Tank monitoring system TMS SIUR
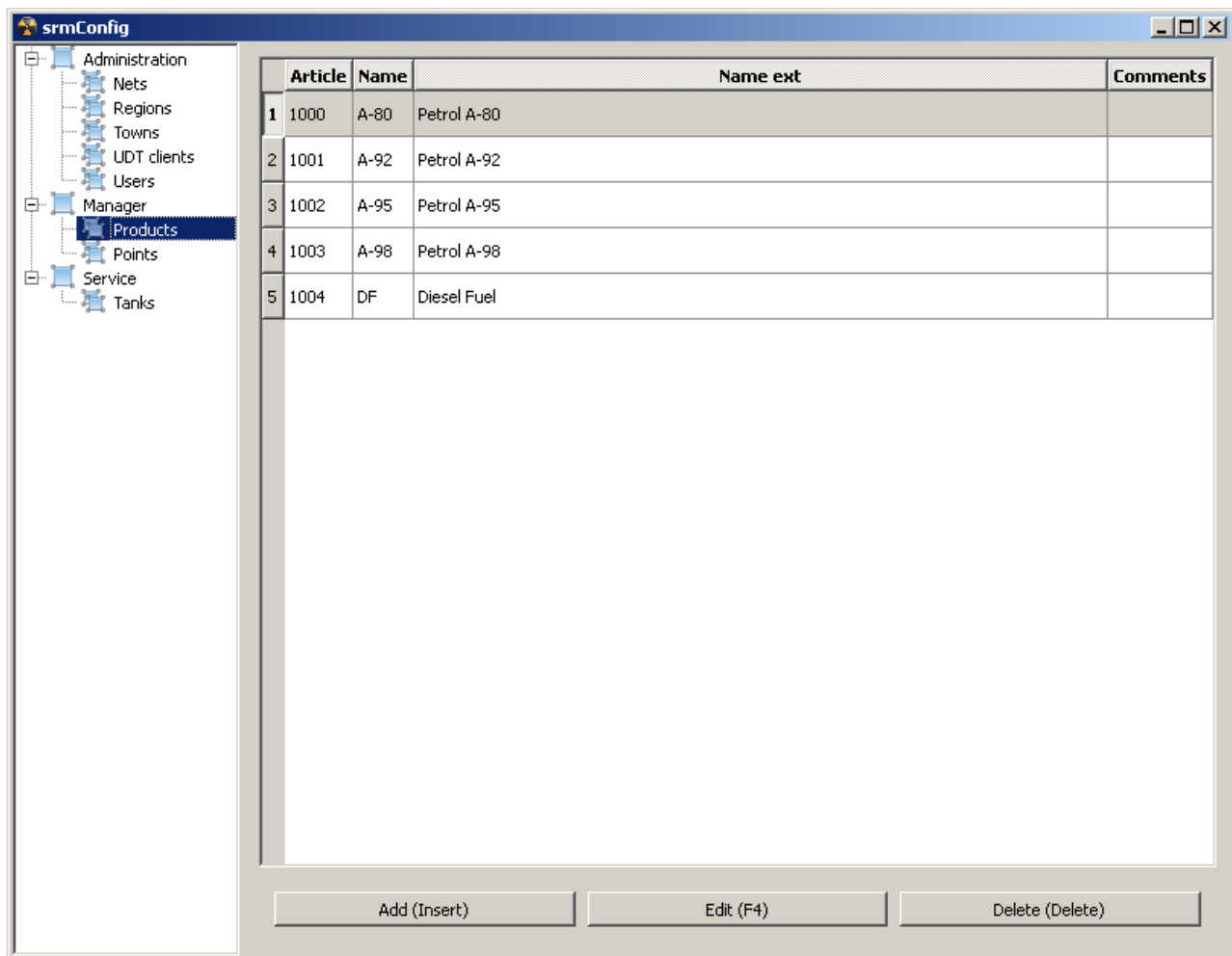## Configuration utility

Operating manual

Firmware version 1.1.1.1

Review date: 11 May 2013

TECHNOTRADE LTD

CONTENT

REVISION HISTORY

REV.	DATE	BY	SECTION	DESCRIPTION
R01	11.05.2013	SA	All	First release of documentation

PURPOSE OF DOCUMENT

This Operating Manual is intended for studying of configuration utility of tank monitoring system TMS SIUR operation.

