DTU Configurator User's Manual.

1. DTU configurator software is designed to change DTU settings through RS-485 interface. User can change software protocol (DTU supports 4 different protocols over RS-485), network address in RS-485 network and some protocol specific parameters.
2. Software requirements. DTU configurator runs under MS Windows XP, Vista, 7, 8, 10.
3. Hardware requirements. For using DTU configurator the DTU sensor must be connected standalone to computer through RS-485 to USB device (for example MOXA Uport 1150). Standalone means that for configuration there must be only one sensor DTU in RS-485 network connected to computer with DTU configurator software. If using MOXA don't forget to set in Windows Control Panel / Devices Manager / Multiport Adapters / UPort 1150 / Ports Configuration to "RS-485 2W" mode.
4. DTU sensor has built-in bootloader software, which is activated during first 3 seconds after power-on DTU. With a help of bootloader the DTU's firmware can be upgraded and the special flash memory sectors can be read or write to configure DTU to desirable mode.
5. Sequence of using DTU configuration.
    a. Connect DTU to computer using RS-485 to USB convertor
    b. Through windows Control Panel / Devices Manager / Ports (COM) see what COM number corresponds to RS-485 convertor
    c. Run DTU configurator
    d. Using field 11 (RS-485 COM NUMBER) type the COM number of RS-485 convertor
    e. Press the button 1 (CONNECT TO DTU)
    f. Switch power off DTU, then switch power ON
    g. If everything is right, the LED 2 will lighten with green and the text "Link established OK" appears in field 4.
    h. If that doesn't happen check the hardware connection, in some cases it would be good to set the COM number manually to be from 1 till 9 (in control panel).
    i. When link is established the DTU is in boot mode. Field 3 (ticks) is used to show current state of connection (software tests for link with DTU each 0.5 seconds). If the connection will fail for 3 times, the program will return to initial state.
6. When link is established user can change the desired settings, write them to sensor's flash. Also user can upgrade firmware, verify firmware or reset sensor to exit from boot mode.
7. Installation. To install DTU configurator you can run setup.exe or run dtu_cinfigurator.msi. It is recommended not to install DTU configurator into Program Files folder. It is better to use folder independent of windows.
8. All answers you can send to support@lcard.ru

