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LANWIN

SOFTWARE FOR MONITORING AND CONFIGURING LANEX DEVICES

USER'S MANUAL

IOALANWIN-1H
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Contents

1 GENERAL CHARACTERISTICS 1

1.1 PURPOSE 1
1.2 HARDWARE REQUIREMENTS 2
1.3 EXAMPLES OF APPLICATIONS 2
1.4 INSTALLATION AND FIRST RUN 6
1.4.1 Configuration of communication ports for LANwin application - LOCAL 9
1.4.2 Configuration of communication ports for LANwin application - NET 11
1.5 ACCESS CODES 12

2 BASIC PROGRAM'S FUNCTIONS 14

2.1 OPTIONS OF APPLICATION'S MAIN WINDOW 14
2.1.1 The "List" tab 14
2.1.2 The "Map" tab 16
2.1.3 Logical maps 17
2.1.4 Macro-commands 18
2.1.5 Archiving of maps 19
2.2 PROGRAM'S CONFIGURATION 19
2.2.1 The "Program" tab 19
2.2.2 The "Rack" tab 20
2.2.3 The "View" tab 21
2.2.4 The "Shortcuts" tab 22
2.2.5 The "SMS" tab 23
2.2.6 The "Parametry" {Parameters} tab 24

3 PROGRAM'S ADDITIONAL OPTIONS 26

3.1 PROTECTING THE PROGRAM BY A PASSWORD AND ADDING NEW USERS 26
3.2 SECURITY DEVICE ACCESS PASSWORD 31
3.3 REGIONS 33
3.4 IDENTIFICATION DATA 35
3.5 PORT IDENTIFICATION 37
3.6 RETRIEVING IDENTIFICATION DATA FROM A LOCAL DATABASE 38
3.7 EXPORT AND IMPORT OF PROGRAM CONFIGURATIONS 39
3.8 INTERFACE OF EXPORT OF ALERTS TO AN EXTERNAL SYSTEM 39
3.9 INTERFACE OF EXPORT OF DATA ON HARDWARE CONFIGURATION TO AN EXTERNAL SYSTEM 41
3.10 TRAP SNMP 43
3.11 PACKET STATISTICS 46
3.12 PING 47
3.13 INVENTORY DATA REPORT 47
3.14 ACCESS AUTHORIZATION TRANSFER 49
3.15 TERMINAL 50
3.16 SQL INTERFACE OF EXPORT OF TRANSMISSION QUALITY PARAMETERS 51
3.17 DESCRIPTION OF GRAPHIC SYMBOLS 54
3.18 CONFIRMING ALERTS VIA ELECTRONIC MAIL 55
3.19 REMOTE CONFIGURATION OF TM-47 MULTIPLEXER 55
3.20 TROUBLESHOOTING 57

List of figures

FIG.1 APPLICATION OF MULTIPLEXER TM-47.1-1 COOPERATING WITH SDH RING FOR MANAGING LANEX DEVICES 3
FIG. 2 APPLICATION OF TM-47.1-1 MULTIPLEXER FOR MANAGING LANEX DEVICES VIA WAN 4
FIG.3 APPLICATION OF TM-47.1-1 MULTIPLEXER FOR MANAGING LANEX DEVICES VIA SERIAL LINK RS232 5
FIG. 4 WINDOW IN WHICH THE USER CAN SELECT A TARGET DIRECTORY WHERE THE APPLICATION WILL BE INSTALLED 6
FIG.5. WINDOW IN WHICH THE USER CAN SELECT LANWIN APPLICATION AFFILIATION TO A SELECTED GROUP OF PROGRAMS 7
FIG.6. WINDOW IN WHICH THE USER IS INFORMED ON THE COURSE OF INSTALLATION PROCESS 7
FIG.7. WINDOW IN WHICH THE USER IS INFORMED ON THE RESULT OF INSTALLATION PROCESS 8
FIG.8. THE APPLICATION'S MAIN WINDOW AFTER ITS FIRST RUN 8
FIG. 9. WINDOW FOR SETTING SERIAL PORT'S SETTINGS 10
FIG.10. WINDOW IN WHICH DETECTED DEVICES ARE DISPLAYED 10
FIG.11. WINDOW FOR CONFIGURING PARAMETERS OF CONNECTION VIA IP NETWORK 11
FIG.12. WINDOW FOR ADDING A NEW CONNECTION 11
FIG.13. THE METHOD OF CONFIGURATION SAVING TO OR READING FROM A FILE 12
FIG.14. WINDOW OF LANWIN APPLICATION WORKING IN A LOCAL MODE WHERE THE USER CAN ENTER ACCESS CODES .. 13
FIG.15. THE PROGRAM'S MAIN WINDOW DISPLAYING THE LIST OF DEVICES 14
FIG.16. WINDOW INCLUDING BASIC INFORMATION ON THE DEVICE 15
FIG.17. THE PROGRAM'S MAIN WINDOW WHERE DEVICES ARE PRESENTED IN THE FORM OF A MAP 16
FIG.18. THE PROGRAM'S OPTIONS – THE "PROGRAM" TAB 20
FIG.19. THE PROGRAM'S OPTIONS – THE "RACK" TAB 21
FIG.20. THE PROGRAM'S OPTIONS – THE "VIEW" TAB 22
FIG.21. THE PROGRAM'S OPTIONS– THE "SHORTCUTS" TAB 22
FIG.22. THE PROGRAM'S OPTIONS – THE "SMS" TAB 24
FIG. 23. THE PROGRAM'S OPTIONS – THE "PARAMETRY" TAB 25
FIG. 24. WINDOW IN WHICH THE SYSTEM'S ADMINISTRATOR CAN GRANT RIGHTS TO USERS 26
FIG. 25. WINDOW FOR CHANGING THE CURRENT ACCESS PASSWORD 27
FIG. 26. WINDOW OF THE WIZARD PROVIDING SUPPORT DURING ADDING A NEW USER TO THE SYSTEM 27
FIG. 27. WINDOW BY WHICH THE ADMINISTRATOR CAN CHANGE THE RIGHTS OF INDIVIDUAL USERS 30
FIG. 28. THE WINDOW "PROPERTIES" BY WHICH THE SYSTEM'S ADMINISTRATOR CAN CHANGE THE LOCATION OF THE RAPORT'S FILE 31
FIG.29. CONTEXT MENU USED FOR DISPLAYING THE INPUT OF THE DEVICE ACCESS PASSWORD 32
FIG.30. VIEW OF THE WINDOW USED FOR INPUTTING OR REMOVING DEVICE ACCESS PASSWORD. 32
FIG.31. VIEW OF THE WINDOW INFORMING THE USER OF THE DEVICE LOGIN STATUS 32
FIG. 32. WINDOW IN WHICH THE SYSTEM'S ADMINISTRATOR CAN DEFINE HIS/HER OWN REGIONS 33
FIG. 33. WINDOW WITH THE REGIONS DEFINED BY THE OPERATOR 34
FIG. 34. ALLOCATING TM-47 MULTIPLEXER TO A REGION 34
FIG. 35. DEFINING REGIONS TO WHICH A USER HAS ACCESS 35
FIG. 36. WINDOW INCLUDING IDENTIFICATION DATA OF A SELECTED DEVICE 36
FIG. 37. WINDOW FOR SELECTING GRAPHICS FILES 36
FIG. 38. WINDOW INCLUDING THE USER'S GRAPHICS FILE 37
FIG. 39. WINDOW WITH THE INFORMATION ON DEVICE'S DATA TRANSMISSION PORT 37
FIG. 40. WINDOW FOR RETRIEVIENG INFORMATION FROM A SET OF ACTIVE DEVICES ON THE BASIS OF VARIOUS CRITERIA INCLUDED IN IDENTIFICATION DATA OF A LOCAL DATABASE 38
FIG. 41. WINDOW FOR EXPORTING CONFIGURATIONS OF LANWIN SOFTWARE 39
FIG. 42. WINDOW FOR WORKING CONFIGURATION OF INTERFACE TO AN EXTERNAL SYSTEM 40
FIG. 43. THE CONTEXT MENU FOR OPENING THE PREVIEW WINDOW OF THE STATUS OF CONNECTION WITH EXTERNAL SYSTEMS 43
FIG. 44. WINDOW IN WHICH THE STATUS OF CONNECTION WITH EXTERNAL SYSTEMS CAN BE CHECKED 43
FIG.45. VIEW OF THE SET-UP WINDOW WITH TRAP-SNMP INTERFACE PARAMETERS 44
FIG.46. FORMAT OF THE TRAP COMMANDS GENERATED BY THE LANWIN APPLICATION 45
FIG.47. VIEW OF THE WINDOW CONTAINING THE DETAILED STATISTICS OF PACKETS SENT AND RECEIVED 46
FIG.48. VIEW OF THE COMMUNICATION TESTING MODULE WINDOW 47
FIG.49. VIEW OF THE WINDOWS USED TO GENERATE THE INVENTORY DATA REPORT 48
FIG.50. EXAMPLE OF THE INVENTORY DATA REPORT 49
FIG.51. VIEW OF THE SUCCESSFUL ACCESS AUTHORIZATION TRANSFER MESSAGE WINDOW 49
FIG. 52. WINDOW IN WHICH THE SYSTEM'S ADMINISTRATOR CAN DEFINE THE NUMBER OF MAINTAINED REMOTE CONSOLES 50
FIG. 53. THE CONTEXT MENU FOR OPENING THE PREVIEW WINDOW OF CONNECTION STATUS OF EXTERNAL CONSOLES ... 50

FIG. 54. WINDOW IN WHICH THE CONNECTION STATUS OF REMOTE CONSOLES CAN BE CHECKED 50
FIG. 55. WINDOW OF THE PROGRAM ACTIVATING SQL INTERFACE 51
FIG. 56. WINDOW WITH INFORMATION ON CONNECTED USERS 52
FIG. 57. WINDOW IN WHICH THE PROGRAM'S OPTIONS ARE GATHERED – " SQL INTERFACE" 52
FIG. 58. WINDOW WITH INFORMATION ON TRANSMISSION QUALITY PARAMETERS 53
FIG. 59. WINDOW OF PROGRAM SQLTESTESSES.EXE 53
FIG.60. WINDOW WITH INFORMATION ON DEVICES MAINTAINED BY THE SOFTWARE CURRENT VERSION 54
FIG. 61. THE CONTEXT MENU FROM WHICH THE REMOTE CONFIGURATION WINDOW CAN BE CALLED 55
FIG. 62. THE WINDOW OF CONFIGURATION OF PARAMETERS OF CHANNELS RS232 OF DEVICE TM47.1-1 56
FIG. 63. BUTTONS TO SAVE DEVICE'S CONFIGURATIONS AND EXIT THE PROGRAM 57
FIG. 64. WINDOW CONFIRMING THAT THE OPERATION OF SAVING THE CONFIGURATION TO THE DEVICE HAS BEEN COMPLETED 57

Abbreviations

AIS	Alarm Indication Signal
ETSI	European Telecommunications Standards Institute
GND	Ground
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
LOSS	Received signal fading
LOF	Loss of frame synchronisation
UAL	Urgent alert
NUAL	Non-urgent alert
ES	Errored seconds
SES	Severely errored seconds
PE	Electric port
PO	Optical port
MUX	Multiplexer
ALACK	Alert cancellation button
UAL	Urgent alert
UALA	Urgent alert reminder
NUALA	Non-urgent alert reminder

1 General characteristics

1.1 Purpose

LANwin application administers the domain of Lanex devices as well as devices of other vendors equipped with a terminal connector working in a standard character mode. There are two software versions:

- Software communicating with devices via serial link RS-232 (the LOCAL version);
- Software communicating with devices via LAN or WAN with the use of TCP/IP protocol (the NET version).

Software network version uses port Ethernet, computer's network adapter and TCP/IP protocol (⇒ figure 1 and 2).
Communication with devices via LAN and WAN is possible only if the system is equipped with multiplexers 8xRS232/ETHERNET 10BASE-T TM-47 manufactured by LANEX which transmit managing connectors with the use of eight RS-232 channels. This device has been optimised to support a proprietary managing protocol used in devices. For detailed description of the multiplexer, refer to manual "Multiplexer 8xRS232/ Ethernet 10BASE-T"

Application's LOCAL version uses, for communication purposes, the computer's serial port. By means of the application working in a local working mode via serial link RS-232, the supported network of managed Lanex devices can be enlarged with the use of TM-47 multiplexer which makes it possible to direct the data appearing on the first port RS-232 to other ports RS-232 and direct data stream from ports RS-232 with numbers 2 to 7 to the device's first port. This offers additional possibilities of compiling the network managing Lanex devices (⇒ figure 3).

If you have the compiled management network, you can monitor and configure the following parameters of individual devices:

- Activating / deactivating component channels;
- Establishing test loops in both local and remote device;
- Switching on PRBS test on a selected channel;
- Monitoring ES and SES (errored seconds and severely errored seconds);
- Monitoring such events as:
  - Optical signal fading;
  - Transmitter power fading;
  - Loss of frame synchronisation;
  - Alert from a remote device;
  - Component signal fading;
  - Exceeding error rate 10^{-3};
  - Exceeding error rate 10^{-6};
- Alert status monitoring:
  - Active;
  - Inactive;
  - Active confirmed;
- Generating reports and archiving gathered data;

1.2 Hardware requirements

Minimal hardware requirements are the following:
- Intel486 processor;
- 20MB of free space on a hard disk;
- Screen resolution 800x600;
- Operating system Win95, Win98 or WinNT/2000;
- Installed TCP/IP protocol;
- Installed mail client e.g. Outlook Express;
- Installed and configured network adapter;
- Free serial port.

1.3 Examples of applications

Figures 1, 2 and 3 show the examples of topologies of networks managing the domains of LANEX devices.

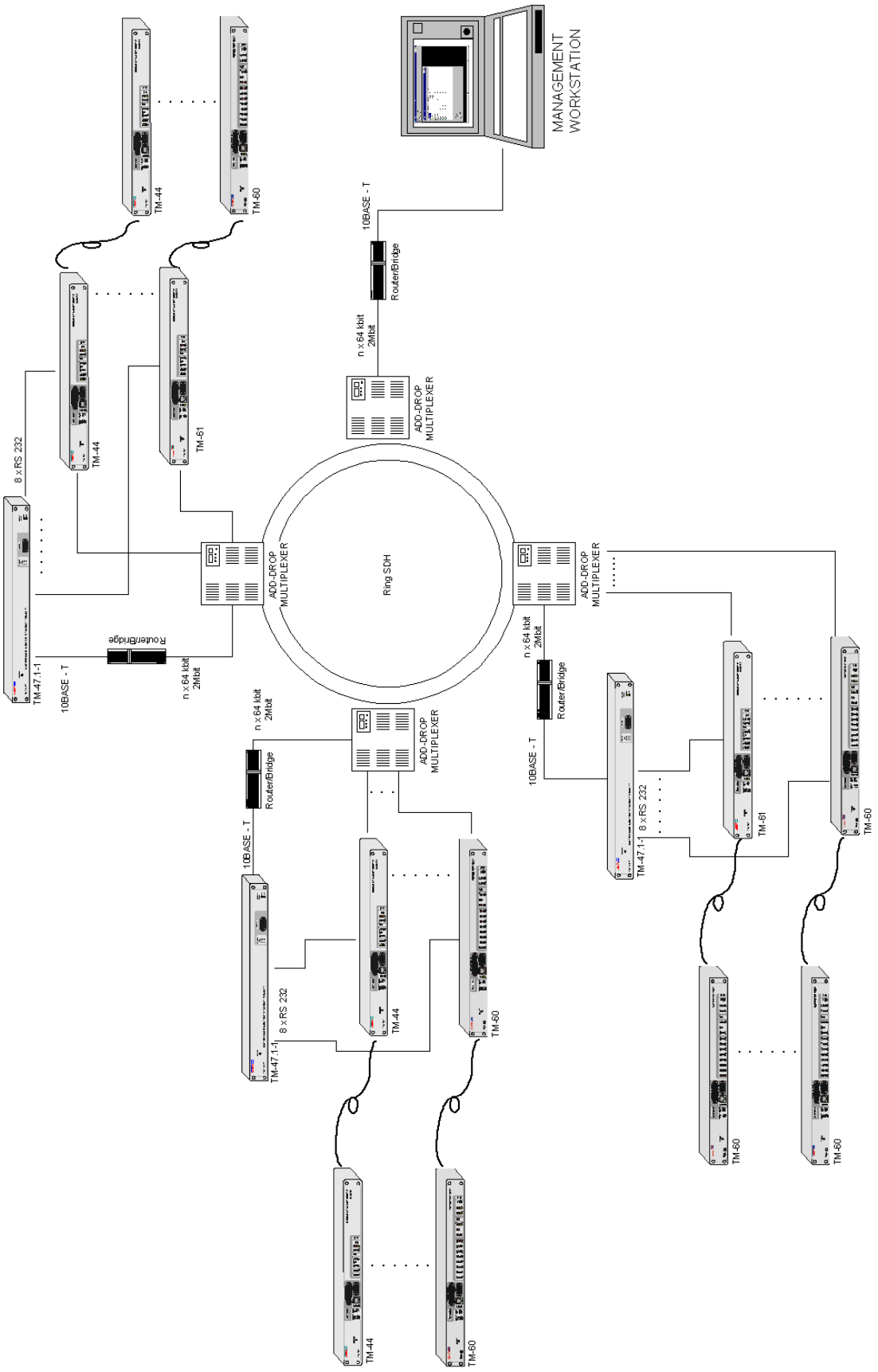


Fig.1 Application of multiplexer TM-47.1-1 cooperating with SDH ring for managing LANEX devices

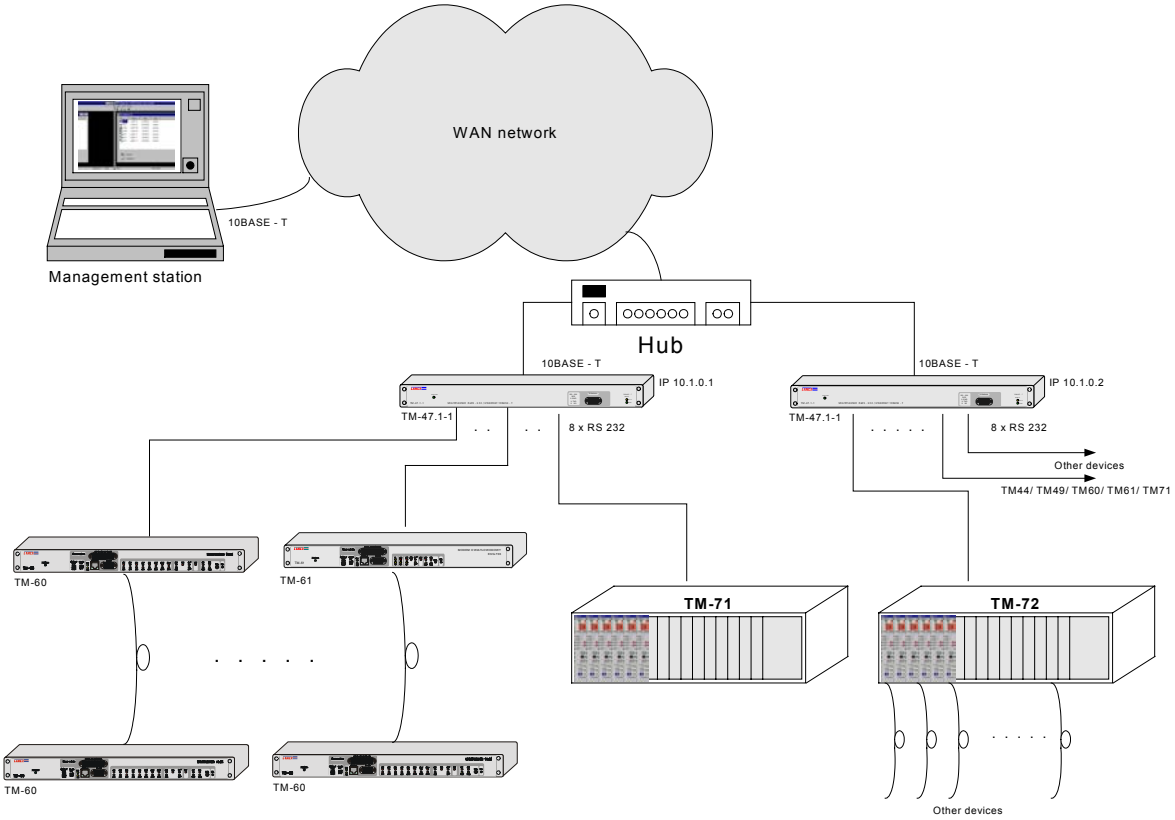


Fig. 2 Application of TM-47.1-1 multiplexer for managing Lanex devices via WAN

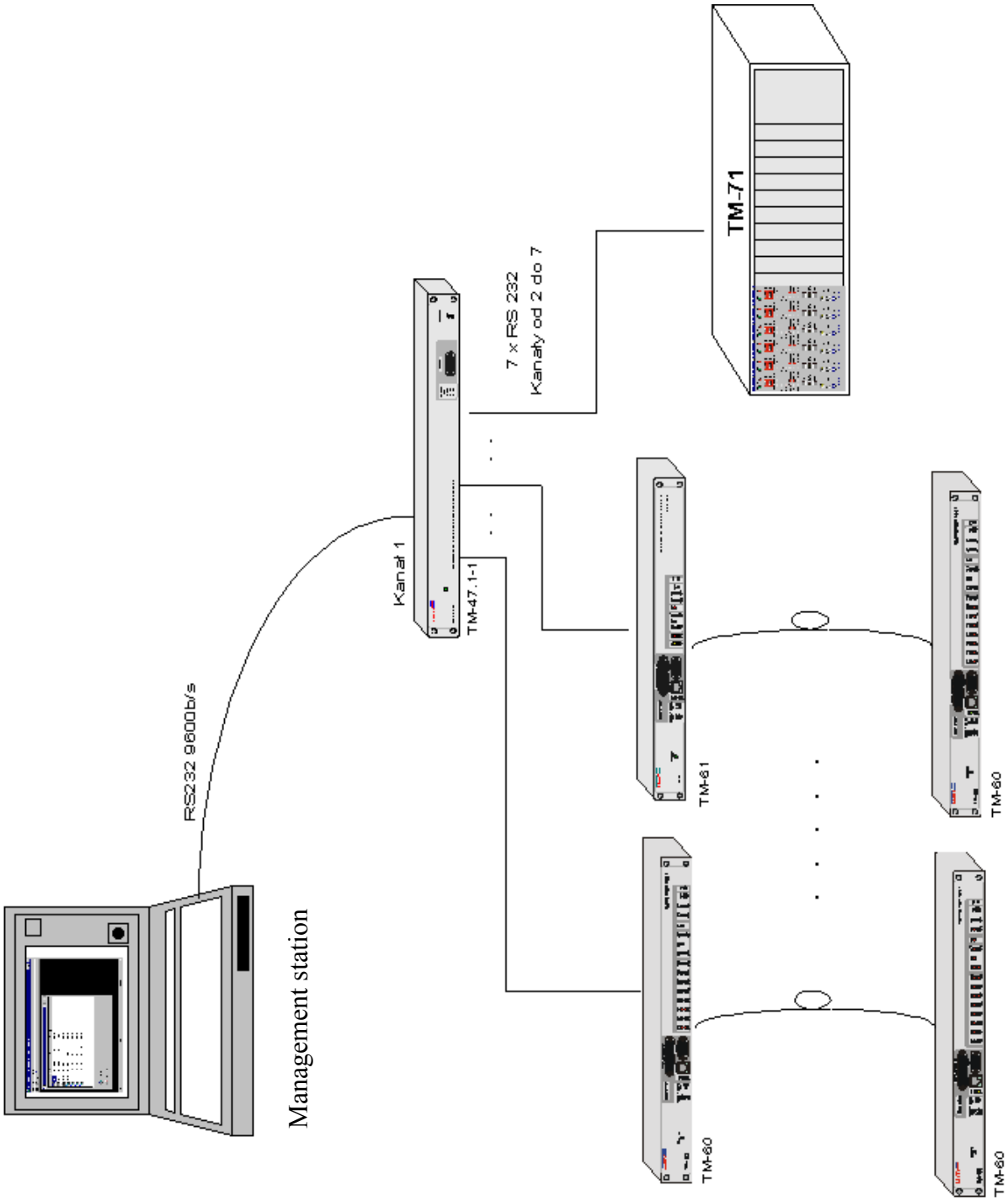


Fig.3 Application of TM-47.1-1 multiplexer for managing Lanex devices via serial link RS232

1.4 Installation and first run

In order to install the application, run program "setup.exe" located on a provided medium. Follow the hints which are displayed on the screen.
During installation, a target directory where the application will be installed can be selected.

