

USER MANUAL

SMART COMMANDER

PC TOOL FOR WE WIRELESS
MODULES

VERSION 1.7

FEBRUARY 23, 2024

WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

Revision history

Manual version	SW version	Notes	Date
1.0	1.0.0.0	<ul style="list-style-type: none"> • First release. 	August 2019
1.1	1.0.0.6	<ul style="list-style-type: none"> • New version of the Smart Commander. 	February 2020
1.2	1.0.1.0	<ul style="list-style-type: none"> • New version of the Smart Commander. 	July 2020
1.3	1.1.0.0	<ul style="list-style-type: none"> • New version of the Smart Commander. 	August 2020
1.4	1.2.2.0	<ul style="list-style-type: none"> • New version of the Smart Commander. • Added new chapter <code>Transparent mode</code>. 	May 2021
1.5	1.3.0.0	<ul style="list-style-type: none"> • New version of the Smart Commander. • Added note on radio module <code>Setebos-I</code>. • Updated chapter <code>System requirements</code>. 	May 2022
1.6	1.3.0.0	<ul style="list-style-type: none"> • New corporate design 	May 2023
1.7	1.3.3.0	<ul style="list-style-type: none"> • New version of the Smart Commander. 	February 2024

* Please also check the chapter `Software history`.

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1 Overview

The Smart Commander is an easy-to-use PC software that enables complete control of the Würth Elektronik eiSos wireless modules via the command interface. This tool offers an intuitive graphical user interface that enables the user to interact with the wireless modules and understand the communication protocol between the module and a host via the **command interface**.

Additionally, the Smart Commander can be used to transfer payload data via wireless modules running in transparent mode.

The Smart Commander works out-of-the-box with the Würth Elektronik eiSos wireless module evaluation boards and USB sticks. This tool along with the evaluation boards allow quick prototyping and testing of various features of the radio modules.



Smart Commander is an evaluation tool that is intended for development purposes only. It is recommended to check regularly for available updates.

1.1 Supported devices

The Smart Commander establishes communication with the radio module by opening a virtual COM port on the PC. The Würth Elektronik eiSos radio evaluation platforms have a serial-to-USB converter on-board that enables such a connection via USB port to the PC. The Smart Commander has been developed and tested with these evaluation platforms. The tool implements the complete set of commands supported by the corresponding radio module.

1.2 System requirements

This tool is intended to run on a PC with the following requirements:

1.2.1 Supported operating systems

The following operating systems are supported:

- Windows 10, 64 bit

1.2.2 .NET

Version 6.0.2 or later of Microsoft .NET is required for using Smart Commander. Install this package if you receive a corresponding error message when starting the program.

1.2.3 Internet connection

The tool works completely offline without the need for any sort of internet connection.

1.3 Installation

The Smart Commander itself is an executable and does not require installation. It will create folders and files on the hard drive e.g. for log file storing.

However, the serial-to-USB FTDI converter chip (i.e. **FT232R**) on the evaluation platform or USB dongles requires special drivers to be installed for proper operation.

To use USB dongles or evaluation boards of Würth Elektronik eiSos wireless connectivity modules, the Virtual COM Port (VCP) drivers have to be installed by following the "Installation Guides" of FTDI available under: <https://www.ftdichip.com/Drivers/VCP.htm>



It is recommended to restart the PC after the installation of drivers.

1.4 Connecting the evaluation board to the computer

The Würth Elektronik eiSos wireless module evaluation board has to be connected to the PC using the USB cable provided with the kit. On successful installation of the drivers (see Section 1.3), the evaluation board appears as a USB serial port with a numbered COM port in the device manager as shown in the Figure 1.

The same evaluation board will also install a second driver "USB serial converter" in the USB-controller section.



Figure 1: Virtual COM port.

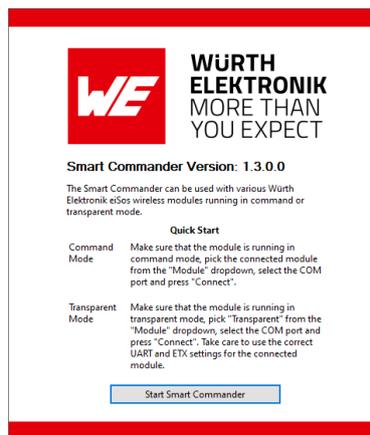
2 Operation

This chapter provides operational instructions for the Smart Commander.

