aitronic

LT-300

Universal Terminal

Operating Manual

Manual

LT-300

Universal Terminal

Operating Manual

We don’t deliver just our mobile Data Capturing Devices with Standard Software...

but also develop to customers specific

- Applications for this Devices
- PC Applications
- Hardware

and advise you on

- Creating concepts for mobile and stationary data collection
- Queries surrounding Bar Code and RFID
- Hardware problems

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9. Standard Application 09029 9-1

1. Introduction

The MDE devices from company aitronic are multi purpose in capturing and recording bar codes, transponder tags and manual data.

The devices come in a range of designs and configurations (refer to **LT-300Technical Manual**).

Before using your MDE devices please read this handbook carefully.

All details in this handbook are without warranty and can be rewritten or altered without prior notification from us. We are constantly engaged in maintaining our products error-free and at highest technical standard. As far as possible our object in view is to design our products compatible with products already in use. Despite painstaking efforts, it is not always possible for us to create, develop or test software to 100 % efficiency or to fully guarantee for every possible situation within working conditions.

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By eventual problems or queries to our products, please do not hesitate to contact us for help or information. Please contact us at:

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2. Security Hints

Laserscanner-Modul

The MDE devices are powered with a low power laser diode for visible laser light. The wavelength is 650 nm and the laser power is 1,2 mW nominal. The laser scanner complies with the regulations of CDRH/IEC Class II.

As with other strong light sources the user should not look directly or indirectly into the laser beam. It is not known that an occasional exposure to CDRH-Class-II-laser light can be damaging to eyesight.

The necessary safety labels can be found under the laser light window.

Never try to open any of the laser components or attempt to carry out maintenance on the device. The laser safety regulations could be violated. Repair of the laser module is done exclusively in our workshop.

3. Care Instructions

Your data capturing device with integrated laser scanner module is a high grade and robust unit consisting of electronic and laser optic components. A faulty treatment of this device may considerable affect function and efficiency. To guarantee long and constant operation you should consider the following care instructions!

Care of the Scanner

The red scanner screen of your device and the inner resided scanner module form an optical unit. This screen is provided with a special coating. A damage of this coating i.e. by scratches may lead to problems when scanning barcodes. Because of this a clean and moist cloth should be used when cleaning this screen. Rough dirt may be removed with a soft brush. Cleaning agents may not be used for the screens care and cleaning.

Dealing with the Devices Markings

The attached marking labels (warning and security labels) may not be removed by principle. It is the legitimation to operate with this terminal. Making the terminals data plate or the data plates information (i.e. the serial number) unrecognizable should be avoided. Missing information on the data plate may lead to a more difficult identification. This may lead further to problems which couldn't be solved by telephone. In this case the terminal must be sent in.

Further we recommend for the attachment of additional information (i.e. department or personal numbers) labels with plastic back. Simple paper back labels aren't durable enough. In that way sticking parts may smudge the scanner screen. In this case on one hand the scanner function will be affected, on the other hand cleaning without ignoring the above instructions isn't possible because a solvent would be required.

Repairing Screen Damages

In case of overstress the screen may be loosen. We explicitly attention to that self repairing with short time glue may affect the screen in such strong way that the casing must be changed.

At this point we want to explicitly attention to that we don’t overtake guarantee for damages which are the consequence of wrong dealing with the MDE devices.

4. Software Installation

For cable bound communication between MDE device and PC the program **MTWin** has to be installed.

In order to run MDE device software updates the installation of **M16Start** is required.

MTWin
Download MTWin from the website www.aitronic.de, execute the setup file and follow the installation instructions.

M16Start
Download MTWin from the website www.aitronic.de, execute the setup file and follow the installation instructions.

M16Start may also be executed with the following command line parameters:

```
M16Start [-COM=comport] filepath
```

`comport` may be: `1...n` (COMn) or `nn.nn.nn.nn:port` (IP address)

5. Communication with PC

The communication between the LT-300 and a PC can be done wired via LAN or wirelessly via GPRS. Software updates are possible only with the supplied USB cable.

Communication via LAN

If the connection of the LT-300 is made via LAN, the captured data can be received by means of an IP-enabled terminal program (for example Tera Term or Windows Hyper Terminal).

Wireless Communication via GPRS

Per GPRS ist die Übertragung der Daten per FTP, E-Mail oder SMS möglich. Die dafür erforderlichen Einstellungen müssen im GPRS-Setup des Standard-Programms vorgenommen werden.

Per GPRS data transfer is possible via FTP, e-mail or SMS. The necessary adjustments must be made in the GPRS setup of standard application.

6. System Functions

Startup

After connecting the mains adapter to the LT-300 it performs a cold boot, the installed application starts automatically and is ready for operation.

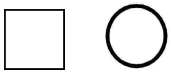
Keyboard

ESC - Exit the menu and return to the higher menu level

Arrow left/top - Select the previous menu item

Arrow right/down - Select the next menu item

ENTER - Execution of the selected menu item or selection of the selected sub-menus



MENU - Calling the menu (hold down key □ and press key ○)

LED's

The 2-color LED arranged left above the LCD screen indicates the following states:

off	Scanner/Transponder switched off
red	Scanner/Transponder switched on
green	Barcode/Transponder Tag scanned

Hardware Reset

A hardware reset is triggered by pressing the buttons □ , ◿ und ○ simultaneously. After a hardware reset, the device is initialized. Successively storage, laser scanners and RFID module are tested. The data memory contents are not changed by the hardware reset.

