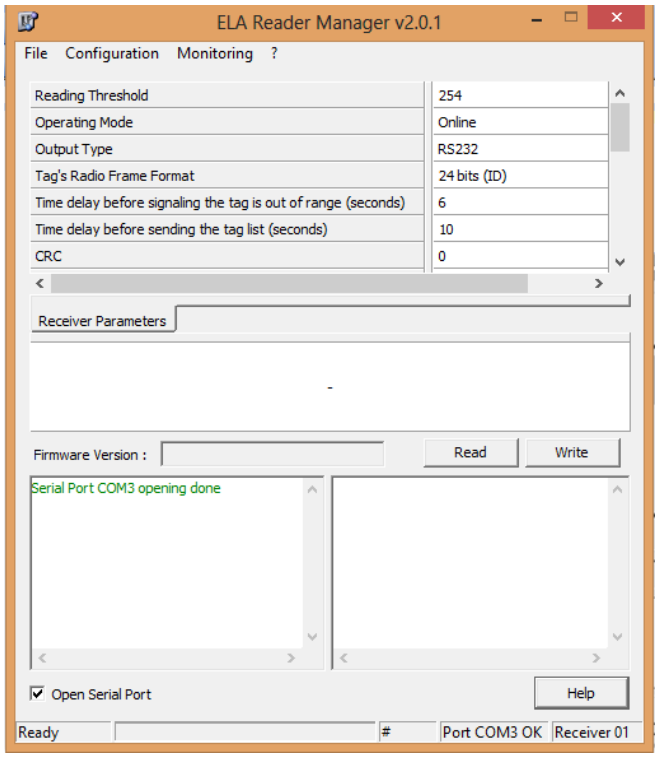
ERM SOFTWARE USER GUIDE

ELA READER MANAGER

Configuration software tool
for all Active RFID SCIEL READER



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1 INSTALLATION :

You need 2 softwares :

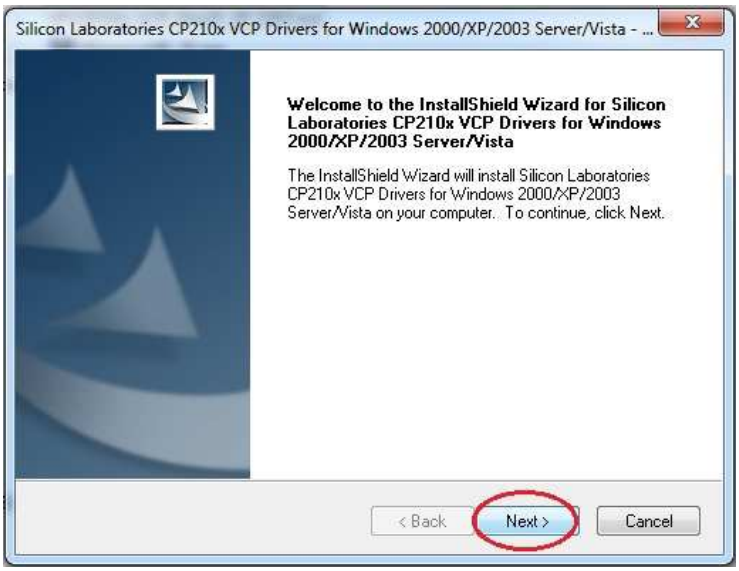
- **USB driver**
  http://ela.fr/Local/ela/files/183/driver.convert.rs232.usb.zip

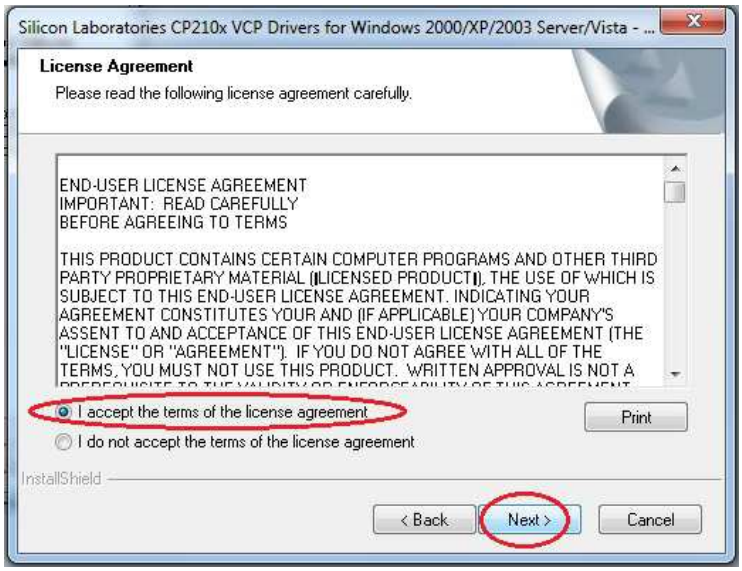
- **ERM Software (ELA Reader Management)**
  http://www.rfid-ela.eu/Local/ela/files/329/ERMSetupEN2.0.1.exe

Install the USB driver **before** connecting the reader.

The USB driver is included in a *.zip* archive. You can open it either with *7zip* (usually provided with Windows) and *WinRar* (freeware).

This archive contains two executable files. To install the USB driver, you have to run *CP210x_VCP_Win2K_XP_S2K3.exe*, then follow the instructions below.





