



**inoteska**

# DYMUX SG

## PRODUCT DOCUMENTATION



## CONTENTS

<b>1. PRODUCT SPECIFICATION</b>	<b>4</b>
<b>2. OPERATING INSTRUCTIONS</b>	<b>9</b>
<b>3. MANAGEMENT SW</b>	<b>14</b>
<b>4. SALES CONDITIONS</b>	<b>53</b>

## Declaration of Conformity

### Device conforms to:

- Technical and operational requirements according to following documents:

**TPT-T 8**

**ETS 300 125**

**ETS 300 102-1**

**TBR4**

**ETS 300 011**

- EMC - level A, measured according to following norms:

**EN 300 386**

**EN 55022/A1**

**EN 61000-3-2/A2**

**EN 61000-3-3**

**STN EN 55022**

**EN 61000-3-2/A1**

**EN 61000-3-2/A14**

- Requirements of telecommunication equipment immunity measured according to following norms:

**EN 300 386**

**EN 61000-4-2**

**EN 61000-4-4**

**EN 61000-4-6**

**EN 61000-4-3**

**EN 61000-4-5**

**EN 61000-4-11**

# 1. PRODUCT SPECIFICATION

## Dymux SG

### **Static functions:**

- ◆ *static connection of optional timeslots from E1 A – H interfaces*

### **Dynamic functions:**

- ◆ *dynamic (statistic) concentration of voice timeslots*
- ◆ *calls routing according to the routing conditions*
- ◆ *CLIP and dial analysis*
- ◆ *change of parameters for called and calling party number*
- ◆ *dial authorization analysis*
- ◆ *call detailed record*

### **Extended functions:**

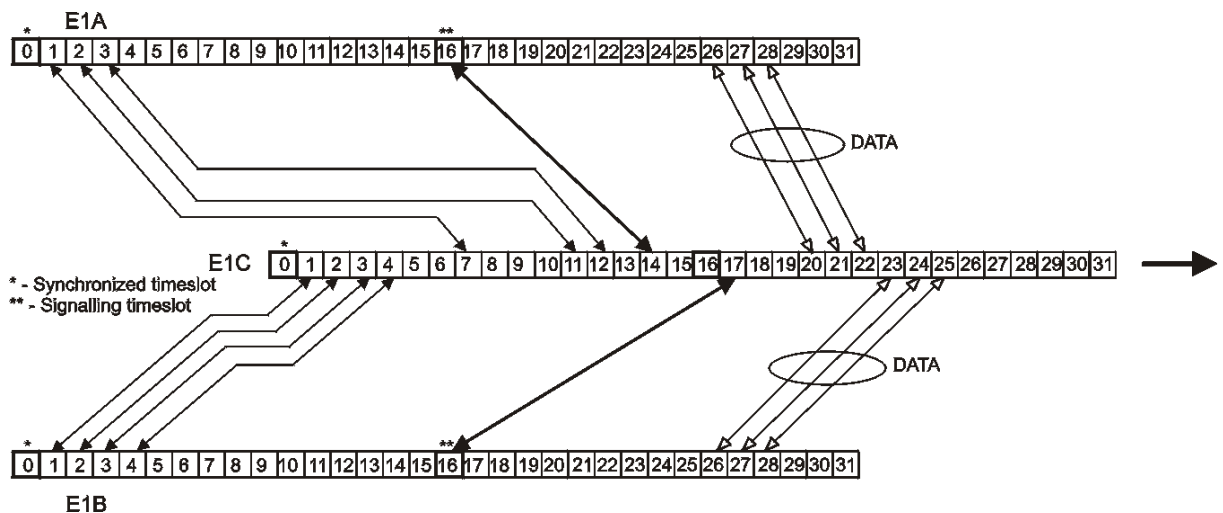
- ◆ *routing of data timeslots to Ethernetu*
- ◆ *ID VLAN for data timeslots*
- ◆ *VLAN tag add/remove*
- ◆ *switch function*

### **Basic parameters:**

- ◆ *4 x or 8 x E1 G.704*
- ◆ *E1 framed n x 64 kbps (n = 1 to 31 timeslots)*
- ◆ *E1 120 Ohm*
- ◆ *Multiplexer synchronization from E1 A - H*
- ◆ *V.24 interface*
- ◆ *Analog interface 2W/4W*
- ◆ *Ethernet interface for data and multiplexer configuration*
- ◆ *Power supply AC 230 V resp. DC 48 V*

### 1.1 Static Multiplexer

The Static Multiplexer allows selective connection of separate timeslots from four or eight E1 G.703 / G.704 interfaces. The multiplexer can be implemented as a Cross-Connect between PBXs, or as a concentrator of voice timeslots from one or more E1 interfaces. Generally a PBX does not utilize all 30 timeslots which allows timeslots from several PBXs to be transmitted via one or more E1 interfaces. The 16<sup>th</sup>, signalling timeslot from each PBX is also transmitted in a free E1 timeslot. On the opposite side each timeslot is transmitted back into the initial E1 interface, thus achieving more efficient use of the transmission line.



### 1.2 Dynamic multiplexer

DyMUX allows the concentration of higher number of incoming voice timeslots to lower number of outgoing voice timeslots within the statistical availability. It allows static crosconnection of data timeslots in the separate E1 interfaces as well as crossconnection of synchronous interfaces to defined timeslots of E1 A-H.

The concentration allows more efficient use of the transmission line and reduces the number of occupied ports on superior devices.

DyMux allows concentration of **N** incoming ISDN PRA interfaces to **M** outgoing PRA interfaces, where  $N + M \leq 8$  per card **ITX 482 78**. DyMux dynamically assigns free outgoing timeslots to all incoming busy timeslots.

Dynamic multiplexer is also able to process the signalling timeslot in on different position than the standard, 16<sup>th</sup> timeslot.

DyMux offers also transmission of data from Ethernet 10/100 BaseT, X.21, eventually from E1 G.703/G.704, to E1 (A to H) timeslots.

**VARIANTS**

**Rack:**

- **ITX 402 33 - DYMUX SG 8 x E1, 1 x Ethernet 10/100**
- **ITX 402 33.a - DYMUX SG 8 x E1, 1 x Ethernet 10/100**

Rack card, a = module position: 6 = module X.21, 7 = module UDI,  
8 = module RS 485, 9 = module 2W/4W

**ITP 222 05 – Rack**

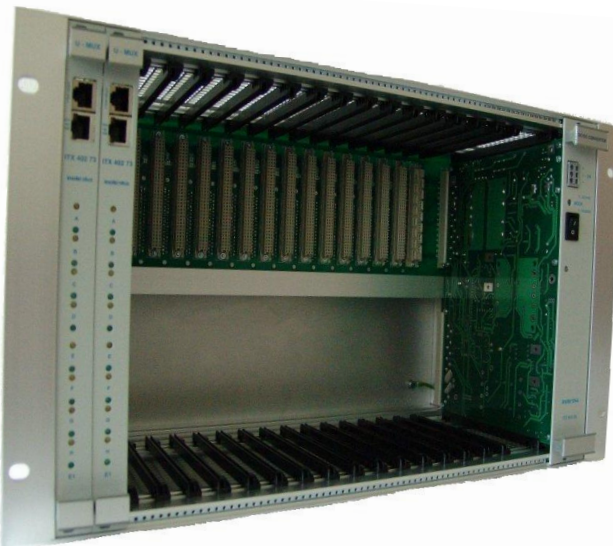
**ITZ 802 05 – Converter DC/DC +5V/20**

- **ITX 402 73 - DYMUX SG 8 x E1, 1 x Ethernet 10/100**

Rack card (E1 connectors conducted in the back)

**ITP 222 08 – Rack (E1 connectors conducted in the back)**

**ITZ 802 05 – Converter DC/DC +5V/20**



*ITP 222 08 – front view*

*ITP 222 08 – back view*

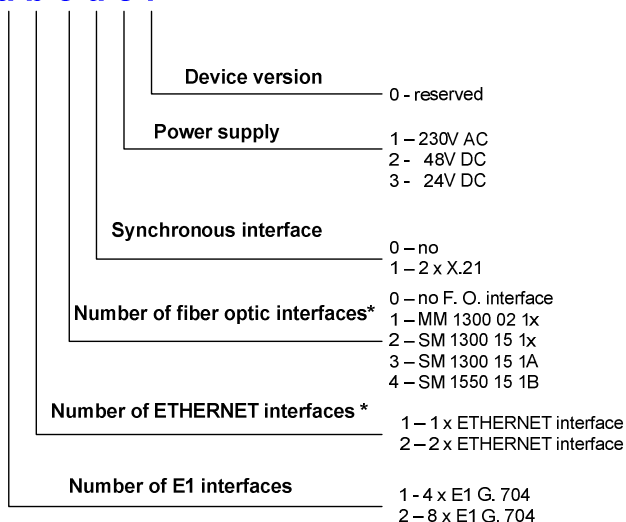


**Desktop:**

- **ITX 482 78 - DYMUX SG**
- **ITX 495 78 - DYMUX SG (1U version)**

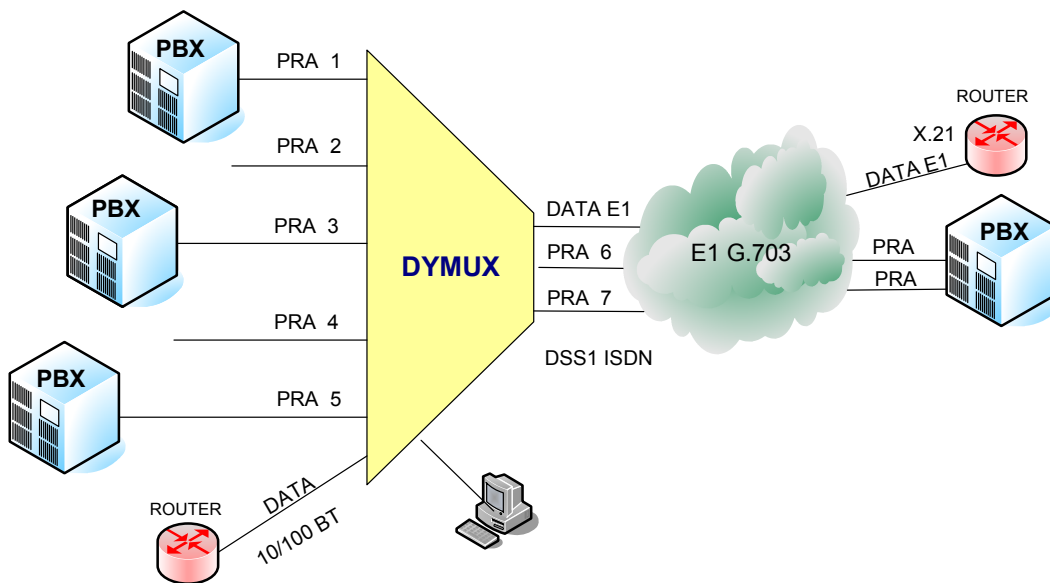
**Available variants:**

**ITX 482 78. a b c d e f**  
**ITX 495 78**



\* - if optical interface is used, only 1 x ETHERNET can be used

**APPLICATIONS**



**TECHNICAL PARAMETERS**

<b>Interface G.703:</b>	Framed G.704      PCM 30, PCM 31
<b>Line code:</b>	HDB 3
<b>Signalling:</b>	DSS 1 ISDN PRA
<b>Impedance:</b>	120 Ohm
<b>Interface X.21:</b>	Connector 15 pin D15 F
<b>Interface Ethernet:</b>	Connector RJ 45
<b>Synchronization:</b>	z G.703 or internal clock
<b>Power supply:</b>	adapter 230 V / 50Hz , ± 10%, max. 5VA DC 48 V, -40V to -65 V, max. 0,2 A, fuse 1,5 A <b>Device must use only adapter supplied by manufacturer.</b>
<b>Max. input:</b>	5 VA
<b>Dimensions:</b>	43.5 x 237 x 220 mm ( h x w x d ) – desktop version
<b>Weight:</b>	2 kg – desktop version



## 2. OPERATING INSTRUCTIONS

### Operational conditions:

0° C to 55° C, 20% to 75% relative atmospheric humidity

### Storage:

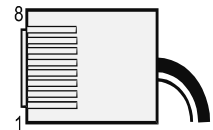
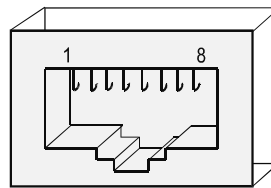
-10° C to 60° C, 20% to 75% relative atmospheric humidity

### Interface E1

#### Connector RJ 45

- 1 – input wire to device
- 2 – input wire to device
- 3 –
- 4 – output wire from device
- 5 – output wire from device
- 6 –
- 7 –
- 8 –

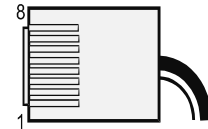
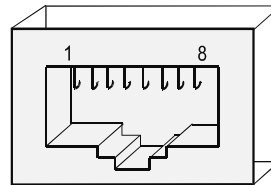
- RX -
- RX+
- TX -
- TX+



### Interface Fast Ethernet 10/100Base-T

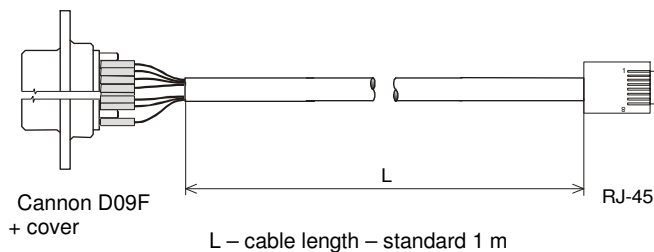
#### Connector RJ 45

- 1 – Transmit from device      Tx +
- 2 – Transmit from device      Tx -
- 3 – Receive to device          Rx+
- 4 –
- 5 –
- 6 – Receive to device          Rx-
- 7 –
- 8 –



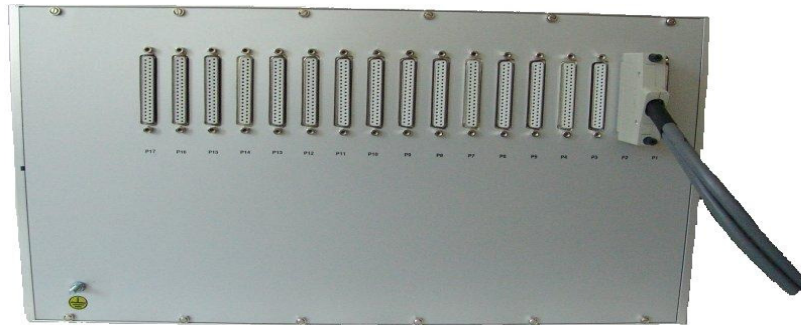
### Connector CONTROL

#### Cable for PC connection



CANNON - D09F cable female	RJ - 45
-	1
-	2
-	3
2	4
3	5
-	6
-	7
5	8
-	-

**Cable for connection of rack card to the rack from the back side**



**ITK 522 32 Cable 8xE1 Cannon DS37L**

Cannon - Cable male DS37L	Pair.	Cable no.	Colour designation of connected line wire	Signal - Ends free
1				
2		2	turquoise	OP H
3		2	white	IP H
4		2	turquoise	OP G
5		2	white	IP G
6		2	turquoise	OP F
7		2	white	IP F
8		2	turquoise	OP E
9		2	white	IP E
10		1	turquoise	OP D
11		1	white	IP D
12		1	turquoise	OP C
13		1	white	IP C
14		1	turquoise	OP B
15		1	white	IP B
16		1	turquoise	OP A
17		1	white	IP A
18				
19				
20		2	violet	ON H
21		2	brown	IN H
22		2	violet	ON G
23		2	blue	IN G
24		2	violet	ON F
25		2	green	IN F
26		2	violet	ON E
27		2	orange	IN E
28		1	violet	ON D
29		1	brown	IN D
30		1	violet	ON C
31		1	blue	IN C
32		1	violet	ON B
33		1	green	IN B
34		1	violet	ON A
35		1	orange	IN A
36				
37				
cover			shielding - GND	

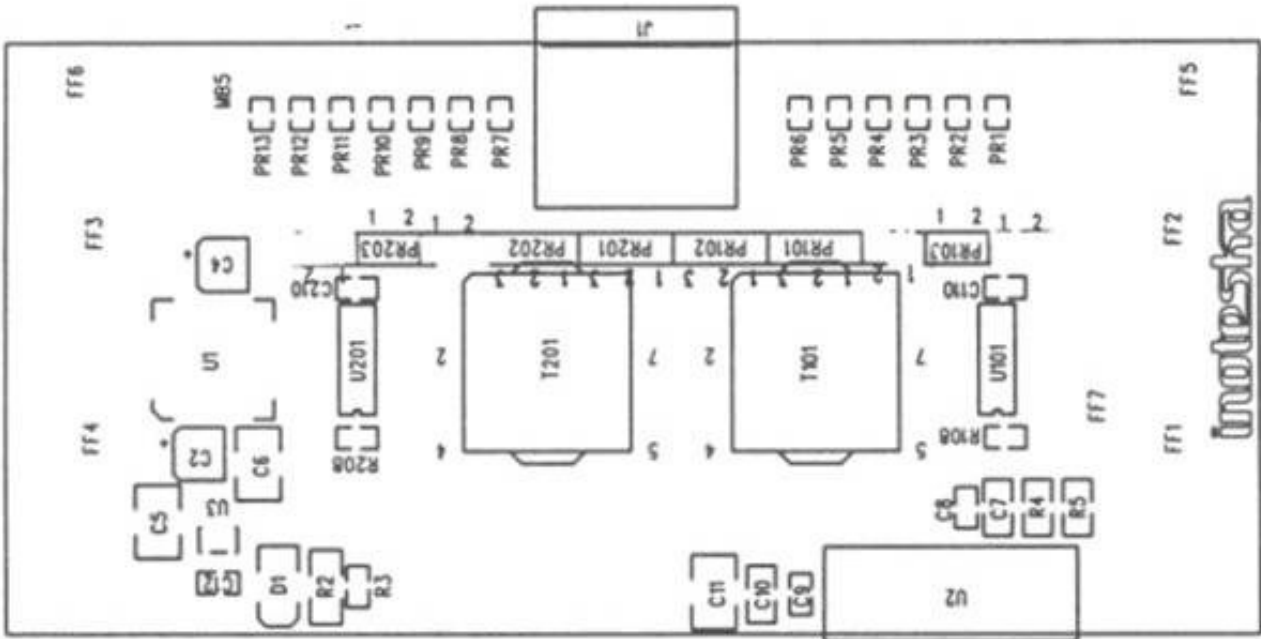
IN x: input to device negative  
IP x: input to device positive

ON x: output from device negative  
OP x: output from device positive

x: E1 A to E1 H

**Module 2W/4W**

Module ITP 185 91 is dual. It is used for building up the speech/voice channel between two points or for conference channel. The conference channel can be built up of 2 analog and 1 digital channel or 2 digital and 1 analog channel.



