

# **Operating instructions**

## **Protokoll-Converter NPC II**





<b>1.0</b>	Installation .....	3
<b>2.0</b>	Technical Data.....	4
<b>3.0</b>	Pin Assignment.....	5
<b>4.0</b>	Brief Description NPC II .....	6
<b>5.0</b>	PC-Setup .....	7
<b>5.1</b>	Menu .....	7
<b>5.1.1</b>	File open / save as .....	7
<b>5.1.2</b>	Configuration PC/DVR interface ( <i>RS232 / LAN</i> ) .....	8
	- Sending data PC/DVR .....	8
	- Comport settings .....	10
	- Connect PC/DVR .....	10
<b>5.1.3</b>	Application interface ( <i>,POS' Interface</i> ) .....	11
	- RS232 ,POS' .....	11
	- IP-address ,LAN POS' .....	11
<b>5.1.4</b>	Menu POS / ATM.....	12
	- POS .....	12
	- ATM .....	13
<b>5.1.5</b>	NPC transmission ( <i>,Converter'</i> ).....	14
	- Download converter .....	14
	- Programming .....	14
	- Monitoring .....	15
	- Converter info .....	15
<b>5.2</b>	Protocol parameters.....	16
<b>6.0</b>	Safety Instructions .....	17

Dear Customer!

Thank you for your decision to use the protocol converter NPC II in your system.

We ask you to read thoroughly through the brief instructions, so that you can use the NPC functions in an optimum way for your application.

Before installing the equipment, please read the safety instructions on page 17.

Check the included accessories for completeness:

- 1 x 9 pin D-SUB cable (1:1 configuration; for PC setup)
- 1 x 9pole D-SUB female connector, housing
- 1 x 9pole Null modem-adapter
- 1 x plug-in power supply 9 VDC or 12 VDC, >400mA
- 1 x CAT5 patch cable (1m)
- 1 x CD-ROM with installation software.

Please contact your dealer directly, if any of the accessories should be missing!

## 1.0 Installation

### 1.1 PC Setup Dialog

The PC setup program for the NPC uses the Windows 98/2000/XP/Vista operating system. The screen resolution should be set to at least 800 × 600 and the number of colors should be set to *True Color*.

To install the program from the included CD-ROM, run *Setup.exe* in the “NPC” folder. Follow the program instructions and install the TD setup in the desired folder.

After the installation has been completed, start the program *NPCII* via the standard Windows menu *Start ▶ Program Files ▶ NPCII*. The setup program for the converter will be executed.

The program can be uninstalled via the Windows control panel menu “*Software*”.

### 1.2 Protocol converter

After connecting the power supply, the yellow LED “PC/DVR” lights up shortly.

To configure the NPC, connect the RS232 interface to a serial port of a PC or a laptop. Use the included serial cable for that purpose.

Alternatively you can set up the NPCII via TCP/IP. For that purpose connect the unit to a switch using the provided patch cable, or via a cross over cable (not included) to the PC directly.

After starting the PC setup program, you can program the unit.

## 2.0 Technical Data

### Hardware:

#### Interfaces:

##### Data in

- 1x RS232, 9-pole SUB-D male plug
- 10Mbit Ethernet RJ45 (depending on protocol)

##### Data out

- 1x RS232, 9-pole SUB-D male plug
- 10Mbit Ethernet RJ45
- 2 Status-LED

#### Programming setup memory:

- Firmware and setup programming via RS232- and LAN-interface
- Flash memory

#### Housing:

- 2 shell housing
- WxHxD: 100x29x85 mm
- Color: gray / granite

#### Power requirements:

- External power adaptor 9-12V DC ; min. 400mA

### Software:

#### Standard:

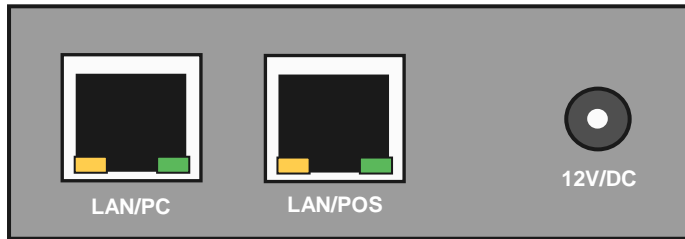
- Programming of interface parameters via RS232-/LAN- interface (PC software)
- Large number of different protocols (e.g. ATM, access control systems, Cash registers) are included on CD-ROM
- Data output to an external database (DVRs / management systems) configurable from a list of many integrated protocols or user-defined format
- Special POS menu in order to define start- and stop-terms respectively user-defined exceptions
- Serial polling possible
- Baud rates 1200...115.200 baud
- Firmware-Upgrade via PC program
- Monitoring function for testing the data output