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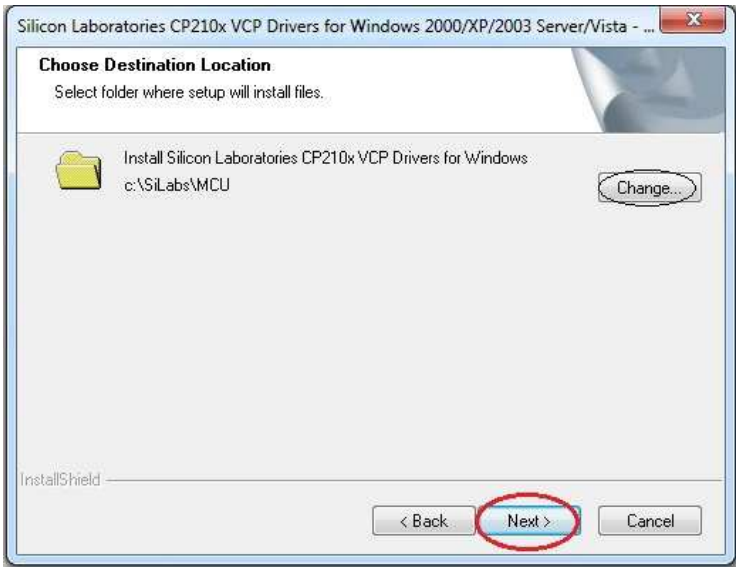
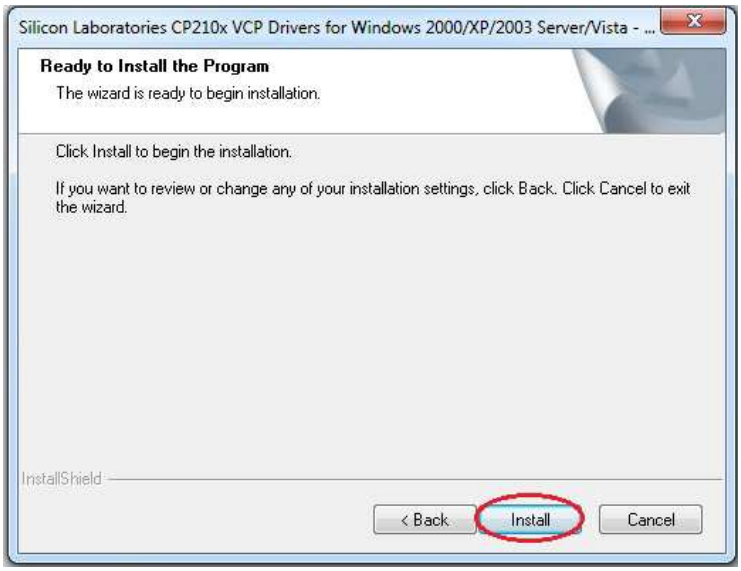
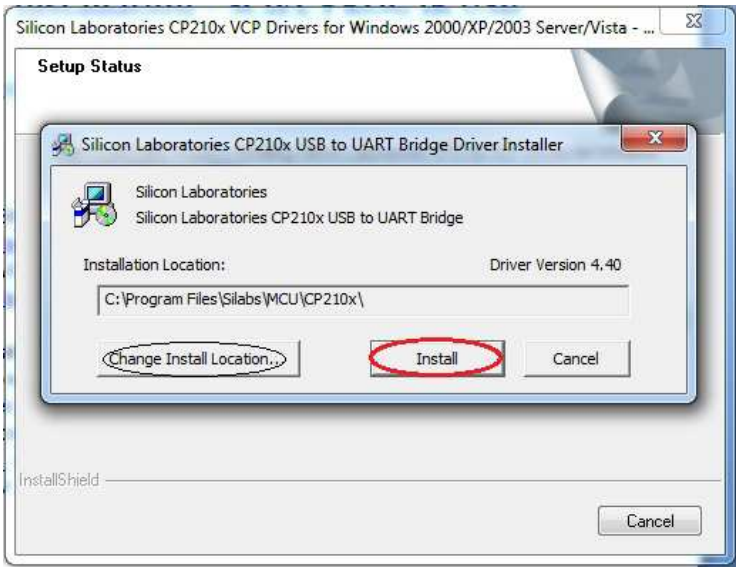
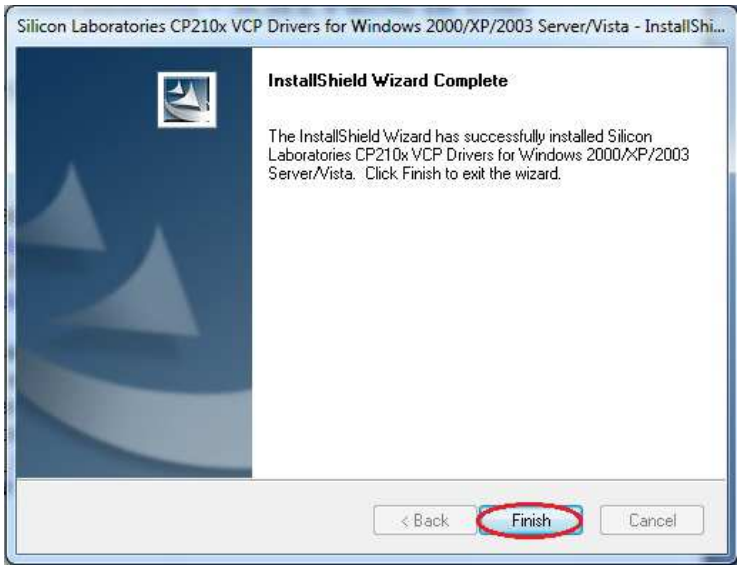




If you wish to install the driver in another directory,
click on « Change »





If you wish to install the driver in another directory,
click on « Change Install Location »