**Jumpers layout**

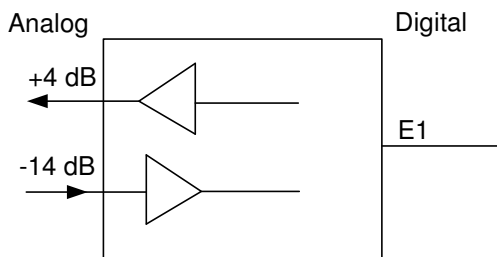
**Settings of audio 2-wire:**

- 1.interface  
jumpers: PR101 connected 1-2  
PR102 connected 1-2  
PR103 connected
- 2.interface  
jumpers: PR201 connected 1-2  
PR202 connected 1-2  
PR203 connected

**Settings of audio 4-wire:**

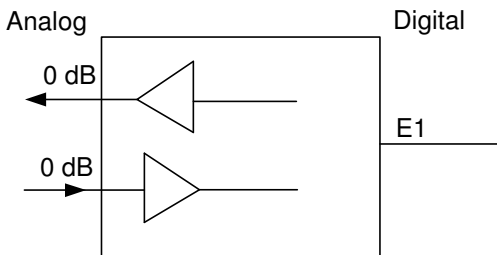
- 1. interface:  
jumpers: PR101 connected 2-3  
PR102 connected 2-3  
PR103 disconnected
- 2.interface:  
Jumpers: PR201 connected 2-3  
PR202 connected 2-3  
PR203 disconnected

**Amplification setting:**



1. line jumpers: PR104 disconnected  
PR105 disconnected

2. line jumpers: PR204 disconnected  
PR205 disconnected

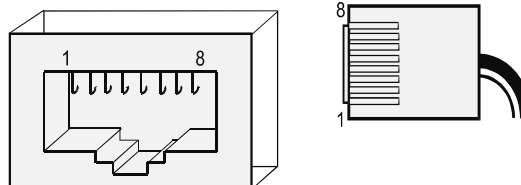


1. line: jumpers: PR104 connected 1-2  
PR105 connected 1-2

2. line: jumpers : PR204 connected 1-2  
PR205 connected 1-2

Connector RJ45 for connection of module:

- |        |                                  |
|--------|----------------------------------|
| pin    |                                  |
| 1. BI2 | receiving B wire 2. interface    |
| 2. AI2 | receiving A wire 2. interface    |
| 3. BI1 | receiving B wire 1. interface    |
| 4. B2  | transmitting B wire 2. interface |
| 5. A2  | transmitting A wire 2. interface |
| 6. AI1 | receiving A wire 1. interface    |
| 7. B1  | transmitting B wire 1. interface |
| 8. A1  | transmitting A wire 1. interface |



If audio 2-wire is set, only trasmitting AB wires are used.

**LED diodes**

\* signification of LED diodes is the same for desktop and rack version

<b>Interface</b>	<b>Led diode green</b>	<b>Led diode yellow</b>	<b>Status</b>
<b>E1</b>	<b>Off</b>	<b>Off</b>	<b>Not enabled</b>
	<b>Off</b>	<b>On</b>	<b>Not connected</b>
	<b>Fast</b>		<b>CRC error or SLIP</b>
	<b>Slow</b>		<b>ISDN - No DLL</b>
		<b>Slow</b>	<b>AIS detected</b>
		<b>Fast</b>	<b>LFA or RRA detected</b>
	<b>On</b>	<b>Off</b>	<b>OK</b>
<b>Ethernet</b>	<b>Off</b>	<b>Off</b>	<b>Line not connected</b>
	<b>On</b>	(flashes during Receive, Transmit)	<b>Line active</b>

Off – no light, On – light, Slow – flashes slow (period 1.6sec), Fast – flashes fast (period 0.2sec, 5x/sec)

**CRC** – cyclic redundancy check error

**No DLL** – no datalink layer active

**AIS** - Alarm Indication Signal – Transmitted signal is constant with data value Log1

**LFA** - Loss of Frame Alignment – Indicates synchronisation error in 0<sup>th</sup> channel

**RRA** - Receive Remote Alarm – Indicates remote device alarm

### 3. MANAGEMENT SW

Device can be configured:

Static multiplexer:

- *Locally from connected PC*
- *Via analog modem*
- *Via supervision centre*
- *Via Ethernet - UDP, TCP, SNMP\* - supervision*

*\* standard MIB tables are used, implemented: system, interfaces (rfc1213), part of ds1, dsx1 (rfc1406), part of isdn, isdn signaling, isdldapd ( rfc2127).*

Dynamic multiplexer:

- *Locally from connected PC*
- *Via modem*
- *Via supervision centre*
- *Via Ethernet - UDP, TCP, SNMP\* - supervision*

*\* standard MIB tables are used, implemented: system, interfaces (rfc1213), part of ds1, dsx1 (rfc1406), part of isdn, isdn signaling, isdldapd ( rfc2127).*

How to proceed:

1. Insert CD to PC (OS Windows '98 and higher).
2. Run **MNDymux.exe**
3. Configure device following the instructions below.

**Note:**

Latest firmware and management software for DyMUX is available on Inoteska website – [www.inoteska.sk](http://www.inoteska.sk).

#### 3.1 Work with configuration file

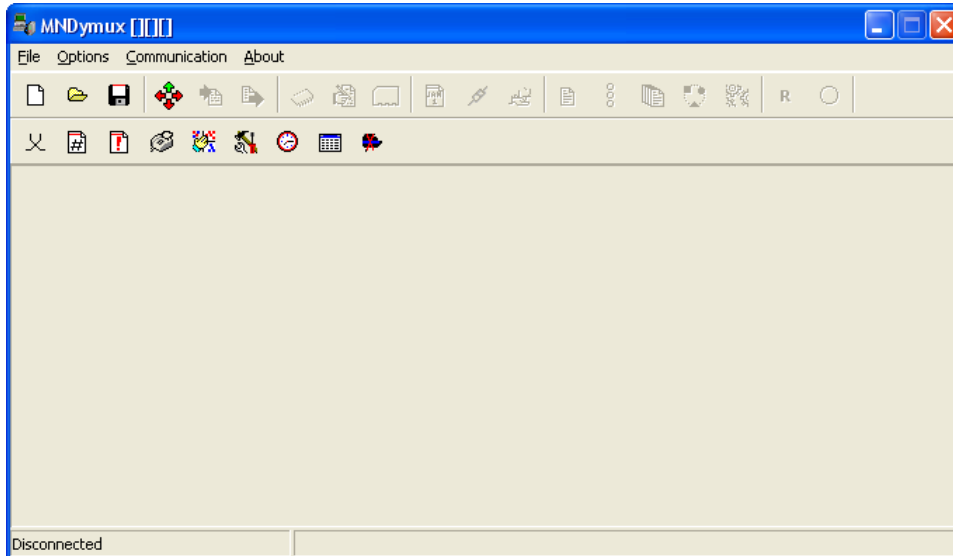
Management SW allows to create a configuration file or modify a configuration file already created without need of connected device.

**Note:**


**Device configuration without connected device can be done only in windows accessible by speed buttons in main menu second line, see chapter 3.2 Device configuration.**

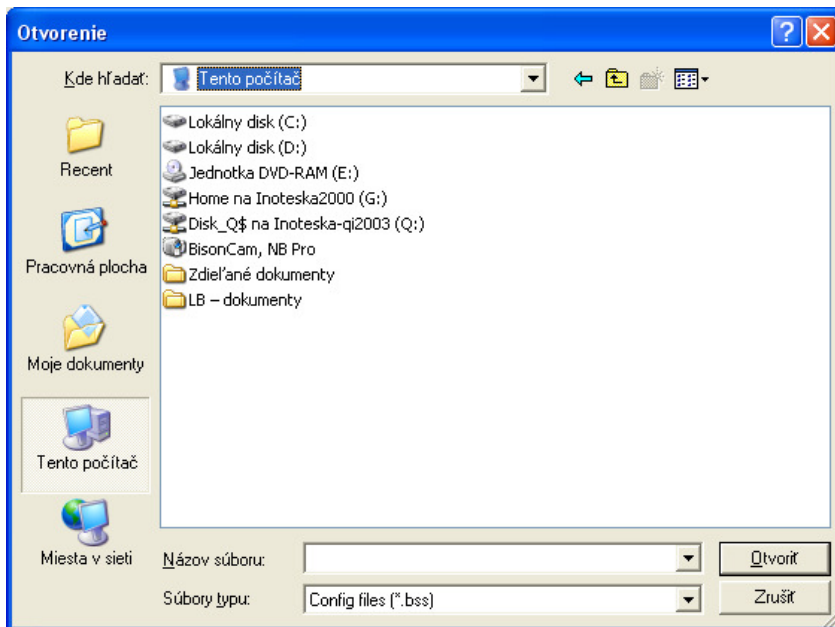
**Create new configuration file**


Click on speed button . Then window is displayed:




**Open existing configuration file**

Click on speed button  or in main menu **File – Open**. Following window is displayed:



Find the saved configuration file and click .

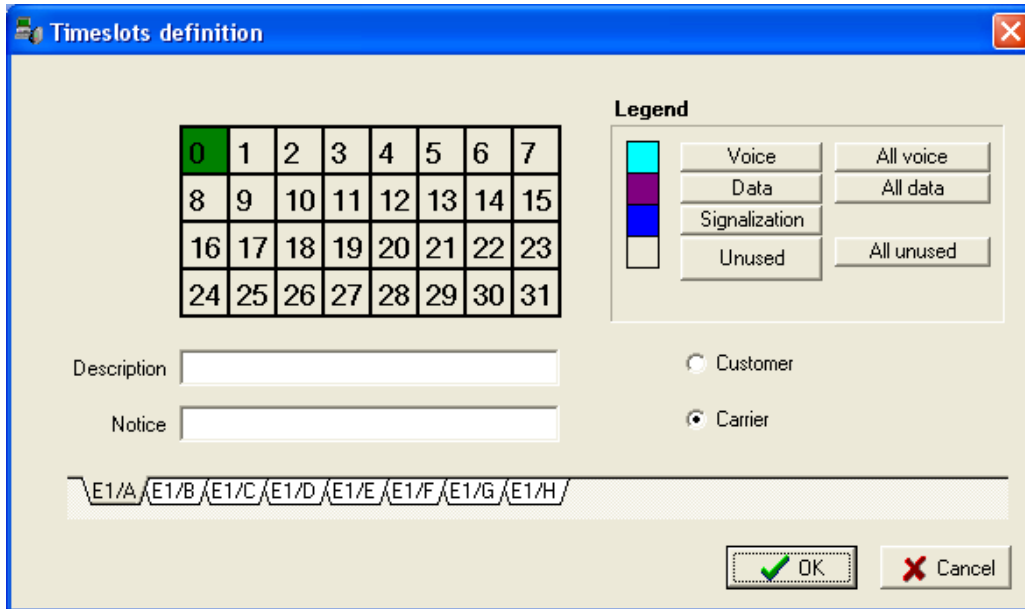
Create or modify configuration file according to the instructions in following chapters.

Save configuration file by click on speed button  or in main menu **File – Save / Save as....**

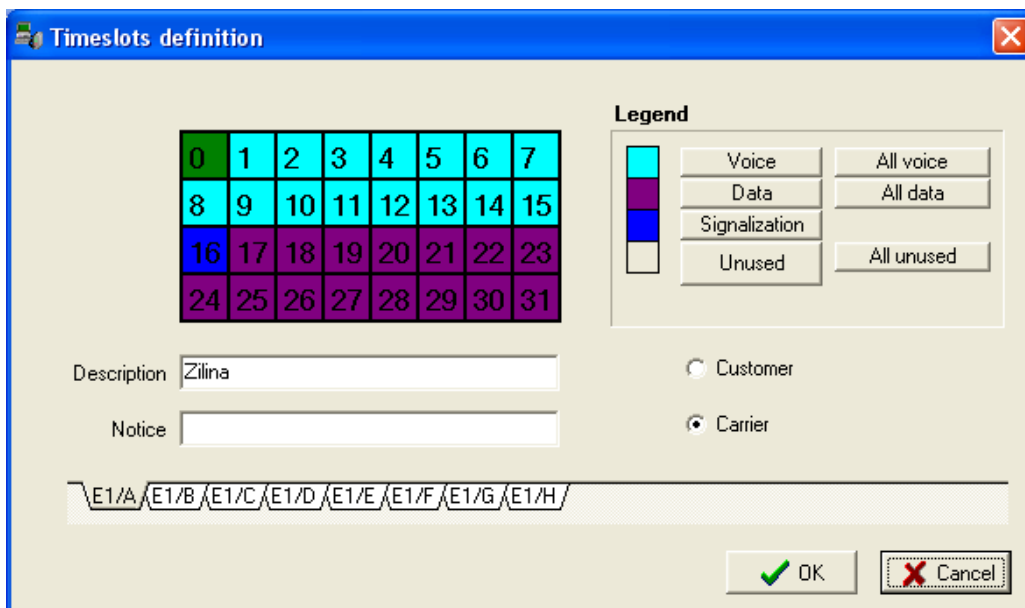
### 3.2 Device configuration

#### 3.2.1 Timeslots definitions

Click on speed button .




Here you can define E1 timeslots. Click on E1 interface tab. Select the timeslots (one or more by using a mouse pointer) and then click on timeslot type (**Voice, All voice, Data, All data, Signalization, Unused, All unused**) on the right. For easier orientation you can name each E1 interface (**Description, Notice**) and select if it is **Customer** or **Carrier**.

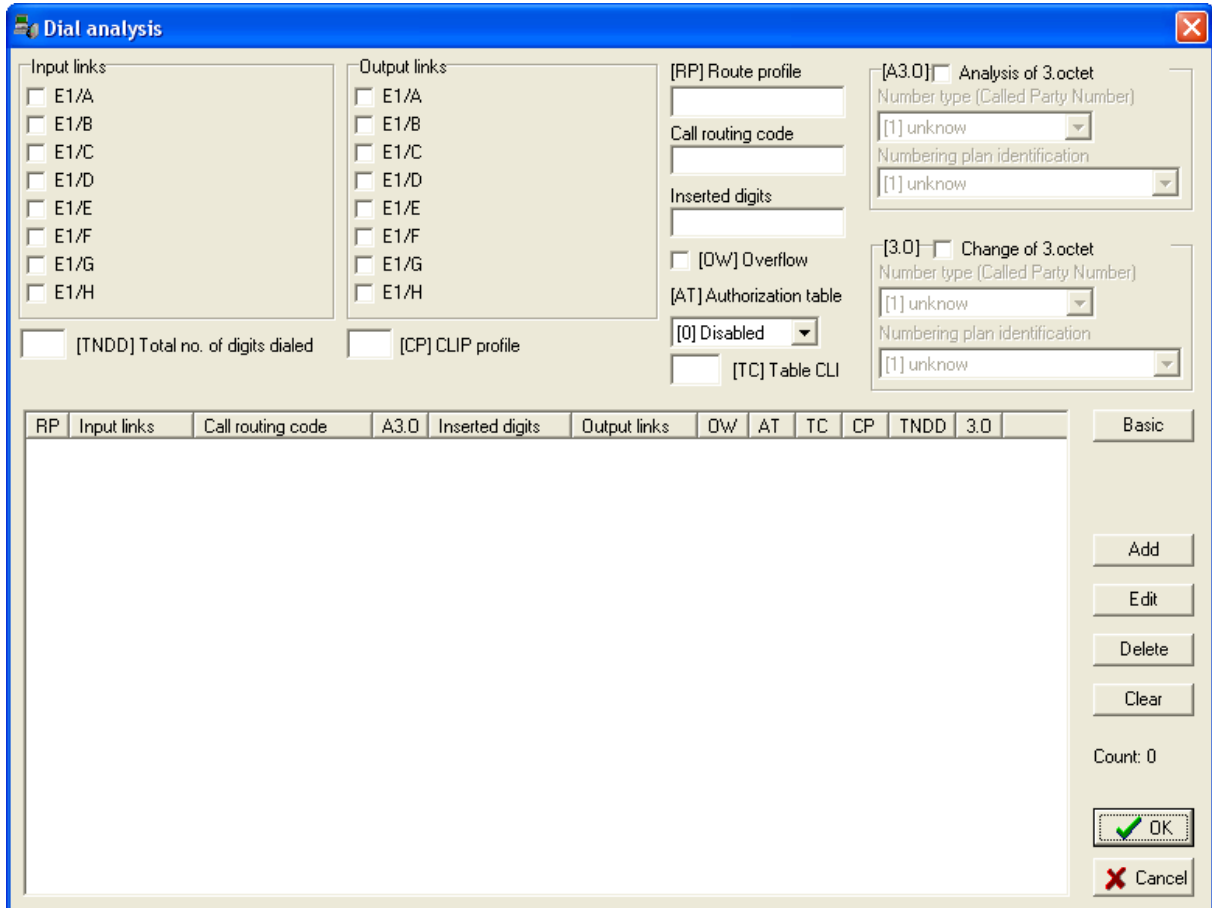


Click  to save the settings or  (without saving).



### 3.2.2 Dial analysis

Click on speed button . This window will be displayed:



Dial analysis table is set for incoming calls routing on the basis of dial analysis. Only those customers and carriers, which have at least one voice timeslot in E1 interface, are displayed in the in- and output links. It is possible to set up to 300 conditions for incoming call re-routing to the specified output link.

For each re-routing condition set:

**Input links** – all called party numbers by incoming calls from these links will be analyzed

**Call routing code** – the calling party number is compared with this number. Except digits, it can contain the universal signs “?” or “x”. “?” implies the match for arbitrary one digit. “x” implies the match for all digits it substitutes. Call routing code can contain max. one sign “x”. If calling party number matches call routing code, all set digits will be suppressed from the calling party number.

