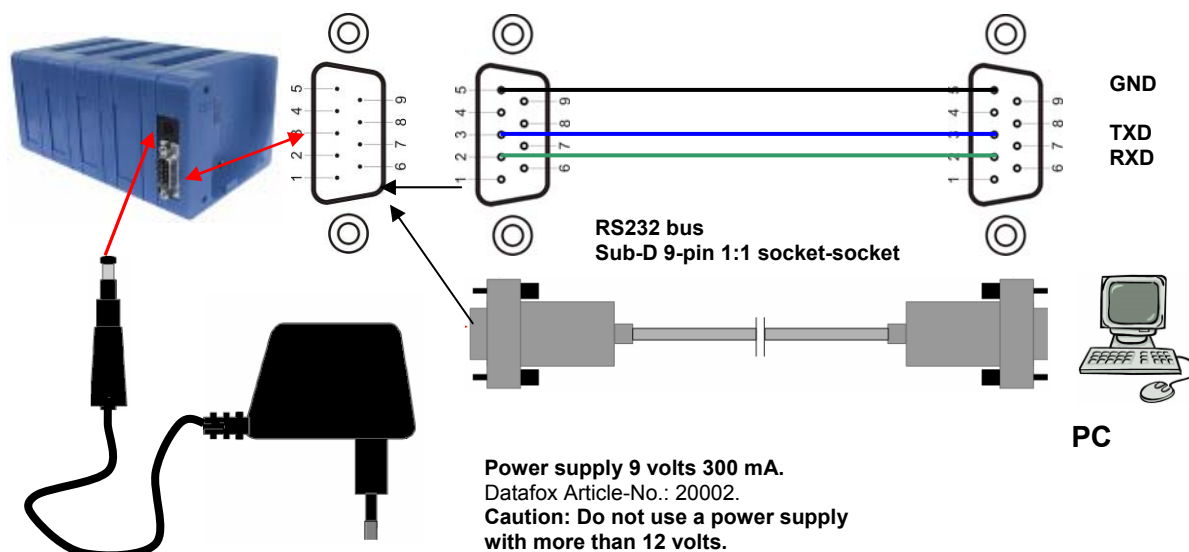
### 5.11.2. Multiple Docking Station via RS232 to the PC

The multiple docking station has an RS232 and RS485 port. Various data transfers can be realized via these interfaces. The multiple docking station is delivered fully assembled. The maximum number of slots for one block is limited to 10 due to power supply for battery charging. Only the head station has ports. The other stations are connected to the head station via contact pins.

#### Purpose:

- a.) Transfer data.
- b.) Charge batteries in the Timeboy.

#### 5.11.2.1. Mehrfachdockingsstation per RS232 an PC



#### Pin assignment of Sub-D plug 9-pin

Pin	Designation	Function
1		
2	TXD RS232	Transmit data (connect to RXD of the PC)
3	RXD RS232	Receive data (connect to TXD of the PC)
4		
5	GND	ground
6		
7	TXD RS485	Transmit data (connect to RXD of the converter/COM server)
8	RXD RS485	Receive data (connect to TXD of the converter/COM server)
9		

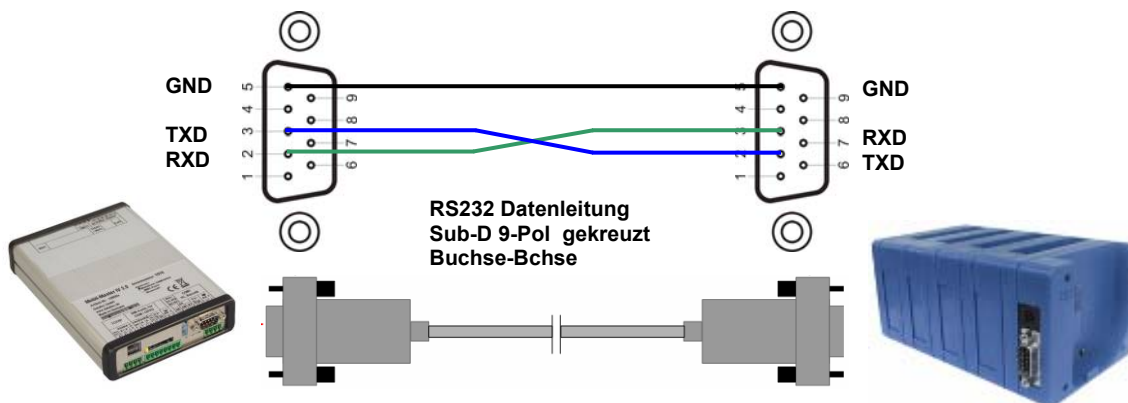
#### Caution:



For use, the power supply has to be connected. This also applies if data is only to be transferred. For data transfer and charging of batteries, insert the Timeboy until the charging contacts snap into place and the green LED at the front side of the docking station lights up. The green LED only shows that the batteries are being charged. It does not give any information regarding communication.

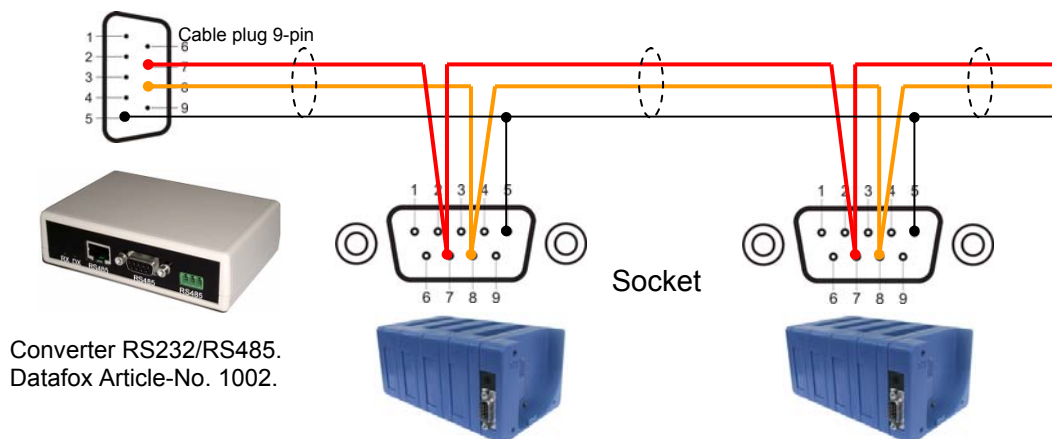
During transfer "Bed-Stop" is displayed and the red LED of the corresponding slot lights up. During transfer, i.e. as long as the red LED glows, the device must not be removed from the docking station.

### 5.11.2.2. Multiple Docking Station via RS232 to the Master IV



### 5.11.2.3. Multiple Docking Station via RS485 Bus to the PC

The easiest way to set up the bus is to solder the lines directly on the Sub-D socket. Upon request we can manufacture the bus line according to the lengths given by you. You should not go without a connection of GND to PIN 5 or the mounting of a terminating resistor (120 ohm). Ideally, the cable cores should be twisted and equipped with a shielding.