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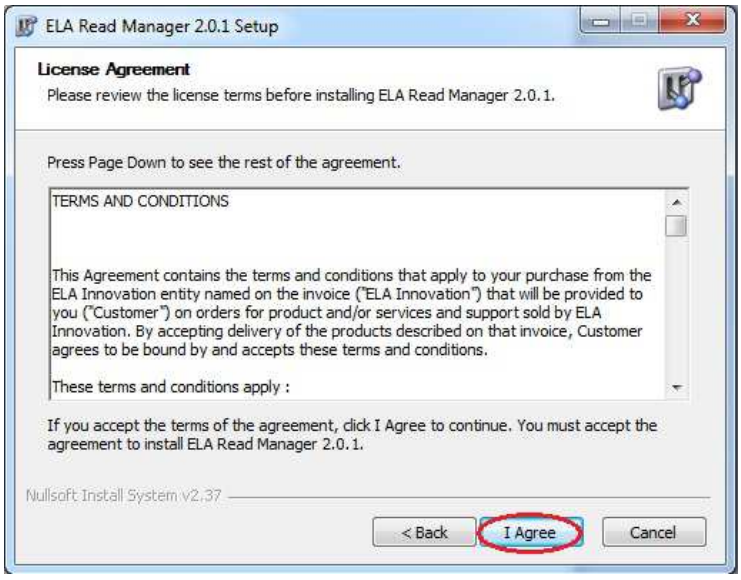
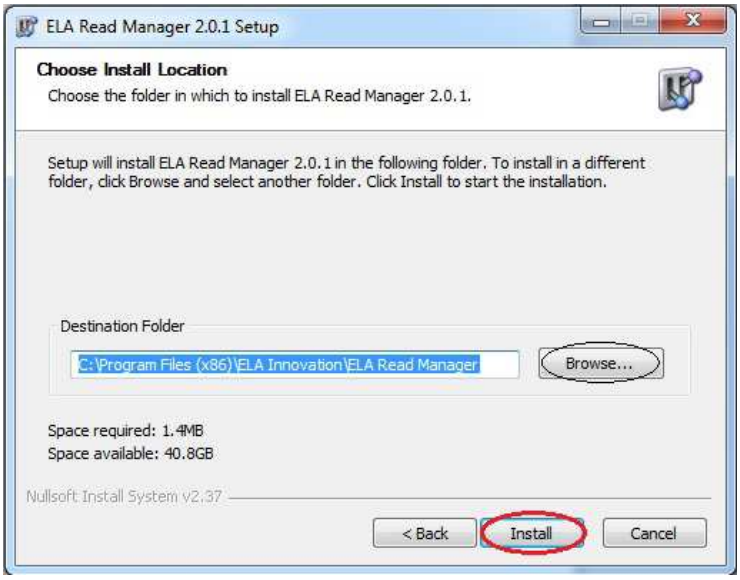
To install the *ERM* software, run the file *ERMSetupx.x.x.exe* and follow the instructions below.





If you wish to install ERM in another location,
click on « Browse » and choose the new directory.

If you don't want to run ERW now,
deselect the checkbox " Run *ERW* x. x. x "

The software version is often updated with new features. The updated version is available on our website http://www.rfid-ela.eu/ in the "Download" (the version reference which appears on the illustrated information may not correspond to the latest version).

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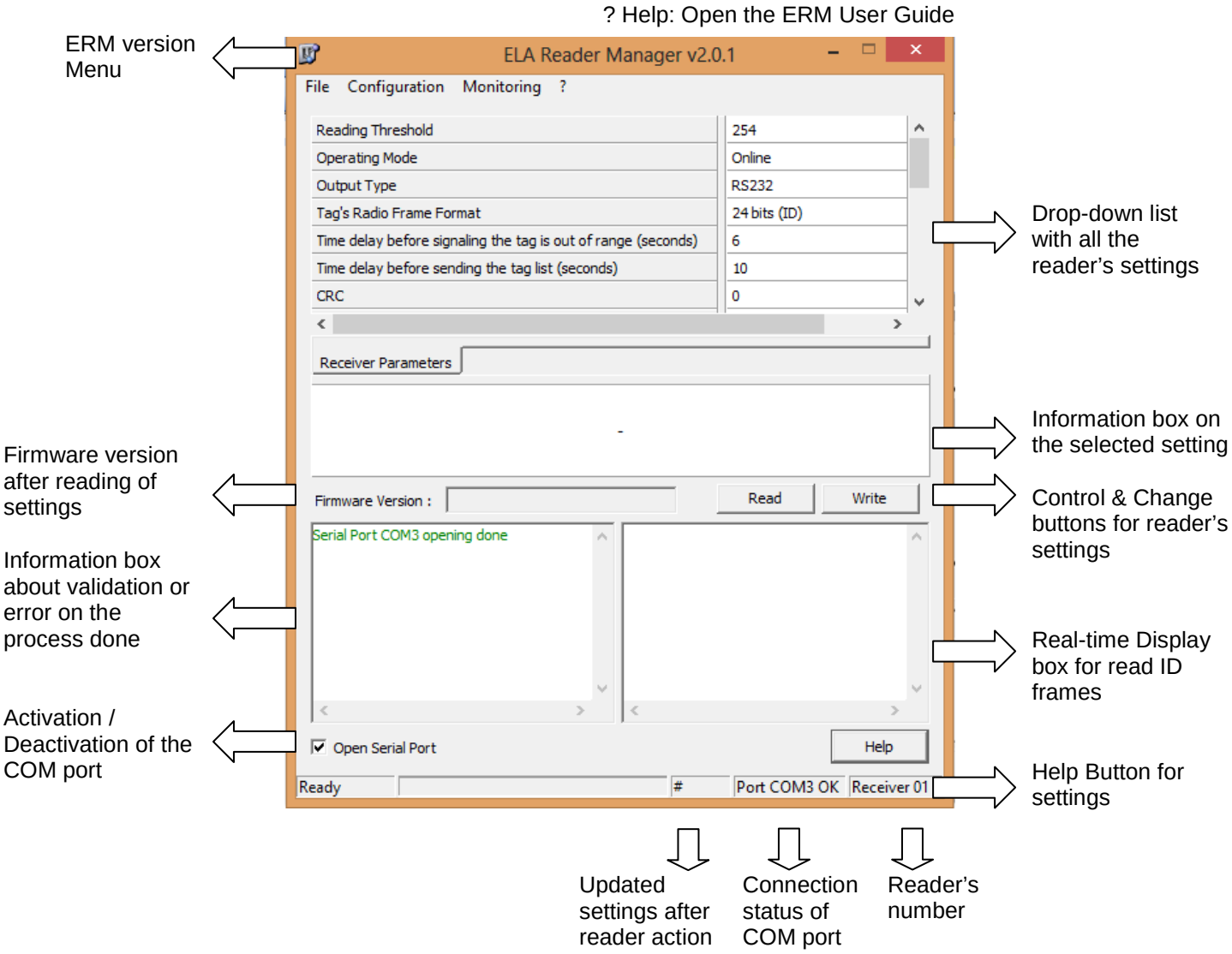
2 HOMEPAGE:



The « ERM Software User Guide » is installed by the setup exe file in the “Program File” with the path \ELA INNOVATION\ERM. The new versions could replace the previous one installed in this folder. The version’s index is indicated in the file, at the right bottom page.