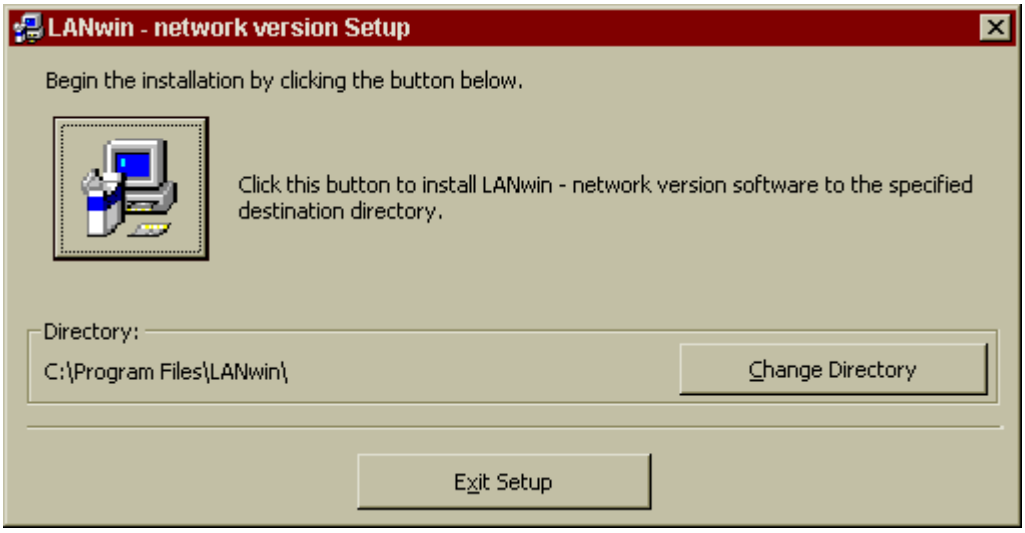


Fig. 4 Window in which the user can select a target directory where the application will be installed

To continue the installation process, press button  .
Next, select the name of group to which software will be qualified.

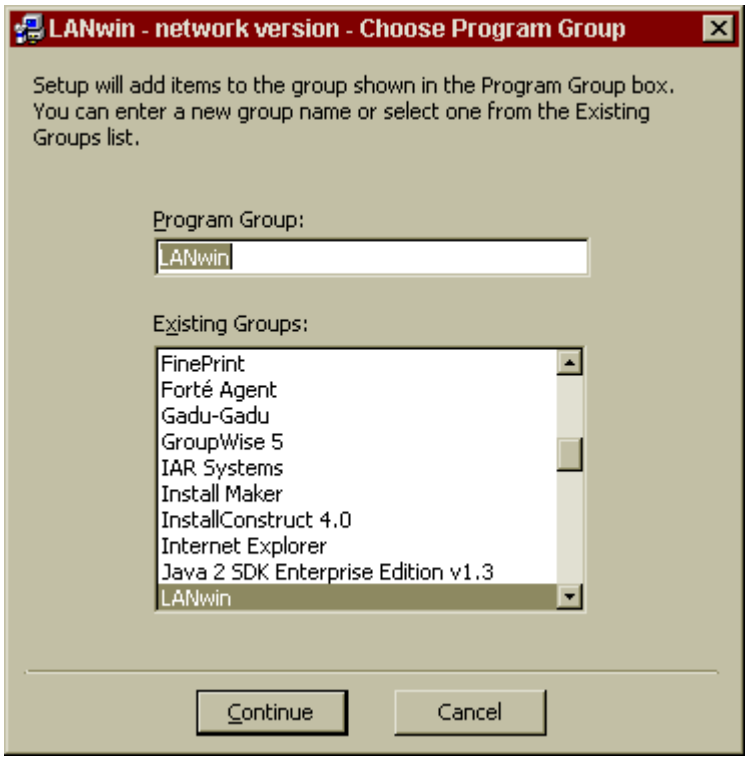


Fig.5. Window in which the user can select LANwin application affiliation to a selected group of programs

After selecting a target directory and group name, files are copied to a selected directory and components are registered in a system register. During installation, copied files may be news than the files used in the system and it may be necessary to restart the computer. In such a case, after loading the operating system to the memory, repeat the installation process.

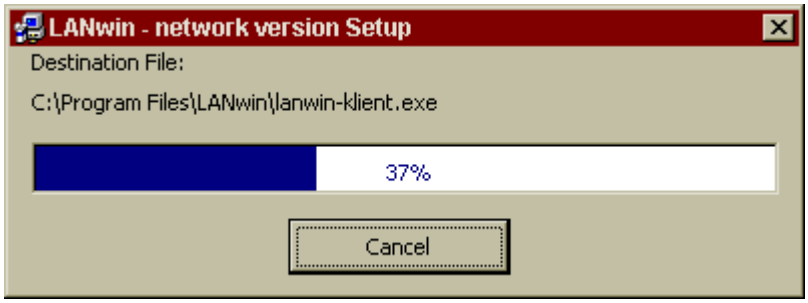


Fig.6. Window in which the user is informed on the course of installation process

Fig.7. Window in which the user is informed on the result of installation process

After installing the software in a directory selected by the user, in the system menu, the group consisting of a shortcut to the execution file and to help files is added. After the first run of the application, the shortcut to the executable program will be created on the system desktop.

The program's main window will be displayed on the screen.

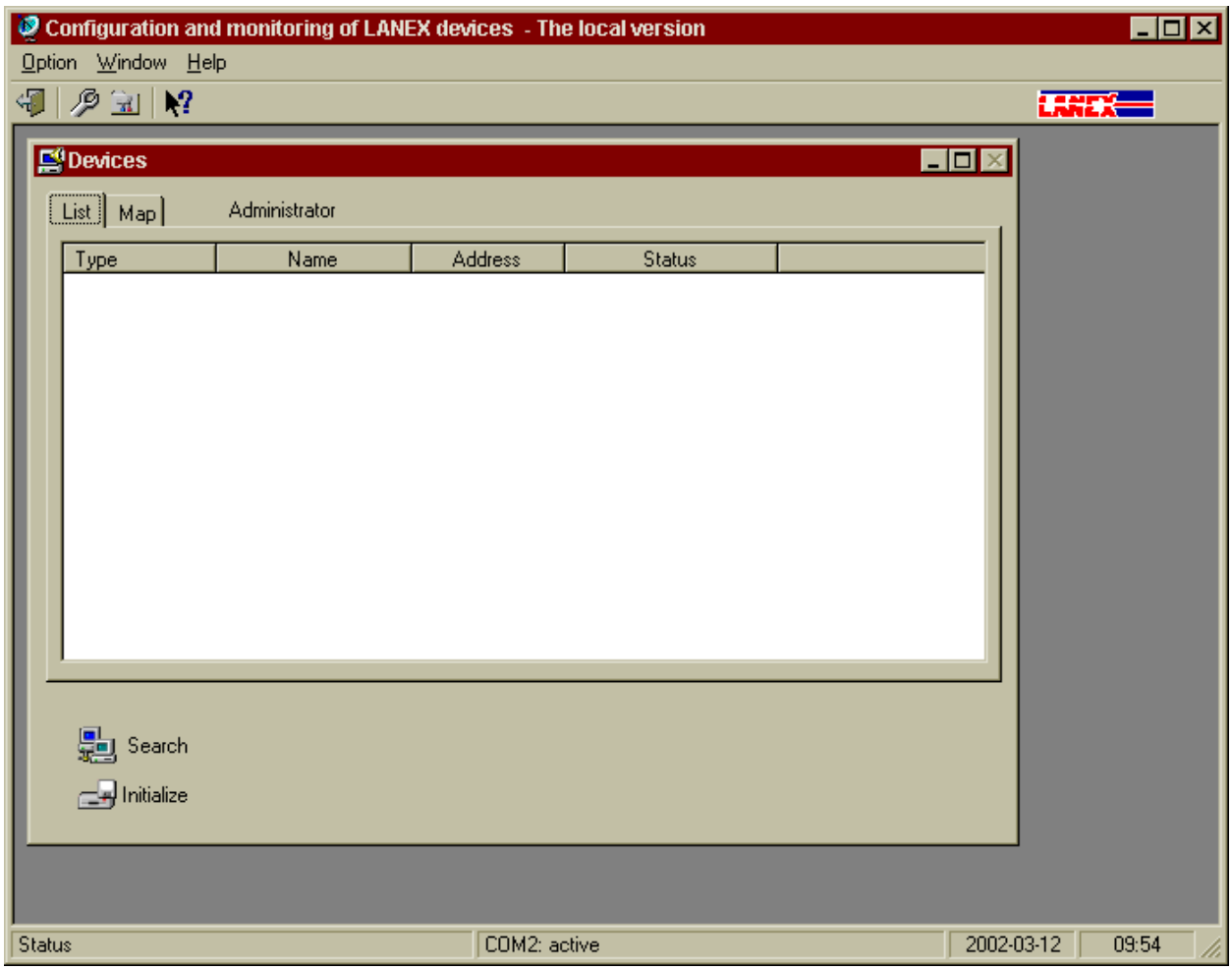


Fig.8. The application's main window after its first run

1.4.1 Configuration of communication ports for LANwin application - LOCAL

In the local working mode, with the use of a serial port (LANwin – LOCAL), connect to PC an external device by means of plain cable RS-232 or "null modem" cable.
Table 1 shows the required list of cable connections.

Table 1. Specification of the cable to connect the computer with an external device

External device end		PC or terminal end	
Male connector DSUB-9	Circuit	Female connector DSUB-9	Female connector DSUB-25
2	TxD	2	3
3	RxD	3	2
7	RTS	7	4
8	CTS	8	5
4	DTR	4	20
6	DSR	6	6
5	SGND	5	7

Table 2 shows the required list of connections of "null modem" cable.

Table 2. Specification of "null modem" cable to connect the computer with an external device

External device end		PC or terminal end	
Male connector DSUB-9	Circuit	Female connector DSUB-9	Female connector DSUB-25
2	TxD	2	3
3	RxD	3	2
	RTS – CTS	7 – 8	4 – 5
	DTR – DSR	4 – 6	6 – 20
5	SGND	5	7

After connecting the device, select a free serial port. This can be done from the sub-menu *Options* ⇒ *Port settings* or by pressing button  . In the case of free-standing devices, select transmission rate of 9600 bps. To automatically search all serial ports in the computer in order to seek active devices, press button "*autodetection"*.

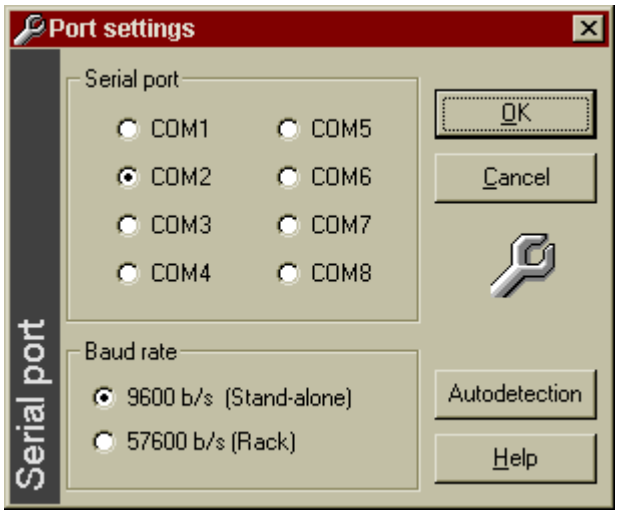


Fig. 9. Window for setting serial port's settings

After establishing a correct connection, in the window of active devices, the connected device should be automatically detected.

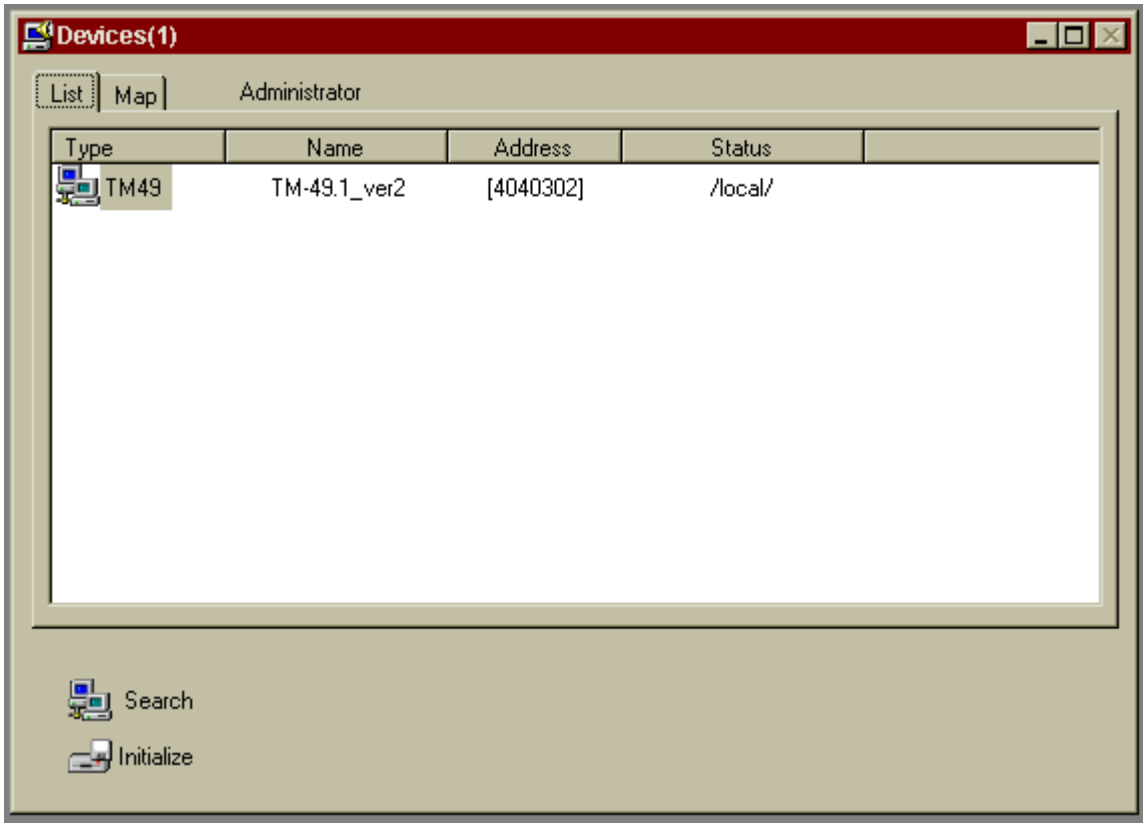


Fig.10. Window in which detected devices are displayed

Additionally, to accelarate the search process, press button 

.
If you click on a selected device, the window associated with a given type of device will open.

To initialise the system, press button 

, and all windows of the devices will be closed and the search process will begin again.

1.4.2 Configuration of communication ports for LANwin application - NET

If the program works in a network mode via a wide area netowork with the use of TCP/IP protocol, enter IP addresses of multiplexers TM-47 and provide affiliation to a region.

To do this, press button  . The window displays information on a selected IP address, connection status, name granted by a user and selected region.

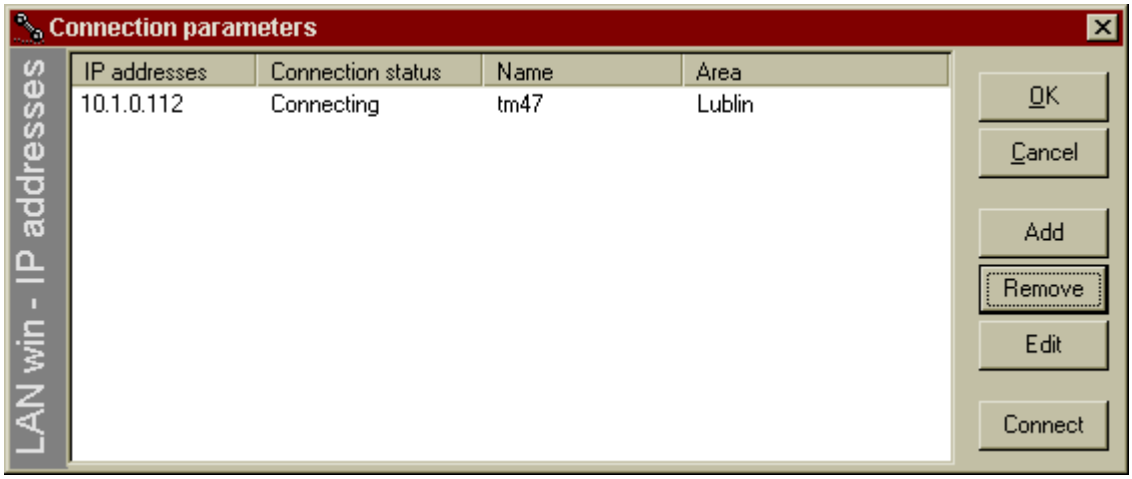


Fig.11. Window for configuring parameters of connection via IP network

With the use of the configuration window, new connections can be added (button "Add") or deleted (button "Delete").

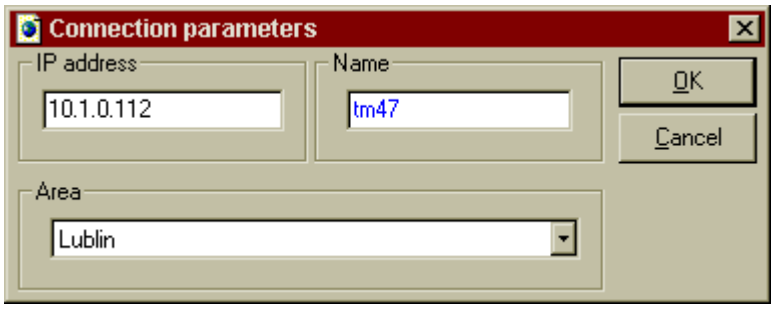


Fig.12. Window for adding a new connection

In field "IP address", enter the address of TM-47 multiplexer or remote computer, in field "name", enter any name identifying a given device.

The set configuration can be saved to a file. To do this, open the context menu (by clicking the mouse's right button within a main box).

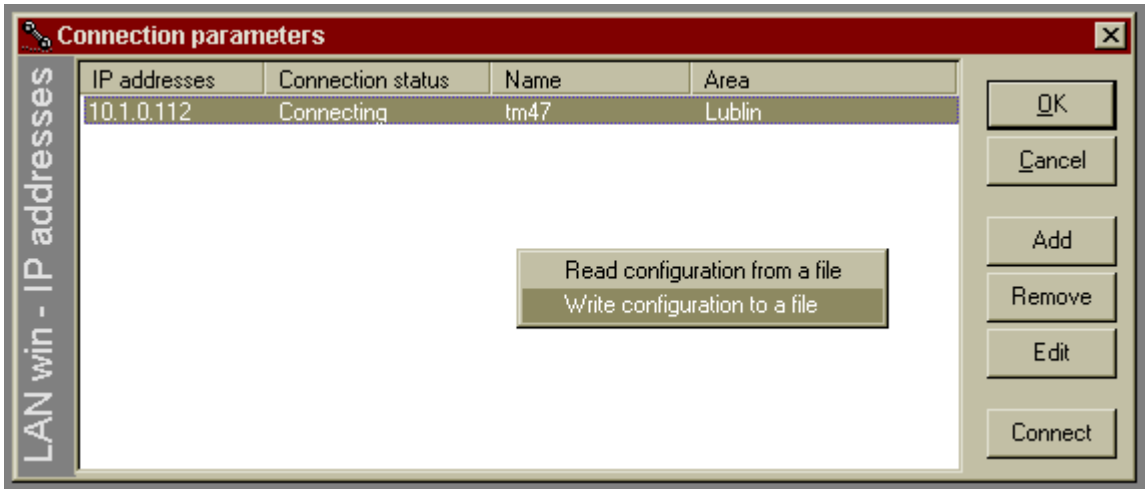


Fig.13. The method of configuration saving to or reading from a file

1.5 Access codes

The LANwin (NET) network application requires access codes to be entered. This option is available from the main menu.

For the LANwin application operating in the network mode using the TCP/IP protocol, *support of all LANEX hardware is enabled*. Only the maximum number of detected devices is limited. The updated status is displayed in the right part of the window. The access code is printed on the cover of the supplied CD.

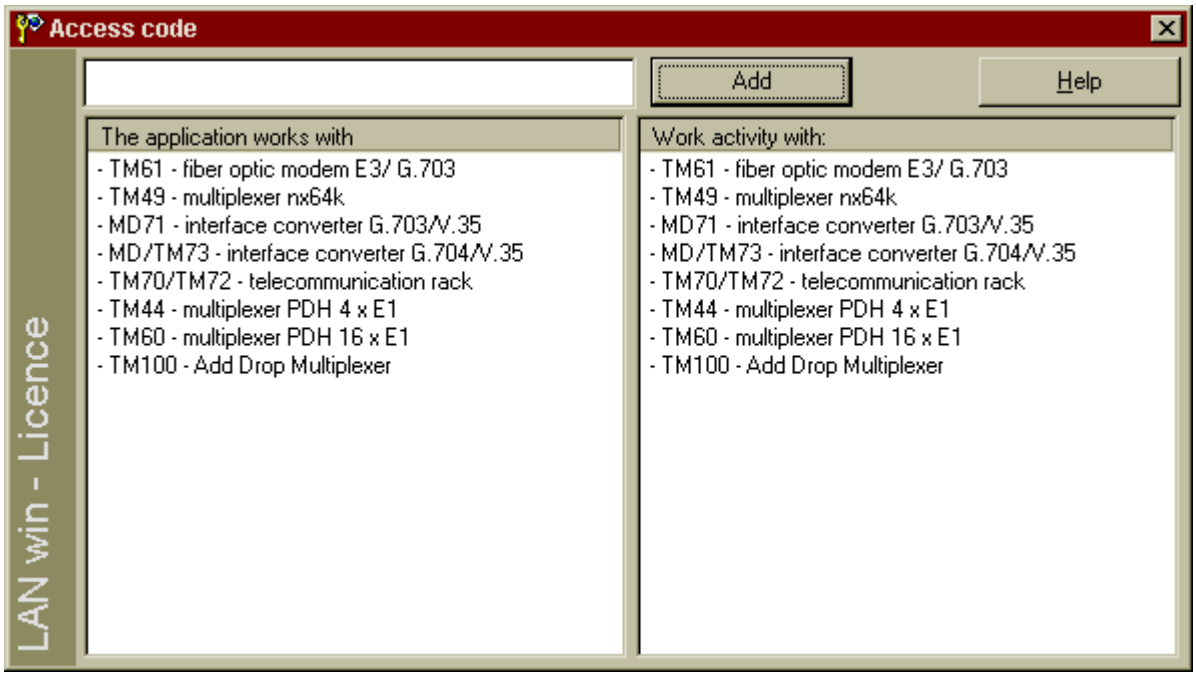


Fig.14. Window of LANwin application working in a local mode where the user can enter access codes

When you enter the access code and press the Add button, the maximum number of supported devices will be updated.
The application does not inform you that more devices that can be processed by the program are connected to the managing station.

