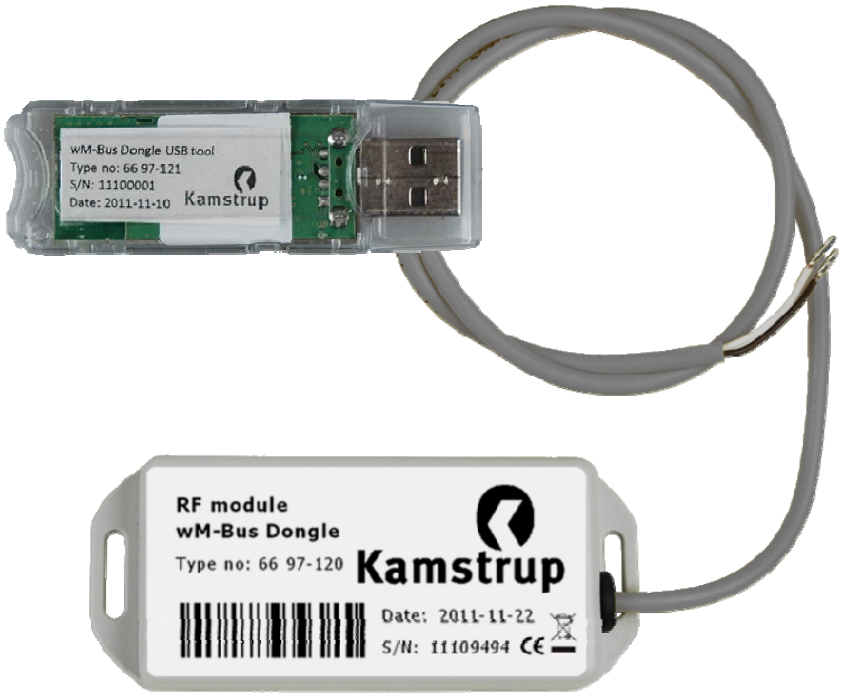
wM-Bus
Dongle SW Tool

USER MANUAL



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1 Overview

This document describes how to use the Kamstrup wM-Bus Dongle SW Tool to set up a wM-Bus dongle to communicate with a Wireless M-Bus meter. The meter can be a Kamstrup heat or water meter or other Wireless M-Bus meters using C-mode communication.

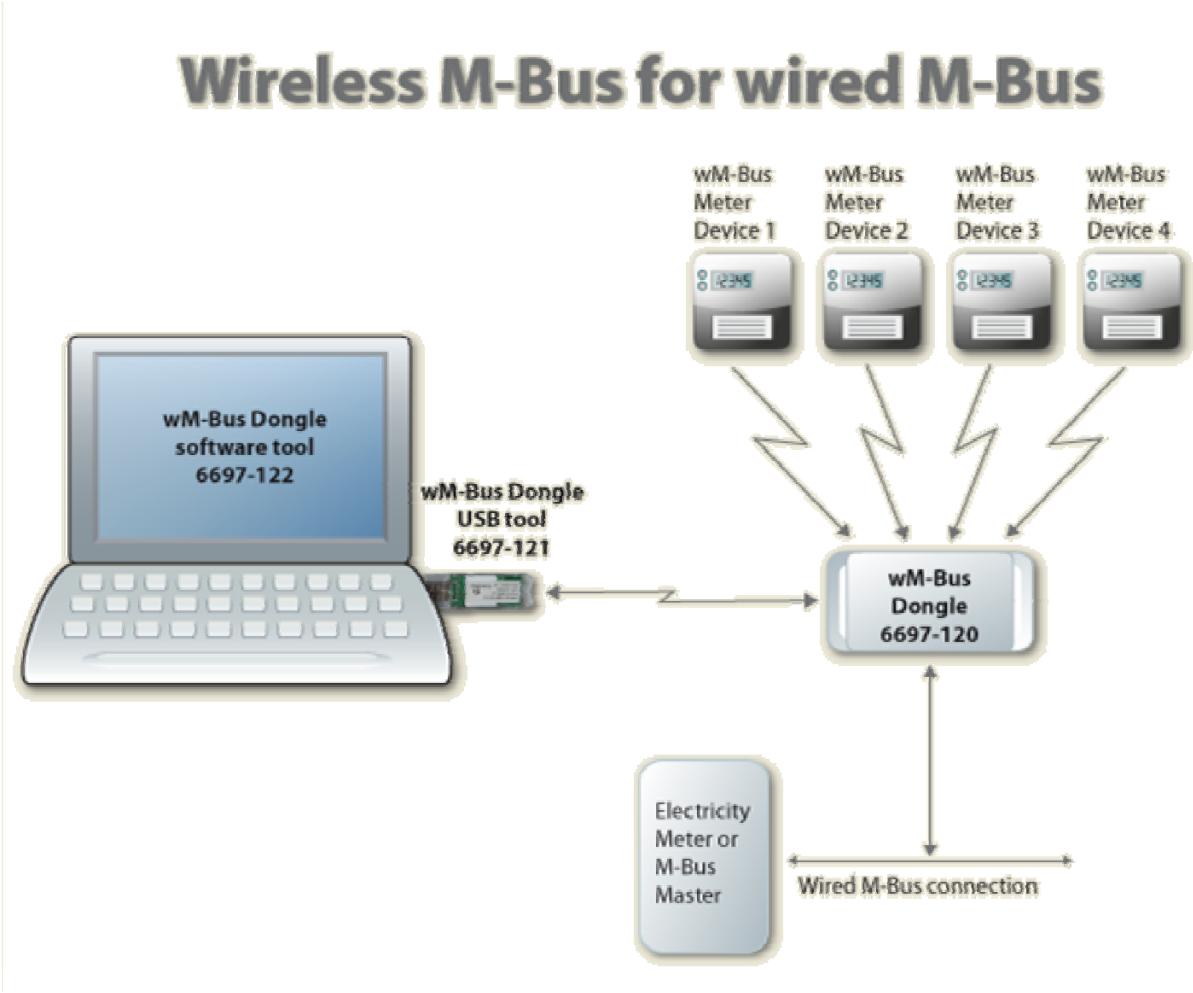

Figure 1

This Tool is used for setting up the parameters in the wM-Bus Dongle to enable it to communicate with the selected meter devices. The Tool communicates with the Dongle either through wired connection or wirelessly through a Kamstrup wM-Bus Dongle USB Tool connected to a PC.

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1.1 Terms and definitions

CAS	Central Access Server (Back office)
Dongle	In meter reading applications, a dongle is a piece of hardware that converts wired M-Bus signals from a computer to wM-Bus for connecting to meter devices.
wM-Bus	Wireless M-Bus according to standard EN13757-4
DSMR	Dutch Smart Meter Requirement
OMS	Open Metering System
wM-Bus Dongle	Hereafter named Dongle
wM-Bus Dongle USB Tool	Hereafter named USB Tool
wM-Bus Dongle SW Tool	Hereafter named Software Tool

1.2 References

EN13757-3	Communication systems for meters and remote reading of meters – Part 3: Dedicated application layer.
EN13757-4	Communication systems for meters and remote reading of meters - Part 4: Wireless meter readout (Radio meter reading for operation in the 868 MHz to 870 MHz SRD band).
FIPS-197	Federal Information Processing Standard. ADVANCED ENCRYPTION STANDARD (AES) published by the National Institute of Standards and Technology (NIST), USA.
DSMR	“Dutch Smart Meter Requirements v2.2 final Main.pdf” “Dutch Smart Meter Requirements v2.2 final P2.pdf” “Dutch Smart Meter Requirements v2.2 final Tender.pdf”.