After having opened the ERM main window, you have to check the COM port’s number, which must correspond to the connected reader and to select it in the drop-down list.

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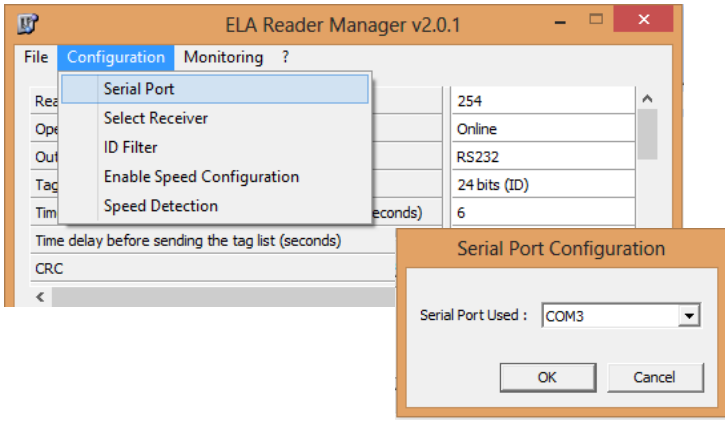
3 MENU « CONFIGURATION » « SERIAL PORT»



If you get some error message, follow the procedure below.

1. Open the **Devices Manager** :
In **Windows XP** or older : *Start* > right click on *My Computer* > *Manage* > *Device Manager* (at the left side of the window).
Under **Windows Vista**, **7** or **8** : *Start* > right click on *Computer* > *Manage* > *Device Manager* (at the left side of the window).

2. Find the **COM port** the programmer is connected on :
In the *Device Manager*, click on **« *Ports (COM & LPT)* »**
You should see a list of devices.
Find the line **« CP210x USB to UART Bridge Controller (COMx) »**.
The port of your programmer is **« COMx »**, with 'x' a number.

3. Select this **COM port** in *ERW :*
Go to *Configuration* > *Port Série.*
Select the good COM port in the drop-down list.

4 INIT ACTION:

After the launch of the ERM software, you have to update the setting's fields by the ones of the connected reader, by clicking the "Reading" button. This will allow the user to change a parameter without impacting all the others when the "Writing" button will be clicked.

The communication speed between the reader and the PC **at each ERM's launch** is by default at 9600bds 8bit 1stop 0parity 0flow.

5 DESCRIPTION OF READER'S PARAMETERS :

5.1 RSSI Level in reading mode:

The sensitivity value of the reader is defined between 120 and 190 approximately (hexa: 78 to BE) and corresponds to a setting from the short to the long range.

The reception is inhibited below the value of 111 (hexadecimal: 6F).
The sensitivity is the highest from 192 (hexadecimal: C0).

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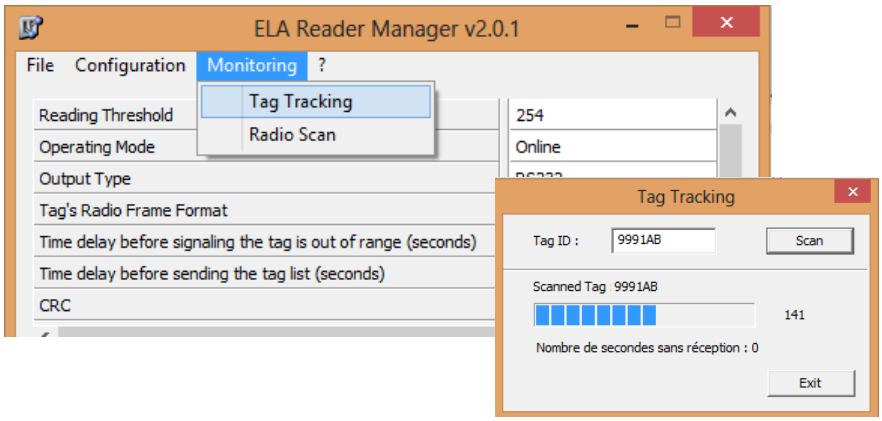
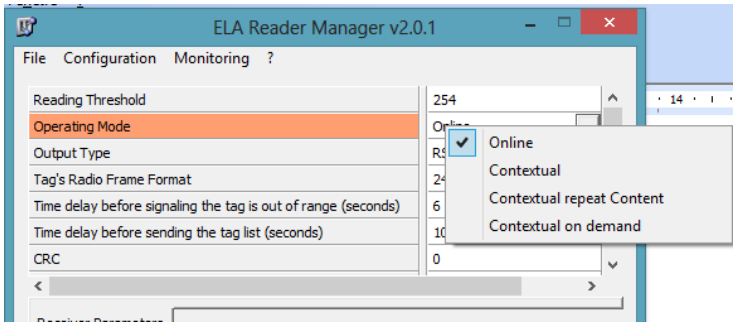


A simple method of the range's setting consists of:

- Selecting the "Monitoring" field in the menu bar, then «Tag tracking». Fill then a tag's ID in hexadecimal and click on the "Next" button.
- Placing in real operating conditions (people, vehicle, asset) an activated RFID tag at the limit of the detection area.
- Getting the decimal value displayed in the «Tag tracking» window at the right of the bar graph.
- Completing this value in the field «Reading threshold» and then clicking on the "Reading" button.