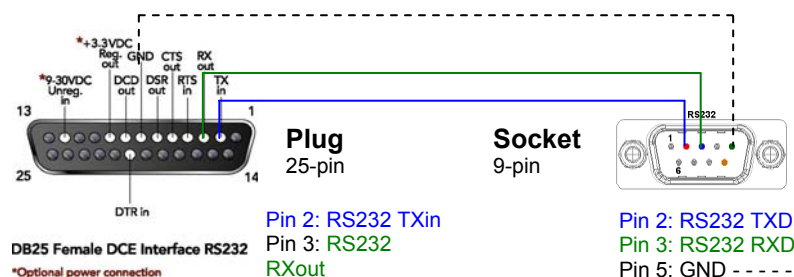
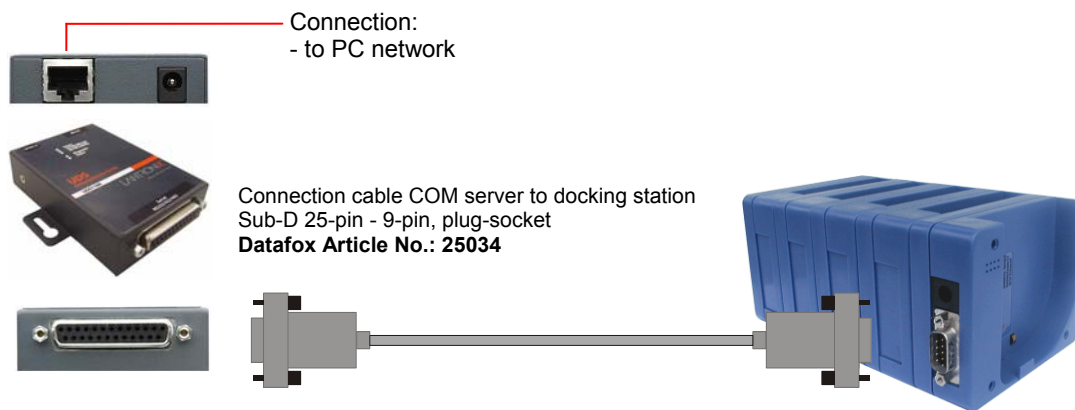


#### Assignment of the Datafox Data Line (Datafox Article No. 25010)

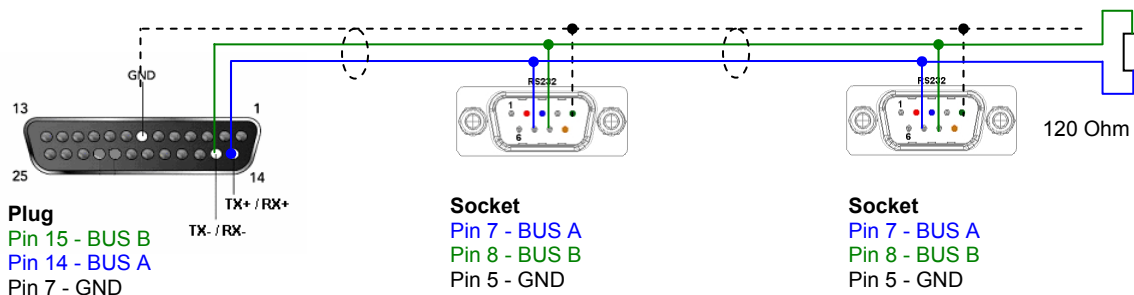
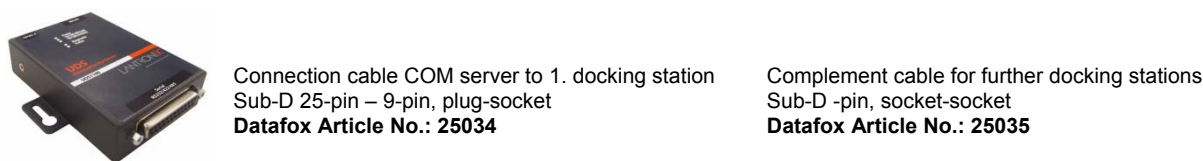
Color coding and pair assignment		Signal Converter	Signal Docking station	Connection to Sub-D of the docking station for RS485
Red = A	Pair of wires 1	RXD	TXD	Pin 7
Yellow = B	Pair of wires 1	TXD	RXD	Pin 8
Shield	-	GND	GND	Pin 5

### 5.11.2.4. Multiple Docking Station to COM Server via RS232 (TCP/IP)

In order to integrate docking stations directly into the PC network, a COM server is used. The following connection and setting overviews describe 2 COM servers and their possible settings. Please note the description of the COM server, especially with regard to the setting of the IP address and the conversion between RS232 and RS485.



### 5.11.2.5. Multiple Docking Station to COM Server via RS485 (TCP/IP)



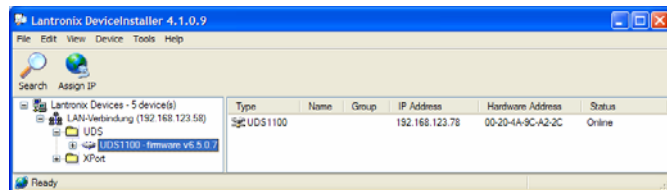
### 5.11.2.6. Set-up of the COM Server Lantronix UDS 11

In order to perform the set-up, you must install and start the "Device Installer" from the enclosed CD.

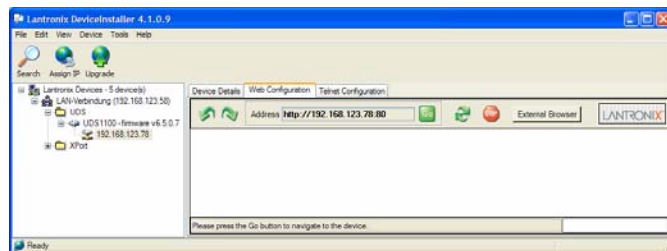
After successful installation, integrate the COM Server in your network. Plug in the power supply and the network cable.

Start the "Device Installer".

All „Lantronix COM Server“ of the network are displayed. In this example a COM Server with the "IP address 192.168.123.78". If several COM Servers are displayed, look at the "Hardware Addresses" (MAC address).



If you mark the "IP address" in blue, the settings for the COM Server can be made via a "Web Configuration". Copy the "Address" into your own browser or click on "Go" to use the available browser.



You are asked for a username and password. Because the COM Server is in the state as delivered, no username or password is set. Thus, make no entries and only confirm with "OK".

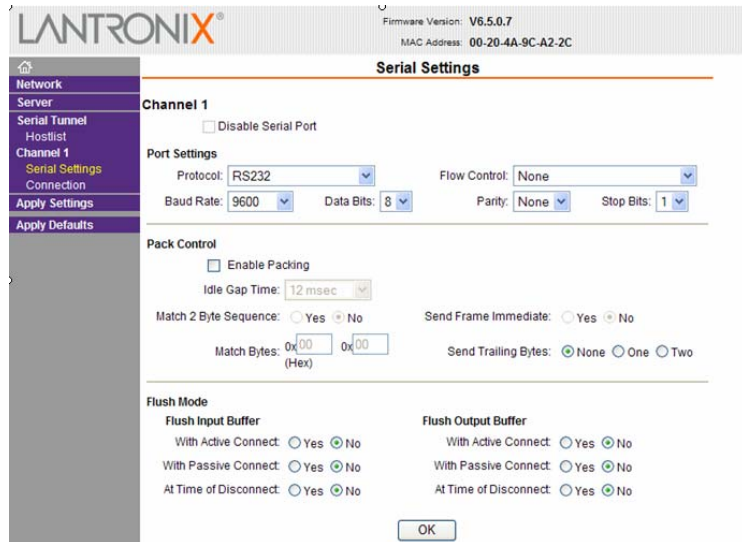




## RS232

Settings of the serial interface for RS232:

1. The baud rate must be set to 9600 .

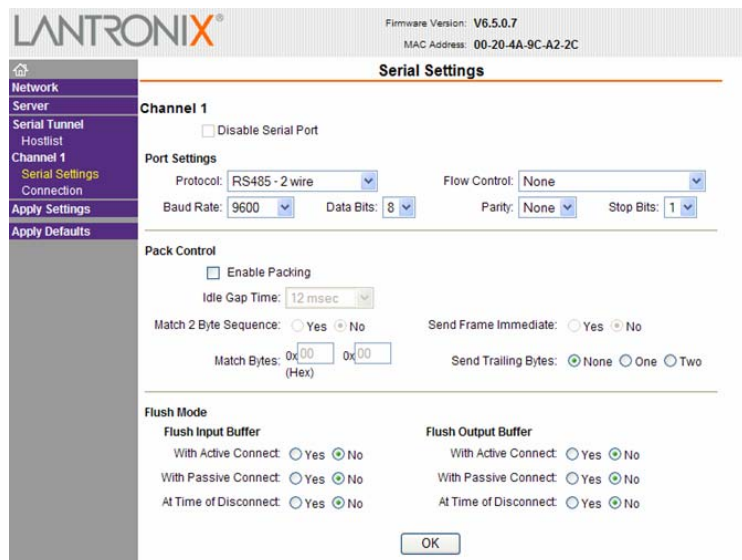


The screenshot shows the LANTRONIX web interface for 'Serial Settings'. The 'Channel 1' section is active. Under 'Port Settings', the 'Protocol' is set to 'RS232', 'Baud Rate' is '9600', 'Data Bits' is '8', 'Parity' is 'None', and 'Stop Bits' is '1'. The 'Flow Control' is set to 'None'. Under 'Pack Control', 'Enable Packing' is unchecked, 'Idle Gap Time' is '12 msec', 'Match 2 Byte Sequence' is 'No', and 'Send Frame Immediate' is 'No'. 'Match Bytes' are set to '0x00' and '0x00'. 'Send Trailing Bytes' is set to 'None'. Under 'Flush Mode', 'Flush Input Buffer' and 'Flush Output Buffer' settings are all set to 'No' for 'With Active Connect', 'With Passive Connect', and 'At Time of Disconnect'. An 'OK' button is visible at the bottom right.

