

# Pocket ISDN

Internet 2.0 / Profi 2.0

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# 1 Preface

This manual allows for the safe and efficient use of the product. The manual is part of the product and must always be stored accessible for installation, commissioning and operating personnel.

## 1.1 Defects Liability Terms

A usage not according to the intended purpose, an ignorance of this documentation, the use of insufficiently qualified personnel as well as unauthorised modifications exclude the liability of the manufacturer for damages resulting from this. The liability of the manufacturer ceases to exist.

The regulations of our Delivery and Purchasing Conditions are effective. These can be found on our website ([www.insys-icom.de/imprint/](http://www.insys-icom.de/imprint/)) under "General Terms and Conditions".

## 1.2 Marking of Warnings and Notes

### 1.2.1 Symbols and Key Words

#### **Danger!**



##### **Risk of severe or fatal injury**

One of these symbols in conjunction with the key word Danger indicates an imminent danger. It will cause death or severe injuries if not avoided.



#### **Warning!**



##### **Personal injury**

This symbol in conjunction with the key word Warning indicates a possibly hazardous situation. It might cause death or severe injuries if not avoided.

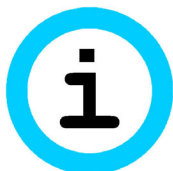
#### **Caution!**



##### **Slight injury and / or material damage**

This symbol in conjunction with the key word Caution indicates a possibly hazardous or harmful situation. It might cause slight or minor injuries or a damage of the product or something in its vicinity if not avoided.

#### **Note**



##### **Improvement of the application**

This symbol in conjunction with the key word Note indicates hints for the user or very useful information. This information helps with installation, set-up and operation of the product to ensure a fault-free operation.



## 1.3 Symbols and the Formatting in this Manual

This section describes the definition, formatting and symbols used in this manual. The various symbols are meant to help you read and find the information relevant to you. The following text is structured like a typical operating instruction of this manual.

### **Bold print: This will tell you what the following steps will result in**

After that, there will be a detailed explanation why you could perform the following steps to be able to reach the objective indicated first. You can decide whether the section is relevant for you or not.

→ An arrow will indicate prerequisites which must be fulfilled to be able to process the subsequent steps in a meaningful way. You will also learn which software or which equipment you will need.

1. ***One individual action step: This tells you what you need to do at this point. The steps are numbered for better orientation.***

✓ A result which you will receive after performing a step will be marked with a check mark. At this point, you can check if the previous steps were successful.

ⓘ Additional information which you should consider are marked with a circled "i". At this point, we will indicate possible error sources and tell you how to avoid them.

➤ *Alternative results and steps are marked with an arrow. This will tell you how to reach the same results performing different steps, or what you could do if you didn't reach the expected results at this point.*

## 2 Safety

The Safety section provides an overview about the safety instructions, which must be observed for the operation of the product.

The product is constructed according to the currently valid state-of-the-art technology and reliable in operation. It has been checked and left the factory in flawless condition concerning safety. In order to maintain this condition during the service life, the instructions of the valid publications and certificates must be observed and followed.

It is necessary to adhere to the general safety instructions must when operating the product. The descriptions of processes and operation procedures are provided with precise safety instructions in the respective sections in addition to the general safety instructions.

Moreover, the local accident prevention regulations and general safety regulations for the operating conditions of the device are effective.

An optimum protection of the personnel and the environment from hazards as well as a safe and fault-free operation of the product is only possible if all safety instructions are observed.

### 2.1 Usage According to the Regulations

The product may only be used for the purposes specified in the function overview. In addition, it may be used for the following purposes:

- Data transmission functions in machines according to the machine directive 2006/42/EC.
- Usage as data transmission device for a PLC or a usual PC.

The product may not be used for the following purposes and used or operated under the following conditions:

- Controlling or switching of machines and systems, which do not comply with the directive 2006/42/EC.
- Usage, controlling, switching and data transmission of machines and systems, which are operated in explosive atmospheres.
- Controlling, switching and data transmission of machines, which may involve risks to life and limb due to their functions or when a breakdown occurs.

## 2.2 Permissible Technical Limits

The product is only intended for the use within the permissible technical limits specified in the data sheets.

The following permissible limits must be observed:

- The ambient temperature limits must not be fallen below or exceeded.
- The supply voltage range must not be fallen below or exceeded.
- The maximum humidity must not be exceeded and condensate formation must be prevented.
- The maximum switching voltage and the maximum switching current load must not be exceeded.
- The maximum input voltage and the maximum input current must not be exceeded.

## 2.3 Responsibilities of the Operator

As a matter of principle, the operator must observe the legal regulations, which are valid in his country, concerning operation, functional test, repair and maintenance of electrical devices.

## 2.4 Qualification of the Personnel

The installation, commissioning and maintenance of the product must only be performed by trained expert personnel, which has been authorised by the plant operator. The expert personnel must have read and understood this documentation and observe the instructions.

Electrical connection and commissioning must only be performed by a person, who is able to work on electrical installations and identify and avoid possible hazards independently, based on professional training, knowledge and experience as well as knowledge of the relevant standards and regulations.

## 2.5 Instructions for Transport and Storage

The following instructions must be observed:

- Do not expose the product to moisture and other potential hazardous environmental conditions (radiation, gases, etc.) during transport and storage. Pack product accordingly.
- Pack product sufficiently to protect it against shocks during transport and storage, e.g. using air-cushioned packing material.

Check product for possible damages, which might have been caused by improper transport, before installation. Transport damages must be noted down to the shipping documents. All claims or damages must be filed immediately and before installation against the carrier or party responsible for the storage.

## 2.6 Markings on the Product

The identification plate of the product is either a print or a label on a face of the product. Amongst other things, it contains the following markings, which are explained in detail here.



### Observe manual

This symbol indicates that the manual of the product contains essential safety instructions that must be followed implicitly.



### Dispose waste electronic equipment environmentally

This symbol indicates that waste electronic equipment must be disposed separately from residual waste via appropriate collecting points. See also Section Disposal in this manual.



### CE marking

By applying a CE marking, the manufacturer confirms that the product complies with the European directives that apply product-specific.



### Appliance Class II – double insulated

This symbol indicates that the product complies with Appliance Class II

## 2.7 Environmental Protection

Dispose the product and the packaging according to the relevant environmental protection regulations. The Waste Disposal section in this manual contains notes about disposing the product. Separate the packaging components of cardboard and paper as well as plastic and deliver them to the respective collection systems for recycling.

## 2.8 Safety Instructions for Electrical Installation

The electrical connection must only be made by authorised expert personnel according to the wiring diagrams.

The notes to the electrical connection in the manual must be observed. Otherwise, the protection category might be affected.

The safe disconnection of circuits, which are hazardous when touched, is only ensured if the connected devices meet the requirements of VDE T.101 (Basic requirements for safe disconnection).

The supply lines are to be routed apart from circuits, which are hazardous when touched, or isolated additionally for a safe disconnection.

## 2.9 General Safety Instructions

### Caution!



**Moisture and liquids from the environment may seep into the interior of the product!**

**Fire hazard and damage of the product.**

The product must not be used in wet or damp environments, or in the direct vicinity of water. Install the product at a dry location, protected from water spray. Disconnect the power supply before you perform any work on a device which may have been in contact with moisture.

### Caution!



**Short circuits and damage due to improper repairs and modifications as well as opening of maintenance areas.**

**Fire hazard and damage of the product.**

It is not permitted to open the product for repair or modification.

### Caution!



**Overcurrent of the device supply!**

**Fire hazard and damage of the product due to overcurrent.**

The product must be secured with a suitable fuse against currents exceeding 1.6 A.

**Caution!**

**Overvoltage and voltage peaks from the mains supply!**  
Fire hazard and damage of the product due to overvoltage.  
Install suitable overvoltage protection.

**Caution!**

**Damage due to chemicals!**  
**Ketones and chlorinated hydrocarbons dissolve the plastic housing and damage the surface of the device.**  
Never let the device come into contact with ketones (e.g. acetone) or chlorinated hydrocarbons, such as dichloromethane.

**Caution!**

**Damage of the product!**  
**Wrong power supply unit.**  
Use the Pocket ISDN only with the supplied power supply unit. Using a different power supply unit may damage the Pocket ISDN. The manufacturer cannot assume liability for this.

### 3 Scope of Delivery

The scope of delivery for the Pocket ISDN includes all accessories listed below. Please check if all accessories are included in the box. If a part is missing or damaged, please contact your distributor.

Please keep the packaging material for a possible future transport or storage.

- Pocket ISDN
- Power supply unit 230 V AC to 5 V DC
- Cable:
  - 1 ISDN cable (S0 cable)
  - 1 PC connecting cable 9/9-pin (RS232 cable)
- Manual
- CD-ROM (optional)

## 4 General Information

The Pocket ISDN is available in two versions. These are

- Pocket ISDN Profi
- Pocket ISDN Internet

Both versions of the Pocket ISDN differ in the following characteristics:

Pocket ISDN	Internet	Profi
CAPI interface	No	No
Multilink PPP	Yes	No
Security callback	No	Yes
X.25	No	Yes
X.31 in D channel:	No	Yes

**Table 1: Differences between Pocket ISDN Profi and Internet**

Both versions are referred to as Pocket ISDN in the further course of this manual. If the Pocket ISDN Profi differs from the Pocket ISDN Internet, this will be mentioned explicitly in the respective sections.

- ⓘ Please note that you cannot use an ISDN device for **digital** data communication to establish a connection to an **analogue** modem.

### 4.1 Product Description

The Pocket ISDN connects a PC (or other device with a serial interface) to the ISDN network. It provides access to online services like Internet, AOL/CompuServe and T-Online. Moreover, point-to-point connections between two ISDN data terminal devices or a connection to a GSM modem can be established. The Pocket ISDN can be considered as digital replacement for an analogue modem.

In order to operate the TA, you will need:

- an ISDN basic rate interface (BRI) (replaces the analogue telephone connection). The basic rate interface can be ordered with the telephone service provider.
- a PC with serial RS232 interface (RS232)

The serial interface of the PC should be suitable for data rates of up to 115.2 kbps. It might be possible that older PCs require an additional PC card for this.

It is possible to increase the data rates over the ISDN line to 230.4 kbps using Multilink PPP with the Pocket ISDN Internet.



## 4.2 Internet Access

There are three methods for Internet access via ISDN:

- with synchronous PPP or Multilink PPP (only with Pocket ISDN Internet)
- with bit rate adaption V.120
- with the B channel protocol X.75

It depends on the access devices of your Internet service provider (ISP) or point-of-presence (POP), which protocol you can use.

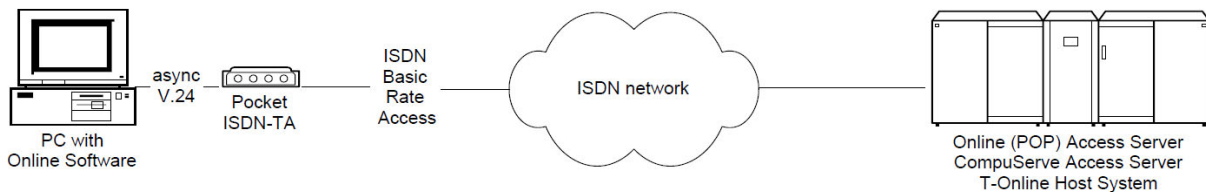


Figure 1: Connection of the Pocket ISDN for access to an online service

## 4.3 AOL/CompuServe Access

The access to AOL/CompuServe via ISDN takes place using the V.120 or X.75 protocol (refer to Figure 1). The protocol depends on the access devices of your AOL/CompuServe dial-in node. The most frequently used common protocol is X.75.

