



BLUEBOX Gen 2
Industrial RFID Devices
Configuration & Test Operation with BLUEBOX Show

iDTRONIC GmbH
Donnersbergweg 1
67059 Ludwigshafen
Germany/Deutschland

Phone: +49 621 6690094-0
Fax: +49 621 6690094-9
E-Mail: info@idtronic.de
Web: idtronic.de

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Safety Instructions / Warning - Read before start-up!

- The device may only be used for the intended purpose designed by the manufacturer. The operation manual should be conveniently kept available at all times for each user.
- Unauthorized changes and the use of spare parts and additional devices that have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.
- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- Repairs may be executed by the manufacturer only.
- Only qualified personnel should carry out installation, operation, and maintenance procedures.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.
- When working on devices the valid safety regulations must be observed.

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1 Installation

System Requirements/Tested Systems

- UNKNOWN

Tested Systems

- Windows XP 32 bit
- Windows 7 32/64 bit

1.1 Where to get the latest version

The latest version can be obtained from the download area of our website for Professional RFID:

- <http://idtronic-rfid.com/downloads/sdks/>
- Password: EaZy_AxXeSs

1.2 Install the SDK

To install the SDK double click on the setup.exe file. Setup program will check the prerequisites (.Net Framework 2.0 and VC++ 2005 Redistributable Package) and installs them, after that it installs the BLUEBOX SDK files in the folder listed below "Folder", to change the installation folder click on "Browse" and select another folder. Click on "Next" to install files.

The setup program will create the following directories and install several tools in them:

Directory	Description
BLUEBOX Demo	Visual C++ sample program. It contains only the source code.
BLUEBOX Polling	.Net Visual C# sample program. It contains the source code, the executable and library files.
BLUEBOX Show	.Net Visual C++ application. It contains only the executable and library files.
BLUEBOX Test	.Net Visual Basic sample program. It contains the source code, the executable and library files.
Library	Library files (BLUEBOXLib.dll, BLUEBOXLib.h, BLUEBOXLib.lib, BLUEBOXLib.def, ReleaseNotes.txt).

Table 1.1 BLUEBOX SDK directories.

2 Establish Connection to a BLUEBOX

2.1 Connection configuration

Once you have connected the BLUEBOX reader to the PC, turn it on and wait the end of the initialization. Type the reader address (0 – 255) in the related toolbar text box, then select the interface to use (RS232, RS485 or TCP) using the related toolbar combo box (Figure 2.1).

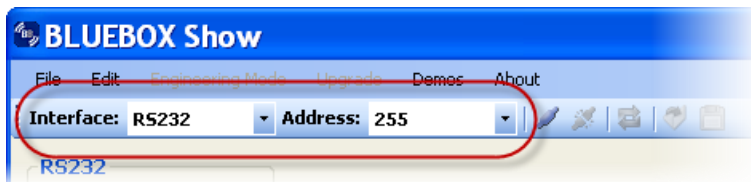


Figure 2.1 BLUEBOX Show connection configuration in the software toolbar.

In case of RS232 or RS485 interface selected you have to select the com port number, the baud rate, the data bits, the stop bits and the parity (Figure 2.2).

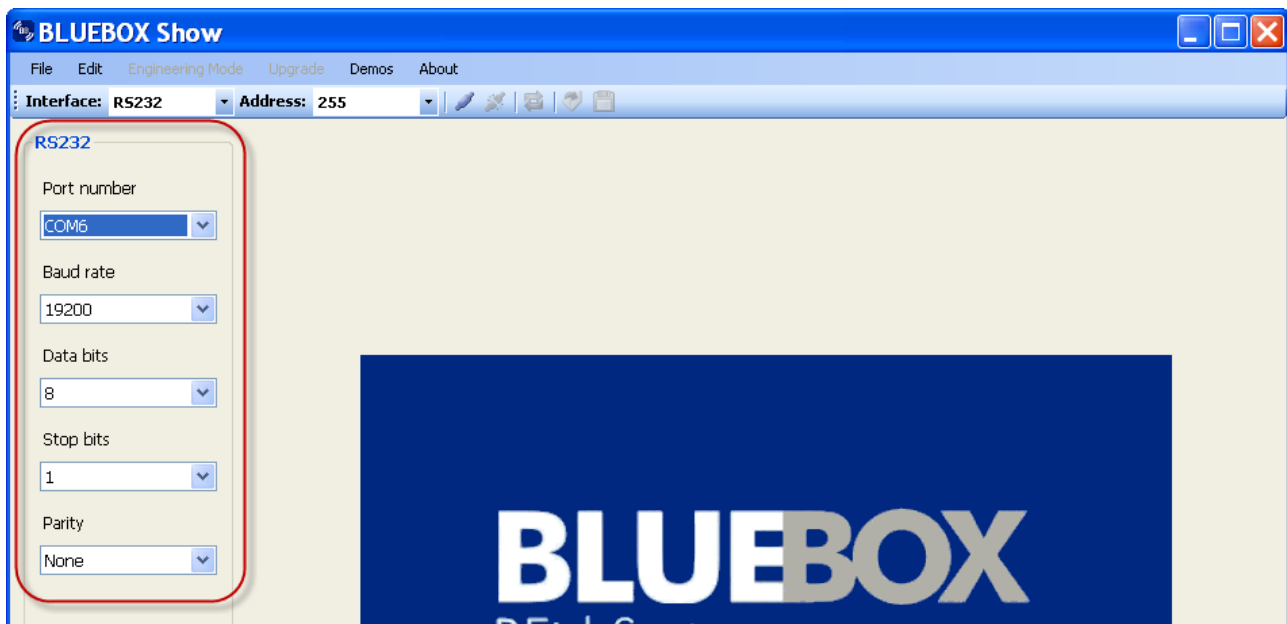


Figure 2.2 BLUEBOX Show screenshot. RS232 connection configuration.

In case of TCP interface selected you have to type the IP address and communication port (Figure 2.3).

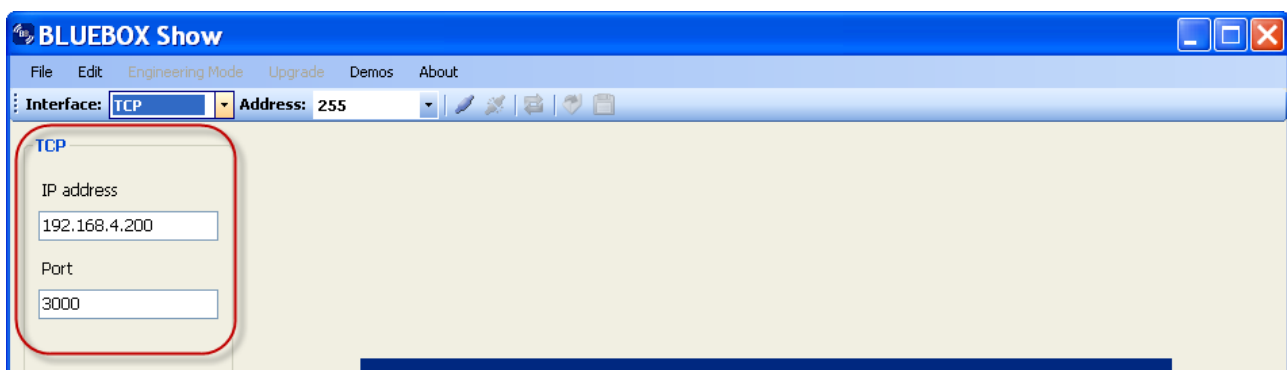


Figure 2.3 BLUEBOX Show screenshot. TCP connection configuration.

2.1.1 Default IP Addresses

The previous BLUEBOX series and the BLUEBOX Gen2 Basic 4 CH UHF has this default IP address:

- 192.168.4.200

The BLUEBOX Gen 2 has this default IP address:

- 10.20.245.200

Important Note

Do not connect any device to your network before it has been configured. Before connecting it your network, check that the desired IP address has been set. A device may have any factory-set IP address. A device with the wrong settings may impede the functioning of your network.

2.2 Connect to the reader

Click on the toolbar connect button (Figure 2.4) to connect with the reader. After opening the connection the software reads the firmware release of the reader.

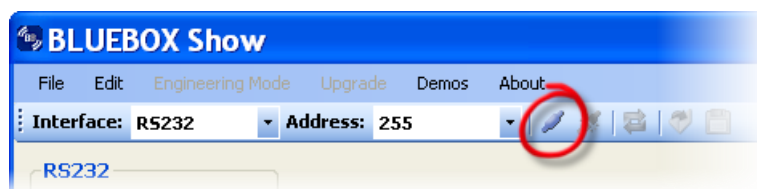


Figure 2.4 BLUEBOX Show connect button in the toolbar.



If the reader is not supported by the software, it prints the following message box (Figure 2.5).

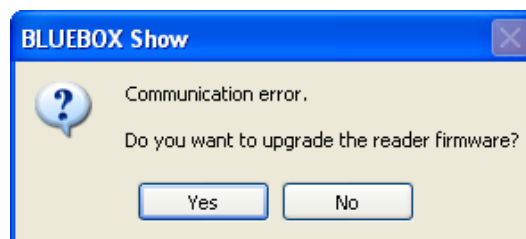


Figure 2.5 Error message box shown on reader connected not supported by software. It allows to upgrade the firmware.