## RS485 – 2 wire

Settings of the serial interface for RS485 - 2 wire:

1. The default setting for the baud rate is 9600 .



The screenshot shows the LANTRONIX web interface for 'Serial Settings'. The 'Channel 1' section is active. Under 'Port Settings', the 'Protocol' is set to 'RS485 - 2 wire', 'Baud Rate' is '9600', 'Data Bits' is '8', 'Parity' is 'None', and 'Stop Bits' is '1'. The 'Flow Control' is set to 'None'. Under 'Pack Control', 'Enable Packing' is unchecked, 'Idle Gap Time' is '12 msec', 'Match 2 Byte Sequence' is 'No', and 'Send Frame Immediate' is 'No'. 'Match Bytes' are set to '0x00' and '0x00'. 'Send Trailing Bytes' is set to 'None'. Under 'Flush Mode', 'Flush Input Buffer' and 'Flush Output Buffer' settings are all set to 'No' for 'With Active Connect', 'With Passive Connect', and 'At Time of Disconnect'. An 'OK' button is visible at the bottom right.

2. The "Local Port" must be set to 8000 via the setting option "Connection".
3. Save your settings with "OK" and then **"Apply Settings"**, otherwise they will not be taken over.

Restart the COM Server and check the connection.

### 5.11.3. Mobile radio (GSM and GPRS/GSM)

The TimeboyIV can be equipped with a mobile radio modem. With it the communication on the mobile radio network is possible. The antenna is integrated in TimeboyIV.

The SIM map is pocketed about the accumulator field. Take moreover the accumulators from the time bell-boy and introduce the SIM map as illustrated in the slit, until she engages.



In order to take out the map must be pushed a little bit further. On letting go she juts out something, so that it can be taken

**Attention:**  
! In order to insert an aid is necessary in the form of a pencil or screwdriver. Pay attention absolutely to the fact that, besides, you do not damage the SIM map.

You find the exact configuration of the single communication possibilities in the manual „Datafox of studio“.

#### 1.1.1.1 Kommunikation

About GSM all functions of the DLL can be applied. GPRS is used either for sending by data of the device to a web server or for an „active connection“ with the DLL. The advantage is present that the data are dispatched immediately. Test:

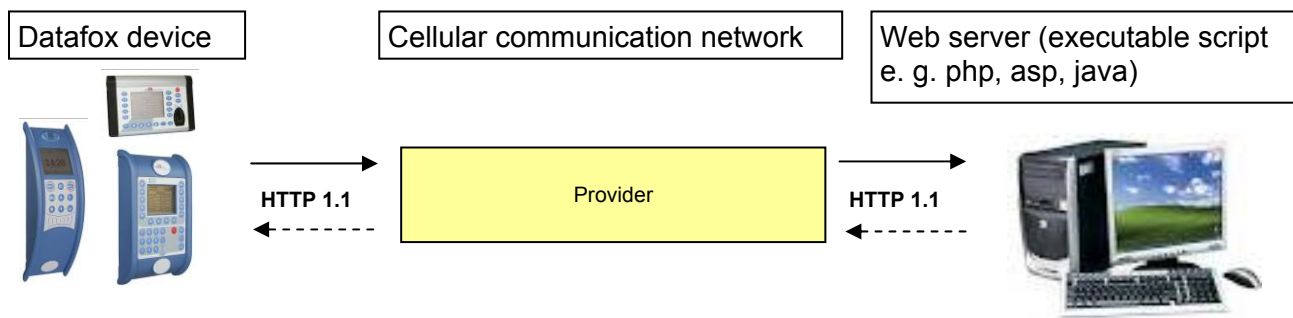
**Attention:**  
! GSM and GPRS are costs causing services. To receive closer information about the respective rate and the originating costs, get in contact with your provider.

For the use of "GPRS/GSM" a konfiguration file (.ini) with the access data of your provider is to be provided and to transfer on the device.

### 5.11.3.1. Necessary Settings for Communication via Cellular Network

In order to enable communication via cellular network, the main communication must be set to GPRS in the BIOS of the device. For information on accessing the BIOS menu see chapter

#### Illustration for Connection via Cellular Network



Information like SIM card PIN, provider and dial-up specifications must be provided. The information is saved in a `GPRS.ini` file and written to the device.

For more information see the DatafoxStudioIV manual, chapter "[Configuration of System Variables HTTP / GPRS](#)".

#### Encryption of Data Fields for Sending via HTTP (GPRS)

If data records are sent via HTTP, field content can be transferred in encrypted form. The data fields of the data record are encrypted with a RC4 encryption. The encrypted characters are transferred as field content in hexadecimal format.

For more information regarding the encryption of data for sending via http see the DatafoxStudioIV manual, chapter "[Configuration > Encryption of Data Fields for Sending via HTTP](#)".

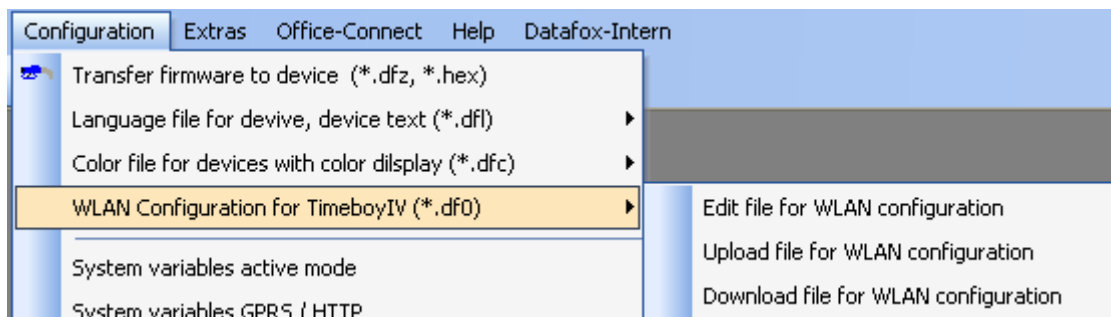
### 5.11.3.2. Communication state

The state of GPRS-/GSM-connection you can always see in the state bar on the display.

Pin	Bez.
0	Modem is off
1	Initialization of the software
2, 3	Start of the modem
4, 5	Initialization of the modem and SIM-card check
6	if PIN necessary, sending of the PIN
7	if PUK necessary, sending of the PUK
8	dilated initialization of the modem
10	Modem in standby mode
11	Call recognized
12	take calls
14	GSM connection activ
15, 16	GSM connection closed
20	GPRS Standby, Initialization of the GPRS connection after the first records
25	connection to Provider (Attach)
30	GPRS standby (waiting for next data/records)
31	Server (Open)
32	connect to server
33	send data to Server (HTTP)
34	Wait for quitting from server (HTTP)
35	recive data from server (TCP/IP)
36	send data to server (TCP/IP)
37	close connection
40	timeout after failed connection , to 15 minutes
41 <sup>1)</sup>	timeout after failed connection Provider, to 15 minutes.
42 <sup>1)</sup>	count of the connection attempt is end
43	on the Device is the encryption active, but not on the server
44	battery is down, to disable Modem.
45	impossible connect to the provider or bzw. Roaming impossible
50	close connection
55	Turn modem off

### 5.11.4. Wireless for TimeboyIV

The TimeboyIV can be equipped with a WLAN module.  
 For the setting WLAN parameter, please use the DatafoxStudioIV.  
 Click on "Configuratio" -> "WLAN configuration for TimeboyIV (\*.df0)."