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2 Installation

Install the Software Tool on each PC that will be used to communicate with the Dongle.

Download the software from www.kamstrup.com, and install it on your PC. When the installation is completed, a Kamstrup icon used for starting the software tool is generated and placed under *start* → *All programs*.

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3 Configuration

To configure the Dongle, follow the steps below.

1. Connect the Dongle to a supply, either a wired bus or to 24 V DC. Run the wM-Bus Wireless application by selecting *Run the WIRELESS Application*. Then, select the Dongle by clicking the button [Find boards in range] and selecting it via the drop-down menu next to *Board to configure*. Clicking the button [Select board] now adds the Dongle to the program (see *Figure 2*)
2. Search for wM-Bus meters (see *Figure 2*)
3. Choose the wM-Bus meter (see *Figure 2*)
4. Configure the wired M-Bus address etc. (see *Figure 3*)
5. Store the configuration (see *Figure 3*).

Note: In *Figures 2* and *3*, all fields marked with red must be filled in or selected.

The menu tabs of the software are described in the following paragraphs.

3.1 Main tab

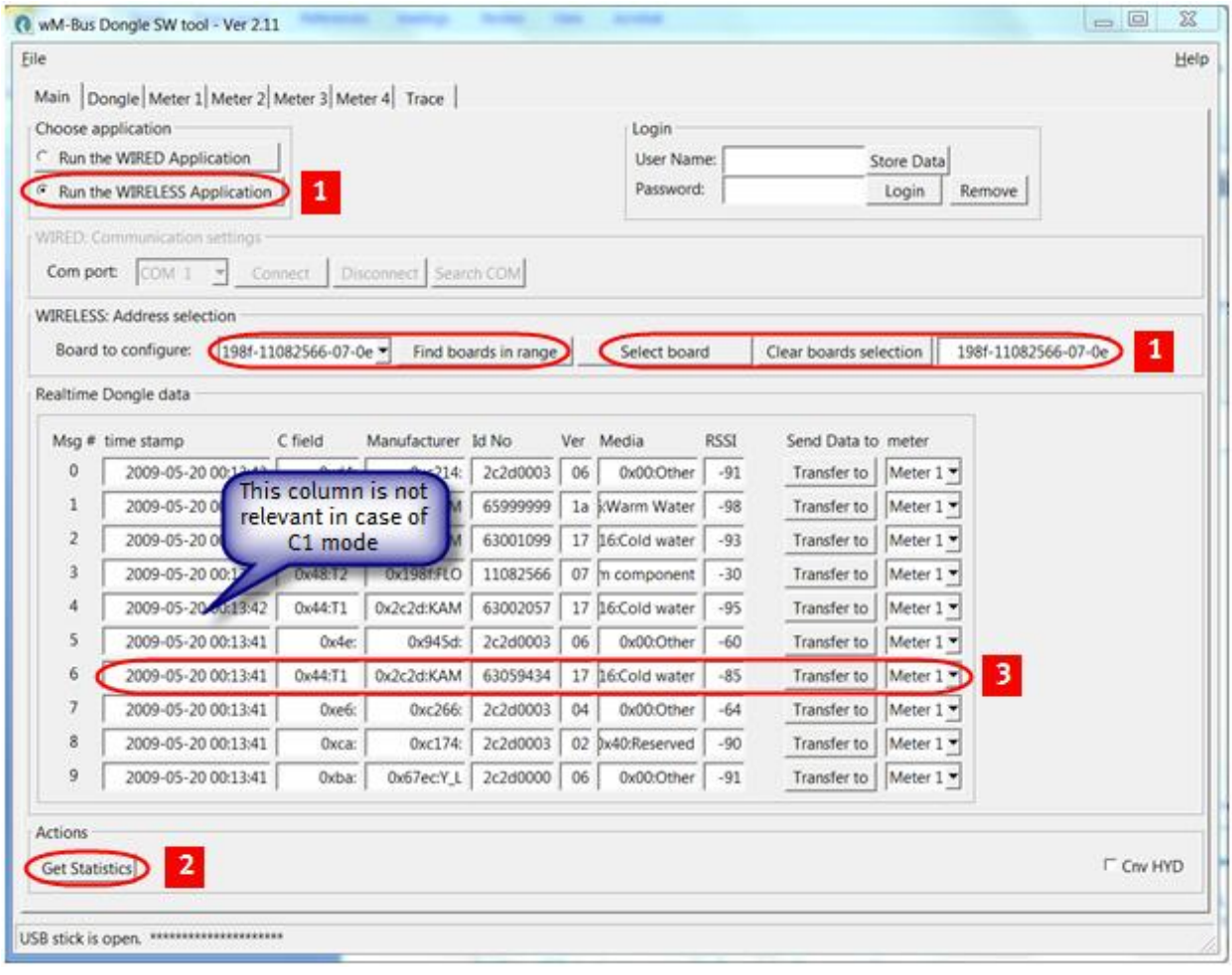

Figure 2

Choose application: Select the interface to use, wired or wireless. If wired application is used, remember to connect an M-Bus to the serial/USB converter, e.g. a Kamstrup MBM 250D. If the

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wireless application is used, remember to connect the USB Tool to the PC. Drivers for this USB Tool are normally found by the operating system.

Login: Not in use for this application.

WIRELESS: Address selection: Click the [Find boards in range] button to start searching for nearby dongles. Select the Dongle you want to configure, and click [Select board].

WIRED: Communication settings: Select the COM port from the *COM port* drop-down menu. Click the [Connect] button. The status of the COM port is shown in the bottom line of the window, and if the status is OK, it will say "Connected to serial". The bottom line in the window will show the status of the serial port. The program automatically scans for active COM ports at start-up and only shows the active COM ports. Click the [Search COM] button to carry out a new search.

Search for wM-Bus meters:
Actions: Click the [Get Statistics] button to get information about the last 10 radio communications received by the Dongle.

Realtime Dongle Data:
Timestamp: Timestamp set by the Dongle when the data is seen (not used for this application).
C-field: Specifies the frame type according to EN13757-4.
Manufacturer: The unique User/Manufacturer ID of the meter.
Id No: The unique serial number of the meter.
Ver: The version of the meter.
Media: The device type information, HEAT, WATER etc.
RSSI: "Received Signal Strength Indicator" is indicated in dBm. Minimum level is -95 dBm.

Click the [Get Statistics] again until you find a meter (serial number) that you want to connect to the Dongle.

Select wM-Bus meter:
In the column *Id No.*, select the meter serial number that you want to connect to the Dongle, and click [Transfer to] to copy the meter details to a specific *Meter* tab (1-4). Select the tab in question for further configuration.

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3.2 Meter x tabs

This description is valid for the tabs *Meter 1*, *Meter 2*, *Meter 3* and *Meter 4*.