## 4.4 T-Online

The T-Online (German online service) access via ISDN takes place using the T.70NL / X.75 or the synchronous PPP protocol (refer to Figure 1).

## 4.5 LAN Remote Access

You have to select the respective protocol of the ISDN router at the LAN for a remote access to a LAN network.

## 5 Technical Data

### 5.1 Physical Features

All specified data was measured with nominal input voltage, at full load, and an ambient temperature of 25 °C. The limit value tolerances are subject to the usual variations.

Physical Feature	Value
Operating voltage	5 V DC
Power consumption	approx. 140 mA
Weight	150 g
Dimensions (Width x Depth x Height)	71 mm x 128 mm x 22 mm
Temperature range	0°C – 55°C
Maximum permissible humidity	95 % non-condensing

Table 2: Physical Features

### 5.2 Technological Features

Technological Feature	Description
Protection class	Housing IP40
Power supply interface	ISDN network, S0 (U.430 Euro ISDN DSS1)
Transmission standards B channel (Pocket ISDN Internet)	V.110, X.75, V.120, ML-PPP, HDLC (PPP)
Transmission standards D channel (Pocket ISDN Internet)	DSS1
Transmission standards B channel (Pocket ISDN Profi)	V.110, X.75, V.120, x.25/X.31, HDLC (PPP), T70NL, T90NL
Transmission standards D channel (Pocket ISDN Profi)	DSS1, 1TR6, VNx
Transmission speed	64 kbps, 128 kbps with channel bundling (only Pocket ISDN Internet)

Table 3: Technological Features

## 5.3 Certifications

The Pocket ISDN has the following license number for the connection to the PSTN: CE-0682 for Europe (EC), Switzerland and Norway. The Pocket ISDN is conform to the European safety requirements IEC 60 950.

The Pocket ISDN has been developed in compliance with the following guidelines and standards:

- R&TTE 1999/5/EG
- DIN EN 55022 Class B
- DIN EN 61000-6-2
- DIN EN 60950-1
- CTR3

## 6 Connections and LEDs

### 6.1 Front Panel

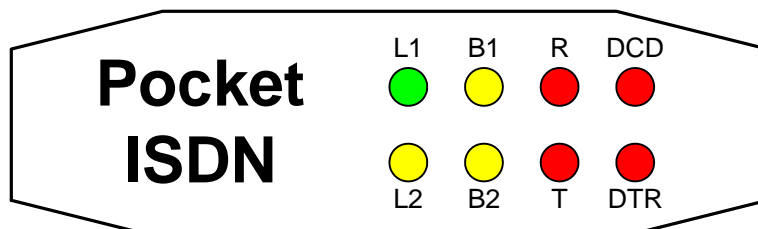


Figure 2: LEDs on the front panel

Description	Colour	LED off	LED on
L1	green	Displays the state of the Pocket ISDN in encoded form	
L2	yellow	Displays the state of the Pocket ISDN in encoded form	
B1	yellow	B channel 1 offline	B channel 1 online
B2	yellow	B channel 2 offline	B channel 2 online
R	red	No data is received	Data is received
T	red	No data is sent	Data is sent
DCD	red	No connection established	Connection to remote terminal is established
DTR	red	DTR line not activated	DTR line activated

Table 4: Description of the LEDs on the front panel

The two LEDs L1 and L2 display the state of the Pocket ISDN according to following table in encoded form.

L1	L2	Status	Action
on	blinking	Start-up process	Wait for start-up process
blinking	off	ISDN error	Check ISDN interface/connector
on	off	active	ISDN OK, no ISDN connection established
on	flashing	Call	ISDN connection is being established
on	briefly off	Sync active	Waiting for B channel synchronisation
on	on	Connection	Data connection is established
off	off	TA error	Hardware error, TA repair necessary
off	blinking	TA error	Hardware error, TA repair necessary
flashing	flashing	Bootloader active	No working firmware; update firmware

Table 5: Device status encoding by LED L1 and L2

## 6.2 Rear panel

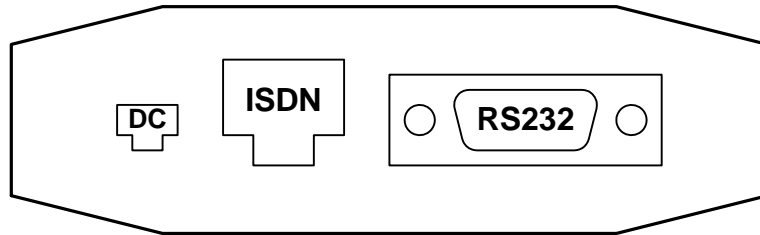


Figure 3: Connections on the rear panel of the device

Description	Colour
DC	Power supply (only the delivered power supply unit must be used)
ISDN	ISDN interface (S0 interface)
RS232	Serial interface

Table 6: Description of the connections on the rear panel of the device

## 6.3 Pin Assignment of the Serial Interface

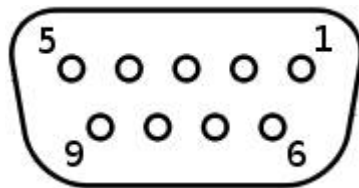


Figure 4: 9-pin Sub-D socket at the device

Pin	Signal	Description
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indication

Table 7: Description of the pin allocation of the Sub-D socket

## 6.4 Pin Assignment of the S0 Interface

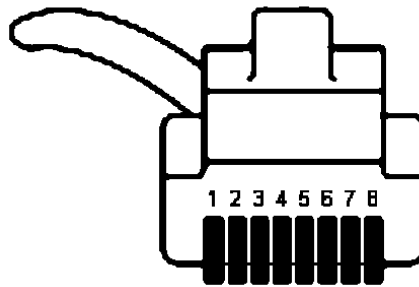


Figure 5: 8-pin Western connector (front view)

Pin	Signal	Description
1	-	Not connected
2	-	Not connected
3	a2	Tx + (Transmit +)
4	a1	Rx + (Receive +)
5	b1	Rx - (Receive -)
6	b2	Tx - (Transmit -)
7	-	Not connected
8	-	Not connected

Table 8: Description of the pin allocation of the RJ45 connector

## 7 Function Overview

The Pocket ISDN provides you with the following functions:

- **Operation at ISDN point-to-point and multipoint interface**

The Pocket ISDN can be operated at ISDN point-to-point interfaces as well as at multipoint interfaces.
- **Different transfer protocols**

The Pocket ISDN supports different transfer protocols, like e.g. X.75, V.110 and HDLC (for PPP connections).
- **Data buffering for serial transmission**

The Pocket ISDN provides send and receive buffers to adjust the Pocket ISDN to the data processing speed of the application.
- **Hardware and software data flow control**

The Pocket ISDN can interrupt the data flow of the application via the control lines of the serial interface, if the buffers of the Pocket ISDN exceed a certain level. An application can also prompt the Pocket ISDN via a control line to interrupt the data flow. As an alternative, the Pocket ISDN can control the data flow via XOFF/XON characters in the data stream.
- **Selective Call Acceptance**

The Pocket ISDN can be set to accept only calls from phone numbers that were previously stored.
- **Security Callback (only Pocket ISDN Profi)**

The called Pocket ISDN can initiate an automatic call to a predefined number, if a specified caller could be identified using CLIP.
- **Automatic call**

The Pocket ISDN can initiate an automatic call either depending on the DTR signal or independent of a status line.
- **Remote configuration**

The Pocket ISDN can be configured remotely using another INSYS ISDN device and a terminal program.

## 8 Initial Operation

This section describes how to commission the Pocket ISDN, i.e. connect the Pocket ISDN to a PC, connect it via an NTBA to the ISDN network and test it.

### Connecting the Pocket ISDN to a PC

How to connect the Pocket ISDN to a PC via the serial interface.

- You will need the 9-pin serial cable.
  - You will need a free serial interface at the PC.
    - ⓘ Use preferably serial interfaces which are actually at the PC as "real" hardware. Virtual serial interfaces or USB-to-Serial solutions may cause problems.
1. *Connect the 9-pin serial cable with the Pocket ISDN and tighten the screws of the connector.*
  2. *Connect the 9-pin serial cable to a free serial interface of your PC.*

### Connecting the Pocket ISDN to the ISDN network

- You will need the enclosed ISDN phone cable
  - You will need an NTBA, which is connected to the ISDN network or a PABX with S0 bus.
1. *Plug one RJ connector of the cable into the RJ phone socket at the Pocket ISDN.*
  2. *Plug the other RJ connector of the cable into the S0 socket of your NTBA or PABX.*

### Connecting the Pocket ISDN to the power supply

How to connect the Pocket ISDN to the power supply.

- You will need the enclosed power supply unit.
1. *Plug the power supply connector of the enclosed power supply unit into the Pocket ISDN and the power supply unit into the power outlet.*

### Install the Pocket ISDN driver for Windows XP

How to install the Pocket ISDN driver.

- You will need the enclosed CD.
- You will need a Pocket ISDN, which is connected to the PC, the ISDN network and the power supply.



1. ***Start your PC, which is connected to the Pocket ISDN.***

- ✓ The Pocket ISDN is detected by the operating system and the hardware installation wizard starts.

2. ***Follow the instructions of the installation wizard.***

- *If the installation wizard is not able to locate the required drivers, unpack the driver, which is located on the CD in the driver section, and install it manually. Please note that the drivers for the Pocket ISDN Internet and Profi are different.*

- ✓ The Pocket ISDN driver for Windows XP is installed now.

### Testing the Pocket ISDN

- The Pocket ISDN is connected to the PC.
- The power supply of the Pocket ISDN is present.
- A terminal program, e.g. Teraterm, is installed on the PC.

1. ***Open your terminal program.***

2. ***Open the serial interface, to which the Pocket ISDN is connected.***

3. ***Enter AT into your terminal program.***

- ✓ The response will be OK.

- *If you don't receive the response OK, check the connection and if the Pocket ISDN receives power. Repeat the test.*

- ✓ The R/T LEDs are illuminated as long as you are entering.

- ⓘ If the R/T LEDs at Pocket ISDN do not illuminate as long as you enter **AT** and receive an **OK**, it might be that you are connected to a different modem (e.g. with the internal modem of the laptop or PC). In this case, check to which interface your Pocket ISDN is actually connected and repeat the test.

- ✓ The Pocket ISDN is installed successfully and ready for configuration.

## 9 Operating Principle

This section describes the basic procedures to operate and configure a Pocket ISDN.

You can operate and configure the Pocket ISDN using AT commands. You can enter these commands yourself with the help of a terminal program and the AT command reference.

### 9.1 Operation with the Terminal Program

In general, any terminal program can be used. We recommend the program Teraterm from T.Teranishi. It is available free of cost on the Internet at <http://hp.vector.co.jp/authors/VA002416/teraterm.html>.

#### Configuring and operating the Pocket ISDN with a terminal program

How to configure and operate the Pocket ISDN using a terminal program.

→ The Pocket ISDN is connected to the PC and switched on.

→ A terminal program is installed on the PC.

**1. Start your terminal program.**

**2. Select the serial port, to which your Pocket ISDN is connected.**

① COM1 under Windows corresponds to /dev/ttyS0 under Linux.

**3. Type the character string `AT` into the terminal program. Complete the entry by pressing the Enter key.**

① Each command input starts with `AT` and is completed with the Enter key.

✓ The Pocket ISDN replies with `OK`.

➤ *If the Pocket ISDN does not respond, this may have two probable reasons:*

*a) the Pocket ISDN is switched off or*

*b) the Pocket ISDN is connected to a different serial port. Check it and repeat step 3.*

**4. Configure the Pocket ISDN using AT commands.**

① A reference of the AT commands can be found in the AT Command Reference section.