Main screen

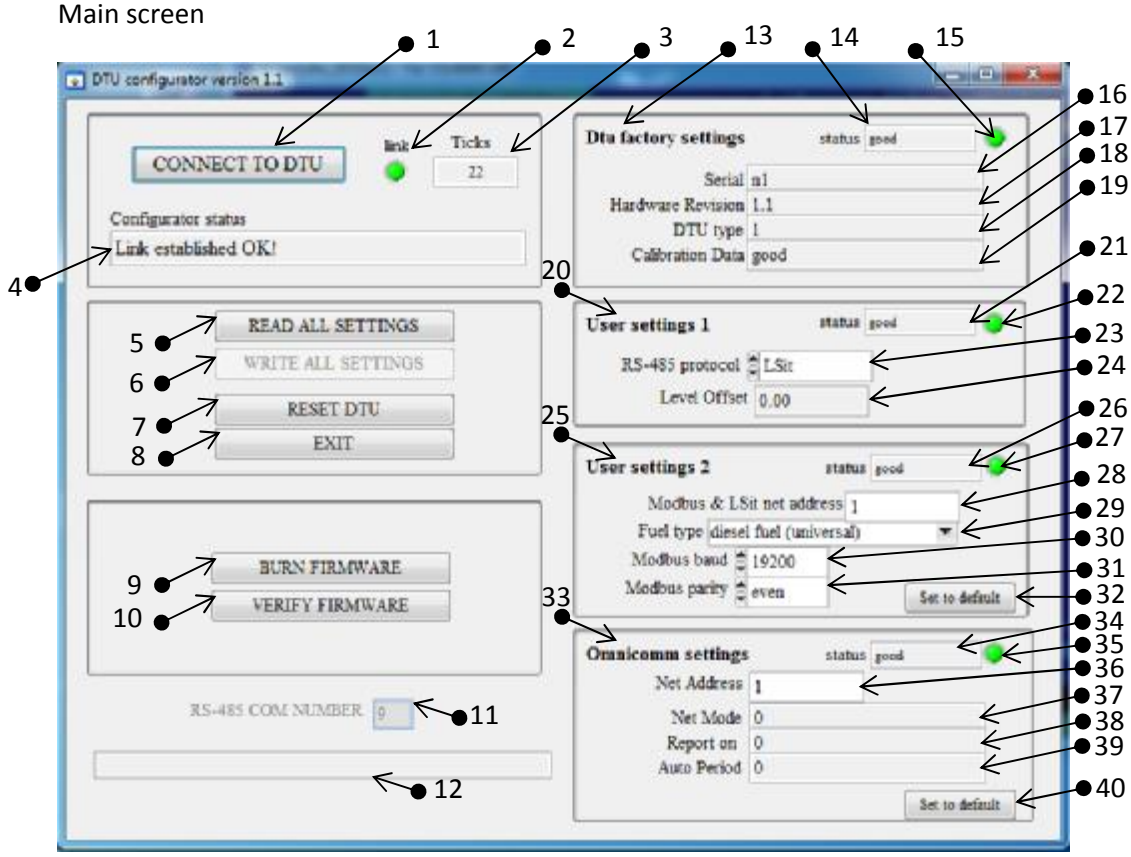

Table with fields description

Field number	Field Name	Description
1.	Button “CONNECT TO DTU”	Press this button to establish a link with DTU sensor and to run bootloader software in DTU. To do so you must after pressing the button switch the power from DTU and then switch the power to DTU. The DTU must be hardware connected standalone (only one DTU in RS-485 network). After finished working with DTU configurator you can use up to 247 DTU sensors in one RS-485 network.
2.	Led Link	Green if link with DTU’s bootloader established
3.	Ticks	Shows that program is not hang-up. After link established the test for connection is performed each 0.5 seconds
4.	Status message	Shows current program state
5.	Button READL AL SETTING	User can use this button to read all settings from flash. It is done automatically when link is stablished.
6.	Button WRITE ALL SETTINGS	After some changes have been made in settings fields this button is not dimmed and can be pressed. Use it to write all changed settings into DTU’s flash.
7.	Button RESET DTU	Use this button to reset DTU’s software. After RESET the DTU will be in working state.
8.	Button EXIT	Use this button to exit the program. If there are some unsaved changes the program will ask permission before exiting.
9.	Button BURN FIRMWARE	Use this button only if there is real need to burn new firmware.

10.	Button VERIFY FIRMWARE.	Use this button to compare the firmware in the DTU with the file.
11.	RS-485 COM NUMBER	Set this field to RS-485 com number (better to be less than 10). See the exact port number in Control Panel / Devices Manager / Ports (COM). Each time the program exists, the COM port number is saved within the DTU configurator folder.
12.	Status text	Status text for warnings and errors
13.	Dtu factory settings	Subpanel for read-only settings, that are burned at factory (contains serial number, revisions, calibration and so on)
14.	Status string	Displays the status of factory settings. Possible messages: "good", "bad crc", "bad rs-485", "wrong calibration".
15.	Led	If dtu factory settings is OK the LED will be green.
16.	Serial	Serial number of DTU sensor.
17.	Hardware revision	Hardware revision in digital format: digit1.digit2
18.	DTU type	DTU type. For current state 0 means normal ultrasonic DTU, 1 means special DTU with additional high-precision mechanical density meter.
19.	Calibration data	Has two values: “good” if the calibration coefficients are normal and “bad” otherwise.
20.	User settings1	Subpanel for protocol selection
21.	Status string	Displays the status of user settings1 sector. Possible messages: "good", "bad crc", "bad rs-485".
22.	Led	If user settings1 is OK the LED will be green.
23.	RS-485 protocol	User can select one of four supported protocols: LSit, Omnicomm-2, Omnicomm-3, Modbus.
24.	Level Offset	For future expansion. Contains the value in millimeters that will be added to the measured level.
25.	User settings2	Subpanel for additional settings.
26.	Status string	Displays the status of user settings2 sector. Possible messages: "good", "bad crc", "bad rs-485".
27.	Led	If user settings2 is OK the LED will be green.
28.	Modbus & LSit net address	Net address from 1 till 247. Default value is 1. Used only for LSit and Modbus protocols.
29.	Fuel type	Used to get more precise measurement of fuel density by ultrasonic technique.
30.	Modbus baud	Used only when Modbus protocol is selected via field “23”. Default value is 19200. For LSit the baud rate is 2400, for Omicomm-2, Omnicomm-3 the baud rate is 19200.
31.	Modbus parity	Used only when Modbus protocol is selected via field “23”. Default value is “even”. For other protocols parity is “none”.
32.	Set to default button	Used to set all settings 2 to default state.
33.	Omnicomm settings	Subpanel for omnicomm settings.
34.	Status string	Displays the status of omnicomm settings sector. Possible messages: "good", "bad crc", "bad rs-485".
35.	Led	If omnicomm settings are OK the LED will be green.
36.	Net address	Net address from 1 till 247. Default value is 1. Used only for Omnicomm-2 & Omnicomm-3 protocols.
37.	Net Mode	Reserved for future
38.	Report On	Reserved for future
39.	Auto Period	Reserved for future
40.	Set to default button	Used to set omnicomm settings to default state.