**Inserted digits** – digits specified here will be inserted and transmitted. They determine the modifications which will be applied for the calling party number of call routed to the specified out links. Except the digits, it is possible to insert the universal

signs “?” or “x”. This string can not contain more univerzal signs than call routing code does.

**Output links** – if the called party number matches the specified conditions, then it is routed to these links.

**Overflow [OW]** – determines if line overflow is allowed for the specified conditions or not. If it is not possible to route the call matching the conditions to any of the set out links because of their drop-out and the overflow is allowed, dial analysis continues with the next table row. If the overflow is not allowed, call is disconnected, because there is no link without drop-out.

**Table CLI [TC]** – number of CLI table assigned to authorized numbers or exceptions according to calling number.

**CLIP profile [CP]** – determines which CLIP analysis table rows have to be analyzed for the call. If no CLIP profile number is set, calling party number is not analyzed and number is transmitted without change to the out link.

**Total number of digits dialed [TNDD]** – allows to set the number of dialed digits, it is used for end of dial analysis. DyMux only waits until the specified number of digits is dialed, this option overrides the default dialling timeout, and overrides the *Complete dial in SETUP* options. Setting TNDD allows faster establishment of connection.

**Dial analysis**

**Input links**

- E1/A - Zilina
- E1/B - Trnava
- E1/C - Presov
- E1/D - Martin
- E1/E - Bratislava
- E1/F - Nove Zamky
- E1/G - Dunajska Streda
- E1/H - Liptovsky Hradok

**Output links**

- E1/A - Zilina
- E1/B - Trnava
- E1/C - Presov
- E1/D - Martin
- E1/E - Bratislava
- E1/F - Nove Zamky
- E1/G - Dunajska Streda
- E1/H - Liptovsky Hradok

[RP] Route profile: \_\_\_\_\_

Call routing code: x

Inserted digits: x

[OW] Overflow

[AT] Authorization table: [0] Disabled

[TC] Table CLI: \_\_\_\_\_

[A3.0]  Analysis of 3.octet

Number type (Called Party Number): [1] unknow

Numbering plan identification: [1] unknow

[3.0]  Change of 3.octet

Number type (Called Party Number): [1] unknow

Numbering plan identification: [1] unknow

[TNDD] Total no. of digits dialed     [CP] CLIP profile

RP	Input links	Call routing code	A3.0	Inserted digits	Output links	OW	AT	TC	CP	TNDD	3.0
A	_____	x		x	_____B						
	__CDE__	x		x	_____F						
	_____G	x		x	_____H						

Basic

Add

Edit

Delete

Clear

Count: 3

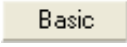

OK

Cancel

**Dial analysis example:**

Called party number	Call routing code	Inserted digits	Resultant called party number	Notes
123456	x	888x	888123456	
123456	12x	88812x	888123456	
123456	15x	88815x	No match	
123456	1??x	8881??x	888123456	
123456	1??x	10??0x	10230456	
123456	x56	x00	123400	Note 1
123456	x??	x00??	12340056	Note 1

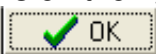
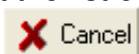
- Note 1: It is possible to compare the suffix only if the called party number is “en-bloc“. Normally this is possible for calls coming from the network side, but it can not be assumed for calls coming from the subscriber.
- Call routing code and inserted digits can contain none or one universal sign “x”.
- If inserted digits contain the universal signs, call routing code has to contain at least the same number of universal signs.
- When comparing, the universal signs get the real values. These are used when replacing.

To display basic settings, click on . Click  to display extended parameters settings for CLIP analysis:

**Analysis of 3. octet [A3.O]** – allows to analyse the number type and numbering plan in 3. octet of information element CALLED PARTY NUMBER in the out links, if it’s necessary.

**Change of 3. octet [3.O]** – allows to change the number type and numbering plan in 3. octet of information element CALLED PARTY NUMBER

Buttons on the right side are used to edit the list of criteria for Dial analysis.

Click  to save the settings or  (without saving).


### 3.2.3 CLIP analysis

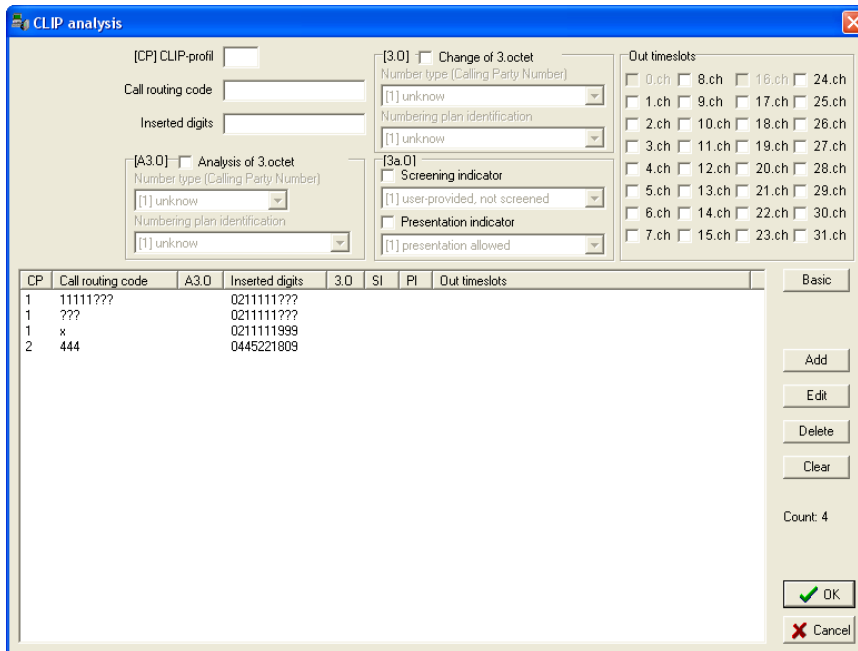
Click on speed button . Window will be displayed:

Here it is possible to set the conditions which will be applied to calling party number for incoming call. This table is related to the table **Dial analysis**.

**CLIP profile [CP]** – allows to divide the CLIP analysis table into several separate tables. That means it determines which CLIP analysis table rows have to be analyzed for the incoming call, if the same **CLIP profile** number is set in the **Dial analysis** window.

Same criteria are applied to **Call routing code** and **Inserted digits** as in Dial analysis window, except they are for calling party number.

Click  to display extended parameters settings for CLIP analysis.



**3. octet [3.O]** – allows to change the number type and numbering plan in 3. octet of information element CALLING PARTY NUMBER in the out links, if it’s necessary.

**3a. octet [3a.O]** – allows to change the SCREENING INDICATOR in 3a. octet of information element CALLING PARTY NUMBER in the out links, if it’s necessary.

**Screening indicator** – modification of Calling party identification

**Presentation indicator:**

- Presentation allowed** – identification is transmitted and displayed
- Presentation restricted** – identification is transmitted and not displayed
- Number not available due to interworking** – identification is suppressed

**Out timeslots** - for CLIP profile set, call will be routed to the specified out timeslots..


Buttons on the right side are used to edit the list of criteria for CLIP analysis.

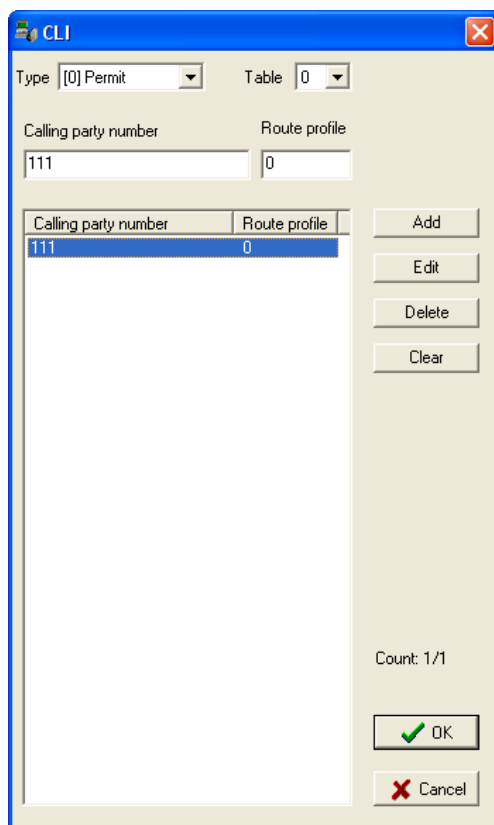
Click  to save the settings or  (without saving).

**CLIP analysis examples for CLIP profile 1:**

Calling party number	Call routing code	Inserted digits	Resultant calling party number
11111567	11111???	0211111???	0211111567
	???	0211111???	
	x	0211111999	
567	11111???	0211111???	
	???	0211111???	0211111567
	x	0211111999	
1111178	11111???	0211111???	
	???	0211111???	
	x	0211111999	0211111999
57891245	11111???	0211111???	
	???	0211111???	
	x	0211111999	0211111999

**3.2.4 CLI**

Click on speed button . There will be a window displayed where it is possible to set calling party numbers which are authorized for outgoing calls.



**Type:**

**Permit** – authorized numbers

**Exception** – numbers with no permission

? – arbitrary one digit in the string

**Table (0-7)**

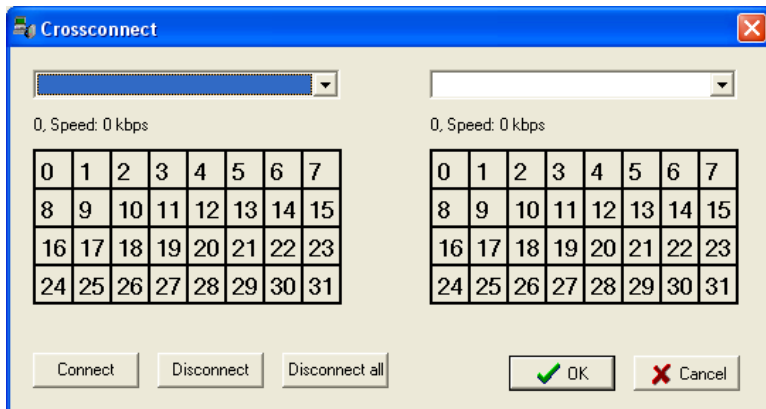
**8000 entries** are available. DyMUX automatically sorts the numbers ascending.

List of Calling party numbers can be edited using the buttons on the right side.

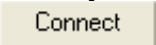
Click  to save the settings or  (without saving).

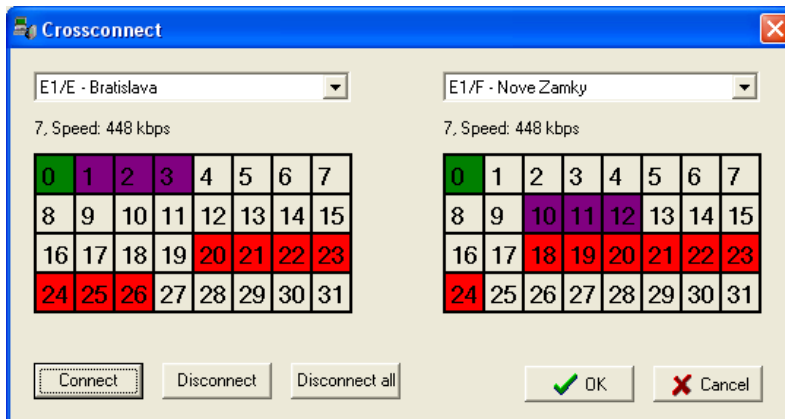
**3.2.5 Crossconnect**

Click on speed button  to set data crossconnect.



Choose E1 interfaces in the top left and right part of window for crossconnect

Click on timeslots (one or more by using mouse pointer) in left part, then click on timeslots in right part. Click  to crossconnect the marked timeslots. Data speed is displayed above the timeslots table. When making the crossconnection between more timeslots at once, you have to select the same number of timeslots on both sides.



**Note 1:**

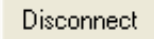
Timeslots are standardly differed by colour:

**green** – restricted timeslot

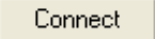
**violet** – crossconnected timeslot

**Note 2:**

If you click on crossconnected timeslot(s) in left (right) part, corresponding (crossconnected) timeslot(s) is displayed in right (left) part. Crossconnected timeslots are marked **red**.


 - choose crossconnect you want to delete and then click on this button to disconnect.

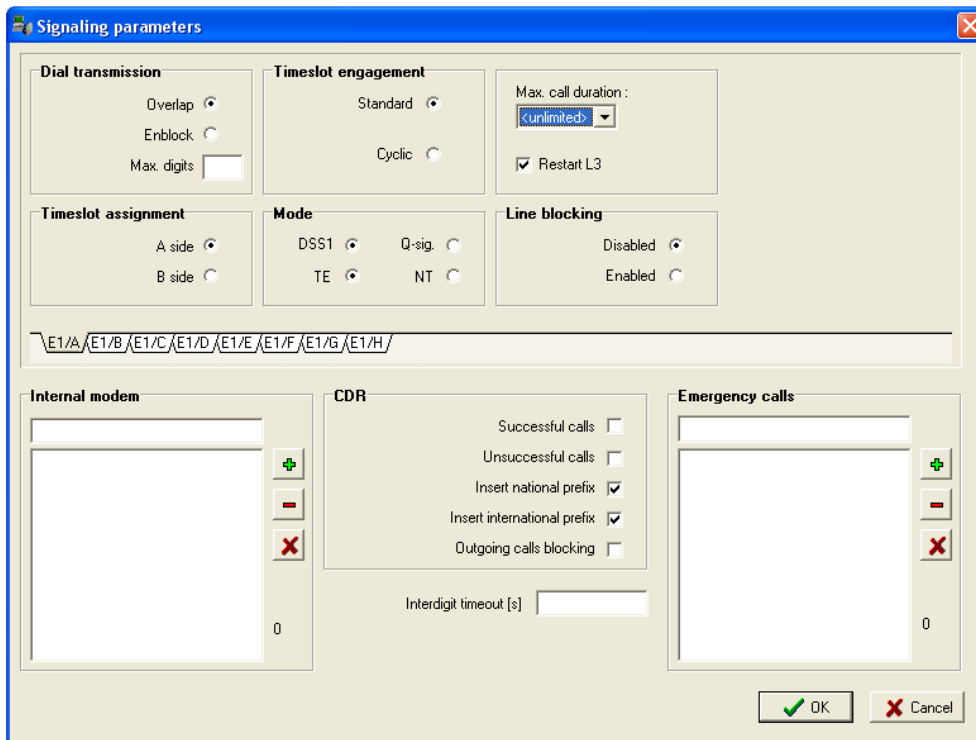
 – all crossconnections will be disconnected.

To crossconnect to **Ethernet** and make VLAN, select the timeslots in source E1 and define target as Ethernet VLAN 0 – 5. Confirm by click on .

Click  to save the settings or  (without saving).

### 3.2.6 Signalling parameters

Click on speed button . There will be a window displayed where it is possible to the signalling parameters for each E1 interface with signalling timeslot separately.





Click on particular E1 interface tab and set following parameters:

### Dial transmission

**Overlap** – DyMUX does not wait for the end of dial, but transmits the dial simultaneously (at the time the customer dials the destination number)

**Enblock** - for DSS1 the complete dial is transmitted in the DSS1 signalling

**Max. digits**– max. number of digits in Setup.

**Timeslot assignment** – timeslots occupation in PRA line:

**A-side** – 1. to 31. timeslot, **B-side** – 31. to 1. timeslot

### Timeslot engagement

**Standard** - first free timeslot is always seized

**Cyclic** - next free timeslot is seized

**Mode** – PRA line configuration:

**DSS1** signalling:

**NT** – device simulates network termination

**TE** - device simulates ISDN exchange

**Q-signalling**:

**Master** - device simulates ISDN exchange

**Slave** - device simulates network termination

**Max. call duration** – 5 minutes interval (5 min. to 6 hours). If max. call duration is exceeded, device will end the call. If max. call duration is not set, then this option is not active.

**Restart L3** – L3 restart

**Line blocking - Disabled / Enabled** - no in/out going calls to carrier will be available.

**Internal modem** – for remote configuration - internal modem will respond to this number

**CDR** – It is possible to save the call detailed records in the device.

**Successful / Unsuccessful calls** – filter for saving records to the file

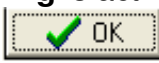

**Insert national prefix** – inserts 0 only for **Number type (Called party number)** – **National number** which is set in **Dial analysis** window

**Insert international prefix** – inserts 00 only for **Number type (Called party number)** – **International number** set in which is set in **Dial analysis** window


**Outgoing calls blocking** – when buffer is overflowed, outgoing calls will be blocked

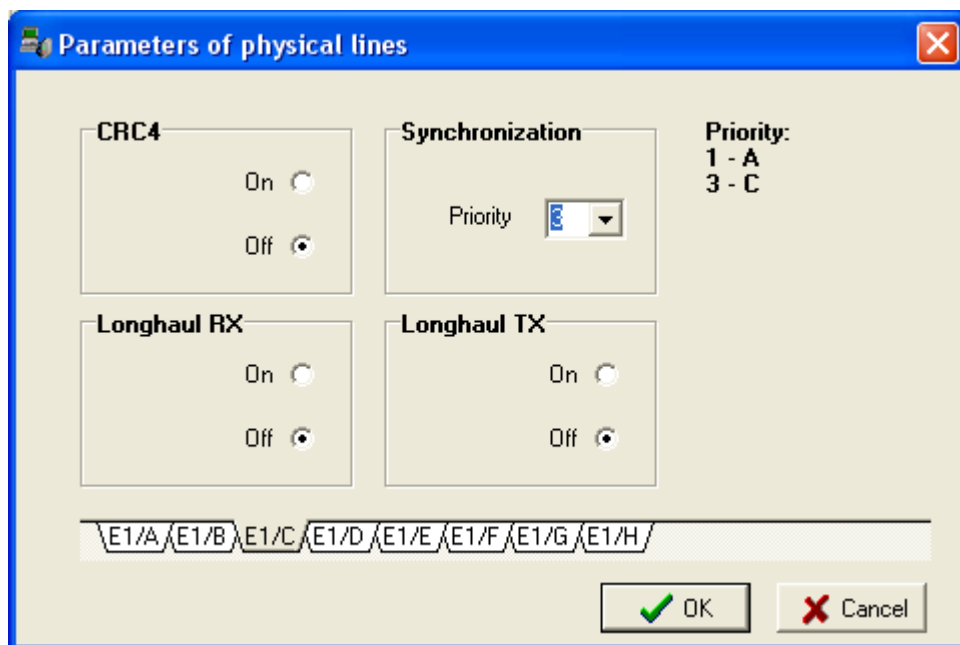
**Interdigit timeout** – Maximum time DyMUX waits for the next digit from the number dialled.