**5. Save your entries with `AT&W`.**

① Not all configurations at the Pocket ISDN need to be saved actively by

entering **AT&W**. Some settings are automatically saved immediately. We still recommend sending the command **AT&W** to the Pocket ISDN as your last configuration step to ensure that all settings are stored safely and are available for the next restart.

## 10 Functions

### 10.1 Establishing or Accepting a Data Connection

The Pocket ISDN can call another ISDN TA (ISDN Terminal Adapter) via the phone line and establish a data connection. After dialling a phone number, the Pocket ISDN synchronises with the called TA and opens a data connection. All incoming characters are transmitted to the other (called) TA during the active data connection. Therefore, AT commands are not processed during a connection. The Pocket ISDN must be changed to command mode again using an "Escape sequence" that it processes AT commands again during an active connection. Then, the local Pocket ISDN processes the entered characters as AT commands and does not transmit them to the remote terminal.

The Pocket ISDN can accept an incoming connection in the same way. For this, the "application" or the PC with the terminal program must support the hardware data flow control at the serial interface, otherwise, the Pocket ISDN does not accept the incoming connection. In this case, the hardware data flow control must be disabled in the Pocket ISDN that a connection is accepted regardless of the status of the application. The Pocket ISDN answers after the configured number of ring tones and opens a connection.

This hardware data flow control is activated by default.

#### Configuration with AT commands

---

In order to **establish a data connection** with the Pocket ISDN, use the command

**ATD<number>**

Replace **<number>** with the phone number of the remote terminal.

---

In order to configure the data connection protocol, use the command

**ATB**

Refer to the AT command reference for protocol details.

---

In order to configure the data connection protocol, use the alternative command

**AT\*\*PROT**

Refer to the AT command reference for protocol details.

---

If the remote terminal accepts the connection, the Pocket ISDN indicates	<b>CONNECT</b>
If the remote terminal is busy, the Pocket ISDN indicates	<b>BUSY</b>
If no connection can be established, the Pocket ISDN indicates	<b>NO CARRIER</b>
if the Pocket ISDN cannot start a dial-up procedure, it indicates	<b>NO DIALTONE</b>
In order to <b>change to command mode</b> during a data connection, use the escape sequence	
	<b>+++</b>
No data must be transmitted for 1 second before and after that the Pocket ISDN changes to command mode.	
In order to <b>change from command mode</b> to normal data transmission again, use the command	<b>ATO</b>
In order to <b>accept an incoming connection</b> , use the command	<b>ATA</b>
In order to configure the <b>number of ring tones</b> after which the Pocket ISDN answers and accepts the connection, use the command	<b>ATS0=&lt;n&gt;</b>
Replace <b>&lt;n&gt;</b> with the number of ring tones.	
In order to <b>terminate a connection</b> and cause the Pocket ISDN to hang up, use the command	<b>ATH</b>

## 10.1 Automatic call

The automatic call allows to initiate a call to a phone number previously stored in the Pocket ISDN. There are three possibilities for initiating a call.

The call may be initiated by the DTR line of the serial interface or incoming data at the serial interface. Additionally, the Pocket ISDN can try to call a number immediately after switching it on.

The phone number for the automatic call is taken from the dialling table "catab". If a connection could not be established successfully, the Pocket ISDN dials the next number from the dialling list. If none of the target phone numbers from the dialling list could be reached, the Pocket ISDN initiates an automatic redial. You can change the maximum number of attempts as well as the duration of the pause until the next call.

### 10.1.1 Configuring an Automatic Call

In order to configure an automatic call, change to the Configurator mode of the Pocket ISDN and enter the target phone number first, then select the trigger for the connection establishment and set the reset timer. The reset timer determines the time from the reset of the Pocket ISDN until the change to the "automatic call" mode. If an automatic call is enabled, you have the possibility to send AT commands to the Pocket ISDN during this time. The Pocket ISDN does not accept AT commands anymore after you have configured and enabled the automatic call. The reason for this is that incoming data are immediately transmitted to the called remote terminal. An established connection is indicated by the Pocket ISDN by the "OH" LED and "DCD" LED on the housing front.

The automatic call is disabled in default setting . The dialling table "catab" is empty.

#### Configuration with AT commands

To start the **TA+Configurator**, use the command

**ATCONF**

To configure or overwrite the **target phone number(s)** of the remote terminal, use the command

**catab<n>=<phoneno>**

Replace <n> with values from 1 to 10 (3 for FW < 1.027).

---

In order to **initiate an automatic call**, use the command

The parameter <n> defines the event, that triggers the connection establishment.

Replace <n> with the value

- "6" for a connection establishment if the control line DTR is active;
- "7" for a connection establishment if data are received at the serial interface;
- "8" for a connection establishment independent of a control line;

**cmds=<n>**

---

In order to **disable the automatic call**, use the command

**cmds=0**

---

in order to determine a **baud rate** at the serial interface, which is set during the automatic call, use the command

**br=<n>**

The automatic baud rate detection is disabled during the automatic call.

---

In order to view the **configurable baud rates**, use the command

**br?**

---

In order to configure the **reset timer**, use the command

Set the reset timer to a value of at least 4 seconds. For this, replace "n" with a value in tenths of a second (e.g. 4 seconds is n=40).

**rsttim=<n>**

---

**Save** the settings with the command

**save**

---

In order to **exit the TA+Configurator and enable the function of the automatic call**, use the command

**go**

---

Further optional settings:

---

**Termination of the call after n seconds** of an unsuccessful call. n = 3..255 (default: 15).

**cato=<n>**

---

---

<b>Dialling pause of n seconds</b> before the next call attempt. n = 0..255 (default: 3, n=0 no call attempt).	<b>capa=&lt;n&gt;</b>
<b>Maximum number of attempts</b> for each number entry in catab. n = 1..255; (default: 1)	<b>catry=&lt;n&gt;</b>
In order to configure an <b>idle time</b> , after which the connection is terminated, if no data are transmitted, use the command	<b>idle=&lt;n&gt;</b>
Replace <n> with a value in seconds. Select n=0 to disable this function.	
In order to <b>delete a target phone number</b> , use the command	<b>catab&lt;n&gt;=-</b>
<b>Save</b> the settings with the command	<b>save</b>
In order to <b>exit the TA+Configurator and enable the function of the automatic call</b> , use the command	<b>go</b>

---



## 10.1.2 Disabling an Automatic Call

If the function "automatic call" is enabled, the Pocket ISDN does not accept AT commands anymore. To be able to configure the Pocket ISDN again, you must disable the function.

**To change the Pocket ISDN to configuration mode with enabled function "automatic call"**

- The function "automatic call" is active.
- Your terminal program is connected to the Pocket ISDN.
- The speed of the serial interface is configured to 9600 bps.

**1. Perform a reset of the Pocket ISDN.**

**2. The terminal program displays the message  
"+++ press <CR>, <CR>, <ESC>, <ESC> to enter TA+Configurator +++".**

**ⓘ** This message does not appear if it is disabled using the command **AT\*\*RSTMSG=0**.

**3. Quickly double-press the "Enter" key and the "ESC" key.**

**✓** You are in the TA+Configurator and can configure the Pocket ISDN with the dedicated TA+Configurator commands again.

**4. Enter `cmds=0` to disable the "automatic call" function.**

**5. Save the settings (if desired) with the command `save`.**

**6. Exit the remote configuration with the command `go`.**

## 10.2 Data flow control

The data flow control ensures that the data transfer is interrupted as soon as the buffer of the Pocket ISDN exceeds a certain level. There are two possibilities for data flow control: via the control lines RTS and CTS, or via the control characters XON/XOFF which are inserted into the data stream.

## 10.2.1 Hardware Data Flow Control (RTS/CTS)

The hardware data flow control works in two directions. When the critical buffer level is exceeded, the Pocket ISDN will set the CTS line to "low" and will thus indicate to the application to interrupt the data flow. When the buffer is emptied sufficiently for the Pocket ISDN to be able to receive data again, the CTS line is set to "high". Reversely, the application can also indicate to the Pocket ISDN to interrupt the data flow. This is done via the RTS line. If it is set to "low", the Pocket ISDN will interrupt the data flow to the application. The application will set it to "high" to request data from the Pocket ISDN.

Data flow control is set to hardware as default setting.

### Configuration with AT commands

Enable hardware data flow control (RTS/CTS) with the command	<b>AT&amp;K=3</b>
Disable data flow control with the command	<b>AT&amp;K=0</b>

## 10.2.2 Software Data Flow Control with XON/XOFF

When the input buffer of the Pocket ISDN exceeds a certain fill state, the Pocket ISDN will insert an XOFF character into the data stream to the application. This character will cause the application to send no more data. It depends on the according application software if the XON/XOFF data flow control is supported.

After the input buffer of the Pocket ISDN is emptied sufficiently that data can be received again, the Pocket ISDN will send an XON character to the application. This character will cause the application to send data to the Pocket ISDN again. Analogously, the application can insert XON/XOFF characters into the data stream to switch the data flow on and off. The XON/XOFF data flow control is only available when the transmitted data do not contain the characters XON or XOFF, which usually appear only in actual ASCII texts (7 bit). When binary data (programs, etc.) are transmitted, or in the XMODEM transmission protocol, for example, occasionally appearing XON or XOFF characters would disturb the operation.

### Configuration with AT commands

<b>Enable</b> the software data flow control XON/XOFF with the command	<b>AT&amp;K=4</b>
<b>Disable</b> data flow control with the command	<b>AT&amp;K=0</b>

## 10.3 Remote Configuration

You can configure the Pocket ISDN with another ISDN TA from remote. You can configure a password, authorised callers as well as a remote configuration number to restrict access. The configuration is performed via the TA+Configurator. This is automatically started after the connection establishment for remote configuration.

The remote configuration is active as default. No password is entered and all callers are authorised.

### 10.3.1 Remotely Configuring the Pocket ISDN

The following describes the commands for the remote configuration of an Pocket ISDN using a second Pocket ISDN:

→ Your terminal program is connected to the local Pocket ISDN.

1. *Configure the B channel protocol X.75 at the local Pocket ISDN using the command `ATB10`.*

2. *Establish an ISDN connection to the "Remote TA" using the AT dialling command. Use the command `ATD<phonenumber>e`.*

ⓘ The extension "e" at the end of the phone number establishes an internal control connection to the remote TA

✓ The "Remote TA" replies with a password request.  
**password:**

3. *Enter the correct password.*

➤ *If the Pocket ISDN has been reset to factory settings: enter no password, just press Enter.*

ⓘ Each line starts with a "#" character during remote configuration. Use the TA+Configurator commands (refer to table TA+Configurator commands).

ⓘ In order to read out the settings for example, use the command `showall`.

4. *Configure the Pocket ISDN, which is to be remotely configured, now.*

5. *Save the settings (if desired) with the command `save`.*

6. *Exit the remote configuration with the command `go`.*

### 10.3.2 Configuring the Remote Configuration Number

You can assign an own, dedicated phone number for the Pocket ISDN for remote configuration access.

The phone number of the caller is not requested in default setting .

#### Configuration with AT commands

---

In order to determine a separate remote configuration number, use the command

**AT\*\*rmsn=<phonenumber>**

---

### 10.3.3 Configuring the Remote Configuration Password

You can enter a password at the Pocket ISDN to increase the safety of the remote configuration.

No password is entered in default setting.