System Menu

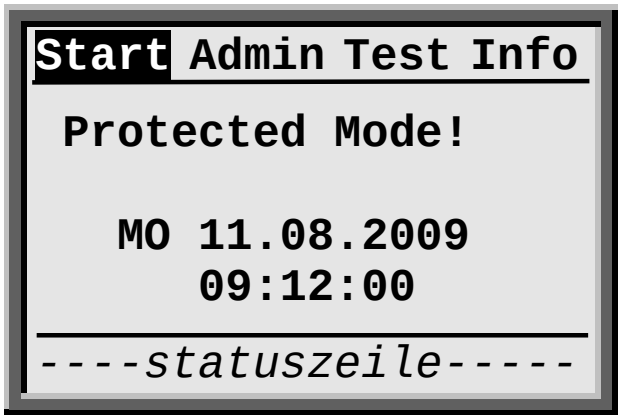
The system-level call is made by

- triggering a hardware reset,
- Wait until „`Database: Init`“ is shown,
- Press button □.

Another quick and easy way to call the system-level is the scanning of the following function code.

Calling System-Level

The system menu is invoked by holding down button □ and pressing button ○.



The system menu has the following structure:

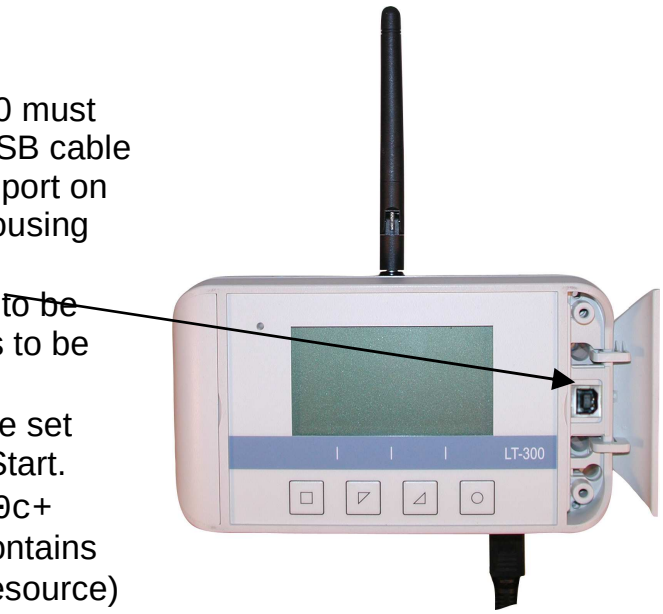
- **Start**
  - Start of the application.
- **Admin**
  - **System**
    - **Power** — Setting power off and power save times
    - **Contrast** — Setting display contrast
    - **Volume** — Setting loudspeaker volume
    - **Keypad**
      - **Click** — Switching on/off button click
      - **Lock** — Switching on/off keyboard lock
    - **Time** — Einstellung von Datum und Uhrzeit
    - **Password** — Setting password
  - **Disk**
    - **Directory** — Display the data which is stored into Flash ROM. After a data file was selected one of the following operations can be performed with this date file:
      - **Info** — Shows the data file information
      - **Copy** — Copy the data file
      - **Rename** — Rename the data file
      - **Del** — Delete the data file
    - **Format** — Format the Flash ROM. **Attention**: All data files will be deleted.
  - **Special**
    - **Bat Monitor**
    - **Light**
    - **Scan Port**
    - **RF-ID Port**
    - **MTWin Port**
    - **RAM Test**
    - **Flash Test**
    - **Flash Erase**
    - **Free Mem**
    - **VEE Erase**
    - **VEE Write Cfg**
    - **Port Bridge**
  - **Restart**
- **Test**
  - **SCAN** — Calling the barcode test program
  - **RF-ID** — Calling the rfid test program
- **Info**
  - Display the operating system information.

Fault Diagnosis

The following table is intended to help eliminate those errors that are indicated by no error message, but only express itself in an unexpected behavior of the LT-300.

Symptom	Possible Causes and Remedy
Barcodes are read bad	• Dirty or scratched transparent panel at the bottom of the LT-300. • Barcode poorly printed, damaged or dirty. • Too many barcodes enabled. Enable only the bar codes that are also required.
Serial communication is faulty	The serial port parameters (baud rate, parity) are set incorrect either at LT-300 or the connected PC or both. The default settings are: 19,200 baud, 8 bits, no parity, 1 stop bit
Serial communication does not work	• USB connector is not fully inserted in the device, • USB cable is not correctly connected to the PC, • Serial interface of the LT-300 or the PC defective.

7. Software Update



- For the software update, the LT 300 must be connected using the supplied USB cable to a USB port on the PC. The USB port on the LT-300 is located at the right housing flap.
- The program M16START.EXE has to be installed and the file type „MOT“ has to be associated with this program.
- The appropriate COM port has to be set under `Option/COM-Port` of M16Start.
- After double clicking file `09018590c+09029100x+09029r100.mot` (contains system software, application and resource) **or** file `09029100x+09029r100.mot` (contains application and resource) program M16START.EXE is startet and the download normally starts automatically. It is important to ensure that the software to be loaded supports the appropriate hardware configuration of the LT-300 (is apparent by `x` in the MOT file name, refer to **Standard Application 09029/Menu: Info**).
- If the download does not start automatically: Trigger a hardware reset (refer to chapter **System Functions/Hardware Reset**) auslösen. M16Start then starts the software update.
- The unlikely event of that M16Start the error message indicating „`Bad Security Key!`“, after triggering the menu `Security/Key Input` the key `8602` has to be entered so M16Start starts the software update. Subsequently, a hardware reset has to be triggered.
- The reported end of the program transmitting M16START confirm with **ENTER**. M16START is then automatically closed.

