Set of control and testing equipment “protocol-tester TOR-2”

Operation manual

(User guide for protocol-tester TOR-2)

Contents

The present operation manual is intended for correct maintenance of the Set of control and testing equipment «Protocol-tester TOR-2» (hereinafter «Protocol-tester TOR-2»), supporting its readiness for operation, and includes information about protocol-tester TOR-2 using, maintenance, storage and transportation.

All the abbreviations in this text are given in appendix A.

Only operators, which are familiar with this document and have experience in using PC, are allowed to work with the protocol-tester TOR-2.

Protocol-tester TOR-2 has been designed in accordance with "Technical terms and conditions on providing operative-search measures functions at electronic exchanges (SOSM)" (Appendix 4 to order #70 of the State Committee of the RF on Communication and Informatization dated 20.04.99) and "Technical requirements on information channels between SOSM and CP" (Appendix 5 to order #70 of the State Committee of the RF on Communication and Informatization dated 20.04.99).

1. Protocol-tester TOR-2 description and operation

1.1. Purpose of the protocol-tester TOR-2

- «Protocol-tester TOR-2» 4à2.105.097 TÓ 6349-196-04604025-99 is intended for checking a SOSM protocol at electronic telephone exchanges (hereinafter exchanges), checking a quality of operation of the data communications channels and hearing the speech channels in a PCM highway.

- Protocol-tester TOR-2 can be used in the stage of SOSM equipment development within an exchange, when realizing factory and linear testing exchanges.

1.2. Technical characteristics

1.2.1. Measured characteristics

Measured characteristic are given in Table 1.

Table 1

Name of feature	Nominal value	Limiting deflections
Bit rate of digital stream, kbit/sec	2048	±0.1
Pulse amplitude of digital stream on load 120 Ohm, V	3	±0.3
Noise level in incoming and outgoing circuits on load 120 Ohm, V	0	±0.3
Pulse duration of digital stream, ns	244	±25

1.2.2. Nonmeasured technical parameters

1.2.2.1. Protocol-tester TOR-2 ensures the following types of connection

- on two dedicated channels X.25

- through 30 and 31 time clots of PCM highway

1.2.2.2. Protocol-tester TOR-2 software allows to realize operation in the following two modes:

- mode of testing the data channels at the layer of protocol X.25

- mode of testing the data channels at the layer of protocol SOSM

1.2.2.3. Protocol-tester TOR-2 allows to detect errors on physical, channel and network layers of protocol X.25 on each of the two data channels.

1.3. TOR-2 composition

1.3.1. Completeness of protocol-tester TOR-2 supply corresponds to Table 2.

Table 2

Name	Indication	Amount	**Note**
1. Package of a control and testing equipment "Protocol-tester TOR-2" in structure:	4a2.105.097		
• portable personal computer;	PENTIUM	1	
• matching device for coordination with	4a3.080.852	1	

the PCM line; • board of synchronous interface V.24; • cable of connection PCM-30; • cable of connection of synchronous interface and modems.	4a3.080.853 4a4.855.171 4a4.855.172	1 1 1	board
2. Package of software products TOR-2: • software product TOR2/1 • software product TOR2/2 • software product TOR2/3 • software product TOR2/4	4a3.060.033 4a3.060.034 4a3.060.035 4a3.060.036	1 1 1 1	magnetic disk magnetic disk magnetic disk magnetic disk

1.4. Arrangement and operation

1.4.1. Arrangement and interaction of constituent parts

The protocol-tester TOR-2 is mounted in a portable computer case by the size (410x280x220) mm.

The protocol-tester TOR-2 mass does not exceed 16 kg.

On the front side of the protocol-tester TOR-2, a liquid-crystal screen, keyboard, touchpad, button of power switching - "Power" are located. On the left butt-end side, there are a connector DB-37 for connecting cable with two interfaces X.25 and connector DB-25 to connect PCM highway.

1.4.2. General principle of operation

The protocol-tester TOR-2 is connected to exchanges through two analog channels X.25 or through the PCM highway.

When connecting the protocol-tester TOR-2 through analog channels, two synchronous modems are used, where a cable with furcate contacts DB-25 is connected. Connecting a protocol-tester TOR-2 to an exchange through two analog channels X.25 is shown at Fig. 1