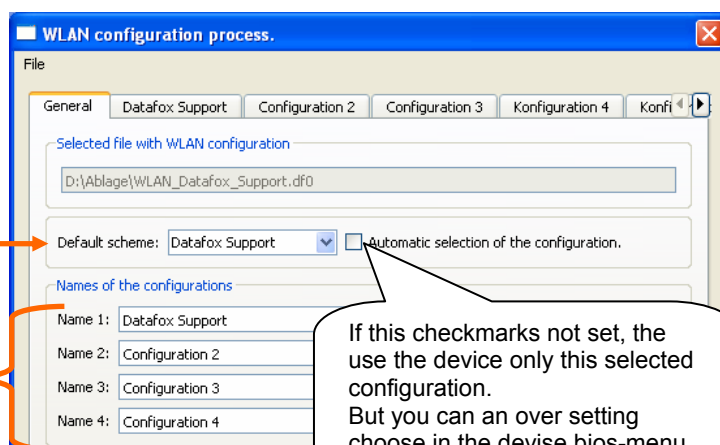


The WLAN settings are stored in a file with the extension "\*. df0".  
 Here can you make changes, reading the setting from the device or upload the setting to the device.  
 If you read the setting from the device, the stored the data in the actually directory and overwrite the data.

You can give the device 8 different settings for AP.  
 This can you use, if you have more than on place were do you use the TimeboyIV.

Choose the first configuration fort he first connecting.

Give some Names fort he different locations.



The entire file and its settings are transferred to the Timeboy IV.  
 In the Bios-menu of the device under -> communication -> WLAN can you select the location.  
 For every location you define different parameter. The user select the location and have no view in the WLAN parameter settings.

**Note:** If you choose the automatic selection, then try the device the connection first with this default settings.

**Caution:** Use multiple locations and a choice of automatic configuration, the scan right amount of energy needed for APs. Therefore, limit the scans after new APs.

### 5.11.4.1. Selecting the location in the bios-menu

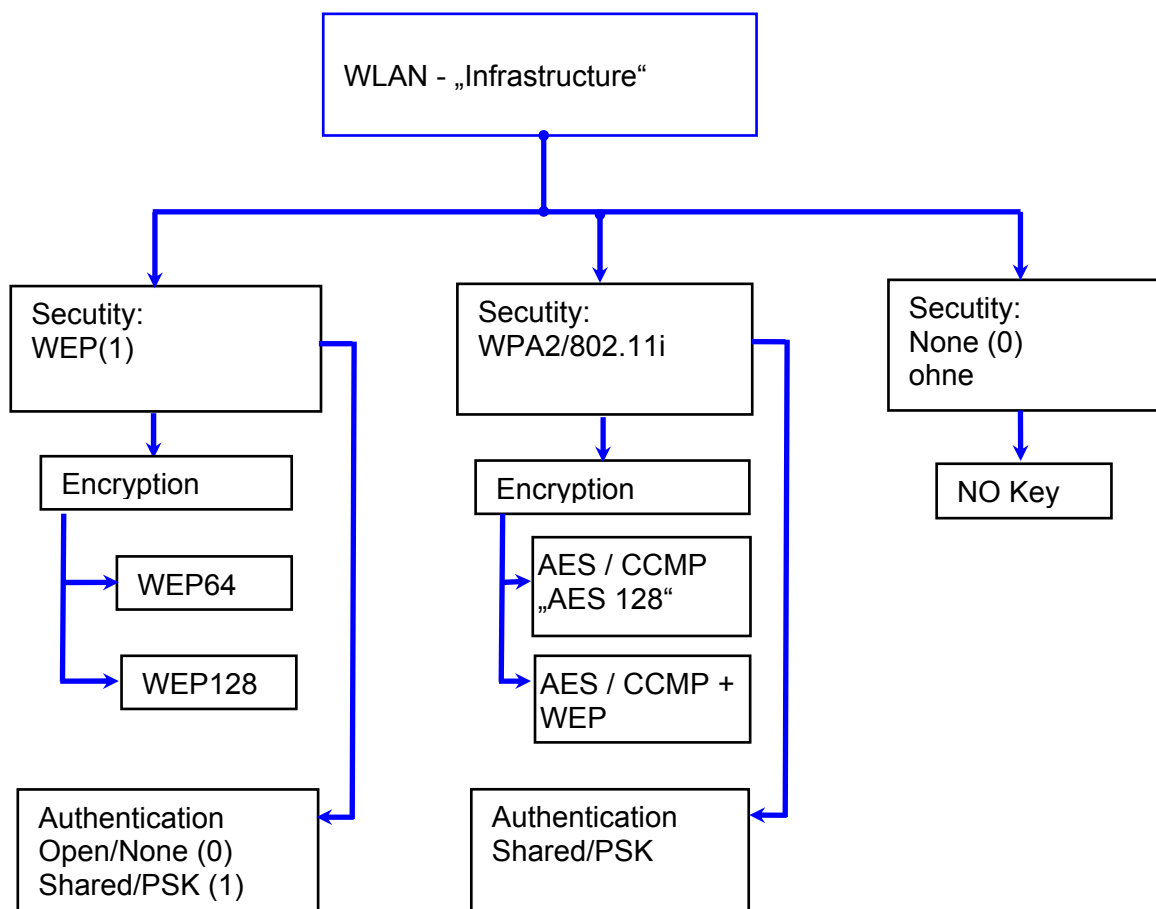
Here see you all existings Networks.

For this 2 Networks have the device all settings to log in.

This AP cannot use.

15.08.11 11:28:08				
<b>Bios</b>				
<b>Akt. Konfig.</b>				
F1	Datafox Support	74db		
F2	Datafox Gast	74db		
?	Location Geisa	86db		
?	Company ?	90db		
ESC Abbruch				Seite
				Taste

### 5.11.4.2. Overview of encryptions



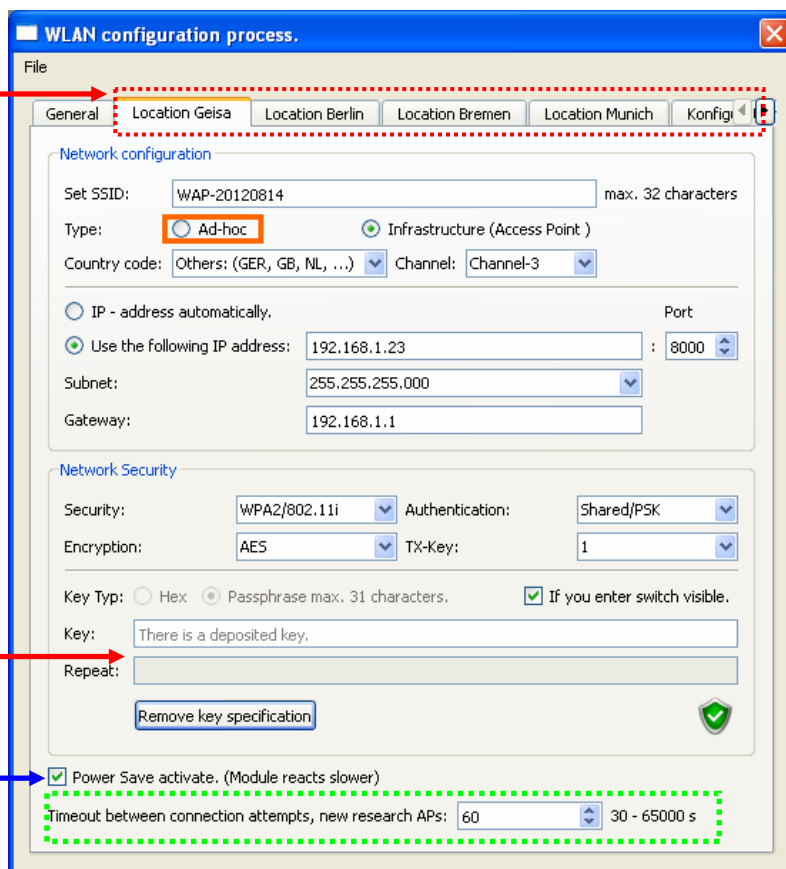
### 5.11.4.3. Setting the wireless parameters

Select the configuration and the location for which you want to set the wireless parameters.