#### Configuration with AT commands

---

In order to define a password, use the command

**AT\*\*rpwd=<password>**

---

### 10.3.4 Configuring the Permitted Callers for Remote Configuration

You can create a list with up to 3 or 10 (depending on firmware) phone numbers, which are permitted as caller numbers for remote configuration of the Pocket ISDN. The Pocket ISDN ignores each incoming call with a phone number, which does not match with one of the entries of the list. The Pocket ISDN compares the number of the caller with each entry of the list for this. The comparison starts with the last digit of the phone number. It will be compared until an entry matches a caller number. If a table entry contains only an asterisk "\*", each incoming call is accepted. If the table is empty, the Pocket ISDN accepts each caller for remote configuration.

The list is empty as default setting.

#### Configuration with AT commands

In order to output the <b>phone number</b> of a caller together with the RING message in the terminal window, use the command	<b>ATV2</b>
In order to define the <b>permitted caller</b> for remote configuration, enter the phone number of the permitted callers in the table <b>racctab</b> . <n> is the number of the table entry and can take on the values 1 to 3 or 10 (depending on firmware). <callno> is the transmitted phone number of the permitted caller. The maximum length of the phone number is 20 digits. * : is a wildcard for one or more digits.	<b>AT**racctab&lt;n&gt;=&lt;callno&gt;</b>
only the entered number is accepted	<b>AT**racctab1=089123456</b>
all numbers starting with "089123" are accepted	<b>AT**racctab1=*89123*</b>
all numbers ending with "1234" are accepted	<b>AT**racctab1=*1234</b>
all incoming calls are accepted, without sub-address	<b>AT**racctab1=*</b>
In order to <b>query the table</b> , use the command	<b>AT**racctab</b>
In order to <b>delete an entry</b> , use the command	<b>AT**racctab&lt;n&gt;=-</b>

## 10.4 Connection Configuration of the Pocket ISDN at the ISDN Basic Access

### 10.4.1 Configuration at Multipoint Interface (PMP, Point-to-Multipoint)

In order to operate the Pocket ISDN at a multipoint interface, you must configure it accordingly and configure an own phone number (MSN). The MSN is always configured without area code. When operating at a PABX, you must only enter the extension number.

The operation at a multipoint interface is configured and "\*" is entered as phone number in the default setting.

#### Configuration with AT commands

---

To configure the multipoint interface connection type use the command

**AT\*\*PTP=0**

---

To set the phone number (MSN) use the command

**AT\*\*MSN=<N>**

---

To save the settings use the command

**AT&W**

---

## 10.4.2 Configuration at Point-to-Point Interface (PTP, Point-to-Point)

You can operate the Pocket ISDN at a point-to-point interface. A point-to-point interface is a special ISDN access, which allows that devices behind the access are accessible from outside with dedicated extension numbers.

In order to operate the Pocket ISDN at a point-to-point interface, you must configure the "Point to point" type of connection.

- ❗ This is not valid for the operation at an ISDN PABX. For this, proceed as described under Configuration at Multipoint Interface (PMP, Point-to-Multipoint).

### Configuration with AT commands

To configure the point-to-point interface connection type use the command	<b>AT**PTP=1</b>
To set the phone number (MSN) use the command	<b>AT**MSN=&lt;N&gt;</b>
To configure the TEI (is assigned by the phone provider) use the command	<b>AT**TEI=&lt;N&gt;</b>
To save the settings use the command	<b>AT&amp;W</b>

## 10.5 Security Callback (only Pocket ISDN Profi)

The security callback function enables the called Pocket ISDN to perform an automatic call back to a configured number. If an ISDN device tries to establish a data connection to a remote Pocket ISDN, the called Pocket ISDN compares the phone number of the calling party with the entries of its "Access table". If the phone number matches with an entry, the number, which is in the entry of the callback number, will be called back after the callback time has expired. Otherwise, the call will be rejected. The Pocket ISDN performs only one callback attempt.

Security callback is disabled in default setting.

### Configuration with AT commands

In order to enable security callback, use the command	<b>AT**CMDS2=40</b>
Enter the phone number, which is to be dialled by the Pocket ISDN when calling back, using the command	<b>AT**CASNR=&lt;number&gt;</b>
(Enter the prefix for accessing an outside line when operating at a PABX.)	

---

In order to enter the phone numbers for authentication into the access table, use the command	<b>AT**ACCTAB&lt;n&gt;=&lt;callno&gt;</b>
<n> = memory location in the table (from 1 to 5 or 10 (depending on firmware)) <number> = phone number of the caller	
e.g. for location 1 with number 0941249413	<b>AT**ACCTAB1=0941249413</b>
<hr/>	
In order to read out the table, use the command	<b>AT**ACCTAB</b>
<hr/>	
In order to delete a phone number from the table, use the command	<b>AT**ACCTAB&lt;n&gt;=-</b>
<n> = memory location in the table (from 1 to 5 or 10 (depending on firmware))	
<hr/>	
In order to configure the callback time (pause between call and callback), use the command	<b>AT**CAPA=&lt;n&gt;</b>
<n> is the time in seconds	
<hr/>	
In order to save the settings, use the command	<b>AT&amp;W</b>
<hr/>	
In order to disable security callback, use the command	<b>AT**CMDS2=0</b>

---



## 10.6 Selective Call Acceptance

The Pocket ISDN can be set to accept only calls from phone numbers that were previously stored. The following commands allow to create a table with up to 5 or 10 (depending on firmware) numbers.

The Pocket ISDN ignores each incoming call, which does not comply with one of the table entries. The Pocket ISDN compares the number of the caller with each entry of the list. The comparison starts with the last digit of the number until an entry complies with. If an entry of the table is configured to asterisk (\*), the Pocket ISDN accepts every incoming call.

The list is empty as default setting.

### Configuration with AT commands

In order to use the selective call acceptance and define the phone numbers of the permitted callers in the table **acctab**, use the command

Replace <n> with the number of the table entry here (1 - 5 or 10 (depending on firmware)). <callno> is the transmitted phone number of the permitted caller. The maximum length of the phone number is 20 digits. Use the asterisk "\*" within the phone number as wildcard. This is used to replace one or more digits in the phone number to permit several similar phone numbers.

**AT\*\*acctab<n>=<callno>**

Example: only the entered number is accepted

**AT\*\*acctab1=0891234567**

Example: The Pocket ISDN accepts all numbers starting with 089123

**AT\*\*acctab1=089123\***

Example: The Pocket ISDN accepts all numbers ending with 1234

**AT\*\*acctab1=\*1234**

Example: The Pocket ISDN accepts all incoming calls

**AT\*\*acctab1=\***

To query the table use the command

**AT\*\*acctab**

To delete an entry use the command

**AT\*\*acctab<n>=-**

In order to output the phone number of a caller with the RING message, use the command

**ATV2**

## 10.7 TA+Configurator

The Pocket ISDN has a further command set, the so-called "TA+Configurator", besides the AT command set. This special command set is used in a terminal program after changing to the "TA+Configurator" besides the AT commands. The commands of the TA+Configurator can also be entered directly by adding the prefix AT\*\* without having to change to the special TA+Configurator command set. The TA+Configurator is especially used for some functions of the Pocket ISDN, for example during remote configuration. A list of the command can be found in the section "TA+Configurator Commands". The entry is not case-sensitive.

The TA+Configurator is not active by default when operating via a terminal program.

### Configuration with AT commands

In order to use the <b>TA+Configurator</b> , use the command	<b>ATCONF</b>
In order to display <b>available parameters</b> of a TA+Configurator commands, use the syntax	<b>&lt;command&gt;?</b>
Replace <command> with a TA+Configurator command.	
<b>Example for a TA+Configurator command</b> to change the ISDN protocol to X.75	<b>Prot=10</b>
Example for a <b>prefixed TA+Configurator command</b> to configure the ISDN protocol to X.75 via a TA+Configurator command	<b>AT**prot=10</b>
Example for a "usual" AT command to configure the ISDN protocol to X.75	<b>ATB10</b>
In order to <b>exit the TA+Configurator</b> , use the TA+Configurator command	<b>go</b>
In order to <b>exit the TA+Configurator</b> , use <b>alternatively</b> the TA+Configurator command	<b>quit</b>

## 10.8 Configuring the Transfer Protocol

The information transfer in the ISDN B channel is performed via dedicated protocols. The Pocket ISDN supports different ISDN protocols, which can be used for specific applications. The following table lists all protocols supported by the Pocket ISDN with application examples. The X.75 protocol is enabled in default setting.

ATB	Protocol	Usage
0	V.110 asynchronous	For connections to the GSM network (CSD data connection). The bit rate (300 to 38.400 bps) must be identical at both communication partners.
3	HDLC async to sync conversion (PPP asynchronous)	For remote data transmission connections or connections to an internet provider.
4	HDLC transparent (octets are packed into HDLC frames)	Control protocol for point-to-point data transmission. Usually connection with X.75 for data protection used. HDLC uses no control characters. The usage of "frames" and "windows" during transmission allows to detect errors and repeat the partial transmission, if required.
5	Byte transparent voice connection (raw B channel data)	Byte-by-byte transmission without protocol.
6	Byte transparent data connection (raw B channel data)	Protocol for byte-transparent data transmission.
10	X.75 SLP	Standard protocol for data transmission in packet-switched networks in ISDN with transfer rate up to 64 kbit/s. Takes over the same tasks like V.42 for modem connections in principle. The size of the data blocks on level 2 (Datalength, Framesize, Blocksize) and the maximum number of blocks to be sent (Windowsize) can be configured.
13	V.120 asynchronous	This protocol is adjusted to V.110.
20	X.31 B channel (X.25 B channel)	Protocol for data transfer in packet switched networks like Datex-P of Deutschen Telekom (not Pocket ISDN Internet).
21	X.31 D channel	X.31 is an international manufacturer-independent ITU standard for connecting ISDN systems to X.25 networks. Packet-mode terminals are supported by ISDN using X.31 (not Pocket ISDN Internet).
31	MLPPP	For channel bundling; provides a higher transmission rate of up to 128 kb/s (not Pocket ISDN Profi).

Table 9: Supported ISDN protocols with usage

### Configuration with AT commands

To select the protocol, enter a value from the "AT-<n>" column of Table 9 for the parameter <n>.

**ATB<n>**

In order to set the V.110 asynchronous protocol use the command

**ATB0**

In order to set the HDLC transparent protocol use the command

**ATB4**

## 10.9 Outputting CLIP of Incoming Calls

The Pocket ISDN can output the phone number of incoming calls via its serial interface using CLIP (Calling Line Identification Presentation). This function can be used for example to acknowledge messages, which are sent to a mobile phone by an application via the Pocket ISDN. The CLIP of the caller is output in the format [xxxxxxxx].

### Configuration with AT commands

In order to display the phone number via CLIP using the extended responses, use the command

**ATW1**

In order to define, which type of incoming calls are to be indicated use the command

**AT#C2**

In order to indicate all calls, use the command

**AT#C2=00000001**

In order to output the number of the last caller, use the command

**AT#O**

In order to indicate only analogue calls for example, use the command

**AT#C2=00030012**

## 10.10 User-to-User-Signalling (UUS1)

The transmission of User-to-User data (UUS1-data) can be performed for incoming and outgoing calls using the additional ISDN service UUS1. The UUS1 data are sent transparently from the calling side to the called side before the B channel connection is established completely.

Please note that this ISDN service has to be enabled by the ISDN service provider usually. It might be possible that additional fees incur.

### Configuration with AT commands

In order to enable the display of the UUS1 data, use the command

**ATW1**

In order to transmit UUS1 data to the called remote terminal, use the command

Replace **<number>** with the phone number of the remote terminal.

**ATD<number>//<UUS1-data>**

Replace **<UUS1-data>** with the data to be transmitted. The UUS1 data has a maximum length of 128 bytes and is interpreted as ASCII characters.