2 Basic program's functions

2.1 Options of application's main window

2.1.1 The "List" tab

The application's main window includes two tabs. In the first tab, the list of all connected devices is displayed.

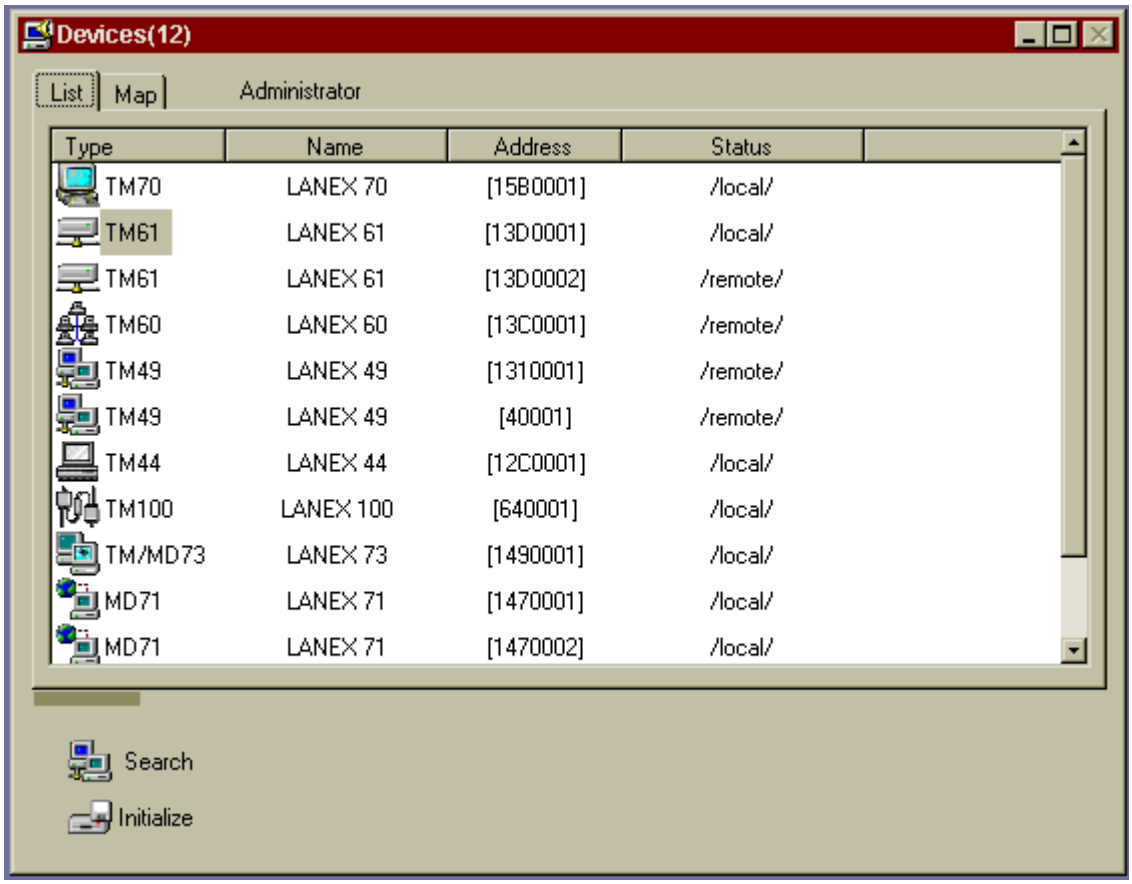


Fig.15. The program's main window displaying the list of devices

Type	Name	Address	Status	Slot number	Configuration

In column "type", the device's type and icon symbolizing its status (⇒ "Description of graphic symbols") are displayed. Column "name" includes a name which the user can change, at his/her discretion, in order to easily identify a selected device. In column "address", a four-byte address unequivocally identifying each device in the network is displayed. Column "status" specifies the location of a selected device in the network with respect to the managing station. In the case of devices installed in a rack, column "slot number " includes information on the adapter's location in a rack. In the case of devices equipped with the

working mode switch – "Software/hardware configuration", in column "configuration", current method of adapter's configuration is displayed.
In the case of the application working in a network mode, the following columns can also be displayed:

- IP address – the device's affiliation to IP address of TM-47 multiplexer;
- Region - TM-47 – the region (geographical area) defined by the system's administrator to which TM-47 multiplexer has been atributed;
- Port no – the number of RS232 port of TM-47 multiplexer to which the device is connected.

The elements displayed in the "List" tab can be selected, at the user's discretion, from the program's options sub-menu (⇒ "Program's configuration").
The working status of devices is signalled by a proper colour of an icon (⇒ "Description of graphic symbols"). Additionally, by clicking the mouse's right button, the user can drop-down the context menu to check the device's working status. All information on alerts occurring in all devices is additionally saved to file alarmy.txt (global file) in sub-directory "Alarm", in the directory where the application has been installed. In files alarmy_xx.txt (files associated with individual devices), where xx is the device's physical address, reports related to only the device of a given address are recorded.

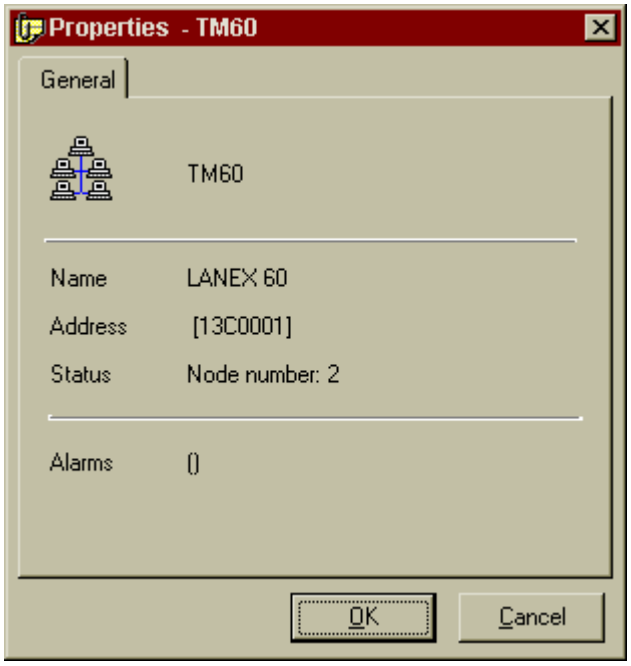


Fig.16. Window including basic information on the device

Sending information on alerts to external systems, sending SMSes, TRAP SNMP, and saving to text files in "Alarm" directory takes place only after information on all devices in the system is gathered. The progress bar located in the program's main window informs on the duration of data downloading. The duration of data gathering depends on the number of devices detected in the system.

2.1.2 The "Map" tab

The "mapa" tab includes all detected devices in the form of a map. The lines show the way of a business channel.

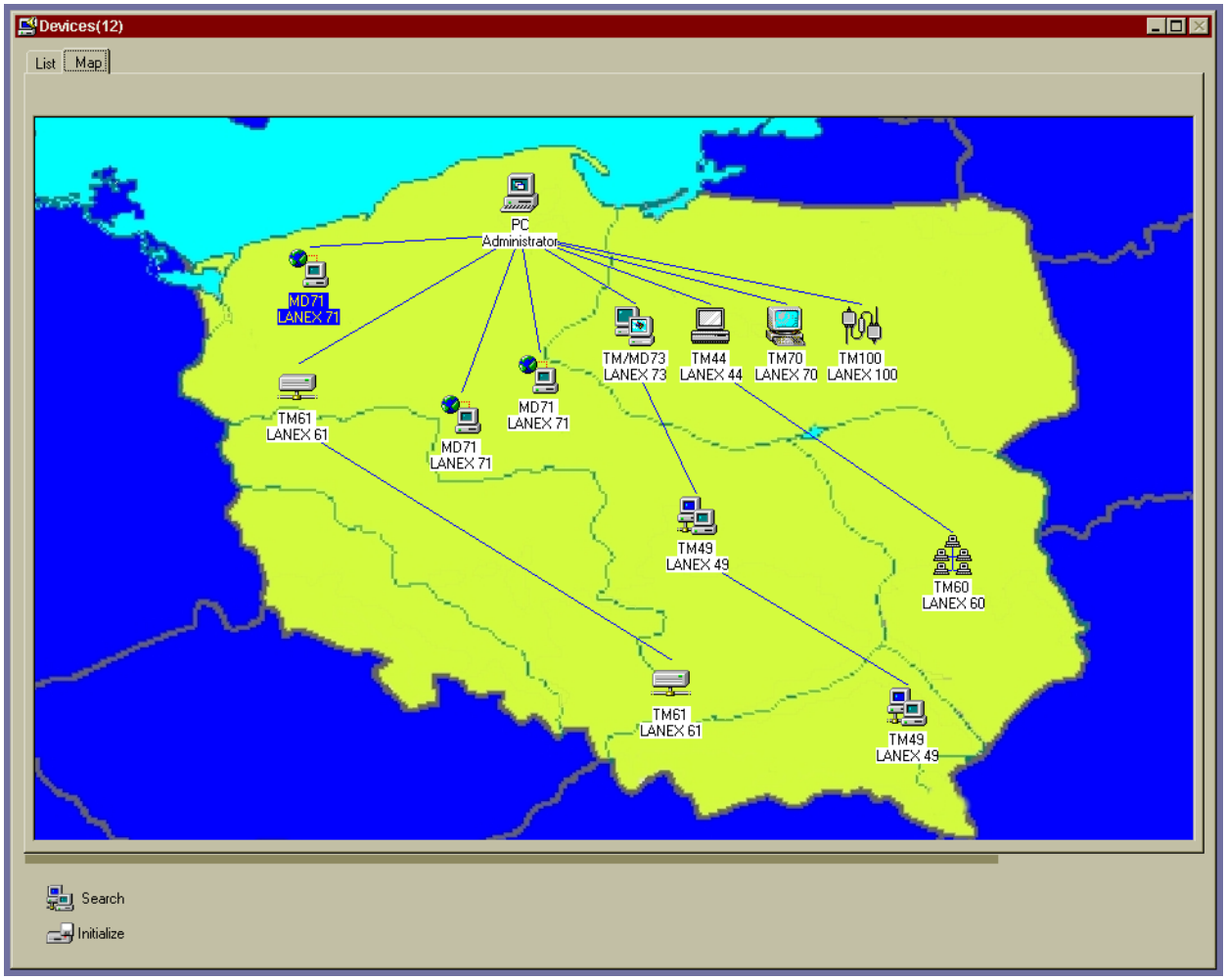
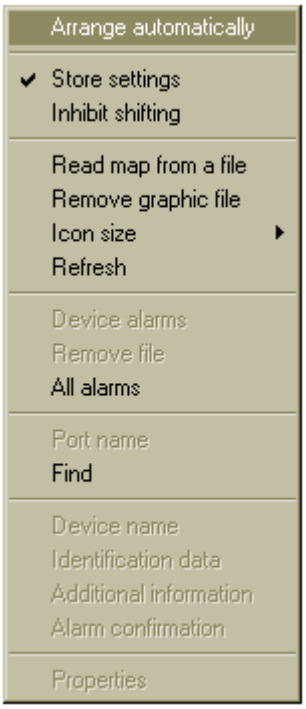


Fig.17. The program's main window where devices are presented in the form of a map

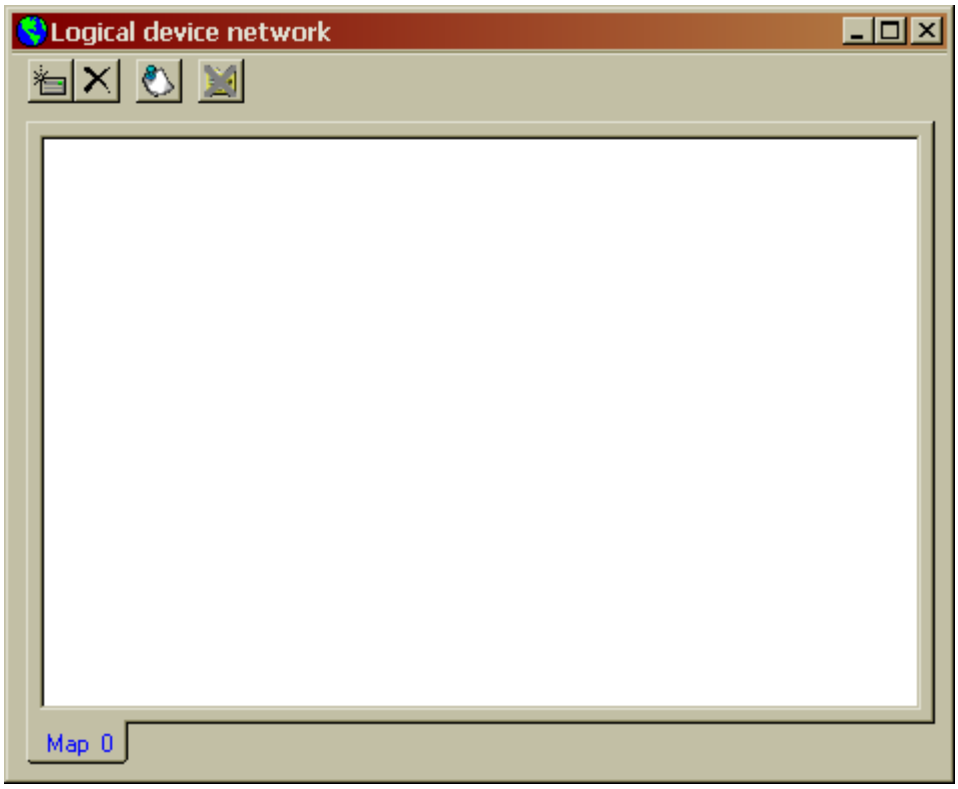
By default, icons presenting devices are arranged automatically. Images can be shifted manually. After they are arranged on the map, in order to save the settings, mark option "Save the settings" on the context menu. To display the context menu, click the mouse's right button on the device's icon.



From this point you can check the working status of a selected device by selecting option "Properties".
The size of displayed icons can be changed. Three sizes are accessible; namely, small, medium and large.

2.1.3 Logical maps

With the use of the software, you can create logical maps which are freely defined and associated with the account of the logged user. To open the window with logical maps, press button  in the bar. After pressing the button, the following box will open:



Three following elements are accessible in this box:

 Adding a new tab with the user's map
 Deleting the tab with the map created by the user
 Changing the name of the tab with the map
 Deleting an object from the map

To add an element in the map, use the drag and drop method and simultaneously press button CTRL or ALT. By selecting an object in which you are interested and which is included on the devices' list or located on a selected physical map of devices, by means of the dragging method, the object can be added to a selected tab with network's logical map.

2.1.4 Macro-commands

The software includes the added possibility of recording and reading macrocommands registered by the user. In this way, the configuration progress of a selected device's type can be automatised. To record macro, press button  and to read, press button  . If you press the button for recording macrocommands, all information sent to the device (if the current user has the rights to save) will be registered in file "tmx.mac", where x is the device's type. For example, in the case of TM60 multiplexer, macro file name will be "tm60.mac".

Macro files are associated with a device's type not with a specific device.

2.1.5 Archiving of maps

In the application, existing graphic maps can be saved and read. To save the map, press button  , to read the saved configuration, press button  .
In the software, two types of files are created depending on a version. In the case of a network version (net), network topology is saved in file "klient.urz", in the case of application working in a local mode (local) – in file "normal.urz".

2.2 Program's configuration

2.2.1 The "Program" tab

With the use of the application, the following parameters can be configured:

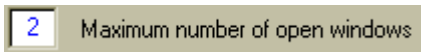
- Automatically open the window of active devices. If this option is marked, after the device is detected in the network, the window of a detected device will open automatically.

- Require confirmation when exiting the program. If this option is marked, each time the application is closed, the message demanding confirmation will be displayed.

- Hide column descriptions in the device list. After marking and accepting this option, information in the column headers of the program's main window such as type, name, address, status etc. will be hidden.

- Mark the whole line in the devices' list. If this option is marked, in the program's main window, for a selected device, the whole line will be highlighted.

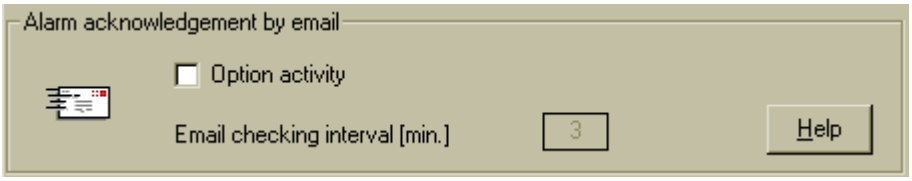
- Show progress bar when updating parameters. Updating parameters in the device lasts several seconds. If this option is marked, during saving the values provided by the user, the progress bar informing on the saving process will be displayed.



- Maximal number of open windows. The user can set the maximal number of windows which will be displayed in the application. If the next window is opened, the older opened window will be automatically closed or a message will be displayed, depending on the option selected by the user.

In device TM-44, TM-60 and TM-61, alerts can be confirmed remotely (equivalence of pressing button ALACK located on the device's front panel). To do this, it is necessary:
- to have a correctly configured e-mail box (email) and installed Microsoft e-mail client (e.g. Outlook Express);
- to have permanent access to the Internet;
- to enter, in the e-mail subject, the physical address or name of the device in which we want to confirm the alert;

- to include word "ack" (Acknowledge) in the mail message.



The user can set the e-mail box checking interval. If option "Option active" is marked, new messages will be checked automatically according to a set interval.

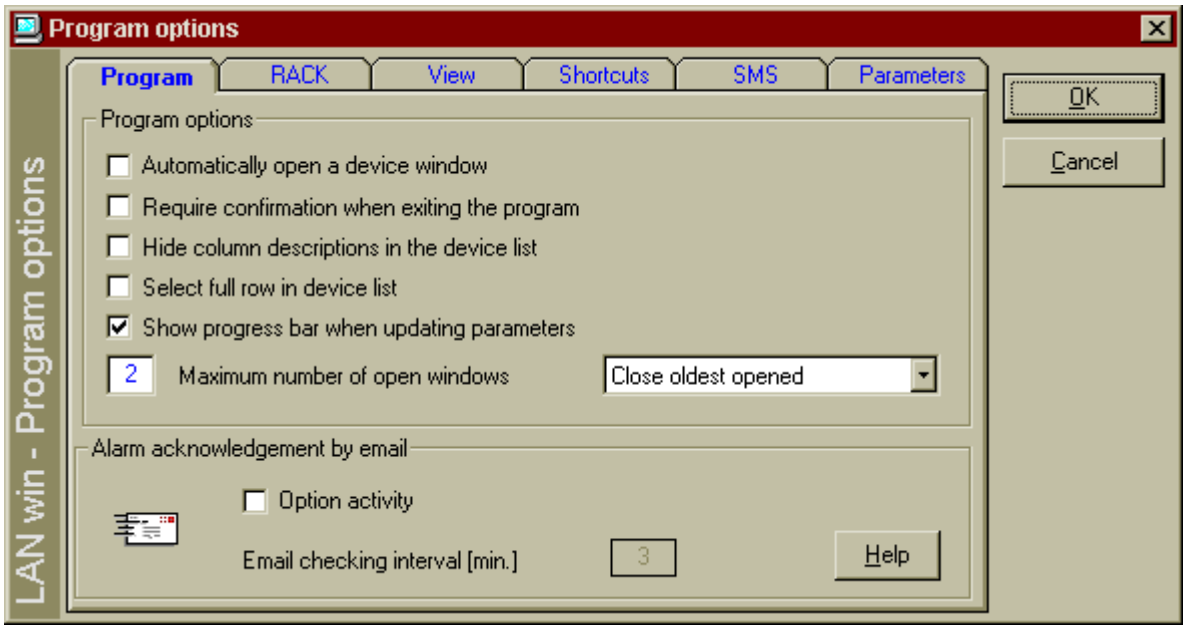


Fig.18. The program's options – the "Program" tab

2.2.2 The "Rack" tab

In the RACK tab, the following check boxes are accesible:

- "Delay in reporting by devices" establishes a time window of a single adapter in a rack. By default, the parameter value is 30 ms. If all the adapters in the system are not detected, the value can be increased only at the cost of shortening the time of adapter's refreshing parameters;

- "Interval of detecting devices in the network" specifies the frequency of automatic searching of new adapters in the network;

- "Time period after which the device is deemed as inactive" means the number of unconfirmed packages sent to a given adapter. The parameter's value should be selected empirically, depending on the number of installed adapters. Default value of 15 is recommended;

- "Interval of checking adapter's parameteres" specifies the time intervals in which the application will send queries to adapters;

- if option "close the adapter's window by doubleclicking" is marked, the window of adapter MD71 can be closed by doubleclicking any graphic element;

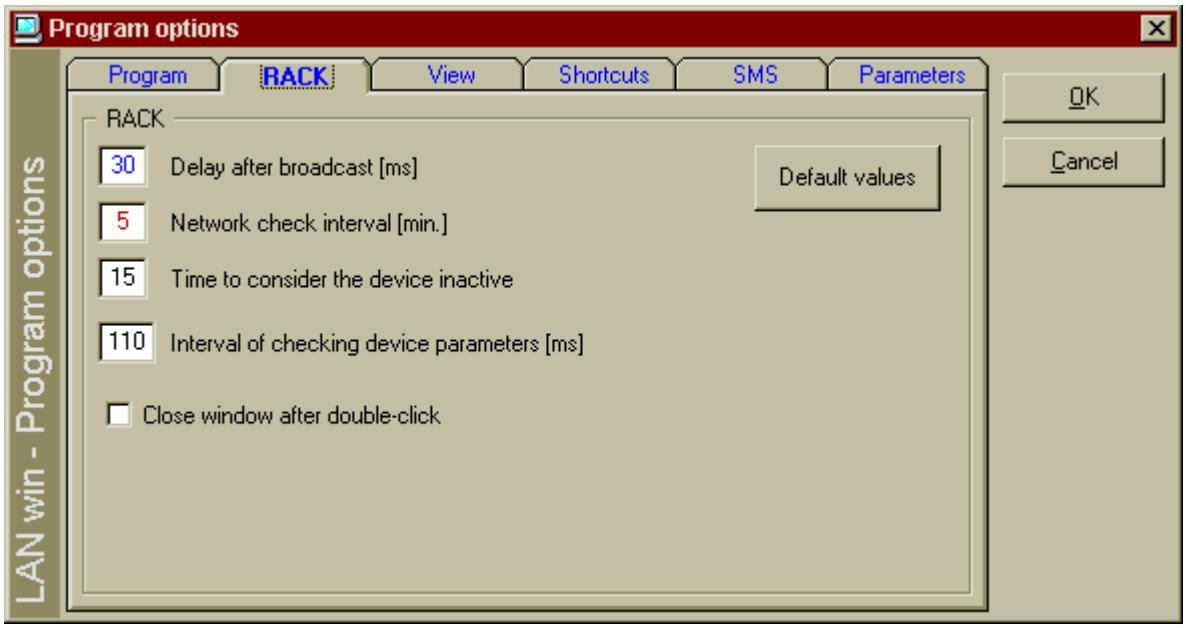


Fig.19. The program's options – the "Rack" tab

2.2.3 The "View" tab

By means of the application, information displayed in the main window can be configured. The user can display or hide such elements as: device name and physical address, status (local or remote device), slot no. (for rack devices), configuration (software or hardware configuration for devices equipped with such an option), and vendor's number granted during manufacturing.