The **Ad-hoc-Mode** you can use, if you need connection directly to an PC.

You see here, if a key saved in the file .df0.

This checkmark is necessary to save power. As a result increases the Battery running time.



A scan (search) for APs is performed after a connection demolition after the set time. Note the following Caution Box!

#### Caution:



A search for a new AP, requires a lot of energy and drain the battery. Avoid a permanent search for an AP when the unit is operating in the border area. Select the interval between scans for new APs generous (80-120s).

At most there is the possibility that AP "Beacon Interval" setting. The higher this is set, the less power required by the TimeboyIV. Recommendation: Beacon interval > 300ms

### 5.11.4.4. Recommend setting for WLAN

We recommend the following setting:

- WPA2
- AES
- Shared/PSK

Datafox have tested th follow AP:

- Longshine LCS-WA5-45 IEEE802.11g
- WatchGuard XTM WEB UI
- Longshine IEEE802.11n
- TP-Link WR841N v6/v7 00000000

#### Settings AP

Encryption: WPA2 Mixed

WPA Cipher Suite:  TKIP  AES

WPA2 Cipher Suite:  TKIP  AES

WPA Authentication Mode:  Enterprise (RADIUS)  Personal (Pre-Shared Key)

Pre-Shared Key Format: Passphrase

Pre-Shared Key: XXXXXXXXXX

Apply Changes Reset

**Disable Wireless LAN Interface**

Band: 2.4 GHz (B+G)

AP Mode Type: AP

SSID: Datafox WLAN TEST

Country: Europe(ETSI)

Channel Number: 2

Associated Clients: Show Active Clients

Apply Changes Reset

#### Settings TimeboyIV via StudioIV

Netzwerkfiguration

SSID setzen: Datafox WLAN TEST max. 32 Zeichen

Typ:  Ad-hoc  Infrastructure (Access Point)

Country Code: Others: (GER, GB, NL, ...) Channel: Channel-Auto

IP - Adresse automatisch beziehen. Port: 8000

Folgende IP - Adresse verwenden: 192.168.123.139 : 255.255.255.000

Subnet: 192.168.123.1

Gateway: 192.168.123.1

Netzwerksicherheit


Security: WPA2/802.11i Authentication: Shared/PSK

Encryption: AES X-Key: 1

Key-Typ:  Hex  Passphrase max. 31 Zeichen.  Bei Eingabe sichtbar schalten.



Key: Es liegt ein hinterlegter Schlüssel vor.

Repeat:

Schlüsselangabe Entfernen 

Power Save aktivieren. (Modul reagiert ggf. langsamer)

Auszeit zwischen Verbindungsversuchen, neue Suche APs: 60 30 - 65000 s

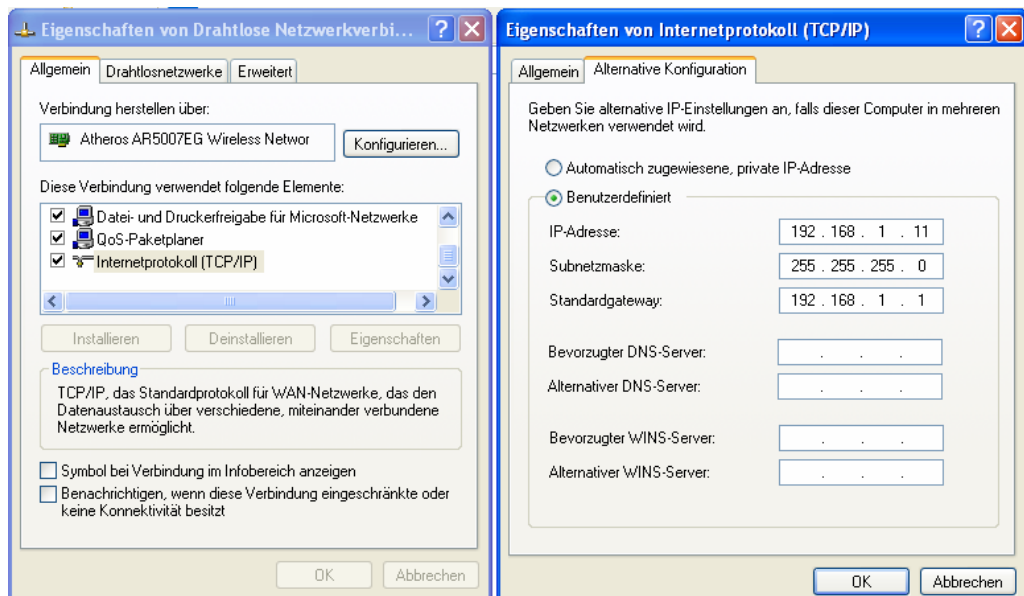
**Caution:**  
 I is not possible to testing all AP you can by.  
 We can not give a guarantee for a conection with each AP.



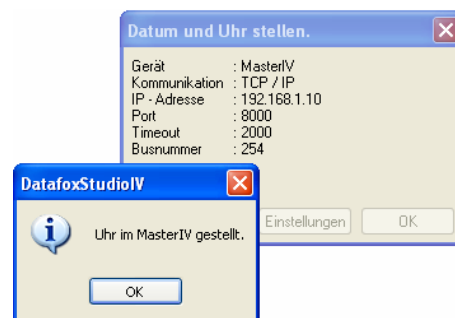
### 5.11.4.5. Ad-hoc Mode

With the dem Ad-hoc Mode is possible, to connect a PC directly with the TimeboyIV.  
As follows are necessary settings:

- ▶ Choose in the Bios Menu ->communication -> WLANRS9110 ->load default settings.
- ▶ Switch the communication to WLAN.
- ▶ Scan for Wireless Networks (The device name is Datafox-MasterIV).
- ▶ Select this network and press connection.
- ▶ The Key is „Datafox-Geisa“.
- ▶ The default IP-Adress in the device is: 192.168.1.10
- ▶ Configure you Network IP adress range confirm to the device.
- ▶ See in the picture and click on alternate configuration:



- ▶ Now you reach the device 192.168.1.10 .



#### Caution:



In ad-hoc mode there is no way of energy saving options. They use this only possible to set up the device.

The WLAN module only when the communication has been set on these.

