

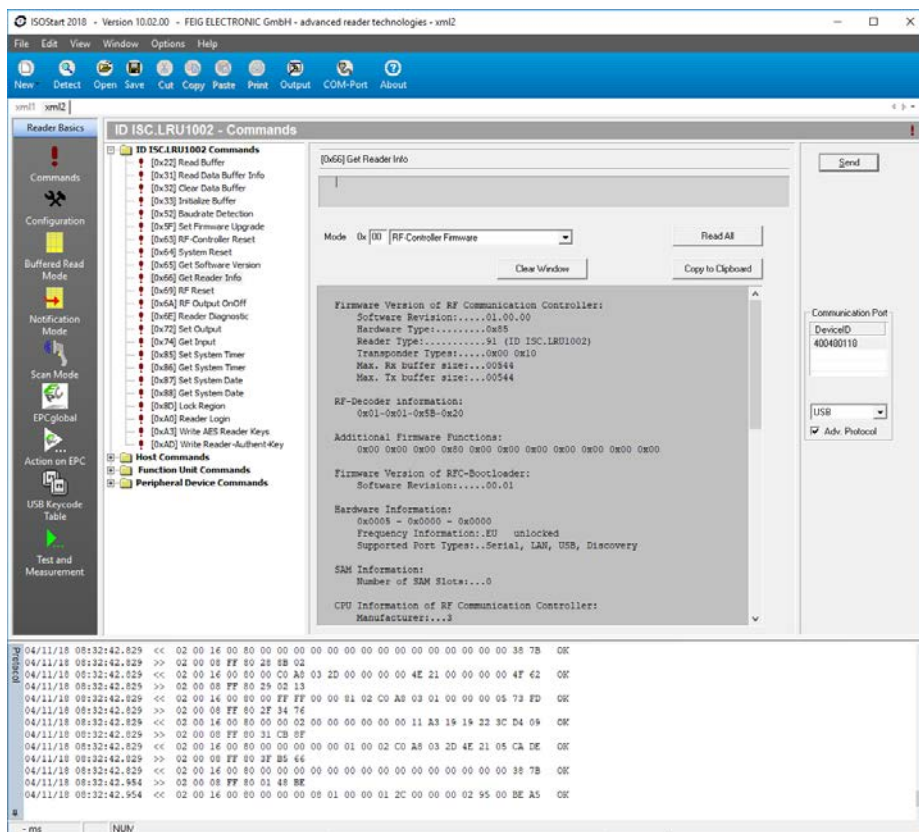
MANUAL

ISOStart 2018

Demo program for FEIG HF and UHF readers

Version 10.02.00

Windows® Vista/7/8/10 (32/64-Bit)



Note

© Copyright 2000-2018 by
FEIG ELECTRONIC GmbH
Lange Strasse 4
D-35781 Weilburg (Germany)
Tel.: +49 6471 3109-0
<http://www.feig.de>
identification-support@feig.de

With the edition of this manual, all previous editions become void. Indications made in this manual may be changed without previous notice.

Copying of this document, and giving it to others and the use or communication of the contents thereof are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design.

Composition of the information in this manual has been done to the best of our knowledge. FEIG ELECTRONIC GmbH does not guarantee the correctness and completeness of the details given in this manual and may not be held liable for damages ensuing from incorrect or incomplete information. Since, despite all our efforts, errors may not be completely avoided, we are always grateful for your useful tips.

The installation instructions given in this manual are based on advantageous boundary conditions. FEIG ELECTRONIC GmbH does not give any guarantee promise for perfect function in cross environments.

FEIG ELECTRONIC call explicit attention that devices which are subject of this document are not designed with components and testing methods for a level of reliability suitable for use in or in connection with surgical implants or as critical components in any life support systems whose failure to perform can reasonably be expected to cause significant injury to a human. To avoid damage, injury, or death, the user or application designer must take reasonably prudent steps to protect against system failures.

FEIG ELECTRONIC GmbH assumes no responsibility for the use of any information contained in this manual and makes no representation that they free of patent infringement. FEIG ELECTRONIC GmbH does not convey any license under its patent rights nor the rights of others.

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.
(<http://www.openssl.org/>)

Copyright (c) 1998-2008 The OpenSSL Project. All rights reserved.

This product includes software written by Tim Hudson (tjh@cryptsoft.com)
Copyright (C) 1995-1998 Eric Young (ey@cryptsoft.com). All rights reserved.

Licensing Agreement for Use of the Software "ISOStart"

This is an agreement between you and FEIG ELECTRONIC GmbH (hereafter "FEIG") for use of left Software ISOStart and all there constituent and the provided documentation, hereafter called licensing material. By installing and using the licensing material you agree to all terms and conditions of this agreement without exception and without limitation. If you are not or not completely in agreement with the terms and conditions, you may not install the licensing material or use it in any way. This licensing material remains the property of FEIG ELECTRONIC GmbH and is protected by international copyright.

§1 Object and Scope of the Agreement

1. FEIG grants you the right to install the licensing material provided and to use it under the following conditions.
2. You may install all components of the licensing material on a hard disk or other storage medium. The installation and use may also be done on a network fileserver. You may create backup copies of the licensing material. Further you are allowed to install a use the licensing material in-house unlimited.
3. The licensing material may only be used in conjunction with devices which are developed and / or produced by FEIG.
4. This license material can depend on third-party software. In case of the use of this third-party software the listed license agreements in chapter [Third-Party Licensing Agreements](#) have to be applied.

§2. Protection of the Licensing Material

1. The licensing material is the intellectual property of FEID and its suppliers. It is protected in accordance with copyright, international agreements and relevant national statutes where it is used. The structure, organization and code of the software are a valuable business secret and confidential information of FEIG and its suppliers.
2. You agree not to change, modify, translate, reverse develop, decompile, disassemble the program library or the documentation or in any way attempt to discover the source code of this software.
3. To the extent that FEIG has applied protection marks, such as copyright marks and other legal restrictions in the licensing material, you agree to keep these unchanged and to use them unchanged in all complete or partial copies which you make.
4. The transmission of licensing material to third parties, as well within a corporate group, in parts or in full is prohibited unless there is an explicit agreement to the contrary between you and FEIG.

§5. Warranty and Liability Limitations

1. You agree with FEIG that it is not possible to develop EDP programs such that they are error-free for all application conditions. FEIG explicitly makes you aware that the installation of a new program can affect already existing software, including such software that does not run at the same time as the new software. FEIG assumes no liability for direct or indirect damages, for consequential damages or special damages, including lost profits or lost savings. If you want to ensure that no already installed program will be affected, you should not install the present software.
2. FEIG explicitly notes that this software makes it possible for irreversible settings and adaptations to be made on devices which could destroy these devices or render them unusable. FEIG assumes no liability for such actions, regardless of whether they are carried out intentionally or unintentionally.
3. FEIG provides the software „as is“ and without any warranty. FEIG cannot guarantee the performance or the results you obtain from using the software. FEIG assumes no liability or guarantee that the protection rights of third parties are not violated, nor that the software is suitable for a particular purpose.
4. FEIG calls explicit attention to the fact that the licensed material is not designed with components and testing for a level of reliability suitable for use in or in connection with surgical implants or as critical components in any life support systems whose failure to perform can reasonably be expected to cause significant injury to human health.
To avoid damage, injury, or death, the user or application designer must take reasonably prudent steps to protect against system failures.

§4 Concluding Provisions

1. This Agreement contains the complete licensing terms and conditions and supercedes any prior agreements and terms. Changes and additions must be made in writing.
2. If any provision this agreement is declared to be void, or if for any reason is declared to be invalid or of no effect, the remaining provisions shall be in no manner affected thereby but shall remain in full force and effect. Both parties agree to replace the invalid provision with one which comes closest to its original intention.
3. This agreement is subject to the laws of the Federal Republic of Germany. Place of jurisdiction is Weilburg.

Please direct any questions pertaining to this agreement to:

FEIG ELECTRONIC GmbH
Lange Strasse 4,
35781 Weilburg-Waldhausen
- Germany -
Fon: +49 6471 / 3109-0
Fax: +49 6471 / 3109-99
e-mail: info@feig.de
<http://www.feig.de>

Third-Party Licensing Agreements

Licensing Agreement of OpenSSL Organization

The following license issues are to be applied in the case that encrypted data transmission is used.

LICENSE ISSUES
=====

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

OpenSSL License

=====
Copyright (c) 1998-2008 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
=====

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License

Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com) All rights reserved.

This package is an SSL implementation written by Eric Young (eay@cryptsoft.com). The implementation was written so as to conform with Netscapes SSL.

This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the SSL code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson (tjh@cryptsoft.com).

Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed. If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used.

This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. All advertising materials mentioning features or use of this software must display the following acknowledgement:

"This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)"

The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related :-).

4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement:

"This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE

ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The licence and distribution terms for any publically available version or derivative of this code cannot be changed. i.e. this code cannot simply be copied and put under another distribution licence [including the GNU Public Licence.]

Content

Licensing Agreement for Use of the Software "ISOStart"	3
Third-Party Licensing Agreements	5
Licensing Agreement of OpenSSL Organization	5
1. Overview	8
2. What's New!	9
3. Installation	10
4. First Steps	11
4.1. Supported FEIG HF and UHF Readers	11
4.2. Connecting a FEIG HF or UHF Reader using the Quick Start Wizard	12
5. Program Description	16
5.1. Overview	16
5.2. Program Settings	17
5.3. Communication Ports	19
5.3.1. Settings for Physical Serial Port and Virtual COM Ports (Bluetooth / USB Converter)	19
5.3.2. Settings for USB	21
5.3.3. Settings for TCP/IP	21
5.4. The Reader Editor	22
5.4.1. Commands	24
5.4.1.1. Reading the Serial Number (UID) of a Transponder	25
5.4.1.2. Reading/Writing Transponder Data	26
5.4.2. Configuration	27
5.4.2.1. Physical View and Logical View	27
5.4.2.2. Changing of Configuration Settings	28
5.4.2.3. How to Store and Load a Complete Reader Configuration into an XML-File	29
5.4.2.4. Load Reader Profile	31
5.4.3. Host Commands	34
5.4.4. Buffered Read Mode	35
5.4.5. Notification Mode	36
5.4.6. Scan Mode	37
5.4.7. EPCglobal	38
5.4.8. Action on EPC	39
5.4.9. Test and Measurement	40
5.5. The Protocol Editor	42
5.6. The Protocol Window	44
6. Handling Communication Problems	45
7. Uninstalling ID ISOStart	46

1. Overview

The demo program **ID ISOStart 2018** has been developed to familiarize you with the functionality of the FEIG HF and UHF readers.

Using this software you can:

- Test communication with HF and UHF transponders.
- Read out and modify the configuration of FEIG HF and UHF readers.
- Communication with Function Units like Multiplexer or Dynamic Antenna Tuner
- Activate a Firmware Upgrade

With each action the transmission protocols between PC and reader are displayed on the screen. This transparency guides you to the software interface of the FEIG HF and UHF readers. The respective system manuals should be referred for interpreting the protocols and for studying the reader properties.

Unique features of **ID ISOStart 2018**:

- Reader Editor for editing the FEIG HF and UHF reader parameters. You can open any number of reader files and “link” them with various interface types.
- Protocol Editor for manual protocol entry and editing.
- Protocol Window for visualizing the communication.
- Test of the automatic reader modes like: Buffered Read Mode, Scan Mode, Notification Mode.

This manual gives you a brief introduction into the program **ID ISOStart 2018**. Some special features and assistance's in the program operation can be accessed using context menus which you open using the right mouse button. If you have any questions concerning this program, FEIG ELECTRONIC GmbH will be happy to provide you with additional information.

2. What's New!

Please refer to the ISOStart Release Notes document to obtain the change history.

3. Installation

System Requirements

- Windows Vista (32/64Bit) or Windows® 7 or 8 or 10 (32/64Bit)
- Hard disk with minimum free 50MB memory space
- Minimal graphics resolution: 800x600. (1024x768 or higher recommended)

ID ISOStart 2018 can only be installed on a computer using the supplied setup program.

Start the installation program SETUP.EXE and follow the instructions.