Incoming UUS1 data are displayed as extensions of the messages **RING** and **CONNECT**

**RING <number>//<UUS1-data>**  
**CONNECT <number>//<UUS1-data>**

## 10.11 Sub-Addressing

The transmission of a sub-address can be supported for incoming and outgoing calls using the additional ISDN service SUB. The sub-address is sent transparently from the calling side to the called side before the B channel connection is established completely.

Please note that this ISDN service has to be enabled by the ISDN service provider usually. It might be possible that additional fees incur.

The sub-address is separated from the phone number using a "/".

The sub-addressing function can be used with the dialling procedures of the AT command set, PAD x.3 and automatic call.

The own sub-address (calling sub-address) can be configured with the TA+Configurator command **sub**. The sub-address can be entered as supplement into all tables, which contain an ISDN number for dialling or checking .

### Configuration with AT commands

In order to transmit a sub-address to the called remote terminal, use the command

Replace **<number>** with the phone number of the remote terminal. **ATD<number>/<subaddresses>**

Replace **<subaddress>** with the sub-address to be transmitted.

Incoming sub-addresses are displayed as extensions of the messages **RING** and **CONNECT**

**RING <number>/<subaddress>**  
**CONNECT <number>/<subaddress>**

## 10.12 Using Multilink PPP (only Pocket ISDN Internet)

A connection with different detection procedures can be established at the Pocket ISDN Internet using the Multilink PPP protocol. One of them is CHAP. If CHAP is not supported by the server, an automatic fallback to PAP is made.

### Configuration with AT commands

In order to configure the Multilink PPP protocol at the Pocket ISDN, use the command	<b>ATB31</b>
In order to enter the CHAP password, use the command	<b>AT**CHAPPPWD=&lt;password&gt;</b>
Save the entry with the command	<b>AT&amp;W</b>
In order to check the settings, use the command	
The password is displayed in clear text and also visible for unauthorised persons therefore.	<b>AT&amp;V1</b>

## 10.13 Details about Multilink PPP (only Pocket ISDN Internet)

The following authentication protocols (AP) are supported by the Pocket ISDN Internet with Multilink PPP (ML PPP) at the moment:

- Password Authentication Protocol (PAP)
- Challenge Handshake Authentication Protocol (CHAP) with variants
- MD5 according RFC 1321
- Microsoft CHAP according RFC 2433

PAP exchanges the password in clear text format in the B channel, while CHAP encrypts the password according to the algorithms as described in above mentioned RFCs. For CHAP, the password must be stored in the Pocket ISDN Internet in addition to the settings in Dial-Up Networking under Windows 95. This is not necessary under Windows 98/ME/2000/XP.

The following basic rules are valid if the Pocket ISDN Internet is configured for ML-PPP:

- If the remote side (in the connection control protocol LCP ConfigRequest) requests an AP, which can be handled by the Pocket ISDN Internet, the request will be forwarded to the local side.
- If the remote side requests an AP, which cannot be handled by the Pocket ISDN Internet, the Pocket ISDN Internet suggests the safest protocol depending on the preconditions:
  - PAP, if no password "chappwd" is stored locally
  - CHAP/MS-CHAP MD5, if a password "chappwd" is stored locally
 This step can be repeated with a certain number of attempts. Then, the

Pocket ISDN Internet falls back to single link operation until the next connection attempt.

- As soon as the local side (with an LCP ConfigNak) refuses an AP, which has been suggested by the Pocket ISDN Internet alternatively (refer to previous rules), the Pocket ISDN Internet falls back to single link operation until the next connection attempt. Local and remote side negotiate any AP.
- The negotiated AP is checked at the end of the connection setup procedure and, if supported, also used for the second connection. If the last AP is not supported, the second connection will not be established. The Pocket ISDN Internet falls back to single link operation until the next connection attempt.

Please note that some hosts are very stringent. If, for example, PAP is suggested by the Pocket ISDN because no "chappwd" password is present, the connection is simply terminated without the chance to negotiate any other protocol. In these cases, the Pocket ISDN Internet should be configured for single link PPP operation or the "chappwd" password should be stored in the Pocket ISDN Internet.

## 10.14 Call Bumping (only Pocket ISDN Internet)

An ML PPP connection uses both B channels of the S0 bus. In order to answer an incoming call (i.e. a voice connection) during an ML PPP session, a B channel must be released. This is called call bumping.

In order to allow call bumping, proceed as follows:

- Enable the call waiting function in the S0 bus. It must be enabled in ISDN and is a service feature of your ISDN connection.
- Open the "Properties" of your dial-up connection, which you use for ML PPP. Enter the command **AT\*\*CMLP=1** as additional parameter.

In case of a call during an ML PPP connection, the Pocket ISDN Internet releases a B channel and an ISDN phone connected to the S0 bus can answer the call.



## 10.15 Bandwidth on Demand (BOD) (only Pocket ISDN Internet)

Selecting this function causes the Pocket ISDN Internet to use Multilink PPP automatically to increase the ISDN data rate using the second B channel:

- If the data rate of the Internet connection exceeds a certain defined value, a second B channel connection is established and used for data communication automatically.
- If the data rate of the Internet connection falls below a certain defined value, the second B channel connection will be terminated automatically.

### Configuration with AT commands

In order to disable BOD (default), use the command

**ATB\*\*BOD=0**

In order to enable BOD, use the command

**ATB\*\*BOD=1**

In order to define the data rate level for establishing the second B channel connection, use the command

**ATB\*\*BODIV=<incrValue>**

Replace <incrValue> with the data rate level in kbit/s (default: 40).

In order to specify the duration for which the data rate level must be exceeded to add the second B channel connection, use the command

**ATB\*\*BODIT=<incrTime>**

Replace <incrTime> with the duration in seconds (default: 30).

In order to define the data rate level for terminating the second B channel connection, use the command

**ATB\*\*BODDV=<decrValue>**

Replace <decrValue> with the data rate level in kbit/s (default: 40).

In order to specify the duration for which the data rate level must be fallen below to disable the second B channel connection, use the command

**ATB\*\*BODDT=<decrTime>**

Replace <decrTime> with the duration in seconds (default: 30).

**i** Call bumping has higher priority than bandwidth on demand.

## 10.16 Resetting the Device

The Pocket ISDN can be reset (restarted) in several ways: By briefly disconnecting the power supply and using an AT command. Resetting the Pocket ISDN to default factory settings is performed using an AT command.

### Configuration with AT commands

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In order to <b>restart</b> the Pocket ISDN, use the command	<b>AT**RESET</b>
---	------------------

---

In order to reset the standard parameters of the Pocket ISDN to <b>default settings</b> , use the command	<b>AT&amp;F</b>
---	-----------------

---

In order to reset the standard parameters and additionally the ISDN parameters of the Pocket ISDN to <b>default settings</b> , use the command	<b>AT&amp;F1</b>
--	------------------

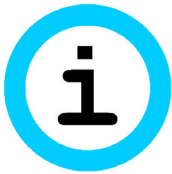
---

In order to save the default settings, use the command	<b>AT&amp;W</b>
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## 10.17 Firmware Update

### Note



#### Function loss due to faulty update!

The Pocket ISDN may lose its function, if it is updated with a wrong firmware or if the transfer of the firmware was faulty.

Before updating the firmware of the Pocket ISDN, contact the INSYS MICROELECTRONICS support department. They will provide you with the suitable firmware version for your Pocket ISDN .

The firmware of the Pocket ISDN can be updated to add further functions to the Pocket ISDN or to improve the existing functions. A firmware update can be performed with a terminal program, which supports XMODEM-1k uploads (like Hyperterminal).

#### Firmware update with a terminal program

How to load new firmware to the Pocket ISDN.

- You will need a terminal program that supports Xmodem-1k file transfers, like Hyperterminal.
- You will need the appropriate firmware for your Pocket ISDN.
- The Pocket ISDN is connected to the PC.

1. *Start your terminal program.*
2. *Activate hardware handshake in the terminal program.*
3. *Configure the baud rate of the serial interface to 115200 and the data format to 8N1.*
4. *Open the serial interface, to which the Pocket ISDN is connected.*
5. *Type in "AT " and confirm with "Enter".*
  - ✓ The Pocket ISDN replies withOK.
  - *If the Pocket ISDN does not respond, check the connection and if the device receives power at all. Continue with step 2.*
6. *Check the version of the currently used firmware by entering the command AT\*\*ver.*

- ✓ The Pocket ISDN displays the version of the currently used firmware, e.g.:  
`HUX0530 V1.027 Jun 18 2007 16:30:57`
- 7. **Enter `AT**FLASH` to start the firmware upload.**
  - ✓ The Pocket ISDN replies "Erasing Flash Eprom now. Please wait..."
  - ✓ The Pocket ISDN replies "send your XMODEM transfer now (Ctrl-X aborts) ..."
- 8. **Send the firmware file with the file transfer protocol 1k-XMODEM using the terminal program.**
  - ❗ If you do not send a firmware file, the Pocket ISDN will terminate the procedure after approx. 60 seconds.
  - ✓ The Pocket ISDN indicates the successful upload of the firmware with e.g.:  
**Loading procedure ended successfully.**
  - *If the firmware update fails, the Pocket ISDN responds to all AT commands (like e.g. `at**ver`) with the reply:  
**ERROR: BOOT LOADER ACTIVE.** Configure the baud rate to 115.200 bps in any case. If you only enter `AT`, `OK` will be returned. Repeat the firmware update in this case. Observe that your terminal program really uses the XMODEM-1K protocol.*
  - *If you didn't receive the previous message for a successful upload, the upload has most probably failed. Try to reset the Pocket ISDN and to repeat the process from step 4. If this fails and the Pocket ISDN does no longer react to AT commands, please contact the INSYS MICROELECTRONICS support department.*
  - ✓ The Pocket ISDN will reset itself and is ready for operation.

## 11 ISDN Error Messages

The exact failure cause is recorded in the protocol memory of the Pocket ISDN in case of a faulty connection establishment. Possible error messages are described here; a complete list of the possible error messages can be found in the subsequent table (refer to section 11.1).

### **Protocol error layer 1 (error code 3301)**

There is no physical connection to the ISDN network. Check the cable connection between the ISDN adapter and the ISDN port. Are you using a suitable cable? Is the connection socket properly installed? Is the ISDN network terminator correctly activated? Do you have other devices on your ISDN line that are maybe faulty or that are blocking the S0 bus?

### **Protocol error layer 2, e.g. DTE address not valid, TEI not valid (error code 3302)**

Could not connect to the ISDN network. This may be due to a wrong ISDN protocol. Have you set "1TR6" (German ISDN) as ISDN protocol even though your ISDN line is set up for "DSS1" (Euro ISDN). or vice versa?

### **Unallocated (unassigned) number (error code 3481)**

"No connection under this number". The number you are calling could not be reached because it has no line assigned to it. The phone number has the right format. Enquire at your telephone company or the operator of your telephone exchange what the correct number is.

### **Normal call clearing (error code 3490)**

"Connection terminated normally". One of the users of the connection cancelled the connection. The connection was not cancelled by the ISDN network.

### **User busy (error code 3491)**

"Busy". The number you are calling cannot answer any calls at the moment because all channels are being used.

### **No user responding (error code 3492)**

The number you are calling did not answer within the time period required by your connection. There is probably no terminal device connected to the number you are calling. Contact the other party to establish the cause.

### **No answer from user (user alerted) (error code 3493)**

The number you are calling confirmed call received within the time period required, but a connection was not established, however. If the terminal device of the other party is a telephone, then it rang, but the call was not answered. Try again later.

### **Call rejected (error code 3495)**

The device reached under the phone number refused the call, although it was not busy and was able to answer the call. Example: if the ISDN option "Call waiting" is activated on the other's party line, a telephone can answer your call even if a call is

in progress at the time. This error message occurs when your waiting call is refused by the person you are trying to reach.