Given Operation Manual describes functional possibilities of configuration utility with firmware version 1.1.1.1.

Due to a reason that functional possibilities of the utility are constantly being extended and updated, changes are possible in final version of the utility, which are not described in given Operation Manual. Latest version of this Operation Manual can be downloaded from the tank monitoring system TMS-SIUR web-page: http://www.technotrade.ua/tank-monitoring-system.html.

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In case if you find any mistakes, omissions in this document or have any suggestions on improvements to this document, please feel free to e-mail them to our support mailbox: support_1a@technotrade.ua. We will be grateful to you for this valuable information.

All technical questions regarding the tank monitoring system TMS-SIUR are welcome to be asked on support mailbox: support_1a@technotrade.ua. Our support team will be glad to help you.

Also you can call to us or visit us on:

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APPOINTMENT

Configuration utility for tank monitoring system TMS SIUR (hereinafter called as Configurator) – software solution for personal computers, that work with OS Windows or Linux. Configurator is intended for complex and selective setting of tank monitoring system (hereinafter named as TMS). Depending on the selected mode Configurator may configure database of TMS SIUR (DB MySQL, necessary to have Internet connection), client part srmProbe and controller UMKA that works with level gauges. For database setting, Configurator may be run in any computer that has Internet access. For setting of srmProbe Configurator must be run on the same computer, where srmProbe is installed. For setting of UMKA controller Configurator should be run on the same computer, to which connected UMKA controller is connected.

FUNCTIONAL POSSIBILITIES

Functional possibilities of Configurator include:

1. Configuration of data collection srmProbe software from level gauges
2. Configuration of data collecting UMKA controller from level gauges
3. Configuration of database of programming complex TMS SIUR

DESCRIPTION OF CONFIGURATOR OPERATION

Configurator is installed on personal computer with OS Windows or Linux.

Starting of application and selection of operating mode

After starting of application a user is proposed to select a mode of operation (picture 1). There are five modes:

1. «SRM and DB»: complex mode that allows to configure database and software srmProbe. For operating in this mode it is necessary to be connected to Internet, and also to have software srmProbe installed. This mode is unification of "SRM" and "DB" modes.

2. «UMKA and DB»: complex mode, which allows configure database and UMKA controller. For operating in this mode it is necessary to have Internet connection and also connection to UMKA controller. This mode is unification of "UMKA" and "DB" modes.

3. «SRM»: mode which allows to configure srmProbe software. For operating in this mode it is necessary to have srmProbe software installed.

Picture 1

4. «DB»: mode, which allows to configure the database. For operating in this mode it is necessary to be connected to Internet.

5. «UMKA»: mode, which allows to configure UMKA controller. For operating in this mode it is necessary to be connected to UMKA controller.

6. «Exit»: button for exiting Configurator utility.
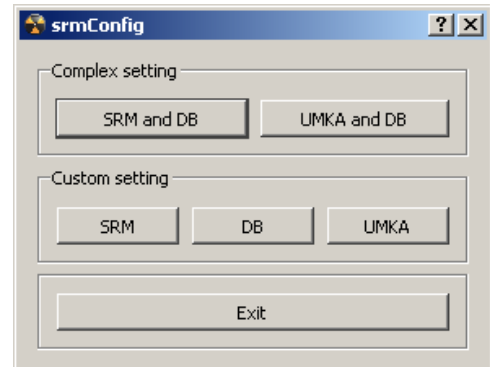
OPERATING MODES OF CONFIGURATOR