3 Operating BLUEBOX Show for Configuration

3.1 Start Screen, Basic Configuration

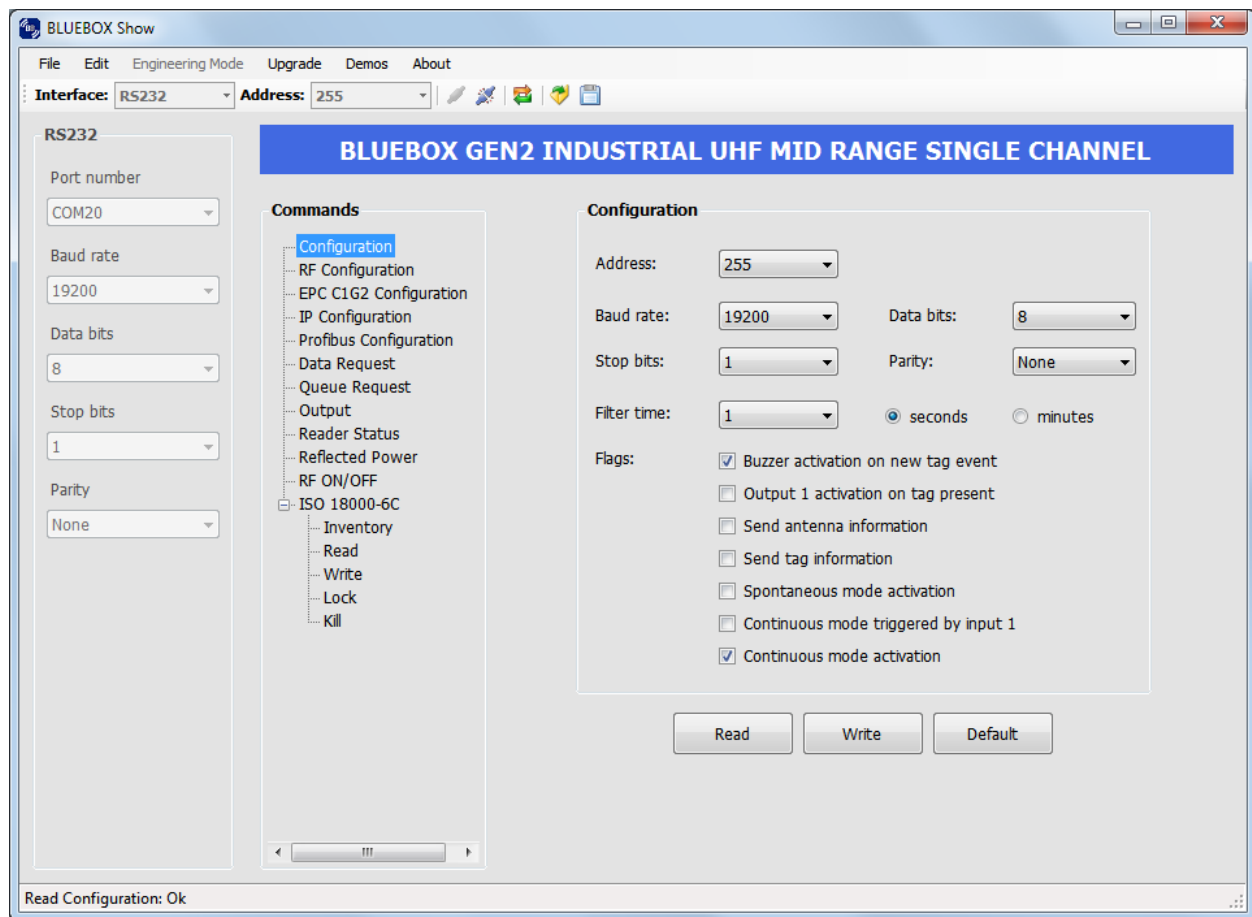
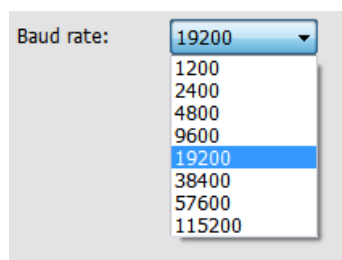


Figure 6 Start screen that appears after connecting to a BLUEBOX first

Address

Select the device address for RS485 operation. This setting is not important for RS232, Ethernet, Profibus etc.

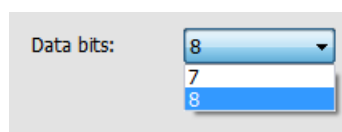
Baud rate



Sets the baud rate of the serial interface (RS232/RS485).

Factory default is 19'200 bps.

Data bits



Sets the baud rate of the serial interface (RS232/RS485).

Factory default is 8 bits.

Parity

Select 1 or 2 stop bits of the serial interface (RS232/RS485).

Factory default is 1 stop bit.

Parity

Select the parity checkbit of the serial interface (RS232/RS485).

Factory default is "None".

Filter Time

Factory default is 10 sec.

3.1.1 Flags
Buzzer activation on new tag event

Whenever the device detects a tag ID (or EPC with UHF tags) it gives an acoustic signal. This signal is repeated after the filter time if the tag is still within range of the device.

The buzzer can be a helpful information for a quick function test.

During everyday operation this sound may be annoying, so it can be switched off.

Output 1 activation on tag present

Whenever the device detects a tag ID (or EPC with UHF tags) it switches output 1 on for a short period of time (HOW LONG?).

This can be useful to turn on a signal lamp to confirm a successful tag reading.

Send antenna information

Only useful with BLUEBOXes that have more than 1 antenna.

Send tag information

Spontaneous mode activation

Every new tag ID is automatically sent to the host.

Continuous mode triggered by input 1

Continuous mode activation

Reader ist steadily scanning for new tags.

3.2 RF Configuration

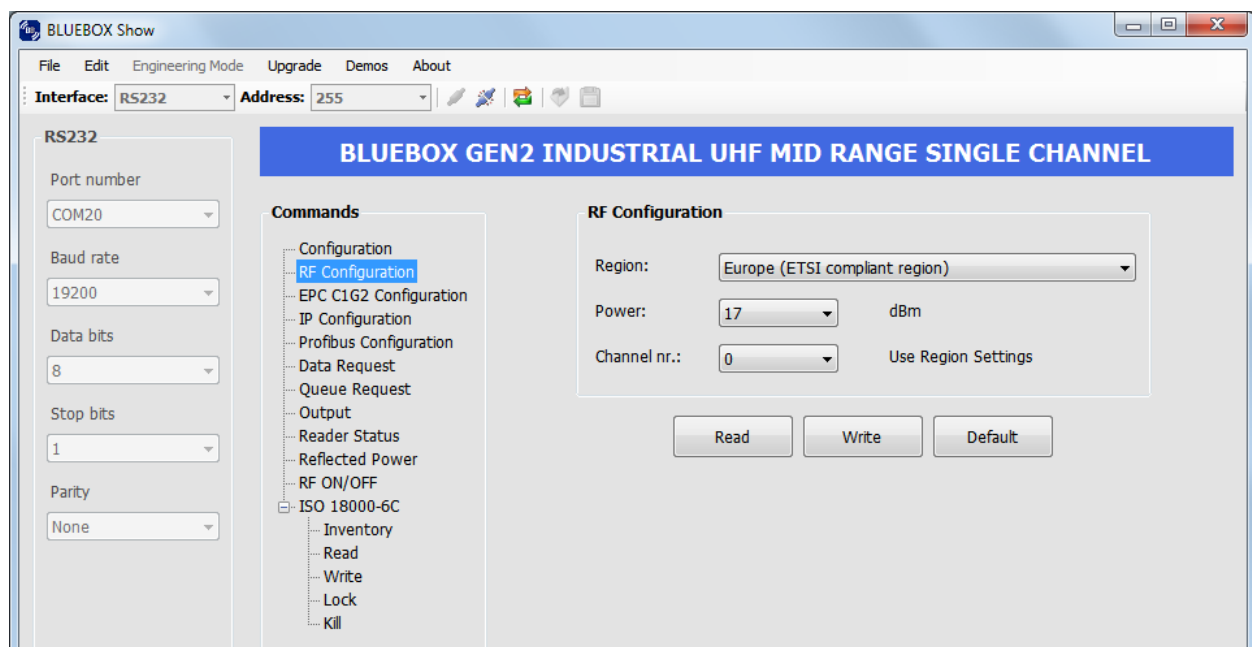
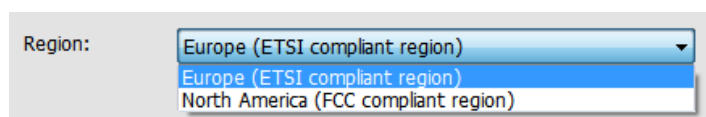


Figure 7 RF Configuration

Region



Select the correct setting for legal operation of this device in your country.

Factory default is "Europe".

RF TX Power

The settings vary according to the capabilities of the device.

Please be aware that it is not always useful to set the device to maximum TX power. Especially with UHF in environments with metal surfaces, the reflected energy can be so high, that a single reader can disturb itself.

A rule of thumb is to turn down the TX power until no tag is detected, then to add 3 dB to have a margin for safe detection.

RF TX Channel Setting

Selecting channel “0” sets the device into an automatic mode. Now the device used a recommended channel hopping technique to get best results in most standard situations.

This is the factory default setting.

If devices are operated in close proximity and may affect each other it can improve performance to configure each device to a distinct channel.

When adjusting the channels it is recommended to write down not only this selected carrier frequency but also to note the sidebands caused by the data communication (pls. see the setting “Link Frequency”).

Factory default is “0”.