**Number changed (error code 3496)**

The phone number of the party you are calling has changed. Contact your telephone company for the new number.

**Destination out of order (error code 349B)**

The terminal device on the number you are calling could not be reached, because the port for this device did not work. Possible causes: the other party's terminal device is not connected or not turned on, or it is not working properly. Contact the other party to find out the cause.

**Invalid number format (error code 349C)**

The party you are calling could not be reached because the number you called is in the wrong format or incomplete.

**No circuit/channel available (error code 34A2)**

No B channel is available for a call at the moment. Upon this, the Pocket ISDN initiates a blockade release and clears a B channel with this.

**ISDN network out of order (error code 34A6)**

Problems in the ISDN network. Wait a while and try again.

**Temporary failure (error code 34A9)**

Temporary problems in the ISDN network. You can try again immediately.

**Incompatible destination (error code 34D8)**

The terminal device of the other party is not compatible with the terminal device that is making the call. The call cannot be answered, therefore. This error could occur, for example, if the terminal device of the other party is a normal telephone.

## 11.1 Extended Error Messages with ISDN

Cause (hex)	Meaning	AT re- sponse	X.25 re- sponse
0000	No error		
0001	NCPI ignored		
0002	Flags ignored		
0003	Alert already sent		
1001	Too much CAPI applications		
1002	Logic block size too small		
1003	Buffer bigger than 64k		
1004	Buffer of the message too small		
1005	Too much logical connections		
1006	Reserved 1		
1007	Message has not been accepted		
1008	Register: OS resources failure		
100A	External equipment not supported		
100B	Only external equipment		
1101	Wrong application ID		
1102	Invalid command or message length		
1103	Message queue full		
1104	Message queue empty		
1105	Message has been lost		
1106	Unknown message		
1107	Message not accepted		
1108	OS resources failure		
1109	CAPI not installed		
2001	Wrong state		
2002	Invalid identifier		
2003	No PLCI free anymore		
2004	No NCCI free anymore		
2005	No LISTEN free anymore		
2006	No fax resource existing anymore		
2007	Invalid message parameters		
3001	B1 protocol not supported		
3002	B2 protocol not supported		
3003	B3 protocol not supported		
3004	B1 protocol parameter not supported		
3005	B2 protocol parameter not supported		

Cause (hex)	Meaning	AT re- sponse	X.25 re- sponse
3006	B3 protocol parameter not supported		
3007	B channel protocol combination not supported		
3008	NCPI not supported		
3009	Unknown CIP value		
300A	Flags not supported		
300B	Facility not supported		
300C	Data length not supported		
300D	Reset procedure not supported		
3301	Protocol error layer 1		
3302	Protocol error layer 2, e.g. DTE address not valid, TEI not valid		
3303	Protocol error layer 3		
3304	Another application has accepted the call		
3311	Fax remote station is no fax		
3312	Fax training terminated with error		
3313	Fax connection termination before data transmission		
3314	Fax connection termination remote termination		
3315	Fax connection termination remote procedure		
3316	Fax connection termination "local transmitter underrun"		
3317	Fax connection termination "local receiver overflow"		
3318	Fax connection termination "local abort"		
3319	Fax invalid send data		
3481	Unallocated (unassigned) number	3	13, 78
3482	No route to transit network	3	0D, 78
3483	No route to destination	3	0D, 78
3486	Channel unacceptable	6	05, 78
3487	Call awarded and being delivered in an established channel	6	05, 78
3490	Normal call clearing	3	00, 78
3491	User busy	7	01, 78
3492	No user responding	8	09, 78
3493	No answer from user (user alerted)	8	09, 78
3494	No answer from user (device off)	8	09, 78
3495	Call rejected	8	21, 78
3496	Number changed	3	0D, 78



Cause (hex)	Meaning	AT re- sponse	X.25 re- sponse
349A	Non selected user clearing	3	00, 78
349B	Destination out of order	8	09, 78
349C	invalid number format	3	13, 78
349D	Facility rejected	3	13, 78
349E	Response to STATUS ENQUIRY	3	13, 78
349F	Normal disconnect, unspecified	3	00, 78
34A2	No circuit/channel available	7	01, 78
34A6	ISDN network out of order	6	05, 78
34A9	Temporary failure	6	05, 78
34AB	Access information discarded	6	05, 78
34AC	Requested circuit/channel not available	6	05, 78
34AE	Precedence call blocked	6	05, 78
34AF	Resource unavailable, unspecified	6	05, 78
34B1	Quality of service unavailable	3	13, 78
34B2	Requested facility not subscribed	3	13, 78
34B5	Outgoing calls barred within CUG	3	13, 78
34B7	Incoming calls barred within CUG	3	13, 78
34B9	Bearer capability not authorized	3	13, 78
34BA	Bearer capability not presently available	3	13, 78
34BF	Service or option not available, unspecified	3	13, 78
34C1	Bearer capability not implemented	3	13, 78
34C2	Channel type not implemented	3	13, 78
34C5	Requested facility not implemented	3	13, 78
34C6	Only restricted digital information bearer capability is available	3	13, 78
34CF	Service or option not implemented, unspecified	3	13, 78
34D1	Invalid call reference value	3	21, 78
34D2	Identified channel does not exist	3	21, 78
34D3	A suspended call exists, but this call identity does not	3	21, 78
34D4	Call identity in use	3	21, 78
34D5	No call suspended	3	21, 78
34D6	Call having the requested call identity has been cleared		21, 78
34D7	User not member of CUG	3	21, 78
34D8	Incompatible destination	3	21, 78
34DA	Non-existent CUG	3	21, 78
34DB	Invalid transit network selection	3	21, 78

Cause (hex)	Meaning	AT re- sponse	X.25 re- sponse
34DF	Invalid message, unspecified	3	21, 78
34E0	Mandatory information element missing	3	21, 78
34E1	Message type non-existent or not implemented	3	21, 78
34E2	Message not compatible with call state or message type non-existent or not implemented	3	21, 78
34E3	Information element /parameter non-existent or not implemented	3	21, 78
34E4	Invalid information element contents	3	21, 78
34E5	Message not compatible with call state	3	21, 78
34E6	Recovery on timer expiry	3	21, 78
34E7	Parameter non-existent or not implemented, passed on	3	21, 78
34EF	Protocol error, unspecified	6	05, 78
34FF	Network interworking error, unspecified	6	05, 78

## 12 Maintenance, Repair and Troubleshooting

### 12.1 Maintenance

The product is maintenance-free and does not require special regular maintenance.

### 12.2 Troubleshooting

If a failure occurs during the operation of the product, you will find troubleshooting tips in the "Knowledge Base" on our web site (<http://www.insys-icom.de/knowledge/>). If you need further support, please contact the INSYS icom Support. You can contact our support department via e-mail under [support@insys-tec.de](mailto:support@insys-tec.de) and via phone under +49 941 58692-0.

### 12.3 Repair

Send defect devices with detailed failure description to the source of supply of your device. If you have purchased the device directly from INSYS icom, send the device to: INSYS MICROELECTRONICS GmbH, Waffnergasse 8, 93047 Regensburg.

#### Caution!



**Short circuits and damage due to improper repairs and modifications as well as opening of products.**

**Fire hazard and damage of the product.**

It is not permitted to open the product for repair or modification.

## 13 Firmware History

### 13.1 Pocket ISDN Internet

Date	Version	Description
26.06.2006	7.011	<ul style="list-style-type: none"> <li>• New development</li> </ul>
20.07.2006	7.017	<ul style="list-style-type: none"> <li>• New B channel protocol X.75 channel bundling (ATB32)</li> <li>• New B channel protocol AO/DI (ATB33)</li> <li>• Data from the non-volatile memory are only written to the flash memory (AT&amp;W), if a configuration parameter has been changed</li> </ul>

Table 10: Firmware history Pocket ISDN Internet

### 13.2 Pocket ISDN Profi

Date	Version	Description
26.06.2006	1.009	<ul style="list-style-type: none"> <li>• New development</li> </ul>
20.07.2006	1.013	<ul style="list-style-type: none"> <li>• New B channel protocol ML-PPP</li> <li>• New commands "autosave" and "autosavetime"</li> <li>• V.110 38.400 bps removed</li> <li>• New security callback function</li> </ul>

Table 11: Firmware history Pocket ISDN Profi

## 14 AT Command Reference

Default values are printed **bold**.

Command	Description
<b>A/</b>	<p><u>Repeat the last command</u></p> <p>This command repeats the commands of the last entered command line.</p>
<b>ATA</b>	<p><u>Accept incoming call</u></p> <p>An incoming call can be accepted with this command if automatic call acceptance is disabled (register S0 = 0). An incoming call is indicated by the "RING" message or the code "2".</p> <p>This command must be the last in an AT command line.</p> <p>ATA[//&lt;UUS1data&gt;]</p> <p>&lt;UUS1data&gt; Data transmitted with UUS1 signaling</p>
<b>ATB</b>	<p><u>B channel protocol</u></p> <p>Transmission protocol for data in B channel.</p> <p>ATB0 V.110 asynchronous (e.g.: for connections to GSM devices)</p> <p>ATB1 V.110 synchronous</p> <p>ATB3 HDLC async to sync conversion (PPP asynchronous, single link PPP) (e.g.: for internet / communication network access)</p> <p>ATB4 HDLC transparent (octets are packed in HDLC frames)</p> <p>ATB5 Byte-transparent Voice (B channel data)</p> <p>ATB6 Byte-transparent Data (B channel data)</p> <p><b>ATB10</b> X.75-NL (e.g.: for direct ISDN-ISDN data connections)</p> <p>ATB13 V.120 asynchronous</p> <p>ATB20 X.31 B channel (X.25 B channel, option)</p> <p>ATB21 X.31 D channel (option)</p> <p>ATB31 Multilink PPP</p> <p>ATB40 external IOM</p> <p>ATB43 external Data</p> <p>ATB45 external Audio Data</p> <p><b>Note:</b> Not all parameters listed here are available for all devices. The availability of the parameters depends on the respective device.</p>

Command	Description
<b>AT%B</b>	<p><u>Configures local baud rate</u></p> <p>Sets the local baud rate of the Pocket ISDN to the desired value (fix value) or to autobauding. If autobauding is configured, the Pocket ISDN detects the required baud rate with each AT command entered via the terminal program (PC). The same baud rate must be configured at the PC for all other settings.</p> <p>This command must be the last in an AT command line.</p> <p><b>AT%B0</b>            Automatic baud rate detection enabled (autobauding)</p> <p>AT%B1            Local baud rate    1.200 bit/s</p> <p>AT%B2            Local baud rate    2.400 bit/s</p> <p>AT%B3            Local baud rate    4.800 bit/s</p> <p>AT%B4            Local baud rate    9.600 bit/s</p> <p>AT%B5            Local baud rate    19.200 bit/s</p> <p>AT%B6            Local baud rate    38.400 bit/s</p> <p>AT%B7            Local baud rate    57.600 bit/s</p> <p>AT%B8            Local baud rate    115.200 bit/s</p> <p>AT%B9            Local baud rate    230.400 bit/s</p> <p><b>Note:</b> If autobauding is enabled (default) and no AT command ins entered into the Pocket ISDN after switching on, the messages from the Pocket ISDN (e.g. RING) are sent with a baud rate of 115.200 bit/s. Autobauding works only with the data format 8N1.</p>
<b>ATCONF</b>	<p><u>Starting the INSYS ISDN TA+Configurator</u></p> <p>Starts directly the INSYS ISDN TA+Configurator. The "#" prompt of the configurator is displayed. The INSYS ISDN TA+Configurator is exited with the command "quit".</p>
<b>AT&amp;C</b>	<p><u>DCD Processing</u></p> <p>Configures the behaviour of the DCD line of the Pocket ISDN.</p> <p>AT&amp;C            Pocket ISDN control line DCD is always ON</p> <p><b>AT&amp;C1</b>            DCD ON indicates that an ISDN connection is established and synchronised</p>
<b>AT#C</b>	<p><u>Bearer channel service</u></p> <p>Indicates the bearer channel service, which has been received with an incoming call, in hexadecimal encoding <i>hbhb</i>.</p> <p>The value of <i>hbhb</i> (word) is the CIP value, as defined in the CAPI 2.0 specification.</p>
<b>AT#C1=<i>hbhb</i></b>	<p><u>Configure outgoing bearer channel service</u></p> <p>Configures the bearer channel service, which is transmitted with an outgoing call.</p> <p>The value of <i>hbhb</i> (word) is the CIP value, as defined in the CAPI 2.0 specification. (Default 0002).</p> <p><b>Example:</b>        AT#C1=0002: outgoing call as data call.                              AT#C1=0004: outgoing call as voice call</p>