User interface of Configurator consists of branches («Administration», «Manager», «Service»). The branches are displayed depending on the selected mode and user rights (while working with DB). The branch consists of controls. Most controls have a standard user interface (picture 2):
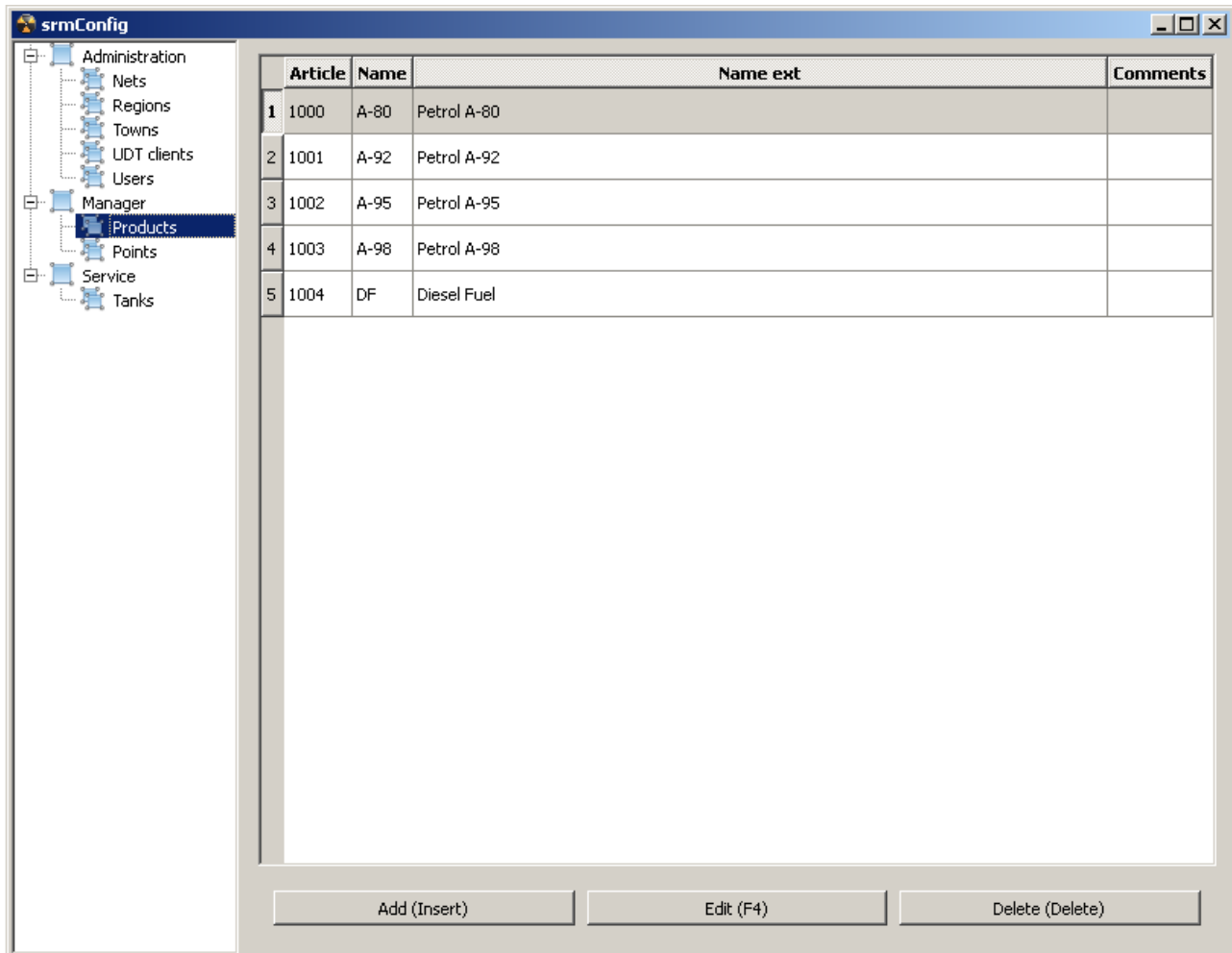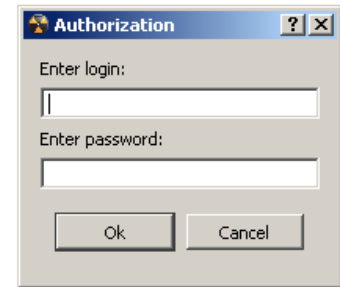

Picture 2

- Element «Control». It is a subsidiary branch of the main tree, is located in the left side of the window. "Control" brings a name of entity, which it manages. When It is clicked, it opens the interface for management of given entity.
- Element «Table». Table is located in central part of the program window and displays a list of elements of chosen entity.
- Element button «Add (Insert)»: is located in bottom part of program window, below «Table». When you click on this button, a dialog window will appear with attributes input fields for creation of a new entity element. To call the dialog window you can use the shortcut button «Insert».
- Element button «Edit (F4)»: is located in bottom part of program window, under «Table». When you click on this button, a dialogue window will appear with attributes input fields for editing of chosen entity element. To call the dialog window you can use the shortcut button «F4».
- Element button «Delete (Delete)»: is located in bottom part of program window, below «Table». When you click on this button, a dialog window will appear with request confirmation to delete the selected item. To call the dialog window you can use the shortcut button «Delete».