#### Optional accessory:

Y-adaptor (9 /15 pole) - "triport" cable in order to split the information of receipt printers or customer displays to the converter

## 3.0 Pin Assignment

## Front side:

*Ethernet RJ45-Buchsen 10BaseT*

1	-	Rx +
2	-	Rx -
3	-	Tx +
4	-	NC
5	-	NC
6	-	Tx -
7	-	NC
8	-	NC

LED left (yellow): Link status  
 LED right (green): Receiving data

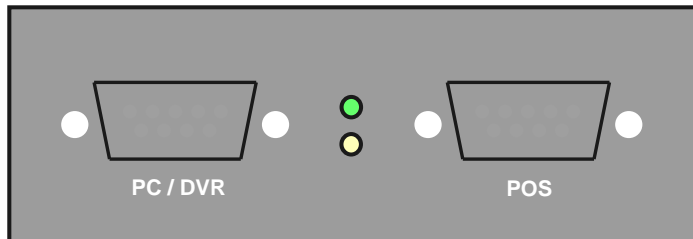
*DC socket 5,5/2,5mm*

ID : +9...12V/400mA

OD: GND

**Attention:** Only galvanically isolated, stabilized power supplies with +9 ...+12V may be connected!!

## Back side:



LED green:  
 Receiving of (protocol-) data via RS232 - Comport „POS“ or LAN interface „POS“

LED yellow:  
 Data transmission PC/DVR and TCP/IP link status „PC / DVR“

*RS232 „POS“ 9pol D-SUB connector*

1	-	NC
2	-	RXD
3	-	TXD
4	-	NC
5	-	GND
6	-	NC
7	-	RTS
8	-	CTS
9	-	NC

*RS232 „PC/DVR“ 9pol D-SUB connector*

1	-	NC
2	-	TxD
3	-	RxD
4	-	NC
5	-	GND
6	-	NC
7	-	NC
8	-	NC
9	-	NC

NC = Not connected

#### 4.0 Brief Description

The protocol converter is a data analyzer for protocol data such as ATM amounts, card information or POS data via the RS232- or TCP/IP interface. All relevant information will be captured and send out on the RS232 Comport or LAN.

The configuration of the parameters can be configured by a PC setup program:

The PC setup interface allows the selection of created protocols from a list and a comfortable setting of protocol parameters, like baud rate, IP settings or data format.

Furthermore, all protocol parameters for sending to the database of the DVR have to be defined.

Having programmed all parameters, these are transferred from the PC to the protocol converter. The unit now operates with the new parameters independently from the PC. The setup data can also be stored on a hard disk/diskette. Thus it is possible to transfer standardized settings without great effort to several converters.

In case of failure, the service engineer can determine whether the setup has been changed by unauthorized persons and he can directly reestablish the original configuration.

For an easy control of the converter functions and the data output format a test monitoring function is integrated.

The NPC uses state-of-the-art Flash technology:

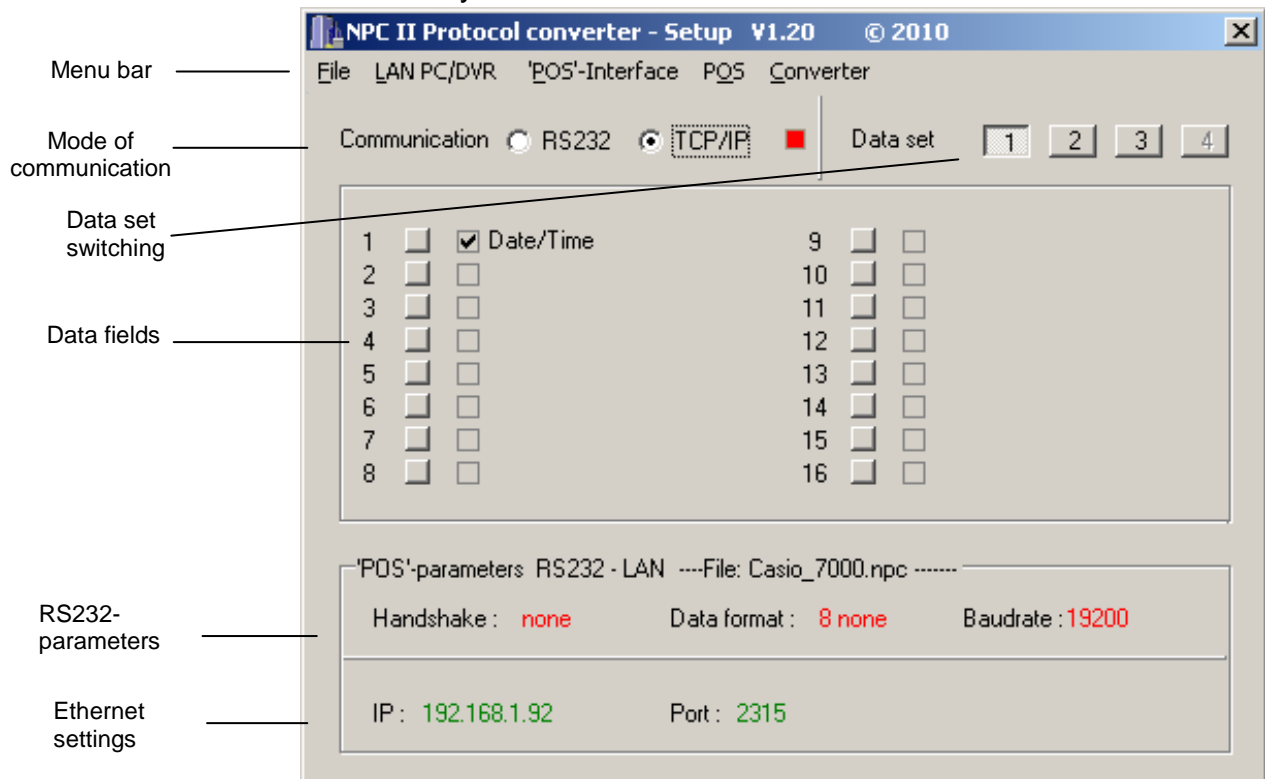
Upgrading the operating software (firmware) can be performed without opening the equipment, upgrades can be loaded via PC or laptop via the RS232-/LAN –interface.