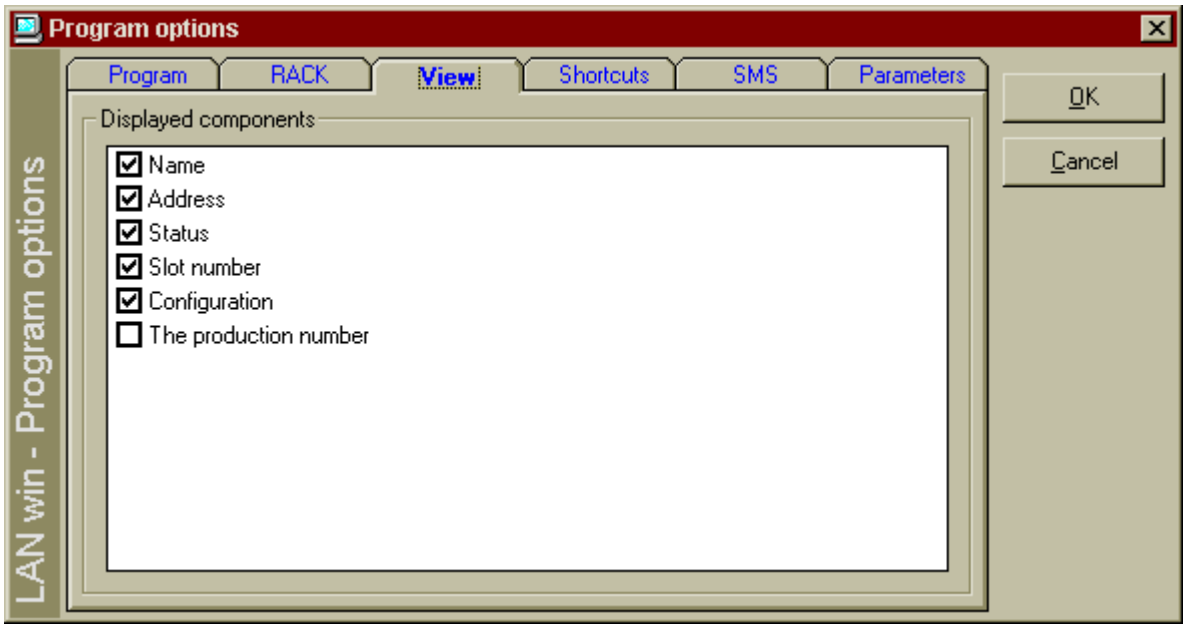


Fig.20. The program's options – the "View" tab

2.2.4 The "Shortcuts" tab

From active program, shortcuts can be created on a system desktop. The user can create the shortcut to:

- Application working in a basic mode (with the use of serial interface RS-232);
- Application working in a demonstration mode. In this mode, the user can watch the devices' windows and the device does not have to be physically connected.

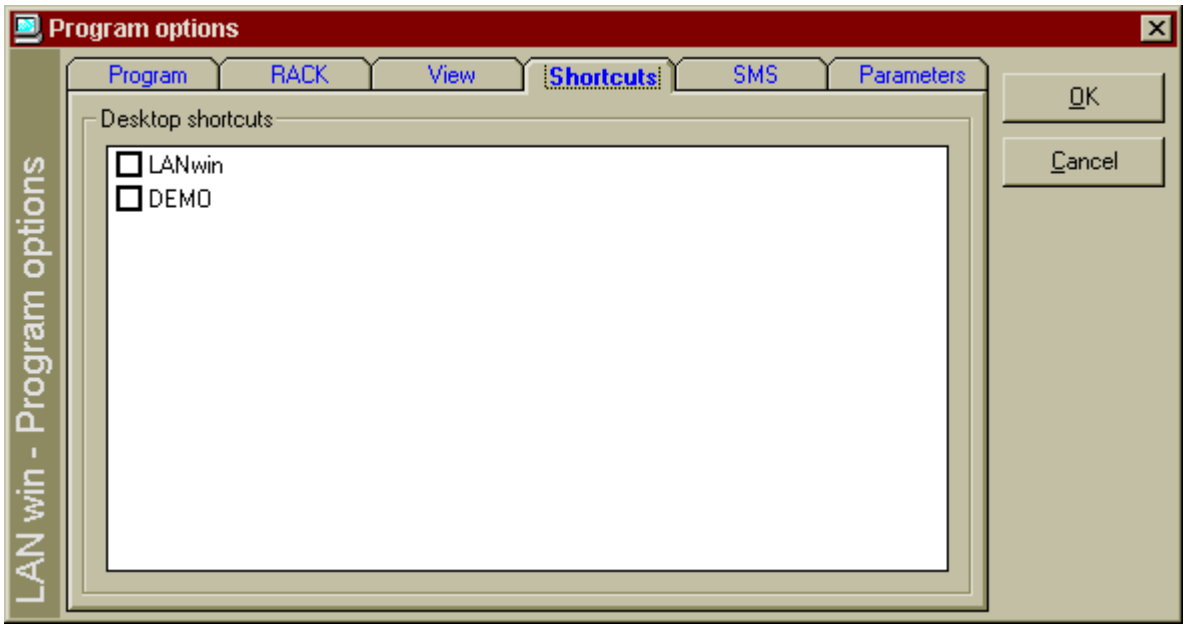
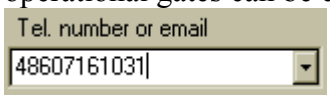


Fig.21. The program's options– the "Shortcuts" tab

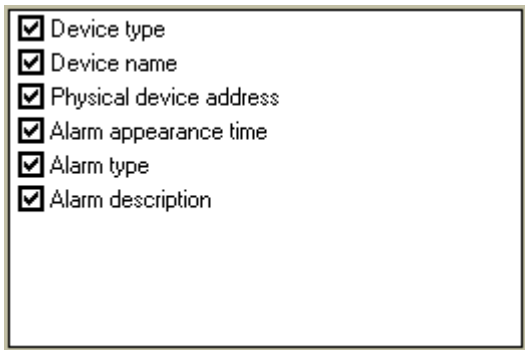
2.2.5 The "SMS" tab

In LANwin application, if a failure is detected in a device, a text message can be sent to cellular phones. Subscribers have to activate the service of receiving SMSes from the Internet gates.

In field "SMS gate", enter the name in the following form "@xxx.xxx.x". The list of current and operational gates can be downloaded from the Internet.



In field "phone no or account name", enter phone number in the following form: 48yyyxxxxxx. In this place, you can also enter the name of mail account; in such a case, messages will be sent not to a cellular phone but to a selected e-mail box.



The user can configure the text of sent information. Such information can include the device's type and name, physical address, date and time of alert occurrence, and alert type and its description.

To check if performed entries and sent text message are correct, press button 

.

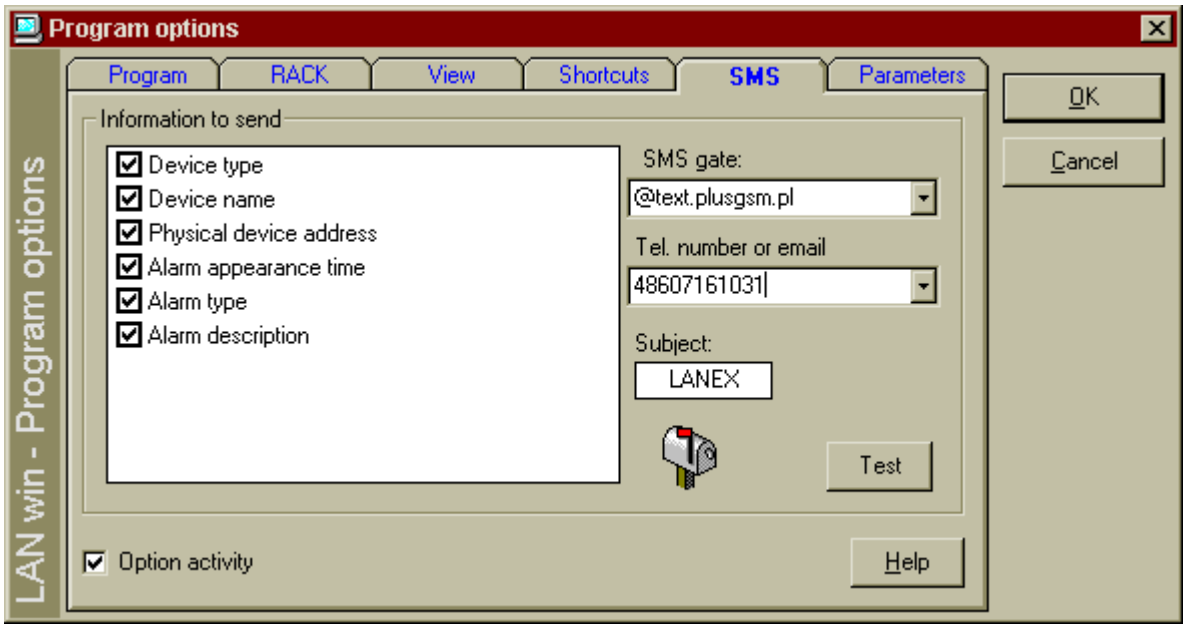


Fig.22. The program's options – the "SMS" tab

2.2.6 The "Parametry" *{Parameters}* tab

LANwin software can automatically update the date and time in a device, if its value is incorrect.

The user can also establish a maximal period of time after which the device will be marked as inactive on the devices' list in the program's main window, if during a set period of time, no information is received from a device.

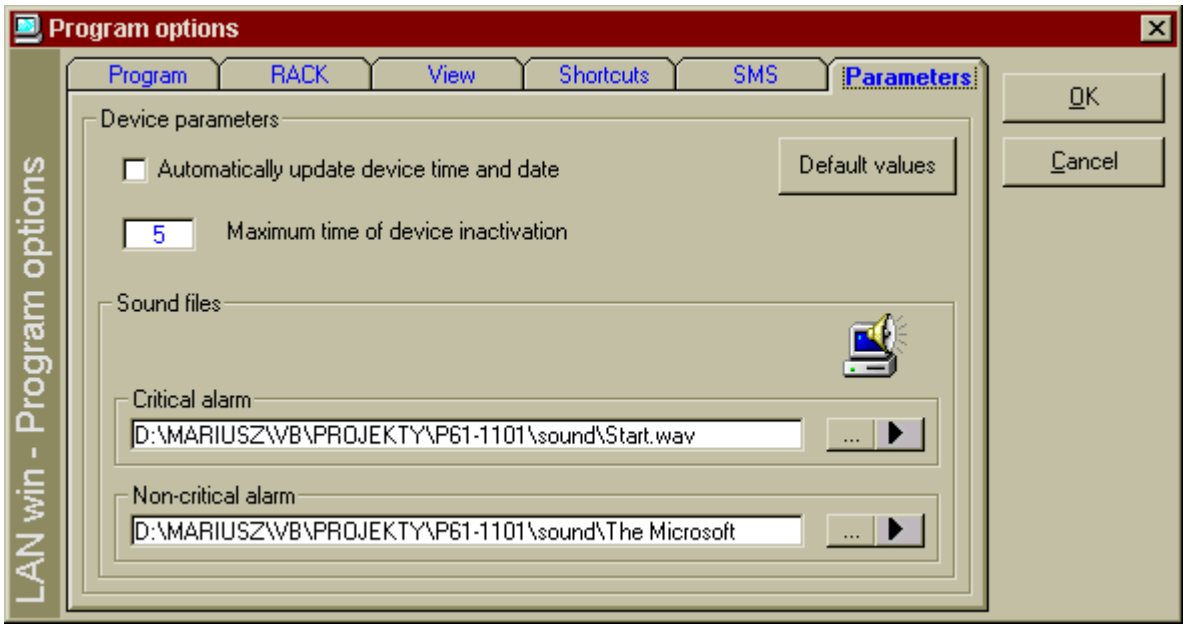


Fig. 23. The program's options – the "Parametry" tab

To urgent and non-urgent alerts you can attribute a sound file which will be generated each time an alert in the system is detected. To select a sound file, press button ..., and to listen to a selected file, press button ▶.

3 Program's additional options

3.1 Protecting the program by a password and adding new users

After the program is installed, it works with full access rights in the administrator's mode. The administrator can protect the application by a password. This can be done in the main menu:

The window includes information on current users. With the use of the configuration window, you can add or delete a user, check the user's access rights, and change the password.

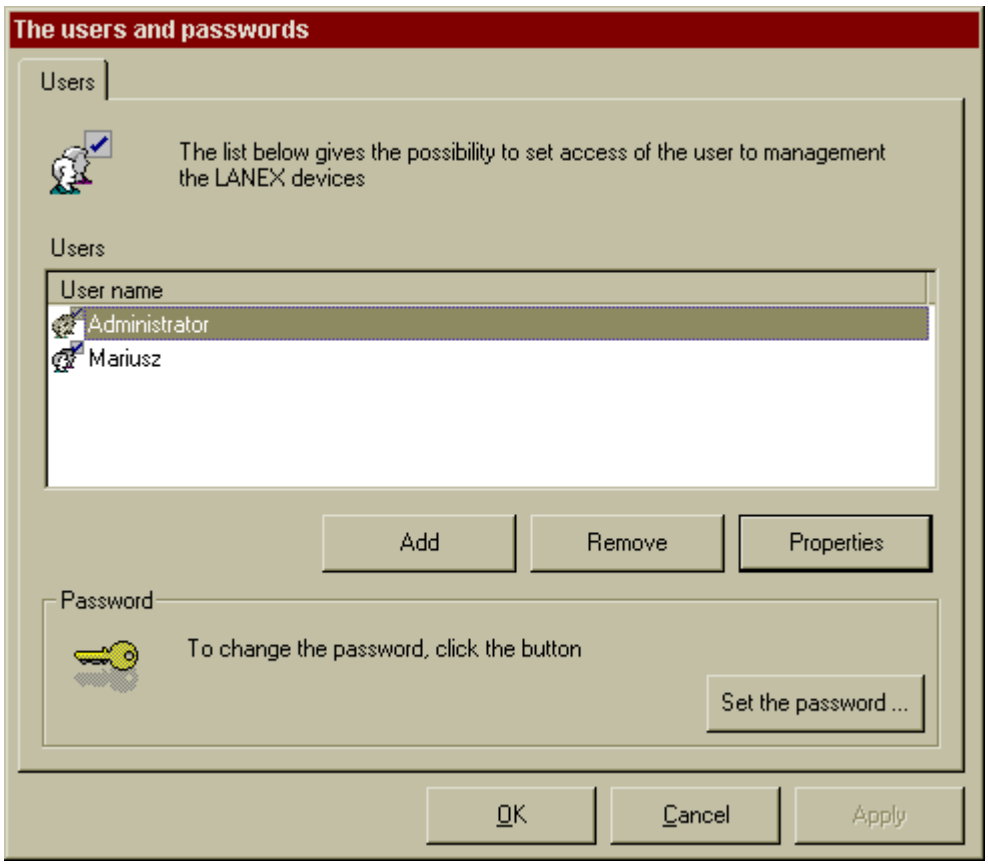


Fig. 24. Window in which the system's administrator can grant rights to users

Fig. 25. Window for changing the current access password

After the selected password is accepted, other users will be allowed to run the application only if they know the password.

The administrator can establish accounts for users. After pressing button "Add", the wizard's window will appear and the wizard will provide support during establishing a new account.

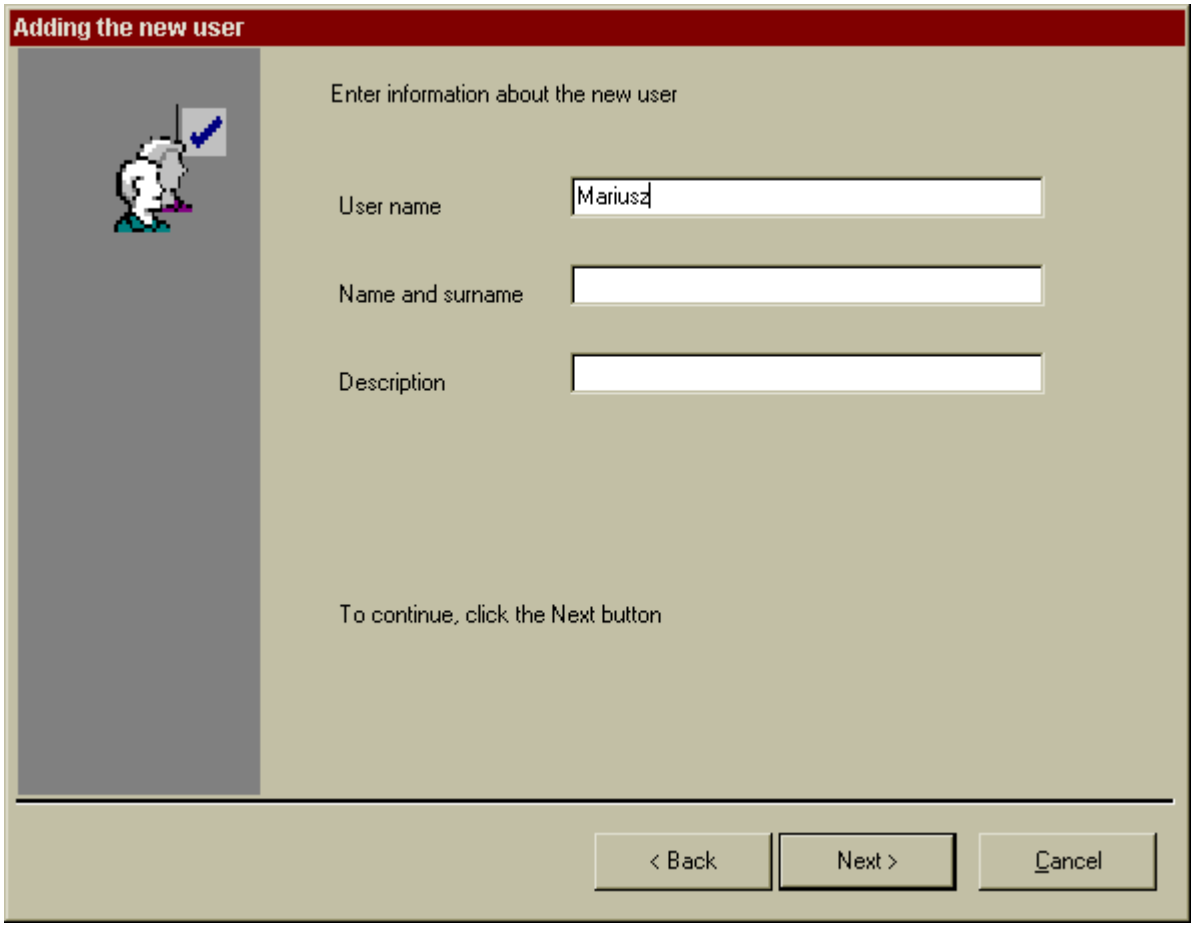
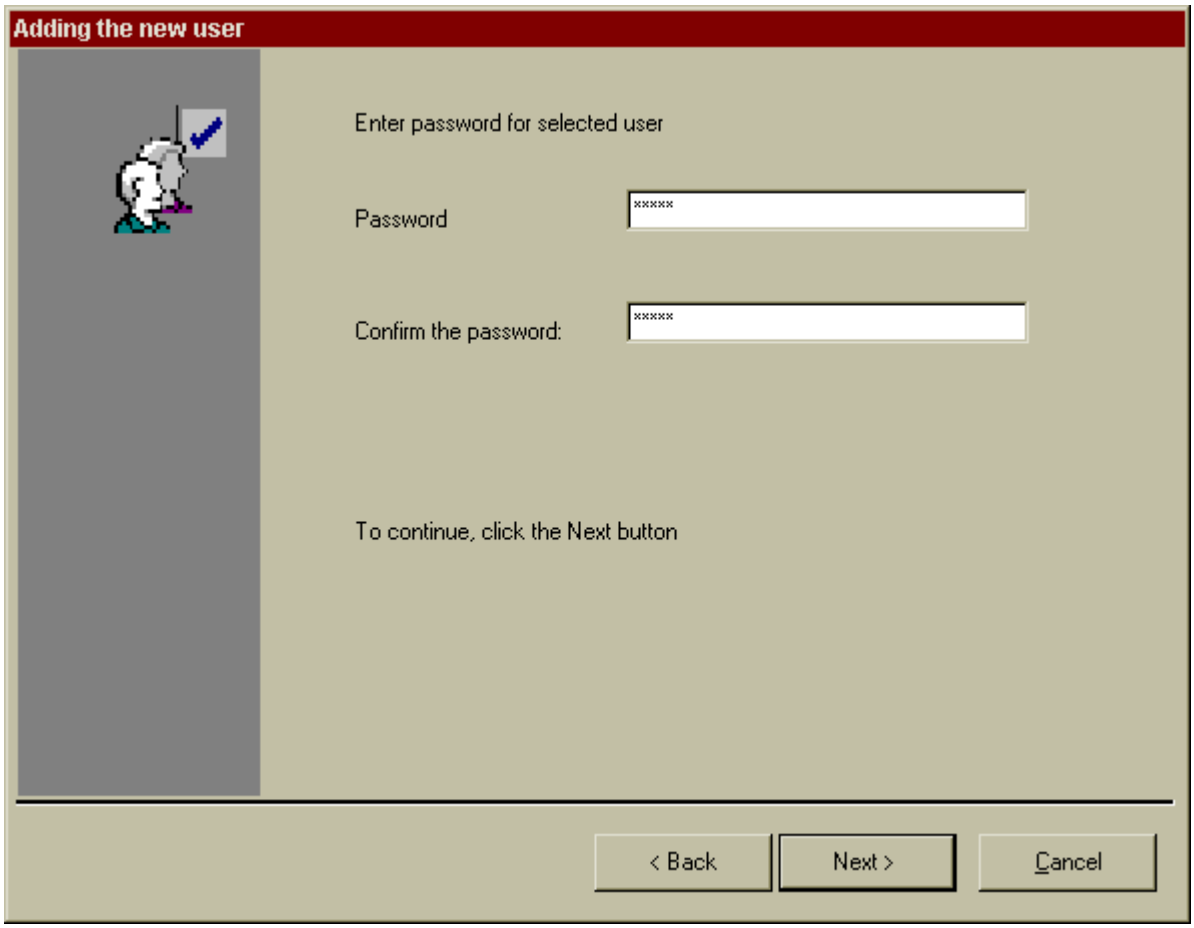
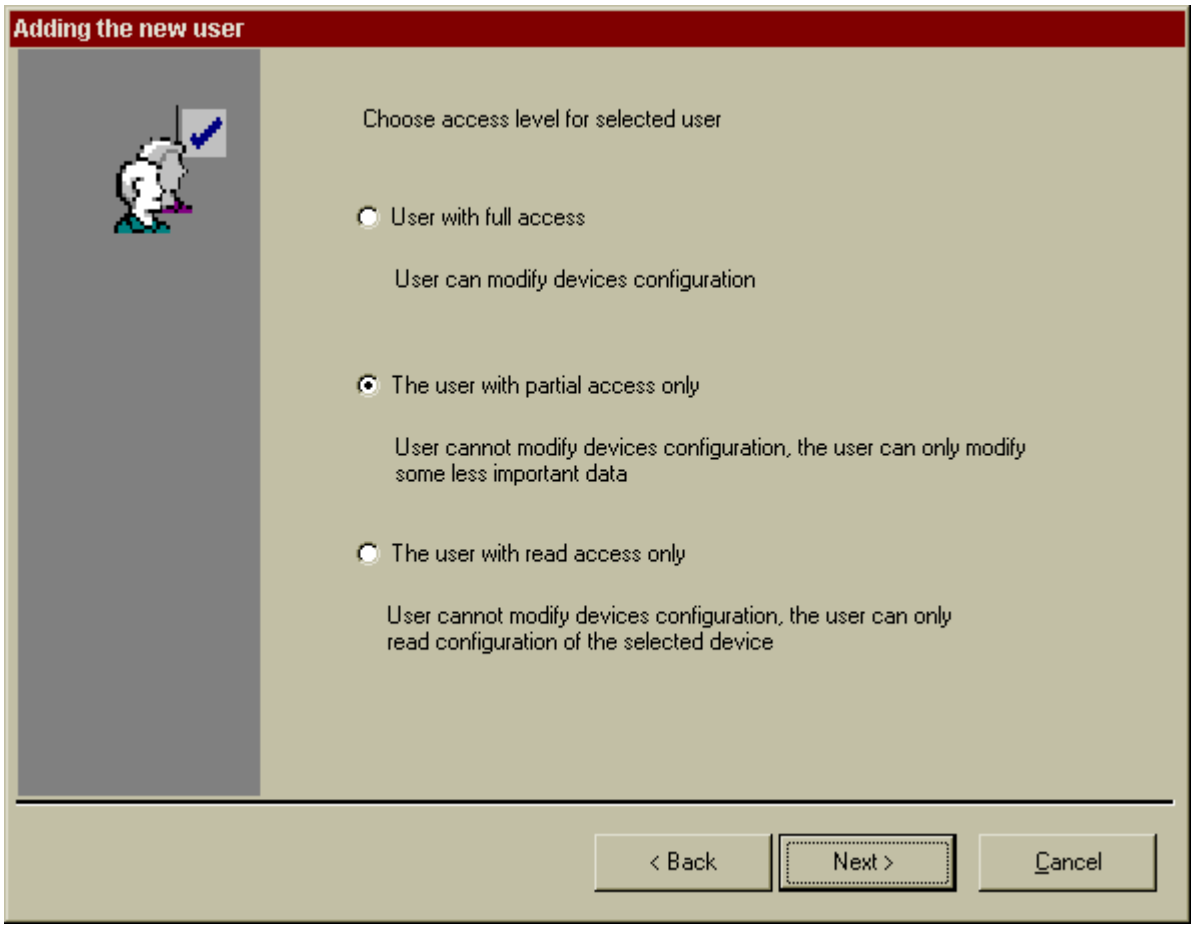
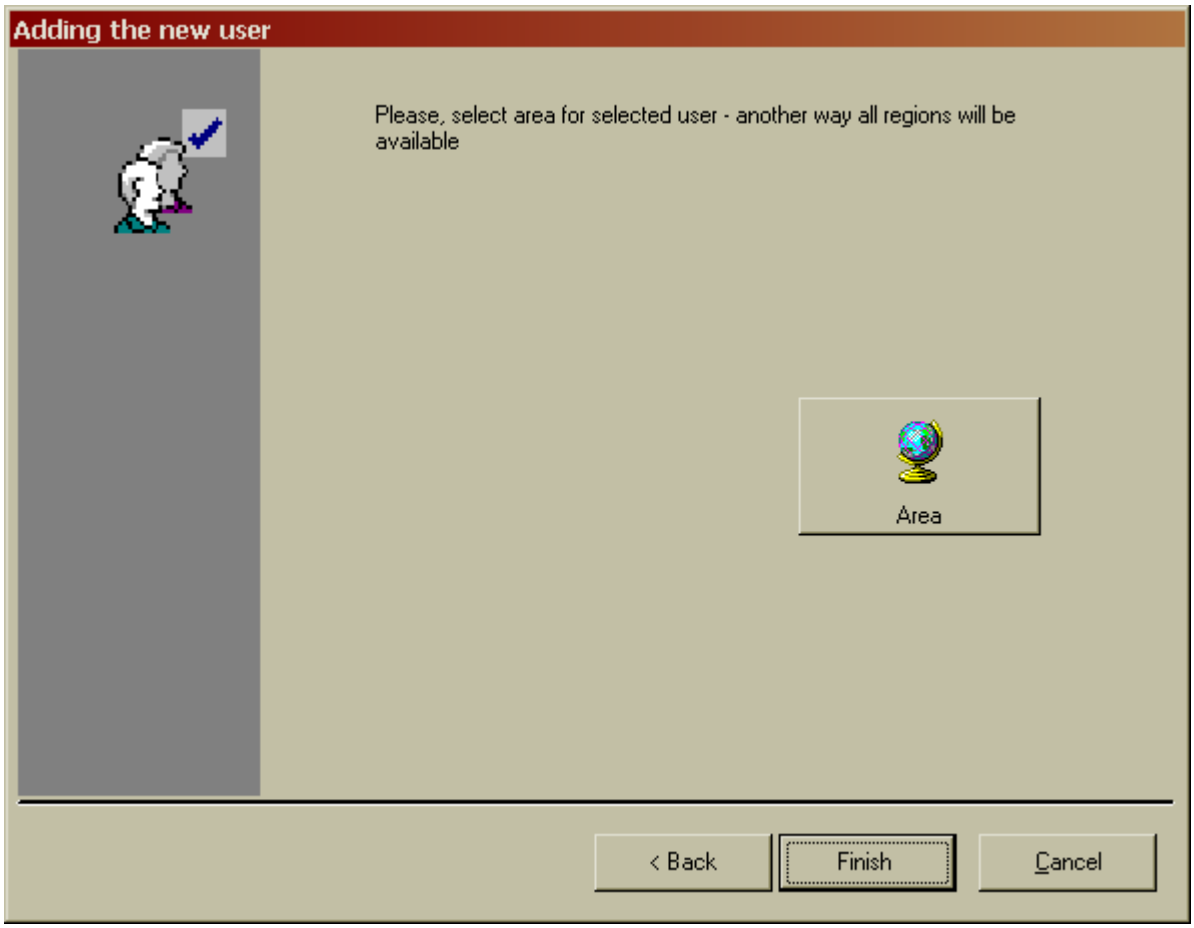