**Emergency calls** – emergency calls only in case CDR option - **Outgoing calls blocking** is active. It is possible to use following characters: 0-9, \*, #, ?,x.

Click  to save the settings or  (without saving).

### 3.2.7 Parameters of physical lines

Click on speed button . Here you can set the parameters of physical line for each E1 interface separately.



Click on particular E1 interface tab and set its parameters:

**CRC 4** – in case CRC (**On / Off**) multiframe is set

#### Synchronization


**Priority** – synchronization priority for particular E1 interface.

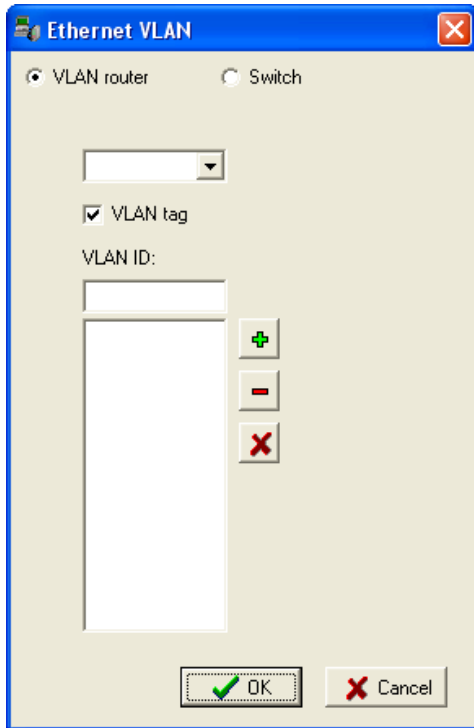
**Priority** – order of priorities according to which the device will be synchronized. Synchronization will be always scanned from the interface with highest priority. In case of its dropout the device will be synchronized to the next port.

**Long haul RX / TX** – this function enables to increase the device radius by setting the receiving more sensitive and transmitting more intense. Long haul parameter is within G.703 norm, that means it is also possible to connect a standard device to the device with long haul.

Click  to save the settings or  (without saving).

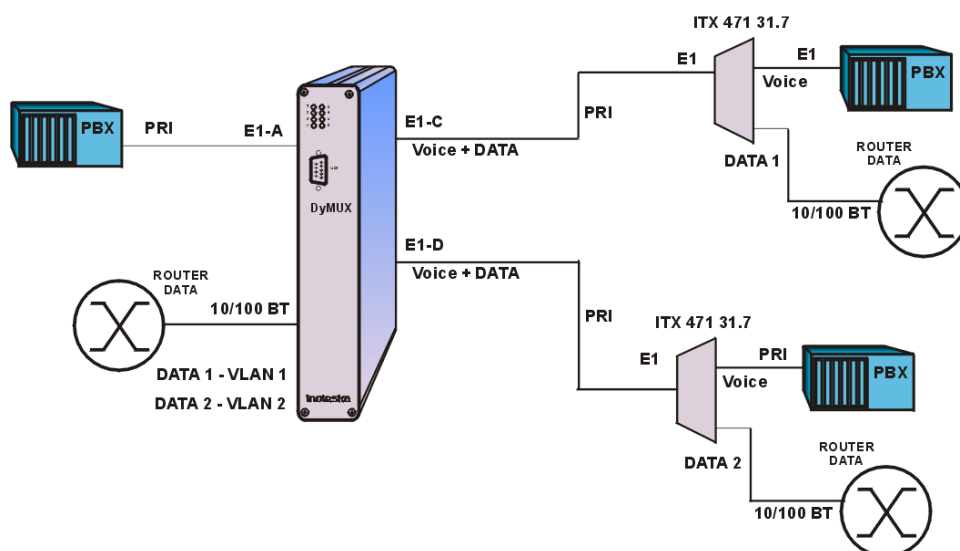
### 3.2.8 Ethernet VLAN

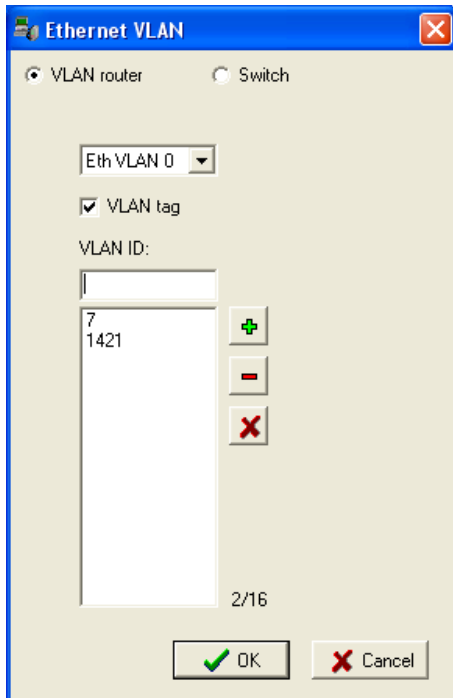
Click on speed button . There will be a window displayed where you can set one of basic Ethernet VLAN functions: **VLAN Router** or **Switch**.



#### 1) VLAN Router

See the picture below. Data are routed to Ethernet interface, where each customer has its VLAN ID assigned. It is possible to set max. 16 VLAN ID.

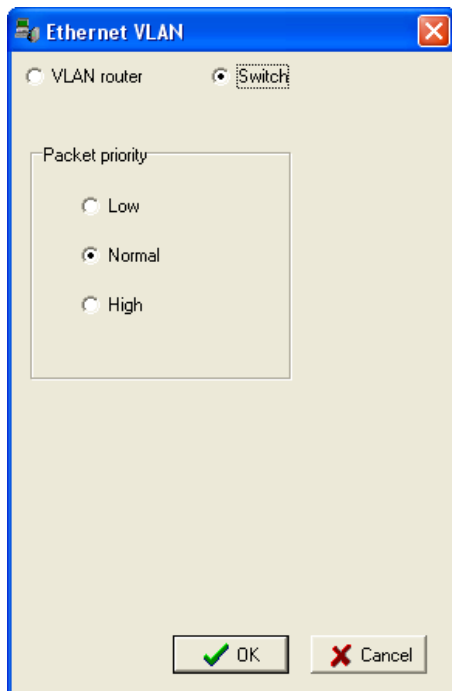




To edit the list of VLAN ID, use the buttons on the right side.


**2) Switch**

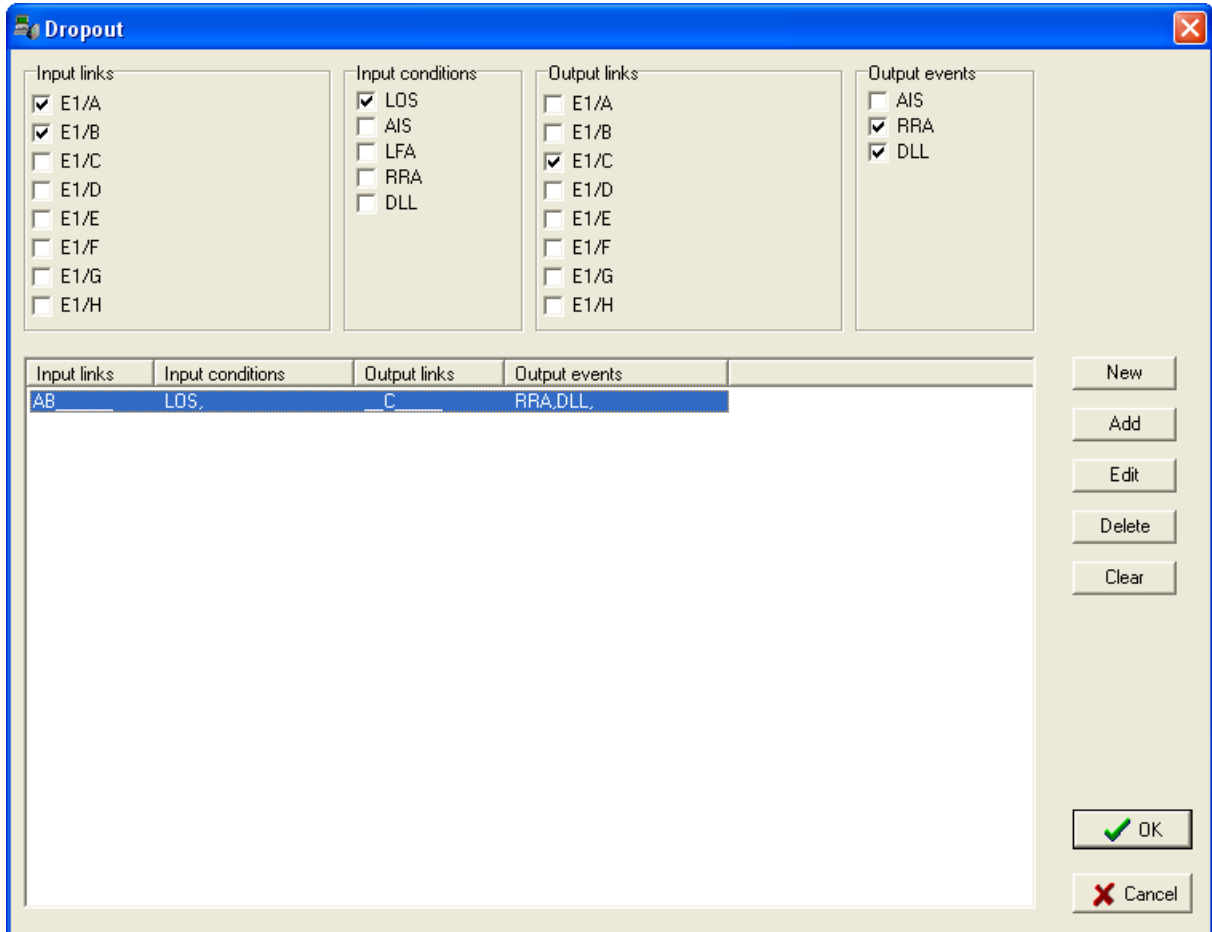
This function is used in situation when device e.g. concentrates the company branches (customers who share output (input) Ethernet capacity). **Packet priority** can be also set.



Click  to save the settings or  (without saving).

### 3.2.9 Dropout


Click on speed button  . Following window allows to set the conditions for dropouts on E1 interfaces.

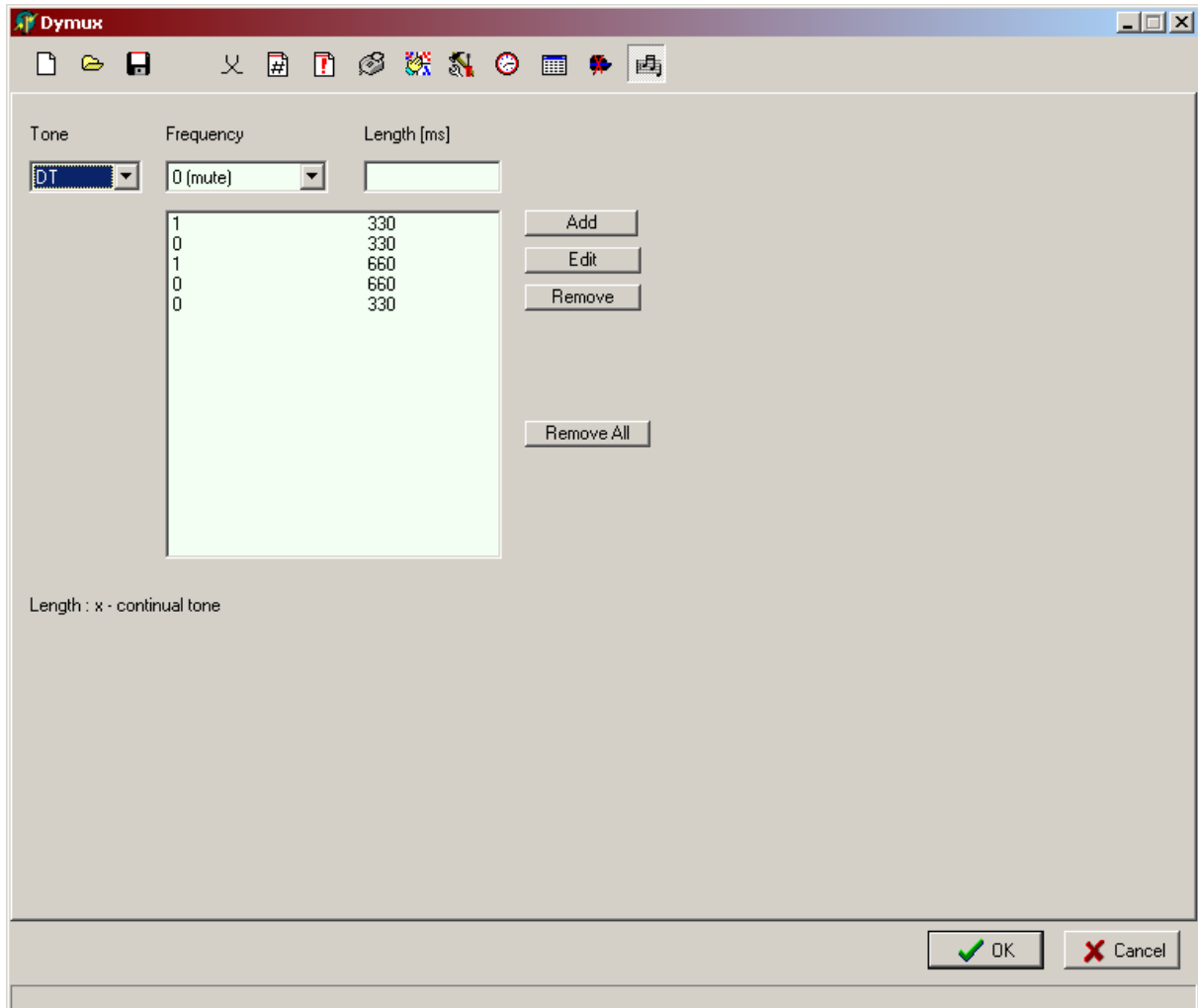


It is not possible to set the same E1 interface as Input and as Output link. To edit the list of dropouts conditions, use the buttons on the right side.

Click  to save the settings or  (without saving).

### 3.2.10 Tones

Click on speed button  . A window, where you can set parameters of tones, will be displayed.



- Tone** - DT ( Dial Tone )
- RT ( Ringing Tone )

- Frequency** - 0 (mute)
- 1 (425 Hz)

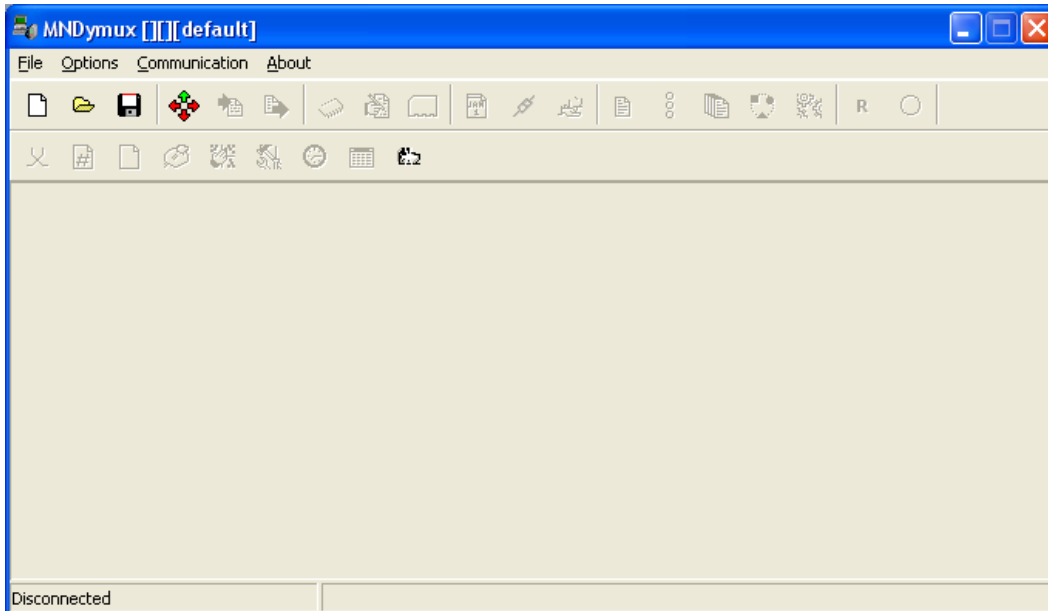
**Length** - numeric value in miliseconds (special character x – continual tone)


For selected tone (DT or RT ), it is possible to set tone parameters (frequency, length) into table (to manage tone parameters table - use Add, Edit, Remove, Remove all).

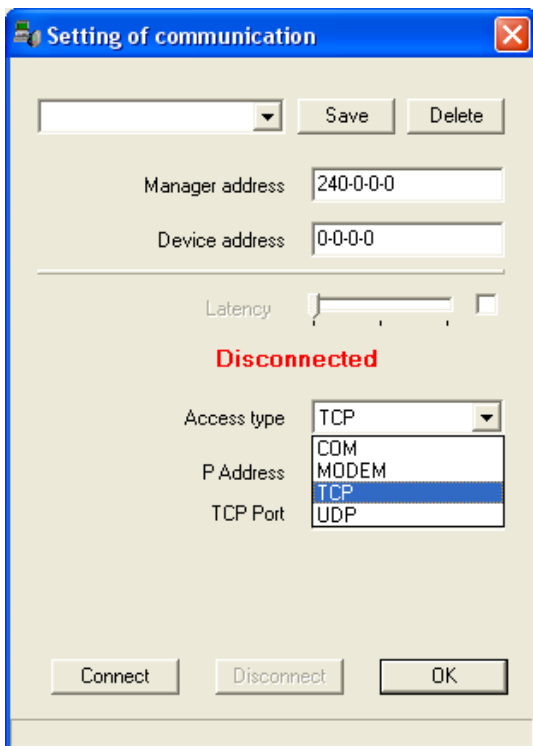
### 3.3 Communication with device

#### 3.3.1 Setting of communication

After running the management software, initial window is displayed:



Set the communication with device. Click on speed button . Following window will be displayed:



This window is skipped if new configuration is made without connected device.