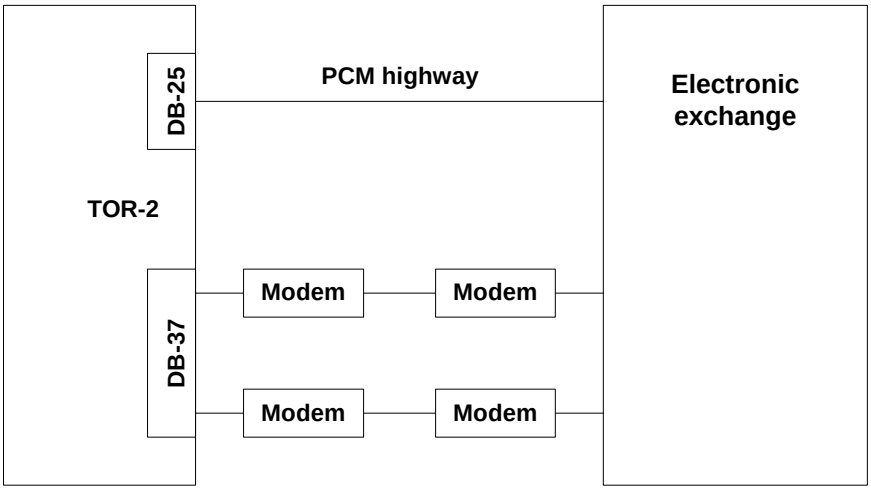

Fig. 1.1. Connecting a protocol-tester TOR-2 through two channels X.25

When connecting a protocol-tester TOR-2 through PCM highway, signal information will be send on furcate connectors RJ-7, which are connected to the jack of dedicated two-wire modem line. Furcate connectors DB-25 are connected to the corresponding connectors of synchronous modems. Connecting a protocol-tester TOR-2 to an exchange through the PCM highway is shown at Fig. 2.

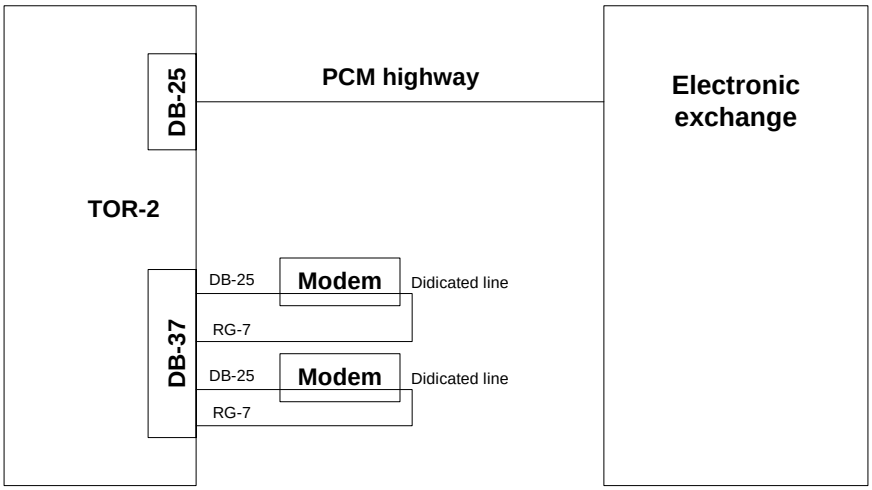

Fig. 1.2. Connecting a protocol-tester TOR-2 to an exchange through the PCM highway

2. User interface

2.1. Monitors of channels

The protocol-tester TOR-2 includes two monitors: SOSM monitor and X.25 monitor , displaying information, which interchange an exchange and the tester. Windows of SOSM monitor and X.25 monitor can be minimized, maximized, hidden from the screen and displayed on the screen. Switching between windows is realized by pushing the left button of the touchpad or Tab key on the keyboard.

2.1.1. Monitor SOSM

Monitor SOSM is intended to display commands, which were sent to the exchange, and received from the exchange answers. The window of monitor SOSM includes a panel of management and is functionally divided into three parts:

- The window of displaying the packages - this window displays information on commands, which were send in the channel, and accepted from the channel answers.
- Window of the package contents displays in the textual view the contents of a command or an answer, chosen in "window of displaying the packages". When choosing another command or answer information is automatically updated.
- Window of the package dump- here information on contents of the package is displayed in the hexadecimal form. When choosing another command or answer information is automatically updated.

The window of displaying the packages is divided into following parts:

- Number - serial number of a package .
- Channel - a symbolic name of the channel, on which commands are sent and messages are received.
- Direction - a direction, in which data will be sent.
- Package name - a symbolic name of a command or a message.
- Time - a time of sending or receiving a package with accuracy up to milliseconds.

To provide convenient reading information, packages in different channels are marked by different tones of gray color.

Panel of commands contains necessary options for displaying information in the monitor and saving into the file. The following options are available in the panel of commands:

- Saving into the file - two saving formats are possible: textual and binary. Binary format can be restored by opening a new database of the monitor.
- Spying - under the pressed button an automatic positioning occurs to the package list end. Under the release button current position on the screen is not changed at the arrival of a new package.
- Delete - cleans a database of monitor SOSM.
- C - pushing the button speaks about displaying information of command channel only .
- D - when pushing the button displayed information is only on the data channel.
- All - when pushing the button command channel and data channel informations are displayed .