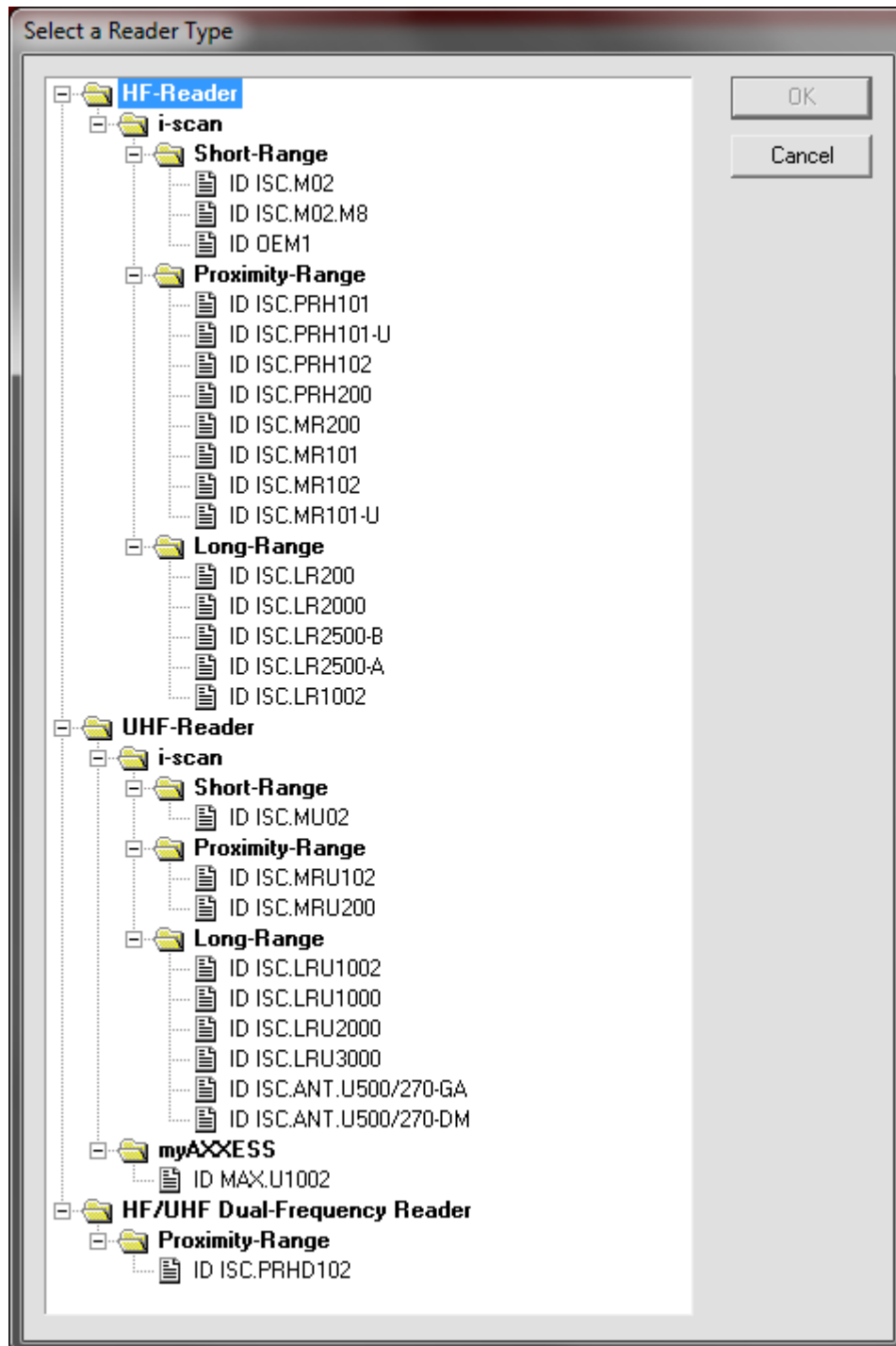
Note:

- *The setup program does not update an earlier version of ID ISOStart. The new ISOStart can be installed parallel to older versions.*
- *Under Windows® Vista and Windows® 7 or 8 or 10 the corresponding administrator rights are required. Check with your network administrator if needed.*

4. First Steps

4.1. Supported FEIG HF and UHF Readers

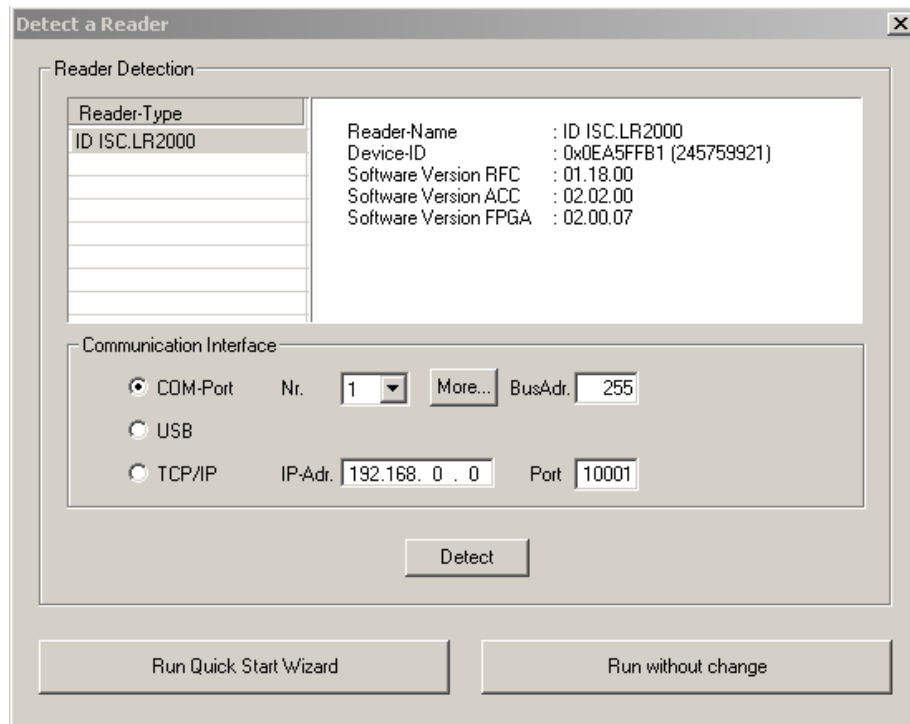
ID ISOStart 2018 supports the following reader types:



4.2. Connecting a FEIG HF or UHF Reader using the Quick Start Wizard

After successfully installing of **ID ISOStart 2018** and before starting the program you can immediately connect a FEIG HF or UHF reader to serial port COM1¹, USB or the LAN/WLAN interface on your PC. The Quick Start Wizard will lead you for a fast configuration of the reader.

Step 1: Start the demo program **ID ISOStart 2018**. In the default configuration of the program, the “Quick Start Wizard” starts automatically, which helps you in detecting the reader and configuring the reader. Choose the used interface type and click on the “Detect” button.



If the connected and activated reader is not in the list, check the interface settings (see [6. Handling Communication Problems](#)).

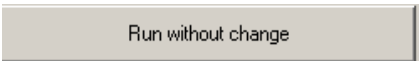
If the connected reader is detected successfully you can use the “Quick Start Wizard” by a click on

the button:  and follow the instructions on the next pages.

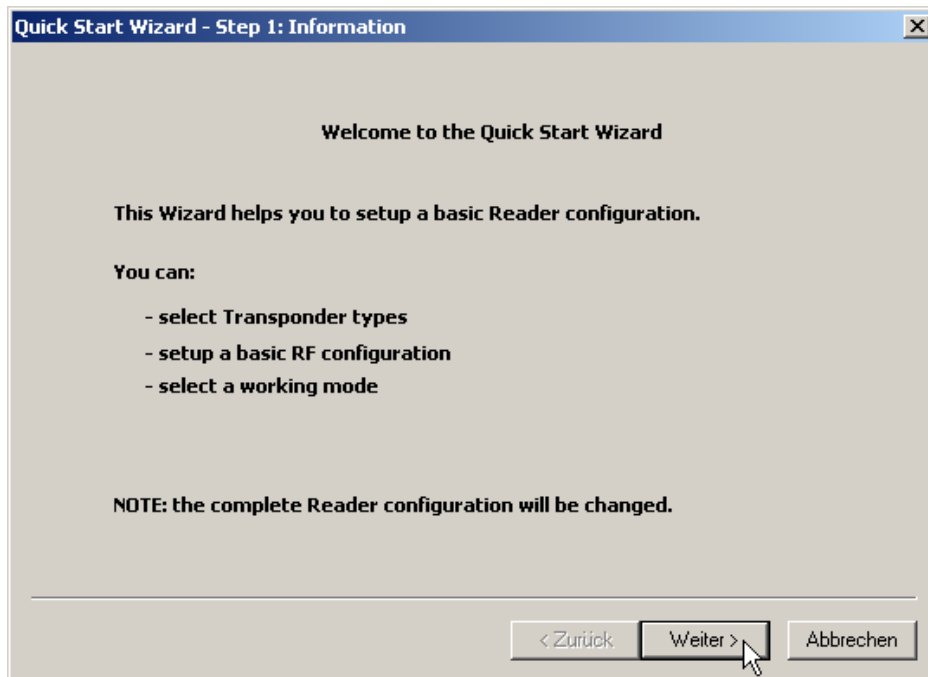
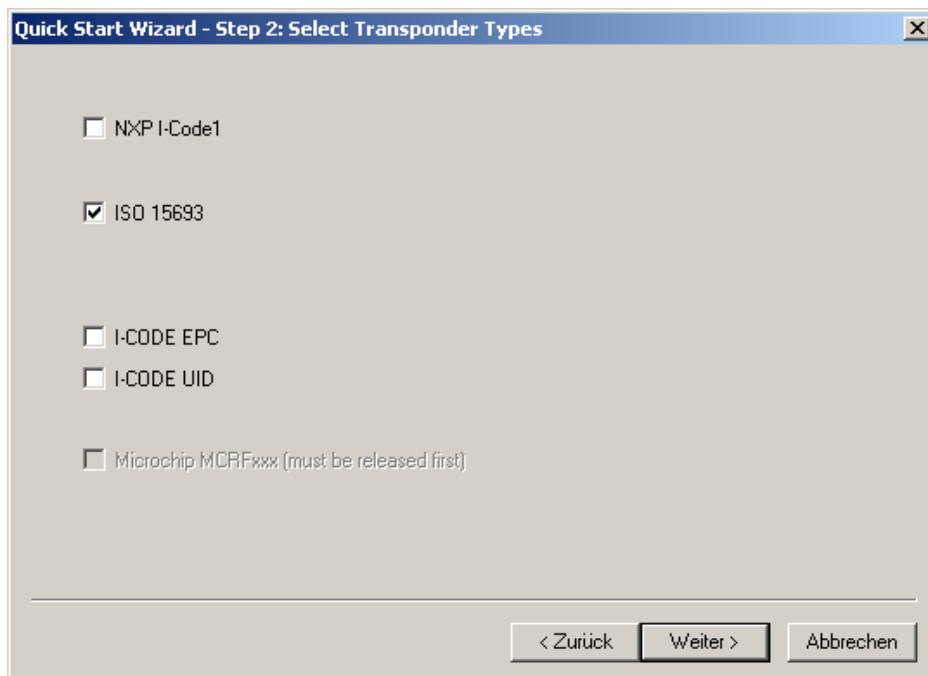
Note:

The Quick Start Wizard will change the existing reader configuration.

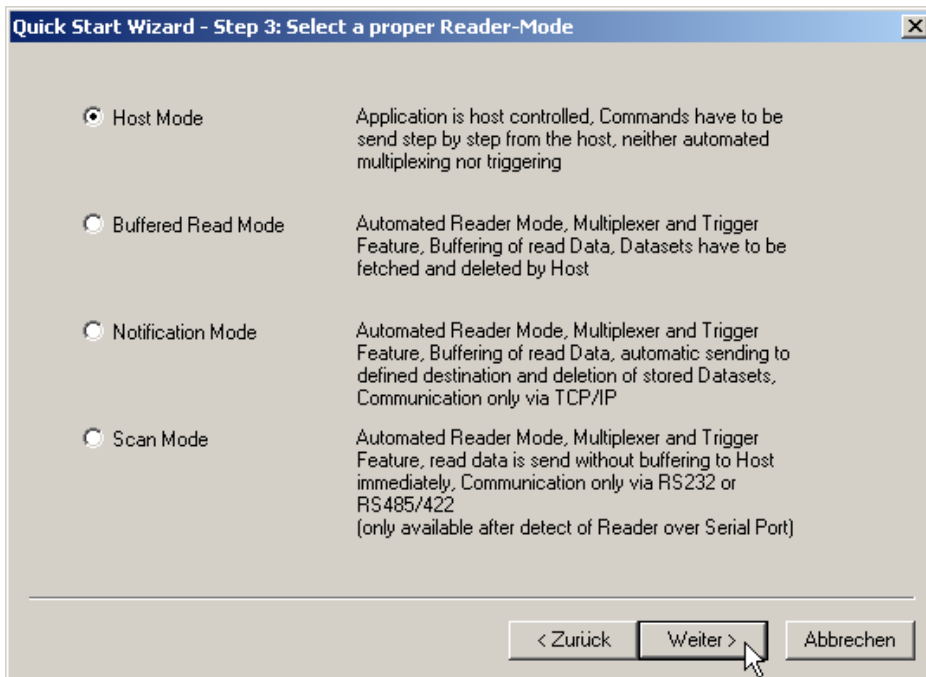
If you want to keep the existing reader configuration unchanged please click on the button:

. Now the existing reader configuration will be read without any modification.

¹ COM1 is preset. All other serial ports are initially not in the search list. To change this, open the “Program Options” dialog in the options menu and select your preferred serial port ([5.2. Program Settings](#)).

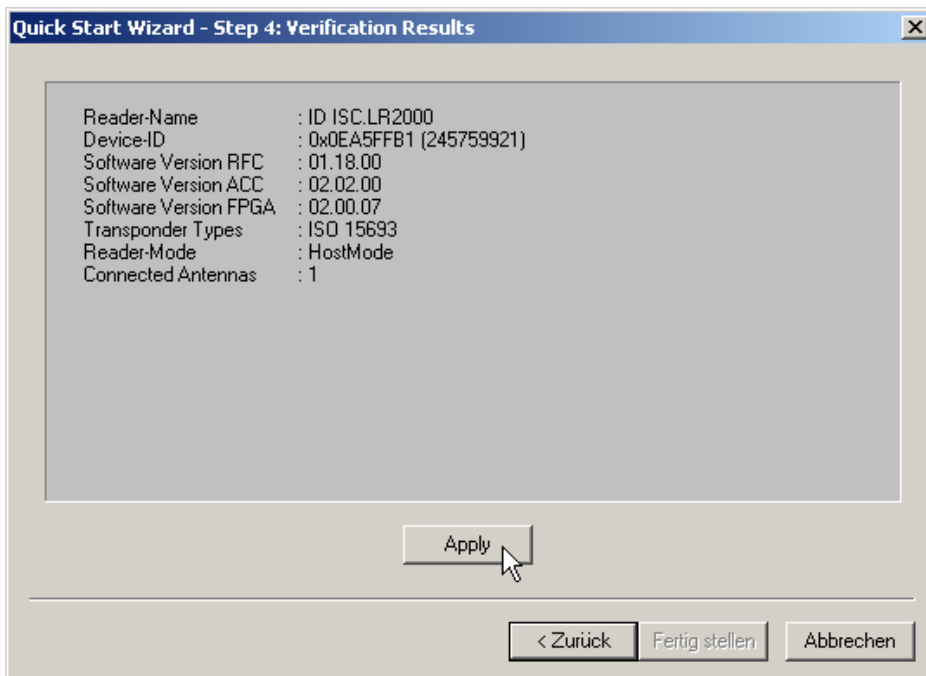
Step 2: Advice message**Step 2:** Choose the transponder driver.

In **Step 3**: You can choose the desired reader mode.