**Manager address** – 240-0-0-0 (this address can be changed: first number from interval 240-254, other three numbers from interval 0-255)

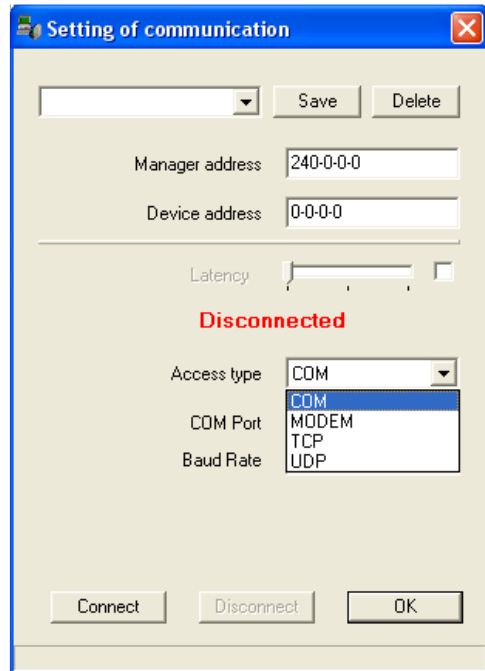
**Device address** - 0-0-0-0 – local connection (this address can be changed: first number from interval 0 - 239, other three numbers from interval 0-255)

**Latency** – longer time will be waited for requested communication.

**Connection - COM**


Local access to device via device address in format X-X-X.X .

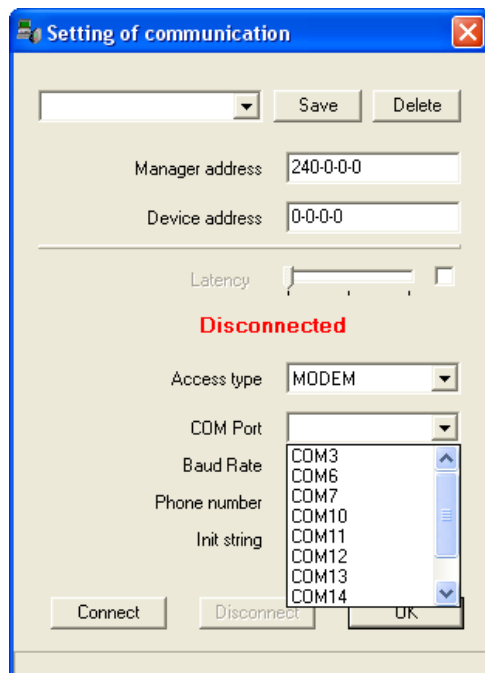
- 1) Set **Access type – COM**.
- 2) Select **COM port** (communication port) and set **Baud Rate** (115200 Bd).
- 3) Click on **Connect** . If connection is successful, **Connected** is displayed.
- 4) Click  .



**Connection - MODEM**

Remote access via modem. Connect the PC serial port to modem.

- 1) Set **Access type – MODEM**.
- 2) Select **COM port** (communication port) and set **Baud Rate** (115200 Bd), **Phone number** and **Init string** (according to the type of modem connected).
- 3) Click on **Connect** . If connection is successful, **Connected** is displayed.
- 4) Click  .

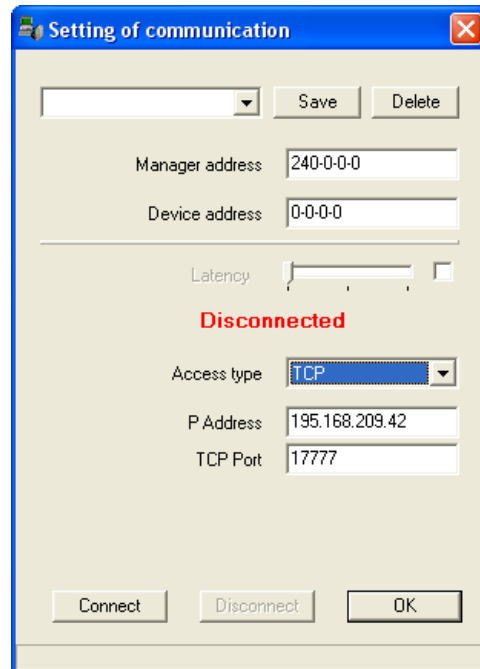




**Connection - TCP**

Remote access using IP address and device address.

- 1) Set **Access type – TCP**.
- 2) Set **IP Address** and **TCP Port**.
- 3) Click on **Connect**. If connection is successful, **Connected** is displayed.
- 4) Click **OK**.



**Connection - UDP**

This access type can be used only if the conditions stated below are met.

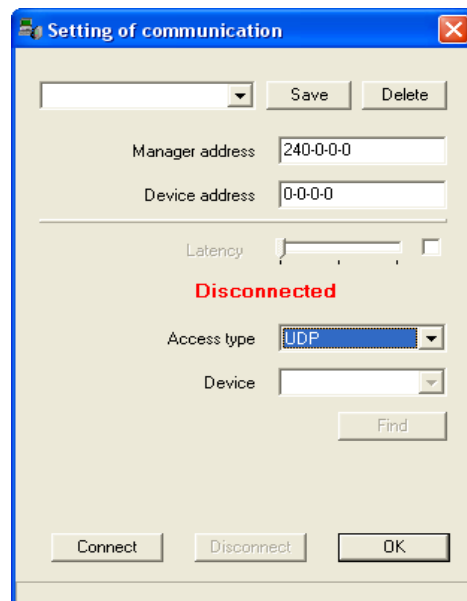
***If device is connected in network***

- Device and PC must be connected in the same local network
- Network must transmit *broadcast*
- PC must have IP address allocated

***If device is connected to PC locally***

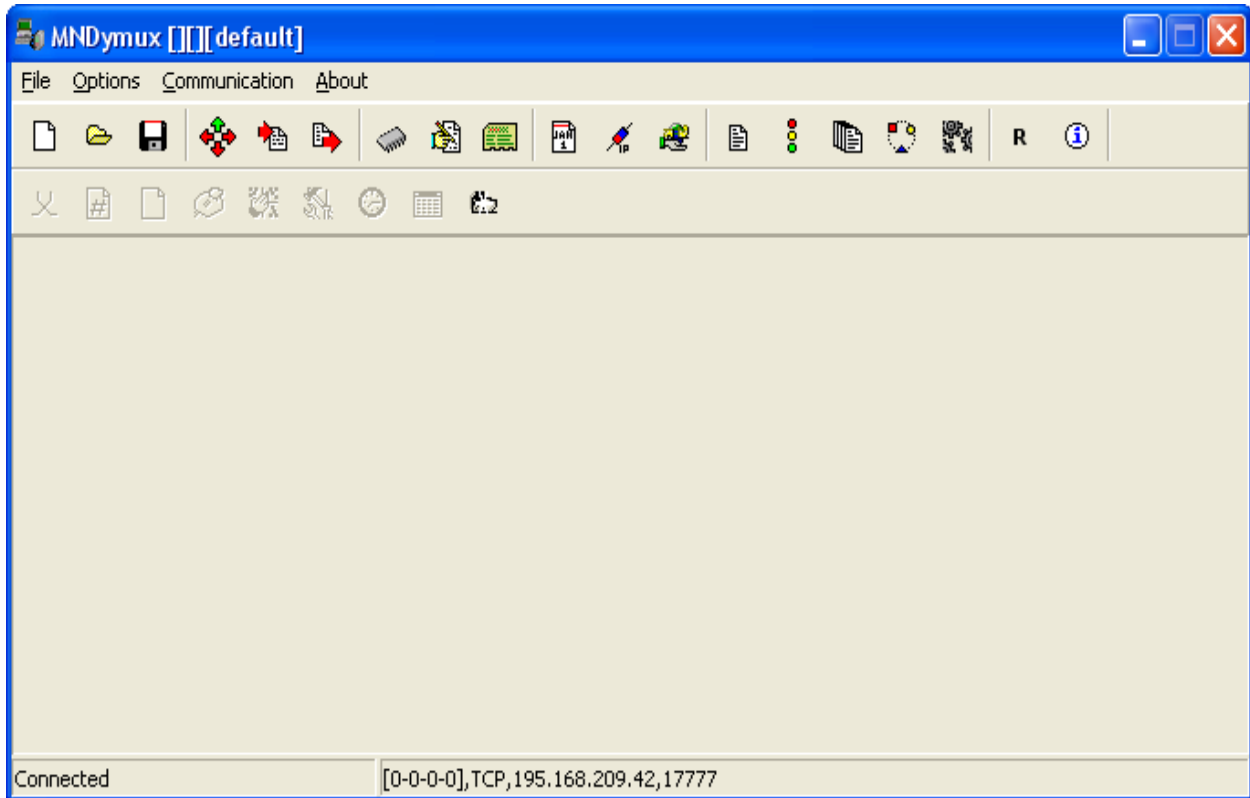
- PC must have arbitrary IP address allocated (it is necessary to disable DHCP and set static IP address, e.g. 192.168.1.2)
  - Receive/Transmit of *broadcast* packets must be enabled on PC
  - UDP port 3864 must be enabled on PC
- SW transmits broadcast and finds all „Inoteska“ device connected in network.

- 1) Set **Access type – UDP**.
- 2) Click **Find**.
- 3) Select the device from the list and click on **Connect**. If connection is successful, **Connected** is displayed.
- 4) Click **OK**.



**Note:**

In case of successful connection, device address, type and parameters of access are displayed in the line at the bottom of main management SW window.

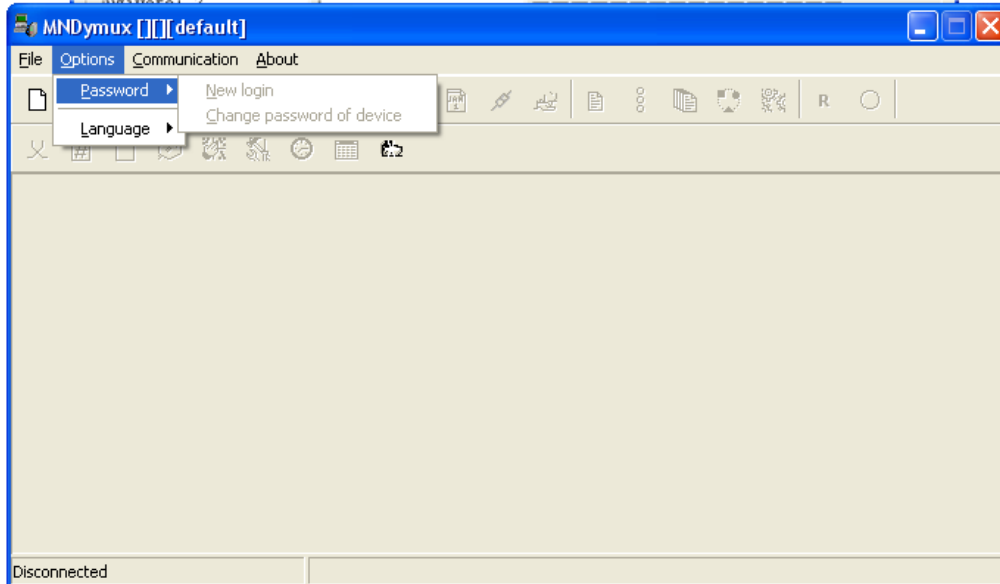


**In case of error, please check:**

- System power source
- Device address 0-0-0-0 – local connection (this address can be changed: first number from interval 0 - 239, other three numbers from interval 0-255)
- Manager address 240-0-0-0 (this address can be changed: first number from interval 240 –254, other three numbers from interval 0-255 )
- Password correctness
- Serial port connection
- Cable between device and PC
- Baud Rate between DyMUX and PC set to 115200 Bd.

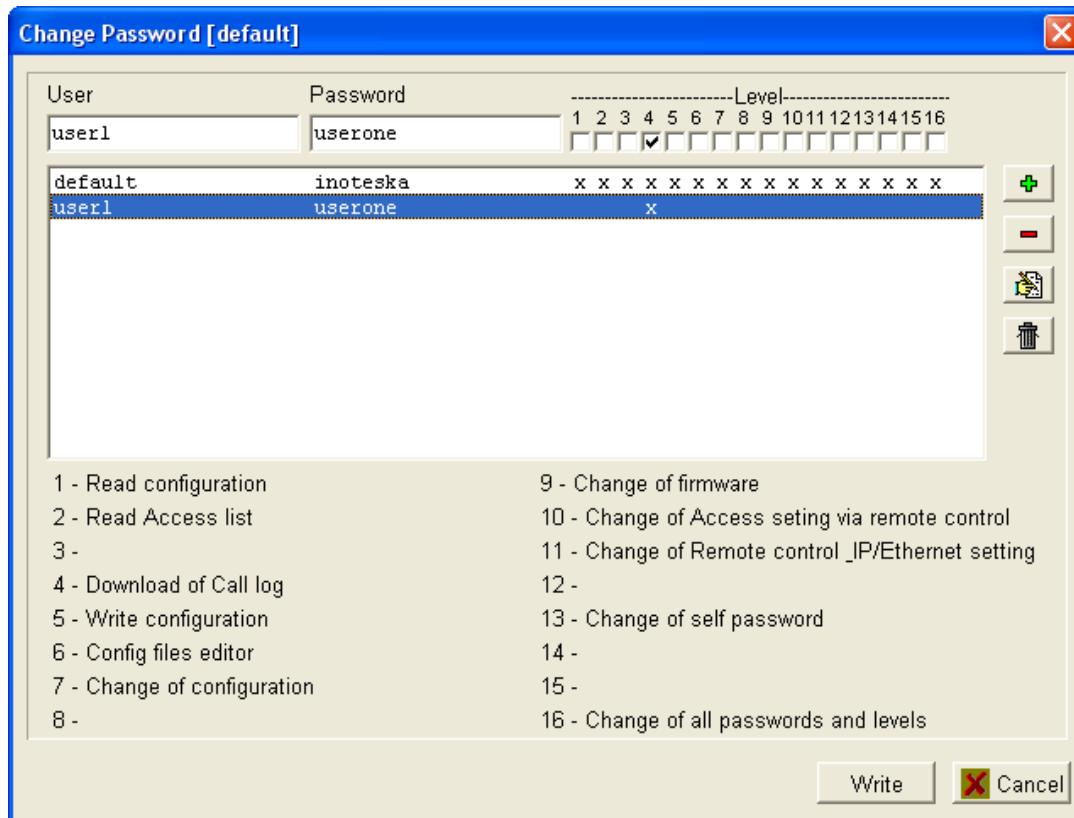
### 3.3.2 Password setting

After setting the communication parameters and successful connection, it is necessary to set password. Choose from main menu **Options – Password**.


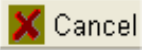


#### Change password of device

Default password is **inoteska**. It can be changed in menu **Options – Password – Change password of device**.

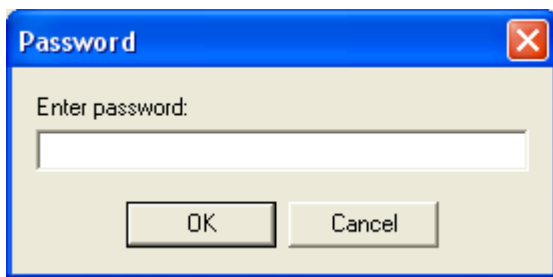


Here it is possible to edit the list of passwords for different users and set the level of their rights for access to device (1 to 16). There are notes below explaining each access level. List of passwords can be edited using the buttons on the right side of list.

-  - write new password settings to device
-  - quit window

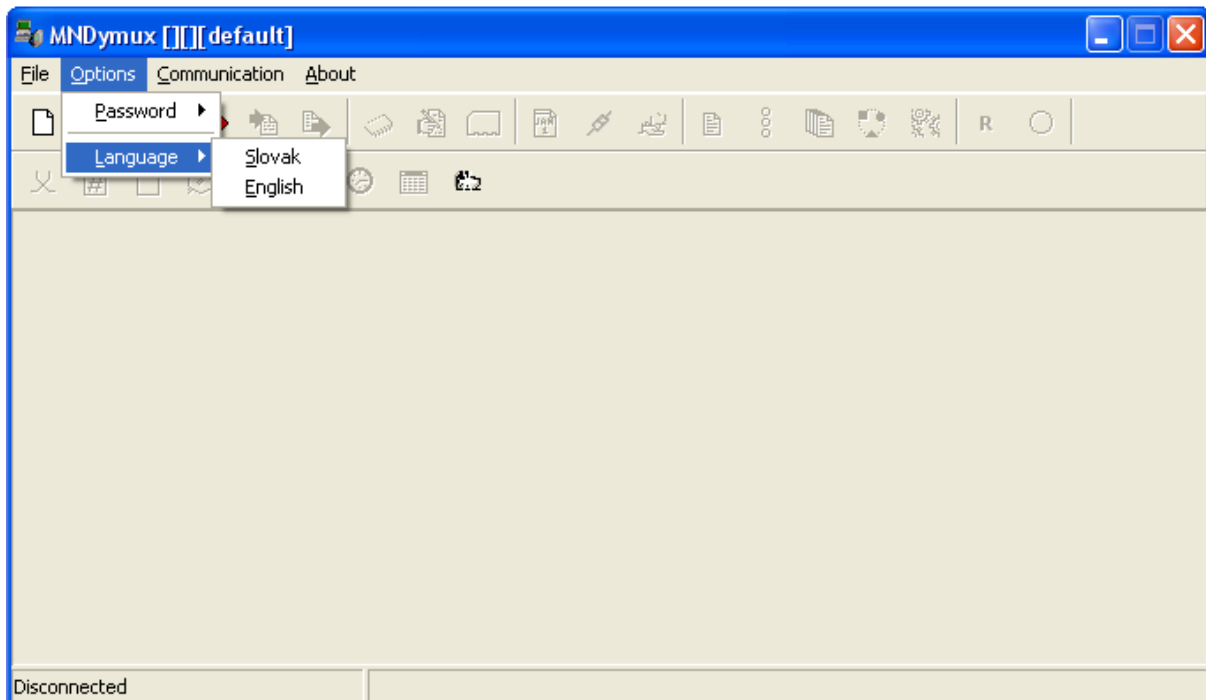
**New login**

Main menu **Options – Password – New login** using new password. After setting the correct password, main window will all available SW options be displayed.




