



BLUEBOX
Industrial RFID Devices
Configuration & Test Operation with BLUEBOX Show

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Issue 0.5
– 06. October 2025 –

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Printed in Germany

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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.

Attention !

Please note that not all the functions included in this guide will be displayed in any BlueBox. The software itself will show only the parameters that are meant to be managed. This guide refers to BlueBox CX series, but can be used with any BlueBox device.

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1 Installation

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://download.idtronic.de>

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 onlyt 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).

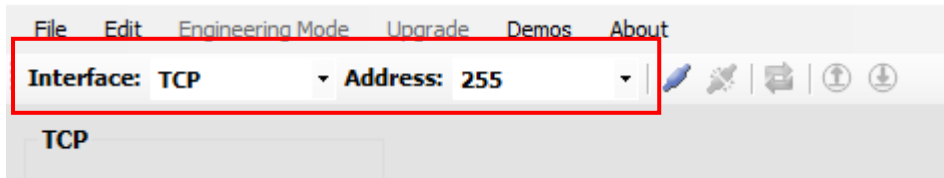


Figure 2-1 BLUEBOX Show connection configuration in the software toolbar.

2.1.1 Connection using RS232, RS485 or USB

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).

USB Connection

With USB connection select RS232.

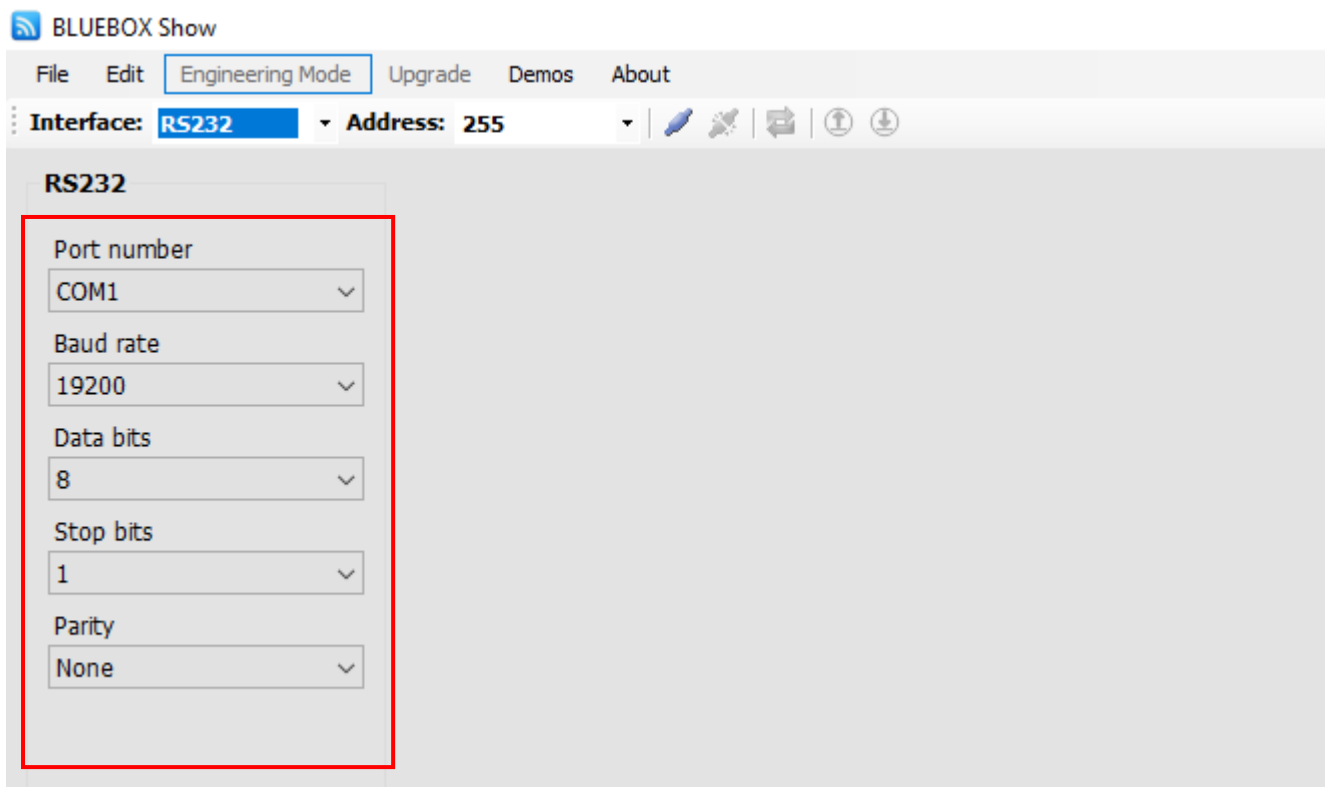


Figure 2-2 BLUEBOX Show screenshot. RS232 connection configuration.

2.1.2 Ethernet Connection

In case of TCP interface selected you have to type the IP address and communication port (Figure 2-3).

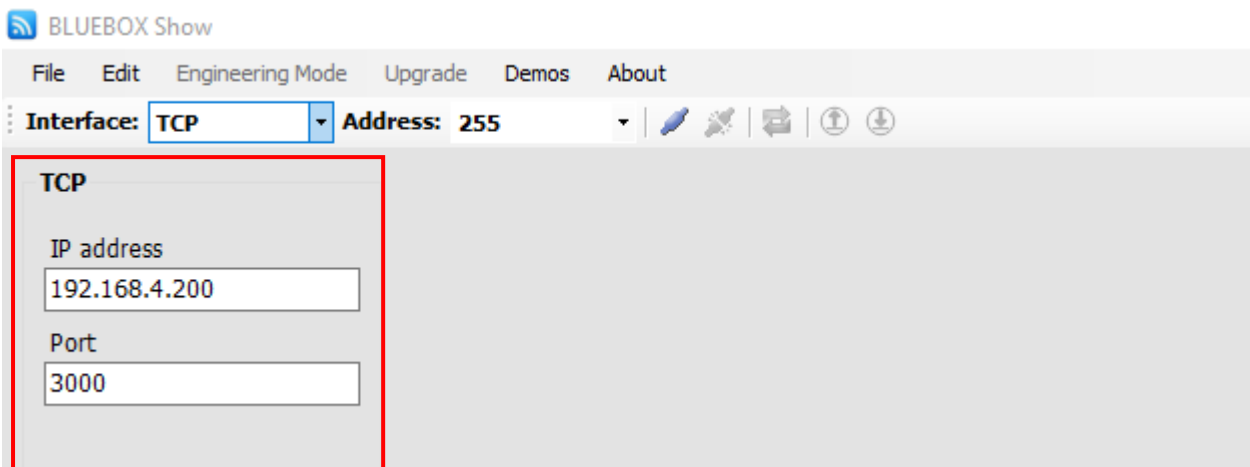


Figure 2-3 BLUEBOX Show screenshot. TCP connection configuration.

2.2 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.

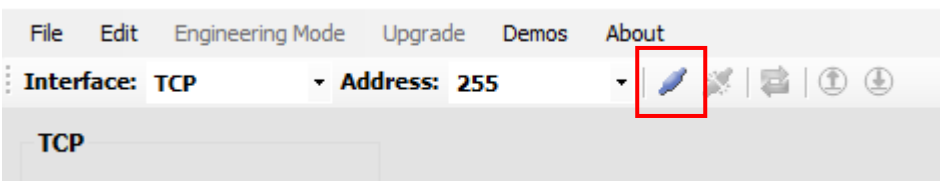


Figure 2-4 BLUEBOX Show connect button in the toolbar.