☛ **Important:**

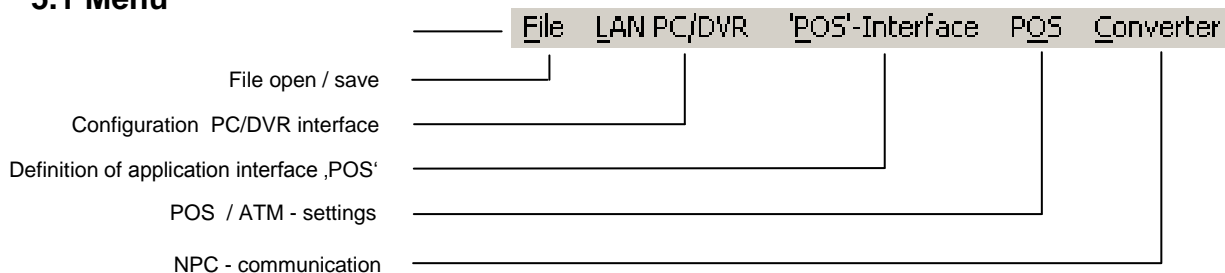
You can find special notes to the unique protocols in the „NPCOverview“-file and in the subdirectories.

## 5.0 PC-Dialog

After starting the program the main screen appears. All important setup parameters of the NPC II can be directly set from this interface.



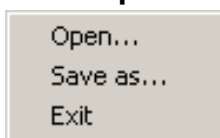
## 5.1 Menu



### Menu bar:

The *menu bar* includes functions via pull-down menus, who will be explained on the following pages:

#### 5.1.1 Open / save ( File ) :



Open: You hereby load a previously saved setup or protocol file with the **.npc** extension from the hard disk /CD. This function for instance allows programming with standardized setup settings.

Save as: The entire setup can be saved as a file. The file contains the **.npc** extension.

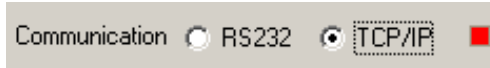
Exit: The program will be finished.



### 5.1.2 Configuration PC/DVR interface (*RS232 PC/DVR* or *LAN PC/DVR*):

In this menu all interface parameters for the desired data transmission to the video recording system as well as for the communication to this configuration software can be defined.

Switching between the modes of communication can be done on the main menu:



By activating the desired mode the communication will be effected via RS232 or TCP/IP, and the menu identifier appears with

the addition "*RS232*" respectively "*LAN*".

In case of activating the TCP/IP interface first a small window appears, which shows the currently valid IP address of the PC/Laptop.



### Sending data PC/DVR:

Here you define the output comport ('PC') of the NPC for database purpose:

#### *Individual / list:*

The list shows types of customary DVRs and video management systems. If one is selected the data output is defined in a fixed optimized format for this DVR. The configuration of the DVR should be programmed in according to this format.

Alternatively an individual definition of data format can be configured.