**3.3.3 Change language**

User can choose the language which will be used while working with management software. Main menu **Options – Language - Slovak / English**.




### 3.3.4 Read and write configuration from/to device

#### Read configuration from device

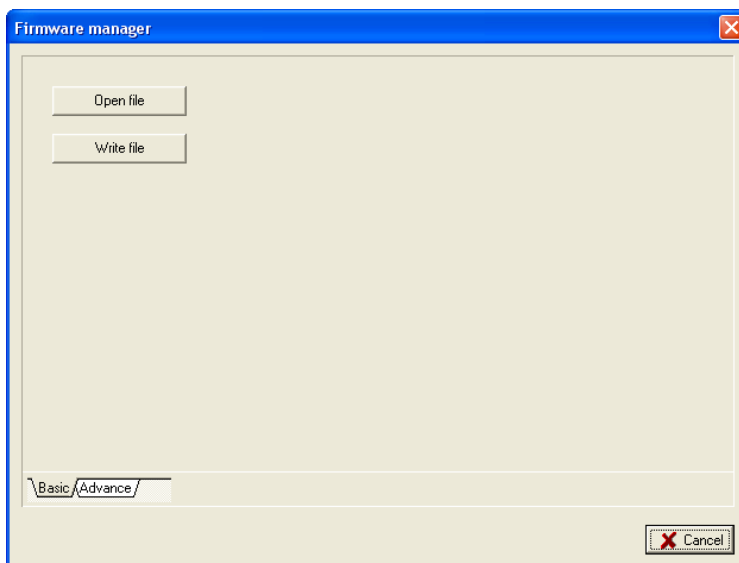
Click on speed button . To display different device settings, click on the corresponding speed buttons from main menu.

#### Write configuration to device

If device configuration has been modified and you want to save new settings, then it is necessary to write new configuration to device by click on speed button .

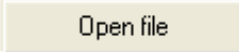

### 3.3.5 Firmware manager

Main menu **Communication – Programmer** or click on speed button . Following window is displayed:



Here it is possible to change the device firmware.


#### How to proceed:

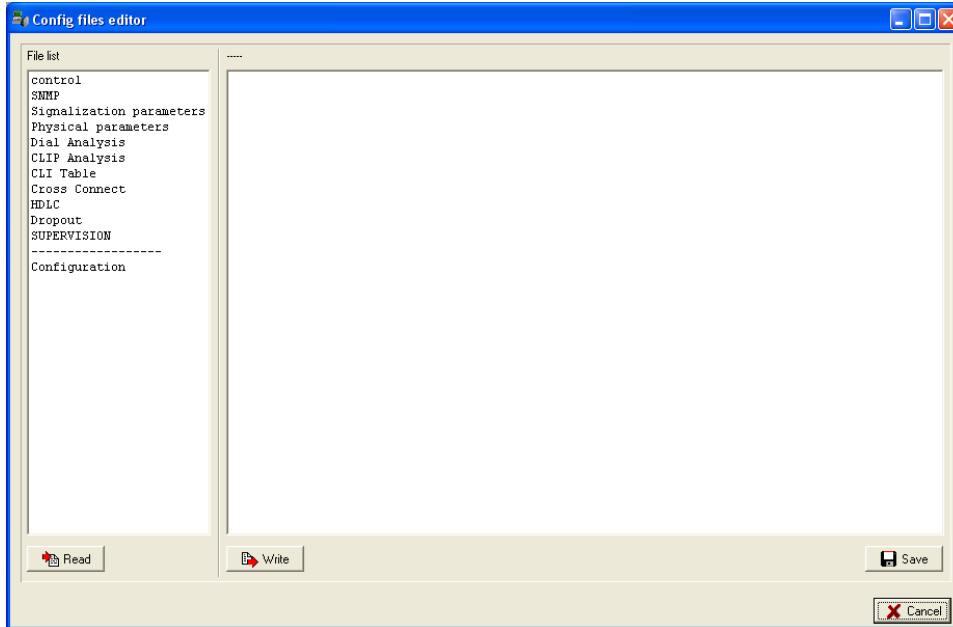
Click  and find appropriate \*.txt (batch file). Then click  and new firmware will be written do device flash memory.



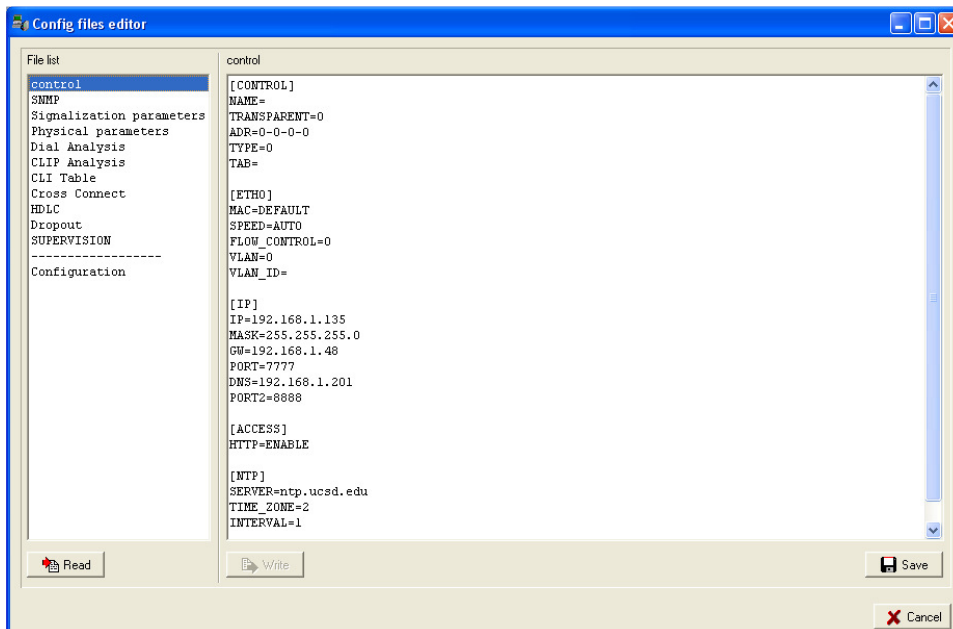
- quit window


### 3.3.6 Config files editor


From main menu choose **Communication – Config files editor** or click on speed button . There is a window displayed:




Here you can configure the device in text format. Double-click on the item from the list in left part and configure the corresponding file in the right part.



 Read - read config files from device

 Write - write modified config files to device

 Save - save config files to \*.txt file

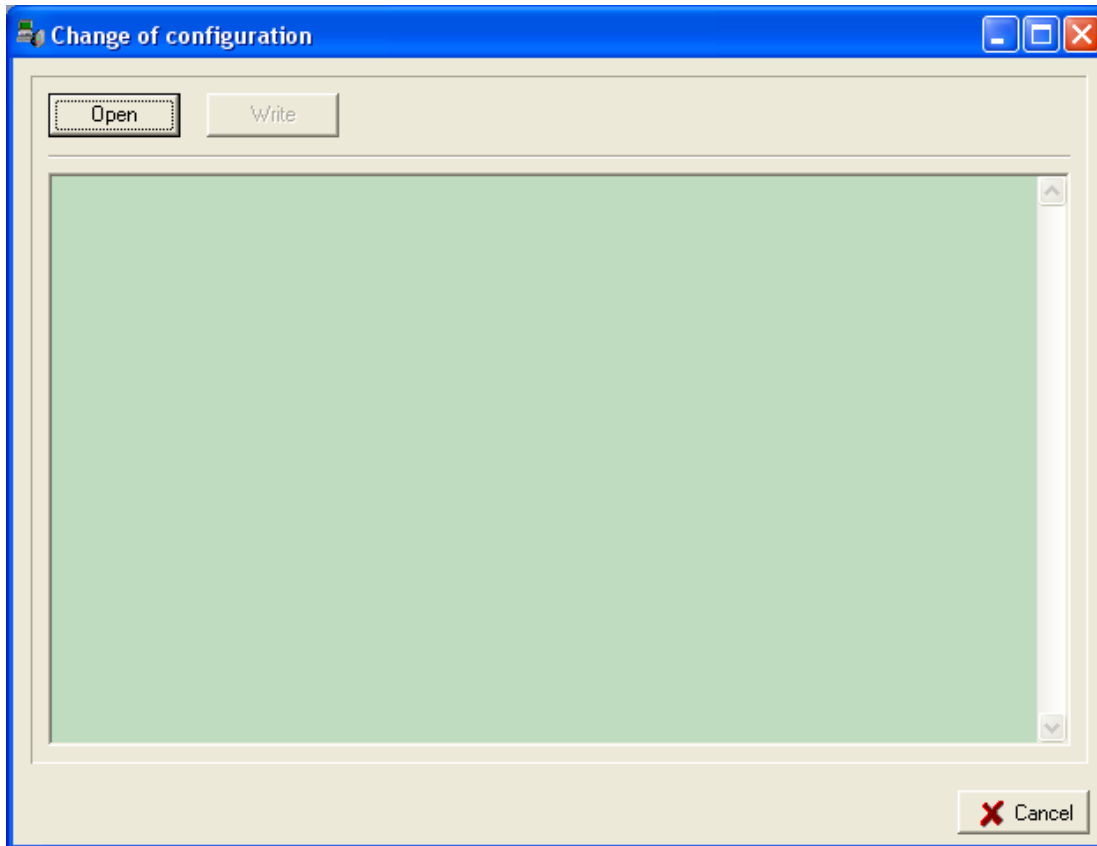
 Cancel - quit window

### 3.3.7 Change of configuration


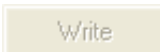

Main menu **Communication – Change of configuration** or click on speed button



. This window will be displayed:



Change of configuration means permission/restriction of interfaces or device functions. This operation can be performed with \*.zkf file generated by producer Inoteska s.r.o.

Click on  to find a file for changing the configuration and then  to write new configuration to device. New device configuration will be displayed in **Identification** window. Click  to quit the window.

#### **How to order:**

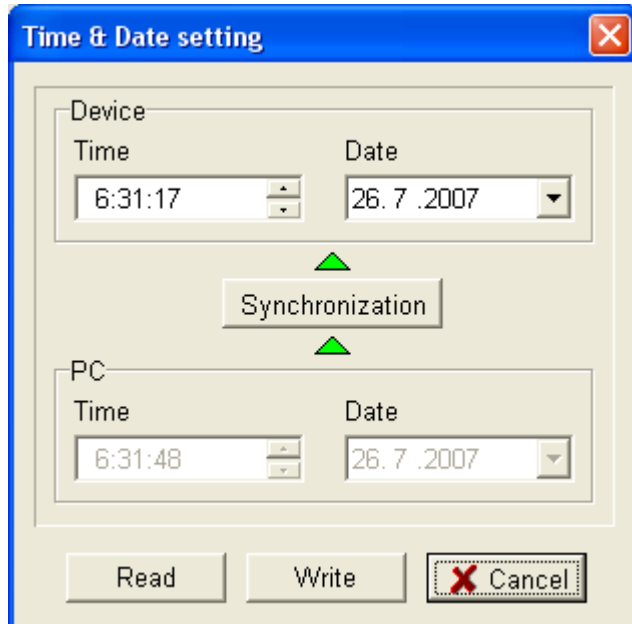
The device's basic configuration can be changed by ordering a new configuration from Inoteska.

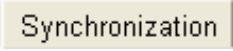
#### **Specify:**

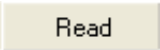

- Device's serial number
- Requested configuration

### 3.3.8 Time & Date setting

Choose from main menu **Communication – Time & Date setting** or click on speed button . Following window will be displayed:




Here you can set **Device** and **PC** time&date or click  to synchronize these settings.

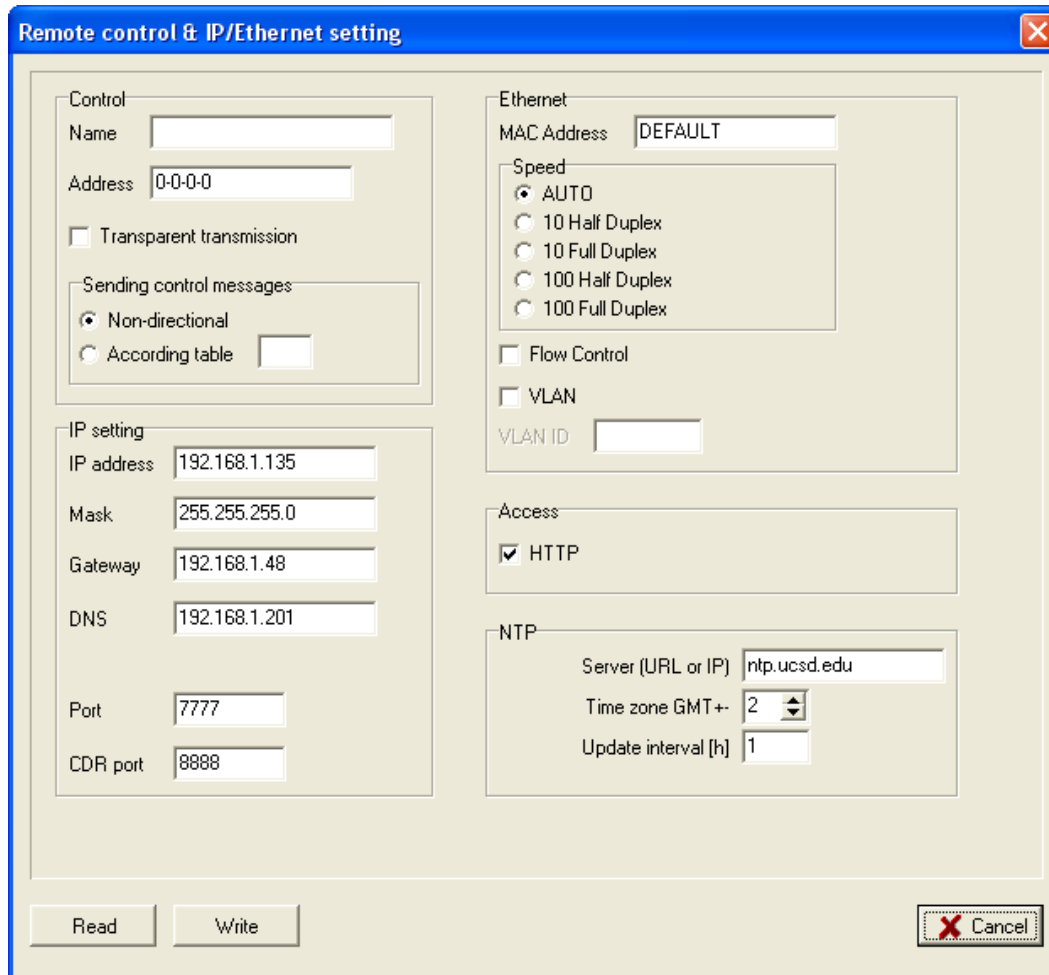
Click on  to read settings from device and  to write new settings to device.

Click  to quit the window.



### 3.3.9 Remote control and IP/Ethernet setting

Main menu **Communication – Remote control\_IP/Ethernet setting** or click on speed button . There will be a window displayed where you can set TCP/IP parameters for communication with device.



**Control**

**Transparent transmission** – currently unused (for compatibility with older device versions)

**Sending control messages**

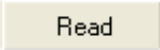

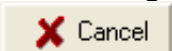
**Non-directional**

**According table**

**Ethernet**

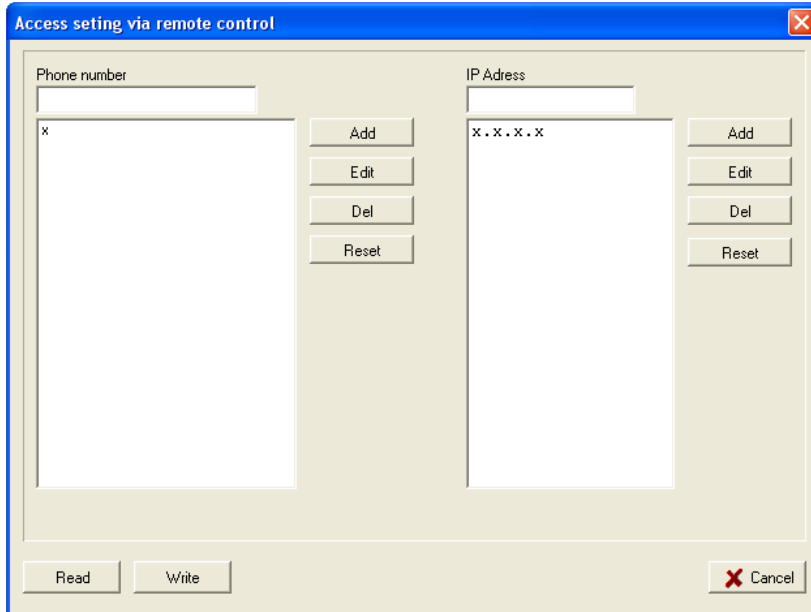
**Flow Control** – control frames transmit when device buffers are overflowed

**VLAN** – VLAN ID – device will expect remote control through VLAN set

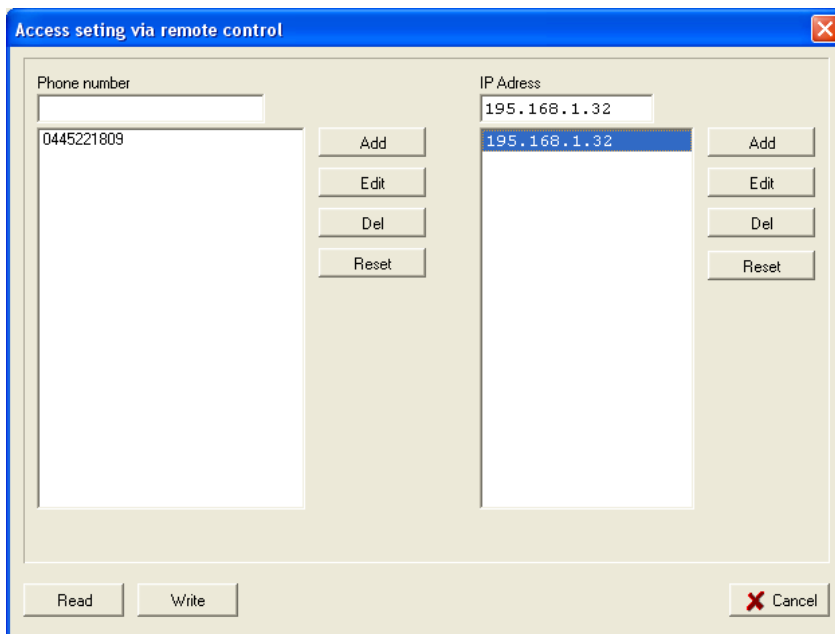
Click on  to read settings from device and  to write new settings to device. Click  to quit the window.