Monitor SOSM view is shown on Fig. 2.1:

Fig. 2.1. Monitor SOSM

2.1.2. Monitor X.25

The monitor of channels X.25 is intended to map information of the second and third layers of protocol X.25. The window of the monitor X.25 includes a toolbar and functionally is broken on three parts:

- Window of displaying the packages - here information is displayed on packages of second and third layers of protocol X.25, which were send to the channel and received from it.
- Window of the package contents displays in the textual appearance its contents , chosen in "window of displaying the packages". When choosing another package information is automatically updated.
- Window of the package dump - here information on contents of the package is displayed in the hexadecimal form. When choosing another package information is automatically updated.

Window of displaying the packages is divided into the following parts:

- Number - serial number of a package .
- Channel - a symbolic name of the channel, on which commands are sent and messages are received.

- Direction - a direction, in which data will be sent.
- Package name - a symbolic name of a package. Packages, which require reinitializing of connection are shown in blue/
- Time - a time of sending or receiving a package with accuracy up to milliseconds.

To provide convenient reading information, packages in different channels are marked by different tones of gray color.

Panel of commands contains necessary options for displaying information in the monitor and saving into the file. The following options are available in the panel of commands:

- Saving into the file - two saving formats are possible: textual and binary. Binary format can be restored by opening a new database of the monitor.
- On - switching on the package receiving mode.
- Off - switching off the package receiving mode.
- Spying - under the pressed button an automatic positioning occurs to the package list end. Under the release button current position on the screen is not changed at the arrival of a new package.
- Delete - cleans a database of monitor SOSM.
- C - pushing the button speaks about displaying information of command channel only .
- D - when pushing the button displayed information is only on the data channel.
- All - when pushing the button command channel and data channel informations are displayed .

Monitor X.25 view is shown on Fig. 2.2:

Fig. 2.2. Monitor X.25

2.2 Database of monitor

The database of monitor is intended for viewing the results of work, preserved in preceding sessions and presents window, divided into three parts:

- Window of displaying the packages - here information is displayed on packages of second and third layers of protocol X.25 or protocol SOSM, which were send to the channel and received from it.
- Window of the package contents displays in the textual appearance its contents , chosen in "window of displaying the packages". When choosing another package information is automatically updated.
- Window of the package dump - here information on contents of the package is displayed in the hexadecimal form. When choosing another package information is automatically updated.

Only data, preserved in the binary type can be loaded. In the window of database of monitor, the protocol X.25 operation or the protocol SOSM operation can be displayed.

The panel of commands contains necessary options for displaying information in the monitor and saving into the file. The following options are available in the panel of commands:

- Saving into the file - two saving formats are possible: textual and binary. Binary format can be restored by opening a new database of the monitor.
- C - pushing the button speaks about displaying information of the command channel only .
- D - when pushing the button displayed information is only on the data channel.
- All - when pushing the button command channel and data channel informations are displayed .

The database of monitor view is shown on Fig. 2.3:

Fig. 2.3. The database of monitor

2.3. Window of a scenario

The window of a scenario is intended for stating subscribers under monitoring in the automatic mode. The window of a scenario includes the table, in which subscribers stated under monitoring are displayed, and panel of management, consisting of:

- Execute scenario
- Stop execution of scenario
- Go to beginning of scenario
- Install time-out on receipts of reporting N7

When striking the button «Install time-out» dialogue window «Time-out for scenario» is called. This window is shown in Fig. 2.4.

Fig. 2.4. The dialogue window «Time-out for scenario»

Data are loaded in the window of a scenario from the textual file. Each line of the file contains consecutively the following data: object number, type of the object, sign of the phone number, the phone number, incoming trunk group number, category of monitoring, number of MCL group and mark of priority. Before starting a scenario it can be edited. View of the window «Scenario» is shown in Fig. 2.5:

Fig. 2.5. The dialogue window «Scenario»

2.4. System of menu

The menu is functionally divided into four groups:

- ***Operation***
- ***Send***
- ***View***
- ***Help***

View of the menu is given in Fig 2.6:

Fig. 2.6. View of the menu

2.4.1. Menu Operation

Item of menu Operation calls an embedded menu, consisting from the following subitems:

- New session - creates a new session of operation, starts a monitor SOSM and monitor X.25, unlocks a panel of commands.
- Terminate a session - closes monitors SOSM and X.25 and locks a possibility of sending the commands on the exchange.
- Open a database of monitor - opens results of preserved work in the separate window.
- Settings... - given subitem calls a dialogue window «Settings of synchronous interface», in which parameters of channels X.25 and highway PCM can be assigned. New parameters take effect after the opening new session of operation. To close the program is not necessary.
- Switch on hearing - calls a dialogue window «Hearing a speech channel». Subitem is available at the opened session of operation.
- Switch off hearing - disconnects hearing a speech channel. Subitem is available at the opened session of operation.
- Connect channel - installs connection via two channels X.25
- Disconnect channel - destroys connection via two channels X.25
- Exit - exit from the program

View of the menu item «Operation» is given in Fig 2.7:

Fig. 2.7. Menu «Operation»

2.4.2. Menu *Send*

Menu «Send » is intended to send a command to the electronic exchange.