2.1 Starting the program

Double-click "smartCommander.exe" to start the program.

The Smart Commander can be used with wireless modules running in command or transparent mode. The steps required for establishing a connection to a wireless module and for communicating with it depend on the operation mode being used. At start-up, a window containing some quick start hints for the two operation modes is shown.



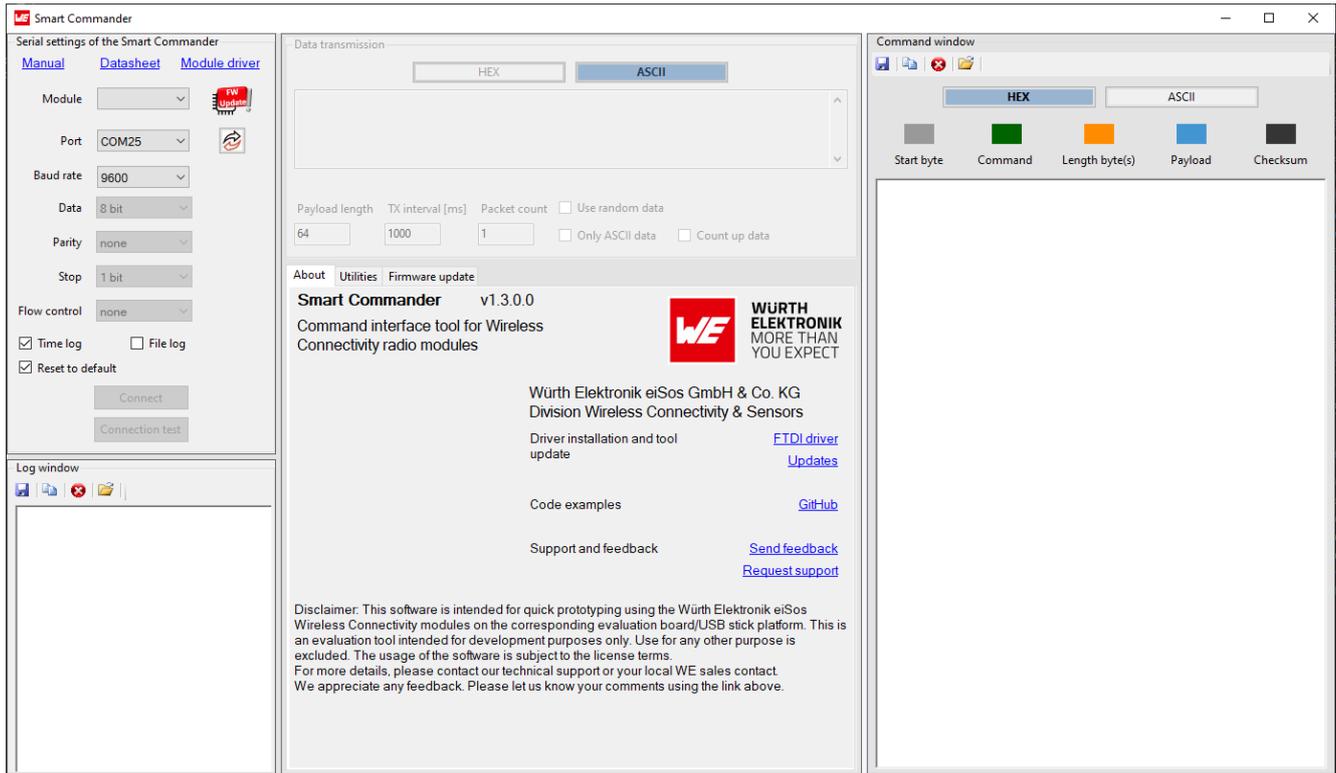


Figure 2: Smart Commander start-up

2.2 Radio module tabs

The Smart Commander supports a range of radio modules from Würth Elektronik eiSos. The desired module can be selected by scrolling down the "Module" drop-down menu and selecting the corresponding module. Selecting a module from the menu automatically makes the module tab available with a possibility to test all the related commands (see Figure 3).