3.2.1 Example – setting several devices to distinct frequencies, diagram including communication sideband

TBD

3.3 EPC Class 1 Generation 2 Configuration

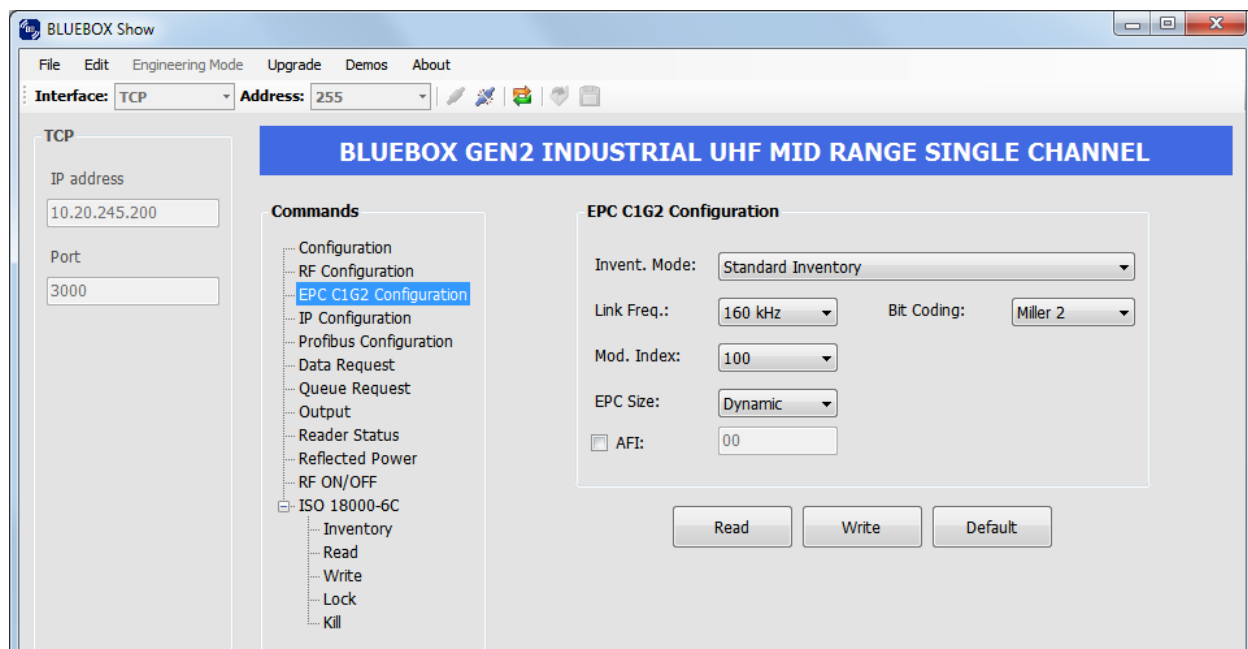
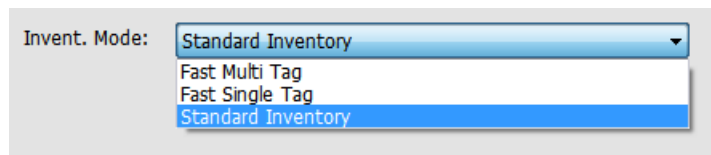


Figure 8 EPC C1G2 Configuration

Inventory Mode



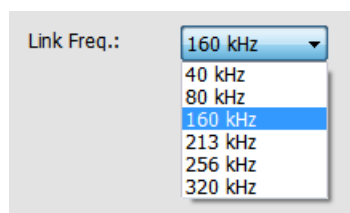
Standard Inventory: Inventory mode like defined in the standard.

Fast Multi Tag: Inventory Mode that does not take the tag to the Opened but to the Acknowledged State. This inventory mode is not as secure as the standard mode, but is faster.

Fast Single Tag: The same inventory mode like the Fast Multi Tag, but with the slot count of 1. This has the effect that no anti-collision procedure is performed, but if there is only one tag in the field, it is detected much more faster..

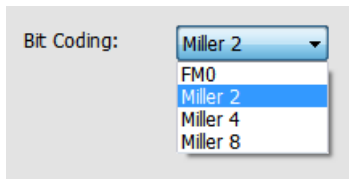
Factory default is "None".

Link Frequency



Factory default is 160 kHz.

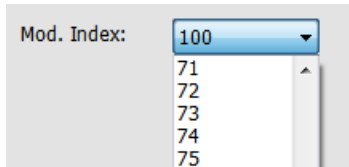
Bit Coding



DaSets the baud rate of the serial interface (RS232/RS485).

Factory default is “Miller 2”.

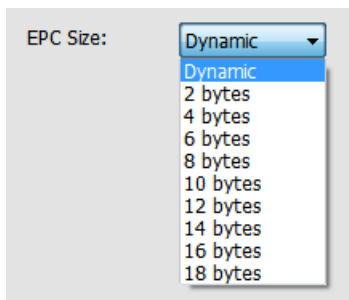
Modulation Index



DaSets the baud rate of the serial interface (RS232/RS485).

Factory default is 100 %.

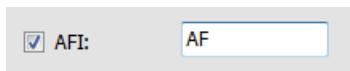
EPC Size



The EPC size is a filter on the tag's EPC length and with dynamic set no filter is applied so every ISO 18000-6C tag could be identified by the reader. If this filter is set to 12 e.g. then only tags with an EPC length of 12 Bytes are shown. Other tags are ignored.

Factory default is “Dynamic”.

AFI (Application Family Identifier)



Bits 17h ... 1Fh (23 ... 31) can contain the “magic number” of an application specific EPC identifier. The AFI allows filtering by this number, so that only tags with fitting numbers are sent to the application. “Foreign” tags are ignored. The AFI filter works only for the continuous mode. “Foreign” tags can be retrieved manually by an inventory command.

Factory default is OFF, no checkmark.

3.4 IP Configuration (Ethernet)

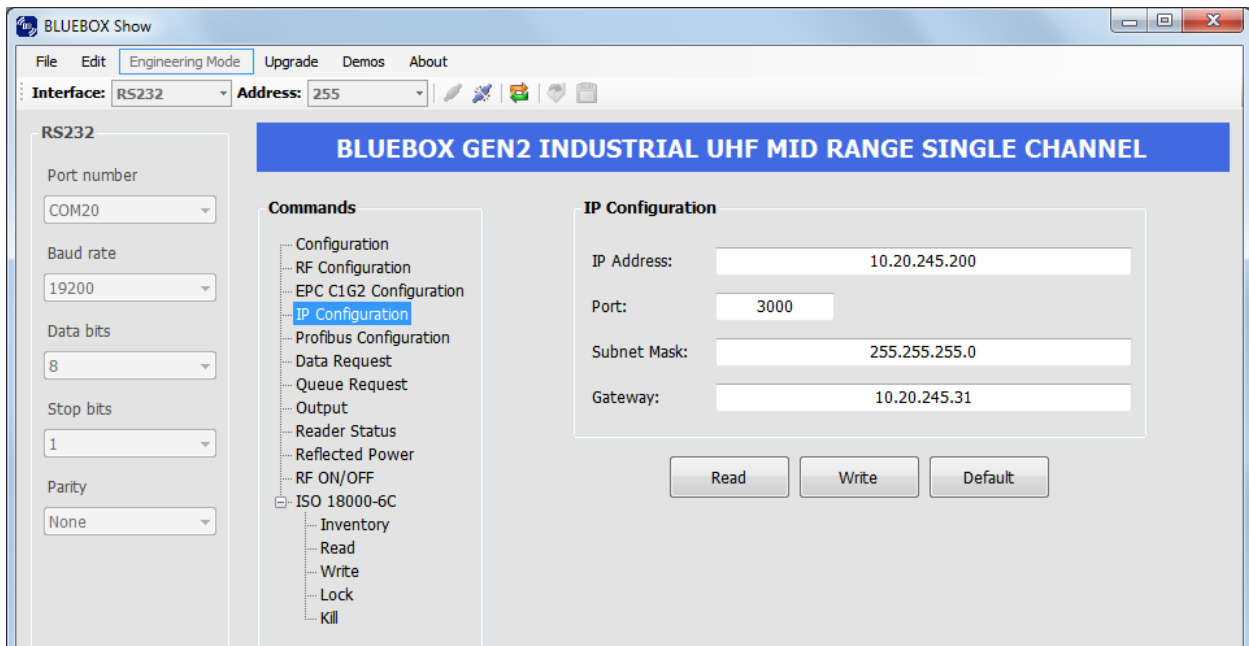


Figure 9 IP Configuration

After changing a setting, confirm with [Write] on this page.
Also confirm on the first page “Configuration “ with [Write].

3.5 Profibus Configuration

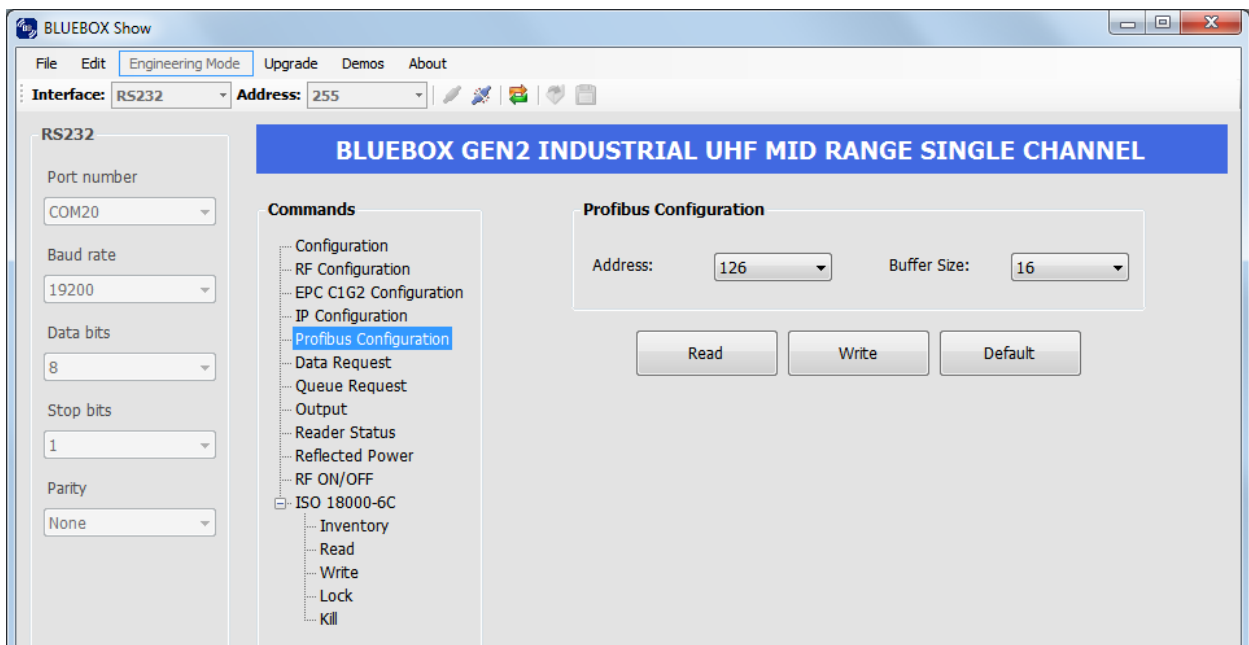


Figure 10 Profibus Configuration

Address

This sets the address for the Profibus.