Choosing the command calls a respective dialogue. View of the menu item «Send» is given in Fig 2.8:

Fig. 2.8. Menu «Send»

2.4.3. Menu View

The menu item «View » allows to display or hide a panel of commands, main panel, panel of status, windows of monitor SOSM and monitor X.25. A mark installed opposite panel or window names means that they are displayed on the screen. View of the menu item «View » is given in Fig 2.9:

Fig. 2.9. Menu «View »

2.4.4. Menu Help

Menu «Help» is intended to get a reference on the program and information on developers. View of the menu «Help» is given in Fig 2.10:

Fig. 2.10. Menu «Help»

2.5. Toolbars

The toolbars (panels of instruments) are intended to make easy an execution of necessary operations and made as freely moved on the screen windows with the kit of necessary instruments.

2.5.1. Main panel

This panel is intended to make the monitors of layer X.25 and layer SOSM, as well as getting a reference on the program. The main panel is executed as window, freely moved on the screen. The panel includes the following buttons:

- Open a new session of operation - creating a monitor SOSM and monitor X.25 with assigned settings of a channel.
- Close session - closes windows of monitor SOSM and monitor X.25
- Open database of monitor - opens earlier saved results of work
- Setup connection - initializing a protocol X.25
- Breakup connection - breaking of communication of protocol X.25
- Switch on hearing - striking the button calls a dialogue window «Hearing a speech channel».
- Switch off hearing - striking the button disconnects a telephone handset from the speech channel.

- Setting a transport layer - striking the button calls a dialogue window «Setting synchronous interface». New settings take effect after closing and opening of new session.
- About program - striking the button calls the system of help.

View of the main panel is given in Fig 2.11:

Fig. 2.11. View of the main panel

2.5.2. Panel of commands

The panel of commands is intended for the simple choice of command, which is necessary to send to the exchange. The panel of commands is executed as freely moved on the screen window with buttons of numbers, meaning command numbers. Striking a button calls corresponding dialogue window, which prompts to edit parameters of the command and send it to the exchange. Button with the badge of question calls a dialogue window «Free command». View of the panel of commands is given in Fig 2.12:

Fig. 2.12. Panel of commands

2.6 Dialogue windows of commands

2.6.1. Dialogue window «Start SOSM»

The dialogue window «Start SOSM» is intended to edit fields of the command #1. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – number from 0 to 255

When striking button OK the command is sent to the exchange

When striking button Cancel no command is sent to the exchange

View of the command «Start SOSM» is shown at Fig. 2.13.

Fig. 2.13. View of the dialogue window «Start SOSM»

2.6.2. Dialogue window «Stop SOSM»

The dialogue window «Stop SOSM» is intended to edit fields of the command #2. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – number from 0 to 255

When striking button OK the command is sent to the exchange

When striking button Cancel no command is sent to the exchange

View of the command «Stop SOSM» is shown at Fig. 2.14.

Fig. 2.14. View of the dialogue window «Stop SOSM»

2.6.3. Dialogue window «Set password»

The dialogue window «Set password» is intended to edit fields of the command #3. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – number from 0 to 255
- New password – a word of 6 characters length

When striking button OK the command is sent to the exchange

When striking button Cancel no command is sent to the exchange

View of the command «Set password» is shown at Fig. 2.15.

Fig. 2.15. View of the dialogue window «Set password»

2.6.4. Dialogue window «Assignment of MCL to group»

The dialogue window «Assignament of MCL to group» is intended to edit fields of the command #4. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – number from 0 to 255
- Number of MCL group – number from 0 to 255
- Type of MCL group – possible variant list is as following:

  01H - a group for combine monitoring

  11H – group for separate monitoring
- MCL A number – number from 0 to 7 – assigns PCM highway number

- CL number in MCL A – number from 0 to 31 – assigns a time slot number in the PCM highway
- MCL B number – number from 0 to 7 – assigns PCM highway number
- CL number in MCL B – number from 0 to 31 – assigns a time slot number in the PCM highway

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Assignament of MCL to group» is shown at Fig. 2.16.

Fig. 2.16. View of the dialogue window «Assignament of MCL to group»

2.6.5. Dialogue window «Setting of object for monitoring»

The dialogue window «Setting of object for monitoring» is intended to edit fields of the command #5. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Conditional number of object – a number from 0 to 255
- Type of the object – list of possible variants is as following:
    - 01H – object of observing – subscriber of given exchange
    - 02H – object of observing – subscriber of telephone network with full phone number
    - 12H – object of observing – subscriber of telephone network with full phone number
    - 03H – object of observing – incoming lines group
    - FFH – insignificant combination
- Sign of phone number – list of possible variants is as following:
    - 01H – phone number of a subscriber of given stations
    - 02H – subscriber number of local telephone network
    - 03H – subscriber number of zonal telephone network
    - 04H – subscriber number of other zonal network
    - 05H – subscriber number of other country
    - 06H – phone numbers of ordered and reference services
    - FFH – insignificant combination
- Telephone number - any decimal number not more than 18 characters