8. Recycling Orders

According to the regulation 2002/95/EC of the European Union a producer of electronic products has to dispose old devices and accessories put on the market under his brand after the 13th August 2005 at his own expense. But in face of the date of purchase we offer to our customers to recycle all their devices they bought from the aitronic GmbH. We pay the costs of the disposal.

Please do not put old electric devices und accessories in the domestic waste or dispose it via any other kind of waste management. Just send us your old devices and accessories to the following address:

aitronic GmbH
Altgeräterücknahme
Balhorner Feld 10
D-33106 Paderborn
GERMANY / ALLEMAGNE

Please mark your shipment as a delivery of old devices. If you have any questions do not hesitate to contact us.

Fon: +49 5251 29816-0
email: info@aitronic.de

9. Standard Application 09029

If the customer has commissioned no special application, the LT-300 includes this standard application.

Calling System-Level

The system-level call is made by

- triggering a hardware reset,
- wait until „`Database: Init`“ is shown,
- press button □.

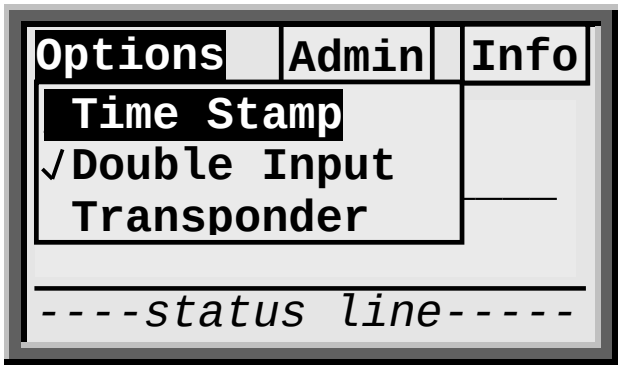
Another quick and easy way to call the system-level scanning the following function code.

Calling System-Level

The system menu is invoked by holding down button □ and pressing button ○.

Menu: Options

After holding the button □ and pressing button ○, the menu bar is displayed. Now the menu item **Options** can be selected with the buttons ◸ and ◿. After pressing the button ○, the options list opens.



Time Stamp

By selected this option a time stamp (record store time) will be added to each record when transferring the data file.

Double Input

When this option deselected, it isn't possible to scan or to enter manually two identical article numbers directly one after another.

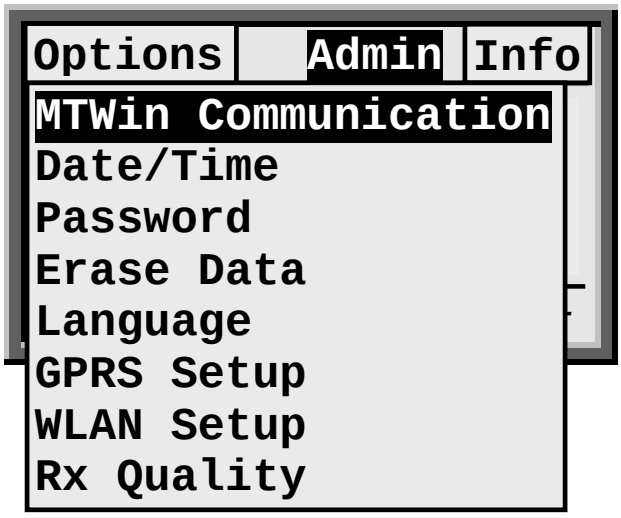
Transponder

If this option isn't selected mask 10 will be shown for scanning barcodes after leaving the options menu.

If this option is selected mask 20 will be shown for reading transponders after leaving the options menu.

Menu: Admin

After holding the button □ and pressing button ○, the menu bar is displayed. Now the menu item **Admin** can be selected with the buttons ◸ and ◿. After pressing the button ○, the menu **Admin** opens.



MTWin Communication

„MTWin – Bereit zum Datenaustausch“ is displayed. All MTWIN functions (for example, data retrieval or loading a table) can now be performed. The MTWIN communication can be terminated by pressing the button □.

Date/Time

Checking and correcting date and time.

Password

Entering a password. This deals for protection against unauthorized access to the **Options** and **Admin** menu.

Erase Data

Manually erasing of the captured data.

Language

Selecting the language for the displayed texts.

GPRS Setup

Calling the GPRS Setup.

WLAN Setup

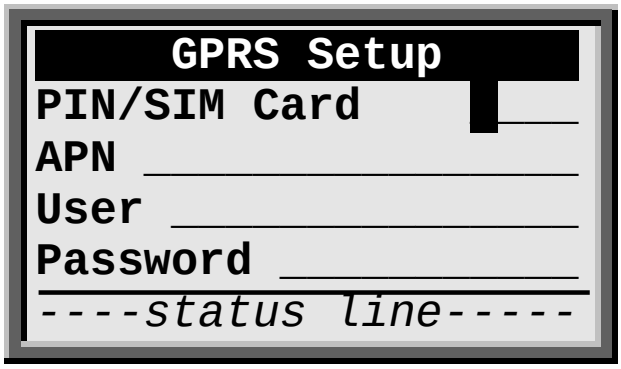
Calling the WLAN Setup.

Rx Quality

Showing the GPRS resp. WLAN signal level and link quality in percent. Function can be terminated by pressing key **ESC**.