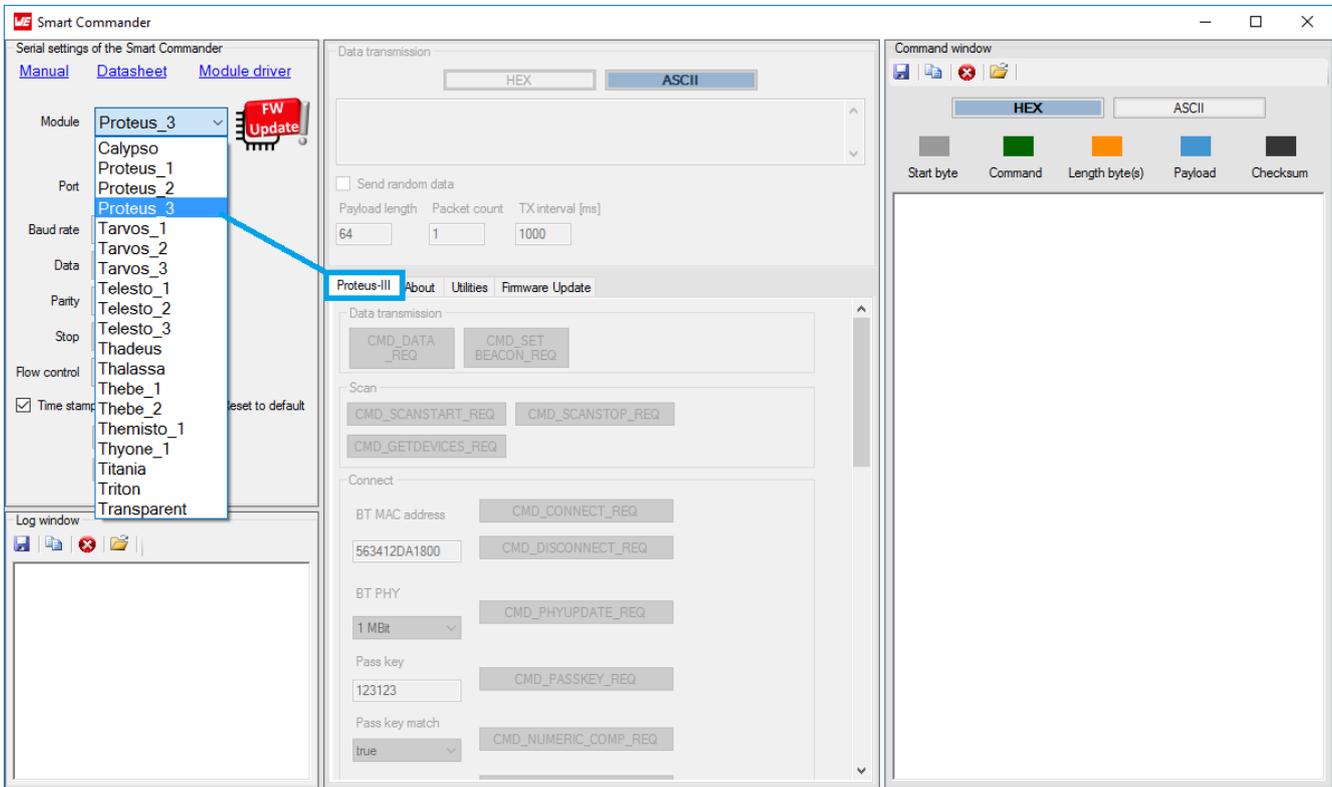


Figure 3: Radio module selection

 The Smart Commander is intended for use with the radio modules with the command interface. Radio modules that support various operating modes must be set to command mode first, so that the command interface is enabled. Please refer to the respective radio module manual to do so.