If the reader is not supported by the software, it prints the following message box (Figure 2-5).

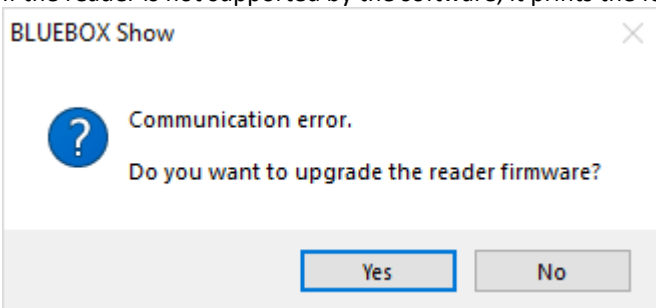


Figure 2-5 Error message box shown on reader connected not supported by software. It allows to start the Firmware Upgrade to upgrade the firmware's reader.

3 Operating BLUEBOX Show for Configuration

3.1 Start Screen, Basic Configuration

Commands

- Configuration
- Ethernet Configuration
- Remote IP Configuration
- Wiegand Configuration
- CAN Bus Configuration
- I/O Configuration
- Spontaneous Configuration
- RF Configuration
- EPC C1G2 Configuration
- Dynamic Power Configuration
- Temperature
- Data Request
- Queue Request
- Records
- Output
- Reader Status
- RF Reading Test
- RF Power Test
- RF Sensitivity Test
- RF ON/OFF
- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite

Configuration

Address: 255

Baud rate: 19200 Data bits: 8

Stop bits: 1 Parity: None

Filter time: 1 seconds minutes

Flags:

- ☐ Buzzer activation on new tag event
- ☐ Relay 1 activation on tag present (see I/O configuration)
- ☒ Reading antenna information
- ☐ Tag type information
- ☒ Spontaneous mode (see Spontaneous configuration)
- ☒ Continuous mode triggered by inputs (see I/O configuration)
- ☒ Continuous mode

Read Write Default

Figure 3-1 Start screen that appears after connecting to a BLUEBOX first

Configuration: This panel allows to set network Address node of the device, and the serial communication parameters.

Filter Time: it is used to avoid multiple detections of the same tag. The Filter time says the device to ignore the tag after the detection for the specified time.

Buzzer activation on new tag event: enables/disable the buzzer on tag detection. 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.

Relay 1 activation on tag present: activate the Relay1, the behaviour is controlled in the I/O configuration section.

Reading antenna Information: upon tag detection, enables/disables adding the antenna information together with the tag ID

Tag type information: upon tag detection, enables/disables adding the tag information together with the tag ID

Spontaneous mode: enables/disables the Spontaneous mode : automatic transmission of transponder UID on the interface, more about this option on chapter 5 Spontaneous Mode

Continuous mode triggered by inputs: by enabling this option the continuous mode is controlled in the I/O configuration panel

Continuous mode: enables/disables the Continuous mode. The reader steadily checks for new tags, storing the tag ID and other selected information (tag type, antenna number, ...) in an internal list.

If you combine this with spontaneous mode any detected tag ID (+ selectable tag & inventory information) will be automatically sent on the host interface.

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

Important!

Whenever you change the settings of the bluebox you have to click the button „write”, to write the settings to the bluebox, if you don't do this action the changed setting won't be saved at all. By some settings the bluebox do a restart and the connection will be interrupted, when the bluebox restarted, you can connect with it again.

The button read is used to read out the current setting of the Blue Box.

The button default writes the default settings to the bluebox.

3.2 Configuration of Communication Interfaces

3.2.1 Serial Communication RS232 and RS485

Commands		Configuration	
Configuration		Address:	255
Ethernet Configuration		Baud rate:	19200
Server Configuration		Stop bits:	1
Wiegand Configuration		Filter time:	1 seconds
CAN Bus Configuration		Data bits:	8
I/O Configuration		Parity:	None

Figure 3-2 Parameters for the serial interfaces RS232 and RS485

Address

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

Baud rate

Baud rate: 19200

Stop bits: 1

Filter time: 1 seconds

Flags: 19200

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

Factory default is 19'200 bps.

Data bits

Data bits: 8

Parity: None

Sets the data bits of the serial interface (RS232/RS485).

Factory default is 8 bits.

Stop bits

Stop bits: 1

Filter time: 1 seconds

Flags: 1

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".

3.3 IP Configuration (Ethernet)

Figure 3-3 Ethernet Configuration

Ethernet Configuration: view/change the IP address, TCP Port, Subnet Mask and Gateway Address

3.4 Server Configuration

Figure 3.4 Parameters Server Configuration

Server Configuration: it is possible to stream the readings to a remote server by specifying the IP address and the TCP listening Port. So in spontaneous mode you can send the read data direct to a specific server.

3.5 Wiegand Configuration

Figure 3.5 Parameters Wiegand Configuration

Wiegand Configuration: set the Wiegand parameters (it applies only to Wiegand versions)

Can Bus Configuration: set the Can Bus parameters (it applies only to Can Bus versions)

3.6 I/O Configuration

Commands	I/O Configuration
Configuration	Input 1 mode: ON -> Activate antenna 1 - OFF ->
Ethernet Configuration	Input 2 mode: Disabled
Server Configuration	Input debounce time: Default
Wiegand Configuration	Trigger mode extension time: Disabled
CAN Bus Configuration	Gate mode max cross time: Disabled
I/O Configuration	Output 1 activation time: Continuous
Spontaneous Configuration	
RF Configuration	
EPC C1G2 Configuration	

Figure 3-4 Parameters I/O Configuration

Input mode 1: sets the behaviour when Input 1 is in ON or OFF state

Input mode 2: not yet implemented in the firmware

Antibump input time: sets the time to manage the antibump (default time is 50 msec)

Trigger mode extend time: extends the reaction time of the input

Gate mode cross time: when enabled the device, for the specified time, is set to identify the crossing gate direction

Output 1 activation time: sets the oper Relay time

3.7 Spontaneous Configuration (Interface)

Commands	Spontaneous Configuration
Configuration	Interfaces: <input type="checkbox"/> Serial RS232 / RS485
Ethernet Configuration	<input type="checkbox"/> Ethernet (TCP server, TCP client)
Remote IP Configuration	<input type="checkbox"/> Wiegand interface
Wiegand Configuration	<input type="checkbox"/> CAN bus interface
CAN Bus Configuration	<input type="button" value="Read"/> <input type="button" value="Write"/> <input type="button" value="Default"/>
I/O Configuration	
Spontaneous Configuration	
RF Configuration	
EPC C1G2 Configuration	
Dynamic Power Configuration	
Temperature	
Data Request	
Queue Request	

Figure 3-5 Interfaces for Spontaneous mode

Interfaces: it is possible to choose through the checkboxes, the interfaces where to send the spontaneous message to.

3.8 Profibus Configuration

Commands	Profibus Configuration
Configuration	Profibus device address: 126
Ethernet Configuration	Profibus IN/OUT buffer size: 16 bytes
Profibus Configuration	
I/O Configuration	

Figure 3-6 Parameters Profibus Configuration

Address

This sets the address for the Profibus.

Factory default is address 126.

Buffer Size

Profibus IN/OUT buffer size:

- 16 bytes
- 8 bytes
- 12 bytes
- 16 bytes
- 20 bytes
- 32 bytes
- 64 bytes

Sets the Profibus Buffer Size for data transfer.