#### *Characters prior / after data field:*

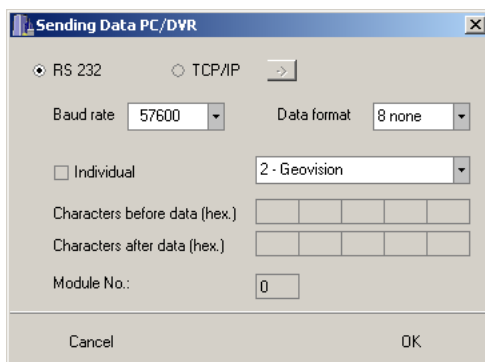
Defines begin / end characters for trigger purpose. The value has to be defined in hexadecimal! For instance "carriage return" (<CR> or ^M ) has to be defined as 0Dhex.

#### *Module No.:*

For some protocol types of the list you can define a special assignment of module number -> camera number here (default "00": without any assignment).

By activating "*RS232*" or "*TCP/IP*" you can define the interface of the data output via RS232 on plug "*PC/DVR*" or via TCP/IP ("*LAN PC*"):

### Connection type "RS232":



#### *Baud Rate:*

Value range 1200..115.200 Baud.

#### *Data format:*

The following data formats are allowed

- 8 data bits without parity,
- 8 data bits with odd or even parity,
- 7 data bits with odd or even parity.

### Connection type "TCP/IP":

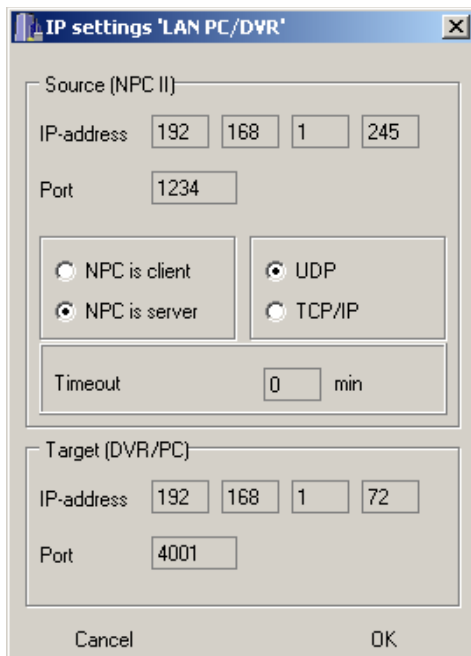
By clicking the arrow button a new menu appears (the figure shows the default settings of the converter):

#### General information for the TCP/IP transmission:

The IP address of the converter („Source“) will be used for the configuration and the data transmission.

Important: After changing the network address and subsequent programming for a reconnect the IP address of the PC/laptop has to be adapted in according to the new IP settings of the NPC.

Only one connection is simultaneously possible. An established connection will be terminated by the converter if the NPCII receives a connection request of the configuration program. The configuration can be done on each PC within the network address because the converter does not verify the target IP address in case of the configuration mode.



#### *Source:*

Entry of IP address and port. Delivery state of the NPC is **192.168.1.245: 1234**.

#### *NPC is client:*

The NPCII tries to establish a connection to the target (exact match of IP address and port!). Optionally you can define a „Keep alive“ timer in seconds (0 Seconds means.: timer disabled).

#### *NPC is server:*

In the server mode the NPCII waits for a connection request of the target unit. The target –port can be different to the defined number, the actual port number will be stored temporary and checked for the further time of this connection. By expiration of „Timeout“ (entry in minutes; „0“ means: no timeout function) after the last data transmission the new establishing a connection under new port number will be admitted.

#### *UDP :*

When using UDP network protocol the data will be sent in the UDP data segment without any feedback from the target unit (DVR). This protocol type needs no established TCP/IP connection.

#### *TCP/IP :*

It's a requirement for the data transmission to have an established connection. In according to the definition „NPC is client/server“ the initialization of the connection will be performed by NPC or PC. The yellow LED indicates an established connection between NPC and target by blinking each 2 seconds.

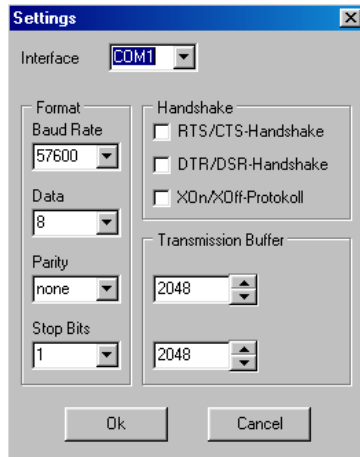
#### *Target:*

Defines the IP address and port of the requested target unit (DVR/PC).

Note: The port value will only be checked in the mode „NPC is client“.