GPRS Setup

Das GPRS-Setup kann mit Hilfe dieser Menü-Funktion lediglich überprüft werden. Änderungen sind nur über das Laden einer neuen GPRS-Setup-Datei möglich.



Mask 1

PIN/SIM Card 4 digit PIN for SIM card installed in the MDE device.

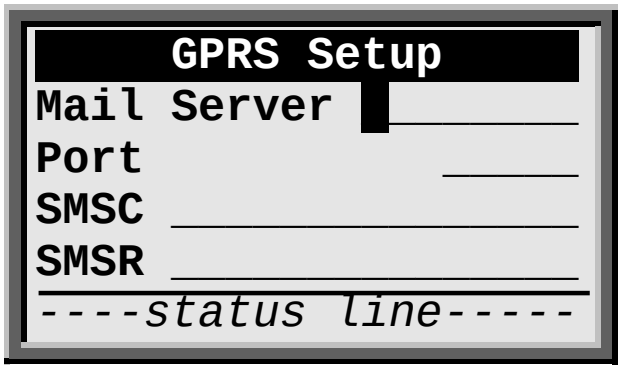
APN 1...40 digit GPRS access point Name.

User 1...40 digit user name, entry is optional.

Password 1...11 digit password. Entry is optional. After having confirmed the entry with ○ mask 2 will be displayed.

The APN fields, **APN**, **User** and **Password** can be taken from the following list for the specified operator:

Provider	APN	User	Pass-word	SMS Service Center
E-Plus	internet.eplus.de	eplus		+491770610000
T-Mobile	internet.t-d1.de	t-mobile	tm	+491710760000
Vodafone	event.vodafone.de			+491722270000



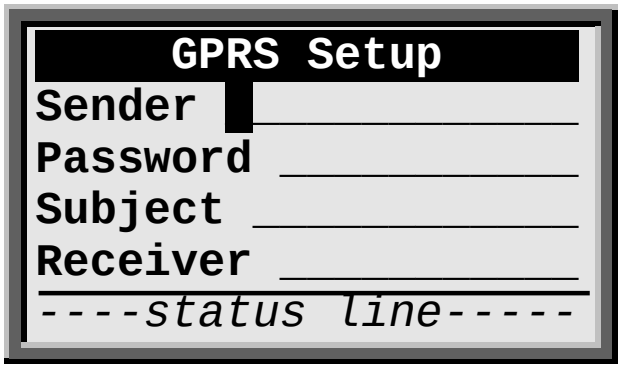
Mask 2

Mail Server 1...40 digit Mail Server Name.

Port 1...5 digit Port No. After having confirmed the entry with ○ mask 3 will be displayed.

SMSC (Short Message Service Center)
1...20 digit telephone no. of the Short Message Service Center.

SMSR (SMS Receiver)
1...20 digit telephone no. of SMS receiver.



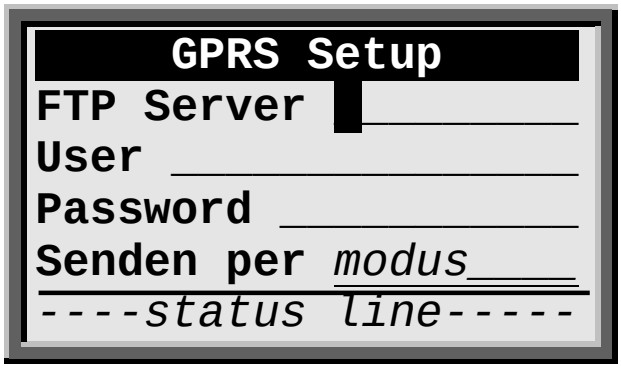
Mask 3

Sender 1...40 digit mail address of sender

Password 1...11 digit password fir Sender Mail Account.

Subject 1...40 digit Subject of mail to send.

Receiver 1...40 digit mail address of receiver. After having confirmed the entry with ○ mask 1 will be displayed again.



Mask 4

FTP Server 1...40 digit FTP Server Address

User 1...20 digit user name

Password 1...11 digit password

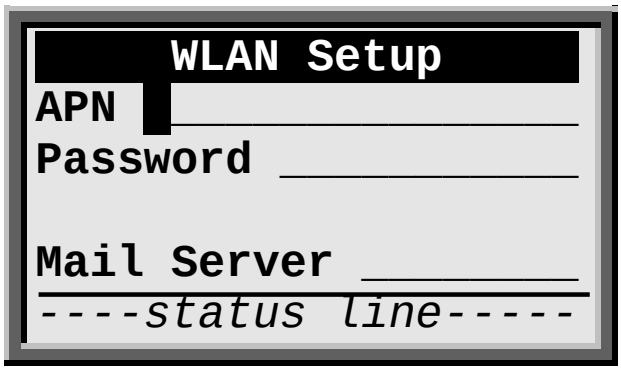
Transm. Per Selecting the file transmission mode. „FTP“ (default), „Mail“ and „SMS“ can be selected.

The GPRS setup masks 1 to 4 can be left at each time by pressing □. After pressing □ the following mask is shown.

Key	Function
○	The settings are **stored** permanently in the User Parameter Area and are preserved also in the case of cold start or formatting the Flash ROM. A return to the previous mask is performed.
□	The settings are **not** stored and a return to the previous mask is performed.

WLAN Setup

The wireless setup can only be checked using this menu function. Changes are only possible via the loading of a new wireless -Setup file.