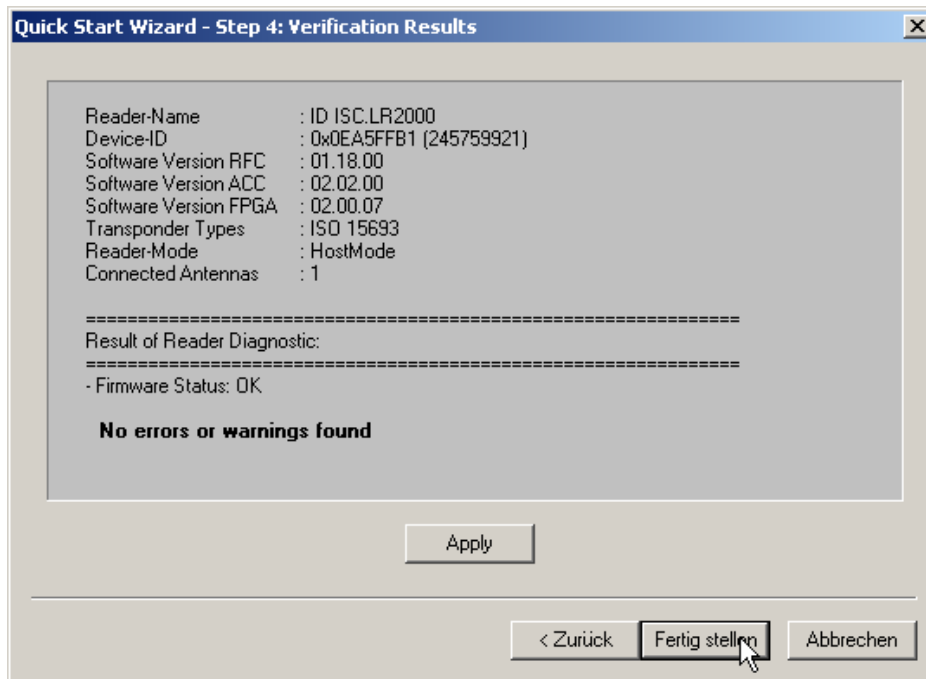


Click on **Next**.

Step 4: Gives an overview of the reader details.



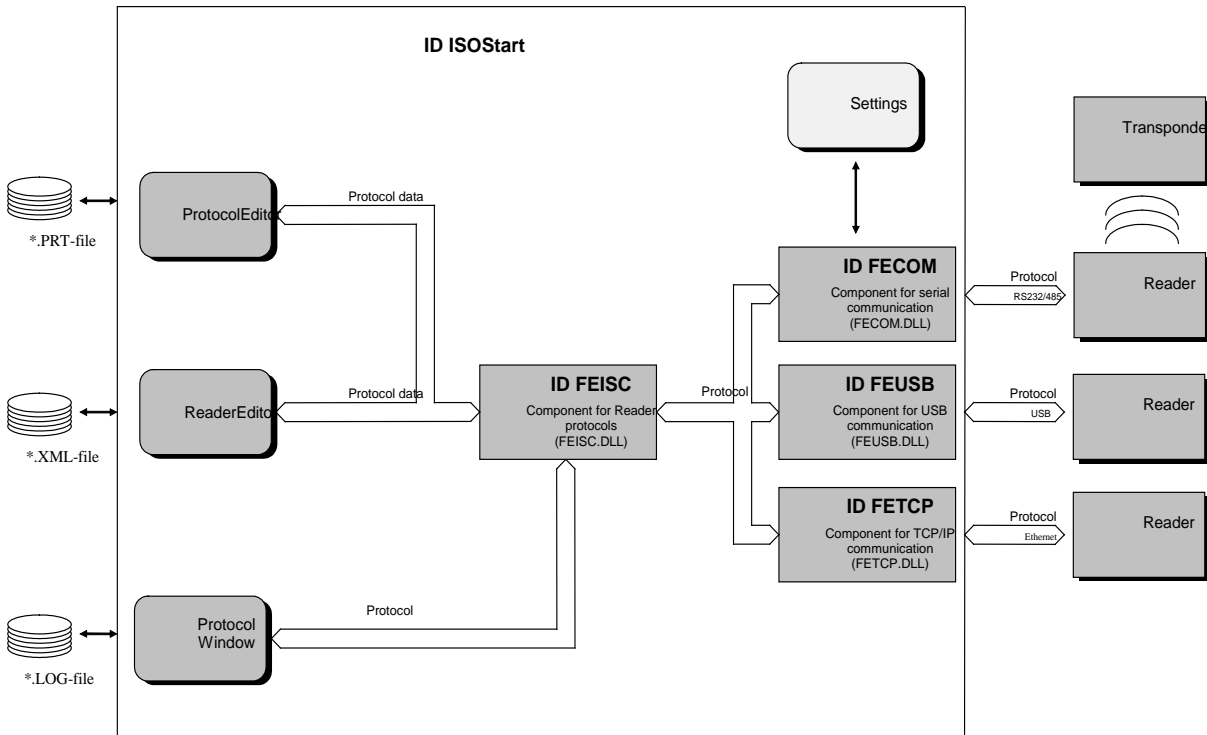
Click on **“Apply”** for confirmation. The wizard configures the reader and the verification results will be shown:



Click on "Finish".

5. Program Description

5.1. Overview



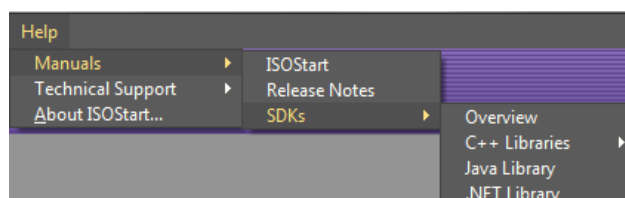
This graphic illustrates the data-oriented structure of the program.

Each data type has a special visual editor which can be used to edit the data or protocols, save them and send them to the FEIG HF or UHF readers or transponders.

The protocols transported over the interfaces are displayed in the protocol window.

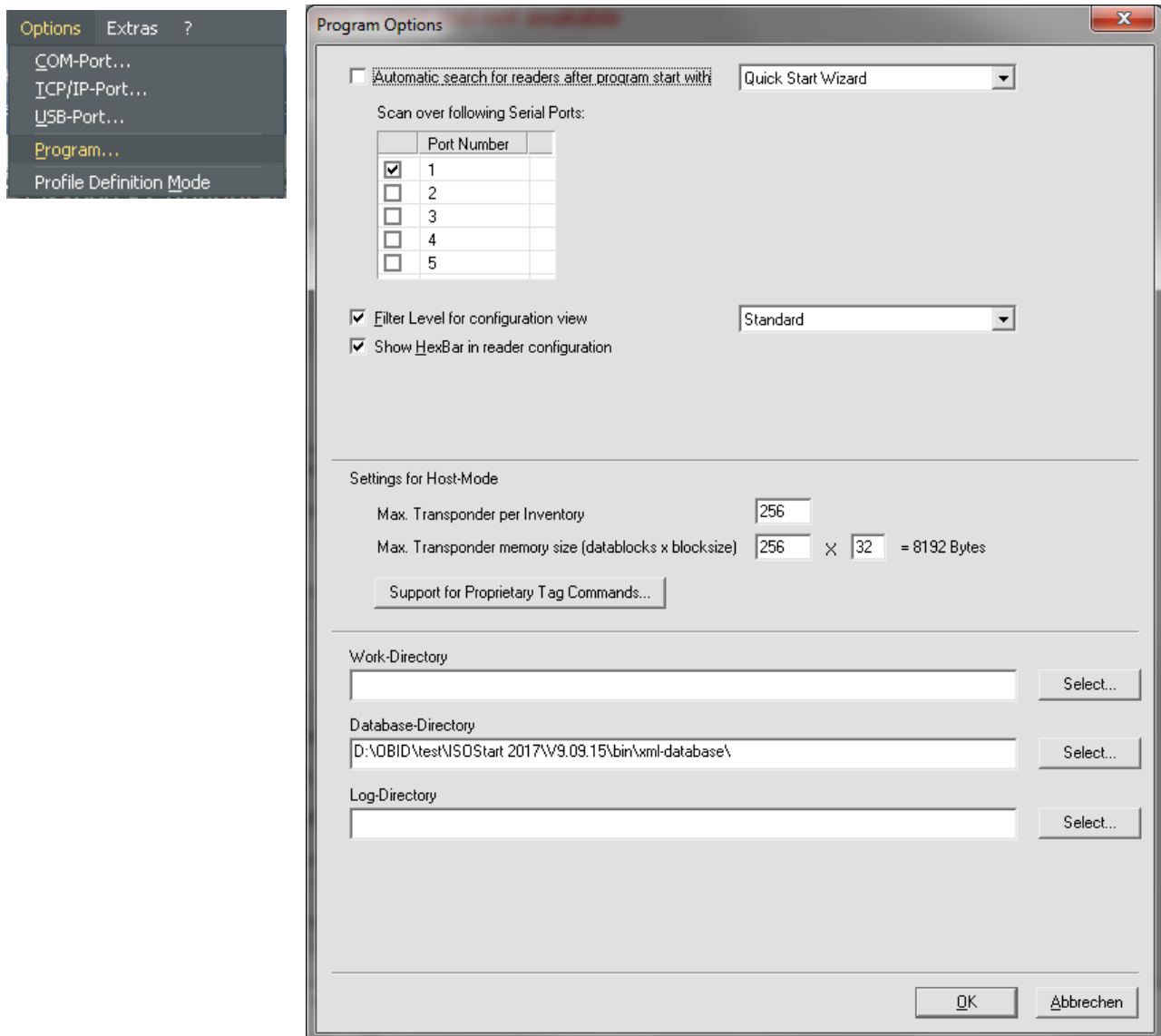
The demo program does not use error messages in separate notification windows if the communication was defective or if the FEIG reader signals an error status in the reply protocol. All outputs are sent to the Protocol Window along with a comment. To interpret the reply protocols, please refer to the system manuals for the respective Reader families.

The ID FECOM, ID FEUSB, ID FETCP and ID FEISC components are special DLLs (Dynamic Link Library) for communicating with FEIG products and are available together in a Software Development Kit (SDK) for supporting your own program developments. Detailed information about the SDKs and libraries can be found in the Help menu:



5.2. Program Settings

The program can be adapted by settings in the menu **Options/Program**.



- Automatic search for readers after program start**
 This option enables the automatic search for readers after program start. The search for readers is limited to serial ports in the list below and to USB devices. It can be chosen between the “Quick Start Wizard” (for beginners) and the “Simple Detect Wizard” as known from the older ISOStart versions.
- Scan over following serial ports**
 The COM-Ports can be enabled / disabled for the automatic search for the reader.

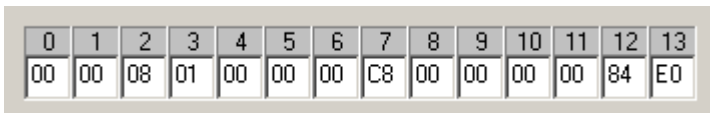
- **Filter Level for configuration view**

It can be selected between “Normal”, “Expert” and “No Filter”.

Level	Description	User
Normal	limited view of the most important parameters	Beginners
Expert	additional parameters for experts are shown	Experienced user
No Filter	all reader parameters will be shown	Professional user

- **Show hexBar in reader configuration**

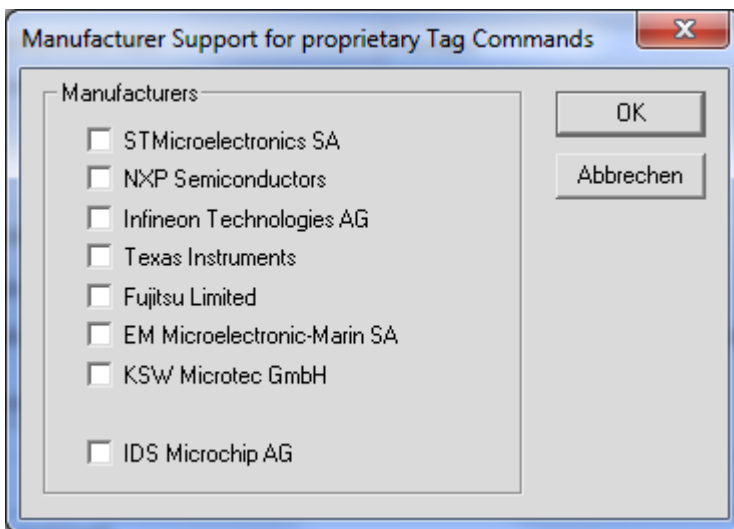
This option displays the hex edit bar in the configuration pages if the “physical view” is used.



- **Settings for Host-Mode**

The maximal number of tags per Inventory can be adjusted. The maximal memory size of Transponders can be customized.

Support for custom commands must be enabled before use with the dialog below.



- **Work Directory**

Location where the last reader configuration xml-file was stored

- **Database Directory**

Location where the different FEIG reader definition files are stored. Should not be changed.

- **Log Directory**

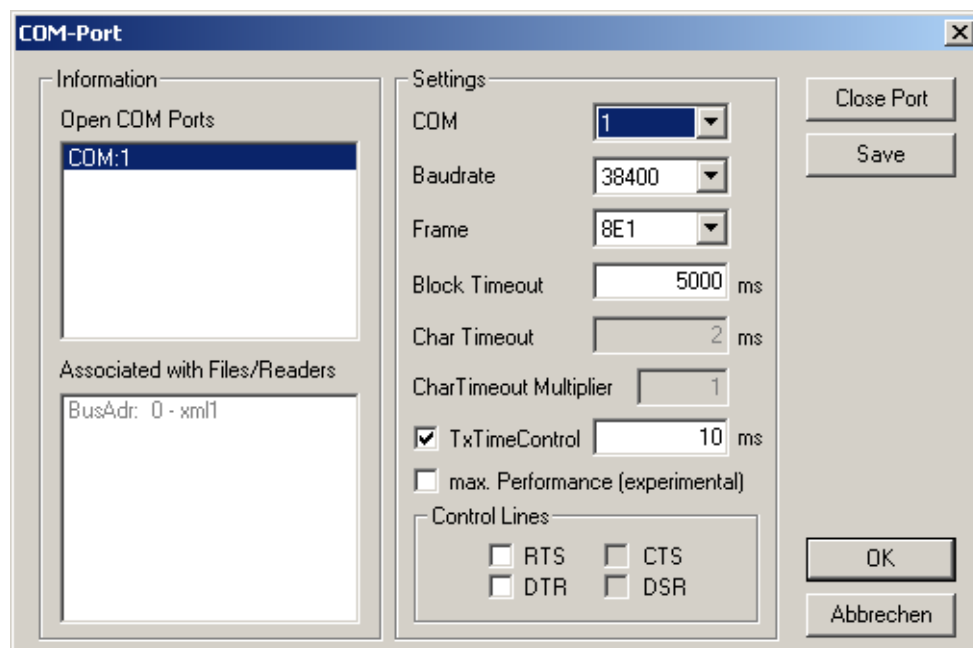
Location where the Log Files should be stored.