Factory default is address 126.

Buffer Size

Buffer Size:

16

8

12

16

20

32

64

Sets the Profibus Buffer Size for data transfer.

Factory default is 16 Bytes.

3.6 Switch RF on/off

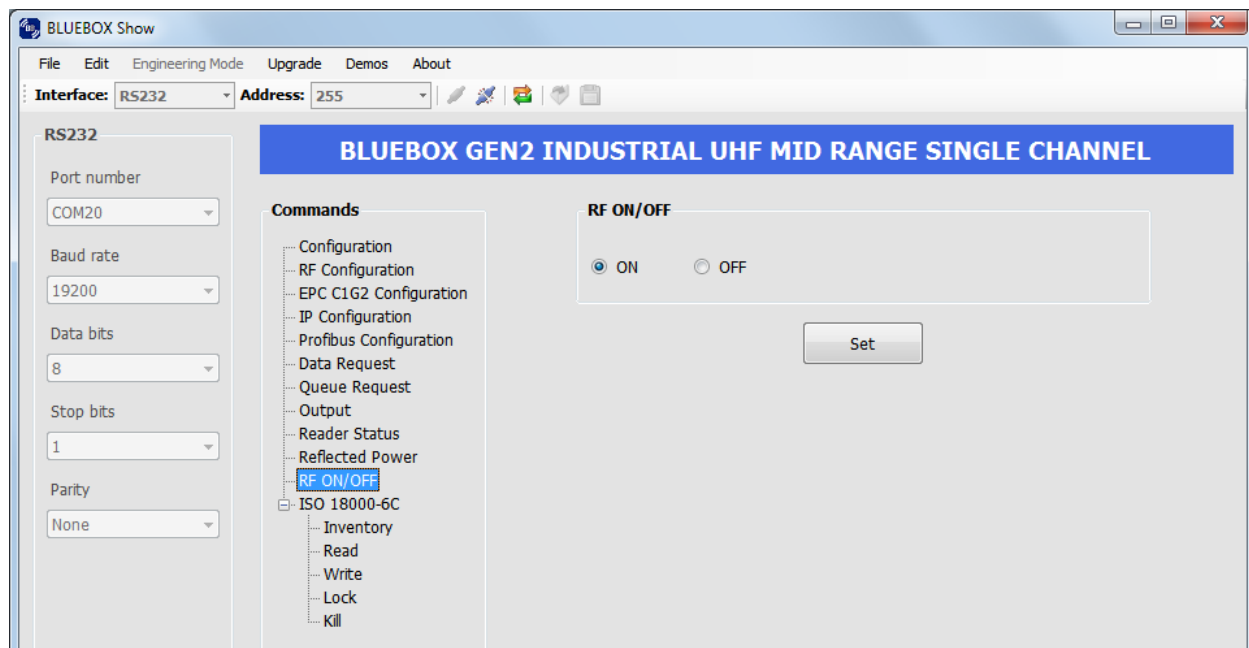


Figure 11 RF ON/OFF

4 Operating BLUEBOX Show for Device Test

4.1 Data Request

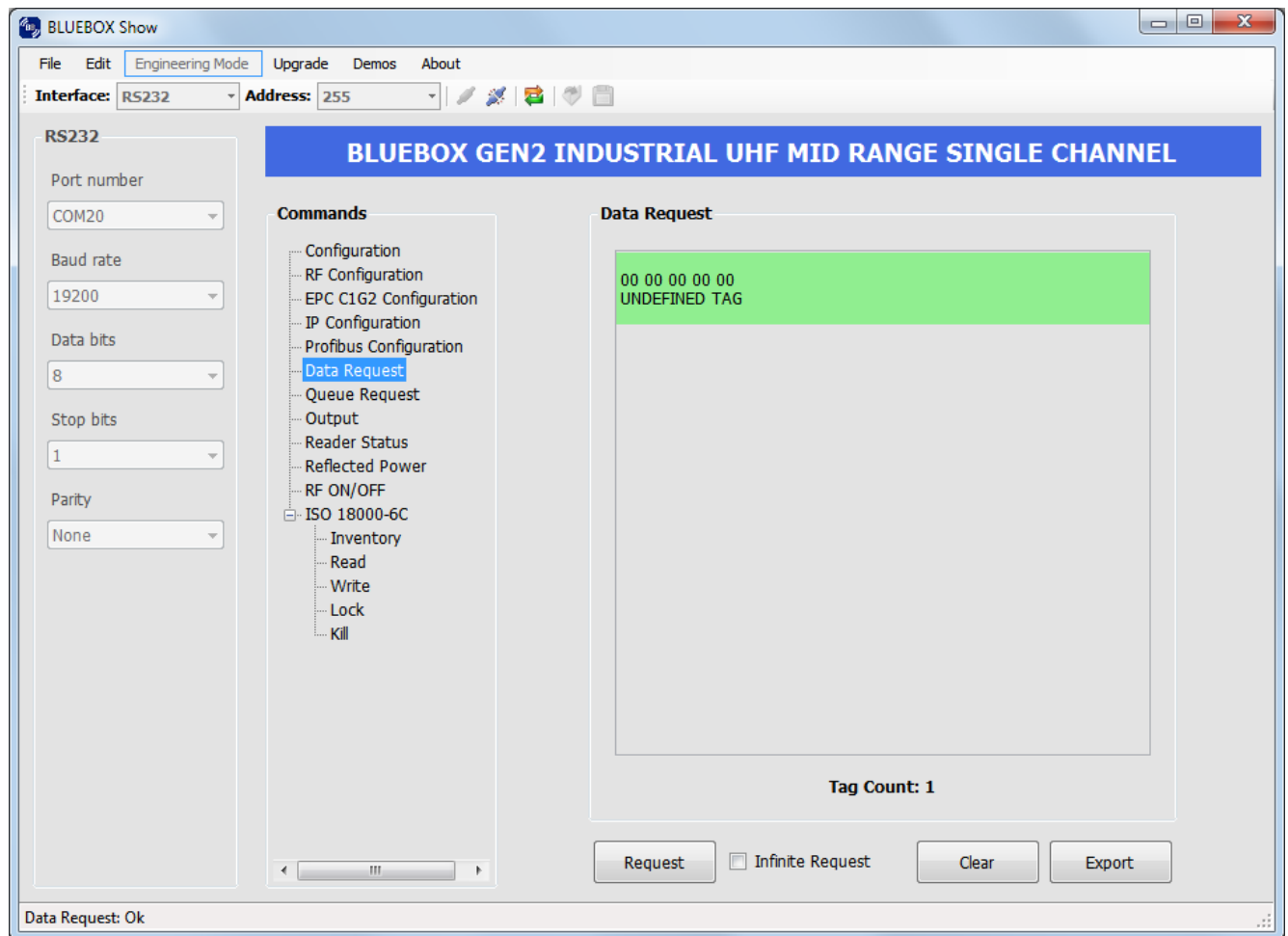


Figure 12 Data Request

4.2 Queue Request

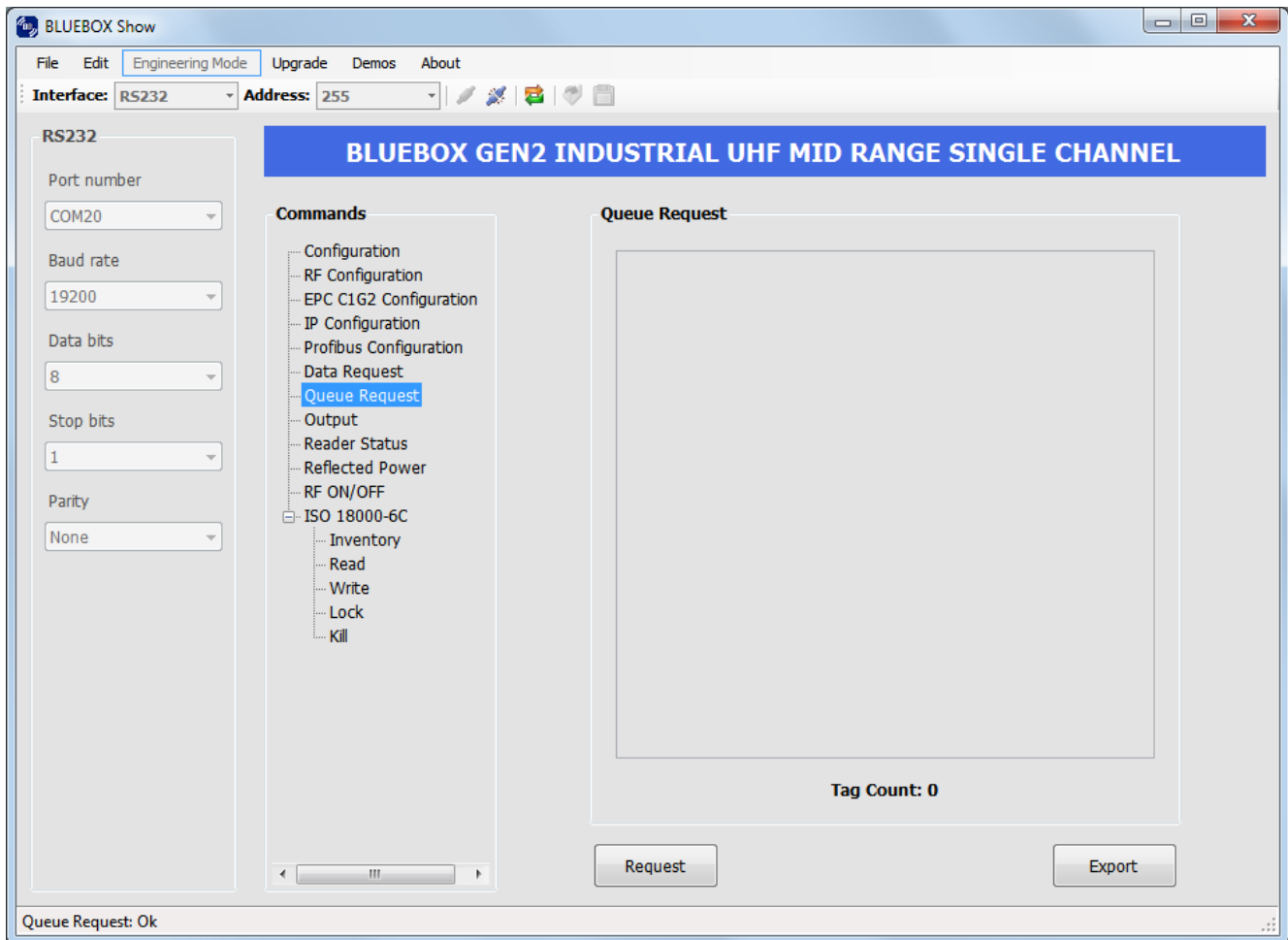


Figure 13 Queue Request

4.3 Digital Input/Output Test Operation

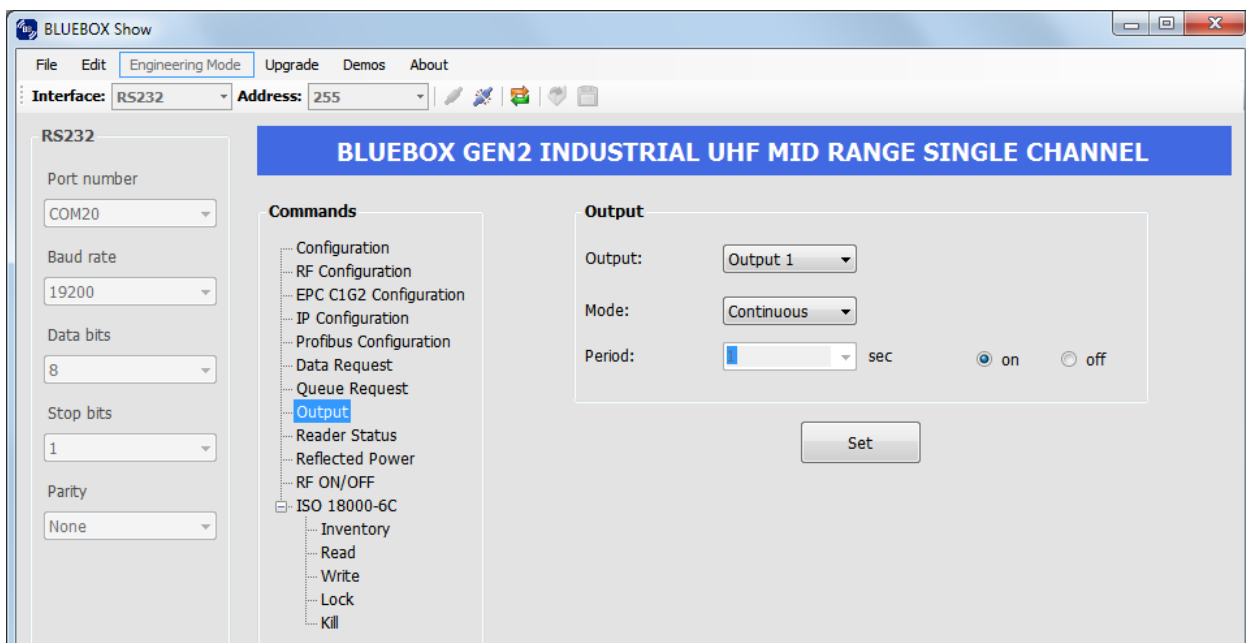


Figure 14 Output

Output Selection