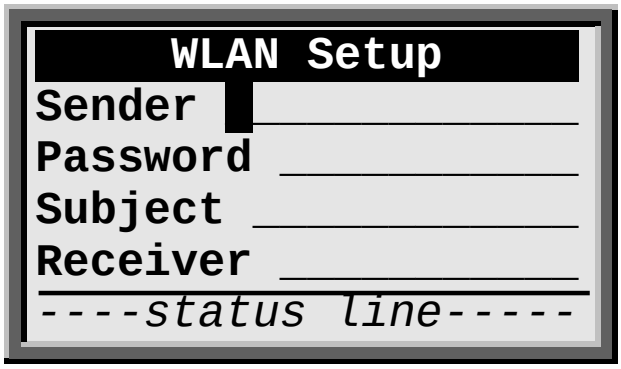


Mask 5

APN 1...40 digit WLAN Accesspoint Name.

Password 1...11 digit password, entry is optional. After having confirmed the entry with ○ mask 2 will be displayed.

Mail Server 1...40 digit Mail Server Name.



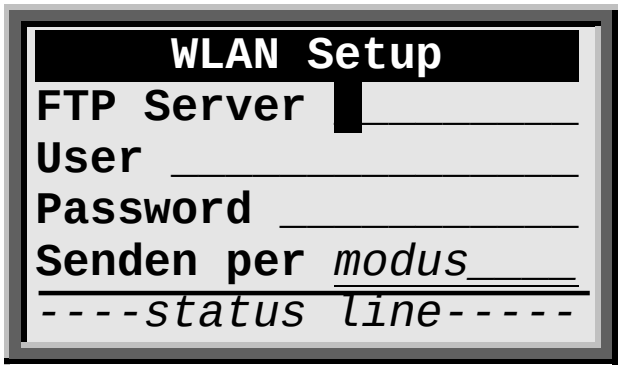
Mask 6

Sender 1...40 digit mail address of sender

Password 1...11 digit password for sender mail account.

Subject 1...40 digit subject of mail to be sent.

Receiver 1...40 digit mail address of receiver. After having confirmed the entry with ○ mask 7 will be displayed.



Mask 7

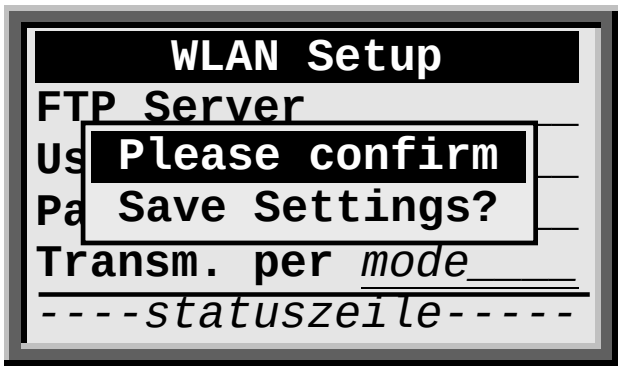
FTP-Server 1...40 digit FTP server address

User 1...20 digit user name

Password 1...11 digit password

Senden per Selecting the file transmission mode. „FTP“ (default) and „Mail“ can be selected.

The WLAN setup masks 1 to 4 can be left at each time by pressing □. After pressing □ the following mask is shown



Key	Function
○	The settings are **stored** permanently in the User Parameter Area and are preserved also in the case of cold start or formatting the Flash ROM. A return to the previous mask is performed.
□	The settings are **not** stored and a return to the previous mask is performed.

Menu: Info

After holding the button □ and pressing button ○, the menu bar is displayed. Now the menu item **Info** can be selected with the buttons ◸ and ◿. After pressing the button ○, the info window is shown.

OS Name and version of system software

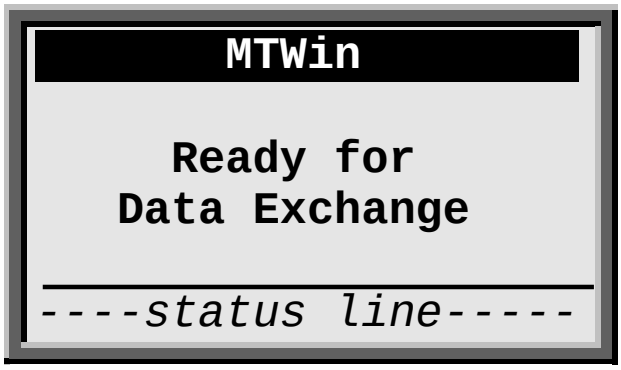
AP Name and version of application

n..n Options marking. This can be put together with following alpha characters:

- **f** The application contains the required software module for WLAN data transmission (Wi**F**i)
- **g** The application contains the required software module for **G**PRS data transmission
- **l** The application contains the required software module for the **L**ogging function

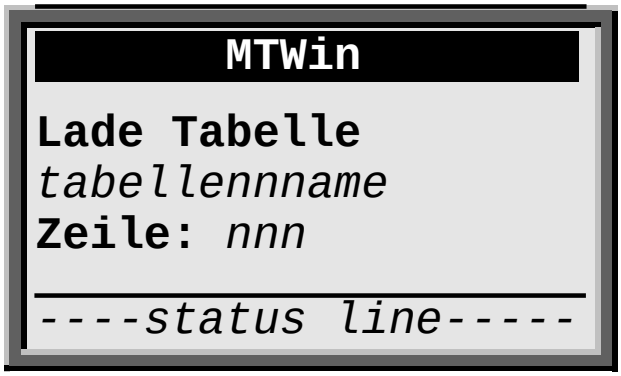
Loading GPRS/WLAN Parameter Table

After executing menu function `Admin/MTWin Communication`



Mask 8

is shown. Nach Starten von MTWin auf dem angeschlossenen PC und Ausführen der Funktion `Tabelle laden` wird