5.3. Communication Ports

5.3.1. Settings for Physical Serial Port and Virtual COM Ports (Bluetooth / USB Converter)

The **ID ISOStart 2018** supports up to four simultaneously opened serial ports which can be assigned to any editor. Each port can also use a RS232/485-converter¹ to operate a data bus to which in turn multiple FEIG HF or UHF readers can be connected. This makes it possible in principle to have a larger number of Reader Editors active at the same time and for each to be connected to a port.

These serial ports are administered using the **COM-Port** dialog box. Open this dialog box by clicking on the **COM-Port** button in the toolbar or by using the **Options / COM-Port** menu.



Use this dialog box to open or close a port or to change its configuration. In addition the two left list fields give you an overview of which ports are already open and which files or editors are using a port.

If you want to close a port which is still being used by files or editors, you will be shown a message and the affected editors goes offline.

Open ports are automatically closed when the program is quit and automatically opened again with the same parameters after restarting the program.

¹ Changing the data direction is not handled by the ID ISOStart program. The RS232/485 converter must be able to make this switch itself.

Note:

- Serial ports are unique system resources which can be assigned only once by the operating system. If a port cannot be opened, first make sure that this port is not being used by another program.
- By the use of an RS232/TTL converter on a Notebook it is partly necessary to activate **RTS-** and **DTR-**signal to support the converter with sufficient power.

Block Timeout (Timeout):

Maximum wait time for the receive protocol. If this time is too short, the status message "Receive Timeout" (-1030) appears. This value depends on various other settings and states, e.g.:

- The number of transponders located in the antenna field.
- Which transponder types are being used and the number of active transponder drivers.
- The Block Timeout should be greater than the "AirInterface.TimeLimit" (ex. TR Response-Time) (see system manual for the Reader)

TxTimeControl

If set (1), output of the next send protocol is delayed until at least TxDelayTime (ms) after the last receive protocol has elapsed.

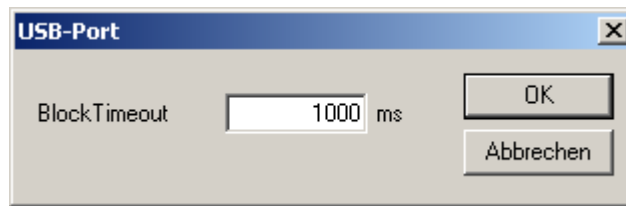
If not set (0), the send protocol is always output as soon as possible, which however can result in a Receive-Timeout (-1030).

TxDelayTime

Minimum time between the last receive and the next send protocol. Only applicable if TxTimeControl=1

5.3.2. Settings for USB

The ID ISOStart 2018 supports simultaneously opened USB devices which can be assigned to any editor.



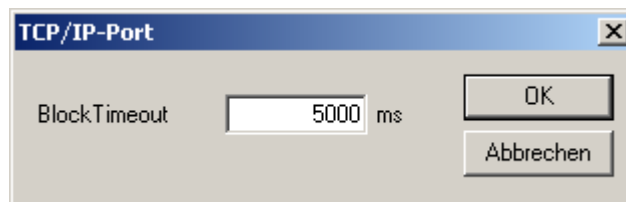
Block Timeout (Timeout):

Maximum wait time for the receive protocol. If this time is too short, the status message "Receive Timeout" (-1130) appears. This value depends on various other settings and states, e.g.:

- The number of transponders located in the antenna field.
- Which transponder types are being used and the number of active transponder drivers.
- The Block Timeout should be greater than the "AirInterface.TimeLimit" (TR-RESPONSE-TIME) (see system manual for the Reader)

5.3.3. Settings for TCP/IP

The ID ISOStart 2018 supports simultaneously opened socket connections which can be assigned to any editor.

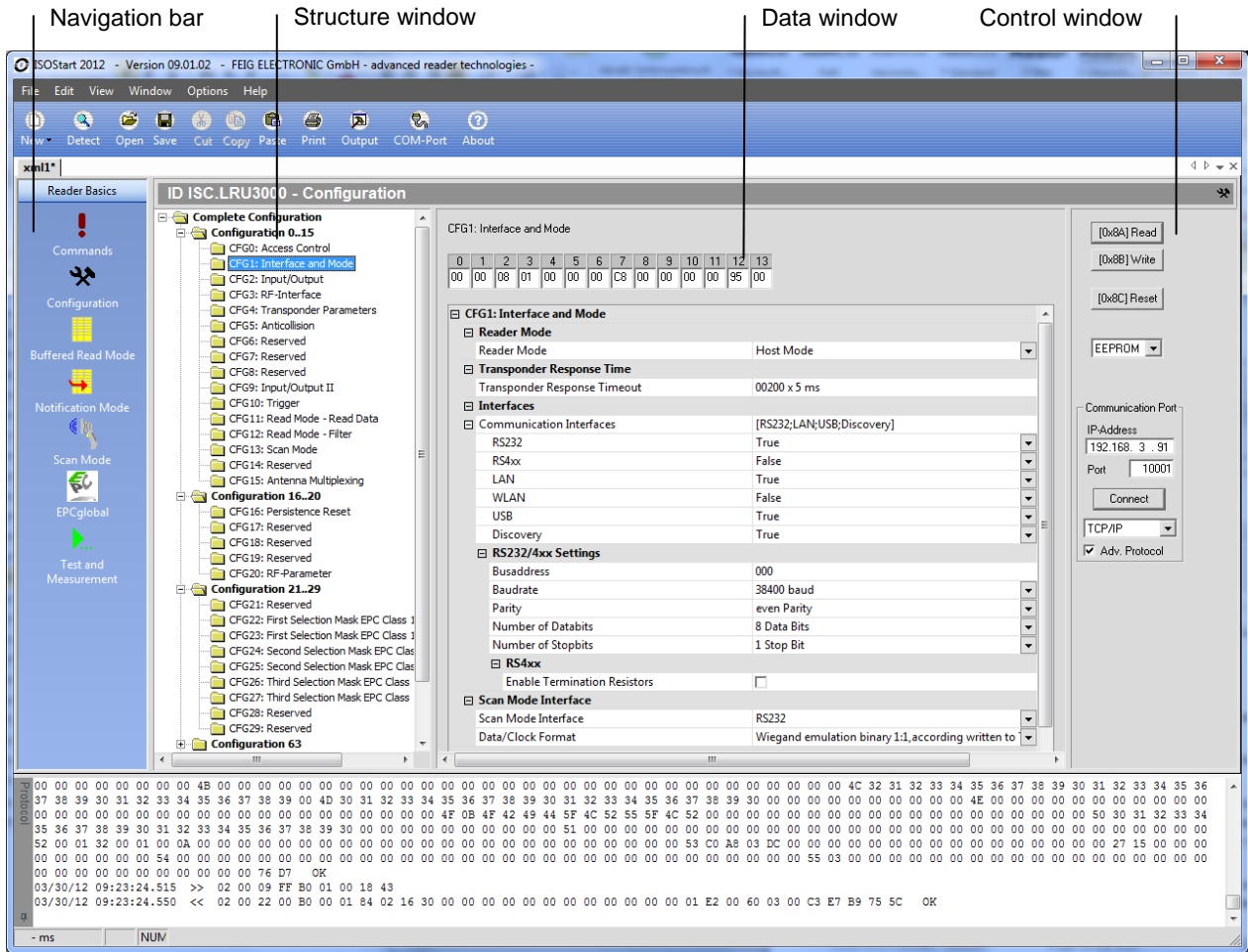


Block Timeout (Timeout):

Maximum wait time for the receive protocol. If this time is too short, the status message "Receive Timeout" (-1230) appears. This value depends on various other settings and states, e.g.:

- The number of transponders located in the antenna field.
- Which transponder types are being used and the number of active transponder drivers.
- The Block Timeout should be greater than the "AirInterface.TimeLimit" (TR-RESPONSE-TIME) (see system manual for the Reader)

5.4. The Reader Editor



The reader editor is divided into the four split boxes shown above:

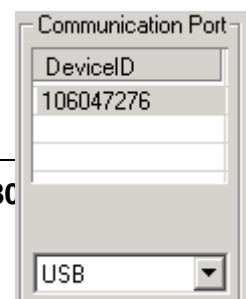
- Navigation bar For selecting a function group
- Structure window For sub-dividing the protocols and configurations
- Data window For displaying and/or editing Reader and transponder data
- Control window For activating communication

The function of the parameters in the entry windows can be found in the respective system manuals for the FEIG reader family.

After creating a new reader file, a serial or USB port is assigned to it which is visible in the control window. If multiple serial ports are open at the same time, you can use the list box **COM** in the control window to switch the port at any time. If a “-” character is visible in **COM**, there is no connection to a reader and no protocols can be exchanged.

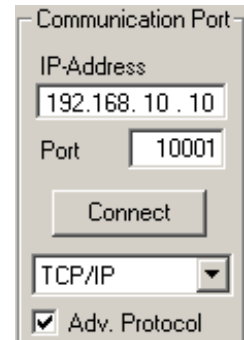
The current bus address of the reader is set in the text field **BusAdr** in the control window (above **COM**). If this address is unknown, you can use the value **255**. This addresses each reader, independent which bus address is currently used with the reader.

If a USB reader is used, they will be detected automatically and the DeviceID will be shown in the Communication Port window. If there are several readers



of the same type detected, each DeviceID will be shown in the list and can be selected. Different reader types will be shown in separate reader editor windows.

If a reader is connected via an Ethernet adapter than you can enter the IP address and the port number in the Communication Port window. The used IP address and the port should be released by the system administrator.



The image shows a dialog box titled "Communication Port". It contains the following elements:

- An "IP-Address" text box containing "192.168.10.10".
- A "Port" text box containing "10001".
- A "Connect" button.
- A dropdown menu currently showing "TCP/IP".
- A checked checkbox labeled "Adv. Protocol".

5.4.1. Commands



The **Commands** window contains all the reader protocols associated with the reader and the **ISO Host Commands** for communication with transponders in ISO Host Mode.

ID ISC.LR2000 - Commands

- [-] ID ISC.LR2000 Commands
 - [0x31] Read Data Buffer Info
 - [0x32] Clear Data Buffer
 - [0x33] Initialize Buffer
 - [0x52] Baudrate Detection
 - [0x55] Start Flash Loader
 - [0x5F] Set Firmware Upgrade
 - [0x63] RF-Controller Reset
 - [0x64] System Reset
 - [0x65] Get Software Version
 - [0x66] Get Reader Info
 - [0x69] RF Reset
 - [0x6A] RF OnOff
 - [0x6E] Reader Diagnostic
 - [0x72] Set Output
 - [0x74] Get Input
 - [0x76] Check Antennas
 - [0x87] Set System Date
 - [0x88] Get System Date
 - [0xA0] Reader Login
- [+] Special Commands
- [-] ISO Host Commands
 - [-] [0xB0] ISO15693 Commands
 - [0x01] Inventory
 - [0x02] Stay Quiet
 - [0x22] Lock Multiple Blocks
 - [0x23] Read Multiple Blocks
 - [0x24] Write Multiple Blocks
 - [0x25] Select
 - [0x26] Reset to Ready
 - [0x27] Write AFI
 - [0x28] Lock AFI
 - [0x29] Write DSFID
 - [0x2A] Lock DSFID
 - [0x2B] Get System Information
 - [0x2C] Get Multiple Block Security Status
 - [+] [0xB1] ISO15693 Cust & Prop Commands
- [-] Function Unit Commands
 - [+] Multiplexer
 - [+] Dynamic Antenna Tuner

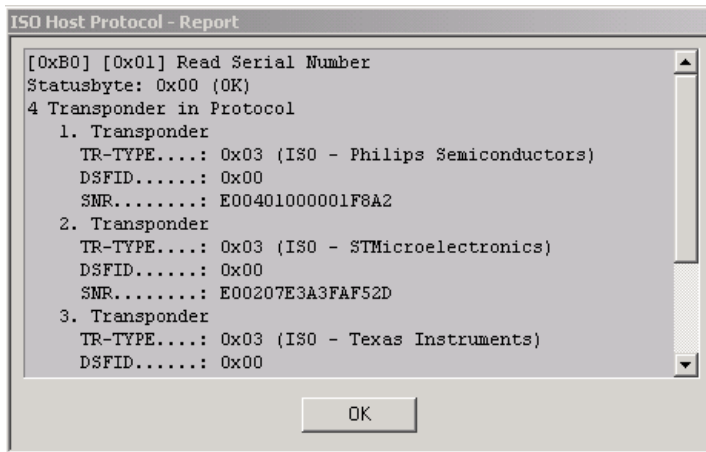
The protocol will be sent to the reader by selecting a protocol and then press the **Send** button.

With some protocols, parameters can be entered in the data window and sent along to the reader.

Detailed protocol descriptions can be found in the system manual for the respective reader.

5.4.1.1. Reading the Serial Number (UID) of a Transponder.

Before each data exchange with the transponder, a reader file must first be opened and the ISO Host Command **[0x01] Inventory** (Read Serial Number) must be executed. The report with the collected serial numbers (UID) of the transponders is shown below.