### Comport settings:

In case of connection type “RS232” ( the menu identifier is “*RS232 PC/DVR*”) the following submenu appears by clicking “*Comport settings*”:



Allows setting up the RS232 interface of the PC, to which the NPC is connected by the provided cable:

Note: Under “

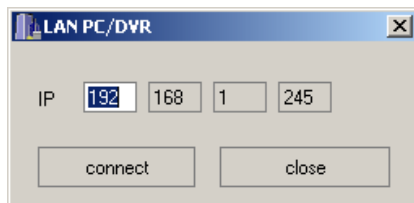
The PC interface is factory-configured as follows:

- .. 8 data bits
- .. no parity
- .. no handshake
- .. Baud rate 57.6 kB.

Clicking “OK” accepts the changes and the following data communication refers to the desired comport.

### Connect “LAN PC/DVR”:

In case of connection type “TCP/IP” (the menu identifier is “*LAN PC/DVR*”) the following submenu appears by clicking “*Connect LAN PC/DVR*” :



Defines the necessary target IP address (the IP of the desired NPCII), in order to establish a connection by your configuration program.

The **delivery state** of each NPC is **192.168.1.245**.

Important: This IP definition refers solely to the connection by this configuration program. Here you can NOT make the necessary settings of the converter. You can make the changing of the TCP/IP parameters by definition in the menu “IP settings ‘LAN PC/DVR’” ( refer to page 9) and subsequent programming. In the case of unknowing the actual IP address you should make a connection to the NPC via RS232! By clicking “*Converter info*” (see side 15) you can call up a window with the currently valid IP settings.

After clicking the “connect” button the configuration program tries to establish a connection to the defined target address. In case of an established connection between NPC and the video recording system – as defined on page 9 – the converter terminates this connection immediately.

After establishing a connection the submenu disappears, and on the main program window the animated “LED” changes to red. Additionally the yellow LED of the NPCII indicates the connection in the configuration mode by blinking 2 times each second.

### 5.1.3 Application interface ('POS'-Interface):

RS232	'POS'
IP address 'LAN POS' "	

Here you can make the necessary settings of the serial interface or the IP parameters to receive transaction data:

#### RS232 'POS':

This function serves to configure the serial interface of the NPC, which serve to receive transaction data:

The screenshot shows a dialog box titled 'RS232-POS'. It contains three dropdown menus: 'Handshake' set to 'none', 'Data format' set to '8 none', and 'Baud rate' set to '9600'. At the bottom are 'Cancel' and 'OK' buttons.

*Handshake:* Defines whether a hardware handshake (RTS/CTS) will be supported.

*Data format:* The following data formats are allowed

- 8 data bits without parity,
- 8 data bits with odd or even parity,
- 7 data bits with odd or even parity.

*Baud rate:* Serial transmission speeds between 1200 and 115200 baud can be set..

The currently valid settings are displayed red on the main screen.

**Note:** The set RS232 parameters refer to the communication with the RS232 device connected to the port ,Pos' only, which serve as source for transaction data. The PC configuration via the serial port is performed by fixed parameters (57.600 baud) and is described on page 10.

#### IP address 'LAN POS':

When using TCP/IP-based transaction protocols, you can make the necessary settings of the TCP/IP parameters for the application LAN interface:

The screenshot shows a dialog box titled 'IP address LAN POS'. It has four input fields for the IP address: '192', '168', '1', and '92'. Below them is a 'Port' field with '2315'. At the bottom are 'Cancel' and 'OK' buttons.

*IP- Address:* Defines the IP address of the NPC in the network of your application (e.g.: cash registry network). They are input in four number blocks which can be set from 0 to 255. The address stated here must comply with the IP address (application LAN; e.g. cash registry network) (exception: data in the broadcast mode). The first three number blocks should comply with the number range of the local network of your

application! Use the IP address to which your connected POS/cash registry system sends the transaction data!

*Port:* Here you define the port number of the converter. Only if the number entered here complies with the target port number of a received data packet is the data accepted or a TCP connection established.

The currently valid settings are displayed green on the main screen.

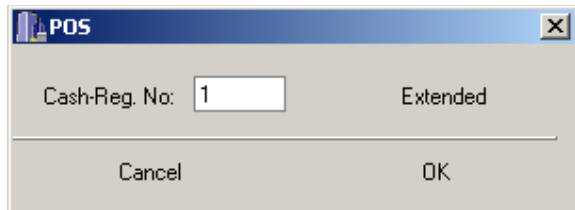
#### 5.1.4 Menu POS / ATM:

Depending on the selected protocol the identifier of this menu is *POS* (**P**oint of **S**ale) or *ATM* (Automated teller machine).