Factory default is 16 Bytes.

3.9 Dynamic Power Configuration

Commands

- Configuration
- Ethernet Configuration
- Remote IP Configuration
- Wiegand Configuration
- CAN Bus Configuration
- I/O Configuration
- Spontaneous Configuration
- RF Configuration
- EPC C1G2 Configuration
- Dynamic Power Configuration
- Temperature

Dynamic Power Configuration

Dynamic power management mode: Off

Power up/down step: 1 dB mW

Time up/down step: 100ms

Read Write Default

Figure 3-7 Dynamic TX Power Setting

When set to 'on' the reader changes the power according to the specified parameters. While changing its power, it changes the shape of the lobe as well. This could increase the reading range of the device.

3.10 Temperature

Commands

- Configuration
- Ethernet Configuration
- Remote IP Configuration
- Wiegand Configuration
- CAN Bus Configuration
- I/O Configuration
- Spontaneous Configuration
- RF Configuration
- EPC C1G2 Configuration
- Dynamic Power Configuration
- Temperature

Temperature

23 °C

Figure 3-8 Display temperature

Displays the temperature inside the Bluebox.

3.11 RF Configuration

Figure 3-9 Parameters RF Configuration

RF geographical region: Europe (ETSI) or North America (FCC)

RF output power: from 0dBm to the Max supported (27 for 500mW, 30 for 1W)

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 input sensitivity: the lower, the more tags are detected

RF Channel: it is possible to choose between 10 channels for ETSI and 50 for FCC. Very useful to avoid interferences where more readers are working simultaneously.

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

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”).

Antennas: the checkboxes control which antenna is active

RF Channel max allocation time: according to the application it is possible to specify the max allocation time of the specific channel

RF Channel min pause time: according to the application it is possible to specify the pause time of the specific channel

RF chip standby mode: puts the RF chip in standby

3.12 EPC Class 1 Generation 2 Configuration

Commands

- Configuration
 - Ethernet Configuration
 - Remote IP Configuration
 - Wiegand Configuration
 - CAN Bus Configuration
 - I/O Configuration
 - Spontaneous Configuration
 - RF Configuration
 - EPC C1G2 Configuration**
 - Dynamic Power Configuration
 - Temperature
 - Data Request
 - Queue Request
- Records
- Output
- Reader Status
- RF Reading Test
- RF Power Test
- RF Sensitivity Test
- RF ON/OFF
- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write

EPC C1G2 Configuration

Inventory mode: **Fast Multi Tag** (dropdown menu showing: Fast Multi Tag, Fast Single Tag, Standard Multi Tag, Standard Single Tag)

T=>R link frequency: []

T=>R bit coding: []

Q algorithm: **Dynamic** (dropdown)

Q initial: **0** (dropdown)

Q value: **0** (dropdown)

Q Final: **0** (dropdown)

Max Q adjust rounds: **0** (dropdown)

Max inventory cycles: **0** (dropdown)

Tags singulation search mode: **Dual Target** (dropdown)

Session: **S0** (dropdown)

EPC size: **Dynamic** (dropdown)

ReadAfterDetect (RAD) info: **None** (dropdown)

RAD password: **00 00 00 00** (text field)

RAD bank: **Reserved** (dropdown)

RAD address: **0** (text field)

RAD blocks: **0** (dropdown)

ReadAfterDetect EPC info:

- ☐ PC
- ☐ EPC
- ☐ CRC

Figure 3-10 Parameters EPC C1G2 Configuration

Inventory mode: **Fast** take the tag to the acknowledged mode, **Standard** to the Opened mode. The first is faster the second is more secure. **Multi** does anticollision procedure, **Single** no.

T=>R link frequency: defaults suggested, refer to the product manual.

T=>R bit coding: defaults suggested, refer to the product manual.

Q tuning section

Q tells the reader informations about the number of tags that could be expected in the field according with the equation $n=2^Q$ so, if the Q value is set to **0** and the Q algorithm to **fixed** the reader expects 1 tag in the field. When the Q algorithm is set to Dynamic, the reader changes automatically the values to match the actual scenario.

Tags singulation search mode: according to the EPC C1G2 specifications, an UHF tag when energized puts its state from A to B, when selected Dual Target the reader looks for tags that are in A and B state, when selected Single Target the reader looks for tags that are in the specified Target

Session: indicates which is the session managed by the reader. For further informations refers to EPC C1G2 specifications

EPC size: indicates the amount of EPC memory that will be used.

ReadAfterDetect (RAD) info: tells the reader what to read after the tag detection (TID, or custom)

RAD Bank: if Custom is selected then it is possible to specify which memory bank to read from, between EPC, TID or User

RAD blocks: when Custom is selected then it is possible to specify the number of blocks to read

ReadAfter Detect EPC info: select The EPC bank info to include in the tag's ID in ReadAfterDetect mode

4 Operating BLUEBOX Show for Device Test

4.1 Data Request

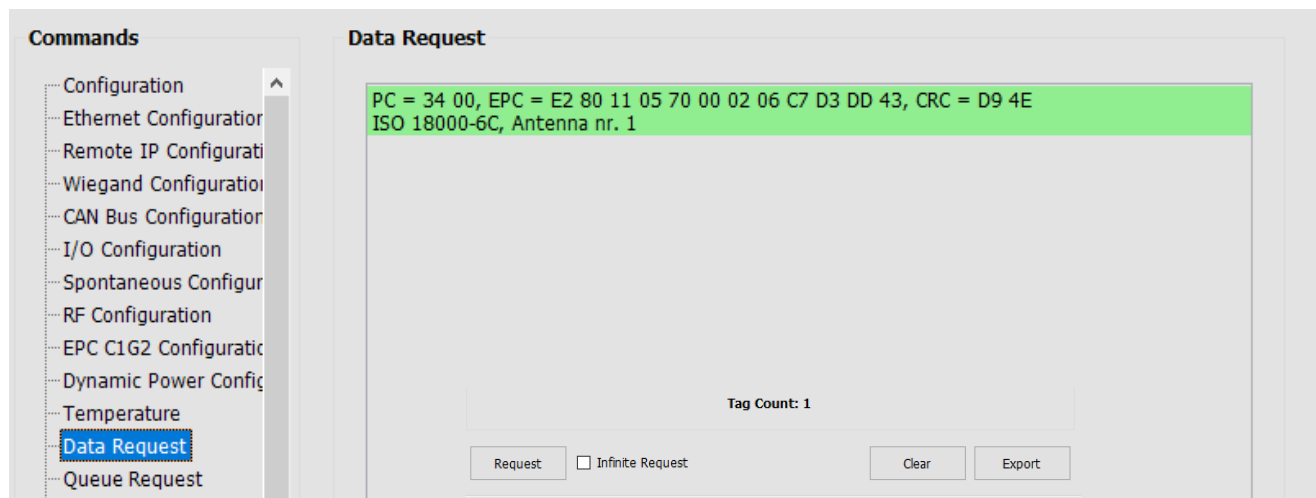


Figure 4-1 Data Request output

when Request button is pressed the panel shows the tag in the reading range, if infinite request is flagged the reader keep searching until stopped.

Clear: clears the panel.

Export: exports in .csv file the Data Request panel content.