### 3.3.10 Access setting via remote control

From main menu choose **Communication – Access setting via remote control** or click on speed button .





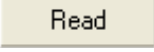



These settings allow to set the access parameters for remote control – **Phone number** and **IP address** authorized to communicate with device.

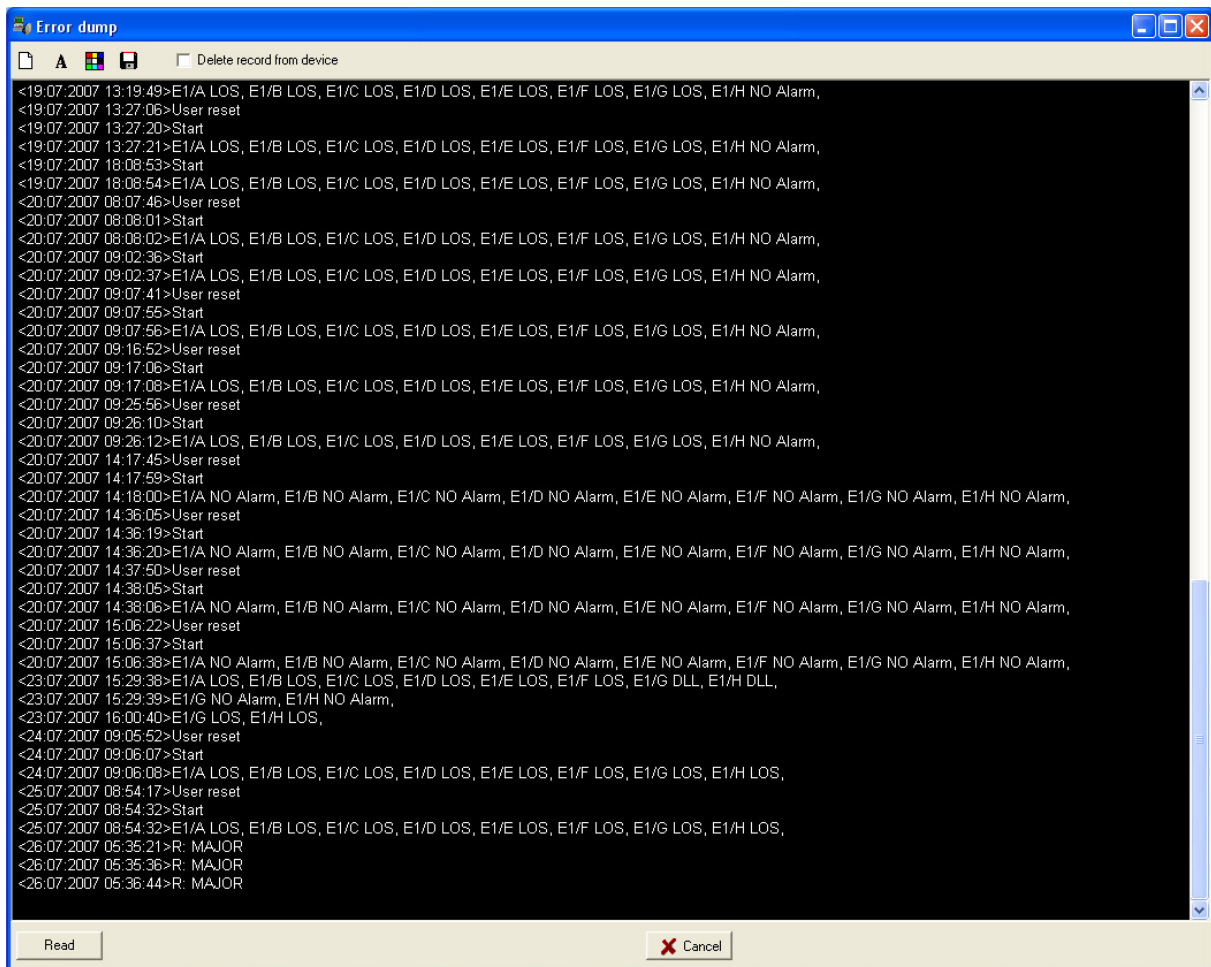


To edit the list of phone numbers/IP addresses, use the buttons on the right side of each list. Click on **Read** to read access setting via remote control from device and **Write** to write new settings to device. Click **Cancel** to quit this window.

### 3.3.11 Error dump


Choose from main menu **Communication – Error dump** or click on speed button . History of device main errors will be displayed – reset, drop-outs, ....

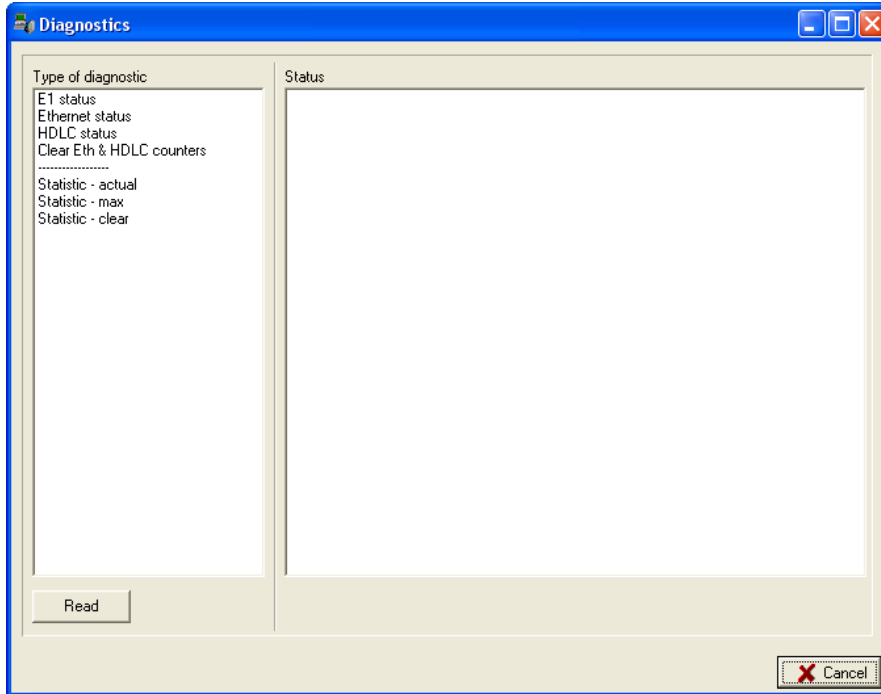
If you wish to clear the window, click on  and then click on  to read data from device. User can define text format  and background color . Data can be saved to a file by click on . To **delete record from device** activate this option in the top part of window.



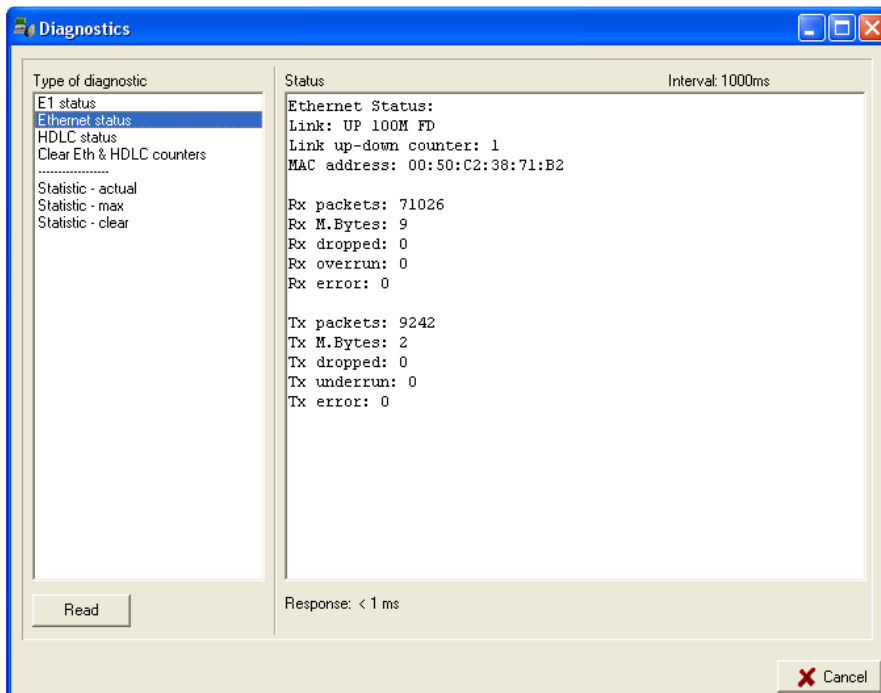
Click  to quit this window.

### 3.3.12 Diagnostics

There is a real state of each interface displayed here. From main menu choose **Communication – Diagnostics** or click on speed button  .



Then double click on the item from the list in the left part of window – its diagnostic will be displayed in the right part of window.



**E1 status**

**Loss of Signal LOS** – detects loss of signal on link level - E1 interface is not connected.

**Alarm Indication Signal AIS** – transmitted signal is constant and data contain value Log1.

**Loss of Frame Alignment LFA** – indicates synchronization error in 0<sup>th</sup> timeslot.


**Receive Remote Alarm RRA** – indicates remote device alarm (error - loss of signal).

**Frame Error Counter FEC** – indicates error rate  $> 10^{-3}$

**Datalink layer not active** – Link layer error.


**Slip Detection Indicator SDI** – indicates positive slip if device clock has higher frequency than the clock signal received, and negative slip if device has lower frequency clock .

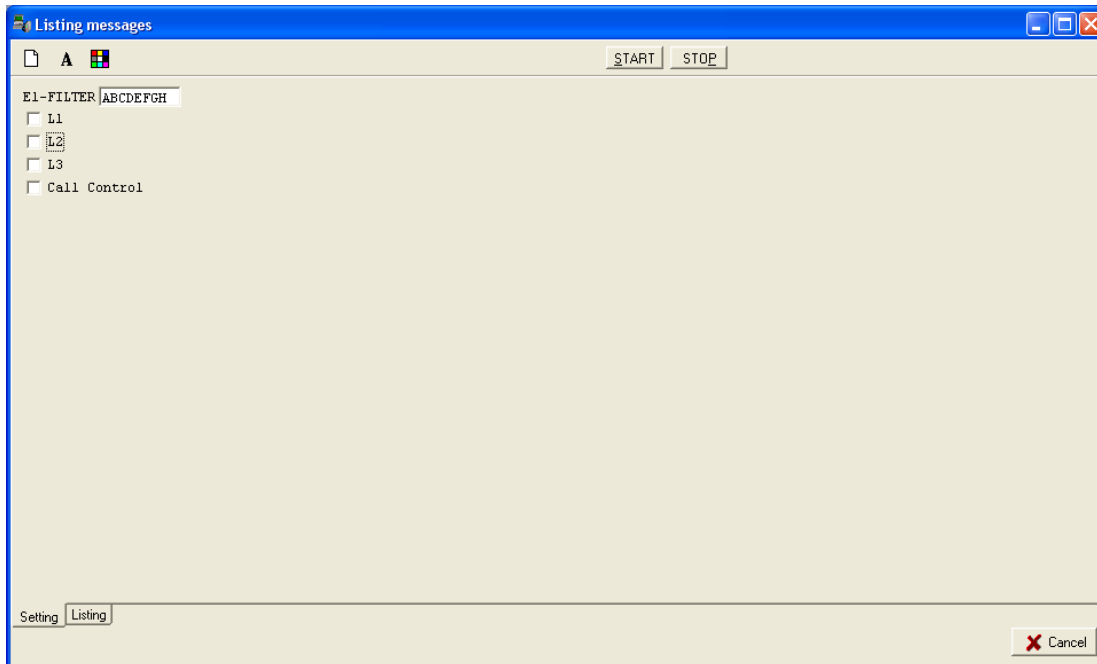
**Clear Eth & HDLC counters** – clears the packets counter in diagnostics


Click  to quit Diagnostics window.

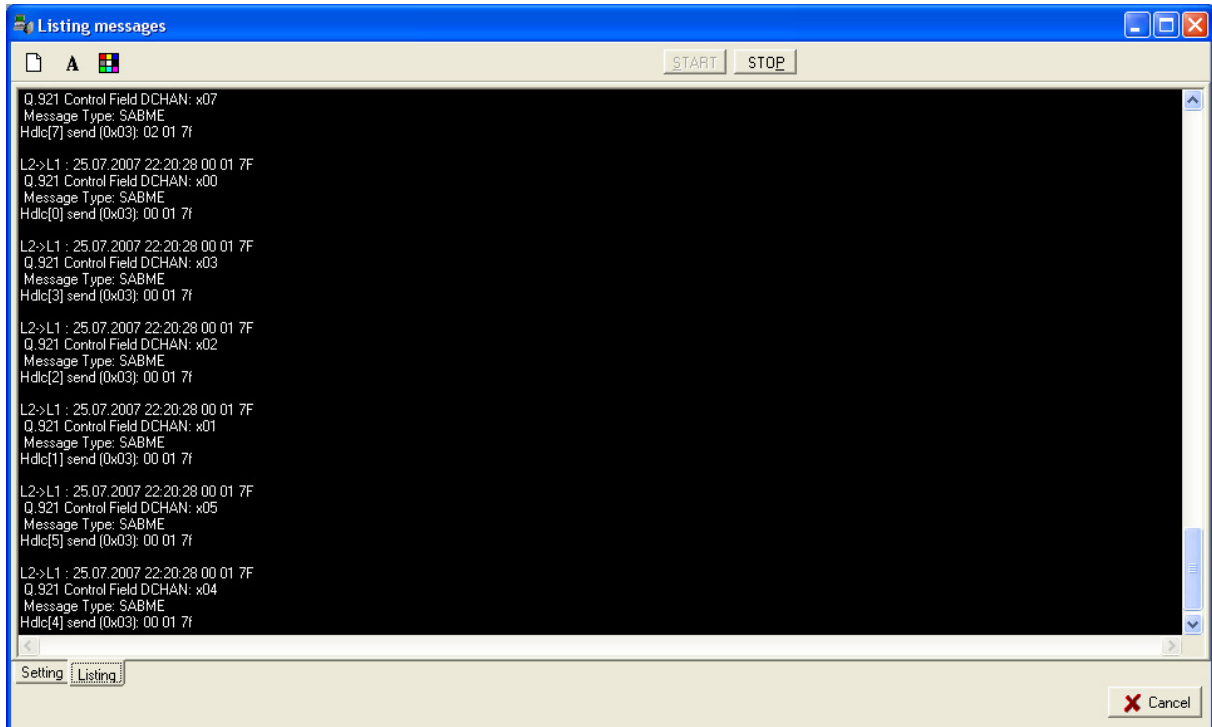
**3.3.13 Listing messages**

This is another diagnostic function displaying ISDN communication on E1 ports.

Click on speed button .

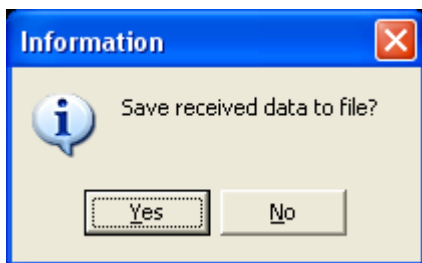


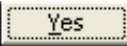
**E1-FILTER** – choose E1 interfaces and layers **L1, L2, L3, Call Control** which have to be monitored. Then click on  to start the listing messages. Click on **Listing** tab to see the data:



User can define text format  and background color .

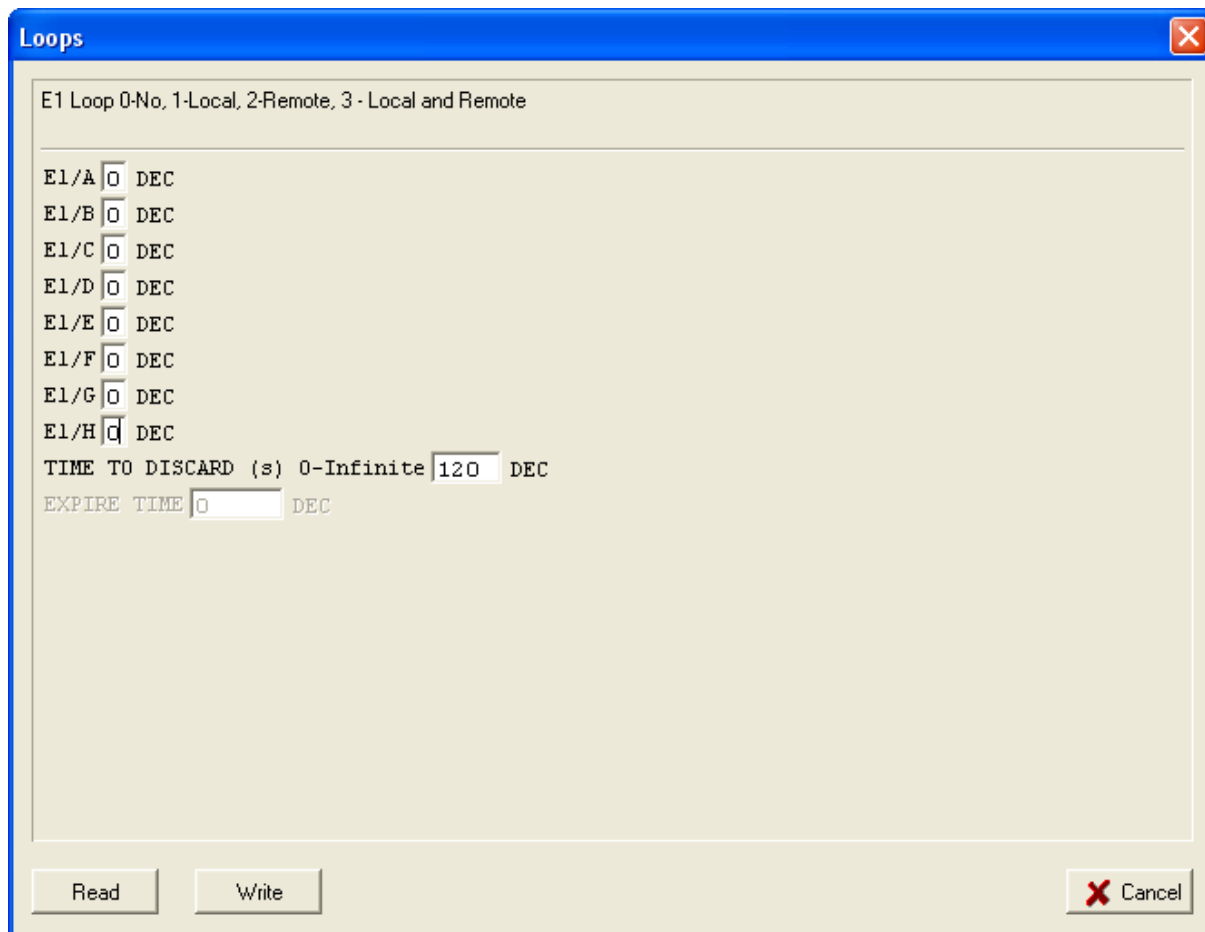
Click  to end the action. Prompt to save data will be displayed.