 When taking the Setebos-I module into operation with the Smart Commander, either the Proteus-III or the Thyone-I module has to be selected on the graphical interface, depending on the mode defined through the logic level of the *RPS* pin. For Setebos-I the pin B1 has no GPIO function.

The Smart Commander additionally supports communication with a radio device in transparent mode, which only supports transmission and reception of pure payload data. Please refer to chapter *Transparent mode* for more information.

2.3 COM Interface

On connecting the radio evaluation board to the PC, the device appears as a USB serial COM port. All the COM ports on the PC are made available for connection under the "Port" drop-down menu. The available COM ports can be updated in the drop-down menu by pressing the refresh button (see Figure 4). Select the COM port corresponding to the connected radio module by scrolling through the menu.

Please note that only COM ports corresponding to FTDI UART-to-USB converter chips are shown. Before connecting a module or device via USB for the first time, the correct driver must be installed and a (virtual) COM port must be available (see Section 1.3).

Additional drop-down menus allow selection of serial port parameters such as baud rate, flow control and parity. The values are set to the default configuration of the selected module and can be used unaltered. Press the connect button to connect to the device. Messages in the log window appear indicating connect/disconnect events or errors.

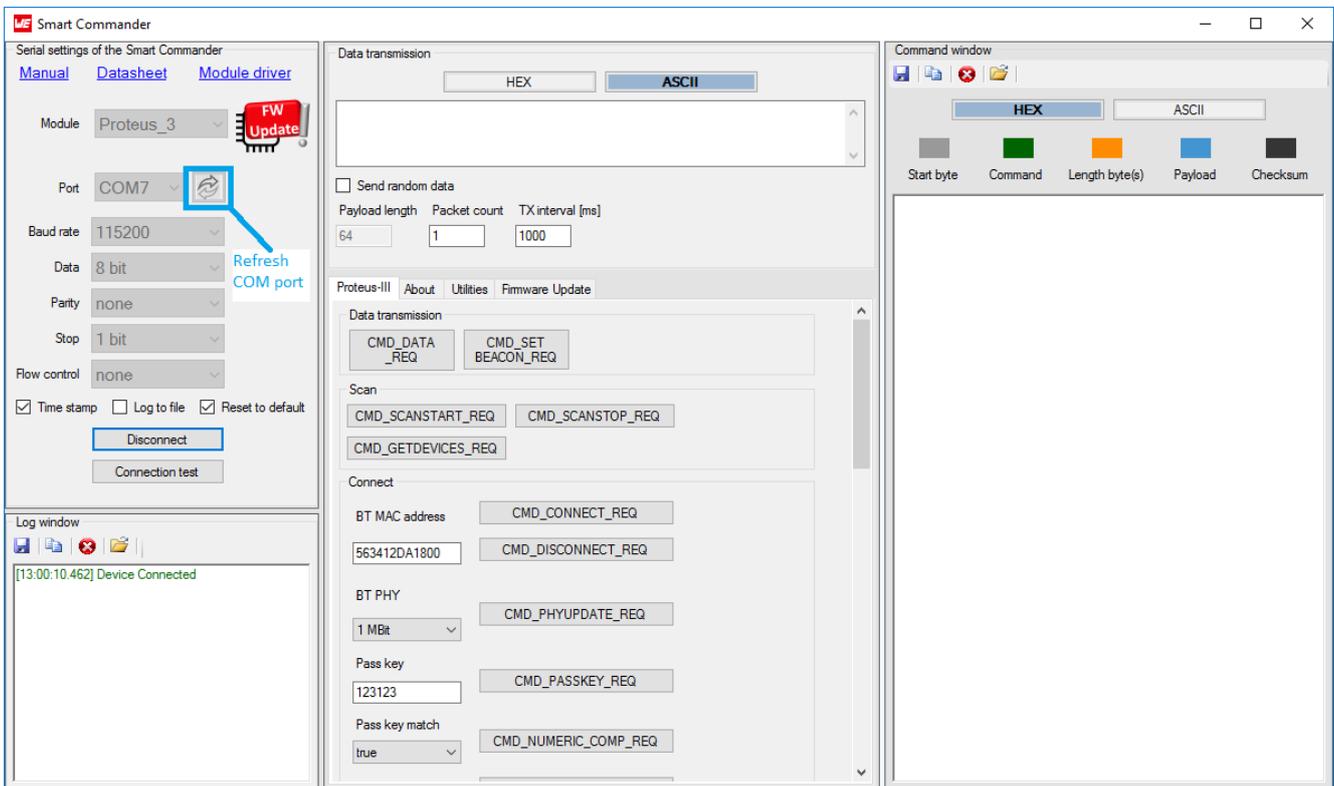


Figure 4: Open COM port

2.4 Data logging

2.4.1 Log window

All messages from the Smart Commander are printed on to the log window. The messages are color coded to easily distinguish warnings and errors from information messages.

- **Time stamp:** The messages can be prefixed with a time stamp by checking the time stamp check box.
- **Log to file:** On checking the save to file check box, all the logs are automatically stored in a file under the path ".\log".

The integrated tool bar provides additional actions such as copy to clipboard, save, clear and open log path.

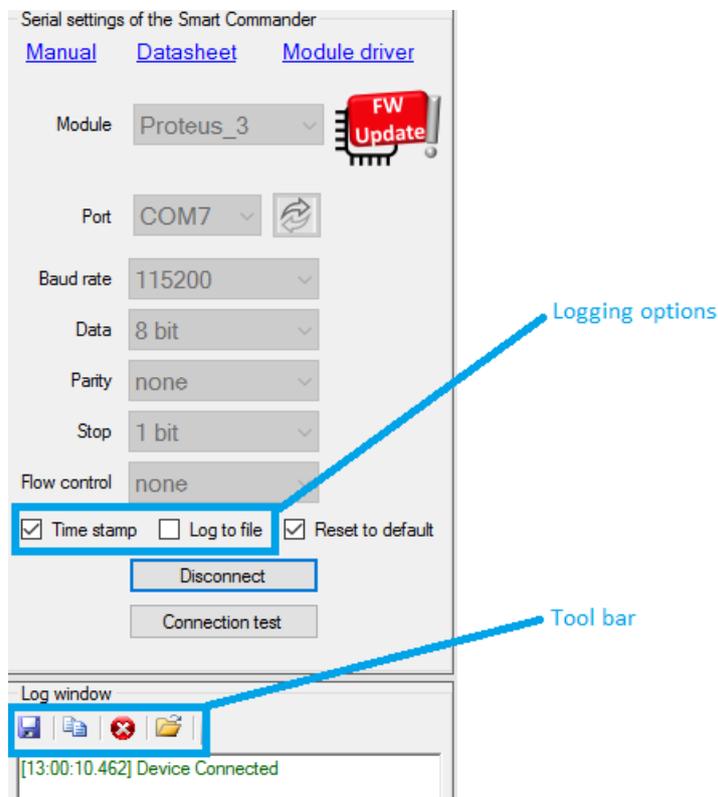


Figure 5: Log window and logging options

2.4.2 Command window

The Smart Commander configures and controls the connected wireless module by sending the corresponding commands over the serial interface. These command packets and the resulting responses from the module are displayed in the command window. The packet structure used for communication with the module is color coded for better readability. The packets sent to the module are left-aligned and the ones received from the module are right-aligned. For each command packet, a brief packet description is shown.