All the parameter's values are loaded in the reader. For this reason, this is highly recommended to proceed to a reading process for all the parameters, before any modification.

5.2 Operating mode:



5.2.1 On Line mode:

The reader sends the ID codes for the tags located in the detection area, as they are emitted.
The received frames are displayed simultaneously in the reception window.

5.2.2 CONTEXTUAL mode:

When the tag enters in the detection are, its ID code is transmitted once by the reader, even if the tag remains in the detection are. This code will be transmitted one more time, only when the tag will go out of the detection area AND will re-enter then. Any tag entering in the detection area will have its ID code transmitted once.

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5.2.3 PERIODIC CONTEXTUAL mode:

The reader has an internal memory stack of the 250 latest read ID codes.
Through the Periodic Contextual mode, these memorized codes can be periodically transmitted, and updated according to the tag's entrances and exits in the reading area.
The emission cycle is user-definable from 1 to 255 seconds with the option « Time delay before sending the tag list»

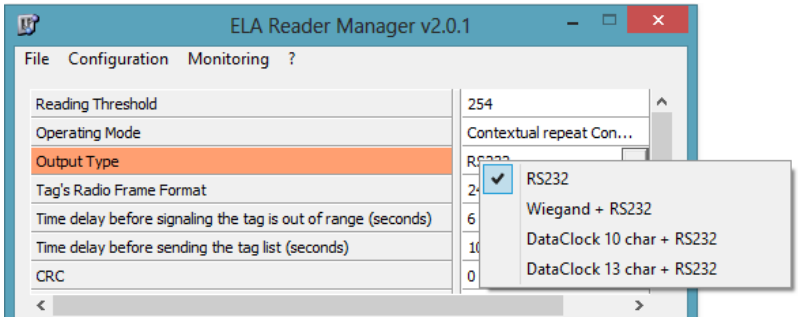
5.2.4 ON DEMAND CONTEXTUAL Mode:

All the frames contained in the reader's stack are transmitted after the reception of a specific command, sent by the operating software which controls the readers, either on Ethernet or by WIFI in a general way.

Please use the Hyperterminal software in RS232 serial link (9600bds 8bit 1stop 0parity 0flow) and the following commands:

ACTION	COMMAND FORMAT								DESCRIPTION
REQUEST	[	0	A	0	0	B	B	]	Request of the list of all the ID codes in the reader's stack (20 max) with BB : reader's number
ANSWER	[	0	A	X	X	B	B	]	List of all the ID codes « XX » in the stack followed by « YY » the number of tags in this list (at the frame's end)
	[	Y	Y	B	B	]			

5.3 OUTPUT TYPE:



Some reader models provide the connection compatible with the WIEGAND or DATA&CLOCK protocols used by the most of access control systems.

This setting is used to select the type of the output interface to be used by the reader.

For the USB reader, the internal led for the reception of ID codes can be activated by selecting the WIEGAND or DATACLOCK option.

The main interface RS232 (or USB) is always activated.

5.4 Format of tag's radio frame:

The data format of the tag's ID code can be either 24bits or 16bits.
For the 16-bits format, the management of the battery's low level can't be selected.

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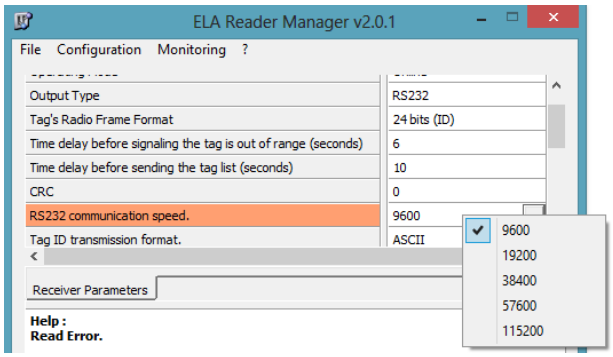
5.5 Leadtime before indication of out-of-range tag:

With this parameter, you can validate the exit of detection area after an adjustable timing from 0 to 255 seconds.
By default, the value is 6 seconds. This timing enables to filter potential short perturbations during the periodic reception of ID codes.
In the case that the CONTEXTUAL mode has been selected, the ID code for a read tag will be cleared from the memory stack, if this one is not read after this leadtime.

5.6 CRC :

Value 0. Not to be modified (specific use)

5.7 RS232 communication speed:



The communication speed can be selected from 9600 to 115200 bds – 8bit – 0 parity – 0 flow control.
To modify the speed, you have to select firstly the option «Enable Speed Configuration» from the menu « Configuration », and then to select the requested speed and at the end to click on the « Read ».

The change from a speed to another one is immediate as long as the ERM main window is opened.
In the case that you close and re-open the ERM software, the speed is 9600 bauds by default. If the reader's speed was initially at 19200 bauds, there won't be any communication.
In order to reactivate the connection, you have to select the option «Load the parameters» from the menu «File» and then open « 19200 » file placed in the EDM folder, as proposed by this option.

To prevent any speed's change, you have to deactivate the option «Enable Speed Configuration» from « Configuration » menu.