Command	Description
<p><b>AT#C2=hbhbhbhb</b></p>	<p><u>Configure incoming bearer channel service</u>                      Configures the bearer channel service, which is accepted with an incoming call. The value of <i>hbhbhbhb</i> (double word) is the CIP mask, as defined in the CAPI 2.0 specification. (Default 00000004).  <b>Example:</b> AT#C2=00000001: accepts all incoming calls.  <b>Note:</b> The command AT#C1 must be set prior to a connection establishment.                      In order to use the predefined services, configure the standard values with AT&amp;F.</p>
<p><b>ATD</b></p>	<p><u>Connection establishment</u>                      Dials the specified number (D for dial). The dialling modifiers "W", "&gt;", "T", ";", "@" can be freely inserted into the dialling string. They have no influence on the dial-up procedure of the Pocket ISDN.                      Entering a letter during dial-up terminates the dial-up procedure.</p> <p><b>ATD&lt;CALLEDnumber&gt;[/&lt;subaddr&gt;][/!&lt;UUS1data&gt;][,X[Pxxx][R ][N&lt;nuipwd&gt; ][G&lt;cug&gt; ]&lt;X25number&gt;][D&lt;userdata&gt;]]</b></p> <p><b>CALLEDnumber:</b> ISDN phone number for a selected B channel connection, or X.25 number for X.31 D channel</p> <p><b>subaddr</b> Dialled sub-address</p> <p><b>UUS1data</b> Transmitted data with UUS1 signalling</p> <p><b>P:</b> Packet size <i>xxx</i> for X.25 connection</p> <p><b>R:</b> Reverse charge by the recipient (only with X25)</p> <p><b>G:</b> Access to closed X.25 user group</p> <p><b>O:</b> Outgoing call from closed X.25 user group</p> <p><b>N:</b> Use NUI and password                      permitted characters: a-z, A-Z, 0-9.                      (overwrites the characters of the NUI configuration command)</p> <p><b>X25number:</b> dialled X.25 phone number (only X.25 B channel)</p> <p><b>D:</b> Separator for user data: "D" or ",": user data without ID protocol</p> <p>"P": user data with ID protocol ("01000000")</p> <p>ATDL Dial last dialled number</p> <p>ATDS=<i>n</i> Dial number <i>n</i> from the stored phone number list (<i>n</i>=1..3)</p> <p>(Refer to the command AT&amp;Z for saving numbers)</p> <p>ATD&lt;CALLEDnumber&gt;e Call for remote access to the Pocket ISDN (refer to note).</p> <p><b>Note 1:</b> In order to configure the own sub-address, refer to the command <b>sub</b>.</p> <p><b>Note 2:</b> If an "e" is appended to <b>CALLEDnumber</b>, this indicates that a connection to the internal remote access of the Pocket ISDN is to be established. For this, the X.75 protocol (ATB10) must be used.</p>

Command	Description
<b>AT&amp;D</b>	<p><u>DTR Processing</u> Determines the behaviour of the Pocket ISDN when changing the DTE line DTR from ON to OFF.</p> <p>AT&amp;D            Condition of the DTR line is ignored</p> <p><b>AT&amp;D2</b>        Condition of the control line DTR is evaluated: A falling signal on the DTR line terminates an existing ISDN connection (default). An incoming call is only accepted with enabled DTR.</p>
<b>ATE</b>	<p><u>Locale echo</u> Configures the local echo in command mode.</p> <p>ATE            No locale echo</p> <p><b>ATE1</b>        Local echo during command input enabled (default)</p>
<b>AT&amp;FL</b>	<p><u>Loads the default settings</u> The default settings are loaded, ISDN protocol settings and MSNs are not overwritten. (Use the command AT&amp;W for saving to the non-volatile memory).</p> <p>AT&amp;FL        All parameters, which refer to the data port, are reset.</p> <p>AT&amp;FL        All parameters including ISDN protocol, MSN settings, and password are reset.</p>
<b>ATH</b>	<p><u>Terminate connection</u> Terminates an existing ISDN data connection after entering the escape sequence.</p> <p>ATH[//&lt;UUS1data&gt;]</p> <p><b>UUS1data</b>    Transmitted data with UUS1 signalling</p>
<b>ATI</b>	<p><u>Displays version information</u> Displays different information about version number and settings:</p> <p>ATI1            Replies the internal checksum</p> <p>ATI3            Replies the version string</p> <p>ATI5            Replies the selected ISDN protocol</p> <p>ATI9            Replies the "plug and play" ID string</p> <p>ATI77          Replies the bootloader version</p> <p>ATI99          Replies the date of the software creation</p>
<b>AT*I</b>	<p><u>Querying the alarm inputs</u> Response: &lt;input1&gt;, &lt;input2&gt;</p> <p>Values:        0     Input enabled (LOW)                   1     Input open (HIGH)</p> <p>This command can also be performed remotely. The input condition is also stored in the registers S17 and S18 (read only).</p> <p><b>Note:</b>        Not valid for Socket ISDN and Pocket ISDN.</p>



Command	Description
<b>AT&amp;K</b>	<p><u>Data flow control</u></p> <p>Determines the behaviour of the data flow control of the Pocket ISDN during data communication.</p> <p>AT&amp;K                No local flow control between DTE and Pocket ISDN is used</p> <p><b>AT&amp;K3</b>            Local flow control Hardware Handshake RTS/CTS configured</p> <p>AT&amp;K4            Local flow control Software Handshake XON/XOFF configured</p>
<b>AT#M</b>	<p><u>Received CLID</u></p> <p>Displays the "Call Line IDentification" (CLID), which has been received with the incoming call – this is the number of the called party at the local S0 bus (dialled MSN).</p>
<b>AT*M</b>	<p><u>Transport protocol for alarm messages</u></p> <p>AT*M0            Via data connection with the B channel protocol configured with ATB</p> <p>AT*M1            As SMS into the D1 network (protocol TAP with X.75)</p> <p>AT*M2            As SMS into the Vodafone D2 network (protocol UCP with X.75)</p> <p>AT*M3            As SMS into the E-Plus network (protocol TAP)</p> <p>The SMS gateways of the GSM network providers are entered with AT&amp;Z1</p> <p><b>Note:</b>            Not valid for Socket ISDN and Pocket ISDN.</p>
<b>ATN</b>	<p><u>Configures transmission baud rate V.110</u></p> <p>Configures the transmission baud rate of the Pocket ISDN to the desired value. (Only valid for V.110 asynchronous B channel protocol).</p> <p><b>ATN0</b>            Transmission baud rate is configured automatically (equal or less compared with the local baud rate)</p> <p>ATN1            Transmission baud rate 1.200 bit/s</p> <p>ATN2            Transmission baud rate 2.400 bit/s</p> <p>ATN3            Transmission baud rate 4.800 bit/s</p> <p>ATN4            Transmission baud rate 9.600 bit/s</p> <p>ATN5            Transmission baud rate 19.200 bit/s</p>
<b>ATO</b>	<p><u>Returning to online mode</u></p> <p>If the Pocket ISDN is in command mode after entering the escape sequence during an existing connection, ATO will return the Pocket ISDN back to data mode.</p> <p>This command must be the last in an AT command line.</p>
<b>AT#O</b>	<p><u>Received CLIP</u></p> <p>Displays the "Calling Line Identification Presentation" (CLIP), which has been received with the incoming call – this is the number of the calling party.</p>
<b>ATQ</b>	<p><u>Response suppression</u></p> <p>Result codes and messages can be suppressed with this command.</p> <p><b>ATQ</b>            Replies status messages after entering a command (default)</p> <p>ATQ1            No replies are output</p>

Command	Description
<b>AT&amp;R</b>	<p><u>CTS Control</u></p> <p>Configures the behaviour of the CTS control line of the Pocket ISDN.</p> <p><b>AT&amp;R</b>            The Pocket ISDN CTS control line follows all changes of RTS</p> <p><b>AT&amp;R1</b>           CTS is always ON</p>
<b>AT#R</b>	<p><u>Processing incoming calls</u></p> <p>Determines the behaviour of the Pocket ISDN if an incoming call is received.</p> <p>If <b>AT#R1</b> is enabled, all incoming calls are ignored regardless of all other settings.</p> <p><b>AT#R</b>            Disables the automatic rejection of all incoming calls</p> <p><b>AT#R1</b>          Enables the automatic rejection of all incoming calls</p>
<b>ATS</b>	<p><u>Displays and sets the internal S registers</u></p> <p><b>ATSnn?</b>        Displays the current value (decimal) of the selected register <i>nn</i></p> <p><b>ATSnn=xx</b>     Sets the selected register <i>nn</i> to the decimal value <i>xx</i>.</p> <p>For an overview of the S registers, refer to section 1</p>
<b>AT&amp;S</b>	<p><u>DSR Processing</u></p> <p>Configures the behaviour of the DSR control line of the Pocket ISDN.</p> <p><b>AT&amp;S</b>            Pocket ISDN control line DSR is always ON</p> <p><b>AT&amp;S1</b>          DSR ON indicates that an ISDN connection is established and synchronised</p>
<b>ATV</b>	<p><u>Message format</u></p> <p><b>ATV</b>            Reply is output as number (followed by &lt;↵&gt;)</p> <p><b>ATV1</b>           Reply is output as text</p>
<b>AT&amp;V</b>	<p><u>Shows the current configuration</u></p> <p><b>AT&amp;V</b>           Displays the current configuration of the AT command set settings, including the stored ISDN numbers</p> <p><b>AT&amp;V1</b>          Displays the current configuration of the extended AT command set settings</p>
<b>AT*V</b>	<p><u>Alarm texts</u></p> <p><b>AT*V&lt;n&gt;?</b>     Querying the alarm texts</p> <p><b>AT*V&lt;n&gt;</b>        Entering the alarm texts following the prompt <b>NEW ALARM-TEXT :</b></p> <p>&lt;n&gt;            0     Collective message (160 characters without individual messages, 120 characters with individual messages)</p> <p>                 1     Individual message for alarm 1</p> <p>                 2     Individual message for alarm 2</p> <p>The index n=0 may be omitted.</p> <p><b>Note:</b>           Not valid for Socket ISDN. I-modul ISDN HIX and Pocket ISDN.</p>