Please find whether and what parameter is significant for your requested protocol in the respective comments in the protocol directory (see subdirectory and application dependant):

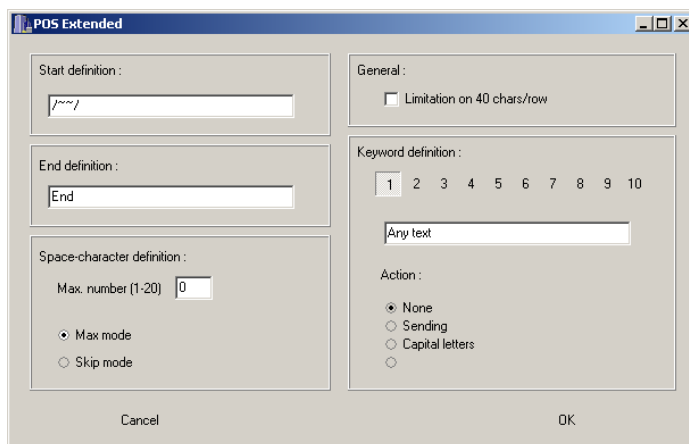
#### POS:

Especially for use in the area of cash registry systems you can define a cash registry number filter.



Cash-Reg.No: Defines the cash registry number. Only details of this cash registry (according to the respective protocol) are displayed.

#### Extended:



With some protocols (especially for applications with customer displays or serial printers) can be called up via the *Extended* button.

If the selected protocol does not allow further settings, the *Extended* button is inactive.

Please find details in the respective additional information on the individual protocols.

**Important:** All below configurable strings should otherwise not occur in the defined form (e.g. as item name, etc.). The string is always made *case sensitive*, i.e. upper and lower cases are distinguished. The tilde character "~" is a so-called wildcard, i.e. any other character can be in this position!

Start Definition: Input of a string which is always sent at the start of issuing a sale receipt. The image shows a date definition with use of two wildcard characters "/~/", as the month of the date can also vary (e.g. 12/04/2007). Only the two slashes at the according distance are decisive for recognising the start sequence. On receipt of the start sequence the receipt data will be captured and transmitted to the DVR.

#### End Definition:

Input of a string which is always sent at the end of issuing a sale receipt. In the example this is called "End".

If the start and end sequence are defined, only the row between start and end (including the defined lines) are transmitted.

Space Definition:

In order to design data outputs with many spaces smaller and more concisely, the NPC provides various options of reducing space sequences: Max Mode and Skip Mode.

Example: „BAR <- 17 spaces ->24,98“

Result for Max Mode: 6 spaces are issued between CASH and 24.98, this means the maximum value was reached

Result for Skip Mode: 15 spaces are issued between CASH and 24.98 because:  
 $6(+1)+6(+1)+3[\text{remain}]=15$

General:

For sales receipt rows with more than 40 characters a row break/feed is automatically carried out without limitation (option Limitation to 40 Chars/Row deactivated). As with sales receipt printers with 42 characters/row the last two characters usually only contain spaces or VAT abbreviations, limiting the display of a maximum of 40 characters serves a better illustration (option Limitation to 40 Chars/Row activated).

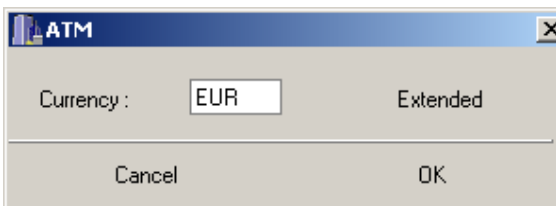
Keyword Definition:

Input of a character sequence where a certain action should be carried out. Every one of the maximum of ten definable keywords can be assigned to the following actions which each refer to the respective row: None, Send, Capital Letters.

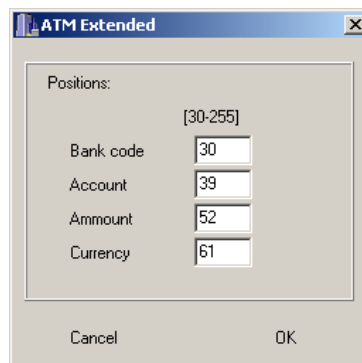
In the event of 'send' only the respective row of the keyword will be sent, rows without the keyword(s) will not be transmitted.

GAA:

The ATM dialogue window is especially for some protocols in the sector of Automated teller machines.



Currency: Defines the currency unit of the connected ATM. Some protocols will be sent this information in addition to the amount where no currency info is received from the cash machine.

Extended:

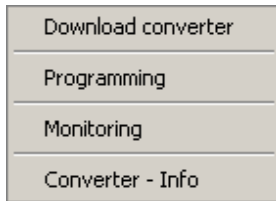
With some ATM protocols a sub menu can be called up via the *Extended* button.

Here you can define the positions of the data fields Bank code, amount, account no. or currency making use of the monitoring function (page 14).

The data on the defined positions will be extracted and sent to the recording system.

Please find details in the respective additional information on the individual protocols.