4.2 Queue Request

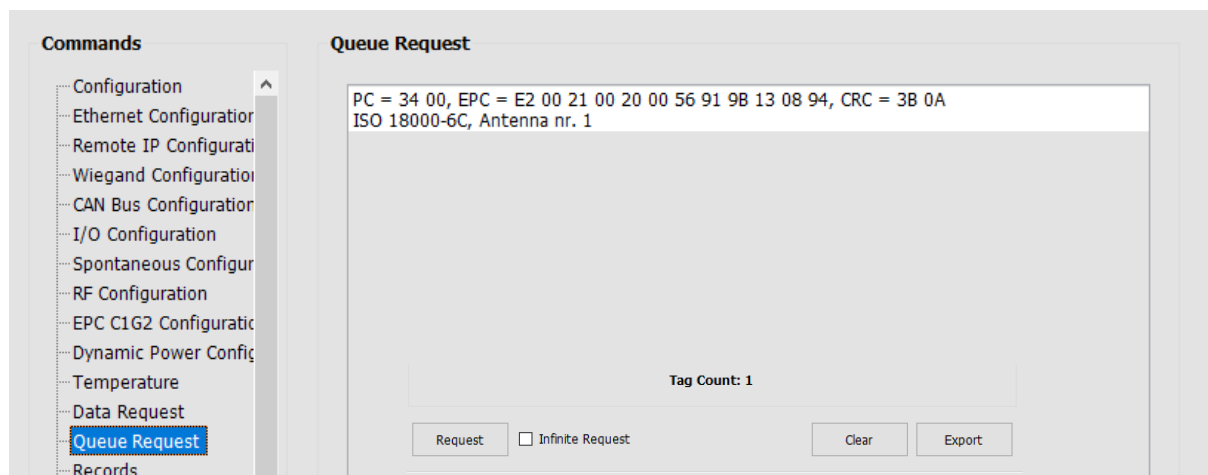


Figure 4-2 Queue Request output

When [Request] button is pressed the panel shows all the tags read by the device since the last request. Due to memory limit a total of approx 1000 readings are stored.

Export: exports in .csv file the Queue Request panel content

4.3 Records

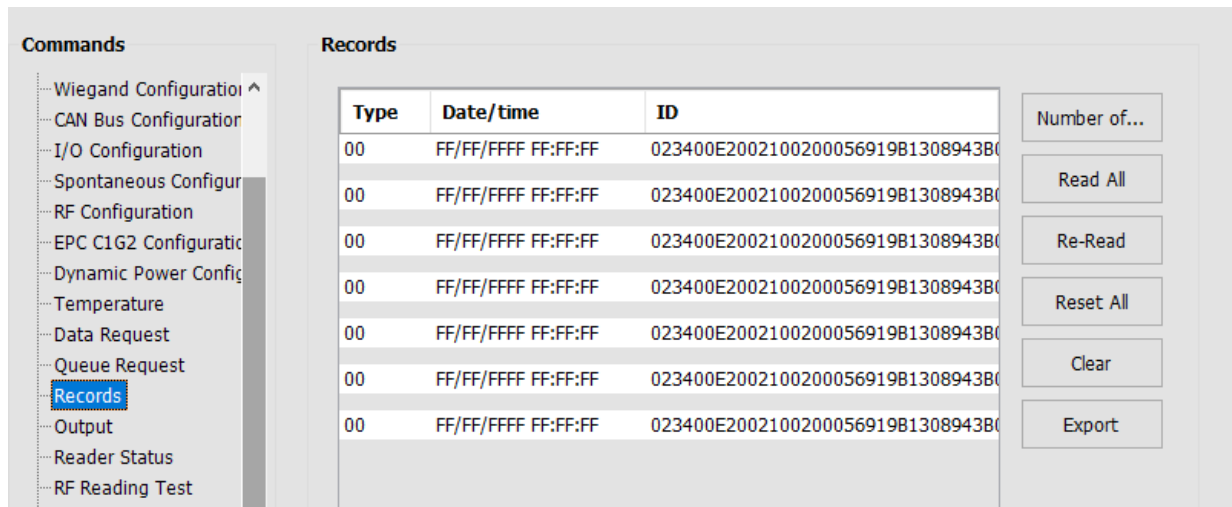


Figure 4-3 Records output

In this panel are shown the stored readings (for BlueBox with Real Time Clock, time stamp is added)

Number of: returns the number of readings stored in the flash memory

Read All: reads the content of the memory

Re-read: updates and reads the content of the memory

Reset All: clears the flash memory and the panel

Clear: clears the panel only

Export: saves the content as .csv file

4.4 Output

This test function is intended to test external wiring, e.g. to a signal lamp.

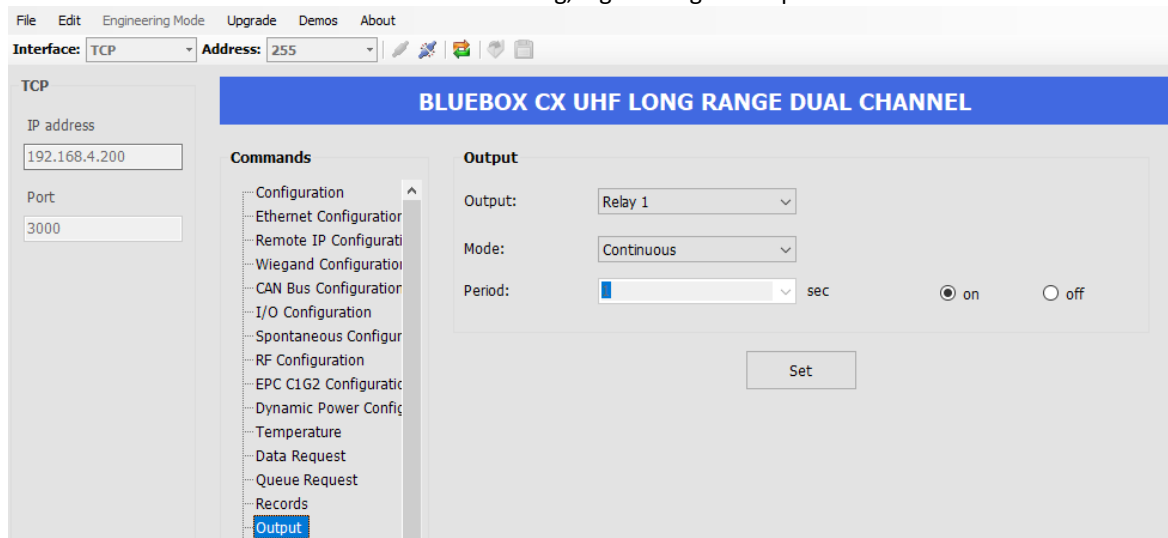


Figure 4-4 Parameters Output

Within this panel it is possible to test the output activating continuously or impulsively Relay1 and Relay2

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.

Period: 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.