Some Controls can contain additional management elements.

«DB» mode

This mode (picture 3) is intended for configuration of database and requires Internet connection. To enter the mode a user should authorize. In the field «Enter login» should be entered own login, and in field «Enter password» - should be entered own password. At successful authorization the user will be provided with an interface to operate in accordance with its type. There are three types of users in a system:

Picture 3

- «Administrator»: available to all interface branches for work with DB
- «Manager»: available branches «Manager» and «Service»
- «Service»: available only branch «Service»

Branch «Administration»

This branch contains set of management elements (hereinafter - Controls) for database configuration by administrator. Branch contain following Controls:

1. «Networks». This control allows to register in a system new Petrol Stations networks and has standard interface. Attributes:
   - «Network number». Integral. Automatically assigned to each network.
   - «Name». Line (32 symbols). Short name of a network.
   - «Extension name». Line (64 symbols). Full name of network.
   - «Phone list». Line (128 symbols). List of contact phones of office of Petrol Stations network.
   - «Address». Line (128 symbols). Address of office of Petrol Stations network.
   - «Comments». Line (128 symbols). Comments to element.
2. «Regions». This Control allows to register in a system new regions and has standard interface. Attributes:
   - «Region number». Integral. Automatically assigned to each region.
   - «Name». Line (32 symbols). Short name of a region.
   - «Extension name». Line (64 symbols). Full name of a region.
   - «Comments». Line (128 symbols). Comments to element.
3. «Cities». This Control allows to register in a system new cities and has standard interface. Attributes:
   - «Region». The drop-down list. Name of the region to which belongs the city.
   - «City number». Integral. Automatically assigned to each city.
   - «Name». Line (32 symbols). Short name of a city.
   - «Extension name». Line (64 symbols). Full name of a city.
   - «Comments». Line (128 symbols). Comments to element.
4. «UDT clients». This Control allows to register in a system new UDT clients and has standard interface. Attributes:
   - «Petrol Station». The drop-down list. Name of a Petrol Station to which attaches UDT client.
   - «Number of UDT client». Integral. Automatically assigned to each UDT client.
   - «Status». The drop-down list. List of possible statuses for UDT clients.
5. «Users». This Control allows to register in a system new users and has addition to standard interface. Attributes:
   - «User number». Integral. Automatically assigned to each user.
   - «Login». Line (32 symbols). Users' login. Only Latin letters and numbers are allowed.
   - «Type». The drop-down list. List of possible types for users.
   - «Status». The drop-down list. List of possible statuses for users.
   - «Full name». Line (32 symbols). Full name of a user.
   - «Phone». Line (16 symbols). Users' phone number.
   - «e-mail». Line (32 symbols). Users' e-mail.

- «Comments». Line (128 symbols). Comments to element.

Additional steps:

Element button «Set a password». Is located in bottom part of program window below «Table». When you click on a button, a dialog window will appear with a field for entering a new password for the user.

Branch «Manager»

This branch contains set of Controls for database configuration by manager of a network. Branch contain following Controls:

1. «Petrochemicals». This Control allows to register in a system new petrochemicals of Petrol Stations network and has standard interface. Attributes:
    - «Article». Integral. Article of petrochemical. It is believed that the article is common to all Petrol Stations of a network.
    - «Name». Line (32 symbols). Short name of petrochemical.
    - «Extension name». Line (64 symbols). Full name of petrochemical.
    - «Comments». Line (128 symbols). Comments to element.
2. «Petrol Station». This Control allows to register in a system new Petrol Stations and has standard interface. Attributes:
    - «Network». Line (32 symbols). Short name of network, to which belongs Petrol Station. Installed automatically from an authorized user settings.
    - «Region». Line (32 symbols). Short name of region, to which belongs chosen city. Installed automatically from a city settings.
    - «City». The drop-down list. Short name of city, to which belongs Petrol Station.
    - «Name». Line (32 symbols). Short name of Petrol Station.
    - «Extension name». Line (64 symbols). Full name of Petrol Station.
    - «Phone list». Line (128 symbols). List of contact phones of Petrol Stations.
    - «Address». Line (128 symbols). Address of Petrol Stations.
    - «Comments». Line (128 symbols). Comments to element.

Branch «Service»

This branch contains set of Controls for configuration of database by service specialist. Branch contains following Controls:

1. «Tanks». This Control allows to register in a system new tanks on Petrol Station and has addition to standard interface. Attributes:
    - «Tank». Integral. Tank number. This number should match with tank number in settings of srmProbe, or UMKA.
    - «Article». The drop-down list. Article of petrochemical.
    - «Fuel». The drop-down list. Short name of fuel.
    - «Level correction». Fractional number (mm). Correction for level measurement, if level gauge does not get to the bottom of the tank.
    - «Protocol». The drop-down list. List of supported protocols of ATG.
    - «Comments». Line (128 symbols). Comments to element.

    Additional steps:

      - Element drop-down list «Choose Petrol Station». Located in upper part of a program window, above «Table». When you select a Petrol Station from the list in the "Table" displays the tanks of selected Petrol Station.
      - Element button «Calibration table». Located in lower part of program window, below «Table». When you click on a button, will appear dialogue box with settings of calibration

table of tank (pic. 4). In this window you may import, export or enter manually calibration table.

Picture 4

- o Button «Import of calibration table» . Button of import of calibration table from file «*.csv», separator ";". Format "level(mm);volume(l)" (0;0 10;35 20;123).

- o Button «Export of calibration table» . Button of saving of calibration table into file.

- o Button «Clear calibration table» . Clear calibration table to enter from scratch.
- o Enter field «Max. level». Maximum level of fuel in tank. On its basis calculates the quantity of lines in a table and level meaning.
- o Column «Volume (l)». In manual input of calibration table, data about fuel volume entered to this column. Column with level filled automatically.
- o Button «Ok». At clicking on this button calibration table saved into database.
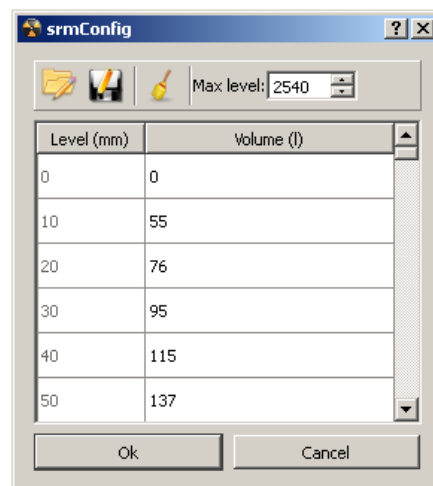
«SRM» mode

This mode is intended for configuration of srmProbe software. At launching Configurator in this mode downloading of such configuration files takes place:

- «C:\Program Files\SRM\srmProbe\etc\coreScheduler.xml». Configuration of measurement information sending period on a server.
- «C:\Program Files\SRM\srmProbe\etc\driverComPort1.xml». Configuration of com-ports for operation with level gauges.
- «C:\Program Files\SRM\srmProbe\etc\logicTank1.xml». Configuration of level gauges.