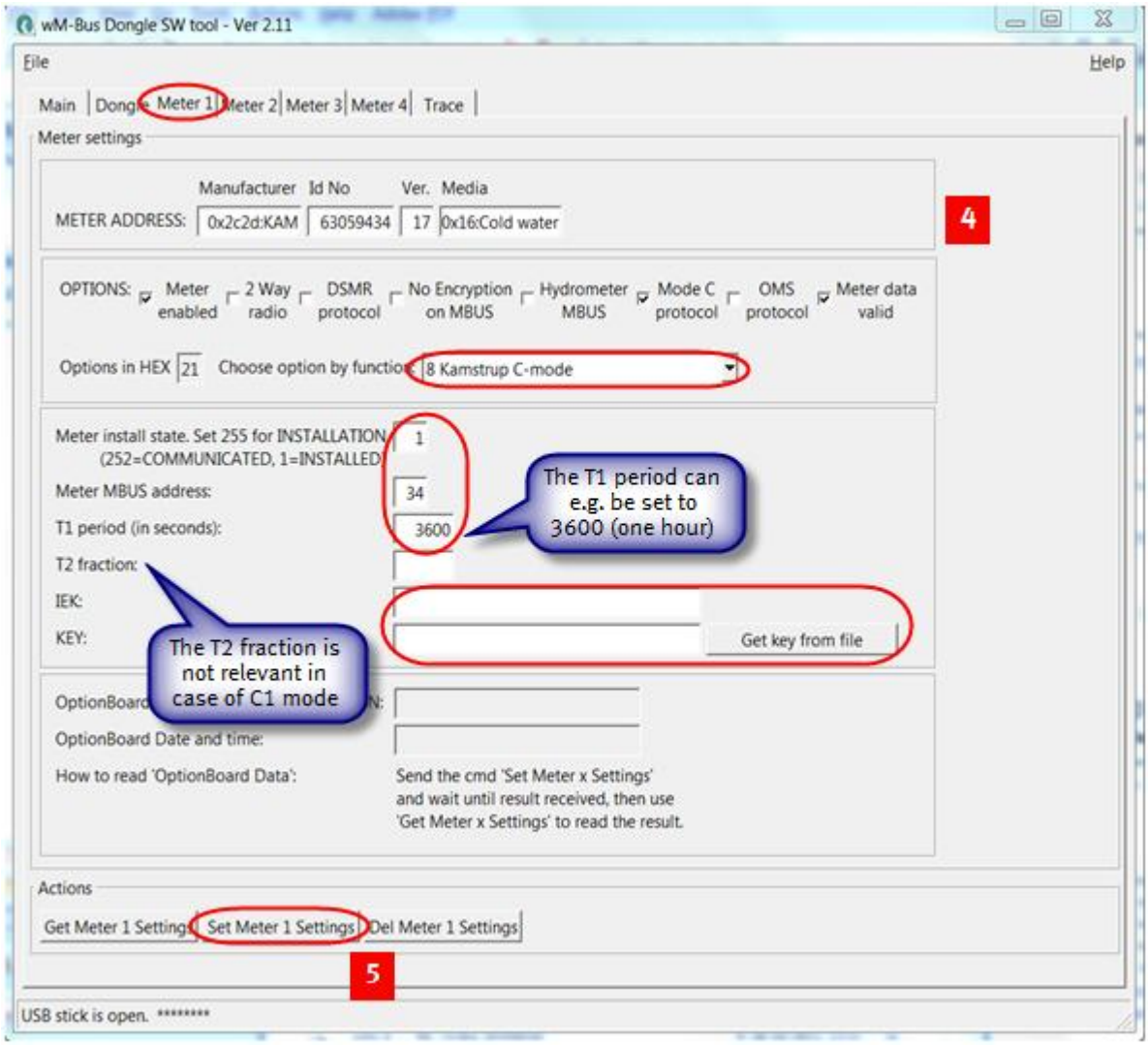

Figure 3

Choose option by function: Select *Kamstrup C-mode* in the drop-down menu.

Meter install state: Set this parameter to 1.

Meter M-Bus Address: Select the primary M-Bus address (from 1 to 250), e.g. the last two digits of the meter's serial number (the Dongle supports secondary addressing).

T1 period (in seconds): Enter a timeout in seconds. When the connection between the Dongle and the meter is lost and after entering the timeout, the answer from the Dongle is an "empty response".

KEY: Enter the key and click [Get key from file] to get the encryption key from the encryption file (use the customer number as password).

[Set Meter 1 Settings]: Click this button to save the settings.

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The Dongle can also be used for non-Kamstrup meters. See appendices for alternative configuration possibilities. Note that Kamstrup does not offer support if the Dongle is used for non-Kamstrup meters.

3.3 Dongle tab

This tab is normally not used for this application.

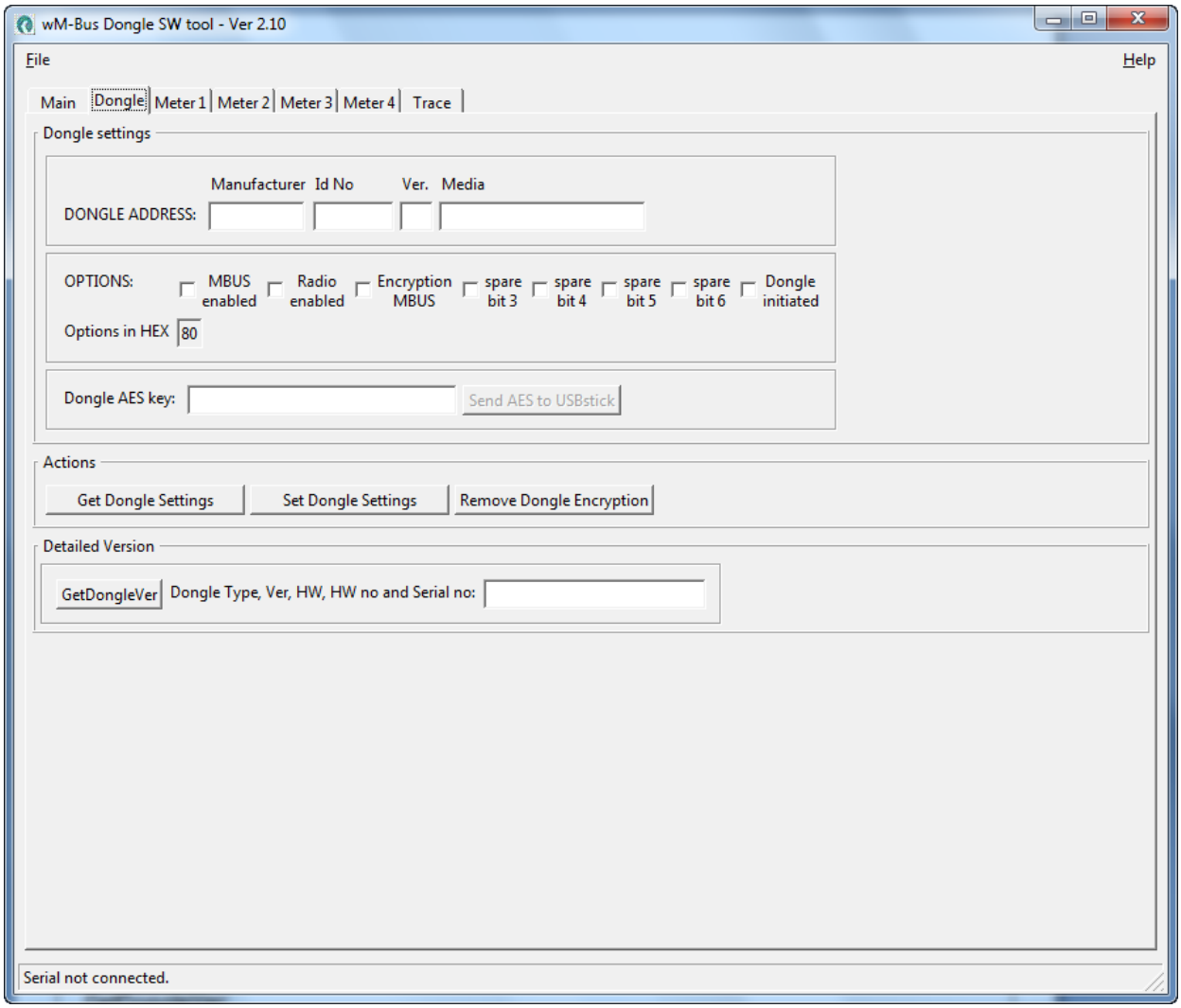

Figure 4

[Get Dongle Settings]**:** Click this button to read the Dongle set-up data and display it in this window.