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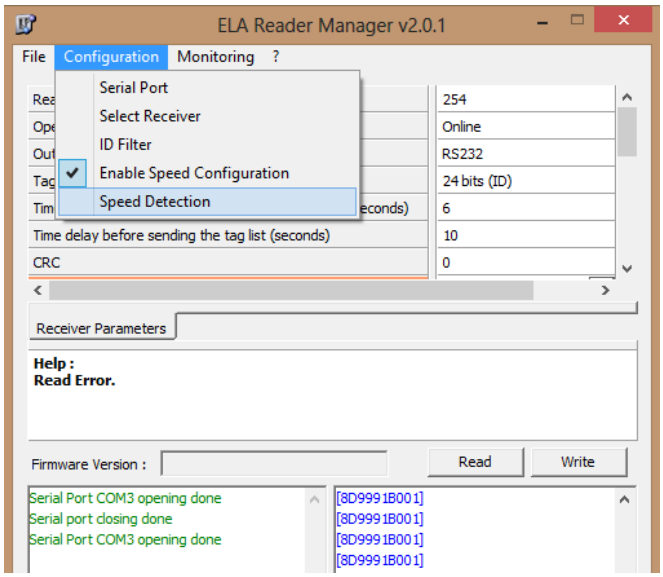
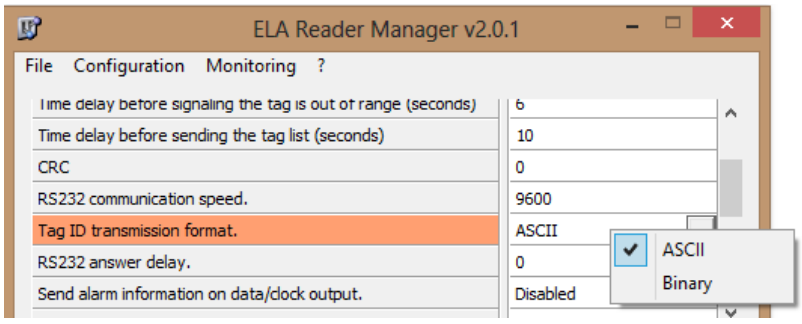
5.8 Automatic detection of RS232 communication speed:



The connected reader's configuration can be automatically detected by this feature.

5.9 Frame format of tag's ID code:



The format of the data frame transmitted by the reader can be either in ASCII or in binary format.

5.10 Delay before RS232 acknowledgement:

The value in milliseconds can be defined to postpone the data transmission between several connected readers, like a pseudo data bus through a RS232 link (please see the chapter "Select Readers").

5.11 Alarm information on the Data&Clock output:

Specific code for the Data&Clock protocol (not used, not to be activated).

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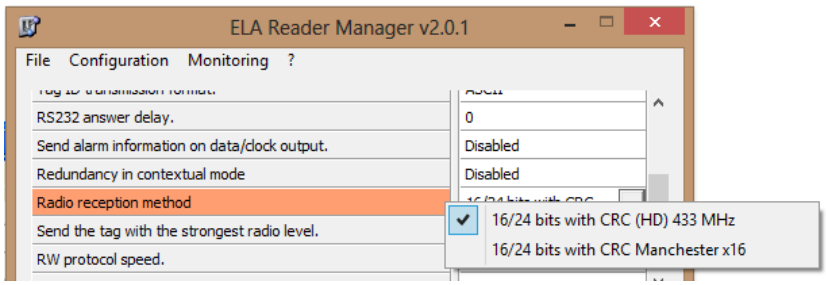
5.12 Redundancy activation in Contextual mode:

In the CONTEXTUAL mode, this setting enables the reader to validate and load in its internal memory an ID's code, only after 2 receptions **AND** only during a period which has to be lower than the exit time (please chapter about the setting «Time delay before signalling the tag is out of range»)

5.13 Radio Reception Process:



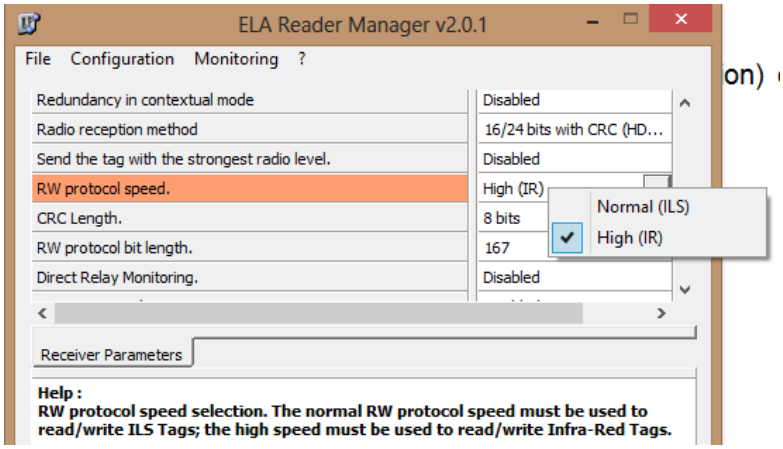
By default, the supported format for the radio frame is 16 or 24 bits with CRC in 433Mhz, which is used to receive the tag's ID in 433Mhz version. The other formats are only for ELA INNOVATION's use.

5.14 Sending tag's ID with the highest radio level:

This feature is used to only transmit the tag's ID code, with the highest radio level, exclusively in the "ON DEMAND CONTEXTUAL" and "PERIODIC CONTEXTUAL" modes.

5.15 RW protocol speed:

The technology used to load the selected settings to the tag is either the IR technology (current version) or the ILS technology (the previous one).



The IR's communication speed is higher.
The IR based speed is the default value. This value can't be changed.

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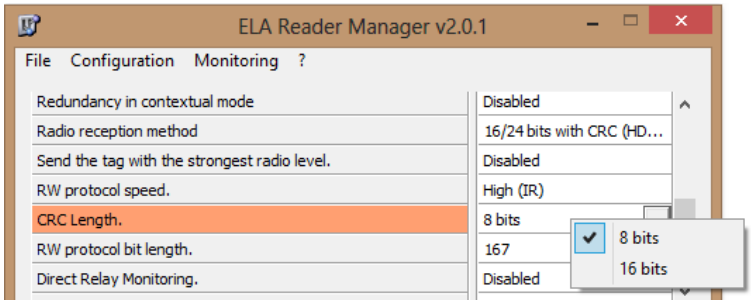
5.16 CRC length:

This corresponds to the calculation format for the checksum.