Output:

Output 1

Output 1

Output 2

Output Mode

Mode:

Continuous

Continuous

Impulsive

Continuous: Output is set/reset (switched on/off) until the device is shut off.
Impulsive: Output is set/reset (switched on/off) for the selected period.

Select Output Set/Reset Period

Period:

1

1

2

3

4

5

6

7

8

9

10

11

12

If the output mode “Impulsive” is selected, the period during which an output is set/reset (switched on/off) can be set to a desired amount of seconds.

4.4 Reader Status

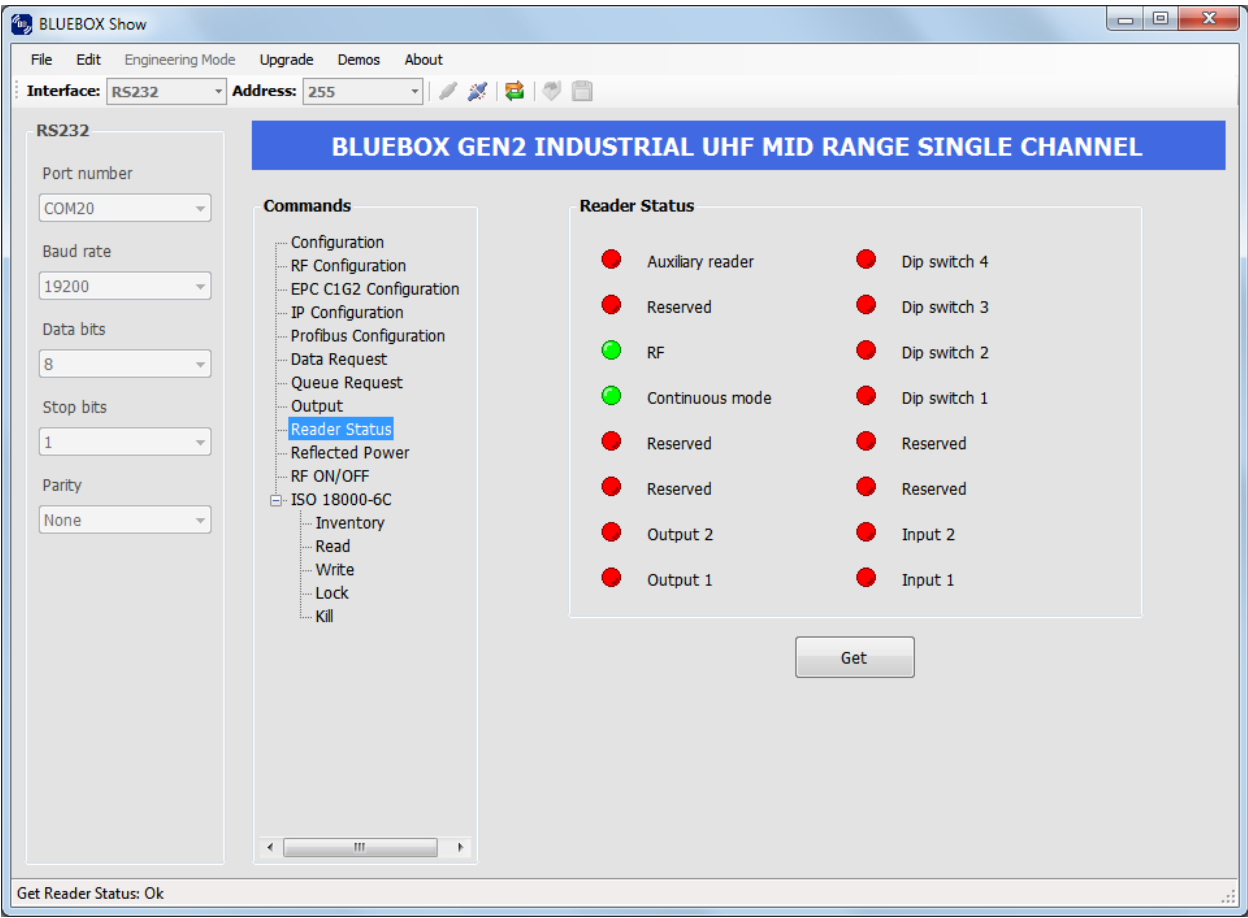


Figure 15 Reader Status

Spontaneous Mode?