OPTIONS:
*M-Bus enabled***:** Tick this checkbox for enabling wired M-Bus

*Radio enabled***:** Tick this checkbox for enabling set-up via wireless M-Bus

*Encryption M-Bus***:** Tick this checkbox for enabling encryption via the wired M-Bus

*Spare bit 3***:** Not used
*Spare bit 4***:** Not used
*Spare bit 5***:** Not used

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Spare bit 6: Not used

Dongle initiated: Untick this checkbox, and click the [Set Dongle Settings] button under *Actions* to reset all data in the Dongle to factory defaults. Click the button again for new use.

Dongle AES key: Not used for this application.

[Send AES to USB stick]: Not used for this application.

[Set Dongle Settings]: Click this button to save the new Dongle data selected in the above fields. Under *DONGLE ADDRESS*, only the *ID No.* can be set, the other fields are fixed in the Dongle.

[Remove Dongle Encryption]: If encrypted M-Bus is enabled, click this button to remove the encrypted M-Bus. The option *Encrypted M-Bus* must stay enabled when clicking [Remove Dongle Encryption] and is automatically cleared afterwards.

[GetDongleVer]: Click this button to get the Dongle version.

3.4 Trace tab

Data sent and received can be viewed in this window for debugging purposes.

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4 Upgrade Dongle software

In the *File* menu, choose *Dongle Update*.

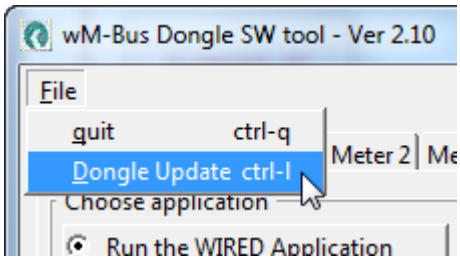

Figure 5

Click the [UPGRADE] button, and choose the **.bin* file for the Dongle in the *File* menu. The upgrade starts automatically, when selected.

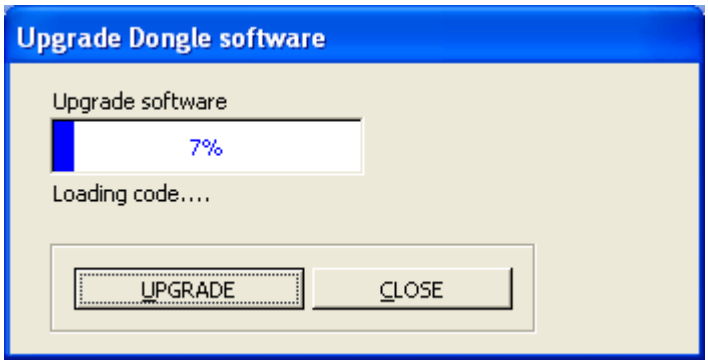

Figure 6

Do not stop the upgrade, when started. The upgrade only takes a few minutes.

When the upgrade is finished, click [Close] to close the *Upgrade Dongle software* dialog box.

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5 Help menu

Click the [Help] button in the upper right corner or press Ctrl+A to open the dialog box *wM-Bus Dongle SW Tool*. Here, the version of the program is shown, and if the USB Tool has been opened, the version of this software is shown too.