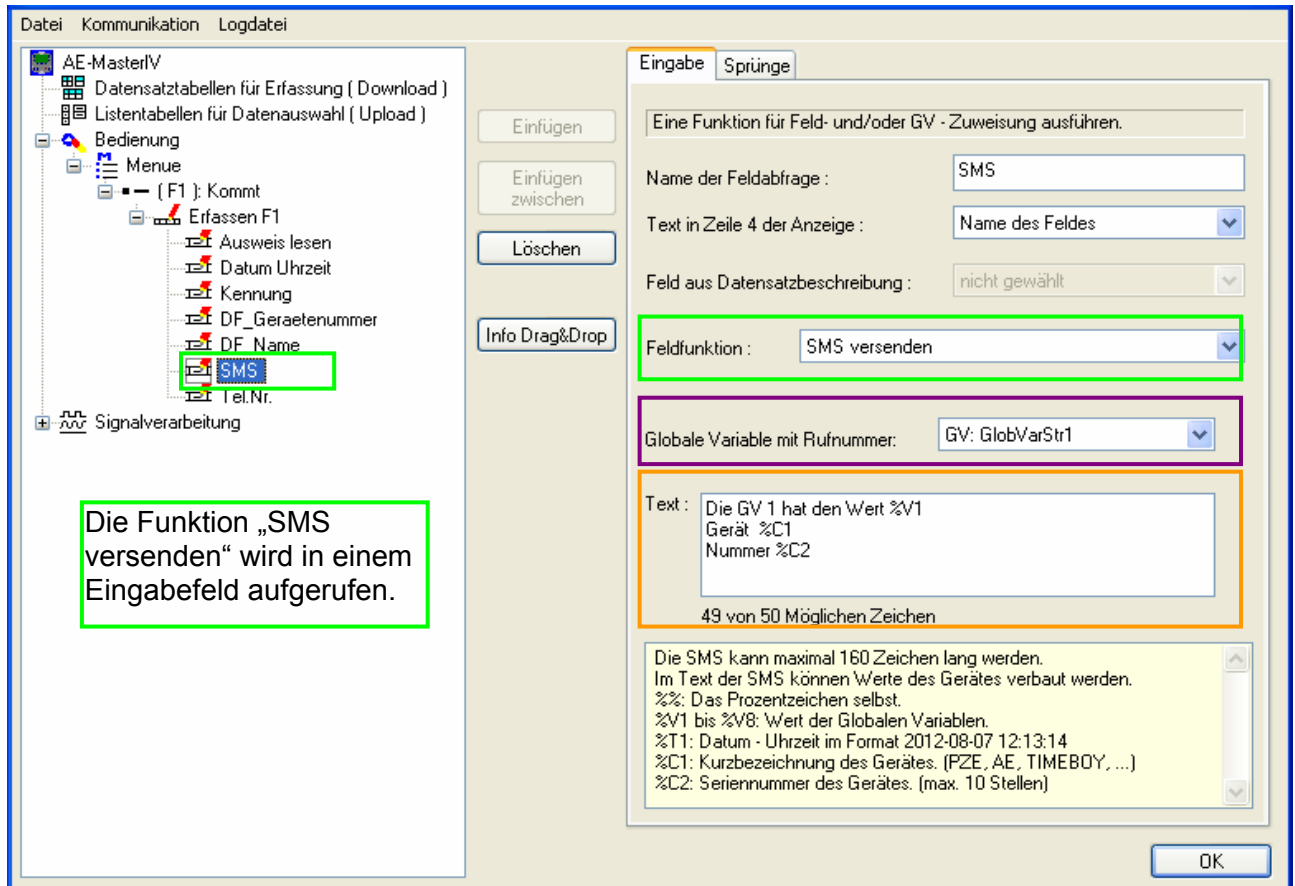
The power consumption of the module to other types of communication is zero.

In ad-hoc mode only supports WEP encryption.

## 5.11.5. Kommunikation per SMS

### 5.11.5.1. SMS versenden

Datafox MasterIV Geräte, die mit einem GPRS-Modem ausgestattet sind, sind nun in der Lage, eine SMS zu senden. Voraussetzung dafür ist, dass die Hauptkommunikation auf „GPRS“ eingestellt ist. Dazu wurde in der Parametriersoftware DatafoxStudioIV eine neue Feldfunktion „SMS versenden“ hinzugefügt. Siehe Bild:



Die SMS kann maximal 160 Zeichen lang werden.  
 Im Text der SMS können Werte des Gerätes verbaut werden.  
 %%: Das Prozentzeichen selbst.  
 %V1 bis %V8: Wert der Globalen Variablen.  
 %T1: Datum - Uhrzeit im Format 2012-08-07 12:13:14  
 %C1: Kurzbezeichnung des Gerätes. (PZE, AE, TIMEBOY, ...)  
 %C2: Seriennummer des Gerätes. (max. 10 Stellen) %1 für GV 1, %2 für GV2 usw..

Die Rufnummer, an die diese Nachricht gesendet werden soll, wird in einer GV (globalen Variablen) angegeben.



#### Achtung:

Geben Sie die Rufnummer immer mit einer Landesvorwahl an.  
 Bsp.: +49161458\*\*\*\*\*

Es werden bis zu 128 SMS im Gerät gespeichert. Kommt dann eine weitere hinzu, wird die älteste SMS gelöscht (Ringspeicher).

### 5.11.5.2. SMS empfangen

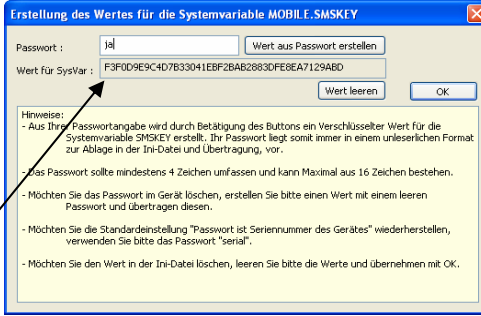
Datafox MasterIV Geräte, die mit einem GPRS-Modem ausgestattet sind, sind nun in der Lage eine SMS zu empfangen.

Folgende Funktionen können dadurch realisiert werden:

- ▶ Anzeige, einer an das Gerät gesendeten SMS auf dem Display. Wie es bereits durch DFCComSendMessage oder bei der HTTP-Rückantwort möglich ist.
- ▶ Aufforderung eine Serviceverbindung aufzubauen (Identisch zur http-Antwort)
- ▶ Eine Eingabekette in der Signalverarbeitung zu starten
- ▶ Einen Signalton ausgeben

**Bedingung** eine SMS zu empfangen ist, dass ein **KEY** in dem SMS-Text hinterlegt sein muss. Der Key für das Gerät, wird in der GPRS/HTTP .ini Datei hinterlegt.

Name	Wert
PHONE	*99**1#
GPRS	internet.eplus.de
USER	blau
PASSWORD	blau
HOST	www.datafox.de
PORT	80
HTTPSEND	GET /httpdemo/geldata.php?
ALIVE	0
HTTPTIMEOUT	10000
HTTPTYPE	1.1
SIMPIN	0
SIMPUK	0
ROAMING	1
RESETTRIGGER	32
ATTACH	32
ERRORLEVEL	0
HTTP	0
KEY	130.149.17.5
DNS1	
SMSKEY	F3F0D9E9C4D7B33041EBF2B8B2683DFE8EA7129A...



#### Textnachricht

Das Schlüsselwort welches in der SMS enthalten sein muss ist

message=Text1 ← Text Zeile2 ← Zeile3 usw.

&delay=10&key=ja

Hierbei bedeutet die **10**, dass die Nachricht für 10 Sekunden angezeigt wird.

Nach dem ← Zeichen wird jeweils automatisch ein Zeilenumbruch eingefügt.

Wurde noch kein **key** im Gerät hinterlegt, muss die Seriennummer des Gerätes als key verwendet werden. Wird der key im Gerät gelöscht (leeres Passwort), so wird jede SMS angenommen.

Die jeweils letzte Nachricht können Sie im Bios-Menü unter „Bios (Menü)“ einsehen.

#### Serviceverbindung

Der Inhalt der SMS ist analog zu dem der http-Antwort vom WEB-Server.

Bisher werden 3 Schlüsselworte unterstützt: **service**, **host** und **port**. Dem Schlüsselwort muss ein ‚=‘-Zeichen mit dem jeweiligen Wert folgen. Die einzelnen Felder wiederum werden mit dem ‚&‘-Zeichen getrennt.

Mit dem Schlüssel **service=1**, wird das Gerät veranlasst, eine Wartungsverbindung aufzubauen. Es wird versucht zu dem im Studio unter „Konfiguration->Systemvariablen Active-Mode“ eingestellten Server („Host“ und „Port“) eine Verbindung herzustellen. Optional ist es auch möglich, den Server direkt in der SMS anzugeben -> **host=**. Voreingestellt ist dann der Port 8000. Mit dem zusätzlichen Parameter **port=** kann auch dieser Wert in jeder SMS angepasst werden.