5 Handling Tags

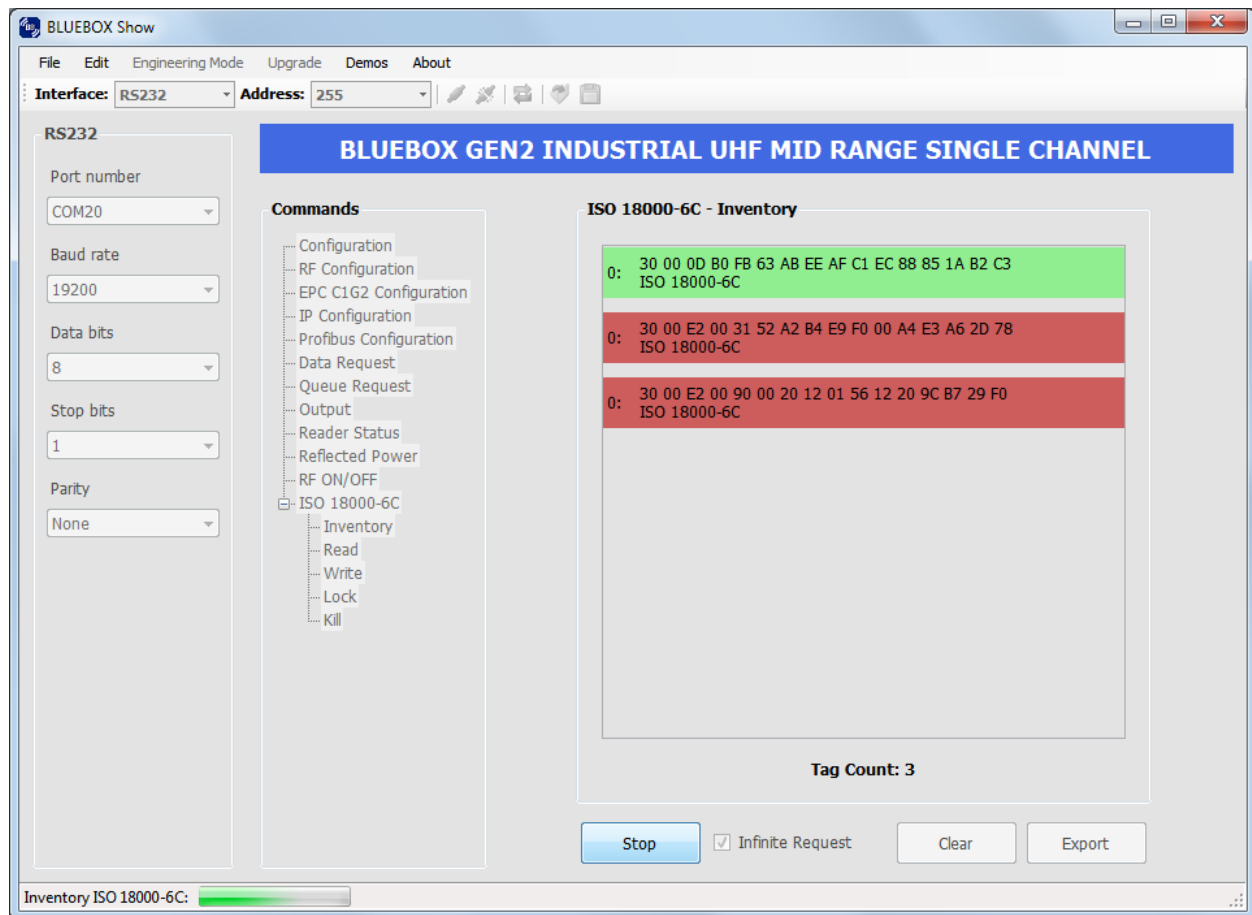


Figure 16 ISO 18000-6C Infinite Inventory Running

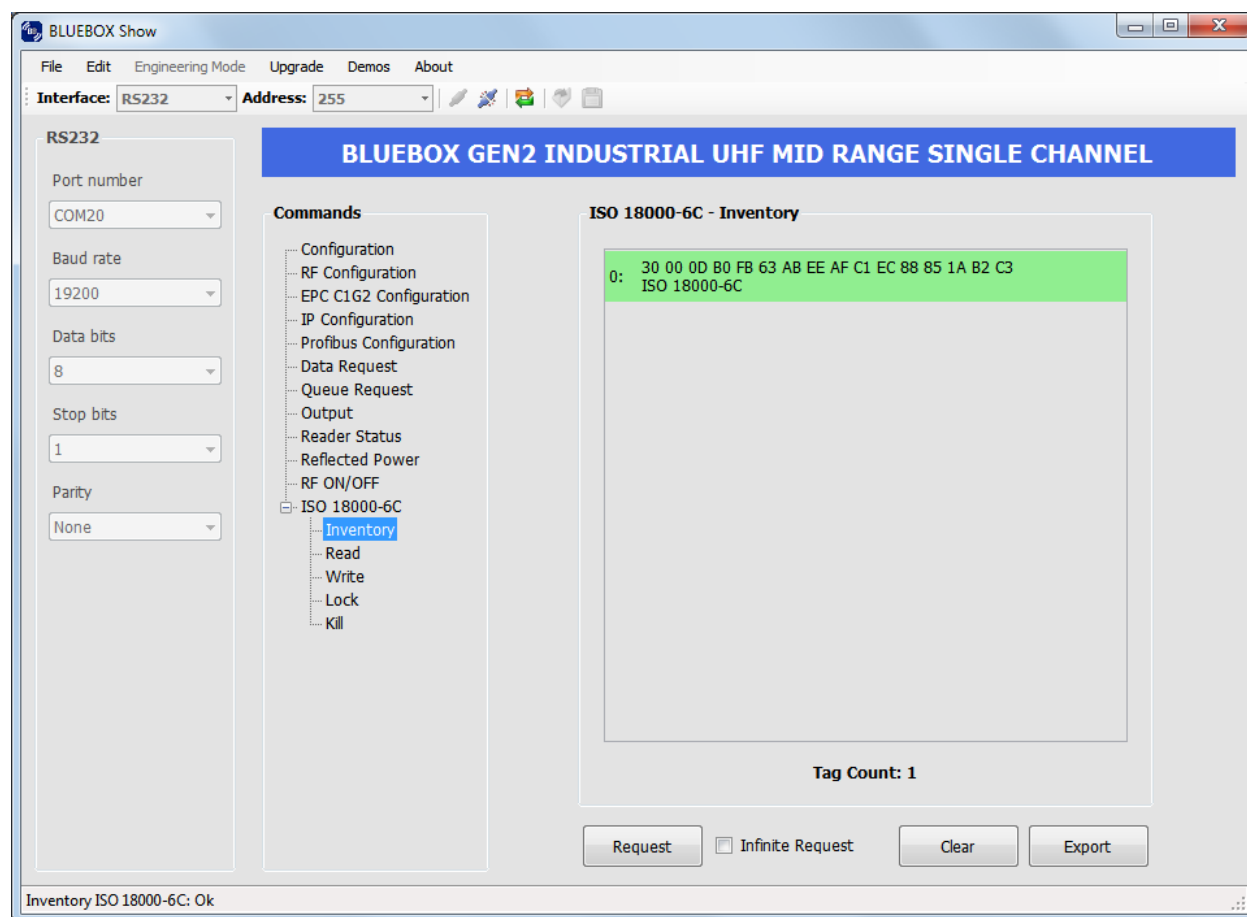


Figure 17 ISO 18000-6C Inventory Result

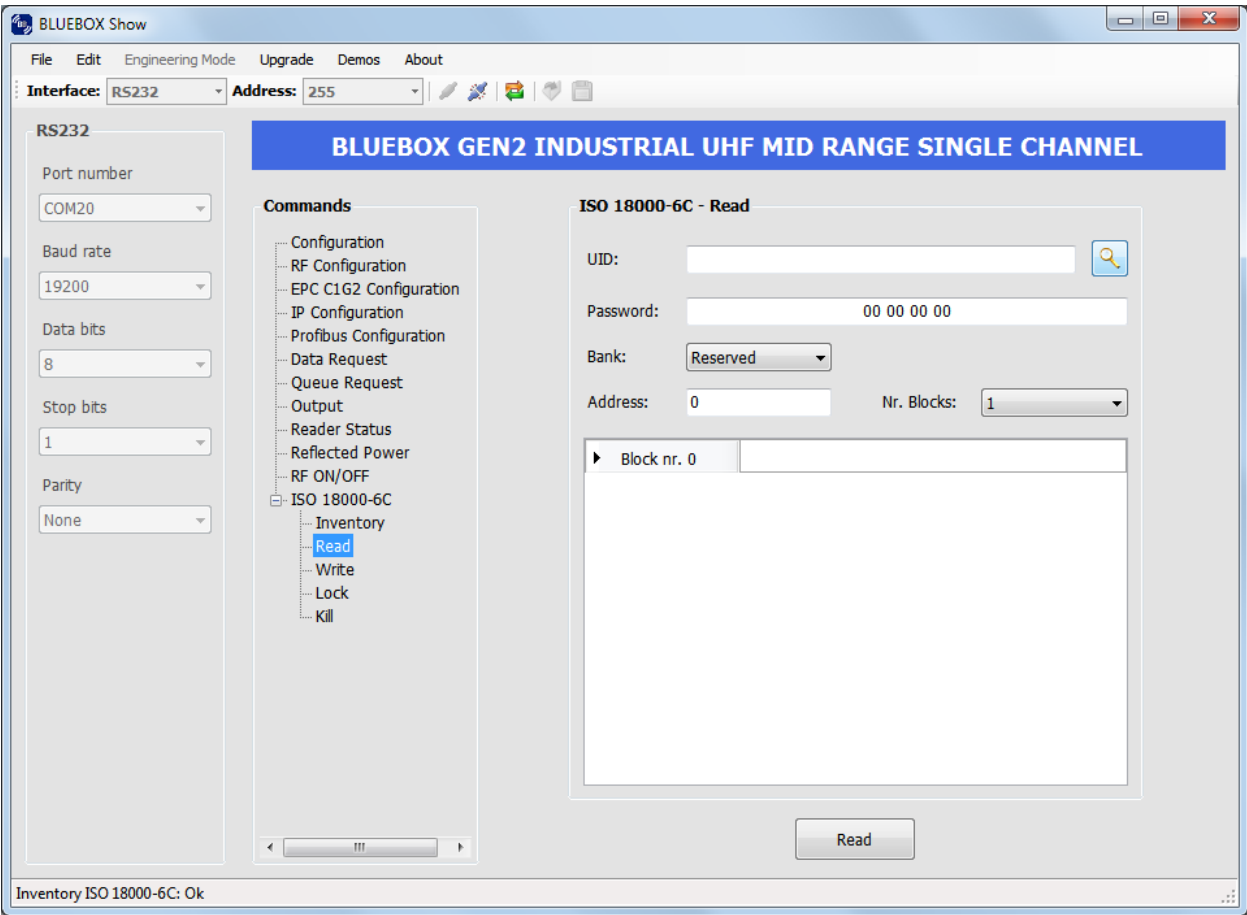


Figure 18 ISO 18000-6C Read Data From Tags

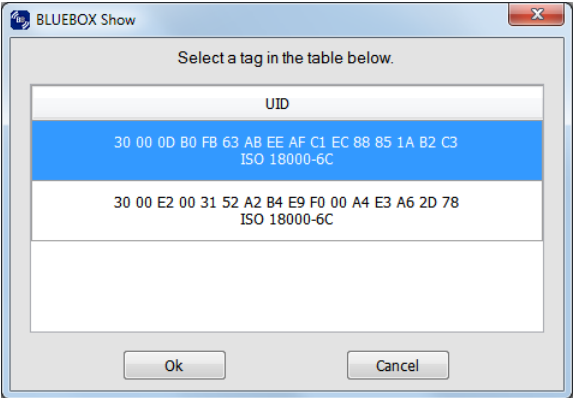
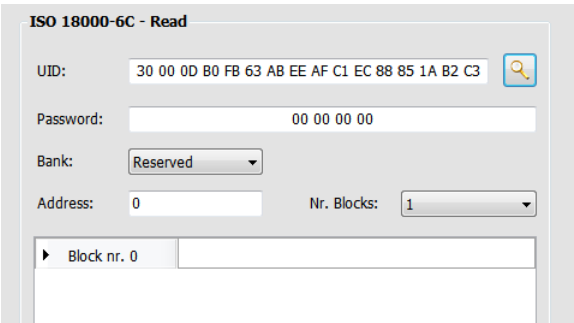