- The 16-bit format (for the current versions) is used for a better immunity to the electromagnetic disturbances.
- The 8bit format was used for the first generation.

5.17 Bit format for RW protocol:

This setting is used to adjust the synchronisation of some types of tag in the reception mode.
The SLIM_ID's version V509 may require an adjustment of this parameter between 164 and 167.

Default value: 165 for all the active RFID tags. Not be modified (specific use).

5.18 Direct relay monitoring:

The standalone reader equipped with an integrated relay enables to activate its relay as soon as the first ID code has been received. The added received codes feed the reader's memory stack and keep the relay as activated.
The direct command of the relay only works in « CONTEXTUAL » mode and keeps activated as long as the memory stack is not empty.

5.19 Temperature filtering:

The active RFID tags with integrated temperature sensor have an ID code on 24 bits (6 hexadecimal characters) divided in 2 parts.
The 3 first characters give the ID code's number.
The 3 last characters give the value of the measured temperature (time-varying value).

This type of tag can be managed with a standard ID code not by taking into account the information given by the 3 last characters, thanks of the activation of this filter (used for the CONTEXTUAL modes).

Please note this feature is applicable for all the sensor-based RFID tags (temperature, humidity, …)

5.20 Automatic clearing of CONTEXTUAL stack:

This setting is used to systematically update the ID's datas contained in the memory stack, at each reading operation in the "ON DEMAND CONTEXTUAL" and "PERIODIC CONTEXTUAL" modes.

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5.21 Replace weakest tag in stack:

The capacity of the memory stack is 250 ID's codes for the 3 CONTEXTUAL modes.
This setting is used to read others tags if their emission level is higher than the one of the stack's weakest tag.
In this case, the tag with the lowest level is deleted and replaced by the new one.

By default, the internal value is 20 tags. This value can't be changed through the ERM's MMI. However, you can change it by using the Hyperterminal software with RS232 link (9600bds 8bit 1stop 0parity 0flow) and with specific software commands. Please refer the MCHD Software specification, available on our website, at the Download space.

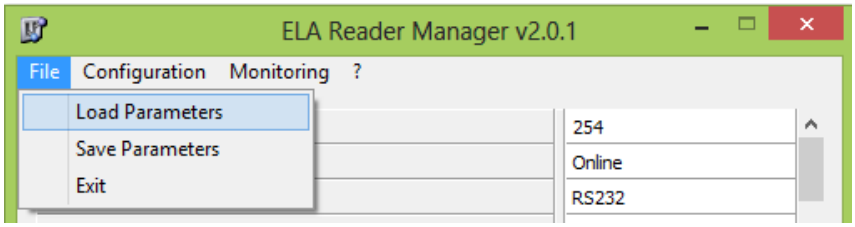
5.22 **Min tag number to control the relay** (from the 1.8.0 version):

In the CONTEXTUAL mode and with the direct command of the relay, you can select this setting to activate it as soon as a minimum number of tags are detected. The value can be defined between 1 and 20 (reflecting the stack's size).

Application case:
Case of protection system for pedestrians equipped with active RFID tags, around of a construction machinery driven by a person, also having a tag. During the equipment's movement, the driver's tag is permanently read and doesn't activate the relay. But as soon as one pedestrian's tag (or more) is detected close to the equipment (user-definable distance), the relay is activated (to trigger a buzzer alarm for instance). In this case, the setting would be at 2. The driver can be become a pedestrian, and vice-versa.

6 MENU BAR

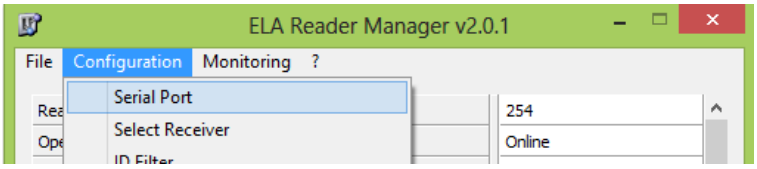
6.1 File:



The configuration settings of a reader can be applied identically for a range of readers

- The « Save Parameters » option enables to create a specific config file load under the path [Program Files – ELA Innovation – ERM] with the .erm file extension.
- The « Load Parameters » option enables to update all the setting's fields from a .erm config file.

6.2 Configuration :



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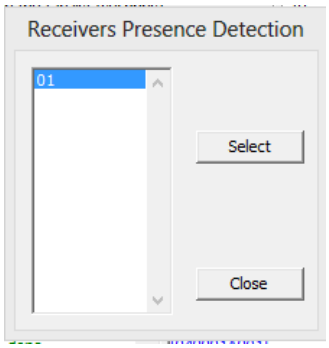
6.2.1 Serial Port:

See previous chapter « Homepage ».

6.2.2 Select receivers:

The RS232 based readers can be connected in a parallel way to the PC's COM port and be managed sequentially through the pseudo data-bus. All the readers must have different ID code and response time. Please refer to the chapter "Delay before RS232 acknowledgement".

In this case, the ERM software displays all the reader's numbers connected to the RS232 link in the window "Receiver Presence Detection."



To set a specific reader up, you have to select its number from the list and click on the "Select" button. The ERM software always keeps in memory the latest managed reader's number.

We advise to check and select from the list the connected reader's number to be set-up, whatever the number of reader's number.

To change the reader's number (always 01 by default), you have to use the Hyperterminal software with RS232 link (9600bds 8bit 1stop 0parity 0flow) and the following commands:

ACTION	COMMAND FORMAT								DESCRIPTION
REQUEST	**[**	**0**	**9**	**0**	**0**	**0**	**0**	**]**	Request of reader's number
ANSWER	**[**	**0**	**9**	**B**	**B**	**B**	**B**	**]**	Reader number in hexadecimal value "**BB**"
COMMAND	**[**	**1**	**9**	**X**	**X**	**B**	**B**	**]**	Setting of Reader's number: BB=current, XX=new

6.2.3 ID Filter:

Please note that this option is not available in the ERM software for the current reader version. A new user guide's index will be published as soon as this option will be activated.