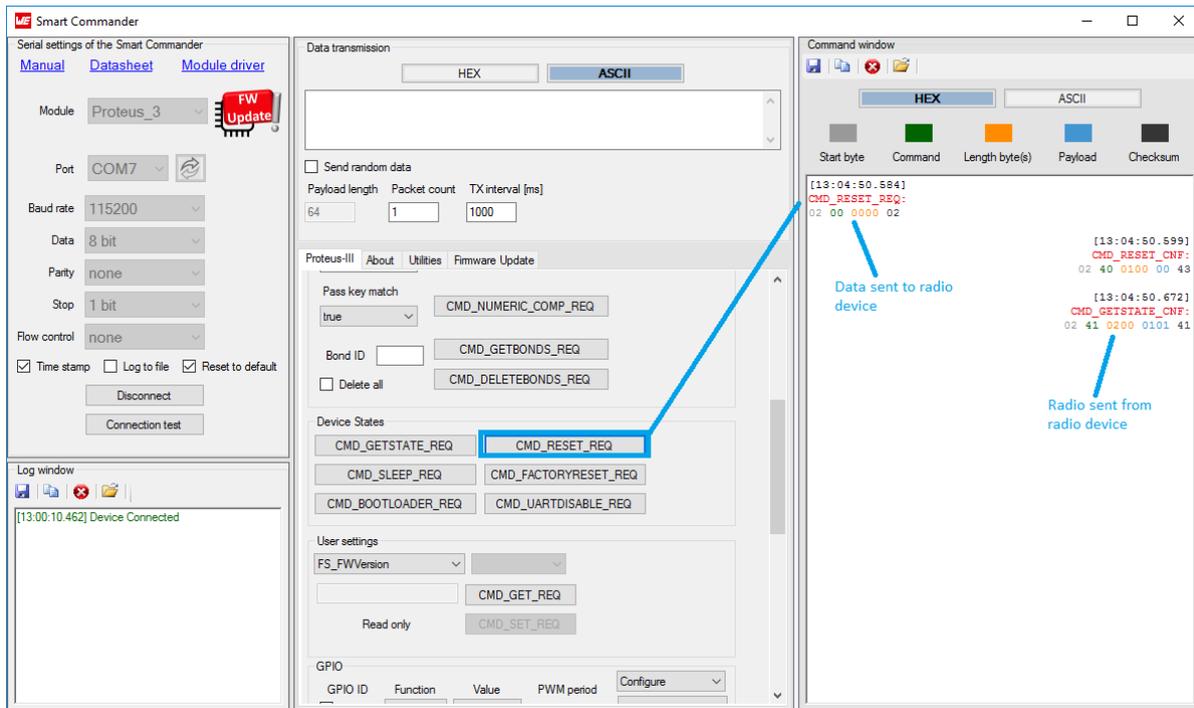


Figure 6: Command window

The messages can be prefixed with a time stamp by checking the time stamp check box. On checking the "Log to file" check box, all the messages are automatically stored in a file under the path ".\log". The integrated tool bar provides additional actions such as copy to clipboard, save, clear and open the log path.

2.5 Radio module tab

The main task of the Smart Commander is to create and send command packets to the radio module and receive responses. In order to achieve this, each command supported by the module has a dedicated button within the corresponding tab. The user can input the parameters of the command by either typing in the value in the corresponding text field or by selecting it from a dropdown menu. On pressing the command button, the tool reads the user parameters, creates a command packet and sends it out on the serial port. Both the commands sent and the responses from the module are then displayed in the command window.



The user is required to input only valid values / options to ensure proper behaviour of radio module. Please refer to the corresponding user manual for valid parameters and options.

Figure 6 shows an example of sending a `CMD_RESET_REQ` command to the Proteus-III module. When pressing the button, a command packet is sent to the module and the module sends a confirmation of the same.

For a detailed description of the individual commands, please refer to the user manual of the corresponding radio module.

2.6 Utilities

In addition to command and control of the radio module, the Smart Commander provides additional tools. An ASCII to HEX converter and a checksum calculator are available in the utilities tab.