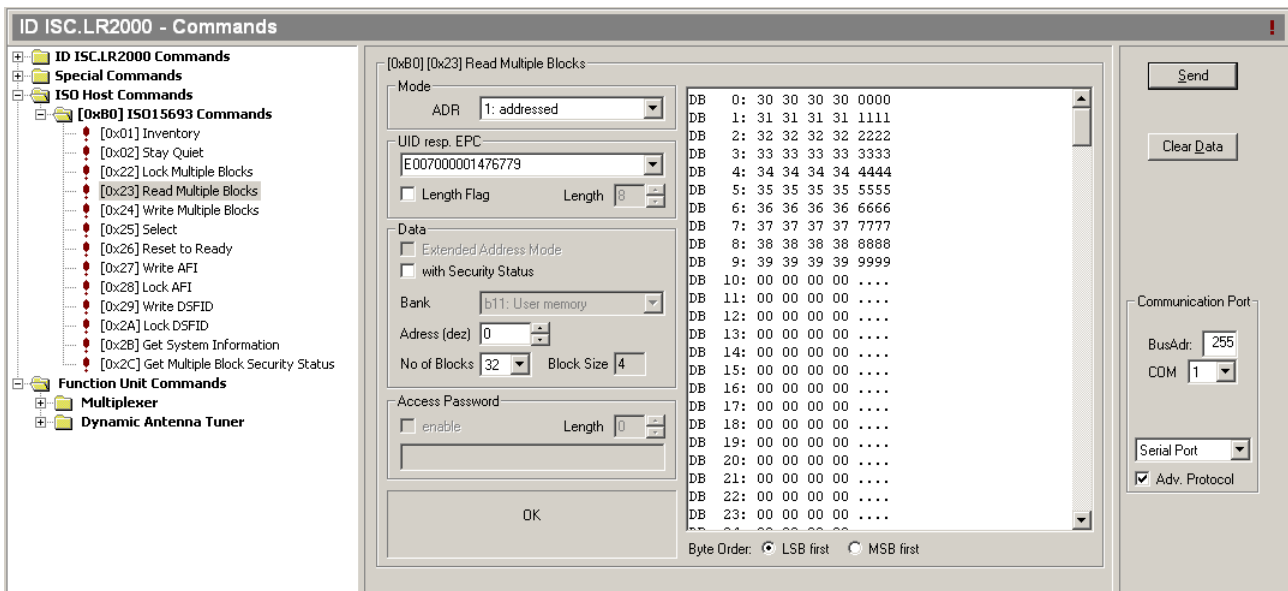


After this, any other action (e.g., reading and writing data blocks) can be performed with the transponder. See following section.

5.4.1.2. Reading/Writing Transponder Data

After selecting the ISO Host Command **[0x23] Read Multiple Blocks** (**[0x24] Write Multiple Blocks**) you can make the necessary settings:

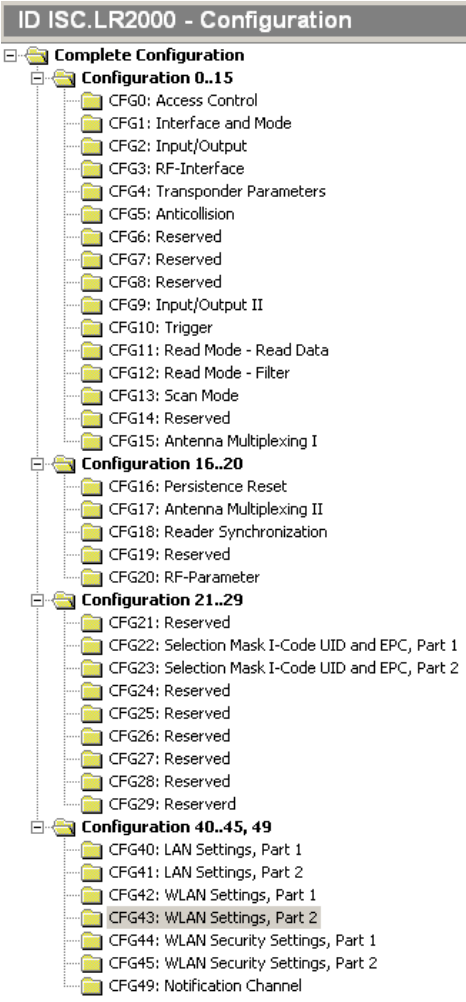
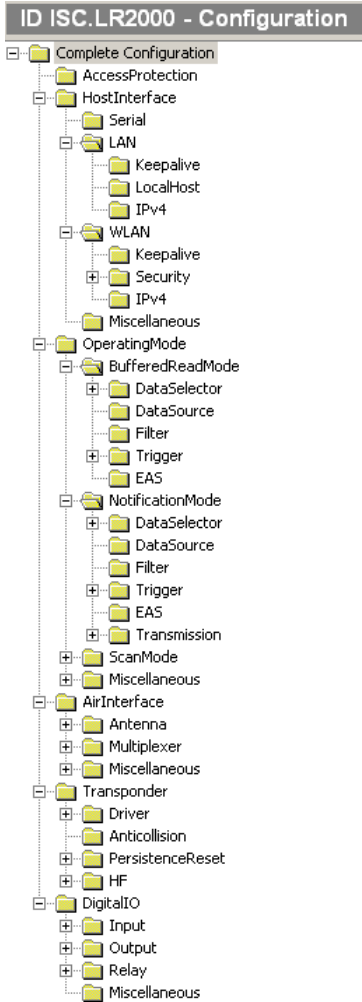
- **Addressed Mode:** the selection of the address mode depends of the transponder type
- **UID:** in addressed mode the UID must be selected
- In addressed mode with UIDs other than 8 bytes, the **Length** field must contain the number of bytes and the **Length Flag** must be enabled
- The flag **Extended Address Mode** is reserved for UHF transponder
- The flag **Security Status** is reserved for HF transponder
- The **Bank** is reserved for UHF transponder and HF GEN2 transponder
- **Address** and **No. of Blocks** specifies the range and number of transponder data
- The **Blocksize** is read with the command **[0x23] Read Multiple Blocks** from the transponder, but for **[0x24] Write Multiple Blocks**, the Blocksize must be set
- The **Access Password** is reserved for UHF transponder



5.4.2. Configuration

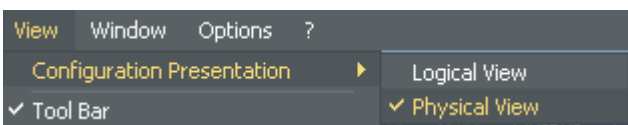
5.4.2.1. Physical View and Logical View

The ISOStart can show the configuration area in two different modes.

Physical View	Logical View
	
<p>The configuration parameters are sorted according to the physical memory location and addressing as shown in older ISOStart versions.</p>	<p>The configuration parameters are arranged according to logical grouping of parameter.</p>

The view mode can be changed any time:

Go to “View” -> “Configuration Presentation” and choose “Logical View “ or “Physical View”:



5.4.2.2. Changing of Configuration Settings

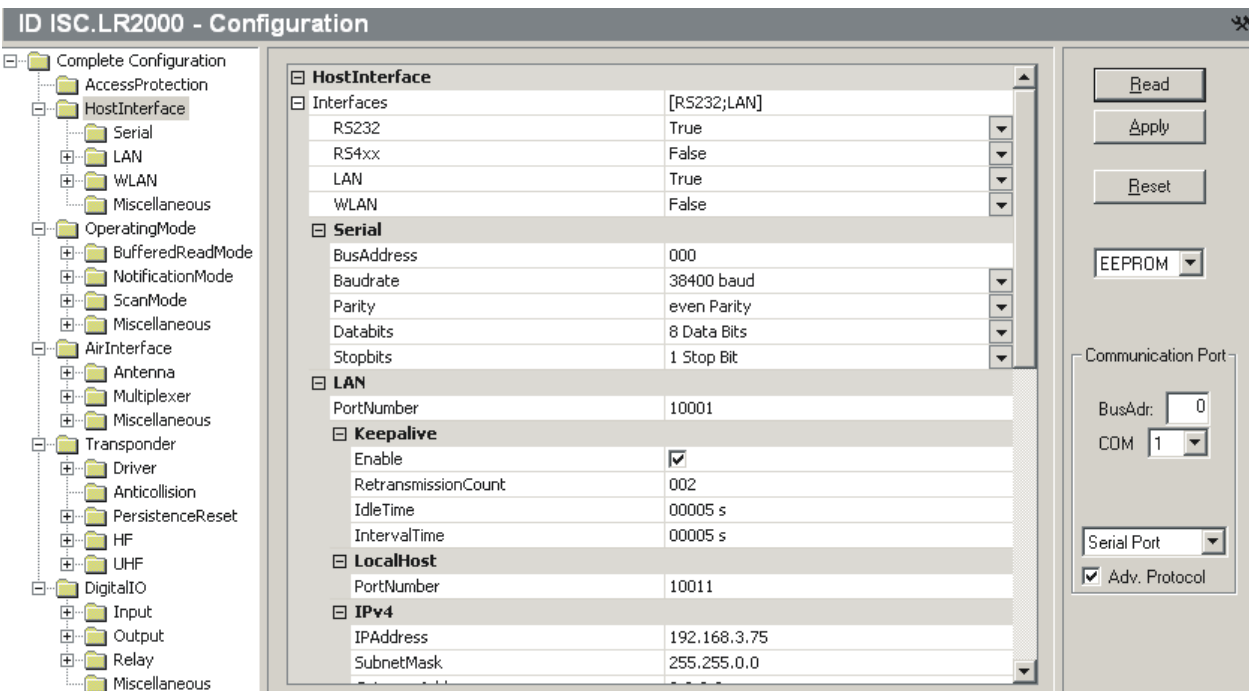


The **Configuration**- window is used to read out, modify and write back the current reader configuration.

A control element for selecting the memory type of the reader is included in the control window for **Configuration**. Depending on the text in the list box (**RAM** or **EEPROM**), the corresponding parameter data are affected in the reader. This selection also exchanges the configuration data in the current data window. A mixing of RAM and EEPROM data is thus precluded.

Note:

As a rule the entire configuration of the reader should be read out first, then modified and then written back! ISOStart prevents writing of configuration data if the configuration is previously not read.



Press the **Read** button to read out the selected configuration page of the reader. To read the complete reader configuration, select the first item (e.g. **Complete Configuration**) in the structure window.

Use the **Apply** button to write modified parameters to EEPROM or RAM. When writing to the EEPROM, the program automatically performs a [0x63] CPU-Reset to apply the change to RAM as well.

The **Reset** button is used to restore the entire configuration to the default values (factory Port setting).

Information on the individual parameters can be found in the system manual for the respective reader.

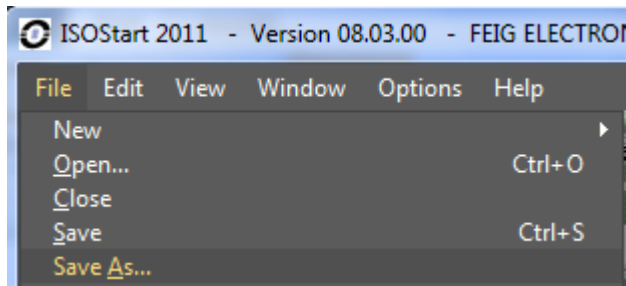
Depending on the selected reader operating mode, the not used parameters can't be modified in the "logical view" of the configuration, they are shown in gray letters.

5.4.2.3. How to Store and Load a Complete Reader Configuration into an XML-File

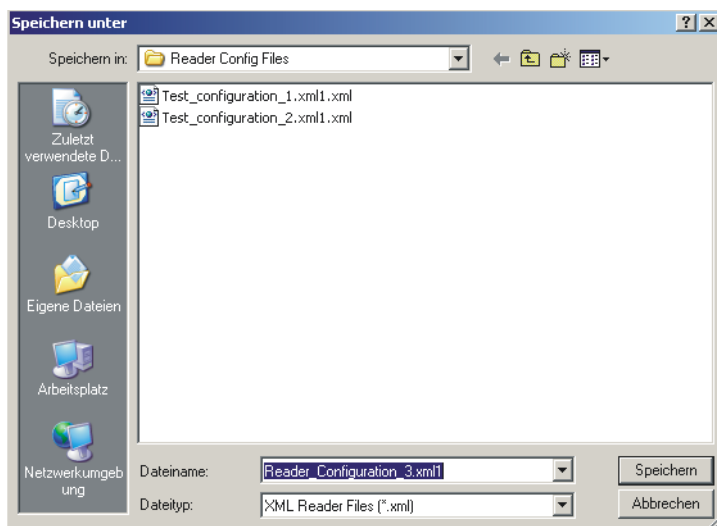
After reading and/or changing the reader configuration in ISOStart it is possible to store the complete reader configuration into an xml-file.