4.5 Reader Status

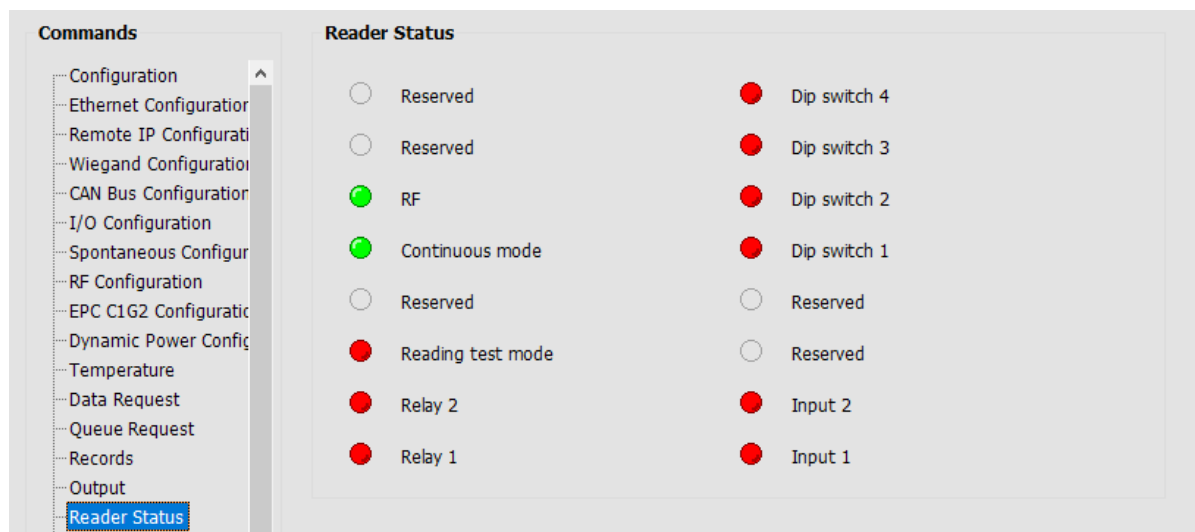


Figure 4-5 Reader Status display

panel that shows what's on and what's off in the BlueBox

4.6 RF reading test

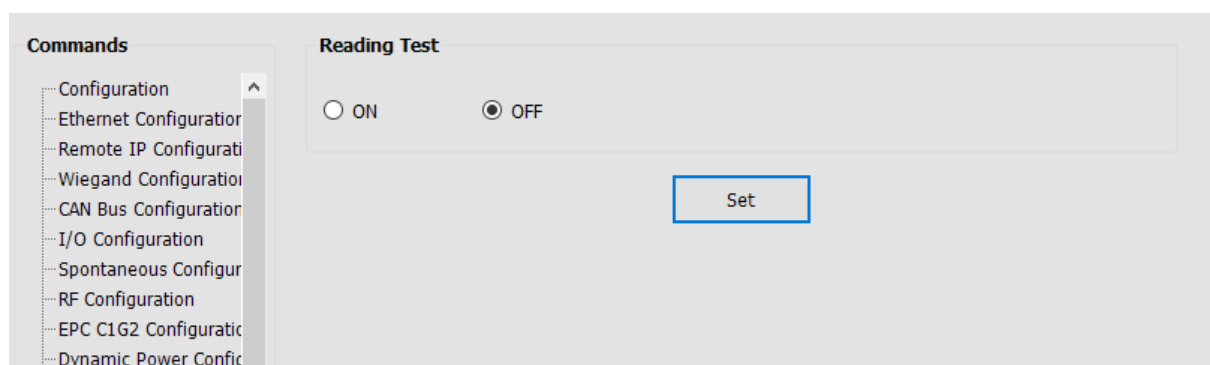


Figure 4-6 RF reading test

When set to ON, the readers beeps continuously when a tag is in the field. This functionality is useful when testing reading ranges.

4.7 RF Power Test

This test function is intended to determine how much RF TX power is needed to power up an RFID tag.

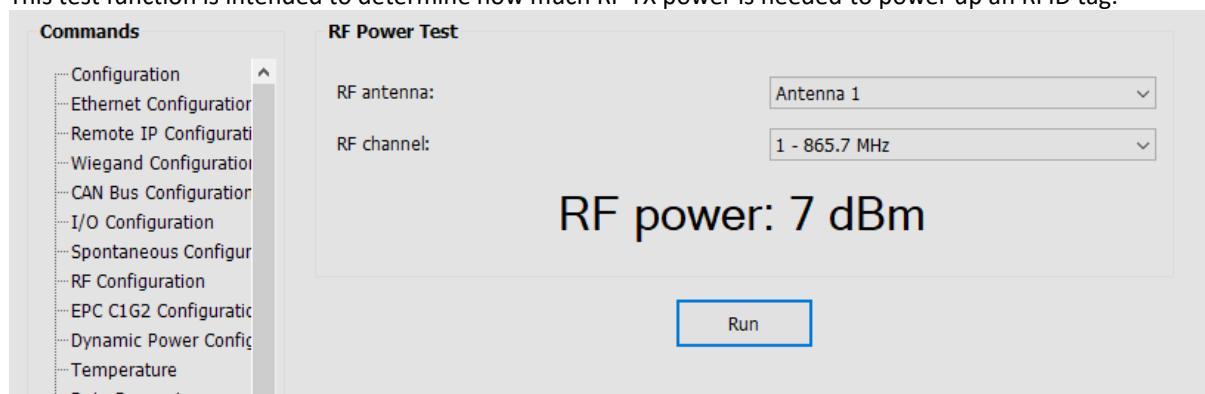


Figure 4-7 Parameters RF Power Test

This test Panel returns the RF Power it needs to connect with a tag, so you can see for which distance which rf power it require.

4.8 RF Sensitivity Test

This test function is intended to determine how much sensitivity is needed to recognize an RFID tag.



Figure 4-8 Parameters RF Sensitivity Test

This test Panel returns the RF Sensitivity

4.9 RF ON/OFF

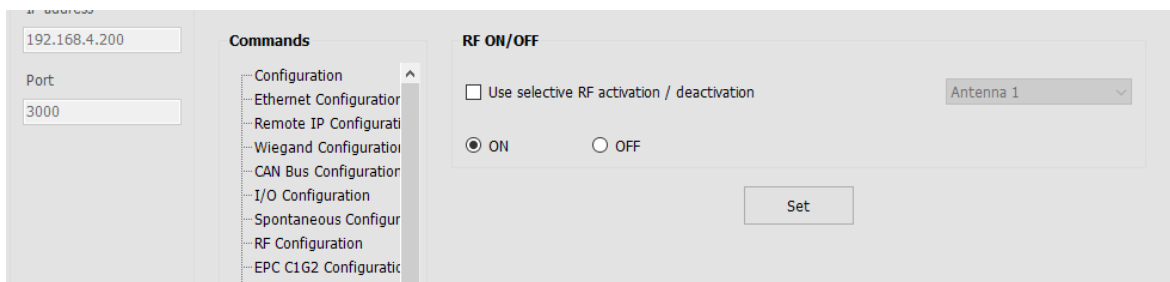


Figure 4-9 RF ON/OFF

For test and lab purpose only. It switches the RF power on the selected channel.