Command	Description
<b>AT*V</b>	<p><u>Alarm texts</u></p> <p>AT*V&lt;n&gt;?      Querying the alarm texts</p> <p>AT*V&lt;n&gt;=&lt;xx&gt;      Defines the alarm text of the respective message</p> <p>&lt;n&gt;              0      Collective message (160 characters without individual messages, 120 characters with individual messages)</p> <p>                    1      Individual message for alarm 1</p> <p>                    2      Individual message for alarm 2</p> <p>&lt;xx&gt;              Alarm text</p> <p>The index n=0 may be omitted.</p> <p><b>Note:</b>              Only valid for i-modul ISDN HIX V4.</p>
<b>ATW</b>	<p><u>Extended reply values</u></p> <p><b>ATW</b>              Result is displayed with extended reply values</p> <p>ATW1              Result is displayed with extended reply values</p> <p>RING and CONNECT contain the ISDN address, all others contain the cause of error. The message RINGING is displayed.</p>
<b>AT&amp;W</b>	<p><u>Saves the active configuration</u></p> <p>The active configuration is saved to the non-volatile memory.</p>
<b>ATX</b>	<p><u>Reduced result messages</u></p> <p>Reduces the number of result messages after attempting to establish a connection.</p> <p>ATX0              only "CONNECT" (without transmission speed)</p> <p>ATX1              "CONNECT" with transmission speed, "BUSY", "NO DIAL-TONE" are not used.</p> <p>ATX2              "CONNECT" with transmission speed, "BUSY" is not used.</p> <p>ATX3              "CONNECT" with transmission speed, "NO DIALTONE" is not used.</p> <p><b>ATX4</b>              "CONNECT" with transmission speed, all messages are used.</p>
<b>AT*X</b>	<p><u>Alarm triggering</u></p> <p>AT*X1              Alarm 1 is triggered</p> <p>AT*X2              Alarm 2 is triggered</p> <p><b>Note:</b>              Not valid for Socket ISDN and Pocket ISDN.</p>
<b>AT*Y</b>	<p><u>Setting the control outputs</u></p> <p>AT*Y&lt;port&gt;,&lt;status&gt;</p> <p>&lt;port&gt;              0      Output OUT1</p> <p>                    1      Output OUT2</p> <p>&lt;status&gt;              0      Normally closed</p> <p>                    1      Normally open</p> <p>                    2      follows DCD (only for OUT1)</p> <p><b>Note:</b>              Not valid for Socket ISDN and Pocket ISDN.</p>



## 15 Special ISDN Parameters

You can make additional ISDN settings with this command set.

Only one command is allowed per line; default values are printed **bold**.

Command	Description
<b>AT**BSIZE</b>	<p><u>Configures B channel block size</u></p> <p>Defines the maximum length <i>x</i> of a received or transmitted data block in the B channel (default: BSIZE = 2048).</p> <p><b>AT**BSIZE=<i>x</i></b></p> <p>The value changes with configuring the B channel protocol (<b>ATBx</b>).</p>
<b>AT**DBITS</b>	<p><u>Number of data bits <i>x</i> at the DTE interface (7,8)</u></p> <p>Number of data bits <i>x</i> for asynchronous characters (7, default: 8)</p> <p><b>AT**DBITS=<i>x</i></b></p>
<b>AT**DTE</b>	<p><u>Configures B channel layer 2 address</u></p> <p>Configures the layer 2 link address. Only valid for HDLC based protocols (X.75, LAPB).</p> <p><b>AT**DTE=0</b>    Calling party reacts as DTE,                   Calling party reacts as DCE (default, X.75 standard)</p> <p><b>AT**DTE=1</b>    TA reacts as DTE (own address = 01)</p> <p><b>AT**DTE=3</b>    TA reacts as DCE (own address = 03)</p> <p>The value changes with configuring the B channel protocol (<b>ATBx</b>).</p>
<b>AT**K</b>	<p><u>Configures layer 2 window size</u></p> <p>Sets the window size <i>x</i> of the layer 2 B channel protocol:    <i>x</i> = 1 ..7, default: 7</p> <p><b>AT**K=<i>x</i></b></p> <p>The default value depends on the configured B channel protocol.</p>
<b>AT**LLC</b>	<p><u>Configures layer 2 compatibility (LLC)</u></p> <p>Defines the LLC value for outgoing calls in hexadecimal format. Sometimes, a certain LLC value is required to transfer detailed information about the used B channel protocol to the called party. This can be achieved by configuring the LLC to a fix value.</p> <p><b>AT**LLC=-</b>    Deletes the LLC value (default: LLC is empty).</p> <p><b>AT**LLC=8890</b> Entering a new LLC value</p> <p>The value changes with configuring the B channel protocol (<b>ATBx</b>).</p>
<b>AT**PTP</b>	<p><u>Configures the ISDN interface type</u></p> <p><b>AT**PTP=0</b>    Configures Point-to-Multipoint mode (default); for multipoint interface</p> <p><b>AT**PTP=1</b>    Configures Point-to-Point mode (to connect ISDN exchange systems); for point-to-point interface</p>
<b>AT**RPWD</b>	<p><u>Password for remote configuration</u></p> <p>Sets the password for remote configuration to <i>nn</i> (1..32 chars). Default: no password.</p> <p><b>AT**RPWD=<i>nn</i></b></p>

Command	Description
<b>AT**SPID</b>	<p><u>Configures SPID (optional)</u></p> <p>An SPID must be configured for ISDN lines in USA. This will be provided by your ISDN provider.</p> <p><b>AT**SPID1=xxxx</b>      Configures SPID 1</p> <p><b>AT**SPID2=xxxx</b>      Configures SPID 2</p>
<b>AT**STATUS</b>	<p><u>Displays the status of the ISDN line</u></p> <p>Status display example:</p> <p>Current status information &lt;device name&gt;  <b>serial line: DTR:on, RTS:on, DSR:on, CTS:on, DCD:off, RI:off</b>  <b>ISDN: L1:up</b>  <b>Dch: Prot:DSS1 State:disconnected, CdPN:, CgPN:, prev error: 0</b>  <b>Bch: Prot:Async HDLC State:disconnected, CdPN:, CgPN:</b></p> <p><b>Serial line:</b> Displays the states of the serial line signals</p> <p><b>ISDN:</b>            Displays the state of the ISDN connection:  <b>L1:up:</b>            ISDN connection detected/present  <b>L1:down:</b>        ISDN connection not detected/present</p> <p><b>Dch:</b>            Displays the state of the D channel</p> <p><b>Bch:</b>            Displays the state of the B channel</p> <p>                  <b>Prot:</b>            Used protocols on the channel                    <b>State:</b>        Connection state                    <b>CdPN:</b>        Called Party Number                    <b>CgPN:</b>        Calling Party Number                    <b>prev error:</b> Error code of the last connection</p>
<b>AT**&lt;cmd&gt;</b>	<p><u>Executes configuration command</u></p> <p>Executes a configuration command &lt;cmd&gt;.</p>

Table 13: Special ISDN parameter command overview

## 16 S Register

The Pocket ISDN contains status registers, which control the operation.

S registers may be read and written using the **ATS** command. Certain S registries may **only** be read; others can only be configured for a particular range of values.

Register	Description
<b>s0</b>	<p>0: No automatic call acceptance, the acceptance of an incoming call is controlled by the data terminal (command <b>ATA</b> following RING)</p> <p>1: Immediate call acceptance by the Pocket ISDN (default)</p> <p>2..n: Call acceptance by the Pocket ISDN after <i>n</i> "RING" messages.</p> <p><b>Note:</b> The time between 2 RING messages can be configured using the command "ringtimer" (default = 5 s.)</p>
<b>s1</b>	Ring tone counter (read only)
<b>s2</b>	Escape character (default = 43h)
<b>s3</b>	Return character (default = 0Dh)
<b>s4</b>	Line feed character (default = 0Ah)
<b>s5</b>	Backspace character (default = 1Ah)
<b>s7</b>	Waiting time for carrier signal in seconds (default = 30)
<b>s9</b>	PNP Configure functionality for Windows95 (default=1, enabled)
<b>s14</b>	<p>Status control output OUT1</p> <p>0           <b>Normally closed</b></p> <p>1           Normally open</p> <p>2           follows DCD</p>
<b>s15</b>	<p>Status control output OUT2</p> <p>0           <b>Normally closed</b></p> <p>1           Normally open</p>
<b>s16</b>	Last CAPI/ISDN error
<b>s17</b>	<p>Status alarm input 1 (read only)</p> <p>0           enabled (connected to GND)</p> <p>1           open</p>
<b>s18</b>	<p>Status alarm input 2 (read only)</p> <p>0           enabled (connected to GND)</p> <p>1           open</p>
<b>s90</b>	Last received ISDN phone number (CLIP)
<b>s91</b>	<p>0: Default</p> <p>1: All unknown AT commands are replied with OK</p> <p>2: Windows 2000 compatibility: some AT commands are replied with OK, unknown commands are replied with OK.</p>

Table 14: Overview of S Registers

## 17 TA+Configurator Command Reference

Command	Description
at.sx, at.opt, at.rcs	AT commands for controlling the S registers
br	Baud rate serial
brn	Baud rate ISDN
bsize	Frame length
catab<x>	Display phone number memory
cato	Call timeout
capa	Call pause
catry	Calls retry
ccts	CTS behaviour
cdcd	DCD behaviour
cdsr	DSR behaviour
cdtr	DTR behaviour
chappwd	Configure password for PPP chap authentication
cmds	Configure command interpreter
cnr<x>	Configure phone number
dbits	Data format serial
defa	Load default settings
dhtc	Configure highest 2-way channel
dltc	Configure lowest 2-way channel
dte	Configure B channel link address
flc	Configure flow control
ftei	TEI value point to point, fixed TEI
fwload (option)	Upload firmware
fwstart (option)	Starts new firmware
htc	Configure highest 2-way channel
idle	Idle data timeout
iinit	ISDN initialisation
isdn	ISDN D channel protocol
k	Configure Window size
load	Load saved parameters
ltc	Configure lowest 2-way channel
X3	Configure command interpreter
pnp	Plug and Play ID
prot	Configure B channel protocol



Command	Description
prty	Configure serial parity
ptp	Configure ISDN connection type
quit, exit, go	Exit TA+Configurator
racctab	Configure access table for remote configuration
reset (only POX)	Reset (hardware)
ridle	Idle data timeout (remote)
mua, rmua<n>	Configure output pins
rmsn	Configure remote MSN
rpwd	Configure password for remote configuration
rstmsg	Configure startup message
rsttim	Startup timer
rsub	Remote sub-address
save	Save configuration change
sbits	Number of stop bits
sertrc	Serial link trace
shidle	Short hold: Idle data timeout
shto	Short hold: Call timeout to abort
shpa	Short hold: Call pause
shtry	Short hold: Max. number of connection attempts
show	Display configuration of basic parameters
showall	Display configuration of all settings
spid1, spid2	Configure SPID
status	Status display
subi	Sub-address for incoming calls
subo	Sub-address for outgoing calls
tei	Configure TEI value
trcn<nnn>	Configure internal trace
ver	Version information
verb	Version of the bootloader
v110llc	Using LLC for V.110 connections
v110flc	Flow control for V.110 connections
xnr	Own X.25 address
xtab<n>	X.25 translation table

**Table 15: Overview of TA+Configurator commands**

## 18 Waste Disposal

### 18.1 Repurchasing of Legacy Systems

According to the new WEEE guidelines, the repurchasing and recycling of legacy systems for our clients is regulated as follows:

Please send those legacy systems to the following address, carriage prepaid:

Frankenberg-Metalle  
Gaertnersleite 8  
D-96450 Coburg  
Germany

This regulation applies to all devices which were delivered after August 13, 2005.

## 19 Declaration of Conformity

This device complies with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility 2004/108/EC and the Council Directive relating to Low Voltage 2006/95/EC as well as the Council Directive R&TTE 1999/5/EC.

We will gladly send you a copy of the declaration of conformity on request.

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