Storing a configuration into an xml-file:

1. Select „File – Save As...“

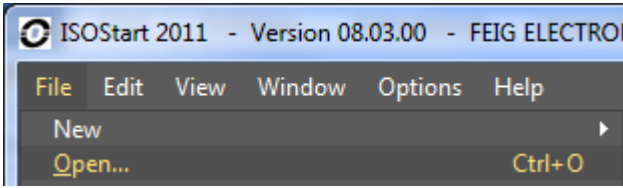


2. Choose a location and a file name and click on store:

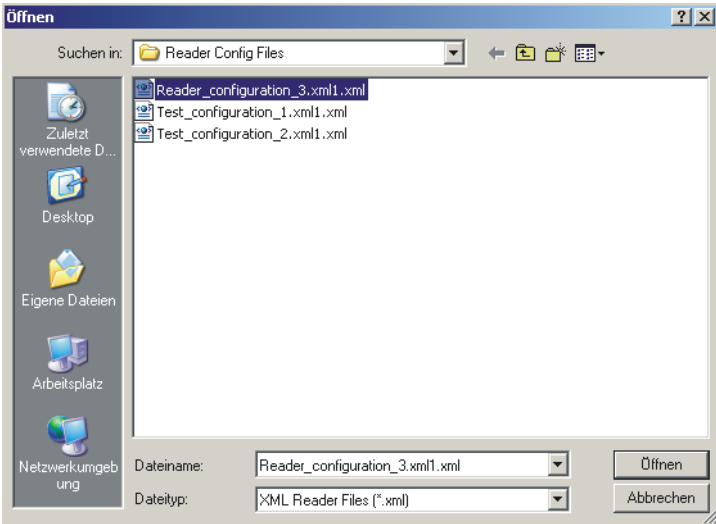


Loading a configuration xml-file into the ISOStart and store it into the reader:

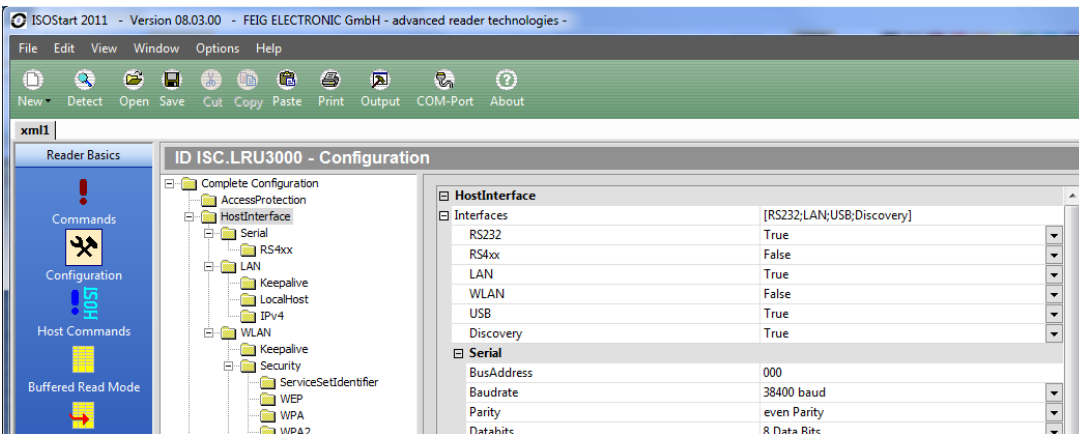
1. Select „File – Open...“



2. Choose the configuration file you want to load into the ISOStart

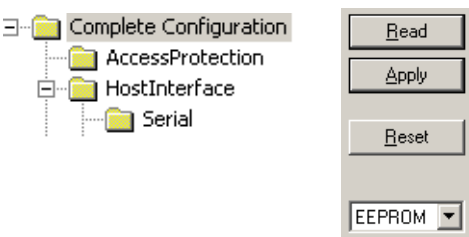


3. The configuration is now visible in ISOStart



4. To store the new configuration into the reader the „Write“ command can be used.

4.1 Select the „Complete Configuration“ folder and click on „Apply“ into the EEPROM.



Now the complete reader configuration is stored into the reader.

5.4.2.4. Load Reader Profile

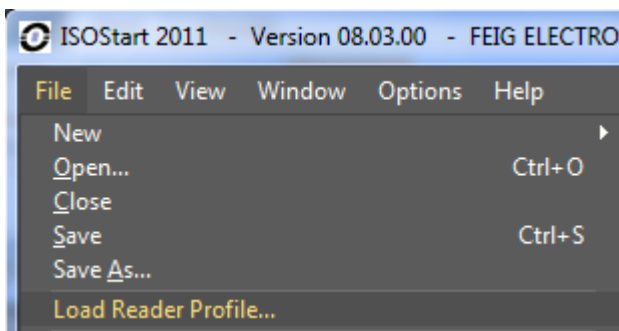
With this special feature it is possible to load a reader configuration file with only a selection of one or more specific parameters. All not enabled parameters will be retained and untouched after loading the profile into the reader. So it is possible for example to change the HF parameter only and leave the LAN and WLAN settings as it has been already configured by the customer. A "Reader Profile" can be generated by FEIG ELECTRONIC GmbH only.

How to load a profile into the reader:

With the help of ISOStart and the "Load Profile Wizard" it is possible to load a new configuration profile into the reader.

Please follow the instruction step by step:

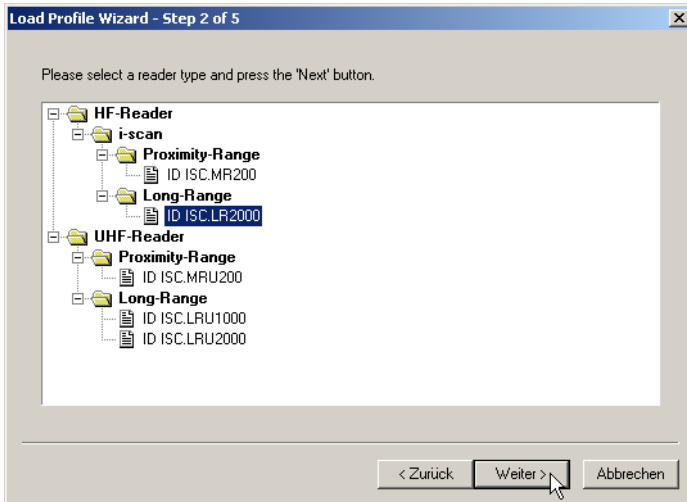
Go to "File" – "Load Reader Profile".



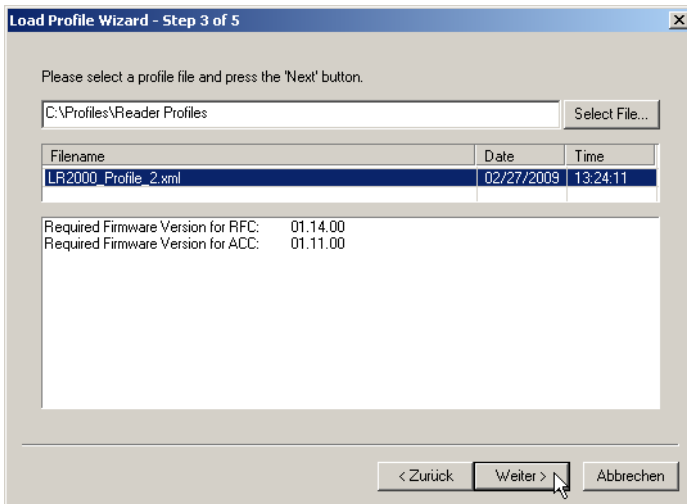
Step 1: Click on the "Next"-button.



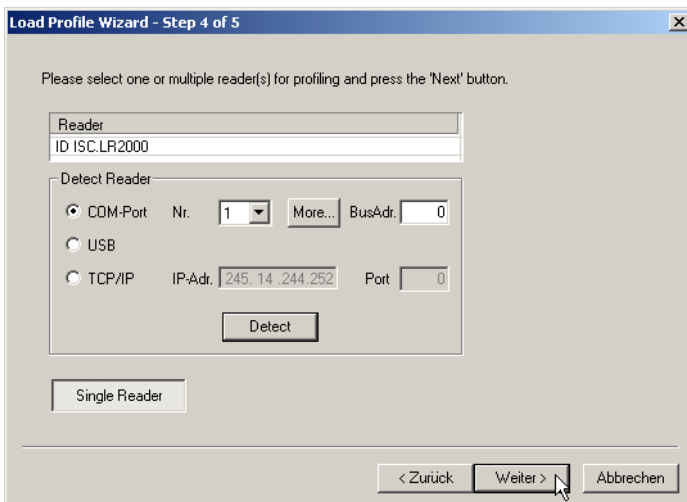
Step 2: Choose the connected reader type.



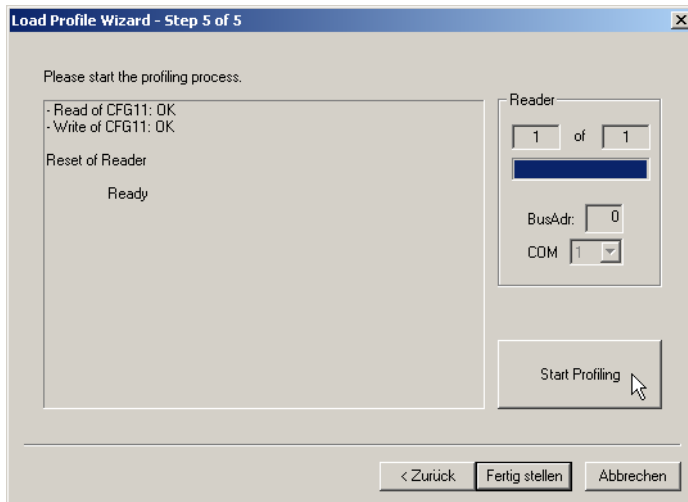
Step 3: Select the new reader configuration profile (xml-file).



Step 4: Detect the connected reader.



Step 5: Click on “Start Profiling” and wait until the “Ready” message appears.



Now the configuration has been finished and the reader can be tested with new configuration.

5.4.3. Host Commands



If the reader is configured to work in ISO Host Mode, you can use the **Host Commands** button to open a corresponding window for communicating with transponders.

No.	Sel...	Tag-Type	Serial Number	DSFID/Info	AFI	MemSize	IC-Ref
1		ISO15693 - Texas Instruments	E007000001476742	00	00	033F	87
2		ISO15693 - Texas Instruments	E007000001476755	00	38	033F	87
3		ISO15693 - Texas Instruments	E007000001476779	00	00	033F	87
4		ISO15693 - Philips Semiconductors	E0040100000380FE	00	38	031B	01
5		EPC 96 bit	01.0203040.506070.009111...	00	00	0000	00

DB	0:	30	30	30	0000
DB 1:	31	31	31	31	1111
DB 2:	32	32	32	32	2222
DB 3:	33	33	33	33	3333
DB 4:	34	34	34	34	4444
DB 5:	35	35	35	35	5555
DB 6:	36	36	36	36	6666
DB 7:	37	37	37	37	7777
DB 8:	38	38	38	38	8888
DB 9:	39	39	39	39	9999
DB 10:	00	00	00	00	....
DB 11:	00	00	00	00	....
DB 12:	00	00	00	00	....
DB 13:	00	00	00	00	....
DB 14:	00	00	00	00	....
DB 15:	00	00	00	00	....
DB 16:	00	00	00	00	....
DB 17:	00	00	00	00	....
DB 18:	00	00	00	00	....
DB 19:	00	00	00	00	....
DB 20:	00	00	00	00	....
DB 21:	00	00	00	00	....
DB 22:	00	00	00	00	....
DB 23:	00	00	00	00	....
DB 24:	00	00	00	00	....
DB 25:	00	00	00	00	....
DB 26:	00	00	00	00	....
DB 27:	00	00	00	00	....
DB 28:	00	00	00	00	....
DB 29:	00	00	00	00	....
DB 30:	00	00	00	00	....
DB 31:	00	00	00	00	....
DB 32:	00	00	00	00	....

With the **Start** button, Inventory commands are executed continuously and the response is displayed in the list window. After stop of Inventory the **Edit** button opens a modal dialog window (always on top) with edit boxes for all Host Commands.

5.4.4. Buffered Read Mode



If the reader is configured to work in Buffered Read Mode, you can use the **Buffered Read Mode** button to open a corresponding window for reading out data stored in the buffer.

ID ISC.LR2000 - Buffered Read Mode - 21 Records

No.	Date	Time	Type	Serial No.	Data Block	Ant No.
0	02/19/2009	10:28:21.235	ISO 15693	E00700001874D108	0x00000000000000000000000000000000	1
1	02/19/2009	10:28:21.355	ISO 15693	E00700001874D10C	0x00000000000000000000000000000000	1
2	02/19/2009	10:28:21.355	ISO 15693	E00700001874D106	0x00000000000000000000000000000000	1
3	02/19/2009	10:28:21.470	ISO 15693	E00700001874D108	0x00000000000000000000000000000000	1
4	02/19/2009	10:28:21.485	ISO 15693	E00700001874D109	0x00000000000000000000000000000000	1
5	02/19/2009	10:28:21.500	ISO 15693	E00700001874D10A	0x00000000000000000000000000000000	1
6	02/19/2009	10:28:21.505	ISO 15693	E00700001874D100	0x67696546656C65206F7274632063696E	1
7	02/19/2009	10:28:21.615	ISO 15693	E00700001874D101	0xAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	1
8	02/19/2009	10:28:21.630	ISO 15693	E00700001874D102	0x00000000000000006734573445477334	1
9	02/19/2009	10:28:21.645	ISO 15693	E00700001874D103	0x00000000000000000000000000000000	1
10	02/19/2009	10:28:21.665	ISO 15693	E00700001874D104	0x00000000000000000000000000000000	1
11	02/19/2009	10:28:21.680	ISO 15693	E00700001874D105	0x00000000000000000000000000000000	1
12	02/19/2009	10:28:21.695	ISO 15693	E00700001874D107	0x00000000000000000000000000000000	1
13	02/19/2009	10:28:21.715	ISO 15693	E00700001874D0F9	0x855667745778966767696546656C4520	1
14	02/19/2009	10:28:21.730	ISO 15693	E00700001874D0FA	0x00000000000000000000000000000000	1
15	02/19/2009	10:28:21.745	ISO 15693	E00700001874D0FC	0x6E696C68207265672073617765726568	1
16	02/19/2009	10:28:21.760	ISO 15693	E00700001874D0FD	0x84747454587564645787757846657556	1
17	02/19/2009	10:28:21.775	ISO 15693	E00700001874D0FE	0x00000000000000000000000000000000	1
18	02/19/2009	10:28:21.790	ISO 15693	E00700001874D0FF	0x00000000000000000000000000000000	1
19	02/19/2009	10:28:21.790	ISO 15693	E00700001874D0F8	0x00000000000000000000000000000000	1
20	02/19/2009	10:28:21.905	ISO 15693	E00700001874D0FB	0x00000000000000000000000000000000	1

Read Buffer

Start
Halt
Step
Continue

Data-Sets:

Buffer Commands

[0x31] Buffer Info
[0x33] Initialize

Clear List

Communication Port

BusAdr:
COM:
Serial Port:
 Adv. Protocol

Recommended sequence:

The command **[0x33] Initialize** clears and initializes the readers internal buffer.

With the “Start” button the command **[0x21] Read** or **[0x22] Read** executes the read of the saved transponder data. You can define the number of **Data-Sets** to read using the edit box. The actual number of data sets in the response protocol depends on the amount of data per data set. A maximum of 255 bytes with standard protocol length¹ can be sent with a read command.