4.10 Inventory:

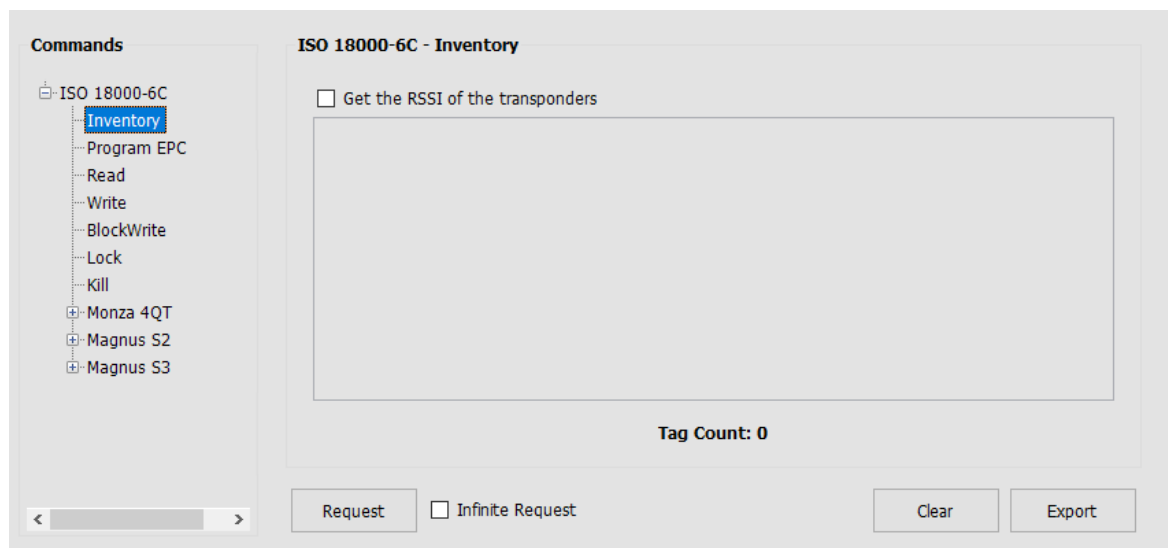


Figure 4-10 Inventory output

When **Request** is pressed, each tag in the reading range appears in the panel. Additionally by flagging the **Get the RSSI of the transponders** it is also possible to have, for each tag, the indication of the **Receive Signal Strenght Indicator** that shows the signal strenght.

If Infinite Request is flagged the reader keeps looking for the TAGs in the field.

4.11 Program EPC

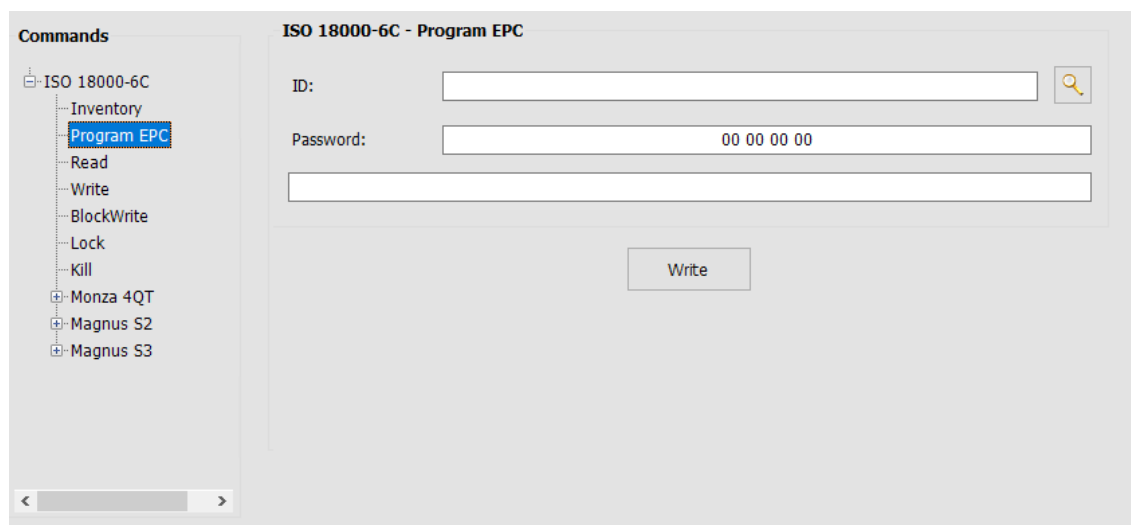


Figure 4-11 Program EPC input

In order to write the EPC area of a tag it is necessary to select a tag by pressing the magnifier Icon. Once selected, please fill in the blanks and press write.

4.12 Read

The screenshot shows the 'ISO 18000-6C - Read' interface. On the left, a 'Commands' sidebar lists options: ISO 18000-6C, Inventory, Program EPC, Read (highlighted), Write, BlockWrite, Lock, Kill, Monza 4QT, Magnus S2, and Magnus S3. The main panel contains the following fields: ID (empty), Password (00 00 00 00), Bank (Reserved), Address (0), and Nr. Blocks (1). A 'Read' button is located at the bottom right. A 'Block nr. 0' label is visible above a large empty text area.

Figure 4-12 Read input and output

By pressing the magnifier, please choose between the tags within the reading range the one to operate with. Then from the scroll down menu select which memory bank read from, the starting address and the number of blocks. End the operation by pressing 'Read' so that the values will be displayed in the panel.

4.13 Write

The screenshot shows the 'ISO 18000-6C - Write' interface. On the left, a 'Commands' sidebar lists options: ISO 18000-6C, Inventory, Program EPC, Read, Write (highlighted), BlockWrite, Lock, Kill, Monza 4QT, Magnus S2, and Magnus S3. The main panel contains the following fields: ID (empty), Password (00 00 00 00), Bank (Reserved), Address (0), and Nr. Blocks (1). A 'Write' button is located at the bottom right. A 'Block nr. 0' label is visible above a large empty text area.

Figure 4-13 Write input

By pressing the magnifier choose between the tags within the reading range the one to operate with. Then from the scroll down menu select which memory bank write to, the starting address and the number of blocks. End the operation by pressing 'write' so that the values will be stored in the tag.

4.14 Blockwrite

Commands

- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite**
 - Lock
 - Kill
 - Monza 4QT
 - Magnus S2
 - Magnus S3

ISO 18000-6C - Write

ID:

Password:

Bank:

Address: Nr. Blocks:

Block nr. 0

Figure 4-14 Blockwrite input

By pressing the magnifier choose between the tags within the reading range the one to operate with. Then from the scroll down menu select which memory bank write to, the starting address and the number of blocks. End the operation by pressing 'write' so that the values will be stored in the tag. While 'write' writes one block at a time, blockwrite writes all the blocks in one operation, so its faster, but it is not supported by all the tags.

4.15 Lock

Commands

- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite
 - Lock**
 - Kill
 - Monza 4QT
 - Magnus S2
 - Magnus S3

ISO 18000-6C - Lock

ID:

Password:

Kill Pwd: Acc. Pwd:

EPC Mem: TID Mem:

User Mem:

Figure 4-15 Lock input

By pressing the magnifier, choose between the tags within the reading range the one to operate with. Then from the scroll down menu select which memory bank to lock. End the operation by pressing 'Lock'.

4.16 Kill

Commands

- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite
 - Lock
 - Kill**
- Monza 4QT
- Magnus S2
- Magnus S3

ISO 18000-6C - Kill

ID:

Password:

Kill

Figure 4-16 Kill input

By pressing the magnifier, choose between the tags within the reading range the one to operate with. Then input the kill Password. End the operation by pressing 'Kill'.

4.17 Monza 4QT

Commands

- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite
 - Lock
 - Kill
 - Monza 4QT**
 - QT Command**
 - Magnus S2
 - Magnus S3

ISO 18000-6C - Monza 4QT - QT Command

Tag ID:

Password:

Read/write:

Persistence:

Short range:

Memory map:

Send

Figure 4-17 Monza 4 QT input

Bluebox UHF CX series, manage the double memory profile of Impinj Monza QT chips. Please refers to the Monza 4QT manual.

4.18 Magnus S2

Commands

- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite
 - Lock
 - Kill
 - Monza 4QT
 - Magnus S2**
 - Read On-Chip RSSI**
 - Read Sensor Code
 - Magnus S3

ISO 18000-6C - Magnus S2 - Read On-Chip RSSI

Tag ID:

Password:

On-Chip RSSI match criteria:

On-Chip RSSI match threshold:

On-Chip RSSI value:

Send

Figure 4-18 Magnus S2 input

Bluebox UHF CX series, manage the RFMicron Magnus Sensor Tags. For further details please refer to the RFMicron Magnus Sensor Tags manual.