- Length of telephone number - a number from 0 up to 255. When changing a telephone number value of a field «Length of a telephone number» is automatically changed
- Trunk group conditional number - a number from 0 up to 255
- Category of monitoring - list of possible variants is as following.
    - 01H - full combined monitoring
    - 11H - full separated monitoring
    - 02H - statistical monitoring
- MCL group number - a number from 0 up to 255
- Priority mark - list of the possible variants is as following :
    - 01H - priority object of monitoring
    - 11H - ordinary object of monitoring

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Setting of object for monitoring» is shown at Fig. 2.17.

Fig. 2.17. View of the dialogue window «Setting of object for monitoring»

2.6.6. Dialogue window «Removal of the object from monitoring»

The dialogue window «Removing an object from checking » is intended to edit fields of the command #6. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Conditional number of object – a number from 0 to 255
- Type of the object – list of possible variants is as following:
    - 01H – object of observing – subscriber of given exchange
    - 02H – object of observing – subscriber of telephone network with full phone number
    - 12H – object of observing – subscriber of telephone network with full phone number
    - 03H – object of observing – incoming lines group
    - FFH – insignificant combination
- Sign of phone number – list of possible variants is as following:
    - 01H – phone number of a subscriber of given stations

- 02H – subscriber number of local telephone network
- 03H – subscriber number of zonal telephone network
- 04H – subscriber number of other zonal network
- 05H – subscriber number of other country
- 06H – phone numbers of ordered and reference services
- FFH – insignificant combination

- Telephone number - any decimal number of not more than 18 characters
- Length of the telephone number - a number from 0 up to 255. When changing a telephone number value of field «Length of a telephone number» is automatically changed
- Trunk group conditional number - number from 0 up to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Removing an object from checking» is shown at Fig. 2.18.

Fig. 2.18. View of the dialogue window «Removing an object from checking »

2.6.7. Dialogue window «Connection to speech path»

The dialogue window «Connection to speech path» is intended to edit and to send the command #7 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Call number – a number from 0 to 65535
- Type of the object – list of possible variants is as following:
  - 01H – object of observing – subscriber of given exchange
  - 02H – object of observing – subscriber of telephone network with full phone number
  - 12H – object of observing – subscriber of telephone network with full phone number
  - 03H – object of observing – incoming lines group
  - FFH – insignificant combination
- Conditional number of object – a number from 0 to 255
- MCL group number - a number from 0 up to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Connection to speech path» is shown at Fig. 2.19.

Fig. 2.19. View of the dialogue window «Connection to speech path»

2.6.8. Dialogue window «Clearing of MCL»

The dialogue window «Clearing of MCL» is intended to edit and to send the command #8 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Call number – a number from 0 to 65535
- Type of the object – list of possible variants is as following:
    - 01H – object of observing – subscriber of given exchange
    - 02H – object of observing – subscriber of telephone network with full phone number
    - 12H – object of observing – subscriber of telephone network with full phone number
    - 03H – object of observing – incoming lines group
    - FFH – insignificant combination
- Conditional number of object – a number from 0 to 255
- MCL group number - a number from 0 up to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Clearing of MCL» is shown at Fig. 2.20.

Fig. 2.20. View of the dialogue window «Clearing of MCL»

2.6.9. Dialogue window «Excluding of MCL out of group»

The dialogue window «Excluding of MCL out of group» is intended to edit and to send the command #9 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length

- SOSM number – a number from 0 to 255
- Number of MCL group – a number from 0 to 255
- Type of MCL group – list of possible variants is as following:

  01H - a group for combine monitoring

  11H – a group for separate monitoring
- MCL A number – a number from 0 to 7 – assigns PCM highway number
- CL number in MCL A – a number from 0 to 31 – assigns a time slot number in the PCM highway
- MCL B number – a number from 0 to 7 – assigns PCM highway number
- CL number in MCL B – a number from 0 to 31 – assigns a time slot number in the PCM highway

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Excluding of MCL out of group» is shown at Fig. 2.21.

Fig. 2.21. View of the dialogue window «Excluding of MCL out of group»

2.6.10. Dialogue window «Request for objects of monitoring data»

The dialogue window «Request for objects of monitoring data» is intended to edit and to send the command #10 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Conditional number of object – a number from 0 to 255
- Type of the object – list of possible variants is as following:
  - 01H – object of observing – subscriber of given exchange
  - 02H – object of observing – subscriber of telephone network with full phone number
  - 12H – object of observing – subscriber of telephone network with full phone number
  - 03H – object of observing – incoming lines group
  - FFH – insignificant combination
- Sign of phone number – list of possible variants is as following:
  - 01H – phone number of a subscriber of given stations
  - 02H – subscriber number of local telephone network

- 03H – subscriber number of zonal telephone network
- 04H – subscriber number of other zonal network
- 05H – subscriber number of other country
- 06H – phone numbers of ordered and reference services
- FFH – insignificant combination

- Telephone number - any decimal number of not more than 18 characters
- Length of the telephone number - a number from 0 up to 255. When changing a telephone number value of field «Length of a telephone number» is automatically changed
- Trunk group conditional number - number from 0 up to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Request for objects of monitoring data» is shown at Fig. 2.22.