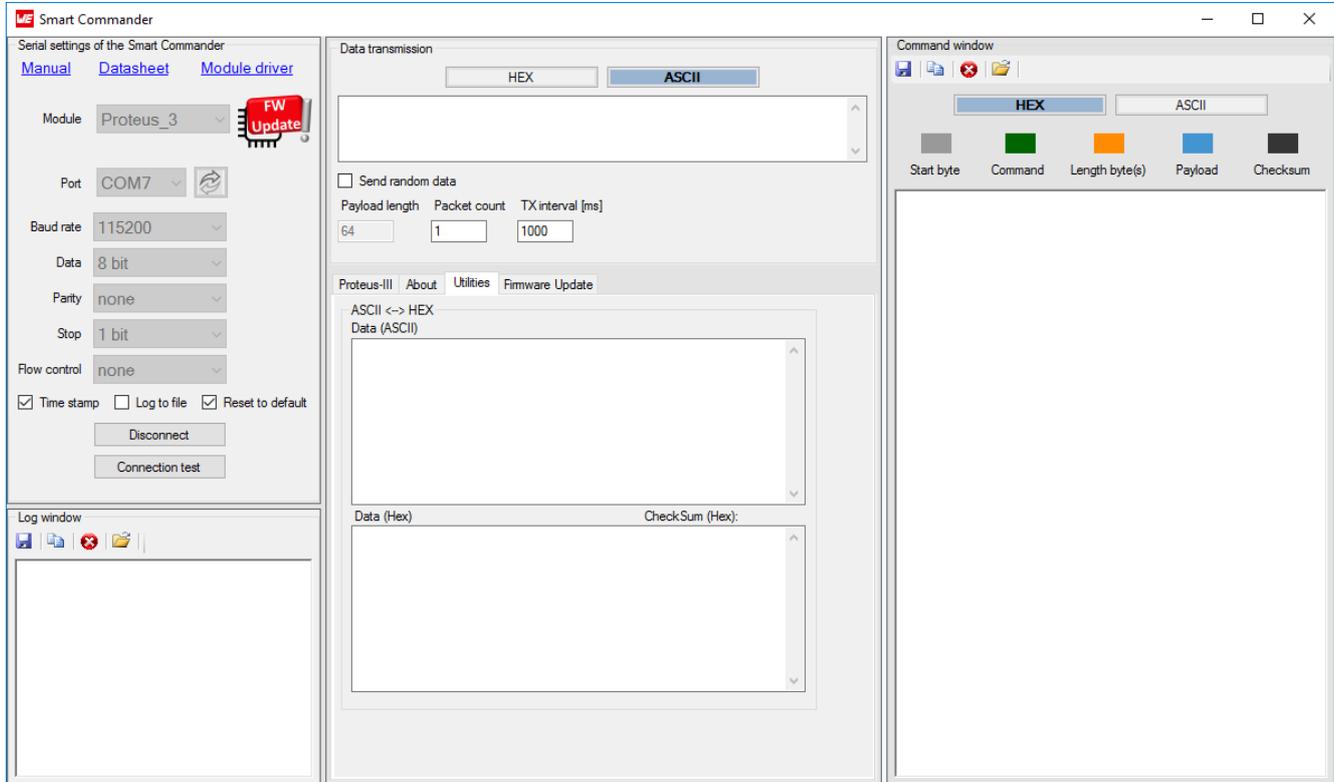


Figure 7: Utilities

2.7 Transparent mode

In case the transparent mode is used instead of the command mode, the "Transparent" entry can be selected in the "Module" dropdown box. In this case, only the transmission and reception of payload data is supported.

The format, ASCII or HEX, of the data to be transmitted can be defined using the buttons placed above the "Data transmission" textbox.

Furthermore, if necessary, ETX characters may be added by selecting the corresponding entry in the drop down menu.