If you want to save it, click , type name of \*.txt file and choose directory where it will be saved.

### 3.3.14 Loops

Click on speed button .



It is possible to create SW loop for each E1 interface (SW connection of receive with transmit).

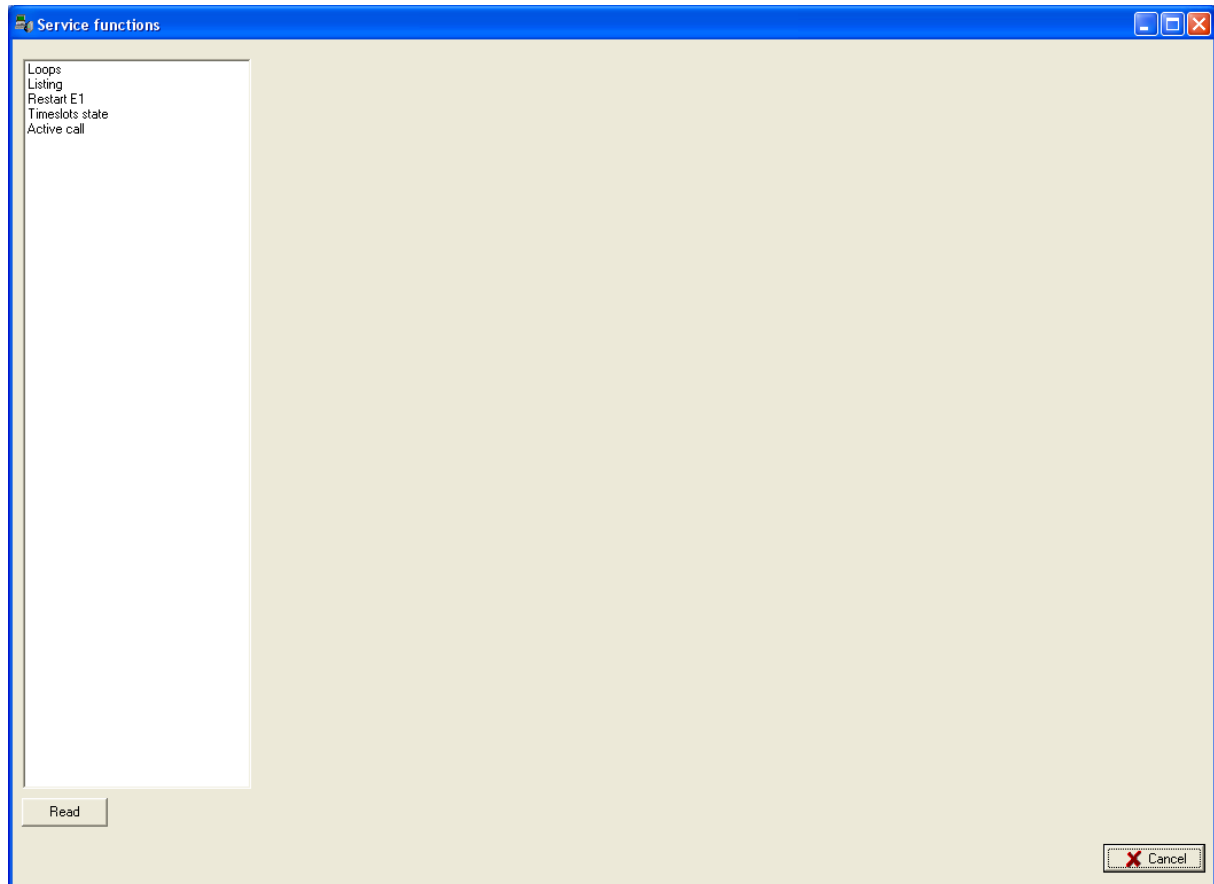
There are 4 types of loop which can be set:

- 0 – No loop
- 1 – Local
- 2 – Remote
- 3 – Local and Remote

**Time to discard** and **Expire time** can be set.

### 3.3.15 Service functions

Click on speed button



Here are some service functions displayed.

Click . Double-click to select the item from the list in the left part of window:

**Loops** – SW loops

**Listing** – listing messages

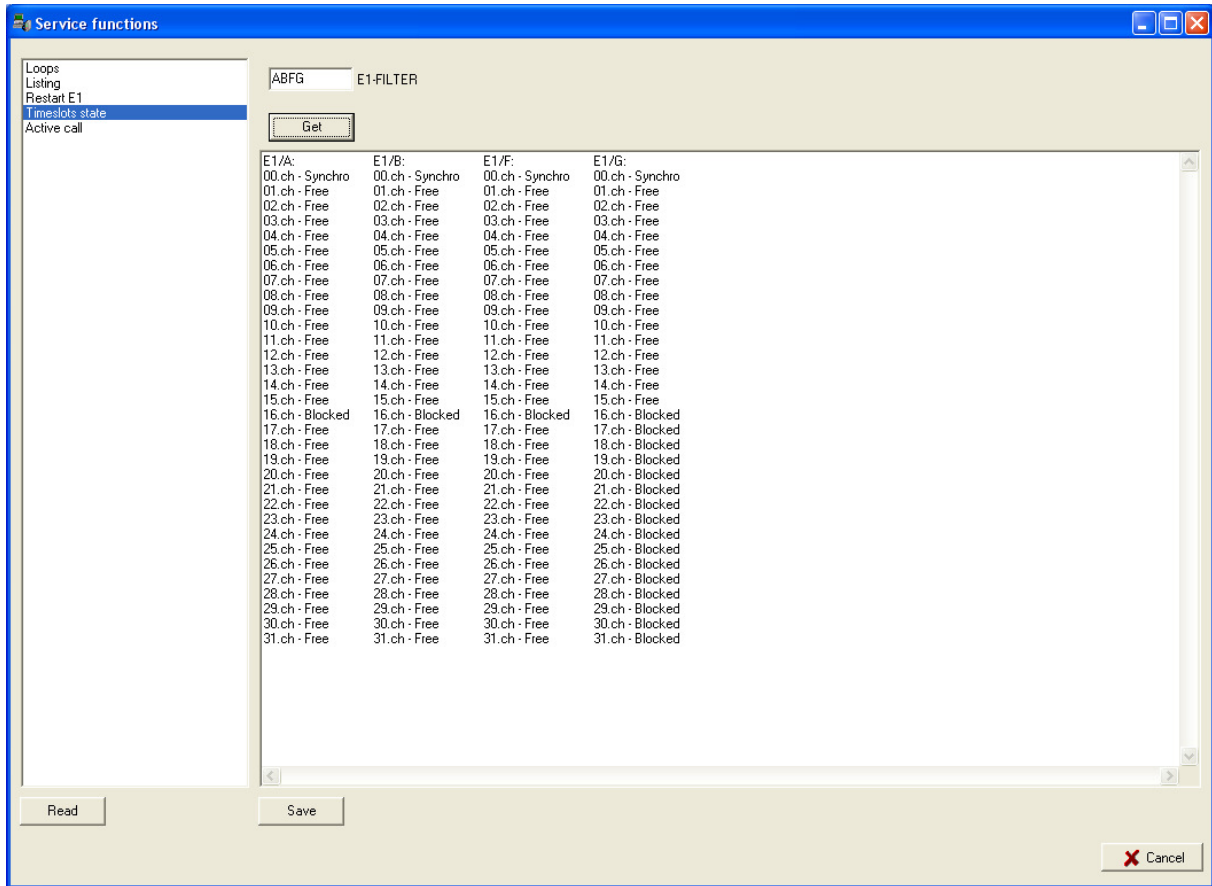
**Restart E1** – restart of selected layer of particular E1 interface

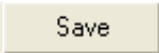

**Timeslots state** – actual timeslots of all, resp. selected (using **E1-FILTER**) interfaces

**Active call** – information about active call on all or selected (using **E1-FILTER**) E1 interfaces


Selected service function is displayed in the right part of window.

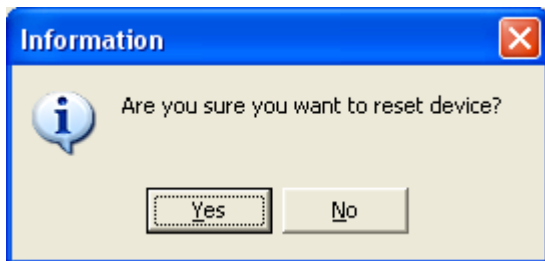




Data of some service functions displayed can be saved to \*.txt file after click on . Click  to quit the window.


### 3.3.16 Reset

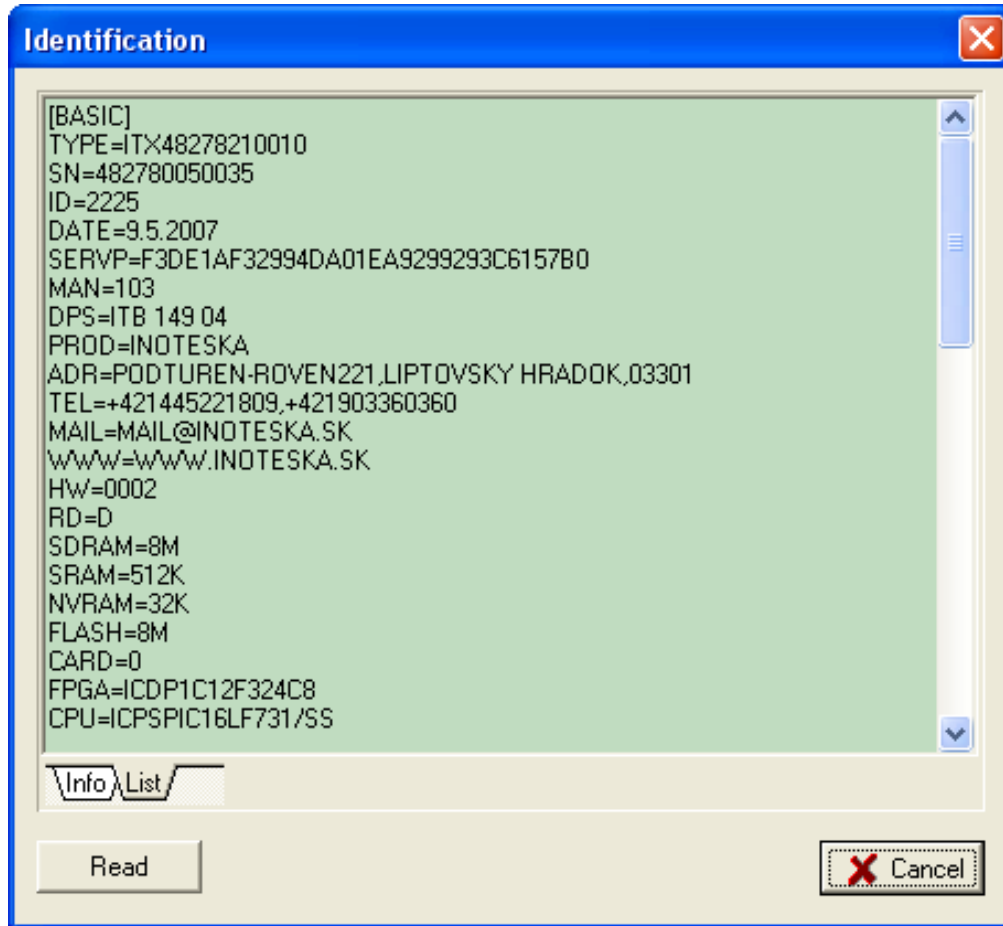
If you want to reset the device, then choose from main menu **Communication – Reset** or click on speed button . Prompt is displayed:



For device reset, confirm by click on .

### 3.3.17 Identification

To find out HW information about device, choose from main menu **Communication–Identification** or click on speed button .



**Note:**

Configuration SW does not allow to change HW configuration (e.g. number of activated E1 interfaces, activation of multiplexer dynamic functions, ...).

### 3.3.18 Call detailed record

Device enables to get CRD (call detailed record).

**How to proceed:**

1. Save DC121t03c\_en.zip to hard disc and extract it
2. Run DC121t03c.exe
3. Set:

POINT

```

NAME          :
Select        ACCESS
ACCESS TYPE:   TCP
              IP:  x.x.x.x
      TCP PORT:  7777 ( must be always 7777)
      OK
ADD POINT
    
```

4. Set:

```

POINT
NAME          :
Select        ACCESS
ACCESS TYPE:   TCP
              IP:  x.x.x.x
      TCP PORT:  7777 ( must be always 7777)
      OK
ADD POINT
    
```

Revert to BOARD and set:

```

NAME          :
DEVICE ADDRESS: 0-0-0-0 ( must be always 0-0-0-0)
DOWN FILE      : %a\down\%i%d.list
                or
                Set the standard path where CDR files will be
                saved
    
```

String %a\down\%i%d.list implies for CDR to be saved to the directory where the application down is run from.

File name will be in accordance with setting:

- %a - directory where the application is run from
- %i – device address in format 0\_0\_0\_0
- %d - current date in format yyyy\_mm\_dd (year\_month\_day)
- %t – current time in format hh\_mm\_ss (hour\_minute\_second)

If the path is set in format:

```

%a\down\%i%d.list
CDR will be saved to file 0-0-0-0 yyyy_mm_dd.list
    
```

- Downloaded data will be saved to one file during the whole day
- Next day a new file is generated

```

%a\down\%i%d%t.list
    
```

CDR will be saved to file 0-0-0-0 yyyy\_mm\_dd\_ hh\_mm\_ss.list

- Downloaded data are saved to a new file after each download

## 5. CDR download frequency

Download frequency is set as UPDATE SPEED in the range 1s to 1200s

Notice:

**It is necessary to wait certain time for connection in accordance with UPDATE SPEED setting.**

**Device memory is cleared after each data writing.**

## 6. Single data are separated , ,

- 1 Unallocated (unassigned) number
- 2 No route to specified transit network
- 3 No route to destination
- 6 Channel unacceptable
- 7 Call awarded and being delivered in an established channel
- 16 Normal call clearing
- 17 User busy
- 18 No user responding
- 19 No answer from user (user alerted)
- 21 Call rejected
- 22 Number changed
- 26 Non-selected user clearing
- 27 Destination out of order
- 28 Invalid number format
- 29 Facility rejected
- 30 Response to „Status enquiry“
- 31 Normal, unspecified
- 34 No circuit/channel available
- 38 Network out of order
- 41 Temporary failure
- 42 Switching equipment congestion
- 43 Access information discarded
- 44 Requested circuit/channel not available
- 47 Resources unavailable, unspecified
- 49 Quality of service unavailable
- 50 Requested facility not subscribed
- 53 Ongoing calls barred within CUG
- 55 Incoming calls barred with CUG
- 57 Bearer capability not authorized
- 58 Bearer capability not presently available
- 63 Service or option not available, unspecified
- 65 Bearer capability not implemented
- 66 Channel type not implemented
- 69 Requested facility not implemented
- 70 Only restricted digital information bearer capability is available
- 79 Service or option not implemented, unspecified

- 81 Invalid call reference value
- 82 Identified channel does not exist
- 83 A suspended call exists, but this call identity does not exist
- 84 Call identity in use
- 85 No call suspended
- 86 Call having the requested call identity has been cleared
- 88 Incompatible destination
- 90 Non-existent CUG
- 91 Invalid transit network selection
- 95 Invalid message, unspecified
- 96 Mandatory information element is missing
- 97 Message type non-existent or not implemented
- 98 Message not compatible with call state or message type non-existent or not implemented
- 99 Information element /parameter non-existent or not implemented
- 100 Invalid information element contents
- 101 Message not compatible with call state
- 102 Recovery on timer expiry
- 111 Protocol error, unspecified
- 127 Interworking, unspecified
- Other values - Reserved

### 3.4 About configuration SW

Main menu **About** - information about configuration software will be displayed.



## 4. SALES CONDITIONS

**Warranty:**

Product warranty period is 24 months from the date of delivery or installation. Warranty does not apply in case of an accident, handling by a non-professional or improper use or force majeure.

**Delivery:**

Standard delivery time is max. 6 weeks from the signing of the purchase order or after mutual agreement.

**Contact:****Inoteska s.r.o.**

Podtureň-Roveň 221

Liptovský Hrádok

033 01

Slovenská Republika

**Tel.:** + 421 44 55 679 11**Fax:** + 421 44 5221 519**Hotline:** + 421 902 774 538**Web:** [www.inoteska.sk](http://www.inoteska.sk)**E-mail:** [mail@inoteska.sk](mailto:mail@inoteska.sk)**VAT no.:** SK2020428300**Bank information:** Všeobecná úverová banka a.s.**Account no.:** 616243342/0200**SWIFT code:** SUBASKBX**IBAN:** SK3402000000000616243342***Sales department:***

Ing. Ľubica Brtáňová 0903 826 079

Ing. Pavel Wolf 0903 800 133

***Technical department:***

Ing. Pavol Perdek 0903 519 908

Ing. Pavel Wolf 0903 800 133