If configuration files cannot be found on a standard way, user will be proposed to choose himself a direction with these files.
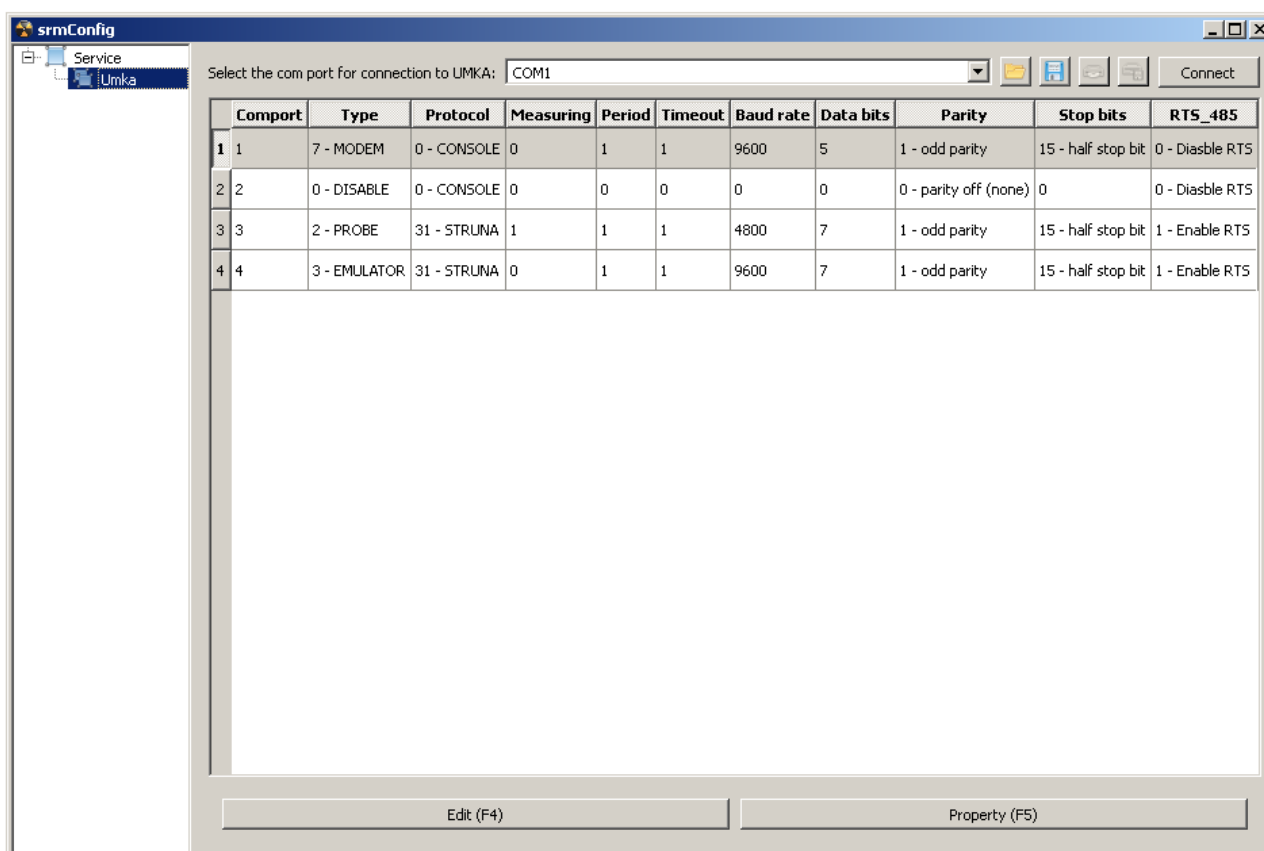
For operating in «SIUR» mode its no need to authorize. This mode contains only one branch «Service» with such controls:

1. «Level probes». This Control allows to add and configure new level probes on Petrol Station and has standard interface. Attributes:
    - «Com-port profile». The drop-down list. Profile number (do not confuse with com-port number in a system!!) of com-port to which level probe connected. Operating with com-ports is made in control «Comports».
    - «Tank number». The drop-down list. Tank number (NOT THE ADDRESS!!). Tank number should match a control number «Tanks».
    - «Address». Line (16 symbols). Physical address of a probe. Indicated in documentation for probe.
    - «Level» sensor. Option. Switch on/off the level sensor.
    - «Temperature» sensor. Option. Switch on/off the temperature sensor.
    - «Volume» sensor. Option. Switch on/off the volume sensor.
    - «Mass» sensor. Option. Switch on/off the mass sensor.
    - «Density» sensor. Option. Switch on/off the density sensor.
    - «Pressure» sensor. Option. Switch on/off the pressure sensor.
    - «Water» sensor. Option. Switch on/off the water sensor.