Mask 9

angezeigt. After the table Laden mask 8 reappears. After pressing □ the MTWIN communication is terminated and (depending upon the selected option) mask 10 or mask 20

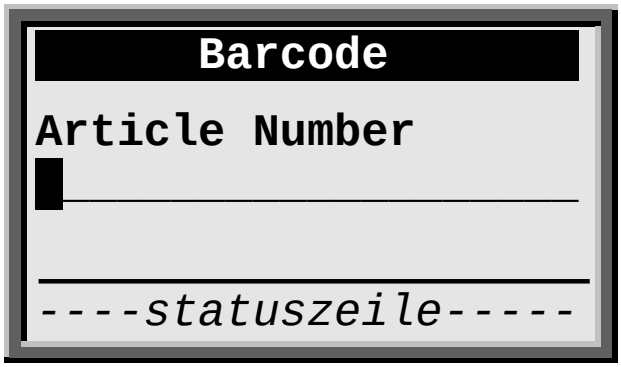
The following page shows an example fort the GPRS/WLAN parameter table. Please notice:

- All unknown parameter names resp. all lines beginning with „//“ are interpreted as comment
- Spaces are only permitted within parameter strings (on the right side of character „=“
- Parameter names are not case sensitive
- Parameters which are not referred by provided parameter names are not changed.

09029 Parameter<CR>
GPRS_PIN_SIM=*pin*<CR>
GPRS_APN=*accesspoint-name*<CR>
GPRS_APN_User=*accesspoint-user*<CR>
GPRS_APN_PW=<CR>
GPRS_MailServerAdr=*mail-server-adresse*<CR>
GPRS_MailServerPort=*mail-server-port*<CR>
GPRS_SMSC=*sms-service-center*<CR>
GPRS_SMSR=*sms-receiver*<CR>
GPRS_MailSender=*mail-sender*<CR>
GPRS_MailSenderPW=*password*<CR>
GPRS_MailSubject=*mail-subject*<CR>
GPRS_MailReceiver=*mail-receiver*<CR>
GPRS_FTPServerName=*ftp-server-name*<CR>
GPRS_FTPUserName=*ftp-user-password*<CR>
GPRS_FTPPassword=*ftp-password*<CR>
// GPRS_DUE_Mode: 0 - FTP, 1 - Mail, 2 - SMS
GPRS_DUE_Mode=*n*<CR>
WLAN_APN=aoa2wlan<CR>
WLAN_APN_PW=*wlan-password*<CR>
WLAN_MailServerAdr=*mail-server-adresse*<CR>
WLAN_MailSender=*mail-sender*<CR>
WLAN_MailSenderPW=*mail-sender-password*<CR>
WLAN_MailSubject=*mail-subject*<CR>
WLAN_MailReceiver=*mail-receiver*<CR>
WLAN_FTPServerName=*ftp-server-adresse*<CR>
WLAN_FTPUserName=*ftp-user-name*<CR>
WLAN_FTPPassword=*ftp-password*<CR>
// WLAN_DUE_Mode: 0 - FTP, 1 – Mail, 2 - SMS<CR>
WLAN_DUE_Mode=*n*<CR>

Barcode Capturing

Following cold start and initialization the standard program mask will be shown:

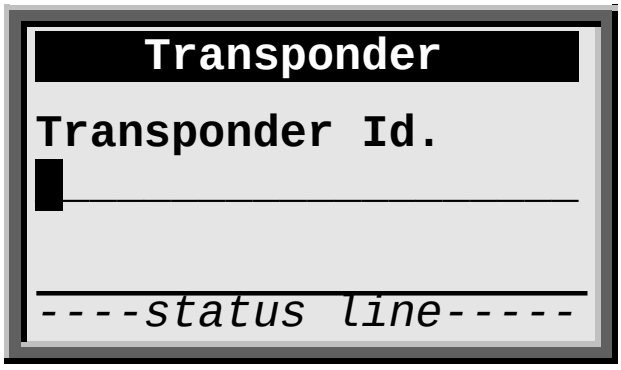


Mask 10

By bringing the barcodes in the vicinity of the scanner plate (behind this is the barcode reader) of the barcode is scanned. The acquired item number is transmitted according to the transmission mode set in the Admin menu and the blank mask 10 is displayed again.

Transponder Capturing

After having selected option **Transponder**



Mask 20

is shown. By bringing the transponder tag to the scanner disk (behind this is the antenna of the transponder module) is the transponder id. will be read. The detected transponder id. is transmitted in accordance with the transmission mode set in the Admin menu and the blank mask 20 is displayed again.

Displaying Records

When an input mask is clear, it is possible to scroll through the memory bank backwards and forwards by pressing the buttons ◸ or ◿.

LAN Data Transmission

If this option is selected, the data is transferred via LAN. Received responses are either info (window closes automatically after 2 seconds) or as a message (this has to be confirmed manually) display. If there is no LAN or wireless connection, the inputted data is stored in data storage. When subsequently restored LAN or wireless connection then the data from the data memory are transferred in the background.