Figure 19 Tag list, select one tag to continue with the desired procedure

Bank: Reserved ▾

Address: Reserved
EPC
TID
User

Nr. Blocks: 1 ▾

1
2
3
4
5
6
7
8
9
10
11
12

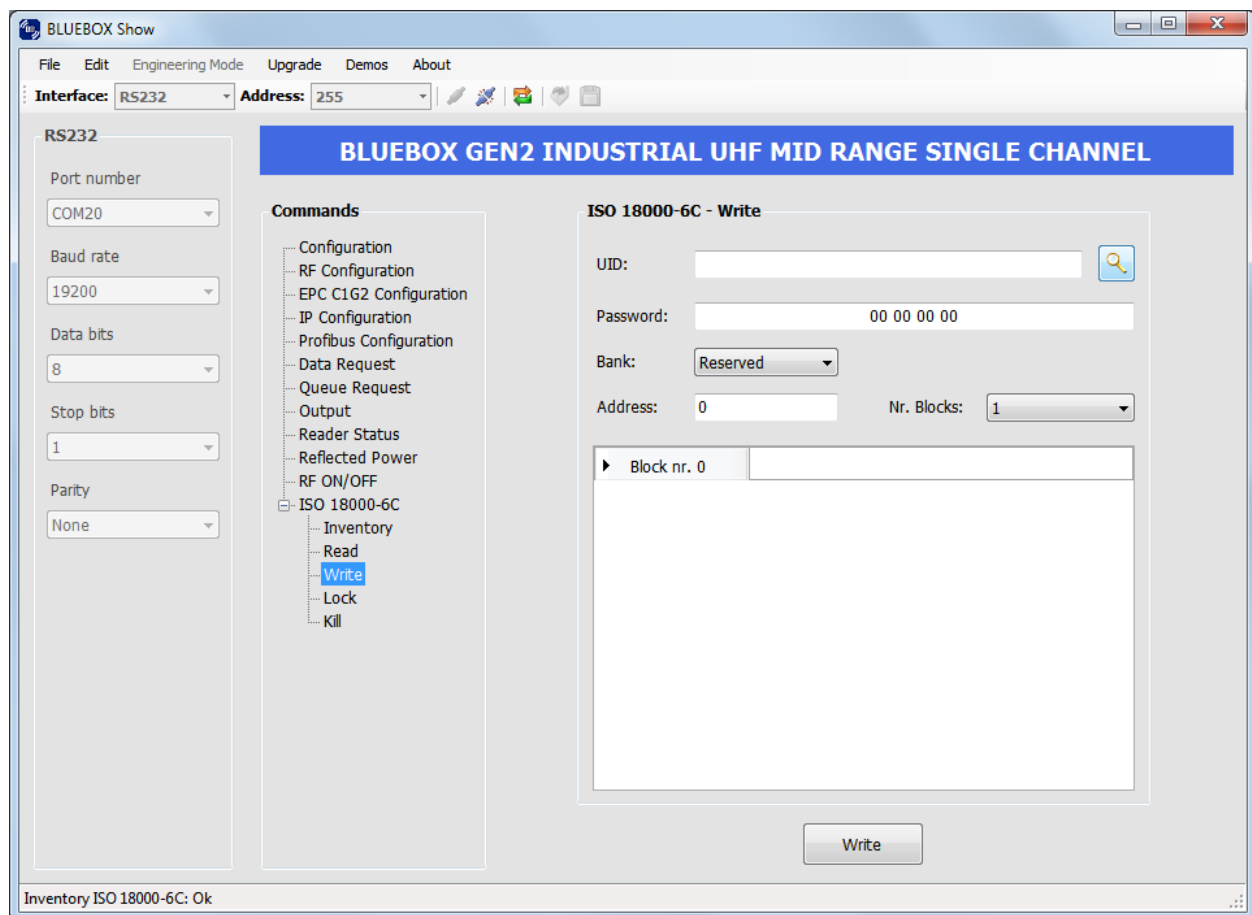
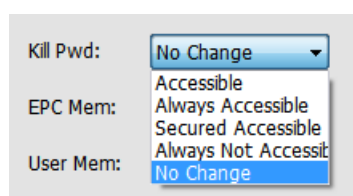
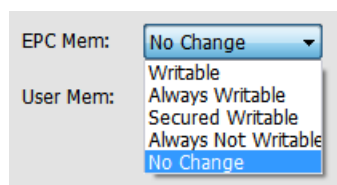
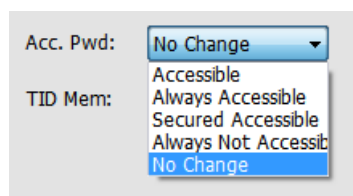


Figure 20 ISO 18000-6C Write Data Onto Tags



TID Mem: **No Change** ▼

- Writable
- Always Writable
- Secured Writable
- Always Not Writable
- No Change**

User Mem: **No Change** ▼

- Writable
- Always Writable
- Secured Writable
- Always Not Writable
- No Change**