2. «Com-ports». This Control allows to add and configure com-ports for interview level probes and has standard interface. Attributes:
    - «Profile». Integer. Profile number of level probe. Needed for connection of level probe with com-port.
    - «Com-port». Line (8 symbols). Com-port name in a system (for Windows COM1, COM2…).
    - «Protocol». Drop-down list. List of supported protocols.
    - «Period (from)». Integer. Period of interview of level probes in seconds.
    - «Timeout (from)». Integer. Waiting period of answer from level probe in seconds.
    - «Rate». Drop -down list. List of allowed rates for com-port.
    - «Data bits». Drop -down list. List of available modes by data bits.
    - «Parity». Drop -down list. List of available parity modes.
    - «Stop bits». Drop -down list. List of available modes of stop bits.
    - «Flow control». Drop -down list. List of allowed flow control modes.
    - «Symbol timeout». Integer. Waiting timeout of a next symbol.

3. «Planner». This Control allows to configure sending period of changes data on a server and has only dialogue of editing period. Attributes:
4. «Period (s)». Integer. Period of sending changes data on a server.

«UMKA» mode

This mode is intended for configuration of UMKA device. For operating in «UMKA» you don't need to authorize. This mode contains only one branch «Service» with control «UMKA» and not standard interface (picture 5). Purpose of this control is configuration of com-posts of «UMKA» device.

	Comport	Type	Protocol	Measuring	Period	Timeout	Baud rate	Data bits	Parity	Stop bits	RTS_485
1	1	7 - MODEM	0 - CONSOLE	0	1	1	9600	5	1 - odd parity	15 - half stop bit	0 - Diasble RTS
2	2	0 - DISABLE	0 - CONSOLE	0	0	0	0	0	0 - parity off (none)	0	0 - Diasble RTS
3	3	2 - PROBE	31 - STRUNA	1	1	1	4800	7	1 - odd parity	15 - half stop bit	1 - Enable RTS
4	4	3 - EMULATOR	31 - STRUNA	0	1	1	9600	7	1 - odd parity	15 - half stop bit	1 - Enable RTS

Picture 5

Upper panel is located above «Table» and contains control elements for connection to «UMKA» device and management of ready configuration:

- The drop-down list «Choose com-port for connection to UMKA». Contains a list of standard com-ports, and also allows to input not standard.

- Button «Downloading configuration from a file» . Opens download dialogue of ready configuration from a binary file with expansion «*.bin».

- Button «Configuration saving into file» . Opens saving dialogue of input configuration into file with expansion «*.bin».

- Button «Downloading configuration from UMKA» . Reads configuration from UMKA device. Active only in case of connection to «UMKA» device!

- Button «Configuration entry in UMKA» . Downloads configuration in UMKA device. Active only in case of connection to «UMKA» device!

- Button «Connection/Disconnection». Connects/disconnects automatically to «UMKA» device in drop-down list of com-ports.

Lower panel is located under «Table» and contains control elements for com-ports configuration of «UMKA» device and devices connected to it:

1. Element button «Edit (F4)». Located in lower part of program window, under «Table». At clicking on a button, will appear dialogue box with input fields of attributes for editing of chosen com-port. To call dialogue box, you may use shortcut button «F4». Com-port has following attributes:
    1. «Type». Drop-down list. Contains a list of types of devices connected to chosen com-port.
    2. «Protocol». Drop-down list. Contains a list of protocols of devices connected to chosen com-port.
    3. «Changes». Integer. Quantity of changes for sending to a server.
    4. «Period». Integer. Interview period of level gauge.
    5. «Timeout». Integer. Waiting timeout from level probe.
    - «Rate». Drop-down list. List of allowed rates for com-port.
    - «Data bits». Drop-down list. List of allowed modes by data bits.
    - «Parity». Drop-down list. List of available parity modes.
    - «Stop bits». Drop-down list. List of available modes of stop bits.
    - «RTS_485». Drop-down list. List of available modes of flow control.