Beispiele:

- a) service=1
- b) service=1&host=www.datafox.de
- c) service=1&host=123.123.123.123
- d) service=1&host=www.datafox.de&port=4711

In Beispiel a) wird zu dem in der „Active-Mode“ hinterlegten Server eine Verbindung aufgebaut.

Bei b) und c) werden Verbindungen auf Port 8000 zum jeweils genannten Server aufgebaut.

Im letzten Beispiel wird versucht, eine Verbindung zum Datafox-Server an Port 4711 herzustellen.

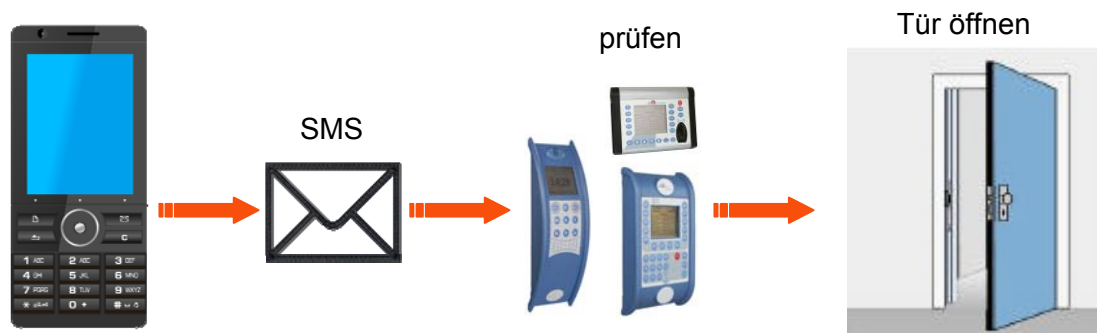
## Eine Eingabekette in der Signalverarbeitung starten

Das Schlüsselwort, welches in der SMS enthalten sein muss, ist:  
**ek=Name&key=ja** (der Eingabekette).

Hierbei muss der **Name** der Eingabekette vollständig übereinstimmen, sonst wird diese nicht ausgeführt. Empfängt nun ein Gerät eine SMS mit diesem Text, so wird die Eingabekette ausgeführt. Ist ein Schlüssel hinterlegt, so wird natürlich auch dieser Benötigt (**&key=ja**).

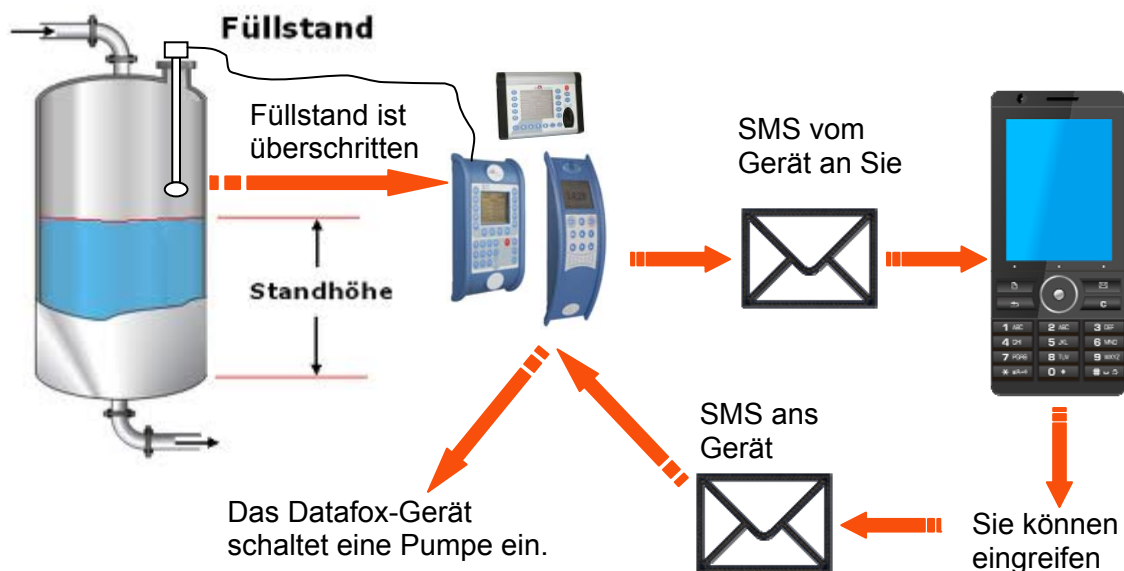
Die Möglichkeiten die sich dadurch ergeben sind sehr zahlreich.  
 Beispiele:

Mit der SMS kann eine Türöffnung durchgeführt werden.



Überwachungsservice einer technischen Anlage bei Störung oä..

Sollte die Regelung des Füllstandes mal abweichen, kann dies durch eine SMS gemeldet werden. Das Datafox MasterIV soll hier nicht als Regler, sondern nur als Benachrichtigung bei einer Abweichung dienen. Bei Bedarf kann auch ein Eingriff erfolgen.



### **Achtung:**

Es gibt keine 100%ige Sicherheit, dass eine gesendete SMS auch beim Empfänger ankommt. Dies ist nur ein Beispiel, welches die Möglichkeiten darstellen soll.

### 5.11.6. Fahrzeugdatenlogger mit Timeboy

Der Fahrzeugdatenlogger erfasst fahrzeugspezifische Daten wie Tachoimpulse, GPS-Koordinaten und digitale Signale von einem Fahrzeug. Diese Daten werden in Abhängigkeit von gefahrenen Kilometern, Zeitintervall und Stellung des Zündschlosses erfasst. Alle erfassten Datensätze werden in den eingesteckten Timeboy geschrieben. Es kann eine Fahrzeugfreigabe hinterlegt werden, die es nur dem/der Fahrer/Fahrerin ermöglicht das Fahrzeug zu starten, wenn der Timeboy die richtigen Freigabebefehle setzt. So kann eine ungewollte Nutzung des Fahrzeugs ausgeschlossen werden.

#### Aufbau



Zur Installation und Einstellung beachten Sie bitte die separate Installations- und Einstellanleitung auf der Datafox DVD:

Datei: "Datafox Fahrzeugdatenlogger für Timeboy, Einbau\_Einstellanleitung HW-Version x,Vx.x".

Es handelt sich um ein separates Dokument, damit die Autowerkstatt für den Einbau nicht das komplette Handbuch benötigt.

Auf den folgenden Seiten, werden nur Informationen zum Setup gegeben.

**Das Einstellsetup und die Beispiele finden Sie auf der DVD.**

#### Ablauf

- Anmeldung des Fahrers und ggf. der Mitfahrer am Timeboy.
- Während der Fahrt, erfasst der Fahrzeugdatenlogger über die digitalen Eingänge den Fahrzeugzustand (Zündung ein/aus) und die Entfernung (Fahrimpulse). Der angeschlossene GPS-Geber liefert die Koordinaten. Bei jeder Zustandsänderung wird ein Datensatz erzeugt. Über diese Funktion wird erfasst, wann.
  - das Fahrzeug die Firma verlässt.
  - das Fahrzeug die Baustelle erreicht.
  - das Fahrzeug die Baustelle verlässt ( auch am Tag zwischendurch ).
  - das Fahrzeug die Firma erreicht.
  - Weiterhin werden auch Zwischenstopps erfasst.
- Wenn der Timeboy in die Fahrzeugdockingstation eingesteckt wird, werden die Daten von der Fahrzeugdockingstation in den Timeboy übertragen.
- Der Vorarbeiter erfasst am Gerät die Arbeitszeiten, ggf. auch Material, etc.. Durch die freie Konfigurierbarkeit vom Timeboy, können beliebige Erfassungsdialoge angelegt werden.
- Die Fahrzeug- und Arbeitszeit-Daten werden im Betrieb aus dem Timeboy ausgelesen.