Fig. 2.22. View of the dialogue window «Request for objects of monitoring data»

2.6.11. Dialogue window «Request for information about MCL and groups correspondence»

The dialogue window «Request for information about MCL and groups correspondence» is intended to edit and to send the command #11 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Number of MCL group – a number from 0 to 255
- Type of MCL group – list of possible variants is as following:

  01H - a group for combine monitoring

  11H – a group for separate monitoring
- MCL A number – a number from 0 to 7 – assigns PCM highway number
- CL number in MCL A – a number from 0 to 31 – assigns a time slot number in the PCM highway
- MCL B number – a number from 0 to 7 – assigns PCM highway number
- CL number in MCL B – a number from 0 to 31 – assigns a time slot number in the PCM highway

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Request for information about MCL and groups correspondence» is shown at Fig. 2.23.

Fig. 2.23. View of the dialogue window «Request for information about MCL and groups correspondence»

2.6.12. Dialogue window «Request for supplementary services list»

The dialogue window «Request for supplementary services list» is intended to edit and to send the command #12 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Telephone number - any decimal number of not more than 18 characters
- Length of the telephone number - a number from 0 up to 255. When changing a telephone number value of field «Length of a telephone number» is automatically changed

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Request for supplementary services list» is shown at Fig. 2.24.

Fig. 2.24. View of the dialogue window «Request for supplementary services list»

2.6.13. Dialogue window «Interruption of messages output on the request for tables contents»

The dialogue window «Interruption of messages output on the request for tables contents» is intended to edit and to send the command #13 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Interruption of messages output on the request for tables contents» is shown at Fig. 2.25.

Fig. 2.25. View of the dialogue window «Interruption of messages output on the request for tables contents»

2.6.14. Dialogue window «Testing of data transfer channels»

The dialogue window «Testing of data transfer channels» is intended to edit and to send the command #14 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Test message number - a number from 0 up to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Testing of data transfer channels» is shown at Fig. 2.26.

Fig. 2.26. View of the dialogue window «Testing of data transfer channels»

2.6.15. Dialogue window «Object of monitoring parameters change»

The dialogue window «Object of monitoring parameters change» is intended to edit and to send the command #15 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Conditional number of object – a number from 0 to 255
- Category of monitoring - list of possible variants is as following.
    - 01H - full combined monitoring
    - 11H - full separated monitoring
    - 02H - statistical monitoring
- MCL group number - a number from 0 up to 255
- Priority mark - list of the possible variants is as following :
    - 01H - priority object of monitoring
    - 11H - ordinary object of monitoring

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Object of monitoring parameters change» is shown at Fig. 2.27.

Fig. 2.27. View of the dialogue window «Object of monitoring parameters change»

2.6.16. Dialogue window «Request for information about correspondence between exchange incoming group name and its conditional number»

The dialogue window «Request for information about correspondence between exchange incoming group name and its conditional number» is intended to edit and to send the command #16 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255
- Conditional number of incoming trunk group – a number from 0 to 65535

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Request for information about correspondence between exchange incoming group name and its conditional number» is shown at Fig. 2.28.

Fig. 2.28. View of the dialogue window «Request for information about correspondence between exchange incoming group name and its conditional number»

2.6.17. Dialogue window «Request of exchange SW version»

The dialogue window «Request of exchange SW version» is intended to edit and to send the command #17 to the exchange. Format of the command fields is as following:

- Password – a word of 6 characters length
- SOSM number – a number from 0 to 255

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Request of exchange SW version» is shown at Fig. 2.29.

Fig. 2.29. View of the dialogue window «Request of exchange SW version»

2.6.18. Dialogue window «Free Command»

The dialogue window «Free Command» is intended to edit and to send any arbitrary command to the exchange. Format of the command fields is as following:

- Preamble - a number from 0 up to 255, value by default is equal 204

- SOSM number – a number from 0 to 255
- Code of a command - a number from 0 to 255
- Length of the command - a number from 0 to 255
- Password – a word of 6 characters length
- The command body - a number from 0 to 255 can be entered into each of the command body fields

When pressing the button OK the command is sent to the exchange

When pressing the button Cancel no command is sent to the exchange

View of the command «Free Command» is shown at Fig. 2.30.