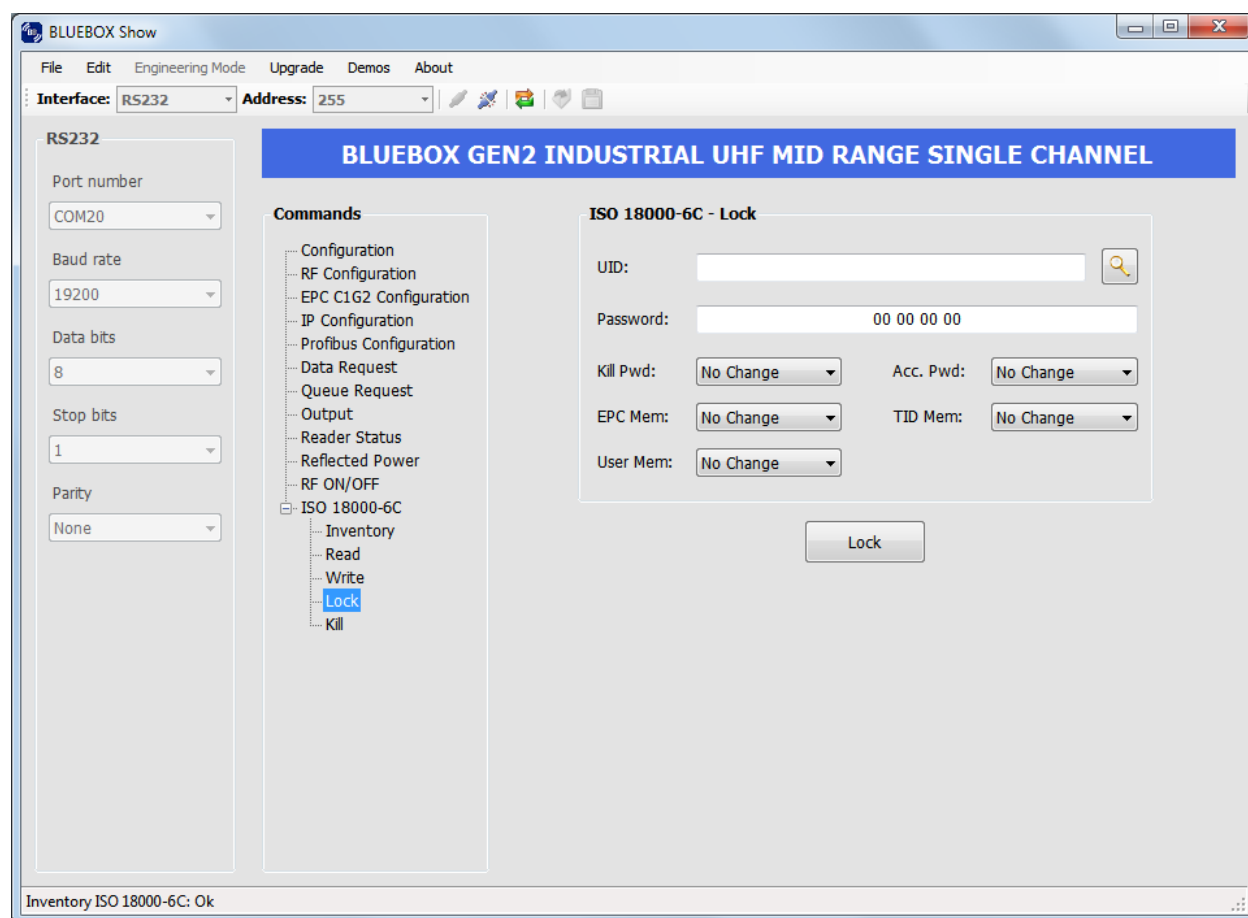


Figure 21 ISO 18000-6C Lock Memory Banks On Tags

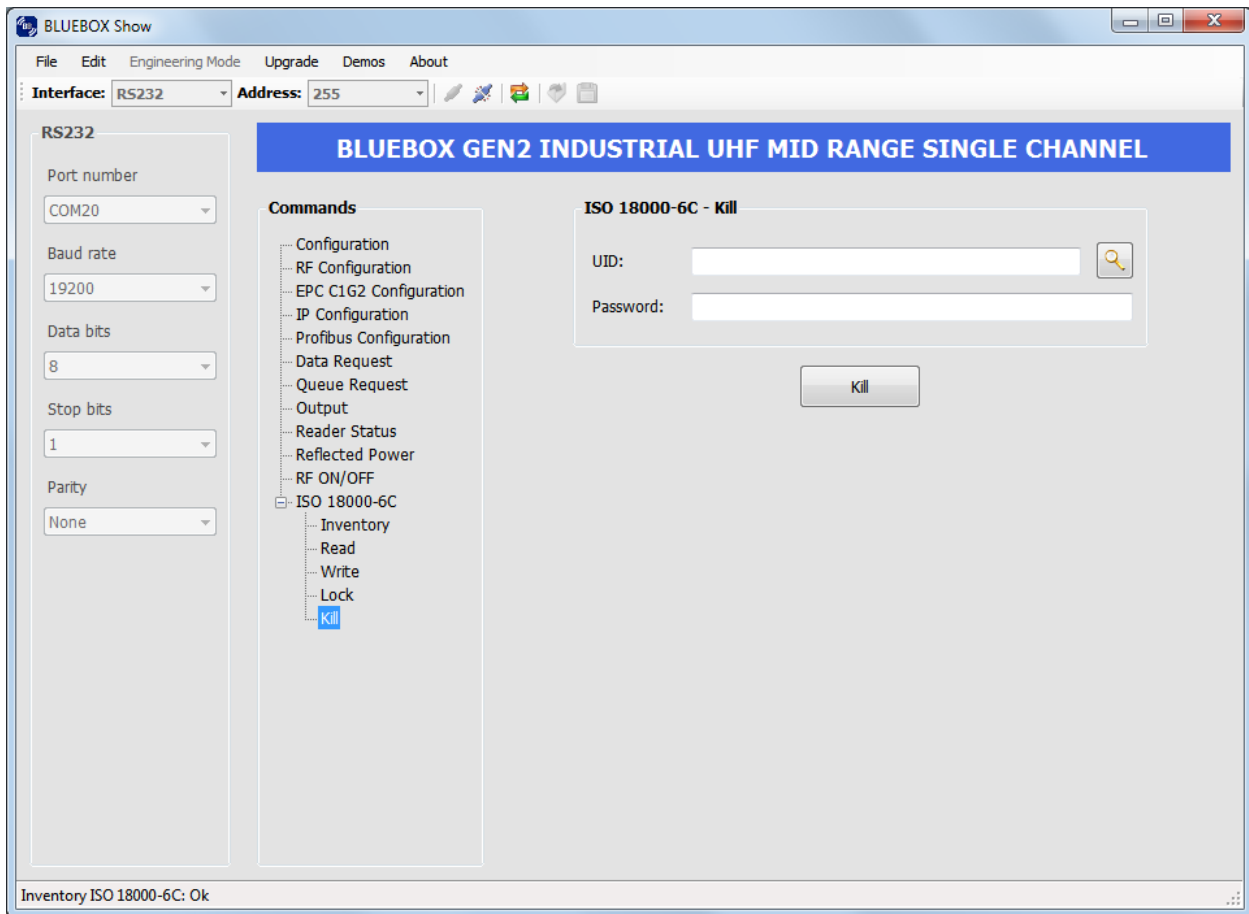
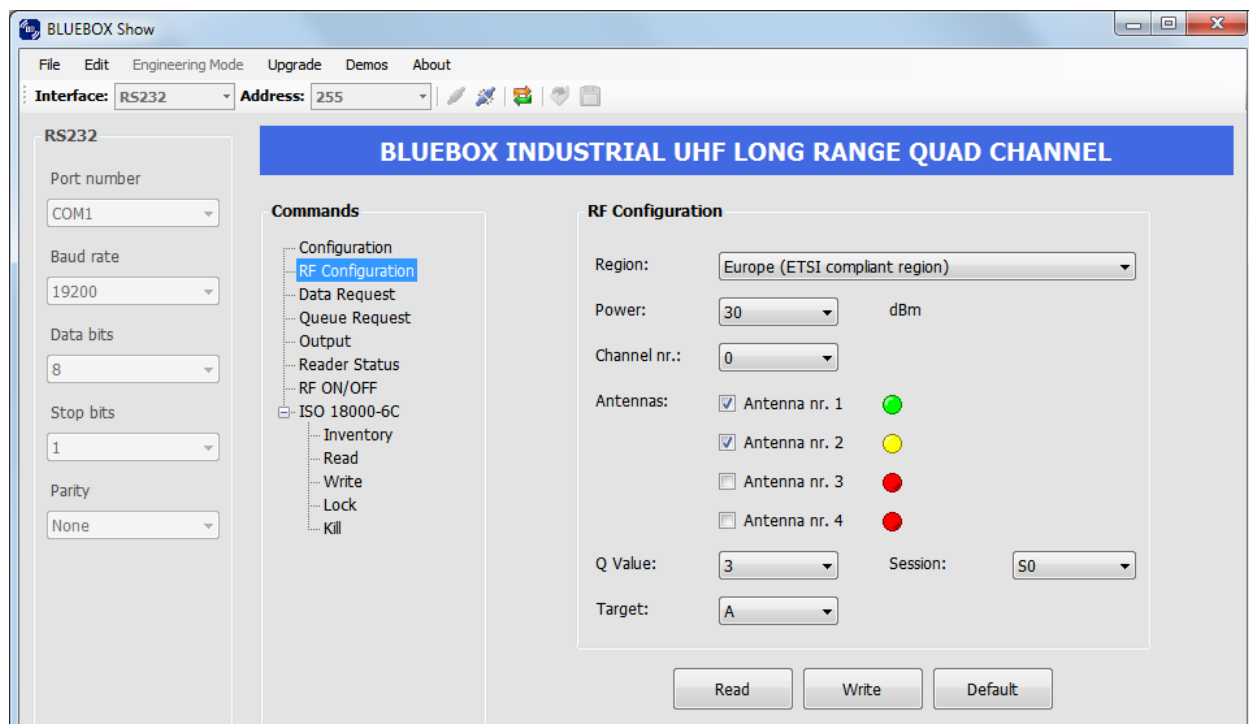
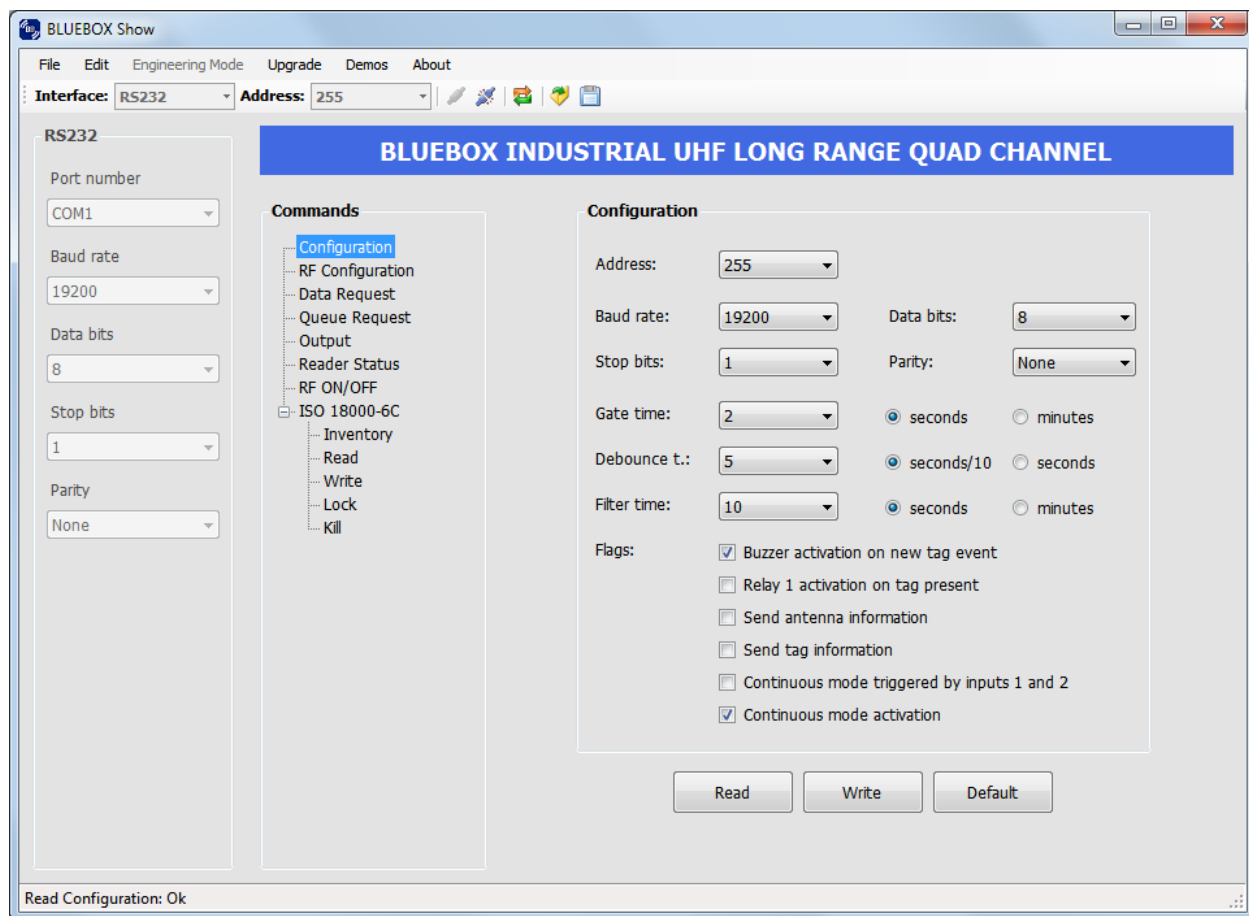


Figure 22 ISO 18000-6C Kill Tags

5.1 BLUEBOX BASIC UHF-Long-Range 4CH



Power

Power:

- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32

Channel Number

Channel nr.:

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

If the output mode “Impulsive” is selected, the period during which an output is set/reset (switched on/off) can be set to a desired amount of seconds.

Select Output Set/Reset Period

Q Value:

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

But, regarding to the EPC C1G2 Q, target and session, refer to paragraphs 6.3.2.2 and 6.3.2.4 and sub-paragraphs of the EPC C1G2 Technical Specification V1.2.0 attached. It is not possible to explain these parameters in a few words, the best thing is to refer to the EPC specification tech. manual...I know that there are a lot of information and they are not so easy to understand...but I think that there is no way to explain it using more simple words....so, good read!

Session

Session:

- S0
- S1
- S2
- S3

S0 = Tag remains steadily active

S1 = Tag can be shut off for 5 seconds

S0 = Tag can be shut off for 20 seconds

Target

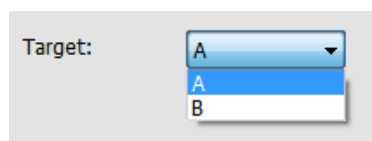


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