### 5.1.5 NPC transmission ( *Converter* ):



Via this menu you can call up or carry out the functions for data exchange between PC and the protocol converter. Depending on the selected connection type the communication will be done via RS232 or an established TCP/IP connection (LED symbol has to be green).

**Note:** If a small window appears with the indication “Com-Port time out” please check the cable connection and the comport settings, respectively the IP settings. If the currently valid IP address should be unknown first you have to make a connection to the NPC via RS232! By clicking “*Converter info*” (see side 15) you can readout the actual IP settings.

#### **Download converter:**

The current settings of the NPC will be read out. All parameters (except for data identifier) will be listed in the PC menu. The entire setup configuration can be saved as a file. The file contains the **.npc** extension.

**Attention:** The reading irreversibly deletes all current settings of the PC menu.

#### **Programming:**



The NPCII is programmed with the current settings. With a successful connection a progress bar provides details on the process of the data transmission. With every programming date and time of the programming as well as the current file name are saved in the NPC. This information can be exported via the *Converter-Info* function (see below).

#### **Important notes:**

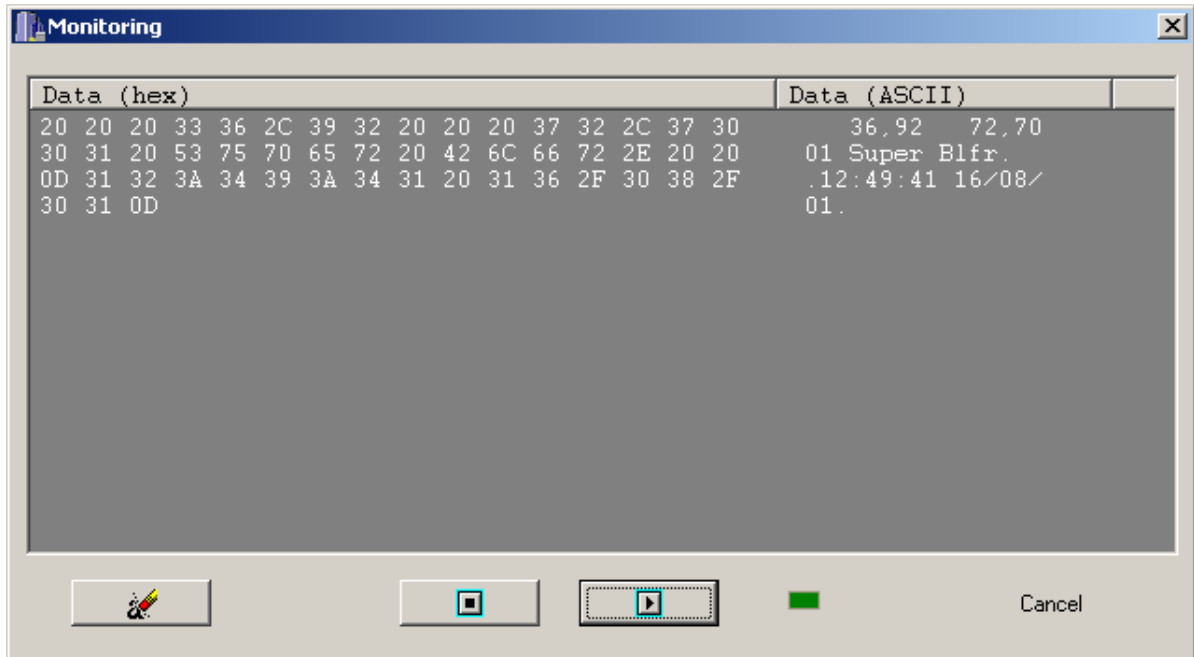
All made settings will be stored and executed after programming the converter! These new parameters irreversibly overwrite all settings of the connected NPC. After programming the progress bar disappears.

In the TCP/IP configuration mode the connection will be terminated automatically (the LED symbol changes to green) and the converter starts with the new settings anew. For establishing a (re-) connection start it via -> “LAN PC/DVR” -> “*Connect PC/DVR*”.



**Monitoring:**

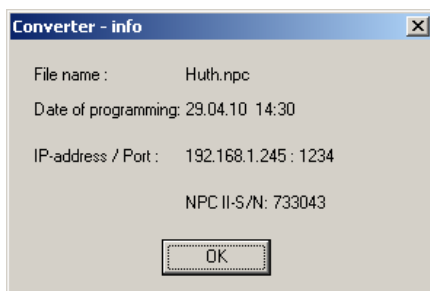
In order to review the correct operating mode and data format the configuration program enables the monitoring service:



All data of the NPC output inclusive the control characters will be displayed in hex- and ASCII- format. With the buttons below you can control the display (start, stop and clear). The LED symbol indicates if the monitoring mode is active („LED“ is green), or the displaying is stopped (red „LED“).