2. Element button «Properties (F5)». Located in lower part of program window, under «Table». At clicking on a button, will appear dialogue box with input fields for attributes for editing device on chosen com-port. To call dialogue box you may use quick access button «F4». For each type of devices there is its own set of attributes:
    1. Type of device «Modem».
        - «IP UDT». Line (16 symbols). Ip address of server UDT.
        - «Port UDT». Integer. Port of server UDT.
        - «IP of time server». Line (16 symbols). Ip address of exact time server.
        - «Port of time server». Integer. Port of exact time server.
        - «APN mob. operator». Line (32 symbols). Access point to Internet.
        - «Res. ip UDT». Line (16 symbols). Reserve ip address of server UDT.
        - «Res. port UDT». Integer. Reserve port of server UDT.
        - «Res. ip of time server». Line (16 symbols). Reserve ip address of exact time server.
        - «Res. Port of time server». Integer. Reserve port of exact time server.
        - «Quan. conn. To Internet». Integer. Quantity of attempts of entering the Internet before restart of modem.
        - «Reconnection period». Integer. Waiting period of modem before next attempt of entering the Internet.
        - «Online checking period». Integer. Period of checking the registration in Internet.
        - «Period of sending a file». Integer. Period of checking not sent files for resending.
        - «Period of accepting a file». Integer. Period of checking new files on server UDT.

- «Period of sync. of time». Integer. Synchronization period of time with exact time server.
- «Time of connection to UDT». Integer. Period of waiting an answer from server UDT.
- «CUSD balance». Line (32 symbols). Command of checking a balance of mobile operator.

2. Type of device «Level probe». Configuration interface of this device has standard interface (table and three management buttons). Attributes:
   - «Tank number». Drop-down list. Tank number (NOT THE ADDRESS!!). Tank number should match with control number «Tanks».
   - «Address». Integral. Physical address of level probe. Specified in documentation for level probe.
   - «Level» sensor. Option. Option. Switch on/off the level sensor.
   - «Temperature» sensor. Option. Switch on/off the temperature sensor.
   - «Volume» sensor. Option. Switch on/off the volume sensor.
   - «Mass» sensor. Option. Switch on/off the mass sensor.
   - «Density» sensor. Option. Switch on/off the density sensor.
   - «Pressure» sensor. Option. Switch on/off the pressure sensor.
   - «Water» sensor. Option. Switch on/off the water sensor.

3. Type of device «Emulator». Configuration interface of this device has standard interface (table and three management buttons). Attributes:
   - «Tank number». Drop-down list. Tank number (NOT THE ADDRESS!!). Tank number should math with control number «Tanks».
   - «Address». Integer. Physical address of probe. Specified in documentation for level probes.
   - «Com-port». Integer. Number of com-port with connected level probe.

STANDARD CONFIGURATION ALGORITHMS

In this article are described standard algorithms of TMS system configuration.

Initial configuration of «DB» by administrator

- Choose «DB» mode.
- Authorize in Configurator as administrator.
- Add network of Petrol Stations that will work with DB («Administration/Networks»).
- Add regions in which located objects of networks («Administration /Regions»).
- Add cities in which located objects of networks («Administration /Cities»).

Registration of new Petrol Station by manager

- Choose «DB» mode.
- Authorize in Configurator as administrator or manager.
- Add new Petrol Station («Manager/Petrol Station»).
- Add configuration of tanks («Service/Tanks»).
- Form a request for administrator on editing UDT of client.

Tanks configuration by service specialist on Petrol Station for «srmProb»

- For configuration of client «srmProb» choose mode «SRM and DB», or «SRM». For «SRM» mode its necessary to have configuration of tanks from control «Service/Tanks».
- If there are no tank configuration, in «SRM and DB» mode you may configure tanks.
- Add and configure com-ports in control «Service/Comports».
- Add and configure level probes in control «Service/Level probes».
- Set the transmission period of the measurements to the server. Period must be on few seconds longer that interview period.

Tanks configuration by service specialist on Petrol Station for «UMKA» device

- For configuration of «UMKA» device » choose mode «UMKA and DB», or «UMKA». For «UMKA» mode its necessary to have configuration of tanks from control «Service/Tanks».
- Choose com-port to which UMKA is connected. Click button «Connection».
- If configuration in file – import file («Downloading of configuration from file»).
- Choose com-port, to which modem is connected. Configure it.
- Choose com-port, to which level probes are connected. Set according to configuration of tanks from control «Service/Tanks».