After read out of data sets, the acknowledge command **[0x32] Clear** deletes the transferred data records in the readers internal buffer. Otherwise, the same records are transferred again.

The **Read** and **Clear** command will be now automatically executed after clicking the Start button.

Information about the current status of the buffer (number of saved data sets) can be obtained using the **[0x31] Buffer Info** command.

¹ The maximum number of bytes with advanced protocol length depends on the reader hardware and can be 4096 or 65535 bytes.

5.4.5. Notification Mode



If the reader is configured to work in Notification Mode, you can use the **Notification Mode** button to open a corresponding window for receiving and displaying notifications. The Notification Mode is an extended mode of the Buffered Read Mode. Thus, the structure of the notified data is the same.

Recommended sequence:

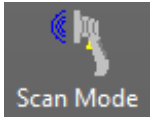
The command **[0x33] Initialize** clears and initializes the readers internal buffer.

The **Apply** button starts the receive process and incoming notifications are displayed in the text window. The port number must be the same as configured in the reader's configuration.

If configured in the reader, the acknowledge of the notification must be enabled. Otherwise, the reader notifies always the same data.

Information about the current status of the buffer (number of saved data sets) can be obtained using the **[0x31] Buffer Info** command.

5.4.6. Scan Mode



If the reader is configured to work in Scan-Mode, you can use the **Scan Mode** button to open a corresponding window for displaying the transponder data sent by the reader.

ID ISC.LR2000 - Scanner Mode

```

-1- 02/26/09 11:31:57.203 E00700001874D10C,00000000,01,0A2C10B7,1409021300
-2- 02/26/09 11:31:57.765 E00700001874D10B,00000000,01,0A2C129C,1409021300
-3- 02/26/09 11:31:57.875 E00700001874D10A,00000000,01,0A2C134B,1409021300
-4- 02/26/09 11:31:59.578 E00700001874D0FD,84747454,01,0A2C1A03,1409021300
-5- 02/26/09 11:32:00.281 E00700001874D103,00000000,01,0A2C1CAB,1409021300
-6- 02/26/09 11:32:01.312 E00700001874D109,00000000,01,0A2C211F,1409021300
-7- 02/26/09 11:32:01.453 E00700001874D107,00000000,01,0A2C2151,1409021300
-8- 02/26/09 11:32:02.343 E00700001874D108,00000000,01,0A2C2471,1409021300
-9- 02/26/09 11:32:02.687 E00700001874D10C,00000000,01,0A2C2679,1409021300
-10- 02/26/09 11:32:03.531 E00700001874D10A,00000000,01,0A2C29B7,1409021300
E00700001874D10B,00000000,01,0A2C29C1,1409021300
-11- 02/26/09 11:32:03.828 E00700001874D0F8,00000000,01,0A2C2A48,1409021300
-12- 02/26/09 11:32:04.906 E00700001874D0FA,00000000,01,0A2C2EC1,1409021300
-13- 02/26/09 11:32:05.078 E00700001874D0F9,85566774,01,0A2C2F1B,1409021300
-14- 02/26/09 11:32:05.343 E00700001874D0FC,6E696C6B,01,0A2C3079,1409021300
-15- 02/26/09 11:32:05.750 E00700001874D103,00000000,01,0A2C31E6,1409021300
E00700001874D106,00000000,01,0A2C325E,1409021300
-16- 02/26/09 11:32:05.828 E00700001874D0FD,84747454,01,0A2C32B3,1409021300
-17- 02/26/09 11:32:05.937 E00700001874D104,00000000,01,0A2C32B8,1409021300
E00700001874D105,00000000,01,0A2C331C,1409021300
-18- 02/26/09 11:32:06.109 E00700001874D101,AAAAAAAA,01,0A2C334E,1409021300
E00700001874D102,00000000,01,0A2C33B7,1409021300
E00700001874D0FB,00000000,01,0A2C33C6,1409021300
E00700001874D0FE,00000000,01,0A2C33D0,1409021300
-19- 02/26/09 11:32:06.250 E00700001874D100,67696546,01,0A2C33DA,1409021300
E00700001874D0FF,00000000,01,0A2C344D,1409021300
-20- 02/26/09 11:32:07.265 E00700001874D107,00000000,01,0A2C3830,1409021300
E00700001874D109,00000000,01,0A2C3849,1409021300
-21- 02/26/09 11:32:07.875 E00700001874D108,00000000,01,0A2C3AA1,1409021300
-22- 02/26/09 11:32:08.640 E00700001874D10C,00000000,01,0A2C3D58,1409021300
-23- 02/26/09 11:32:09.218 E00700001874D10A,00000000,01,0A2C3FD8,1409021300
E00700001874D10B,00000000,01,0A2C3FE7,1409021300
-24- 02/26/09 11:32:09.359 E00700001874D0F8,00000000,01,0A2C4019,1409021300
                
```

Format

ASCII

Line Number

Date+Time

Output Window

Clear Screen

Show Data

write in file

Communication Port

BusAdr: 0

COM 1

Serial Port

Adv. Protocol

To receive Scan Mode data, the communication port type **Serial Port** must be selected. All other port types are not supported.

The **display format** must be set to the format setting of the reader. In addition, you can add in front of each data record a line number and date and time.

For long runs, the display of the data should be disabled. **Show Data** controls the data output. Otherwise, the performance will decrease and/or the memory of the PC can run out.

Activating the **write in file** function allows the scanned data to be saved to a file. The filename is built with the prefix "Scan" followed by the date, e.g. Scan060317.txt.

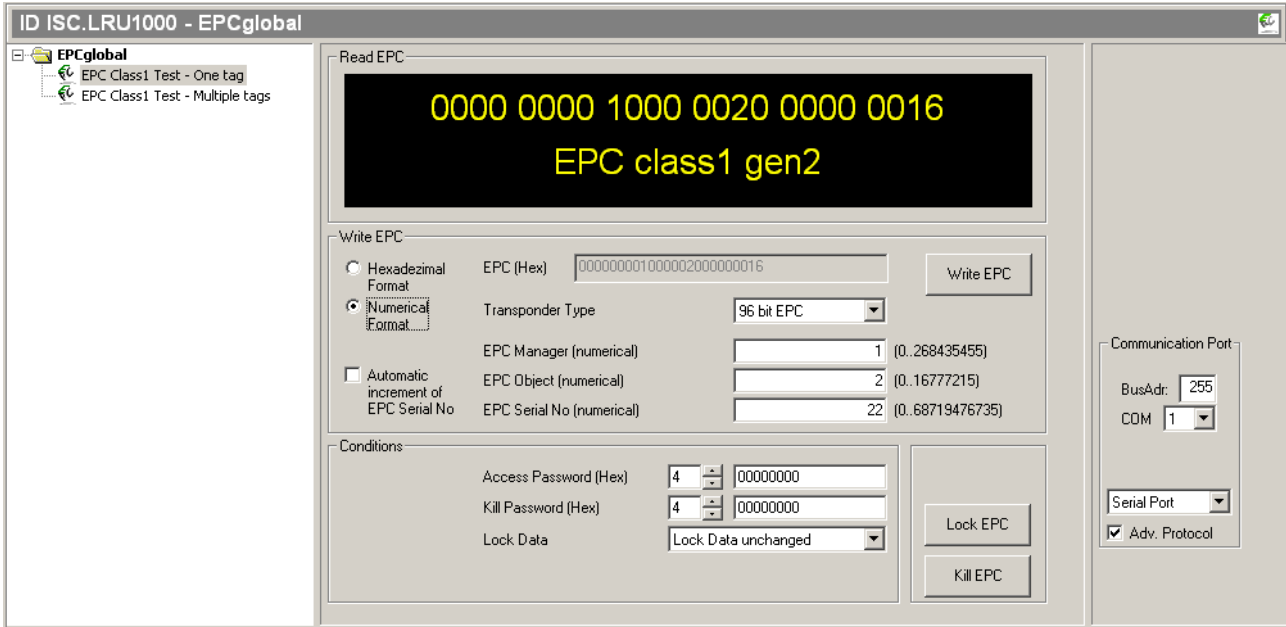
Note:

USB readers working in Scan Mode send data to the HID kernel driver of the PC and act like a keyboard. The data can be displayed in this gray window after positioning the cursor in this window. The data can be also visualized within any other Windows application where the cursor is positioned.

5.4.7. EPCglobal



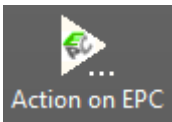
If the reader is configured to work in Host-Mode, you can use the **EPCglobal** button to open a corresponding window for working with EPC (UHF) transponder class1 GEN2 or 18000-6-B/C.



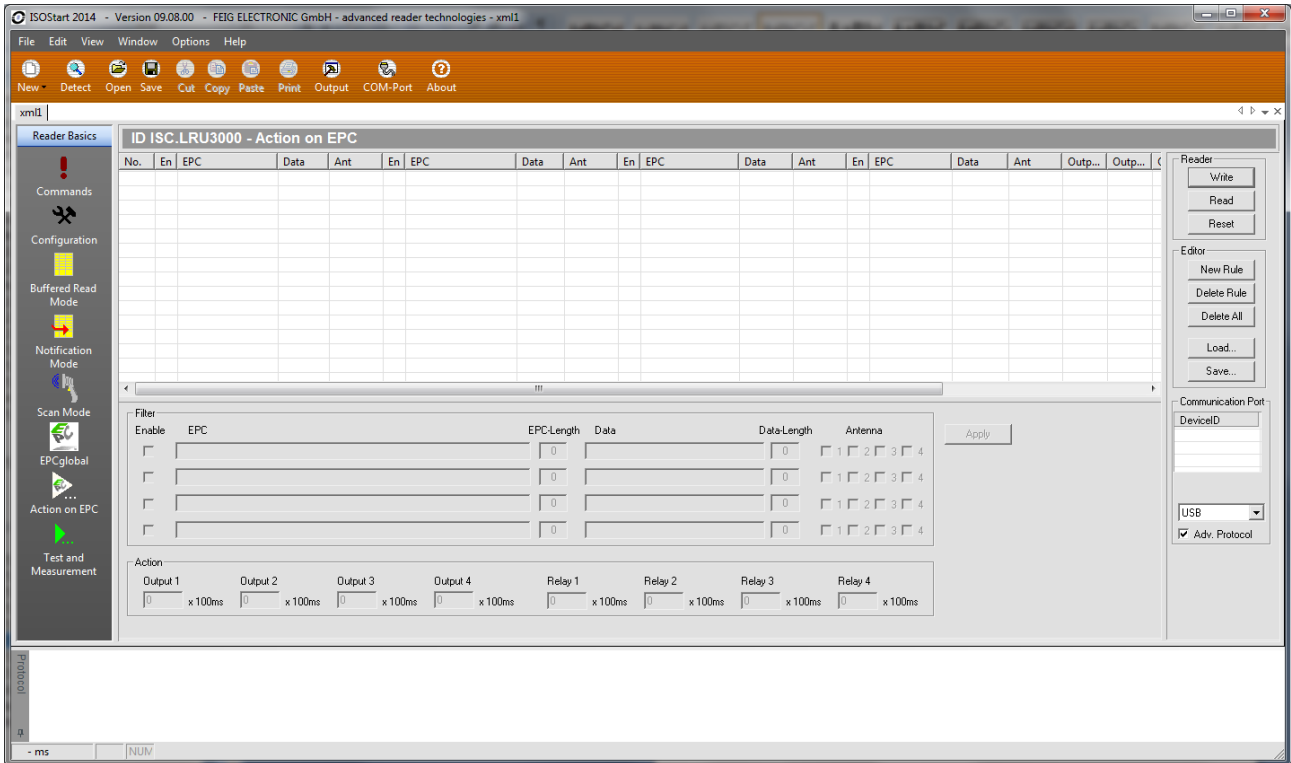
For working with one EPC transponder, the item **EPC Class 1 Test – One Tag** must be selected. The dialog window allows the **Write**, **Lock** and **Kill** of an UHF-EPC transponder. For HF-EPC transponders, only the **Write** button is accessible.

These functions should be used with care because of the risk of irreversible damage of the EPC transponder. More information about the access and kill password and the lock data can be found in the EPCglobal specification **EPCglobal Class-1 Generation-2 UHF RFID Protocol V1.0.9.pdf** ready for download from the EPCglobal homepage www.epcglobalinc.org.

5.4.8. Action on EPC



The **Action on EPC** group offers the possibility to define rules for automatic output events. This group is limited to some UHF readers.



Please refer to the Application Note N40612-0e-ID-B.pdf for detailed description.

5.4.9. Test and Measurement



The **Test and Measurement** group collects some helpful functions.

ISO Inventory:

This test function can be used for continuously executing the Host Protocol **[0xB0][0x01] Inventory**. This presumes the reader is configured to work in Host Mode.

No.	Tag-Type	Serial Number	DSFID/Info
1	ISO15693 - Texas Instruments	E00700001874D100	00
2	ISO15693 - Texas Instruments	E00700001874D101	00
3	ISO15693 - Texas Instruments	E00700001874D102	00
4	ISO15693 - Texas Instruments	E00700001874D103	00
5	ISO15693 - Texas Instruments	E00700001874D104	00
6	ISO15693 - Texas Instruments	E00700001874D105	00
7	ISO15693 - Texas Instruments	E00700001874D106	00
8	ISO15693 - Texas Instruments	E00700001874D107	00
9	ISO15693 - Texas Instruments	E00700001874D0F8	00
10	ISO15693 - Texas Instruments	E00700001874D0F9	00
11	ISO15693 - Texas Instruments	E00700001874D10A	00
12	ISO15693 - Texas Instruments	E00700001874D0FB	00
13	ISO15693 - Texas Instruments	E00700001874D0FC	00
14	ISO15693 - Texas Instruments	E00700001874D0FD	00
15	ISO15693 - Texas Instruments	E00700001874D0FE	00
16	ISO15693 - Texas Instruments	E00700001874D0FF	00
17	ISO15693 - Texas Instruments	E00700001874D108	00
18	ISO15693 - Texas Instruments	E00700001874D109	00
19	ISO15693 - Texas Instruments	E00700001874D0FA	00
20	ISO15693 - Texas Instruments	E00700001874D10B	00
21	ISO15693 - Texas Instruments	E00700001874D10C	77

Select the function **ISO Inventory** in the **Test** folder and press the **Start** button.