Fig. 2.30. View of the dialogue window «Free Command»

2.7. Dialogue windows of setting a synchronous interface

2.7.1. Dialogue window «Parameters of making a session»

Dialogue window «Parameters of making a session» is intended for configuration working a tester on analog channels X.25 and tract PCM. Parameters of dialogue window:

- SOSM number – a number from 0 to 255, which is displayed by default in the dialogue windows of sending commands
- SOSM password - a word of 6 characters length, displayed in the dialogue windows of sending commands by default.
- Channel C - a PCM highway number and time slot number within it for transmitting communication contents of a command channel.
- Channel D - a PCM highway number and time slot number within it for transmitting communication contents of a data channel.
- Setting synchronous interface - striking the button calls a dialogue window «Setting synchronous interface», where parameters of protocol V.24 can be set.
- Setting second layer X.25 - striking the button calls a dialogue window «Setting X.25», where parameters of protocol X.25 second layer - LAPB can be set.
- Setting third layer X.25 - striking the button calls a dialogue window «Packet layer setup», where parameters of protocol X.25 third layer - Packet Layer can be set.
- Setting PCM-30 - calls a dialogue window «PCM-30 settings», including settings for PCM highway.

Settings... - given subitem calls a dialogue window «Settings of synchronous interface», in which parameters of channels X.25 and highway PCM can be assigned. New parameters take effect after the opening new session of operation. To close the program is not necessary.

Button «OK» confirms the choice. Button «Cancel» abolishes the choice. New settings take effect after starting a new session of operation. No rebooting the program is necessary.

View of the dialogue window is shown at Fig. 2.31.

Fig. 2.31. The dialogue window of the interface settings

2.7.2. Dialogue window «Setting a synchronous interface»

The dialogue window «Setting a synchronous interface» is intended to manage setting a protocol V.24. The dialogue window parameters are as following:

- Interruption number for card SOSM-2 - the fall out list with interruption numbers is offered, according which a synchronous interface card operates. Exposed value by default is 10.
- Base address of the card - a parameter, defining range of input/output ports of the synchronous interface card. Value by default is 220.

The parameters formed in groups "Channel 0" and "Channel 1" are identical to each other. Group of settings "Channel 0" defines parameters of layer LAPB for the command channel. Group of settings "Channel 1" defines parameters of layer LAPB for the data channel accordingly.

- Type of synchronizing - a fall out list provides a choice of internal or external synchronizing.
- State of DTR - a fall out list provides choice for setting or removing a signal DTR.
- Transmission rate - a fall out list provides choice of transmission rate in channel X.25. Value by default - 9600
- Receiving buffer size defines a volume of input buffer of channel X.25 in bytes. Value by default - 4096.
- Transmission buffer size - a volume of output buffer of channel X.25 in bytes. Value by default - 4096.

Button «OK» confirms the choice. Button «Cancel» abolishes the choice. View of the window «Setting a synchronous interface» is shown at Fig. 2.32.

Fig. 2.32. The dialogue window «Setting a synchronous interface»

2.7.3. Dialogue window «Setting X.25»

The dialogue window «Setting X.25» is intended to manage setting a layer LAPB of the protocol X.25. Parameters of the dialogue window are as following:

- T1 time-out - time in milliseconds. Range 500 - 10000 ms;
- T2 time-out - time in milliseconds. Range 100 - 5000 ms;
- T3 time-out - time in milliseconds. Range 10000 - 30000 ms;
- k - number of frames, waiting for acknowledgment. A number from 0 to 7

- N1-length - maximum size of a package
- N2-repetitions - maximum number of attempts to complete transmission - 10;
- Type of the node of channel C - a fall out list, offering one of two possible types of the node - DCE or DTE.
- Type of the node of channel D - a fall out list, offering one of two possible types of the node - DCE or DTE.

Button «OK» confirms the choice. Button «Cancel» abolishes the choice. View of the window «Setting X.25» is shown at Fig. 2.33.

Fig. 2.33. The dialogue window «Setting X.25»

2.7.4. Dialogue window «Packet Layer Setup»

The dialogue window «Packet Layer Setup» is intended to manage settings of third layer of protocol X.25. Dialogue window includes two groups of settings for channels C and D accordingly . These settings are identical. Parameters of the dialogue window are as following:

- Logical channel group - a logical group of channels - a number from 0 to 16
- Logical channel – number of channel in logical group – a number from 0 to 255
- T20 time-out - a time in milliseconds. Value by default - 18000
- T21 time-out - a time in milliseconds. Value by default - 20000
- T22 time-out - a time in milliseconds. Value by default - 18000
- T23 time-out - a time in milliseconds. Value by default - 18000

Button «OK» confirms the choice. Button «Cancel» abolishes the choice. View of the window «Packet Layer Setup» is shown at Fig. 2.34.