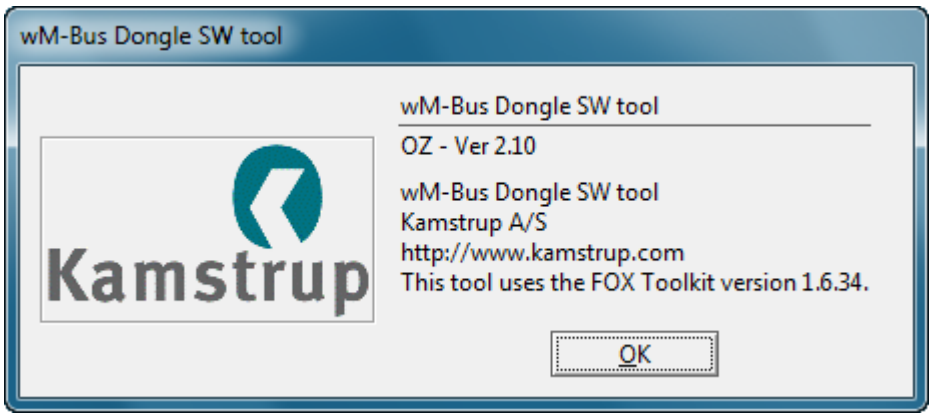

Figure 7

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Appendix A: DSMR set-up

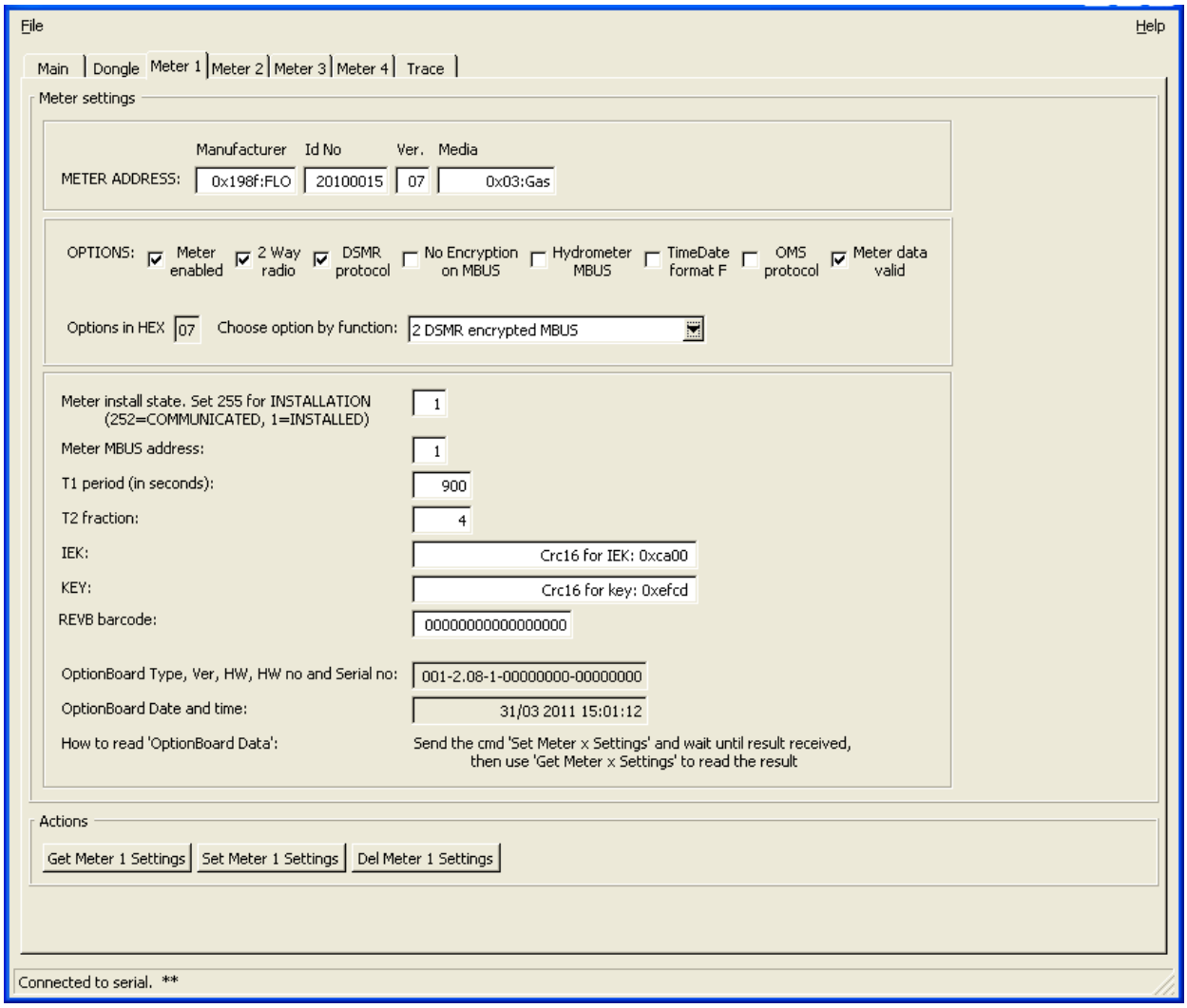

Figure 8

Set-up of a DSMR meter:

- After starting the meter, find the meter in the *Main* tab, and transfer the data to the wanted *Meter X* tab, or enter the meter data manually.
- Set the *OPTIONS* to *0x07 0x0F*, depending on whether the wired M-Bus should be encrypted or not.
- Set *Meter install state* to *255*. Next time the meter sends out an *ACCESS DEMAND INSTALL STATE (CI=0x06)*, the Dongle will acknowledge this, and the state will change to 1 when seeing the next message from the meter.
- Set *Meter M-Bus address*.
- *Rev B barcode* is not used.

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Appendix B: OMS T1 meter set-up

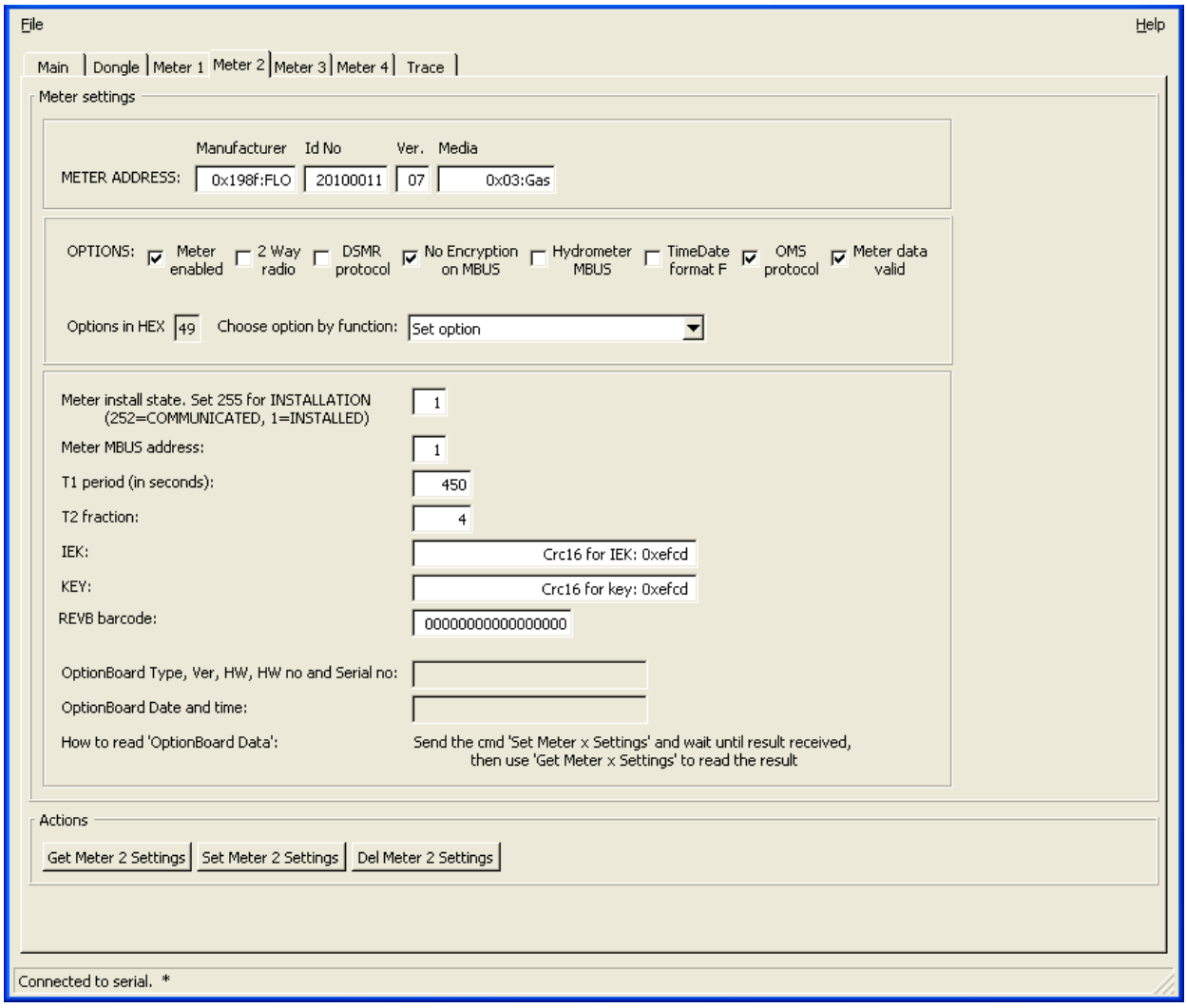

Figure 9

If the option board (radio module) in the meter is an OMS T1 type, the set-up should be as follows:

- Transfer the data from the *Main* tab, or enter the *METER ADDRESS* manually.
- Set the options as shown, i.e. tick the checkboxes *Meter enabled* and *Meter data valid* (*Options in HEX* = 49).
- Set *Meter install state* to *1* as there is no installation procedure.
- *T1 period (in seconds)* and *T2 fraction* cannot be set.
- Set *IEK* and *KEY* to the same transport key.
- *Rev B barcode* is not used.
- The *Option Board* data fields are not used.

No Encryption on M-Bus:

- Untick this checkbox if the decryption has to be done in the back office (then the *Options in HEX* will show 41).

Important for OMS: Both *IEK* and *KEY* must be set, and set to the same key.