Fig. 26. Window of the wizard providing support during adding a new user to the system


Adding the new user
Enter password for selected user
Password
*****
Confirm the password:
*****
To continue, click the Next button
< Back
Next >
Cancel


Adding the new user
Choose access level for selected user
User with full access
User can modify devices configuration
The user with partial access only
User cannot modify devices configuration, the user can only modify some less important data
The user with read access only
User cannot modify devices configuration, the user can only read configuration of the selected device
< Back
Next >
Cancel



During a normal work, the administrator can change the parameters of a selected account.

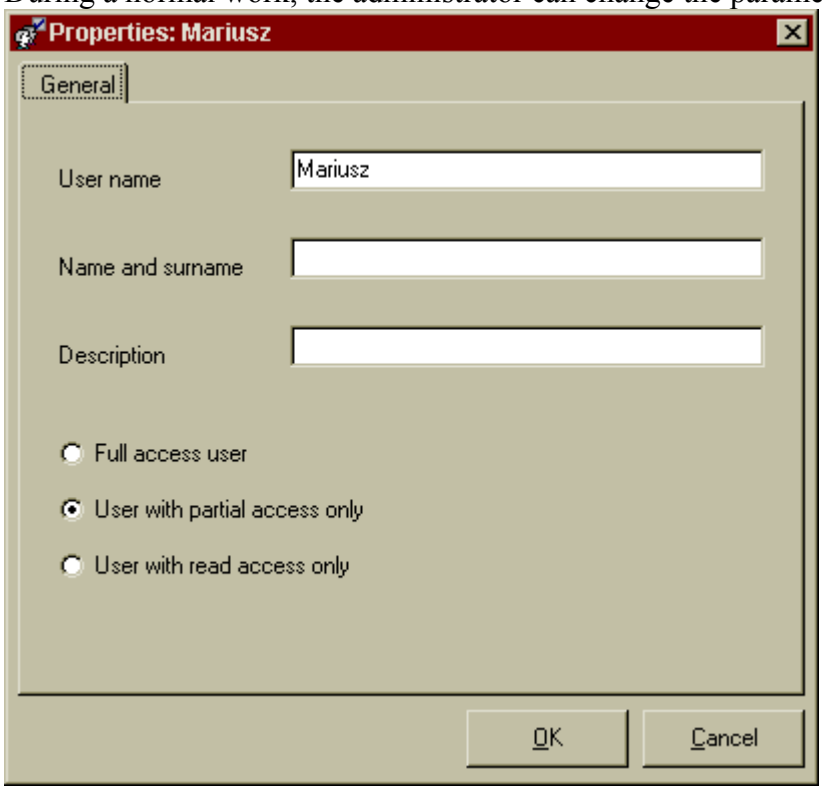


Fig. 27. Window by which the administrator can change the rights of individual users

With the use of "properties" , the administrator can establish the location of raport's file (log), where information on running and closing application and unauthorised attempts to enter the system will be recorded.

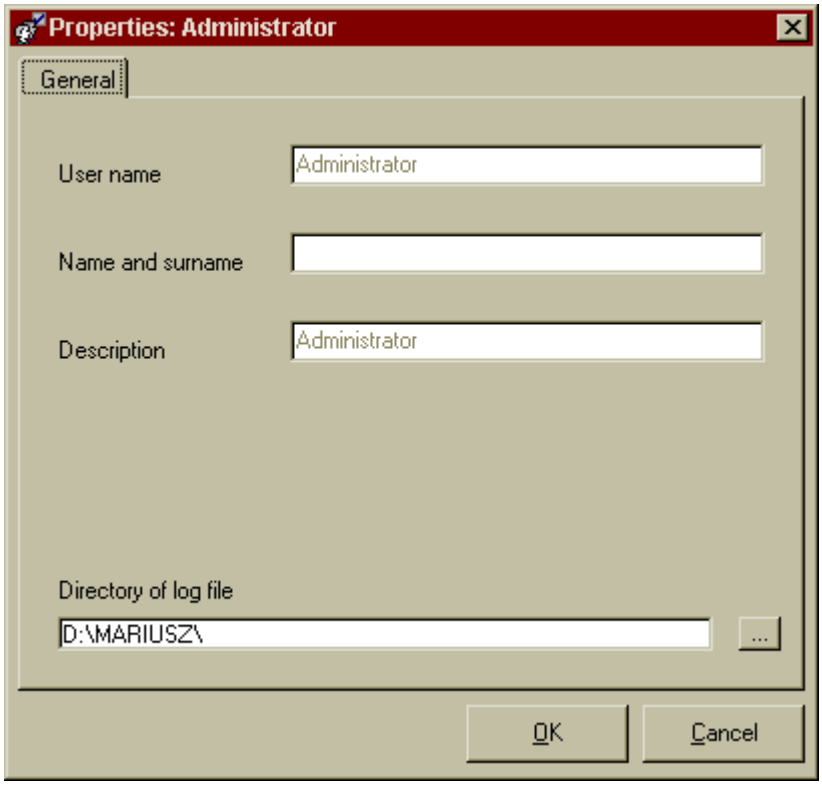


Fig. 28. The window "Properties" by which the system's administrator can change the location of the raport's file

3.2 Security device access password

Device access security against unauthorized users has been added starting from the software version 3.01 on. In order to gain access to a given device access password assigned by the operator is necessary . Default password is inactive.
The older versions of the Lanwin software allow only for the reading of device parameters, however, changing their configuration is not possible.
Assigning an access password or a change (or its removal) is available in the context menu in the device list window.

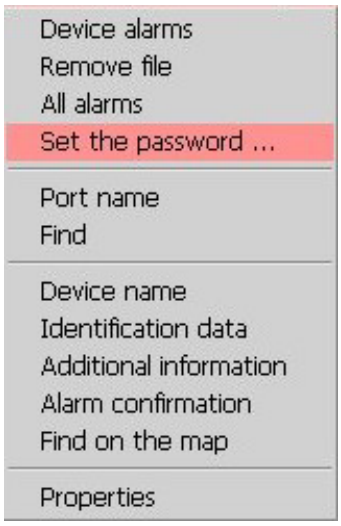


Fig.29. Context menu used for displaying the input of the device access password

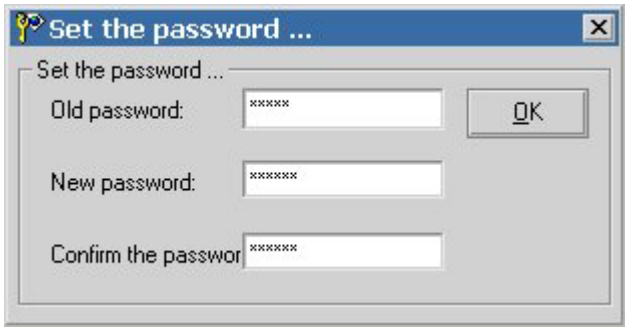


Fig.30. View of the window used for inputting or removing device access password.

After inputting a password the user is automatically logged out. Access to the device is possible after inputting access password. The user is automatically logged out after 10 seconds of inactivity on the level of a given device.

The login status may be checked from the device list context menu or map using the "additional information" option.

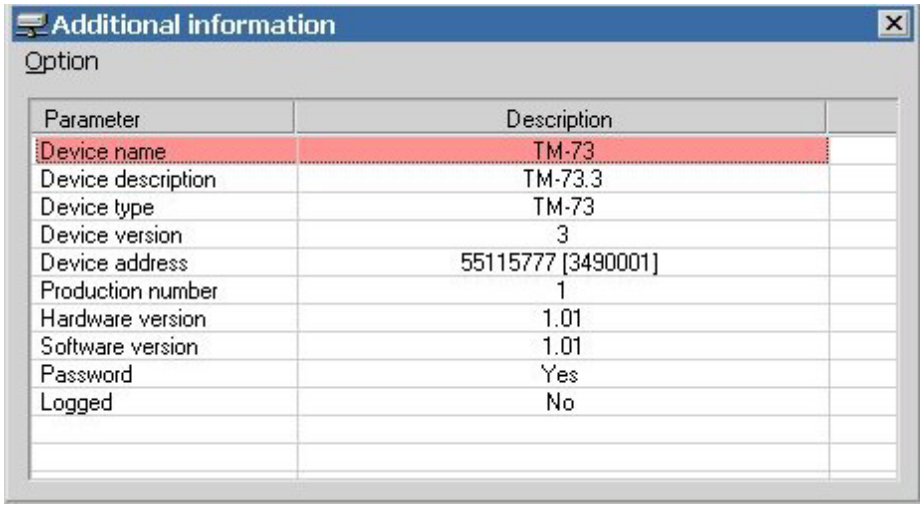


Fig.31. View of the window informing the user of the device login status

3.3 Regions

LANwin application working in a network mode can divide the view into regions in order to group the devices' domains. The system's administrator can add and delete defined regions.

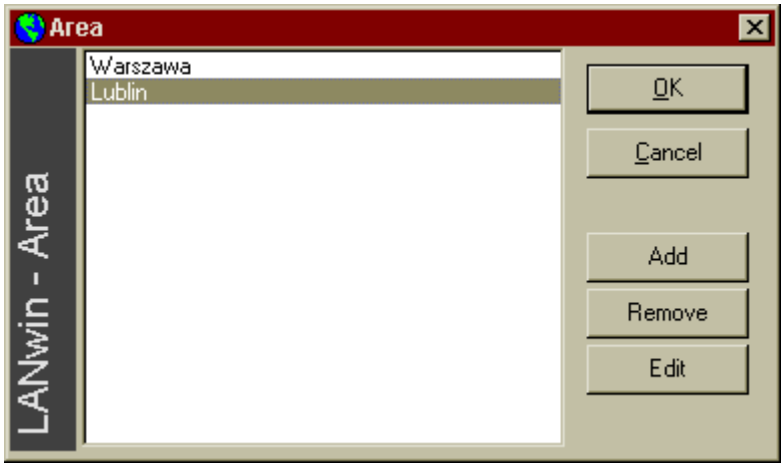


Fig. 32. Window in which the system's administrator can define his/her own regions

After this option is accepted, on the application's map desktop, icons will be added according to the names given by the operator.

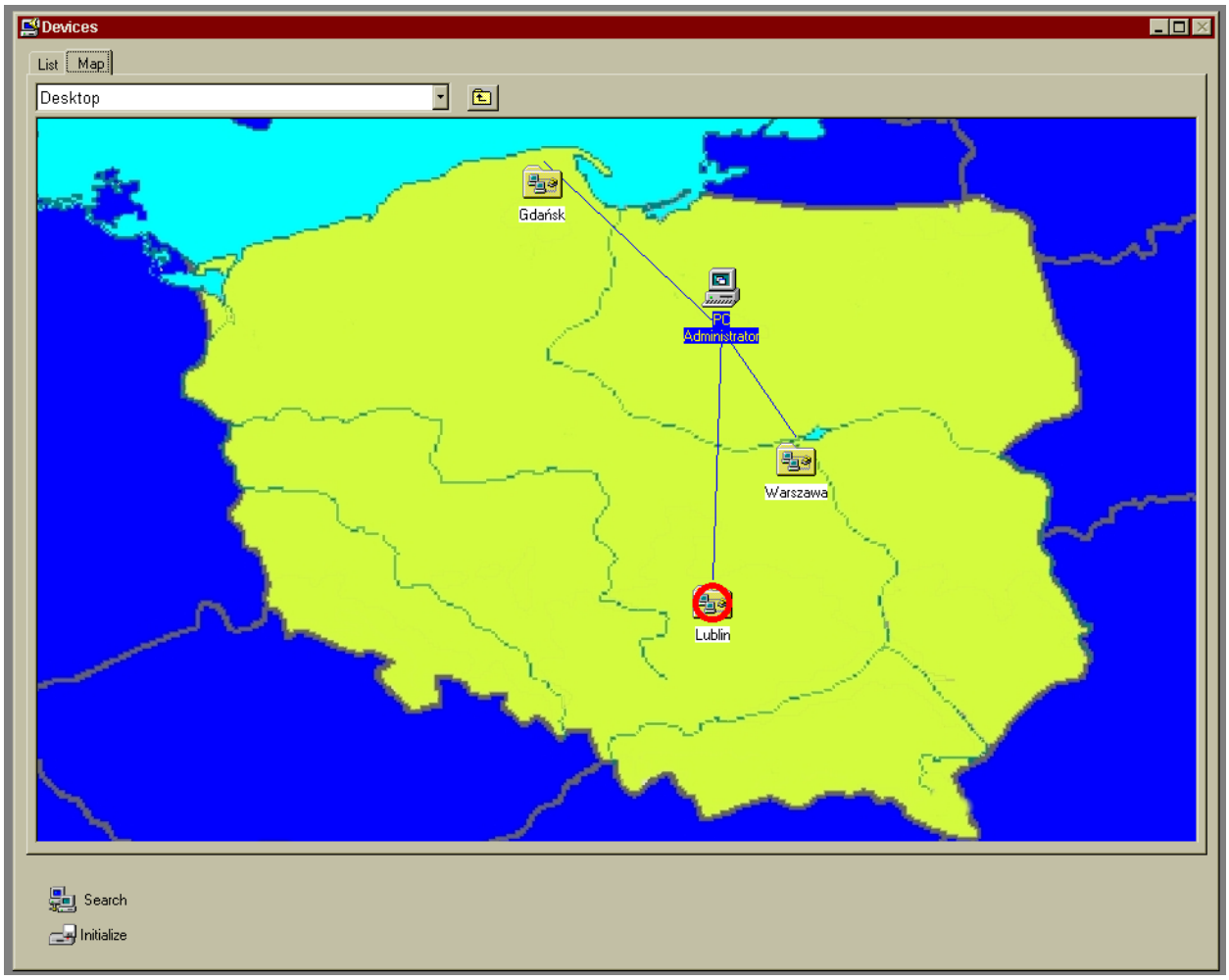


Fig. 33. Window with the regions defined by the operator

When TM-47 multiplexers are added to the system, they should be allocated to one of defined regions. This can be done also when the application is operating.

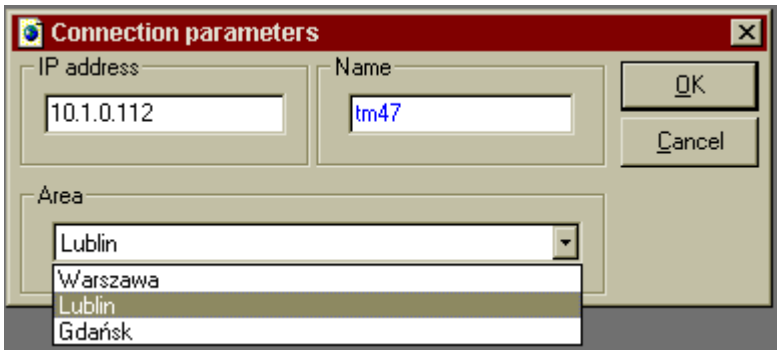


Fig. 34. Allocating TM-47 multiplexer to a region

Each device appearing in the system should be allocated to an actual region. (⇒ chapter "Identification data")

When the administrator creates the users' profiles, he/she can choose regions and devices' groups which a selected user can access.