Fig. 2.34. The dialogue window «Packet Layer Setup»

2.7.5. Dialogue window «PCM-30 Settings»

The dialogue window «PCM-30 Settings» is intended to manage setting a PCM-30 highway. The dialogue window parameters are as following:

- Source of synchronizing - fall out list provides choice of one of the following possible variants:
    - FALC0
    - FALC1
    - FALC2

- FALC3
- EXTERNAL
- INTERNAL
- GROUND

Value by default is FALC0

- Type of the generator - a fall out list provides a choice of one of the following possible variants:
  - ALTERA
  - FALC

  Value by default is ALTERA.
- Framing format - a fall out list provides a choice of one of the following possible variants:
  - CRC4 Multyframe
  - Doubleframe

  Value by default is CRC4 Multyframe.

Button «OK» confirms the choice. Button «Cancel» abolishes the choice. View of the window «PCM-30 Settings» is shown at Fig. 2.35.

Fig. 2.35. The dialogue window «PCM-30 Settings»

2.8. The board of status

The board of status is intended to display a state of protocol - tester TOR-2 operation. At the right side of the board two groups of three indicators showing state of physical, channel and network layers of protocol X.25 accordingly are represented. When setting an appropriate layer of operation, its indicator turns red. View of the board of status is shown in Fig. 2.36.

Fig. 2.36. The board of status

3. Preparation a protocol-tester TOR-2 for operation

3.1. General instructions

When entering the device in the usage it is necessary:

- unpack the device, check its completing;
- conduct an installation and preparating a protocol-tester TOR-2 for operation in accordance with

requirements of the present document;

- connect a cable of synchronous interface and a cable of PCM highway to the device.

3.2. Security measures

When working with the protocol-tester TOR-2 is forbidden:

- Turn on the device when the wire of grounding is absent;
- produce the works on the mounting and takedown circuit boards and connecting cables included in the device being under voltage when the protocol-tester TOR-2 power is on.

3.3. Order of installation a protocol-tester TOR-2

- Prepare a working place for a protocol-tester TOR-2.
- Lead to the working place single-phase alternative voltage 220 V.
- Connect a cable of synchronous interface to the connector DB-37 .
- Connect a cable of PCM highway to the connector DB-25.
- Produce installing software, for what start on execution a file setup.exe from diskettes, enclosed to the device.
- Load file TOR-2.exe.

4. Use a protocol-tester TOR-2

Order of operation of operator when using a protocol-tester TOR-2.

- Connect a cable of synchronous interface to the connector DB-37 .
- Connect a cable of PCM highway to the connector DB-25 .
- Switch a power of the device on. After boot an operating system Windows 98, start a file TOR-2.exe. Reference to it must inheres on the desktop. File must base in the directory, in which program was fixed. By default this directory is C:\Programm Files\LONIIS\TOR-2.
- After starting a program a start (empty) window, main panel and panel of commands must appear.
- Call a dialogue window «Setting a transport layer», where necessary settings of PCM highway and channels X.25 should be produced.
- Create a new session of operation. A window of monitor SOSM and a window of monitor X.25 should appear, whereupon install a connection. If the monitor X.25 is switched on, outgoing packages of layer LAPB with the request for setting connection should appear in it window. If settings of the channels were executed correctly, answers to requests for connection should appear in same window. If no incoming packages are in the window of monitor X.25 , it is necessary to check settings of a transport layer, for what call corresponding window. New settings take effect only after closing and new opening of the session. All the main control elements inhere on the main panel and are duplicated in the menu.
- After setting the channels X.25 in operation it is possible to proceed with checking of protocol SOSM. The monitor of channels X.25 can be disconnected. Checking a protocol SOSM is produced by sending the commands to the exchange. Answers from the exchange should be received by the device, and their type and format must be analyzed. Format of reporting see in Supplement 1 «Technical requirements to information interchange channels between SOSM and Control Point» or in the electronic version of this document, applicable to the device.

- For stating a big amount of subscribers under monitoring it is possible to use «Generator of scenarios», which is called from the protocol-tester TOR-2 program.

- Testing a protocol SOSM is produced in accordance with the document «Standard program and methodic of type approval testing for communications interface and information interchange protocol in data communications channels between SOSM and CP at electronic telephone exchanges», which electronic version is also enclosed to the device.

- The results of undertaken tests can be saved into the file. Two types of this files are possible : textual and binary. Textual file is intended for viewing and printout of results of work on any computer, but the binary one can be reopened by pressing the button «Open a database of monitor».

5. Storage

5.1. The protocol-tester TOR-2 must be kept in packing in storage premises, which protect its from the influence of atmospheric precipitation, at absence of midair vapours of acids, alkalis and other aggressive admixtures.

5.2. The product in the packed type can be kept in storage premises at the temperature from –50 C up to +50 C , average value of moisture in month up to 80 % at the temperature 20 C. Short increasing of moisture up to 95% at the temperature 30 C without condensations water, but total not more than one month per annum is allowed.

6. Transportation

6.1. Product in the packed type can be transported by car, railway and aircraft transport on any distances.

6.2. Precaution measures, which should be kept under cargo-handling operations and transporting, are marked by preventive signs in the upper left corner of transport tare.