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Appendix C: Flonidan Rev. B meter set-up

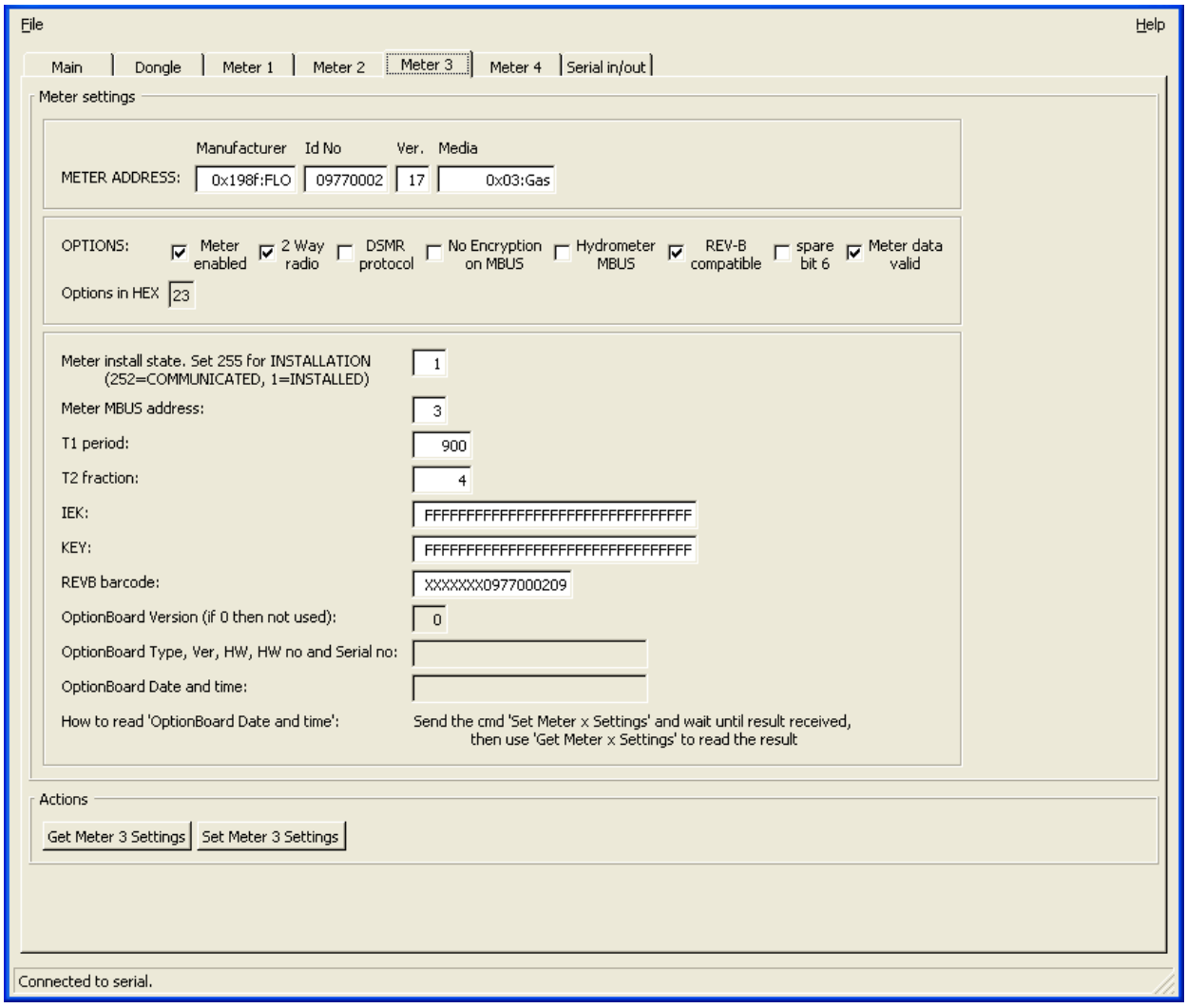

Figure 10

If the option board (radio module) in the meter is an old Flonidan Revision B type, the set-up should be as follows:

- Transfer the data from the *Main* tab, or enter the *METER ADDRESS* manually.
- Set the options as shown, i.e. tick the checkboxes *Meter enabled*, *2-way radio*, *Rev B compatible* and *Meter data valid* (*Options in hex* = 23).
- If the meter is not installed, set the *Meter Install state* to 255. Next time the meter sends out an *ACCESS DEMAND INSTALL STATE (Ci=0x06)*, the Dongle will acknowledge this, and the state will change to 1 when seeing the next message from the meter.
- Set *Meter M-Bus address*.
- *T1 period* and *T2 fraction* cannot be set.
- *IEK* and *KEY* are not used.
- Set the *Rev B barcode*. As this is not included in the radio message, the Dongle will add this to the wired M-BUS REQ_UD2 response.
- The *Option Board* data fields are not used.

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Appendix D: Hydrometer set-up

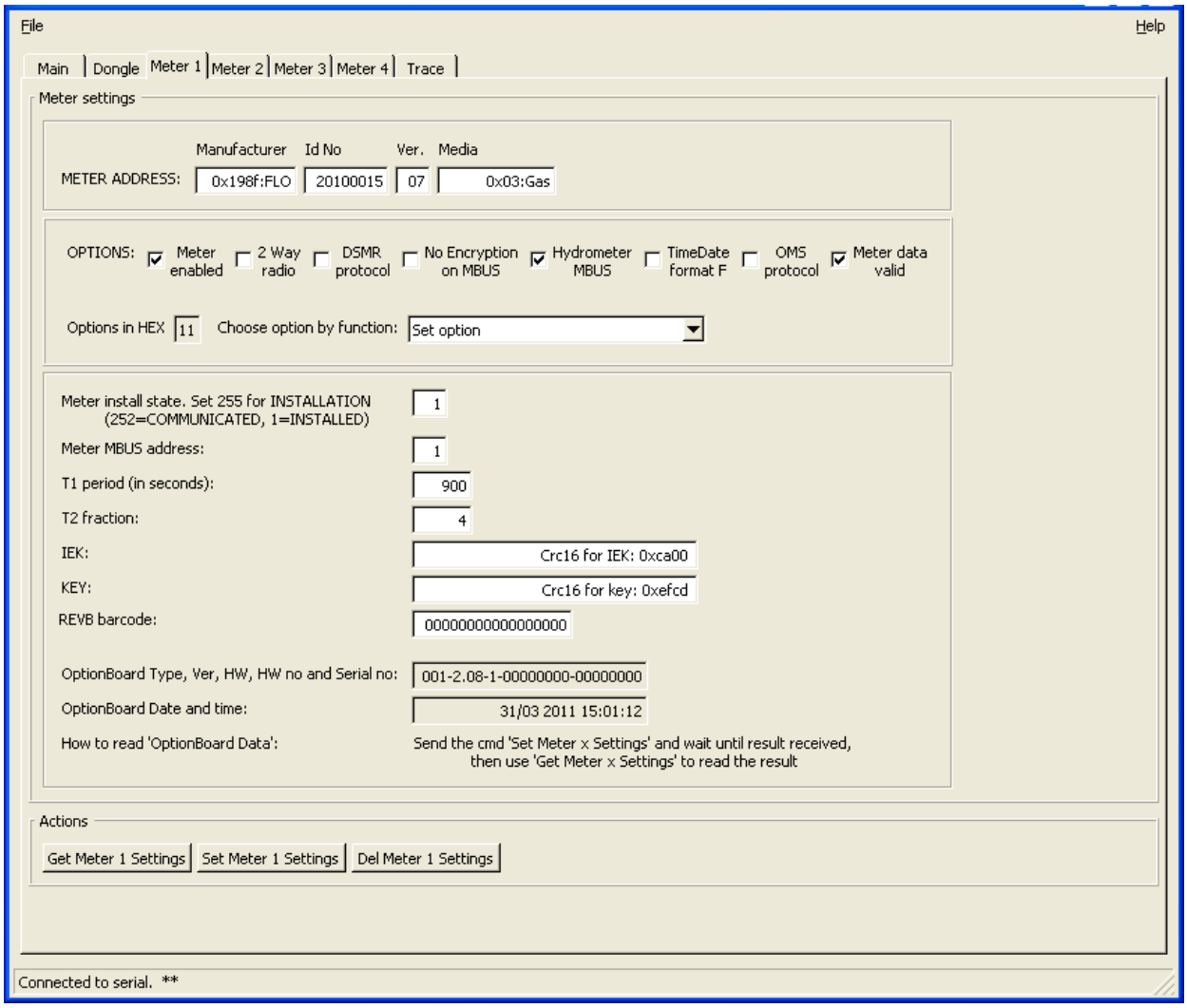

Figure 11

Set-up of a Hydrometer meter:

- Find the meter on the *Main* tab, and transfer the data to the relevant *Meter X* tab.
- Set *Meter install state* to 1 as there is no installation procedure for Hydrometer.
- Set *Meter M-BUS address*.
- *T1*, *T2*, *IEK*, *KEY*, *Rev B barcode* and the *Option Board* data fields are not used.

Warning: If [Get Meter X Settings] is clicked, do not click [Set Meter X Settings] as this will destroy the meter settings (Hydrometer addressing is proprietary, and setting the address after getting the meter settings will result in a wrong address).

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In the Software Tool version 2.6, tick the checkbox *Cnv HYD* in the lower right corner, and the program will treat the HYD, EWT and GWF manufacturers in a special way as they are sent as M-Bus signals and not proprietary. The *ID No.*, *Ver* and *Media* will be shown correctly. The data can be transferred to the *Meter 1-4* tabs, and the buttons [Set Meter X Settings] and [Get Meter X Settings] can be used without problems.

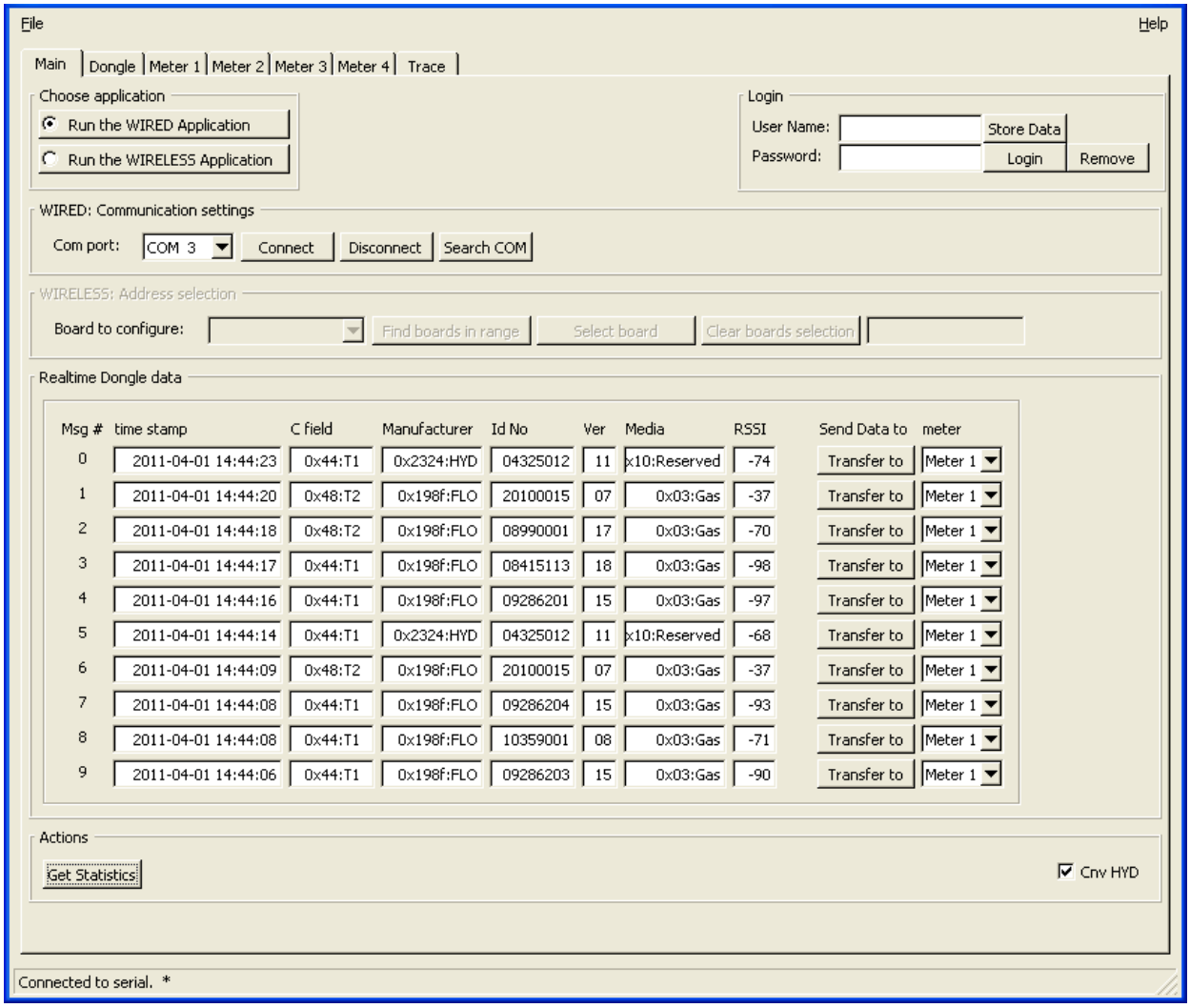

Figure 12

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Appendix E: OMS T2 meter set-up