## Mögliche Auswertungen:

- ⇒ Auswertung der Arbeitszeiten von Mitarbeitern
- ⇒ Auswertungen der Stunden nach Projekten und Tätigkeiten
- ⇒ Automatische Überprüfung der gebuchten Arbeitszeiten gegen die Fahrzeugdaten.  
Überprüft werden soll:
  - ⇒ Arbeitsbeginn darf nicht vor der Ankunft auf der Baustelle sein.
  - ⇒ Arbeitszeit ( Geht – Kommt – Pause ) darf nicht größer als die Anwesenheitszeit auf der Baustelle sein ( Abfahrt Baustelle – Ankunft Baustelle )
  - ⇒ Arbeitsende darf nicht nach der Abfahrt von der Baustelle sein.

## Datensatzformat für den Fahrzeugdatenlogger

Damit die Daten aus dem Fahrzeugdatenlogger in den Timeboy übertragen werden können, muss im Timeboy eine entsprechende Datensatzbeschreibung angelegt werden, wobei es unbedingt wichtig ist, dass es die erste Datensatzbeschreibung im Setup ist. Der Aufbau ist nachfolgend beschrieben.

Die weiteren Datensatzbeschreibungen für die Zeiterfassung, Materialerfassung, etc., können beliebig aufgebaut werden. Damit eine Zuordnung der Daten stattfinden kann, muss ein Timeboy fest einem Fahrzeug zugeordnet werden, oder täglich eine Anmeldung auf das Fahrzeug erfolgen. Über die Schlüsselfelder Datum und Fahrzeug können die Fahrzeugdaten und Zeitdaten verknüpft werden.

Feldname	Feldformat	Beschreibung	
LEN_Kennung	ASCII 5	10100	Zündung ein. Eingang Nr.2 auf 12 Volt.
		10101	Fahrzeug fährt los. ( Erster Tachoimpuls Eingang 1 von 1 auf 0 ).
		10102	Fahrzeug hält an (keine Impulse für t1 Sekunden) oder wird ausgeschaltet. Der Datensatztyp speichert dann im Feld LEN_Zähler die Fahrimpulse.
		10103	Fahrzeug wird ausgeschaltet ( Eingang 2 auf 0 ).
		10104	Entfernungsdatsatz, wird erzeugt, wenn die Anzahl der eingestellten Impulse erreicht ist.
		10105	Timedatsatz, wird erzeugt, wenn die eingestellte Zeit (Fahrt) erreicht ist.
LEN_Fahrzeug	ASCII 5	Fahrzeugnummer, konfigurierbarer Wert zwischen 0 und 65535.	
LEN_DATUHR	7	Datum Uhrzeit, Standardformat von Timeboy	
LEN_Zähler	ASCII 8	Impulszähler, Anzahl Tachoimpulse	
LEN_Flags	ASCII 1	<b>1 Byte mit den codierten Eingängen</b>	
LEN_GPS	ASCII 28	GPS-Daten innerhalb durch „“ getrennt. Die Daten werden ohne Veränderung vom GPS-Modul übernommen. Die Beschreibung kann dem Datenblatt „NaviMouse Serial Data Interface Specification (NMEA, 4800, N, 8, 1 only!)“ entnommen werden. Aus der Message RMC (Seite 19) werden die Felder 2, 3, 4, 5 und 6 übernommen, mit den Kommata als Trennzeichen. Sind die Daten kürzer als 28 Byte, wird der Rest mit 0x00 aufgefüllt.	
Zusatzfeld 1	ASCII 20	Zusatzfeld zur Übernahme einer GV (ab Firmware V 3.2.2 Fahrzeugdatenlogger )	
Zusatzfeld 2	ASCII 20	Zusatzfeld zur Übernahme einer GV (ab Firmware V 3.2.2 Fahrzeugdatenlogger )	

### LEN\_Flags:

Die Flags geben den aktuellen Zustand der 4 Eingänge aus. Der Wert wird als Hexadezimalwert ausgegeben mit einem Offset von 0x40. Die möglichen Werte liegen also zwischen 0x40 und 0x4F. Ein Wert von 1 entspricht Spannung am Eingang, ein Wert von 0 entspricht keiner Spannung.

Bit	7	6	5	4	3	2	1	0
Wert	0	1	0	0	Eingang 4	Eingang 3	Eingang 2	Eingang 1

Ein Firmwareupdate des Fahrzeugdatenloggers kann nur durch Datafox erfolgen, sollten Anfragen dazu bestehen, setzen Sie sich mit Ihrem Händler oder Datafox in Verbindung.

### Autofreigabe per Relais

Im Fahrzeugdatenlogger ist ein Relais eingebaut, das Sie für die Fahrzeugfreischaltung verwenden können.

Anschluss siehe Datei: "Datafox Fahrzeugdatenlogger für Timeboy, Einbau\_Einstellanleitung HW-Version x,Vx.x".

Das Prinzip ist ganz einfach. Wenn der Fahrzeugdatenlogger in der 1. ASCII-Variable den Text "autofreigabe" findet, wird das Relais geschlossen. Bauen Sie Ihr Setup so auf, das bei der Fahreranmeldung die 1. ASCII-Variable über eine Konstante mit dem Text gefüllt wird.

Wie das funktioniert, können sie am einfachsten anhand des Einstell-Setups und des Muster-Setups auf der DVD sehen.

#### **Achtung:**



Um Daten aus dem Fahrzeugdatenlogger lesen zu können, muss die Kommunikation eingeschaltet sein.

Prüfen Sie gegebenenfalls in den Energieoptionen, ob die Kommunikation eingeschaltet ist. Mehr zum Thema finden Sie im Kapitel Energieverwaltung.



## 6. Technical data TimeboyIV

System	clock	real-time clock
Data Memory	Flash	4 MB; 100,000 write cycles
Display	LCD	220 x 176 pixel; 1.9 inch color TFT with backlight
Keys	type	tactile feedback with full switch way
	size	Ø 10 and 12 mm
	number	25
Power Supply	3 x NiMH micro AAA	capacity: 700 mAh to 1000 mAh useable; standard 800 mAh
	power supply docking station	9 V, 300 mA; battery charging inside the unit
	power consumption	0.5 mA to 150 mA (according to mode of operation)
	external supply with plug	5 V DC + inner contact, GND outer contact; max. 5000 cycles; reduced protection class to IP44
Digital Inputs	2 digital inputs	$f_{in}$ 2,5kHz, $U_{Inmax}$ 18V, not DC-isolated
Dimensions	length x width x depth	148 mm x 70 mm x 15 mm
Weight	with batteries	approx. 140 g
Environmental Factors	ambient temperature	-20 °C to +60 °C
	protection class	IP 65
Software	configuration program	setup program for configuration without programming
	communication tools	DLL or C Source code for integration in application
Interfaces Dockingstation	RS232 / RS485	Data communication takes place through the docking station. It consists of a RS232/RS485 interface and a microcontroller. There is the possibility of data transfer for all data modules with RS232 interface, e.g., directly with the PC, router, modem, WLAN bridge, radio etc.
Additional Options	signal inputs	2 x digital input 2.5 kHz
	vibration sensor	for detection of vibrations or movements
	acceleration sensor	3-axis acceleration sensor $\pm 2g$ or $\pm 8g$
	bar code scanner	built-in bar code laser scanner: Motorola SE 955
	transponder reader	built-in: 125kHz, e.g. Unique, Titan, Hitag, 13,56MHz, e.g. Legic, Mifare, ISO14443, ISO15693
	GPS receiver GSM / GPRS (optional)	50 channels, GPS L1 frequency C/A, GALILEO Open Service L1 online via mobile network with GSM and GPRS

Subject to technical change without notice.

### technical data for digital inputs

parameter	descr.	min.	typ	max.	unit
input Voltage	$V_{in}$	0		18	V
max. input. for low	$V_{ILmax}$			1	V
Max. input for high	$V_{IHmin}$	2,0			V
input current ( $V_{in} = 12V$ )	$I_{in}$		0,12		mA
frequency input	$f_{in}$			2,5	kHz

## 7. FAQ

An extensive collection of FAQs can be found on our homepage.

<http://www.datafox.de/faq-de.html>



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