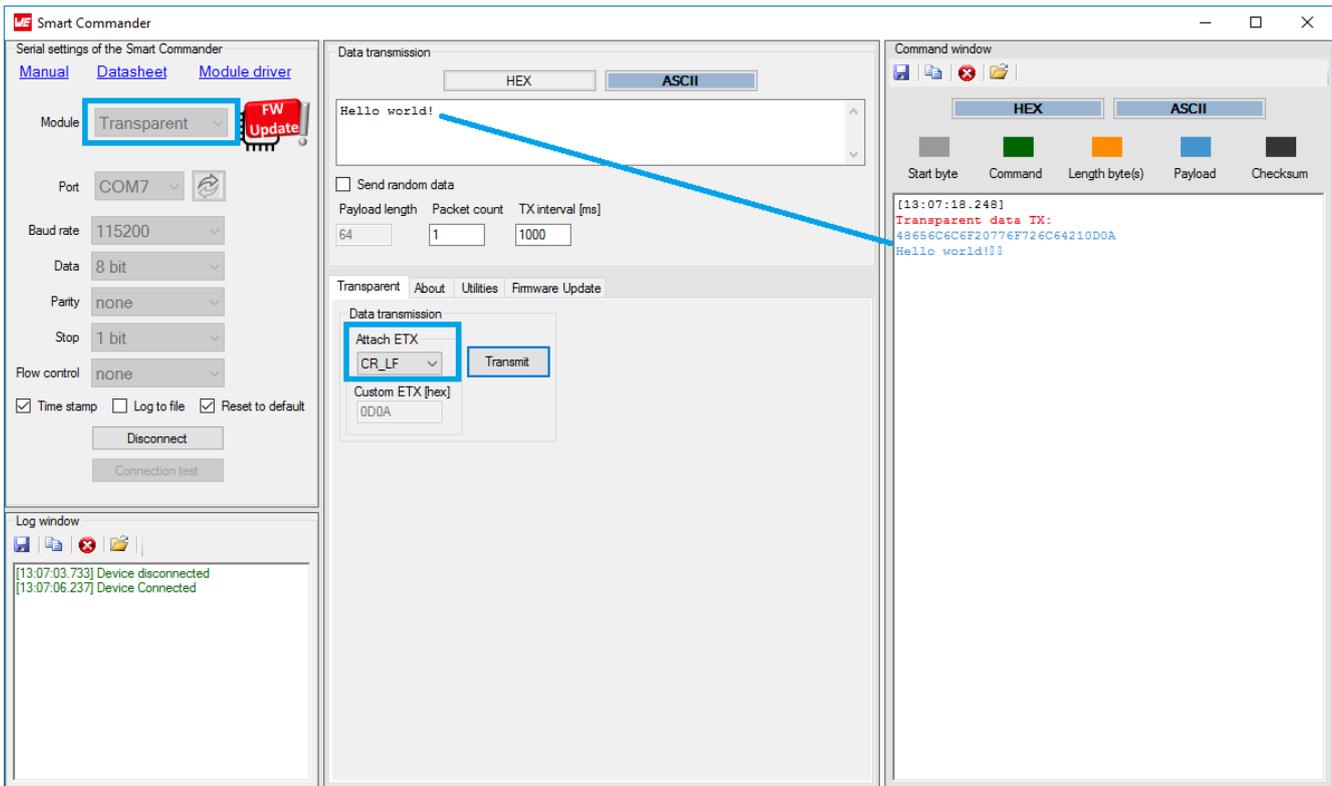


Figure 8: Transparent UART interface

3 Software history

Version 1.0.0.0 "Release"

- First released version of the Smart Commander tool.

Version 1.0.0.6 "Release"

- Added support for new radio modules, Proteus-III and Thyone-I.

Version 1.0.1.0 "Release"

- Added GPIO function to Proteus-III.

Version 1.1.0.0 "Release"

- New function to check whether the connected module responds to requests or not.
- Improved internal data handling.

Version 1.2.2.0 "Release"

- Improved internal data handling.
- Added links to device manual and data sheet.
- Added "Transparent" mode tab for communication in transparent mode.
- Added "Firmware Update" for hints concerning device firmware update.
- Added PWM function of the Thyone-I (version 1.5.0) and Proteus-III (version 1.3.0).
- Improved input capabilities of ASCII and HEX data for data transmission.
- Improved logging of UART packets in HEX and ASCII format.
- Optimized placement of graphic objects in the GUI.

Version 1.3.0.0 "Release"

- Added support for radio module Proteus-e.
- Improved option to send transparent data (with/without ETX).
- Improved generation of random data for radio transmission test.
- Improved core for internal data handling.
- Switched to .NET 6.0.2 .

Version 1.3.3.0 "Release"

- Added support for radio module Daphnis-I.
- Added support for radio module Stephano-I.

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Any product-specific data sheets, manuals, application notes, PCN's, warnings and cautions must be strictly observed in the most recent versions and matching to the products firmware revisions. This documents can be downloaded from the product specific sections on the wireless connectivity homepage.

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We recommend you to be updated about the status of new firmware and software, which is available on our website or in our data sheet and manual, and to implement new software in your device where appropriate.

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