Press the magnifier in order to select the tag to operate with. From the scroll down menu it is possible to set reading criteria (up or under the threshold), the threshold. After pressing the sent button, the readings are graphically shown in the 'Read Sensor Code' menu.

ISO 18000-6C - Magnus S2 - Read Sensor Code

Tag ID:

Password:

30
25
20
15
10
5
0

0 10 20 30 40 50 60 70 80 90 100

— Sensor Code

Run

4.19 Magnus S3

Commands

- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite
 - Lock
 - Kill
 - Monza 4QT
 - Magnus S2
 - Magnus S3**
 - Read On-Chip RSSI
 - Read Sensor Code
 - Read Temperature

ISO 18000-6C - Magnus S3 - Read On-Chip RSSI

Tag ID:

Password:

On-Chip RSSI match criteria:

On-Chip RSSI match threshold:

On-Chip RSSI value:


Send

Figure 4-19 Magnus S3 input

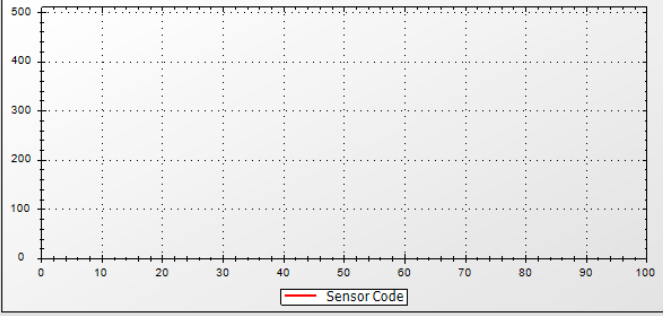
Bluebox UHF CX series, manage the RFMicron Magnus Sensor Tags. For further details please refer to the RFMicron Magnus Sensor Tags manual.

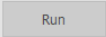
Press the magnifier in order to select the tag to operate with. From the scroll down menu it is possible to set reading criteria (up or under the threshold), the threshold. After pressing the sent button, the readings are graphically shown in the 'Read Sensor Code' and Read Temperature menus.

ISO 18000-6C - Magnus S3 - Read Sensor Code

Tag ID: 

Password:





5 Spontaneous Mode

5.1 Switch on the Spontaneous Mode

Continuous mode = automatic detection of transponders

Spontaneous mode = automatic transmission of transponder UID on the interface

Commands

- Configuration
- Spontaneous Configuration
- RF Configuration
- EPC C1G2 Configuration
- Dynamic Power Configuration
- Temperature
- Data Request
- Queue Request
- Reader Status
- RF Power Test
- RF ON/OFF
- ISO 18000-6C
 - Inventory
 - Program EPC
 - Read
 - Write
 - BlockWrite

Configuration

Address: 255

Baud rate: 19200 Data bits: 8

Stop bits: 1 Parity: None

Filter time: 1 seconds minutes

Flags:

- ☐ Send antenna information
- ☐ Send tag information
- ☒ Spontaneous mode (see Spontaneous Configuration)
- ☒ Continuous mode

Read Write Default

Figure 5-1 Parameters Spontaneous Mode

5.2 Test the Spontaneous Mode

Disconnect the existing connection to the BLUEBOX.

Then select in the menu "Demos" the entry "BLUEBOX Spontaneous".

BLUEBOX Show

File Edit Engineering Mode Upgrade Demos About

Interface: TCP Address: 255

TCP

IP address
192.168.4.200

Port
3000

BLUEBOX Converter
BLUEBOX Spontaneous

Figure 5-2 Switch to spontaneous

Enter the device address in the following dialog. Factory setting is 255.

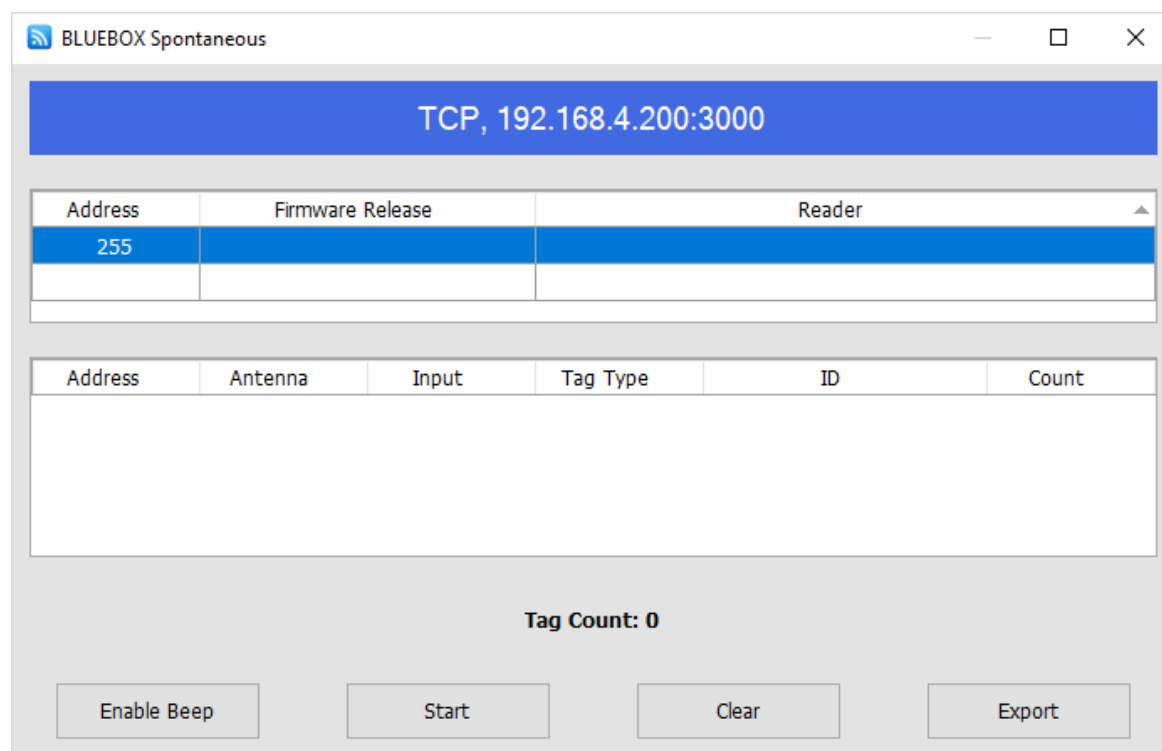


Figure 5-3 Spontaneous mode window

Click [Start]. Now the firmware and device information should be displayed.