GPRS/WLAN Data Transmission

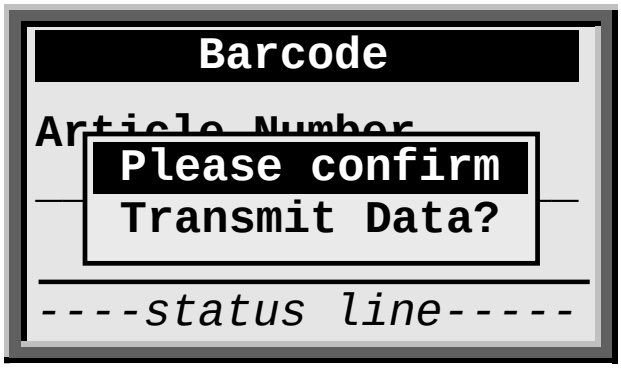
The data is transmitted via GPRS or WLAN, depending on the setting "Send via" in "GPRS Setup" or "Wireless Setup" either via FTP or mail with the captured data as an attachment or in the case of a single record as SMS (only with GPRS).

Der Name der übertragenen Datei mit den vom mobilen Terminal erfassten Daten wird aus der Seriennummer des mobilen Terminals und dem Zeitpunkt der Datenübertragung in folgendem Format gebildet:

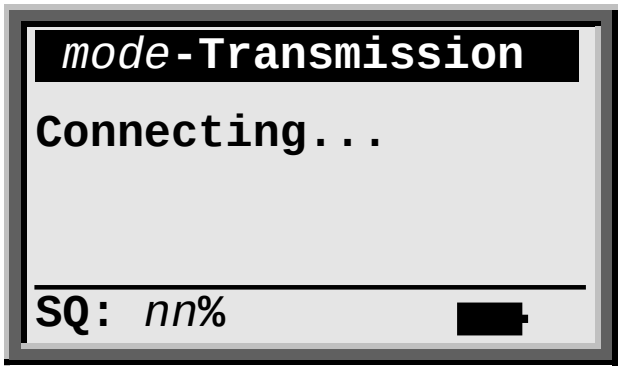
ssssss_jjjjmmtt_hhmmss.TXT

ssssss	serial number of the terminal
jjjjmmtt	year/month/day
hhmmss	hour/minute/second

After pressing button ○ in case of empty entry field



is shown. After confirmation with butoon ○ Mask 20 is shown. This function can be cancelled with button □.

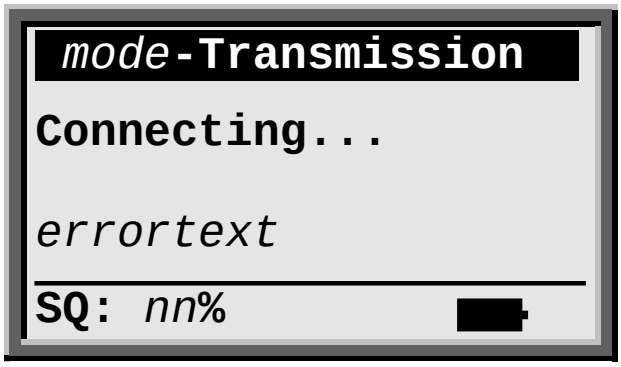


Mask 20

In the title line of the transmission mode *mode*= “FTP“, “Mail“ oder “SMS“) is displayed. The status bar displaying the signal quality SQ percentage done.

The data transmission can be interrupted any time by pressing the button □.

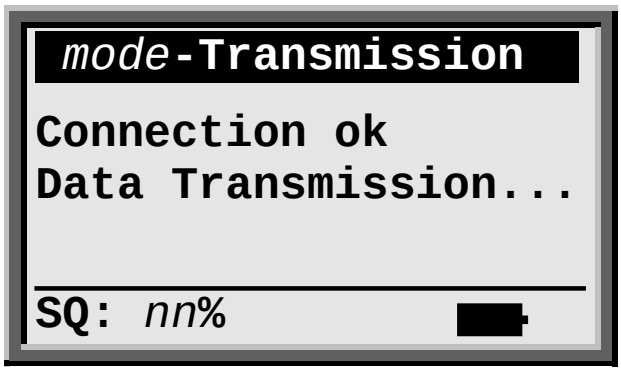
A possible error occurring during connection setup is displayed as follows:



Mask 20

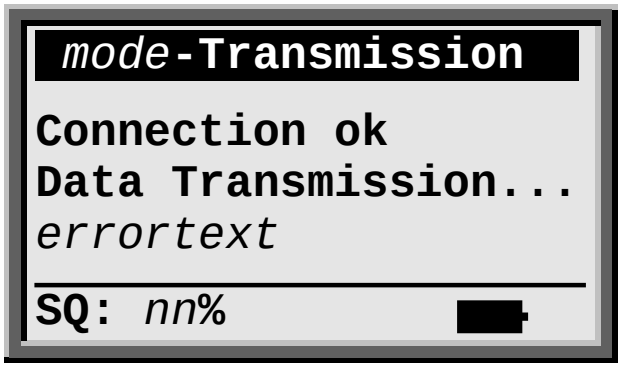
The description of the displayed GPRS error please refer to the document "AT Command Set for SAGEM HiLo Module.PDF". After confirming the error signal by pressing the input mask of the selected standard program will appear.