**Important:** When the configuration and monitoring is made via RS232, the connection type in menu „*Sending data*“ has to be set to „RS232“, 57.600 baud and data format „8 none“ and transmitted to the NPC (programming) for the time of the review.

In case of configuration and monitoring using an established TCP/IP connection the data will be sent and displayed irrespective of the desired connection type in menu „*Sending data*“.

**Converter-Info:**

The programming data of NPC is exported. The file name as well as IP settings, serial number and the date of the last programming are displayed. The device is quickly reset.



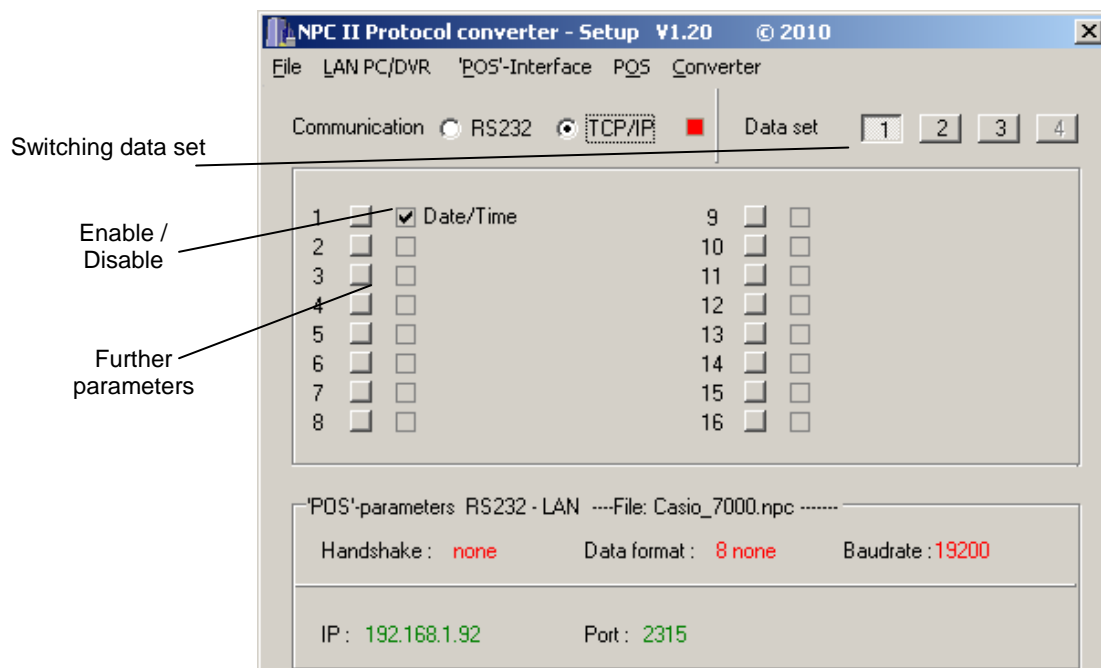
## 5.2 Protocol parameters

Data carriers included in the delivery are, apart from a general control program (POS\_allgemein.npc), some files which are prepared for connection to standard ATM- or cash registry systems.

**Notes and comments on all protocols or the connection configuration are saved as \*.txt- or \*.doc files in the created directory!!**

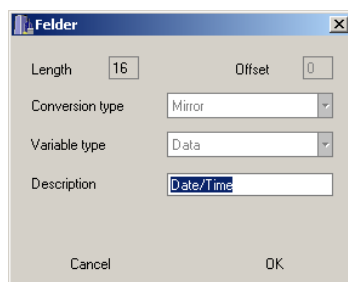
Information on the reliability of other protocols is provided by your Dealer.

After selecting the requested protocol (**open file**) the following representation appears on the main screen, for example:



In the middle all data fields supported and displayable by the protocol are displayed. With some protocols two or more data sets can be defined. Switching between the individual data sets 1 to 4 is carried out with the buttons of the same name.

The data fields are activated/deactivated on the left hand of the identifier. By pressing the square button to the right of the data field number, the following menu to set up the data field appears:



Under Description the identifier can be changed. Under Length the preset data field length can be shortened. All other displays serve for internal information only!

**6.0 Safety instructions**

Observe the following safety instructions for your own safety and to fulfill the device and EMC specifications:

1. Keep the device away from heat sources and direct sun light.
2. Protect the device and the power supply from moisture to avoid the risk of electrical shock and fire.
3. If fluids have penetrated the device, immediately pull the power plug and have the device inspected by an authorized dealer.
4. Do not insert any objects into the device.
5. Never attempt to open the device yourself..