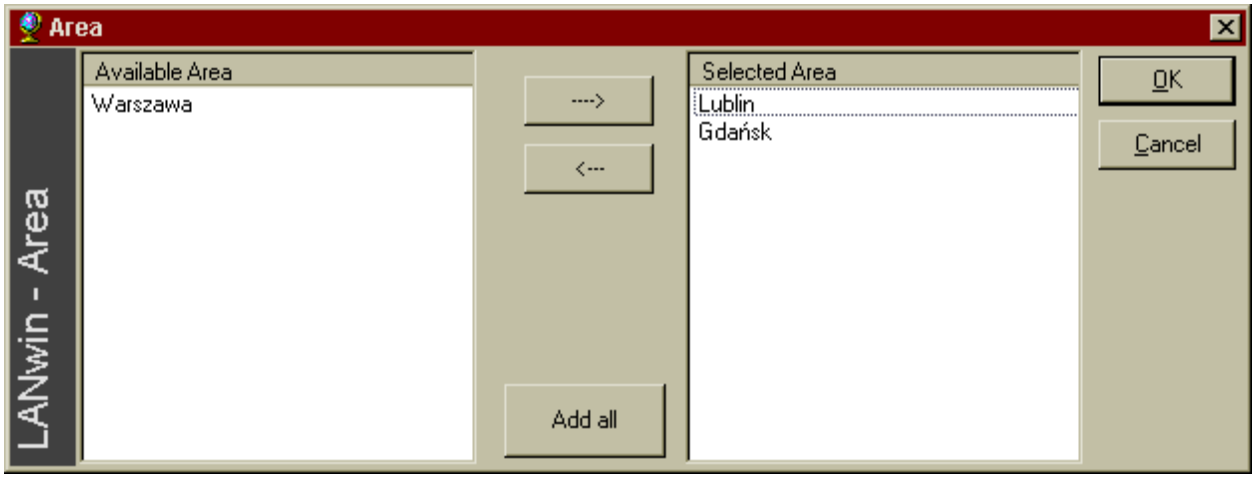


Fig. 35. Defining regions to which a user has access

3.4 Identification data

To each device, additional identification data gathered in a local database can be allocated. They include:

Field	Description
"Address"	Device localisation
"Contact person 1"	Name Surname Stationary phone no Cellular phone no
"Contact person 2"	Name Surname Stationary phone no Cellular phone no
"Accessing person"	Cellular phone no
„Inventory no"	Number given by an operator
"Serial no"	Number given by an operator
"Region"	Device's association with a selected region in the country
"Photos" (files' names)	Room's diagram General view Other view

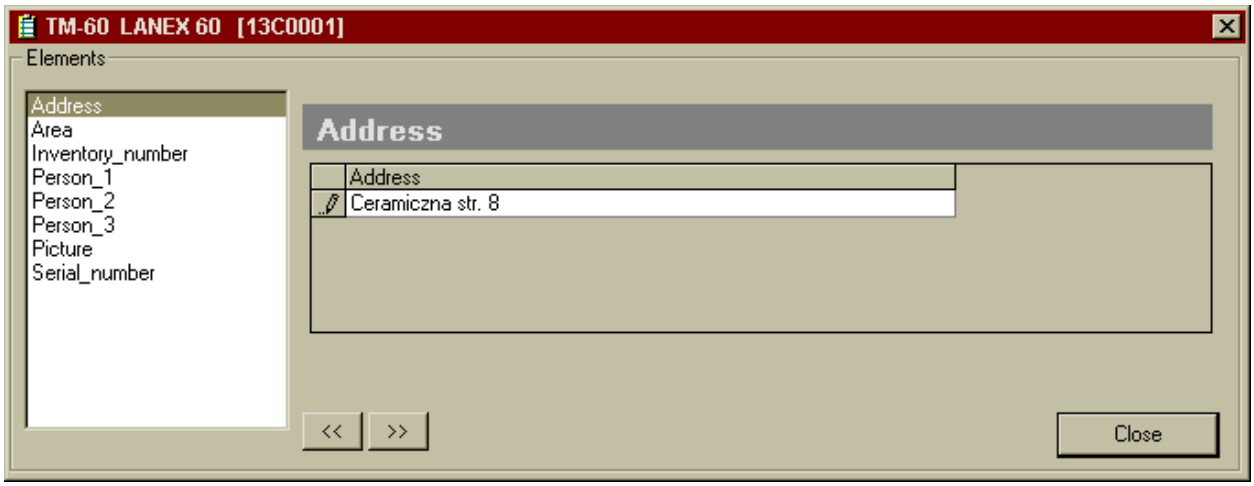


Fig. 36. Window including identification data of a selected device

To walk between consecutive devices from a list, press buttons << >>.
For fields "region" and "photo" , you can press additional buttons to select elements from a disk (photo) or a list (regions) for authorised users.

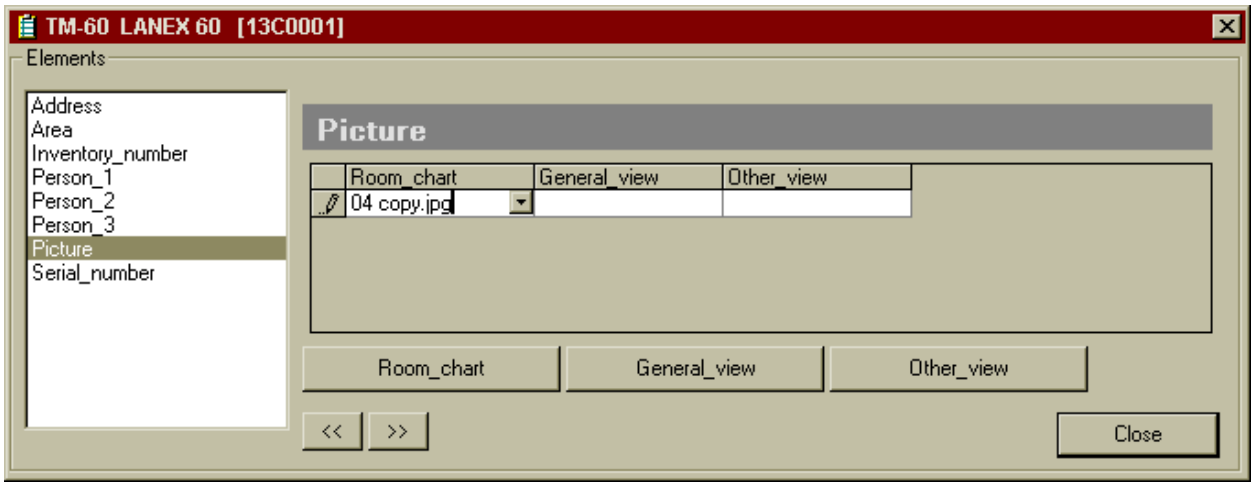
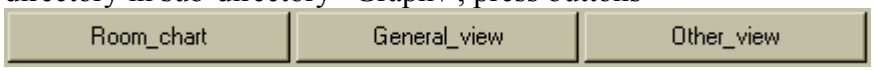


Fig. 37. Window for selecting graphics files

To display the window including the contents of a graphics file located in the application's directory in sub-directory "Graph\", press buttons



The object can be displayed in the scale of 1:1 or its size can be adjusted to the window's size (option "Scale").

Fig. 38. Window including the user's graphics file

3.5 Port identification

The operator can assign to each port an identification number and name of a customer using a current channel. This option is accessible from the context menu "Port name".

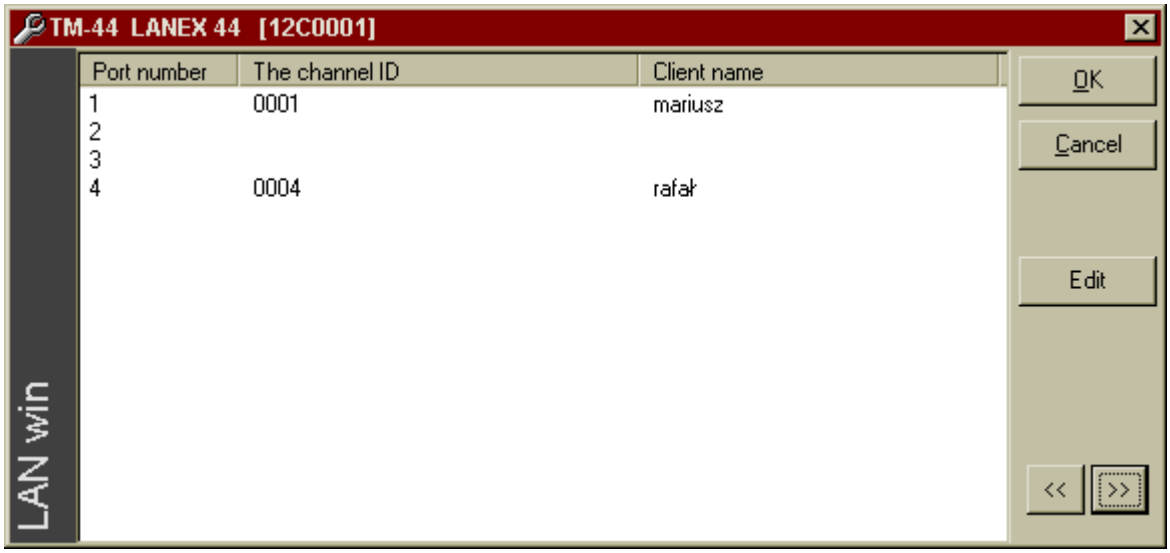


Fig. 39. Window with the information on device's data transmission port

To quickly walk between devices located on the list, press buttons << >>. A channel leased to a selected customer can be easily identified by means of an identification number and customer name.

3.6 Retrieving identification data from a local database

LANwin application includes implemented mechanisms for retrieving elements from a local database. This option is accessible from context menu "Find".
Elements can be retrieved on the basis of the following criteria:

- device's physical address;
- address – device's physical localisation;
- device name;
- port name – identification number or customer name;
- inventory number;
- serial number;
- contact person 1 (fields: "name", "surname", "phone number");
- contact person 2;
- accessing person;
- region to which a device has been qualified;
- photo associated with a device.

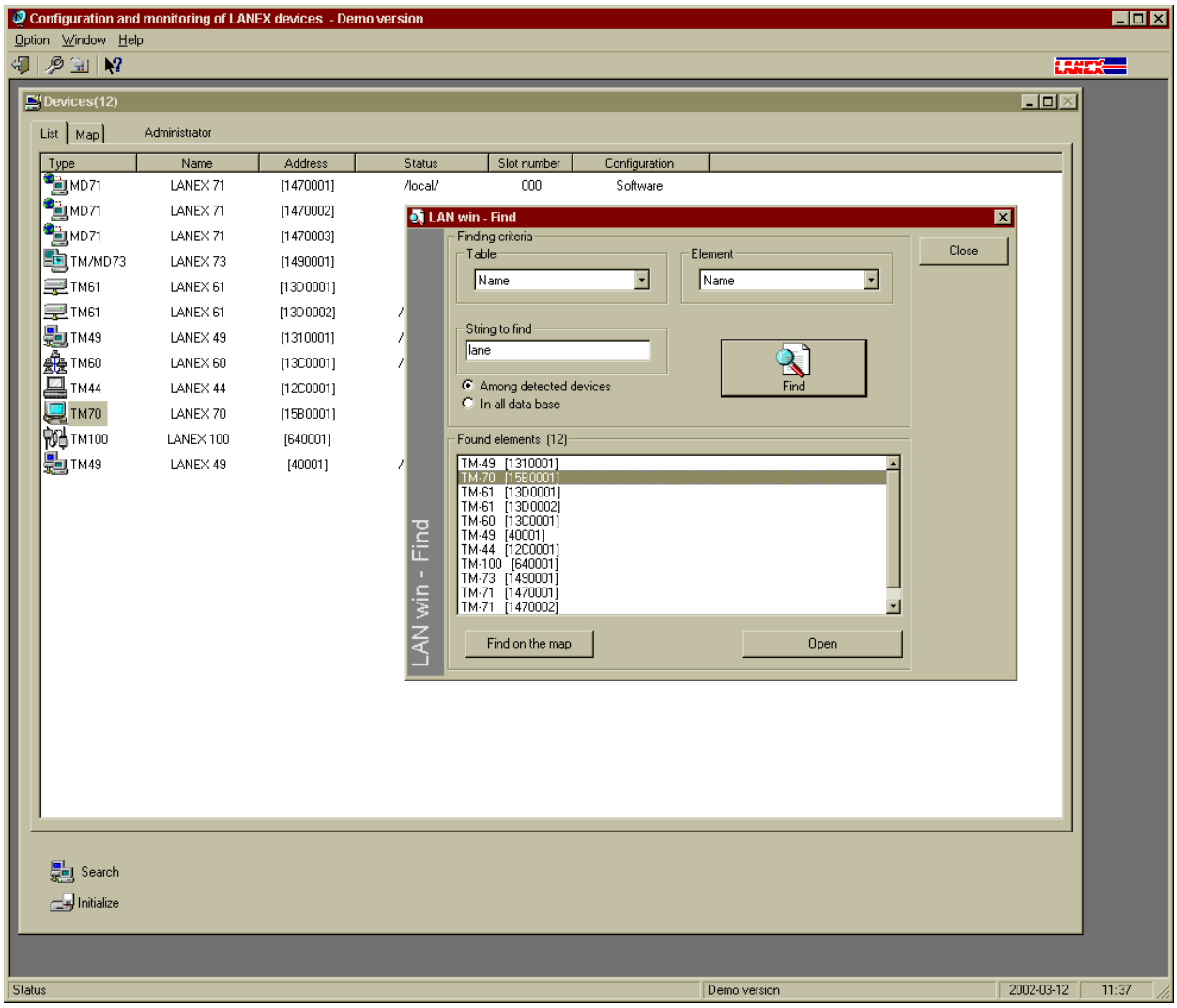


Fig. 40. Window for retrievieng information from a set of active devices on the basis of various criteria included in identification data of a local database

Devices fulfilling retrieval criteria are displayed on the list. If you click on the device located on the list of found elements, the device will be highlighted in the application's main window. From this point, the device on the map can be found and the window associated with a selected device can be opened. By marking option "In the whole database", a local database can be searched on the basis of a selected criterion irrespective of whether the device is active in the system.

3.7 Export and import of program configurations

LANwin application includes an implemented function of export and import of program configurations. By this function, user settings can be easily transferred to another computer and the system does not have to be re-configured. Exported and imported elements include:
- all graphics files in directory \Graph\;
- all sound files in directory \Sound\;
- all files of reports about alerts occurring in devices in directory \Alarm\;
- application's database;
- information on locations of objects on the maps;
- all entries to the system register associated with the application;

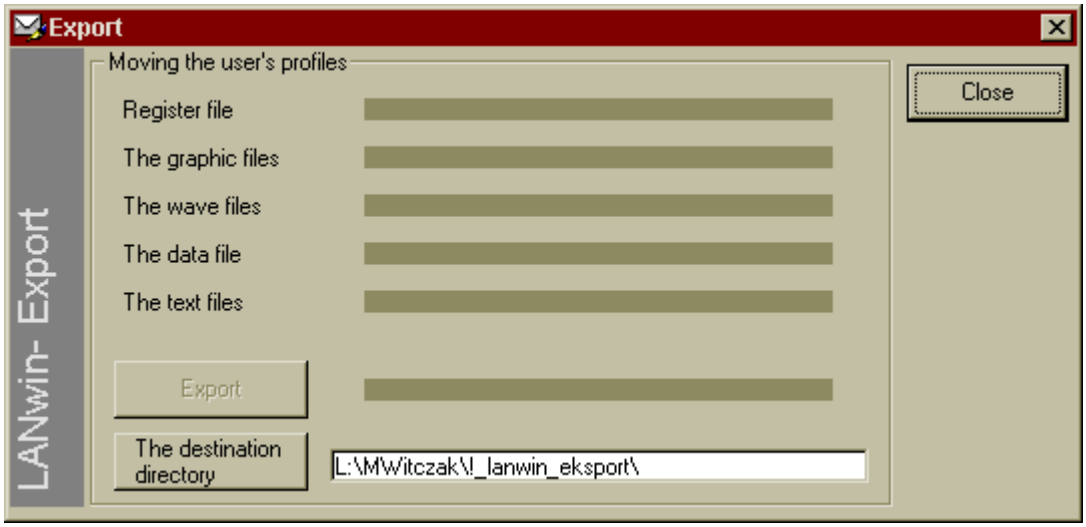
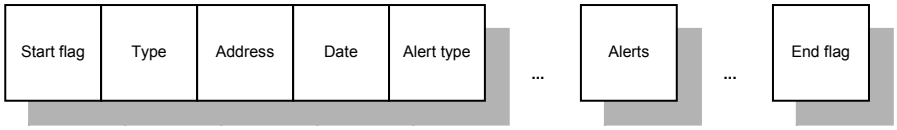


Fig. 41. Window for exporting configurations of LANwin software

Option of export/import can be accessed in the application's main menu.

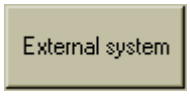
3.8 Interface of export of alerts to an external system

LANwin application listens to, on TCP/IP port selected by the user, the queries from external systems. After the connection is established, in real time, i.e. after receiving the TRAP order from connected devices, orders are transmitted in the form of packages on a configured port. Data on detected alerts are sent to an external system after the data from connected devices are completed. The duration of this operation depends on the number of devices introduced to the system. The progress bar located under the list in the program's main window informs on the data downloading status. For the purposes of communication with an external system, the following data exchange format is applied:



Field	Value	Description
Start flag	E.g. ~ [0x7E]	Character starting the sequence related to one device, start flag value will be defined by the user
Type	TM60, TM44	Type of device from which information on alert is received
Address	E.g. 20709377	Physical address unequivocally identifying a device in the network
Date	2001-10-05 13:22.07	Date and time of alert occurrence
Alert type	UAL, NUAL, UL, TE, BA	UAL – urgent alert; NUAL – non-urgent alert; UL – loss of communication with a device; TE – informs on activation of a pseudo-random sequence generator or activity of test loops; BA – no alerts or have been confirmed by the operator.
Alerts	LOSS, LOF, E103, E106, LDF, RAL, ZSS1 – ZSS16	LOSS – loss of optical signal; LOF – loss of frame synchronisation; E103 – exceeding error rate E-10^{-3}; E106 – exceeding error rate E-10^{-6}; LDF – transmitter power fading; RAL – alert to a remote device; ZSS1-16 – component signal fading 1 – 16.
End flag	E.g. [0x7F]	Character ending a sequence, value defined by the user. It has to differ from the start flag

Individual fields are separated by separators defined by the user e.g. „;"
Separator's value, and start and end flag cannot appear in the data field.

Start flag, end flag, separator, and port number can be defined by the system's administrator. This is accessible in the program's main configuration in the "Program" tab under button 

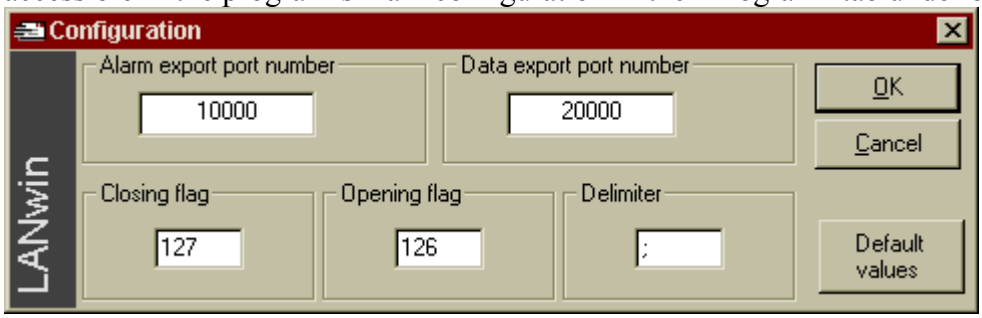
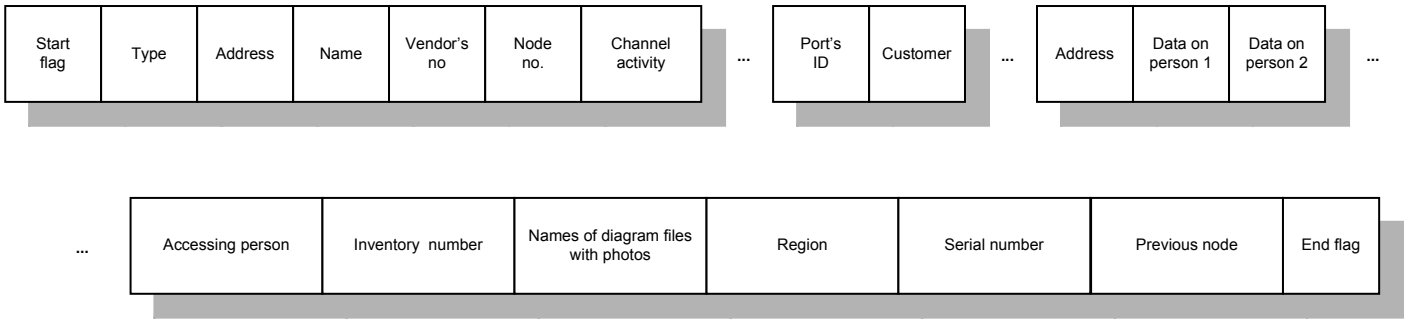


Fig. 42. Window for working configuration of interface to an external system

3.9 Interface of export of data on hardware configuration to an external system

LANwin software waits for establishing a connection via the network with the use of TCP/IP protocol on a port selected by the operator. After the connection is established, the application sends information only after it receives a demand from an external system. After the demand is received, the application sends the information about addresses of all devices in the network or information about the devices selected by the operator.

The format of responses returned by LANwin application:



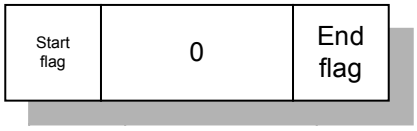
Field	Value	Description
Start flag	E.g. ~ [0x7E]	Character starting the sequence related to one device, start flag value will be defined by the user
Type	TM60, TM44	Type of device from which information on configuration is received
Address	E.g. 20709377	Physical address unequivocally identifying a device in the network
Name	TM-60_LUBLIN_2	Device name given by the user
Vendor's no	E.g. 1234	Number given during production – read-only value
Node no	1,2,3 etc.	On the basis of the field, the device's location in the network with respect to the managing station can be identified; 1- local device, 2- remote device etc.
Channels' activity	E.g. 65280	Number converted in the form of a character string informing on the activity of component channels in the device – in this case, channels 16 to 9 are on and channels 8 to 1 are off.
Port ID	000123	Number attributed to port G.703 of device TM44 or TM60
Customer	Kowalski	Customer using a selected channel. Field "port ID" and "customer" will appear depending on the device type: for TM44 – 4, for TM60-16 (number of accessible ports)
Address	Diamentowa 2	Device's localisation
Data of person 1	Stanisław; Nowak;123456;0607 123456	Name, surname, stationary phone number, cellular phone number of person 1 Data separated by separators
Data of person 2	Stanisław; Nowak;123456;0607 123456	Name, surname, stationary phone number, cellular phone number of person 1 Data separated by separators

Accessing person	0607123456	Accessing person's cellular phone no
Inventory number	121212	Inventory number given by the operator
Names of diagram files with photos	Bitmapa1, bitmapa2, bitmapa3	Room diagram, general view, other view – names of graphics files separated by separators
Region	Lublin	Region to which the device is attributed
Serial number	1234	Serial number given by the system's administrator
Previous node	20709378	Physical address of previous device in the network. On the basis of this information, network topology can be unequivocally specified.
End flag	E.g. [0x7F]	Character ending the sequence, value defined by the user. It has to differ from the start flag

Format of a query generated by an external system:

Field	Value	Description
Start flag	E.g. ~ [0x7E]	Character starting the sequence related to one device, start flag value will be defined by the user
Address	E.g. 20709377	Physical address unequivocally identifying a device in the network *)
End flag	E.g. [0x7F]	Character ending the sequence, value defined by the user. It has to differ from the start flag

*) – If non-zero value is entered in field "address" , the response related only to a selected device will be generated. If the device of a set address does not exist, the response of the following format is sent:



Individual fields will be separated by separators defined by the user e.g. „;"

If, in the query sent by an external system, in field "address" *}*, value 0 is entered, information on addresses of all devices in the system will be returned.

To preview the status of connection of external systems using the application, press the mouse's right button on the status bar of network connection.