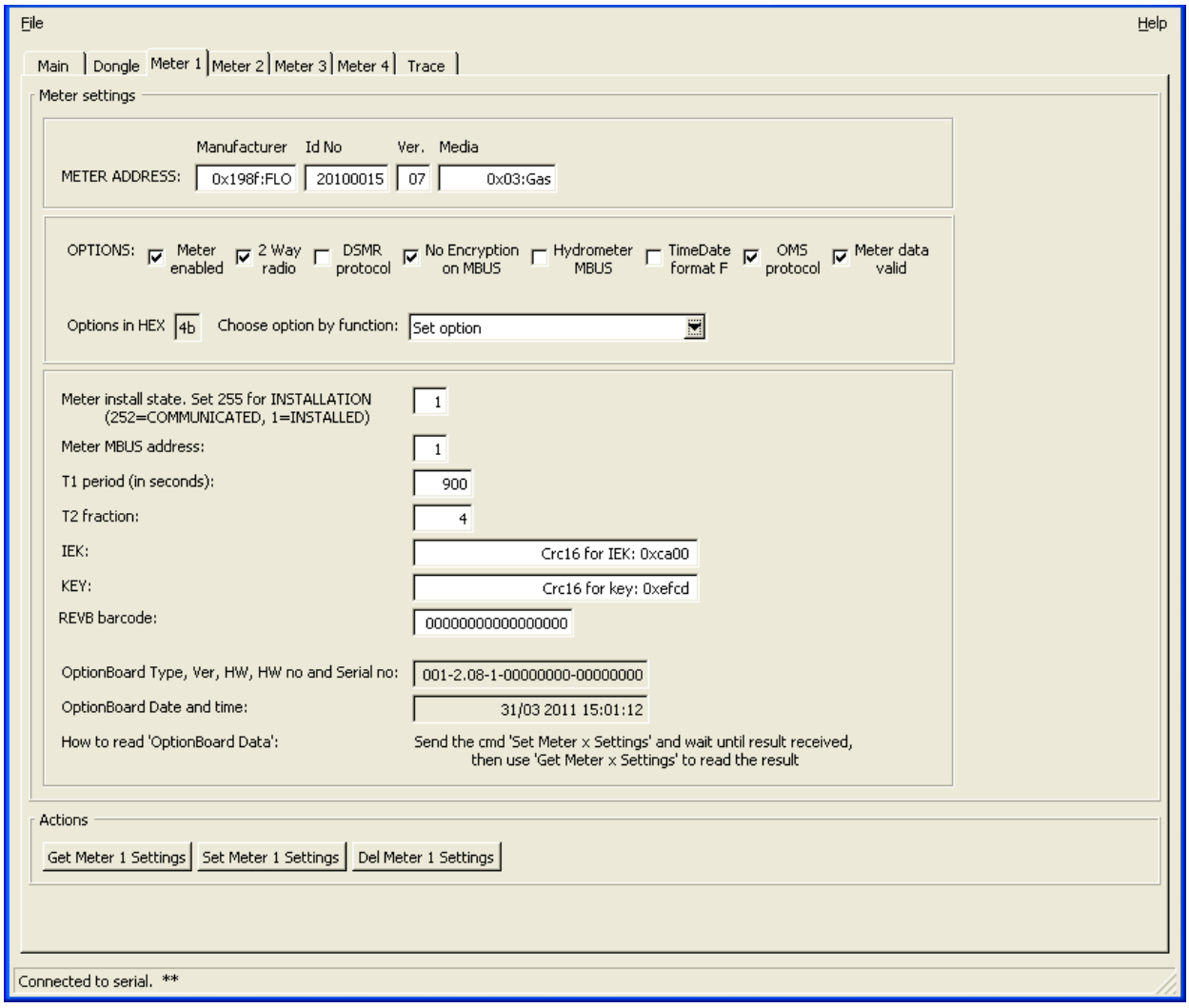

Figure 13

If the option board (radio module) in the meter is an OMS T2 type, the set-up should be as follows:

- Transfer the data from the *Main* tab, or enter the *METER ADDRESS* manually.
- Set the options as shown, i.e. tick the checkboxes *Meter enabled*, *2-way radio*, *OMS T2 protocol* and *Meter data valid* (*Options in hex* = 4B).
- Set *Meter install state* to 1 as there is no installation procedure.
- Set *T1 period (in seconds)* to how often the meter is to send out meter data. *T2 fraction* is not used.
- Enter the same key in *IEK* and *KEY*.
- *Rev B barcode* is not used.
- For the *Option Board* data fields, see *3.2 Meter x tabs*.

No Encryption on M-Bus:

- Tick this checkbox if the decryption has to be done in the back office (then the *Options in HEX* will show 43).

Important for OMS: Both *IEK* and *KEY* must be set, and set to the same key.

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Appendix F: DSMR TimeDate format F set-up

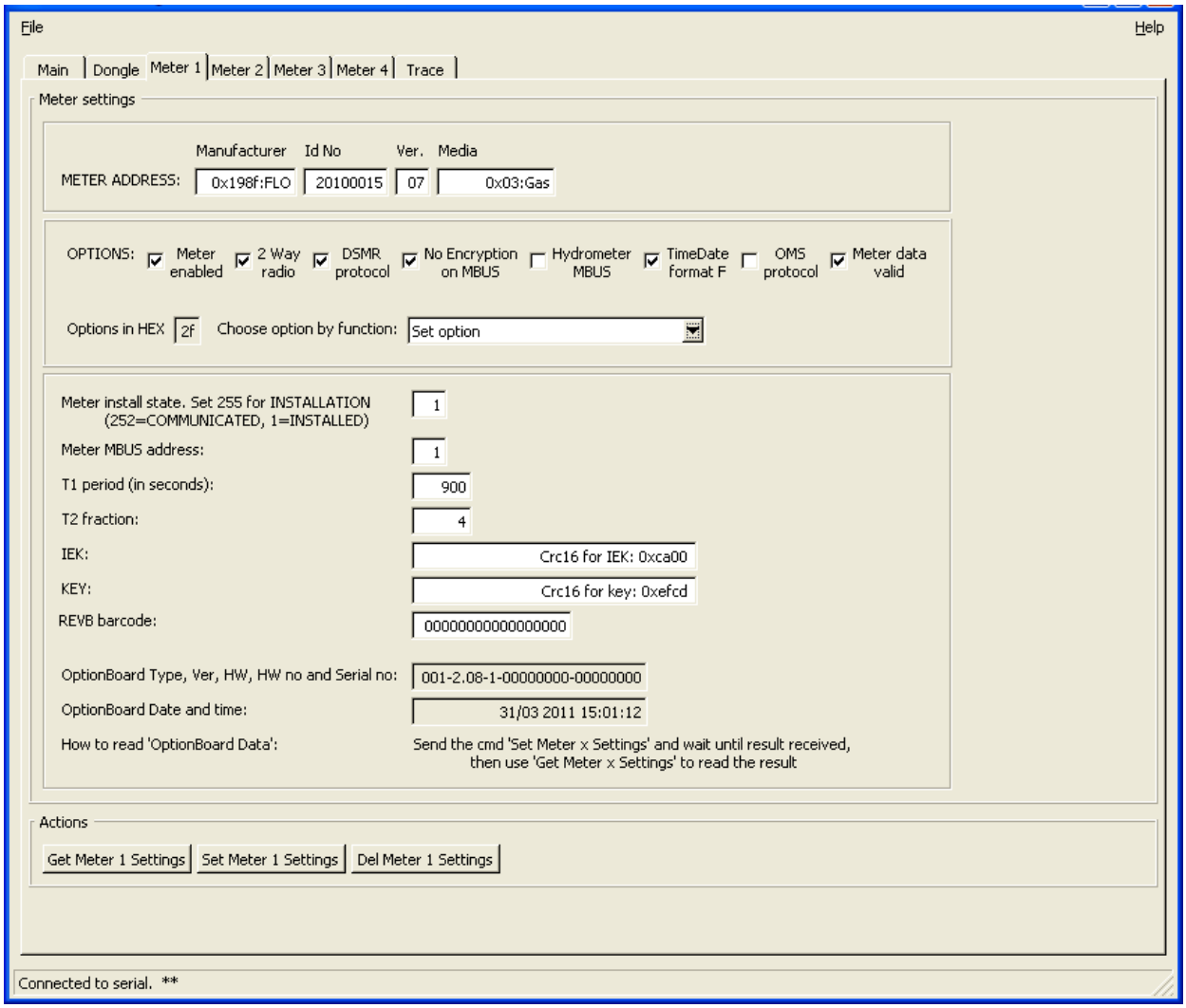

Figure 14

If *TimeDate format F* is required to and from the Dongle, set up the Dongle as shown in *Appendix A: DSMR set-up*. However, always run unencrypted M-Bus, i.e. tick the checkbox *No Encryption on M-Bus*, and tick the checkbox *TimeDate format F* (*Options in HEX* = 2F).

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