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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/) 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.

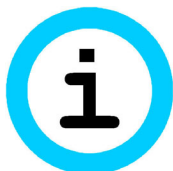
Caution!



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 | Yes | 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.

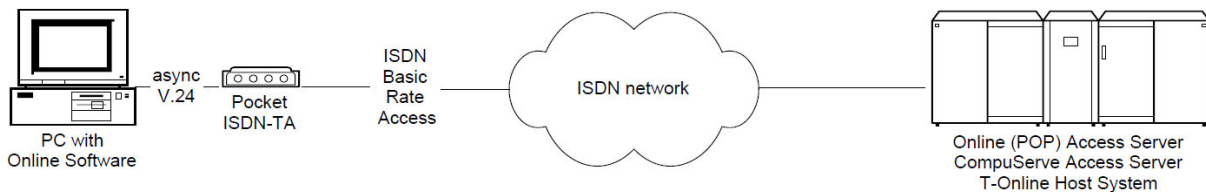


Figure 1: Connection of the Pocket ISDN for access to an online service

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

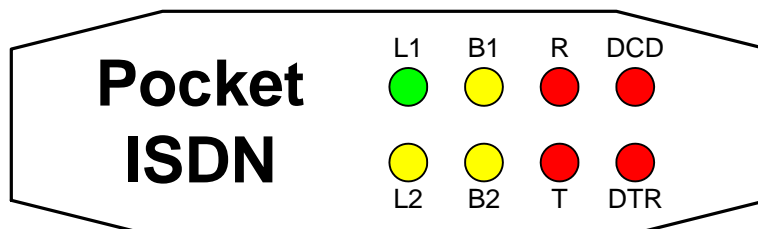


Figure 2: LEDs on the front panel

| 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

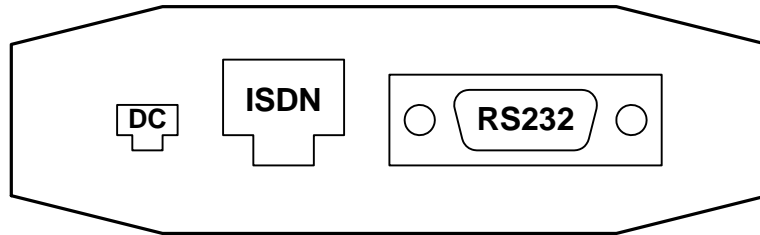


Figure 3: Connections on the rear panel of the device

| 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

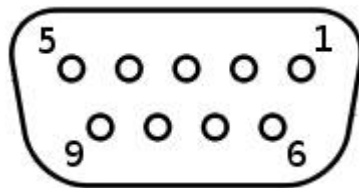


Figure 4: 9-pin Sub-D socket at the device

| 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

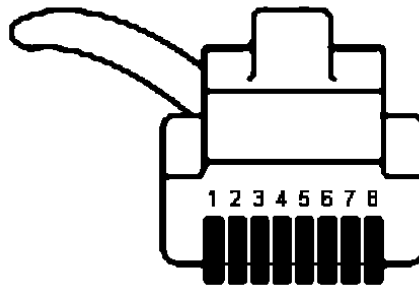


Figure 5: 8-pin Western connector (front view)

| 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

ATPROT**

Refer to the AT command reference for protocol details.

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

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).

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

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

Table 11: Firmware history Pocket ISDN Profi

| Command | Description |
|-----------------|---|
| AT&R | <p><u>CTS Control</u></p> <p>Configures the behaviour of the CTS control line of the Pocket ISDN.</p> <p>AT&R The Pocket ISDN CTS control line follows all changes of RTS</p> <p>AT&R1 CTS is always ON</p> |
| AT#R | <p><u>Processing incoming calls</u></p> <p>Determines the behaviour of the Pocket ISDN if an incoming call is received.</p> <p>If AT#R1 is enabled, all incoming calls are ignored regardless of all other settings.</p> <p>AT#R Disables the automatic rejection of all incoming calls</p> <p>AT#R1 Enables the automatic rejection of all incoming calls</p> |
| ATS | <p><u>Displays and sets the internal S registers</u></p> <p>ATSnn? Displays the current value (decimal) of the selected register <i>nn</i></p> <p>ATSnn=xx 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> |
| AT&S | <p><u>DSR Processing</u></p> <p>Configures the behaviour of the DSR control line of the Pocket ISDN.</p> <p>AT&S Pocket ISDN control line DSR is always ON</p> <p>AT&S1 DSR ON indicates that an ISDN connection is established and synchronised</p> |
| ATV | <p><u>Message format</u></p> <p>ATV Reply is output as number (followed by <↵>)</p> <p>ATV1 Reply is output as text</p> |
| AT&V | <p><u>Shows the current configuration</u></p> <p>AT&V Displays the current configuration of the AT command set settings, including the stored ISDN numbers</p> <p>AT&V1 Displays the current configuration of the extended AT command set settings</p> |
| AT*V | <p><u>Alarm texts</u></p> <p>AT*V<n>? Querying the alarm texts</p> <p>AT*V<n> Entering the alarm texts following the prompt NEW ALARM-TEXT :</p> <p><n> 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>Note: Not valid for Socket ISDN. I-modul ISDN HIX and Pocket ISDN.</p> |