After successful connection, the data is sent:



Mask 20

A possibly occurring data transmission error appears as follows:



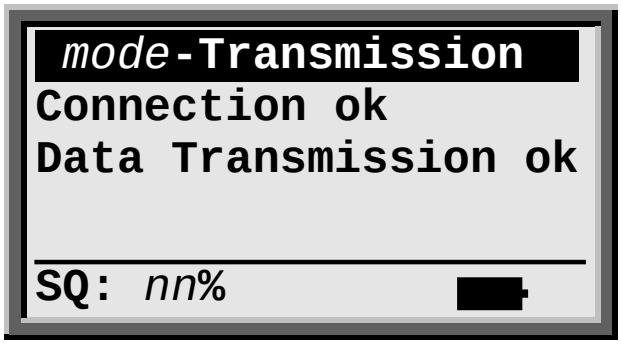
Mask 20

For the description of these errors please refer:

- for GPRS the document "AT Command Set for SAGEM HiLo Module.PDF".
- for WLAN the document "ATi_Programmers_Manual.pdf".

After confirming the error message by pressing button ○ the input mask of the selected standard program will appear.

If the data has been transmitted successfully

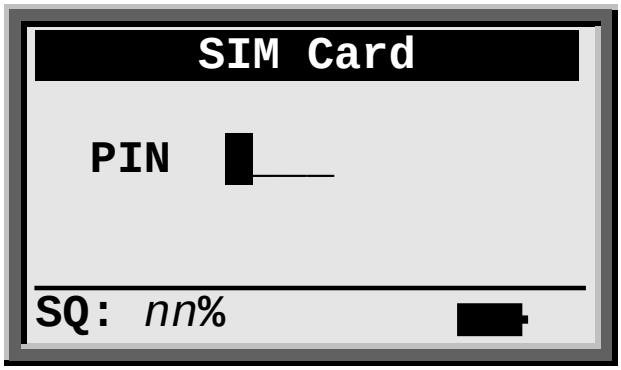


Mask 20

will be shown and the data memory will be cleared. After pressing button □ or ○ the input mask of the selected standard program will appear.

Activating the SIM Card after PIN Error

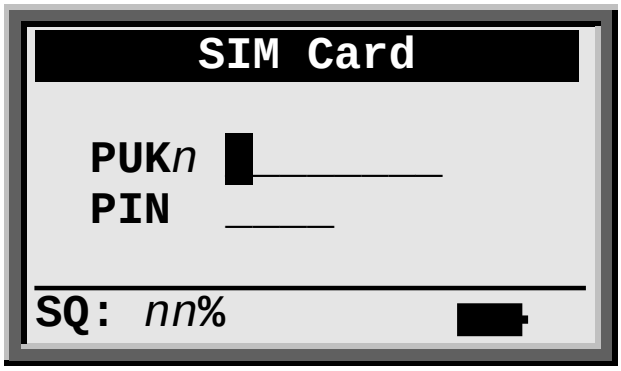
If a PIN error occurs during data transmission mask 30 will be shown.



Mask 30

Entering of a valid PIN is required. An invalid entry will be replied with the error message „`Please confirm – Invalid PIN!`“.

If an invalid PIN was used 3 times overall (either for data transmission or when entering it in mask 30), mask 31 will be shown.



Mask 31

Entering PUK1 resp. PUK2 is required. An invalid entry will be replied with error message „`Please confirm – Invalid PIN`*n*`!`“. After entering the PUK the entering of an new PIN is required. After that mask 12 will be shown and the data transmission has to be started again.

Logging

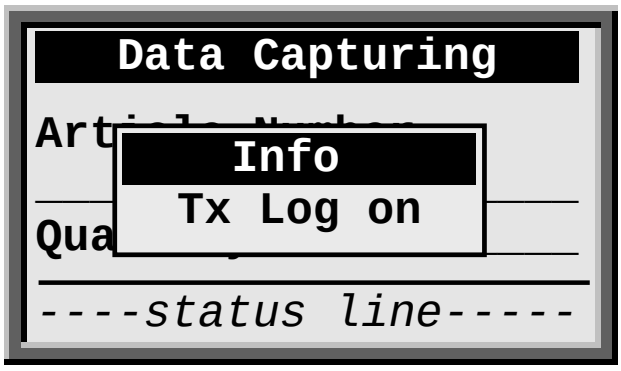
Assumed the application contains the concerning software module (refer to menu: Info), following events are logged with time stamp in the data file and may be inspected together with the captured data:

Log Text	Explication
`Power on`	Device switched off
`Power off`	Device switched on
`GPS Fix`	GPS coordinates are available
`GPS Fix lost`	GPS coordinates no longer available
`Store GPS Coordinates`	Record which were stored without GPS coordinates were added afterwards with GPS coordinates and time stamp

By means of the following function code

Tx Log on/off

it can be switched between „`Tx Log on`“ and „`Tx Log off`“. The new state will be shown at the display, i.e.:



`Tx Log on` Output of log information together with the data
`Tx Log off` No output of log information (default).

After data transmission it will be switched to „`Tx Log off`“.

Test Barcodes

Code 39

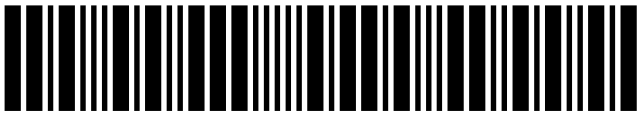
UPC

EAN

Code 2/5 int.

Code 2/5 std.

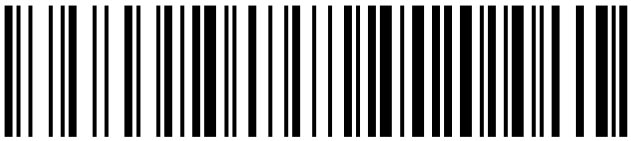
0123



123456

Code 128

Code-128



abc-ABC-123