All transponders located in the antenna field are displayed in the list window with serial number and transponder type. The **Stop** button stops the ISO Inventory execution. The **Halt** button sets the Inventory process into a wait status to execute single steps with the **Step** button. The **Continue** button finishes the wait status and continues the Inventory process.

The **Reset** button clears the display window.

To send the individual protocols to the reader with a delay, use the **Delay** slider to set the pause between protocols at up to 1000ms.

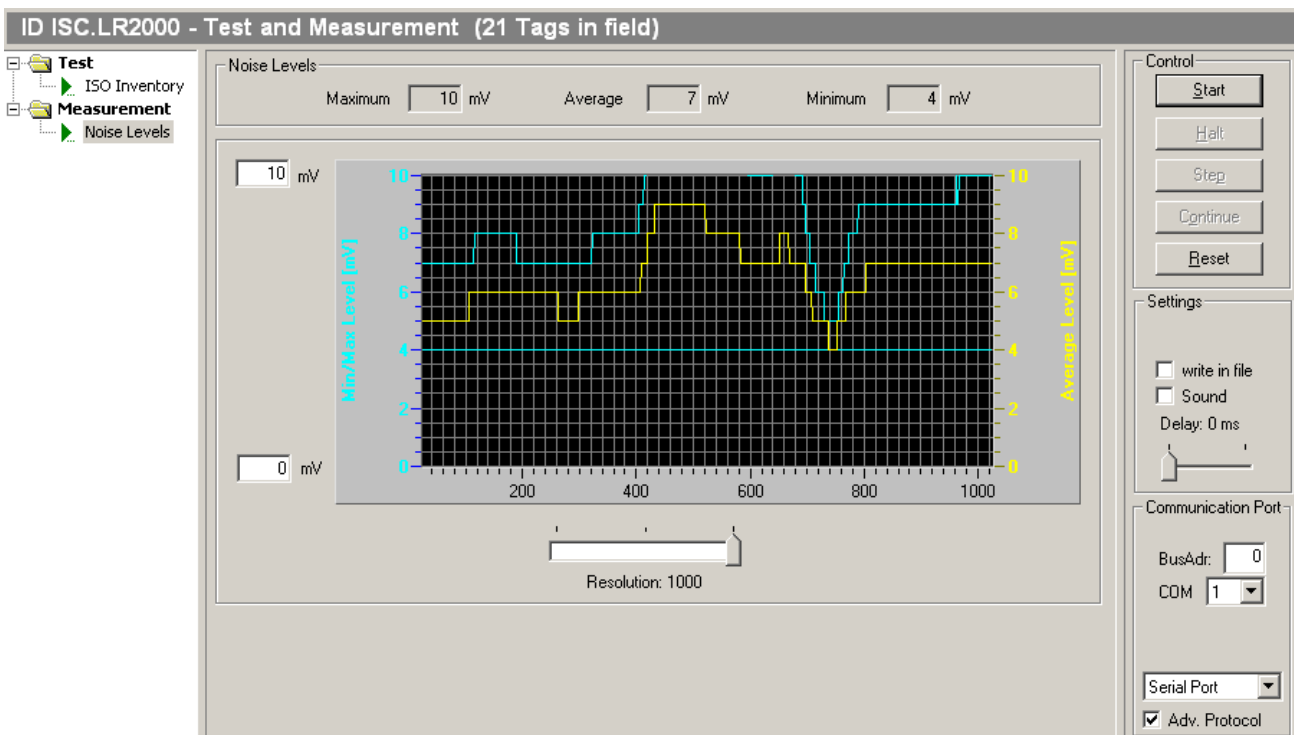
Noise Level:

The second **Test and Measurement** function **Noise Level** is available only for the HF Long Range Reader ID ISC.LR200 / LRM200 and ID ISC.LR2000 / LRM2000.

This function permits continuous measurement of the noise levels which are transmitted through the antennas. This allows time changes in the noise levels in the antenna surroundings to be graphically detected over a longer period of time.

The displayed voltage ranges for the maximum level can be freely defined. The **Resolution** slider can be used to vary the displayed time range on-the-fly into three ranges.

For the execution of this function the same control buttons are available as for the ISO Inventory function.



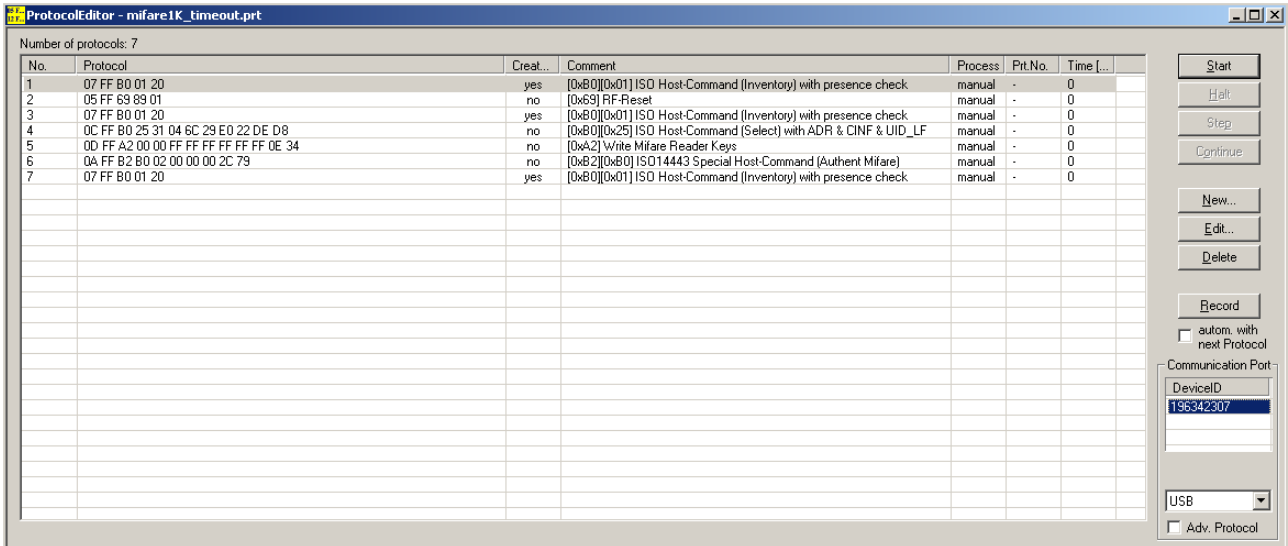
For additional information about noise level, refer to the manual for the corresponding antennas.

Activating the **write in file** function allows the noise level data to be saved to a file. The filename is built with the prefix NL followed by the date, e.g. NL060717.txt.

5.5. The Protocol Editor

The protocol editor is a helpful tool for checking the response of the FEIG HF or UHF reader for faulty, new or unknown protocols. As in the case of the reader editor, a port type must be allocated to the protocol editor. This may in principle be the same port.

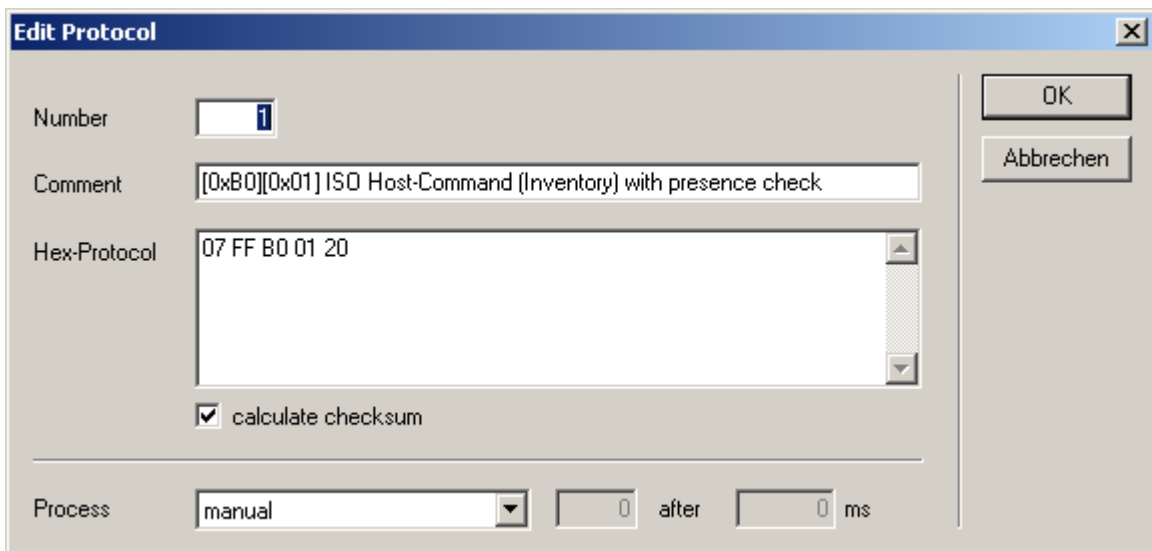
With the protocol editor one can collect any protocols and the scheduling of the protocol is arbitrary.



Use the **Start**, **New**, **Edit** and **Delete** buttons to transfer, create, modify and clear the entries.

With the **Record** button you can activate the record of any protocols sent by the reader editor. This presumes to have opened the reader editor first. The recorder can set the process state for each recorded protocol to **automatic with next Protocol** if this option is enabled. This is helpful for the automatic step-by-step scheduling of protocols.

The **Edit** button opens a dialog for the selected protocol item.

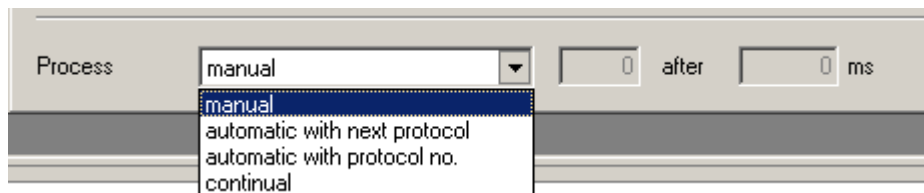


Every protocol item must have an individual **item number**. After changing this number the protocol item can be moved in the list with the context menu one step up or one step down to have a continual increasing order.

The edit box for the **hex protocol** accepts every chars, but all non-hex chars will be removed before the protocol is sent. This allows to use the space char as a separation char between every hex number.

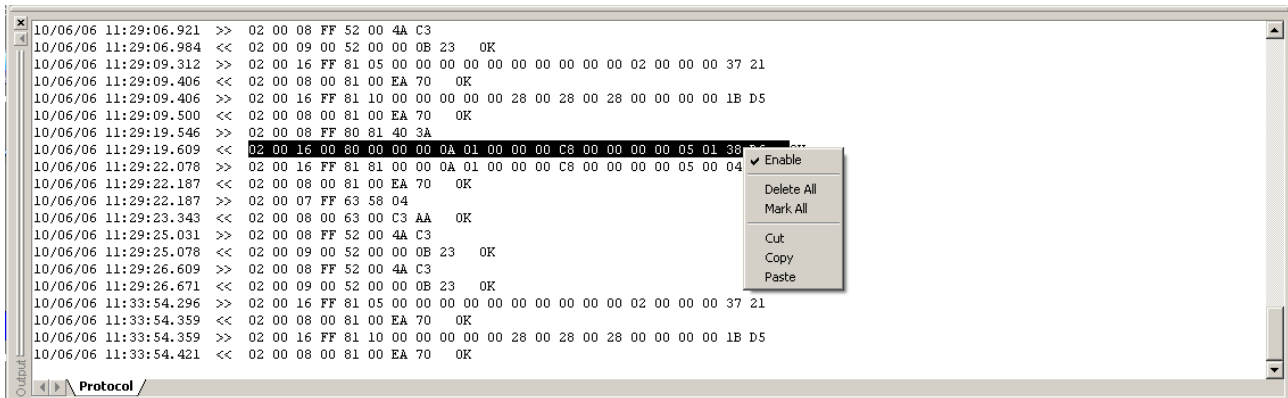
The hex protocol must contain the complete protocol frame except the checksum, which is calculated and added internally if the option **calculate checksum** is set. Recorded and unmodified protocols have a valid protocol checksum and the option calculate must not be set.

To organize the scheduling the drop-down box **Process** lists a number of scheduling options.



The item manual disables a scheduling for this protocol item. All other options enables the scheduling for this protocol item.

5.6. The Protocol Window



The protocol window lists each protocol action. All error messages occurring in connection with protocol traffic are diverted to this window

The protocol window is a normal editor and allows copying of text lines to the clipboard. Use the context menu with the right mouse button. In this way you can very easily copy protocols to the protocol editor and manipulate them.

For long runs of a test function or high performance tests, the protocol window should be disabled.

6. Handling Communication Problems

If you have communication problems with the FEIG Reader, please check the following points:

- Is the cable to the reader properly connected?
- Is power to the reader turned on?
- Is the correct port type assigned?
- In case of a serial connection, is an opened serial port allocated to the reader file? Go to the reader editor and check the list box **COM** at lower right.
- In case of a serial connection, is the correct bus address set in the reader editor? Try address try the broadcast address 255.
- In case of a serial bus connection (RS485) with multiple readers, each reader must be set with its own bus address. Check these settings.
- In case of a serial connection, check the settings for the serial port in [5.3.1. Settings for Physical Serial Port and Virtual COM Ports \(Bluetooth / USB Converter\)](#):
- In case of an Ethernet connection, does the IP address of the reader match the subnet mask of the PC?

Test every change using the protocol **[0x52] Baudrate Detection** from the reader editor commands group if a COM port is used.

7. Uninstalling ID ISOStart

To uninstall **ID ISOStart 2018** go to the Start Menu → Settings → Control Panel → Add/Remove Programs. From the Install/Uninstall tab look for the entry **ID ISOStart 2018** and select it. Click on the Add/Remove button. In the next dialog box select **Remove** and confirm the prompt for uninstalling with “Yes”. Now all components of **ID ISOStart 2018** will be removed from your computer.