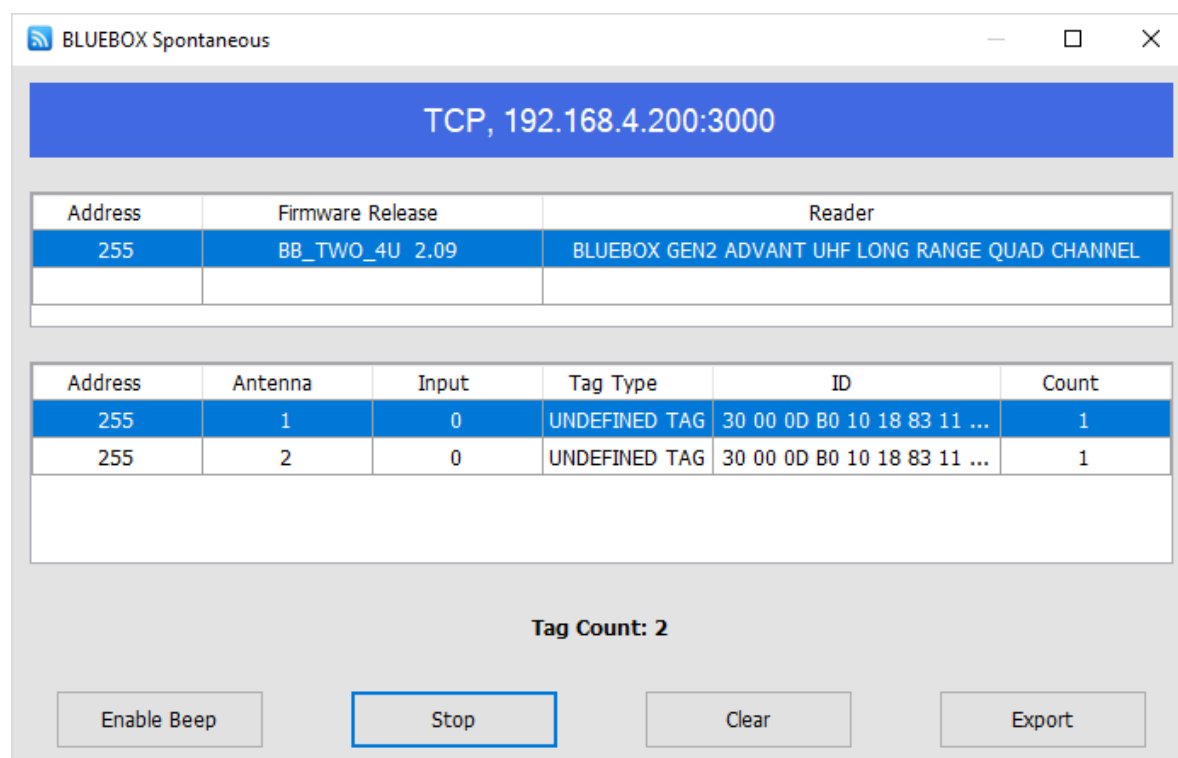


Figure 5-4 Spontaneous mode window

Captured transponders are displayed.

6 Test mode

6.1 Configuration

Continuous mode = BLUEBOX automatically detects RFID data carriers.

Spontaneous mode = BLUEBOX automatically sends telegrams with self-recorded RFID data carriers. Continuous mode must be switched on for this.

Buzzer activation on new tag event = BLEUBOX beeps on each newly captured RFID media.

Send antenna information = In automatically sent telegrams the antenna number is also included. Superfluous for devices with only 1 antenna.

Send tag information = Information about the RFID tag type is sent. At UHF this is superfluous because only the same type is reported.

The screenshot shows the 'Configuration' window. On the left, a 'Commands' list has 'Configuration' selected. The main area is titled 'Configuration' and contains several settings:

- Address: 255 (dropdown)
- Baud rate: 19200 (dropdown)
- Stop bits: 1 (dropdown)
- Filter time: 1 seconds (dropdown)
- Flags:
 - ☒ Buzzer activation on new tag
 - ☐ Output 1 activation on tag
 - ☐ Reading antenna information
 - ☐ Tag type information
 - ☐ Spontaneous mode
 - ☐ Continuous mode triggered by
 - ☒ Continuous mode
- Data bits: 8 (dropdown)
- Parity: None (dropdown)

Figure 6-1 Configuration for testing

6.2 Spontaneous Configuration

Select on which interfaces the automatic telegrams are sent by an automatic detection.

The screenshot shows the 'Spontaneous Configuration' window. On the left, a 'Commands' list has 'Spontaneous Configuration' selected. The main area is titled 'Spontaneous Configuration' and contains the following settings:

- Spontaneous message interfaces:
 - ☒ Serial RS232 / RS485
 - ☒ Ethernet (TCP server, TCP client)
 - ☒ Wiegand interface
 - ☒ CAN bus interface

Figure 6-2 Spontaneous configuration for testing

6.3 RF Configuration

The essential setting is the transmission power. By default, here with +20 dBm a fairly low transmission power is set to be able to test in closed rooms.

For outdoor operation, values of +24 to +27 dBm are required for several meters.

Commands	
Configuration	
Ethernet Configuration	
Server Configuration	
Auto Connection Configuration	
Wiegand Configuration	
CAN Bus Configuration	
I/O Configuration	
Spontaneous Configuration	
RF Configuration	
EPC C1G2 Configuration	
Dynamic Power Configuration	

RF Configuration	
RF geographical region:	Europe (ETSI compliant region) ▾
RF output power:	20 dBm ▾
RF input sensitivity:	-76 dBm ▾
RF Channel:	Default ▾
Antennas:	<input checked="" type="checkbox"/> Antenna 1
RF channel max allocation time:	Default ▾
RF channel min pause time:	Default ▾
<input checked="" type="checkbox"/> RF chip standby mode	

Figure 6-3 RF Configuration for testing

The essential setting is the transmission power. By default, here with +20 dBm a fairly low transmission power is set to be able to test in closed rooms.

For outdoor operation, values of +24 to +27 dBm are required for several meters of read range.

6.4 EPC C1G2 Configuration

The essential setting is the transmission power. By default, here with +20 dBm a fairly low transmission power is set to be able to test in closed rooms.

For outdoor operation, values of +24 to +27 dBm are required for several meters.

Commands	EPC C1G2 Configuration	
Configuration	Inventory mode:	Standard Multi Tag
Ethernet Configuration	T=>R link frequency:	160 kHz
Server Configuration	T=>R bit coding:	Miller 2
Auto Connection Configuration	Q algorithm:	Dynamic
Wiegand Configuration	Q initial:	0
CAN Bus Configuration	Max Q adjust rounds:	3
I/O Configuration	Max inventory cycles:	3
Spontaneous Configuration	Tags singulation search mode:	Dual Target
RF Configuration	Session:	S0
EPC C1G2 Configuration	EPC size:	Dynamic
Dynamic Power Configuration	ReadAfterDetect (RAD) info mode:	None
Tuning Configuration	RAD password:	00 00 00 00
Temperature	RAD address:	0
Data Request	ReadAfterDetect (RAD) info flags:	<input checked="" type="checkbox"/> PC
Queue Request		<input checked="" type="checkbox"/> EPC
Records		<input checked="" type="checkbox"/> CRC
Output		
Reader Status		
RF Reading Test		
RF Power Test		
RF Sensitivity Test		
RF ON/OFF		
ISO 18000-6C		

Figure 6-4 EPC C1G2 Configuration for testing

7 Custom Specific Versions

7.1 Version C

EPC C1G2 Configuration

Invent. Mode:

Link Freq.: Bit Coding:

Mod. Index:

EPC Size:

☐ AFI:

EPC Size

EPC size:

ReadAfterDete

RAD

password:

RAD address:

ReadAfterDete

The change

Dynamic

2 bytes

4 bytes

6 bytes

8 bytes

10 bytes

12 bytes

14 bytes

16 bytes

18 bytes

20 bytes

22 bytes

24 bytes

26 bytes

28 bytes

30 bytes

32 bytes

34 bytes

36 bytes

38 bytes

40 bytes

42 bytes

44 bytes

46 bytes

48 bytes

50 bytes

52 bytes

54 bytes

56 bytes

58 bytes

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)

☒ AFI:

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.

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