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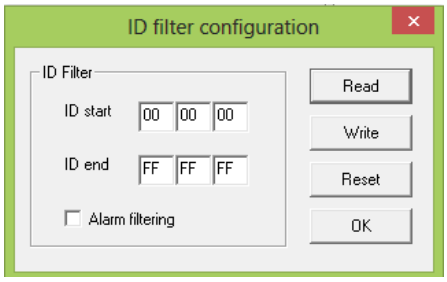
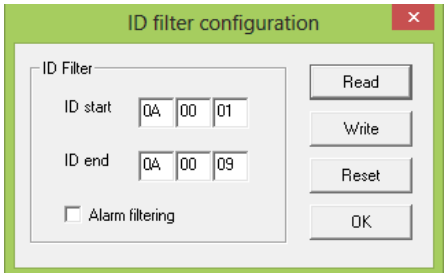
However, you can define this ID's filter by using the Hyperterminal software with RS232 link (9600bds 8bit 1stop 0parity 0flow) and with specific software commands. Please refer the MCHD Software specification, available on our website, at the Download space.



This option is used to limit the list of tags to be managed and increase by this way the reader's immunity to disturbances and others codes out of the application. By default, this range is at the maximum.

Please click on the button "Write" to check the max range (000000 to FFFFFF)

To define a code's range, you have to fill the ID's starting and the ending codes, and then click on the "Write" button.



Check box «Alarm Filtering»:
When this box is not activated, the specific codes for the tag's alarms (low level of battery, hanging action) are not taken into account.
The alarm information impacts the highest niddle of ID's code and can be by this way out of the defined range.

Example:

- ID code without alarm: 0A0001
- ID code with Battery Low Level: 2A0001

In the example above, for a filtering range between 0A001 and 0A009, the tag's alarm codes from this list won't be taken into account.

You have to activate the check-box to take into account the alarm codes in the defined range.

6.2.4 Enable Speed Configuration:

Please refer to chapter «RS232 Communication Speed »

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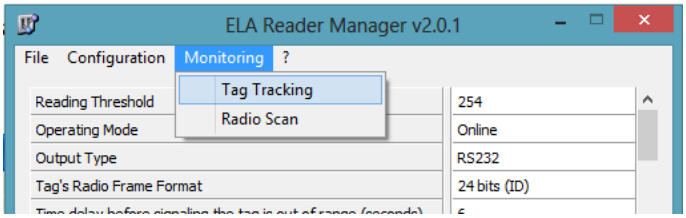
6.3 Monitoring

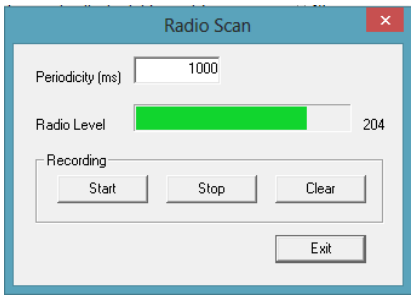


6.3.1 Tag tracking:

This feature enables to display the emission level for a specific tag from its ID' code in hexadecimal value.
Please refer to the chapter « RSSI Level in reading mode »

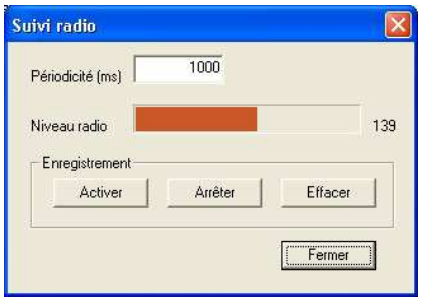
6.3.2 Radio Scan :

This feature is used to estimate the occupancy rate of the 433.92MHz frequency band used by the tags and the readers.
The radio level in decimal value shows the degree of intensity (inversely related) of the emissions in the reader's area.



GREEN Level
Very low occupancy

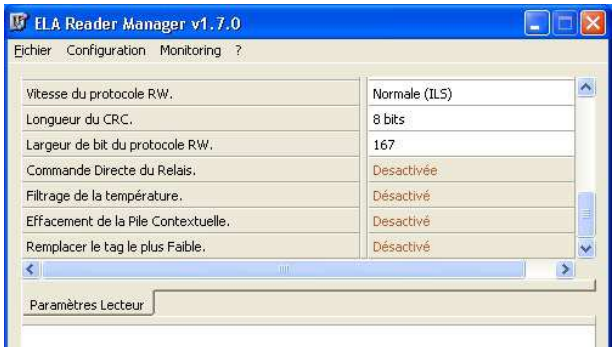
ORANGE Level
Medium interferences



RED Level
High occupancy and interferences

7 REMARKS:

7.1 Greyed-out Fields:



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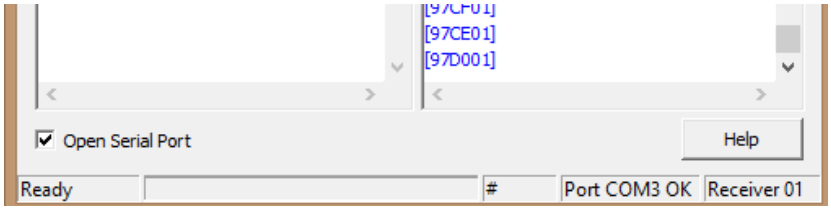
According to the reader's firmware version, some settings can be deactivated and their fields are displayed as greyed fields. The firmware's update is not required except if these settings are required for the application.

Please contact our Sales department for an offer about the update of reader's firmware.

7.2 Open the Serial Port:



This check box is used to quickly switch from ERM to another application software (example: ERW, EDM, Hyperterminal) without closing the ERM's homepage. If the box is not activated, the software makes available the COM Port.

Only one application software can be used on the same COM Port.

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