Fig. 43. The context menu for opening the preview window of the status of connection with external systems

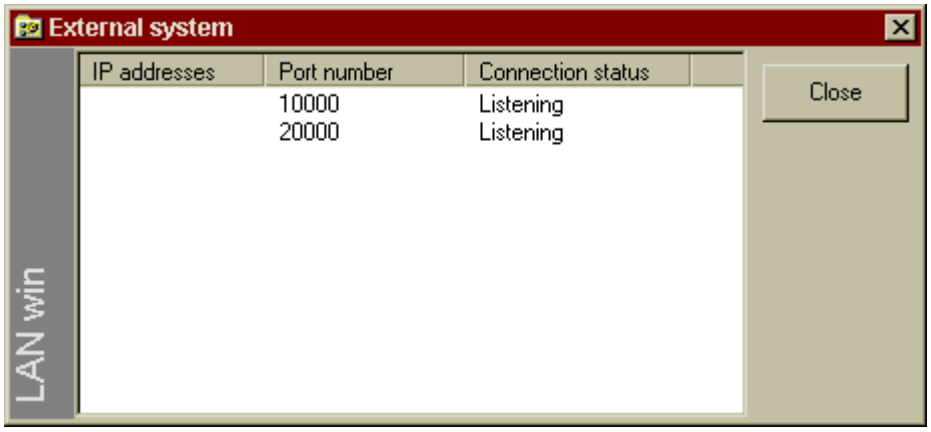


Fig. 44. Window in which the status of connection with external systems can be checked

3.10 TRAP SNMP

The Lanwin application v.2.70 has been enriched by a module generating TRAP SNMP version 1 commands to external systems supporting this protocol. As the default setting, the alarm option is inactive. You can access the interface parameters from the level of global program options -> "TRAP SNMP" tab.

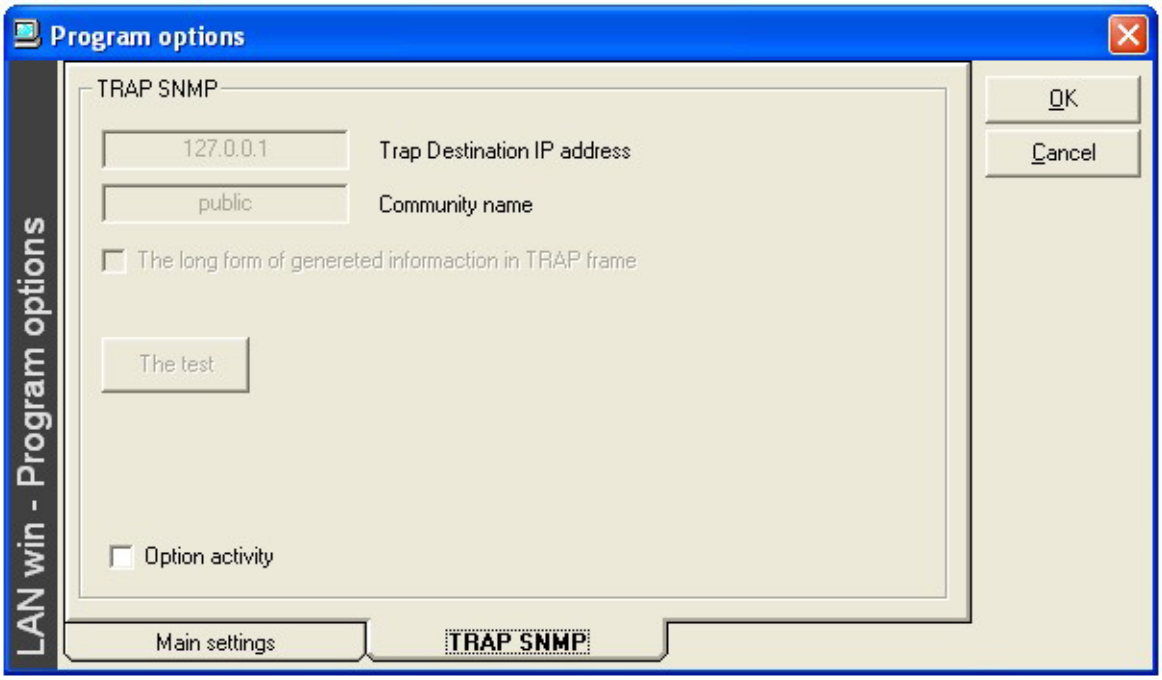


Fig.45. View of the set-up window with TRAP-SNMP interface parameters

You activate the service using the "Option activity".
You should enter the IP address of the SNMP administrator located in the network in the field "TRAP recipient IP address" SNMP.
"CommunityName" is the community name by which SNMP packets will be filtered in the SNMP administrator application. As the default setting, the name is set to "public".
If the "Descriptive form of the information contained in the TRAP contents" option is active, a long form of the description of alarm events from a given device is attached.
You use the "Test" button to test the program set-up options. If you press the button, a test TRAP SNMP packet will be sent to an external system.

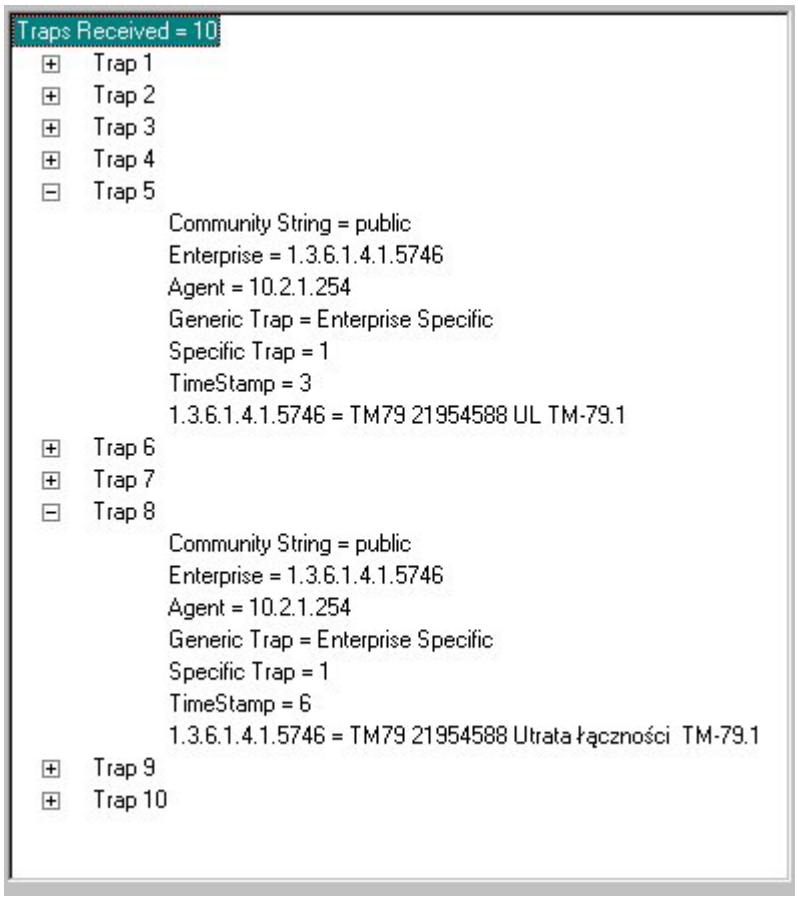


Fig.46. Format of the TRAP commands generated by the Lanwin application

The following information is contained in the TRAP command descriptive field:
- type of device, e.g. TM-79;
- unique device address assigned during production;
- short or long information on the device event type (Table 3);
- name of device, e.g. TM-79.1;

The available information in the long and short forms is presented in Table 3.

Table 3. Interpretation of the short and long form of information contained in the TRAP command contents

Short information	Long information	Description
UL	Loss of communication	Loss of communication with a device
BA	No alarms	A device is active and no alarm criteria exist in the device or they have been confirmed by the operator
NL	Communication established	Connection with a device has been restored
TE	Tests	Device tests are in progress (internal PRBS generator is on or at least one test loop is active)

UAL	Urgent alarm	Criteria which qualify for an immediate response of the operator occur in the device.
NUAL	Non-urgent alarm	A device has detected criteria proving e.g. deteriorated transmission quality but not requiring an immediate response of the operator

3.11 Packet statistics

The Lanwin application contains a library of the statistics of packets sent and received with a detailed specification of types of the firm LNMP management protocol commands.
The statistics are available from the level of the menu -> additional options -> statistics.

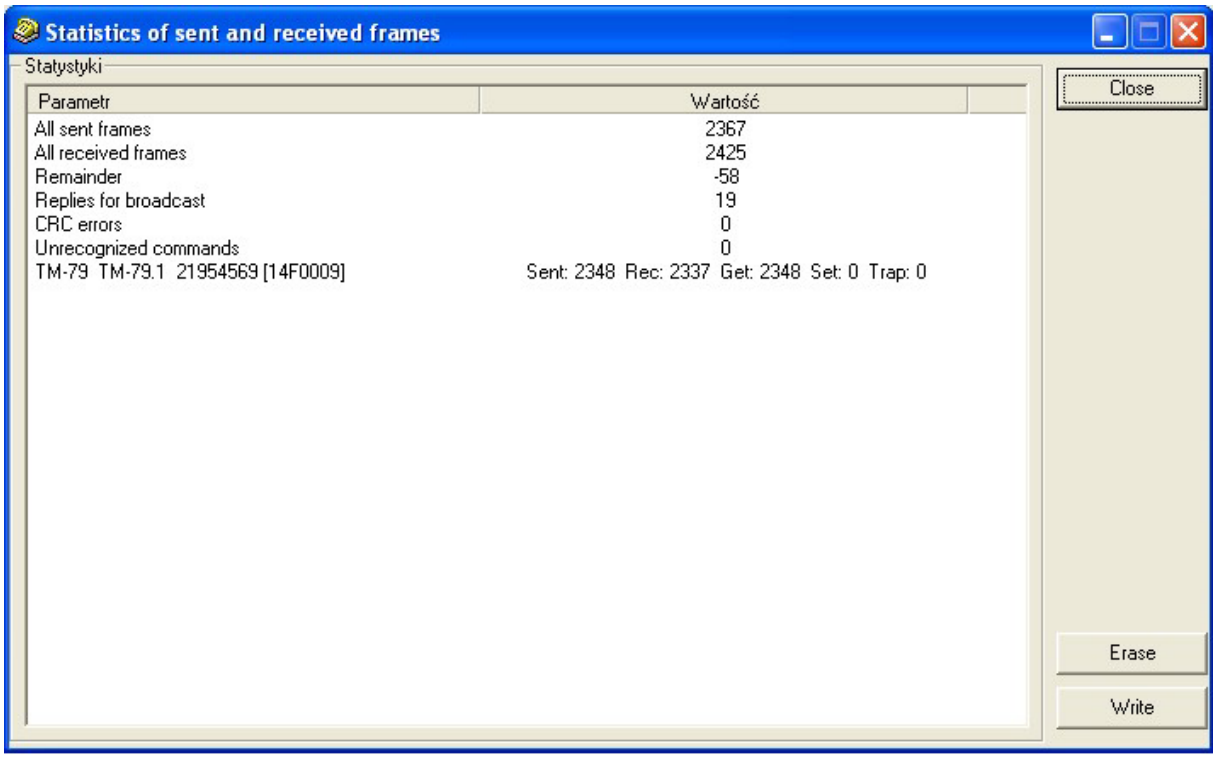


Fig.47. View of the window containing the detailed statistics of packets sent and received

The following information is collected in the statistics:
- the number of all LNMP frames, which were sent by the application;
- the number of all frames received;
- the difference between the number of frames sent and received;
- the number of broadcast-response frames – used to detect the active network devices;
- the number of frames with damaged CRC16;
- the number of the firm management protocol commands unrecognised by the application ;
- the number of frames sent, received, -Get (data retrieval), -Set (device parameter setting), -Trap (alarms sent by the device) in each node of the network.

The data is collected in the program from the moment the application is activated. If you switch the program on and off, the counters are set to zero.

3.12 Ping

The Lanwin application contains a module to test the connection to a selected node on the network - an equivalent of the system "ping" command. The option is available by clicking the right mouse button on the selected network element and by selecting the "Properties" option and the "ping" tab.

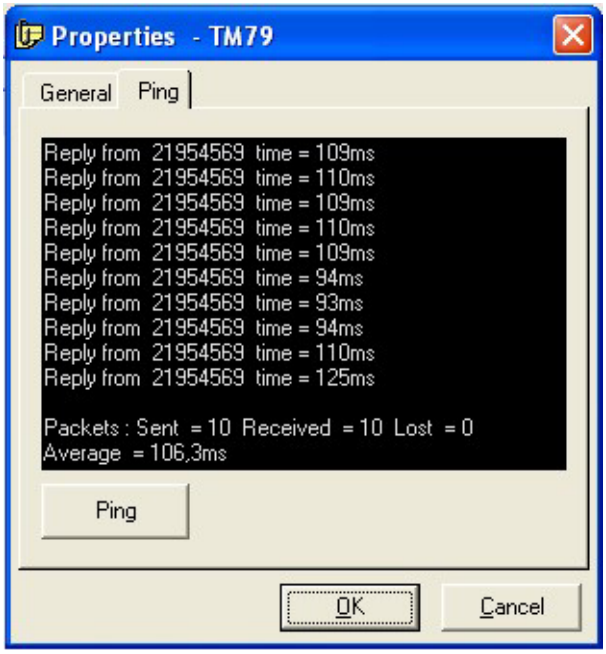


Fig.48. View of the communication testing module window

You use the "Ping" button to start the communication testing procedure and to test response time from a selected device. 10 commands are sent to a device. When the procedure is finished, a report regarding response time, quantities of packets received and average device response time is generated.

3.13 Inventory data report

The managing application is equipped with a module to generate a report containing the information regarding the device inventory data. The report contains the following information:

- type of device;
- device physical address;
- name of device;
- manufacturing number;
- node number (device location on the managed device network in relation to the managing station);
- channel activity (refers to devices, in which channels can be disabled);
- port ID – the number assigned to device port (ports);
- client – name of the client using a given device port;

- address – physical device location;
- person 1 data – forename, surname, telephone number of person 1;
- person 2 data – forename, surname, telephone number of person 2;
- person performing access – phone number of the person supervising a given device;
- inventory number – the number assigned by device operator;
- names of diagram files including photographs matched to devices;
- area – the name of the area, to which the device has been assigned;
- serial number – the number assigned by the operator;
- previous node – the physical address of a device, which is the previous node of the managed device network in relation to the managing station;

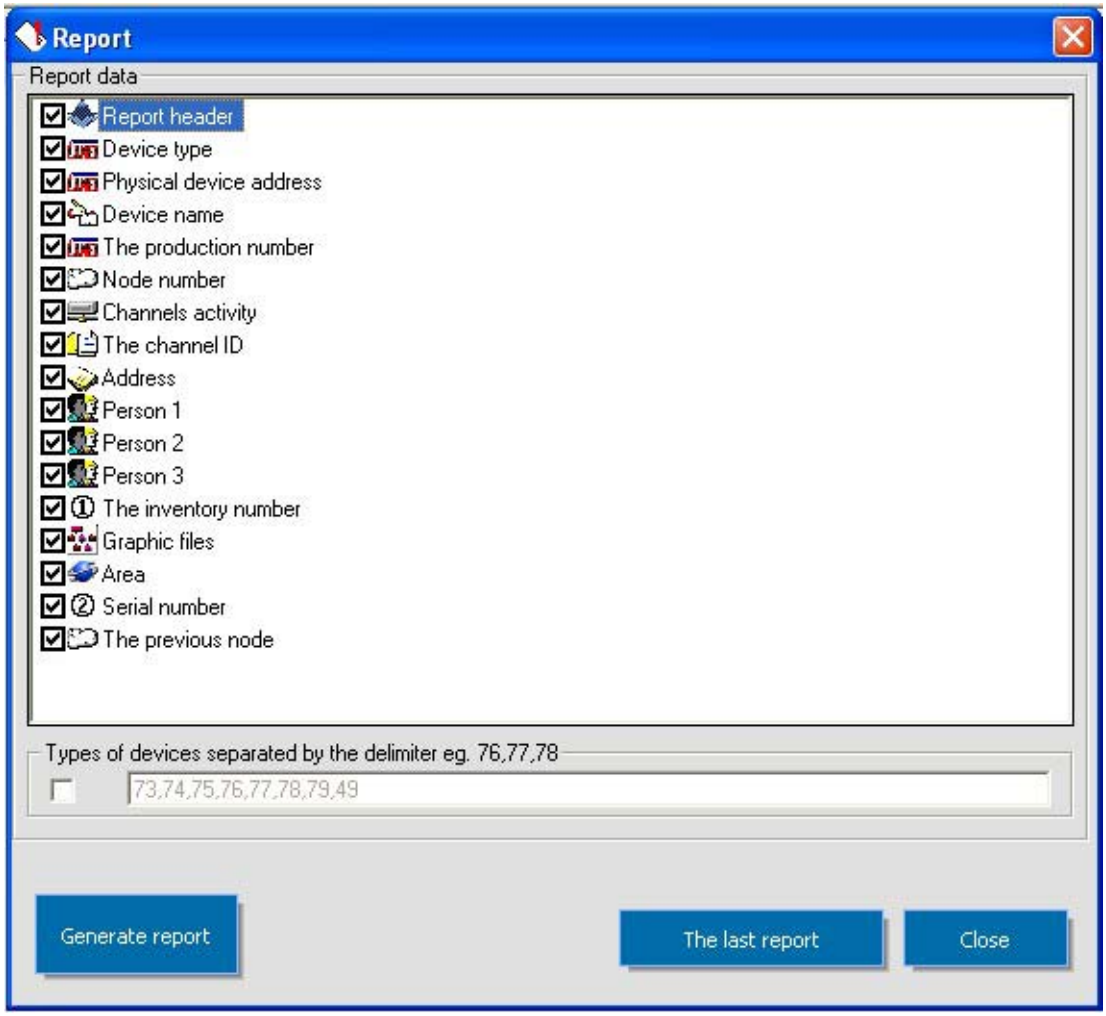


Fig.49. View of the windows used to generate the inventory data report

The user can select information to be included in the report. Additionally, the user can filtrate the report for a given device type. You use the "Device types" field for this purpose.
You use the "Generate report" button to start the report generation procedure. You can view the last generated report by pressing the "Last report" button.
The input format of the inventory data report is a standard text file. An example of the report is shown in Figure 47.

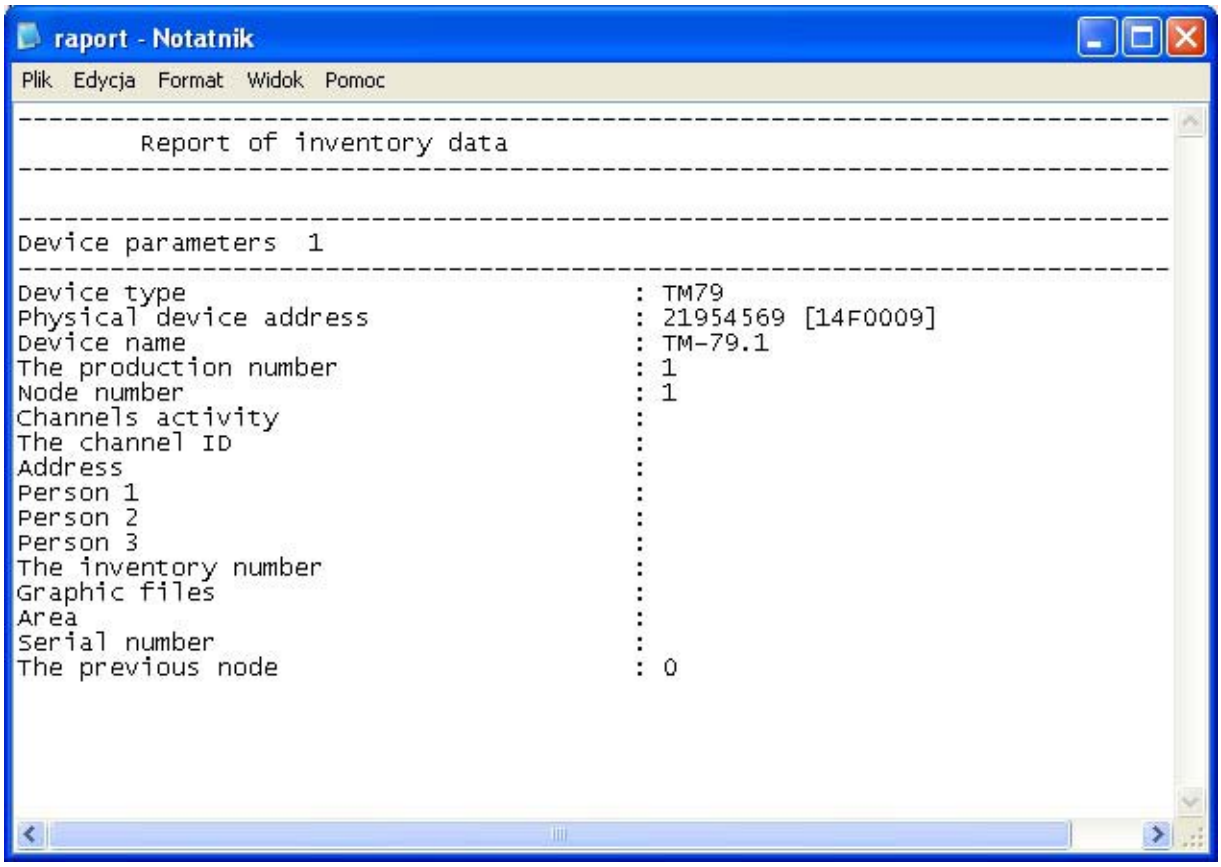


Fig.50. Example of the inventory data report

3.14 Access authorization transfer

Due to a fact that many user accounts can be active on a single PC station and the Lanwin application requires access codes to be entered for each user, a module has been added, which, upon an operator's request, activates access to the application for all system users, who have all access rights. You should enter the "CODES" command in the active device window field to transfer the authorizations to the remaining users. If the operation is successful, it will be confirmed by the following message:

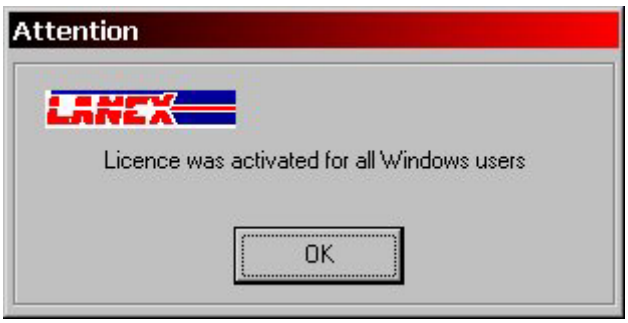


Fig.51. View of the successful access authorization transfer message window

3.15 Terminal

LANwin application - NET working in a network mode can maintain up to 6 remote terminal. The number of maintained terminal is defined by the system's administrator. This is accessible from the program's main configuration, in the "Program" tab under button Terminal.

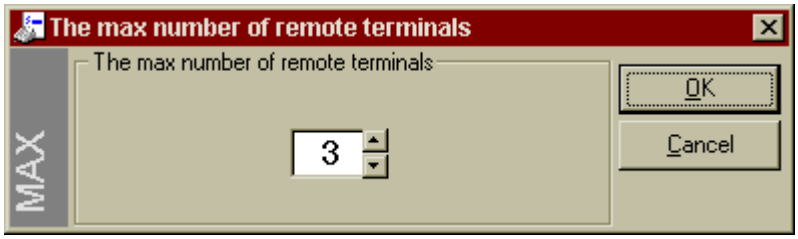


Fig. 52. Window in which the system's administrator can define the number of maintained remote consoles

In order to launch LANwin application in the console mode, it has to be called with parameter **/k**. This can be done by using the command line (⇒ Start ⇒ Launch ⇒ "...\lanwin-klient.exe /k") or by creating a shortcut on the system desktop with the use of the system wizard. In order to correctly connect with the base station, we have to define IP address of LANwin application to which we want to connect and the port number. The system's administrator allocates port numbers to remote consoles. They are addresses starting with 1010 i.e. the first console can connect on port 1010, the second one on port 1011 etc.
To check the status of connection of individual remote consoles, click the mouse's right button on the bar of system port status.