| Command | Description |
|-----------------|---|
| AT*V | <p><u>Alarm texts</u></p> <p>AT*V<n>? Querying the alarm texts</p> <p>AT*V<n>=<xx> Defines the alarm text of the respective message</p> <p><n> 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><xx> Alarm text</p> <p>The index n=0 may be omitted.</p> <p>Note: Only valid for i-modul ISDN HIX V4.</p> |
| ATW | <p><u>Extended reply values</u></p> <p>ATW 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> |
| AT&W | <p><u>Saves the active configuration</u></p> <p>The active configuration is saved to the non-volatile memory.</p> |
| ATX | <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>ATX4 "CONNECT" with transmission speed, all messages are used.</p> |
| AT*X | <p><u>Alarm triggering</u></p> <p>AT*X1 Alarm 1 is triggered</p> <p>AT*X2 Alarm 2 is triggered</p> <p>Note: Not valid for Socket ISDN and Pocket ISDN.</p> |
| AT*Y | <p><u>Setting the control outputs</u></p> <p>AT*Y<port>,<status></p> <p><port> 0 Output OUT1</p> <p> 1 Output OUT2</p> <p><status> 0 Normally closed</p> <p> 1 Normally open</p> <p> 2 follows DCD (only for OUT1)</p> <p>Note: 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 |
|------------------|--|
| AT**BSIZE | <p><u>Configures B channel block size</u></p> <p>Defines the maximum length x of a received or transmitted data block in the B channel (default: BSIZE = 2048).</p> <p>AT**BSIZE=x</p> <p>The value changes with configuring the B channel protocol (ATBx).</p> |
| AT**DBITS | <p><u>Number of data bits x at the DTE interface (7,8)</u></p> <p>Number of data bits x for asynchronous characters (7, default: 8)</p> <p>AT**DBITS=x</p> |
| AT**DTE | <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>AT**DTE=0 Calling party reacts as DTE, Calling party reacts as DCE (default, X.75 standard)</p> <p>AT**DTE=1 TA reacts as DTE (own address = 01)</p> <p>AT**DTE=3 TA reacts as DCE (own address = 03)</p> <p>The value changes with configuring the B channel protocol (ATBx).</p> |
| AT**K | <p><u>Configures layer 2 window size</u></p> <p>Sets the window size x of the layer 2 B channel protocol: $x = 1 \dots 7$, default: 7</p> <p>AT**K=x</p> <p>The default value depends on the configured B channel protocol.</p> |
| AT**LLC | <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>AT**LLC=- Deletes the LLC value (default: LLC is empty).</p> <p>AT**LLC=8890 Entering a new LLC value</p> <p>The value changes with configuring the B channel protocol (ATBx).</p> |
| AT**PTP | <p><u>Configures the ISDN interface type</u></p> <p>AT**PTP=0 Configures Point-to-Multipoint mode (default); for multipoint interface</p> <p>AT**PTP=1 Configures Point-to-Point mode (to connect ISDN exchange systems); for point-to-point interface</p> |
| AT**RPWD | <p><u>Password for remote configuration</u></p> <p>Sets the password for remote configuration to nn (1..32 chars). Default: no password.</p> <p>AT**RPWD=nn</p> |

| Command | Description |
|------------------------|---|
| AT**SPID | <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>AT**SPID1=xxxx Configures SPID 1</p> <p>AT**SPID2=xxxx Configures SPID 2</p> |
| AT**STATUS | <p><u>Displays the status of the ISDN line</u></p> <p>Status display example:</p> <pre>Current status information <device name> serial line: DTR:on, RTS:on, DSR:on, CTS:on, DCD:off, RI:off ISDN: L1:up Dch: Prot:DSS1 State:disconnected, CdPN:, CgPN:, prev error: 0 Bch: Prot:Async HDLC State:disconnected, CdPN:, CgPN:</pre> <p>Serial line: Displays the states of the serial line signals</p> <p>ISDN: Displays the state of the ISDN connection: L1:up: ISDN connection detected/present L1:down: ISDN connection not detected/present</p> <p>Dch: Displays the state of the D channel</p> <p>Bch: Displays the state of the B channel</p> <p> Prot: Used protocols on the channel State: Connection state CdPN: Called Party Number CgPN: Calling Party Number prev error: Error code of the last connection</p> |
| AT**<cmd> | <p><u>Executes configuration command</u></p> <p>Executes a configuration command <cmd>.</p> |

Table 13: Special ISDN parameter command overview

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