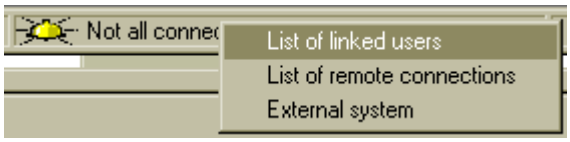


Fig. 53. The context menu for opening the preview window of connection status of external consoles

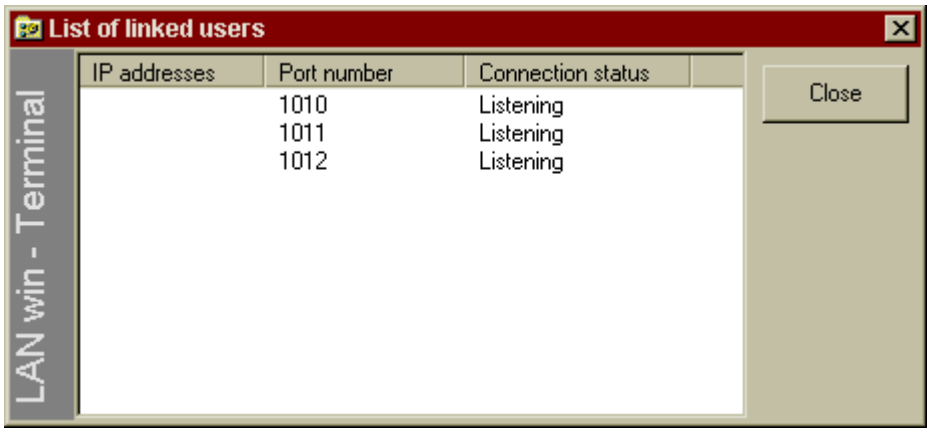


Fig. 54. Window in which the connection status of remote consoles can be checked

In order to correctly connect to the main managing station, the administrator has to create the user's profile by granting the user the access rights and the rights to preview all or selected regions. (⇒ "Protecting the program by a password and adding new users").

3.16 SQL interface of export of transmission quality parameters

By means of the application you can gather the data on transmission quality of individual interfaces of devices. Such information is gathered in a local database. Such data can be made accessible to remote systems. For this purpose, socket TCP in LANwin application is used. By default, this option is **inaccessible**. On the customer's request, the application activating this option is provided. After installing a specially provided package in a directory where LANwin application is installed, the following two programs are added:
SQL_Activity.exe – to activate the option;
SQLTestESSES.exe – to test added functionality locally or remotely.

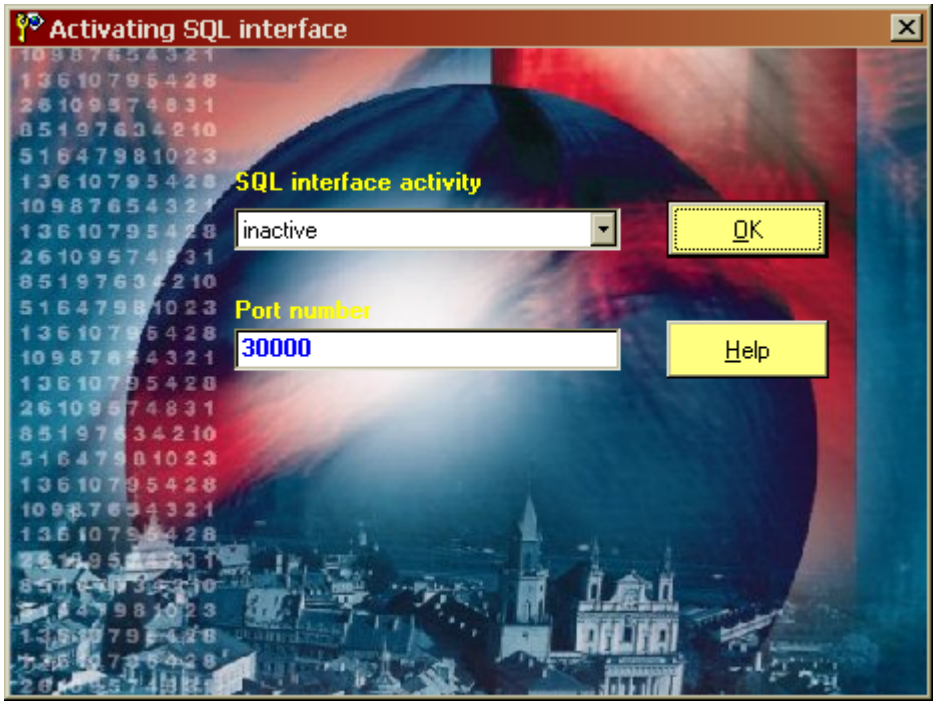
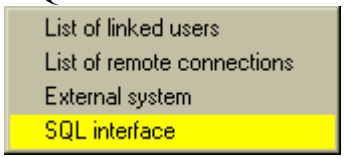


Fig. 55. Window of the program activating SQL interface

With the use of program "SQL_Activity.exe" you can switch on or off the interface of export of quality data to an external system and select the number of TCP port performing the connection. By default, port number 30000 is selected. After parameters are changed, operation of LANwin application should be shut down and started again.
After activating the option in LANwin application (only net version), additional tabs and menu commands appear.
On the status bar in the context menu (clicking the mouse's right button), you can see command "SQL interface" .



If this option is chosen, the window with information on the list of users connected to the system is displayed.

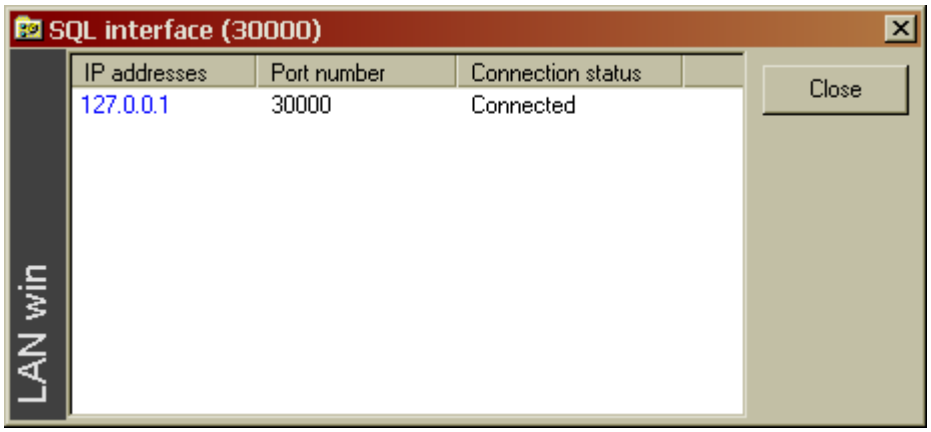


Fig. 56. Window with information on connected users

Additionally, if the information on any detected device in devices' network is displayed (option "Properties" in the context menu), "SQL interface" tab with the following options appears:

- displaying the list of connected users;
- browsing the local database where quality data are collected (ES/SES);
- testing connection of TCP/IP with the system.

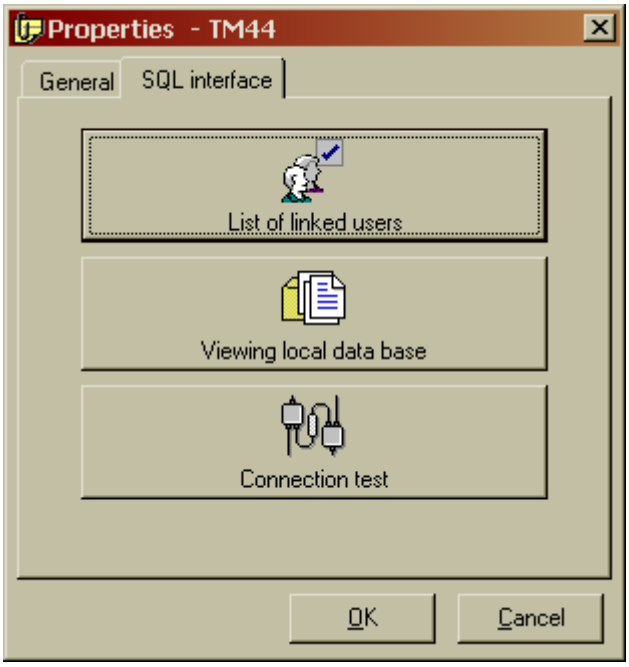


Fig. 57. Window in which the program's options are gathered – " SQL interface"

To check the data collected in the local database, press button "Browsing the local database". The data relate only to the device indicated by the user.

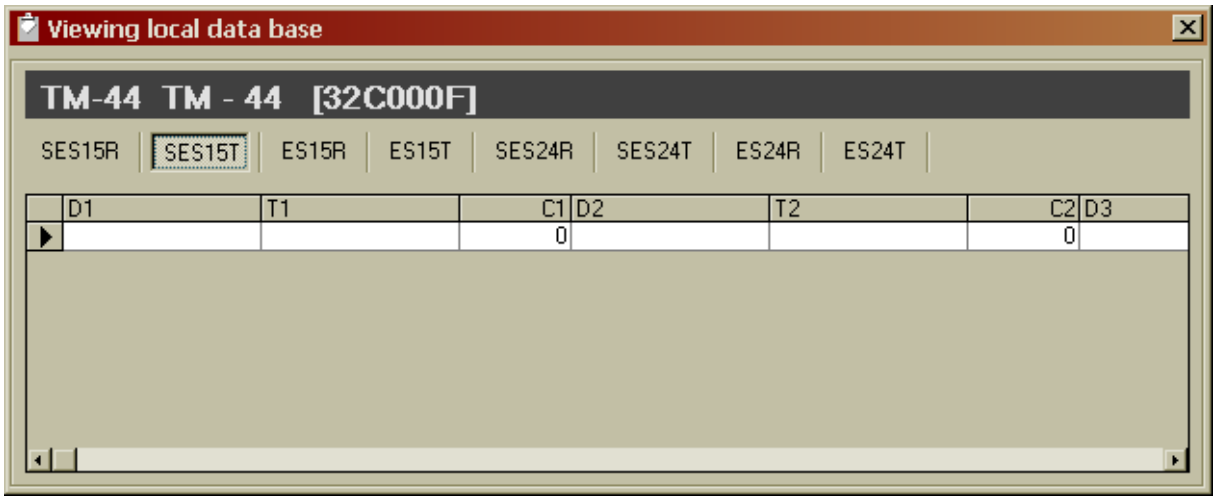


Fig. 58. Window with information on transmission quality parameters

Symbol "Dx" means the date of recorded event, "Tx" means time and "Cx" means the value of error counter. The record marked with digit 1 is the most up-to-date, and the next ones refer to future 15-minute or 24-hour periods.
To browse various database tables, use buttons SES15R, SES15T, ES15R, ES15T, SES24R, SES24T, ES24R, ES24T. The table names are analogous to the names used in devices TM60 and TM44 (-> see manual IO60.doc -> ES/SES tab)

To run the application provided in an additional package of application for testing the access to the database locally or remotely, press button "Connection test" .

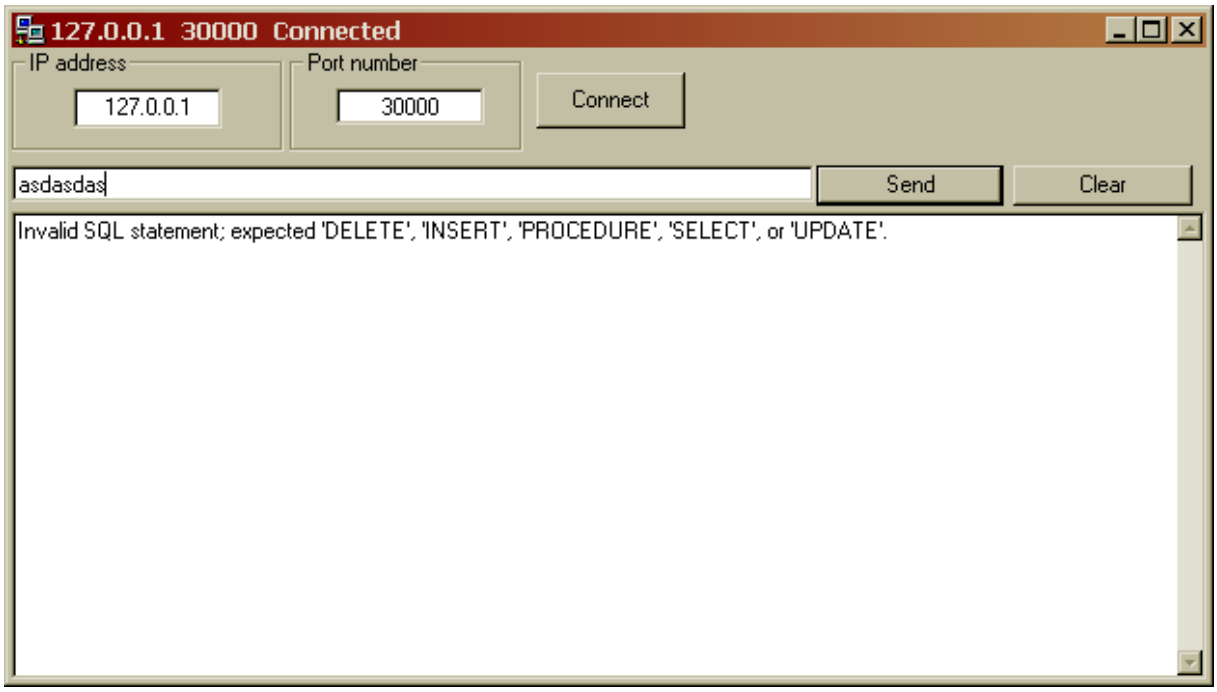


Fig. 59. Window of program SQLTestESSES.exe

With the use of program SQLTestESSES.exe, connection with LANwin application can be tested on a pre-defined port and data from the database embedded into the system can be downloaded. The record's start and end is separated by a separator – semicolon (;), and individual table fields are separated by a separator; carriage return character and new line character (characters 0xA and 0xD

ASCII). In the case of an error (incorrect formulation of SQL query), a response with error description is generated. In the information about an error, separator characters are not used.

3.17 Description of graphic symbols

The working status of a connected device is signalled by an icon's colour:

 - device's normal working status;

 - red circle means urgent alert in the device;

 - yellow circle means non-urgent alert in the device;

 - grey cross means loss of communication with a selected device;

 - green circle means actvity of loop or test in the device;

 - detection of a device not maintained by the software current version.

In such a situation, check whether the access code for a given device type has been entered correctly and whether the application's current version maintaines a given device's type.

Fig.60. Window with information on devices maintained by the software current version

3.18 Confirming alerts via electronic mail

In devices TM-44, TM-60 and TM-61, alerts can be confirmed remotely (equivalence of pressing button PKAL located on the device's front panel). To do this, it is necessary:
- to have a configured mail box (email) and installed Microsoft mail client (e.g. Outlook Express);
- to have permanent access to the Internet;
- to include, in the e-mail subject, the physical address or name of the device in which the alert is to be confirmed;
- include, in the e-mail, word "ack" (Acknowledge);

After reading the contents of a selected e-mail box, the alert in an adressed device will be automatically confirmed.

3.19 Remote configuration of TM-47 multiplexer

LANwin application can remotely configure serial ports of TM-47 device. Access to the option can be reached from the context menu by clicking the icon showing TM-47 multiplexer.

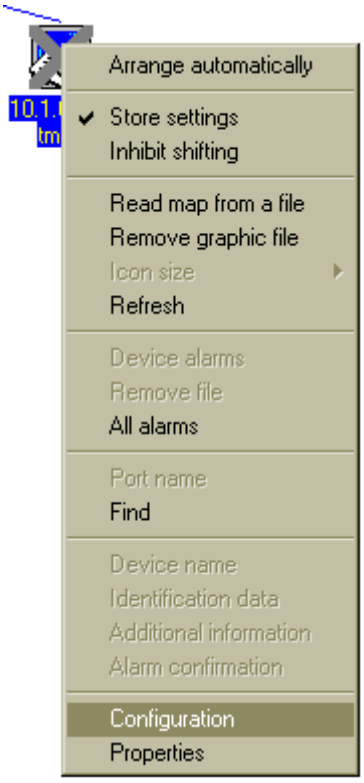


Fig. 61. The context menu from which the remote configuration window can be called

Each port RS232 of TM-47 multiplexer can work in one of three working modes: **LANEX**, **TERMINAL** and **TRANSMITTER.** To select a mode, select a proper item from check boxes located in column "Device's type" on Figure 59.

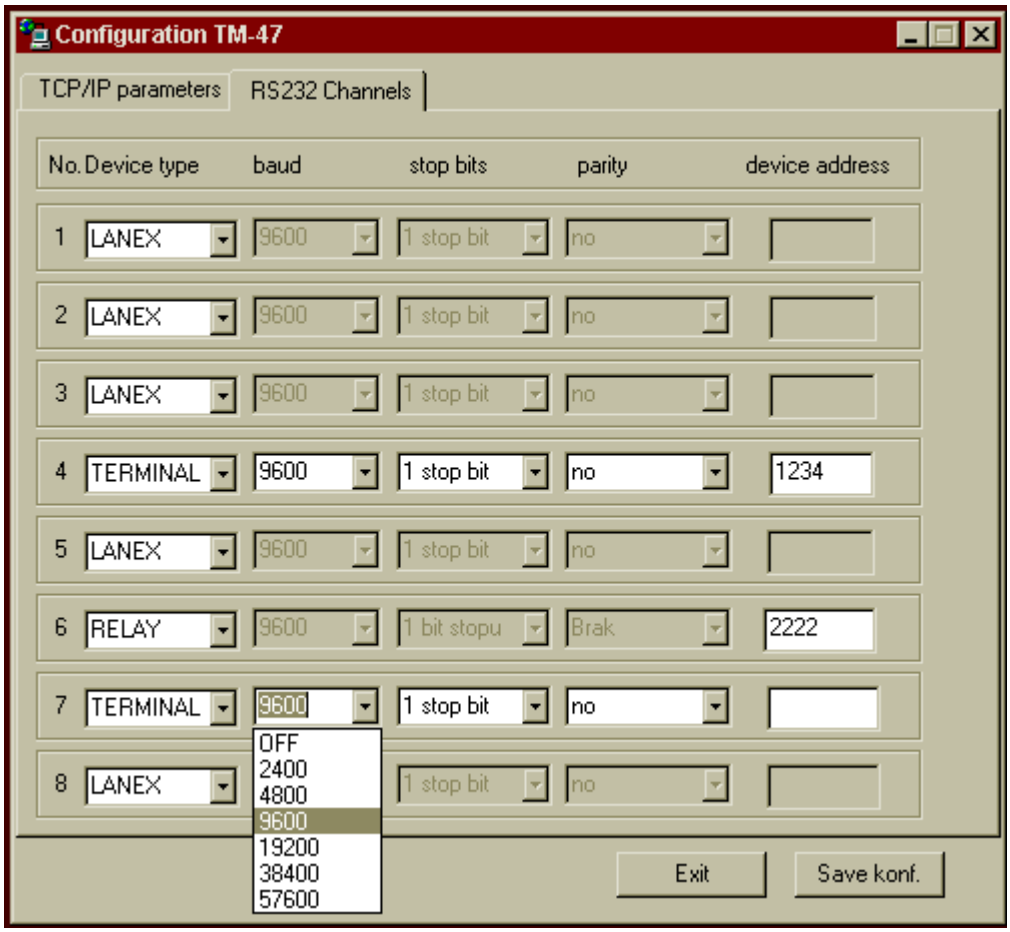


Fig. 62. The window of configuration of parameters of channels RS232 of device TM47.1-1

"**LANEX**" working mode is a basic and default working mode of channel RS232. It is used for managing LANEX devices. In this mode, the values of ports RS232 settings are default so that the cooperation with LANEX devices was correct.

Two other working modes; "**TERMINAL"** and "**RELAY",** extend the scope of functions of LANwin application. Due to the "**TERMINAL**" mode, other vendors' devices with the function of configuration from terminal RS232 can be managed. In the "**RELAY"** mode**,** alert connector status of devices equipped with an alert transmitter can be transmitted. An alert (short-cut of transmitter's connectors) is registered and signalled by "LANWIN" application.

In both modes, field "Device's address" (Fig. 59) should be configured. Such an address is treated as a hardware address (MAC) granted to all LANEX devices due to which devices managed in the network can be unequivocally identified. Additionally, such addresses make it possible to automatically recognise the network's topology by LANwin application. The system will function correctly only if **each managed device has a unique hardware address.** In the case of devices, this requirement is fulfilled during the production phase, however, in the case of channels RS232 in TM47 device simulating the presence of managed devices "TERMINAL" and "TRANSMITTER", the user has to take care of numbers which are unique in the whole management network by himself/herself (last column in Fig. 59). The address consists of 4 bytes, but for the security purposes, only a given pool of possible addresses has been allocated, ranging from XXXX0000 to XXXXFFFF, where XXXX refers to the "TERMINAL" mode equalling 0001, and in the case of

"TRANSMITTER" mode equalling 0002. In the field "Device's address" user can enter four characters from the left side. The rest of characters are granted by the configuration program depending on the working mode.

Moreover, in the "TERMINAL" mode, it is possible to configure the parameters of ports RS232 such as flowability ranging from 2,400 to 57,600 bps (column "Flowability*}*, Fig. 59), number of stop bits (column "Stop bits" , Fig. 59) and occurrence and type of parity bit (column "Parity" , Fig.59).

The configuration application, upon detecting a device, automatically reads its configuration so that the program could show the configuration of a given device. After configuration is changed, you can save it by pressing button "Save and setting" demonstrated on Fig.60.

Fig. 63. Buttons to save device's configurations and exit the program

After operation "Save configuration" is performed, the whole configuration is saved to the device, and the fact is confirmed by the window as demonstrated on Fig. 61.

Fig. 64. Window confirming that the operation of saving the configuration to the device has been completed

{pop-up message}: Configuration has been saved.

For detailed information on TM-47 multiplexer and configuring software, refer to manuals "Multiplexer 8xRS232 / Ethernet 10BaseT" and "Configuring the program for multiplexer 8xRS232 /Ethernet 10BaseT".

3.20 Troubleshooting

If the computer on which we want to run LANwin application does not have an Outlook Express mail client installed, problems with port opening may occurr. In such a case, (if, after the application is run, there are problems with its configuration), launch the program with parameter **/MapiOff**. It can be done using the command line or you can create a shortcut on the system desktop with initial parameter.

To switch off the welcome screen, run the application with parameter **/IntroOff**.

To run the program in the demonstration mode, use shortcut **/demo**.

LANwin application has a defined keyboard shortcut. After pressing shortcut Alt + Z from any point of the system, the application's window will be activated.

Sending information on alerts to external systems, sending SMSes and saving to text files in directory "Alarm" takes place only after information on all devices in the system is gathered. The progress bar located in the program's main window informs on the duration of data downloading. The duration of data gathering depends on the number of devices detected in the system.

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