

# SPYLOCK

## USER GUIDE



---

## Table of contents

1.	Description of the device .....	4
1.1	SPYLOCK views.....	5
2.	Notice .....	7
3.	Accessories .....	7
4.	Device set up.....	8
5.	Technical specifications.....	8
6.	Device functions .....	9
6.1	Description of the device functioning .....	9
7.	Spylock Management Software .....	11
7.1	Programming Mode .....	13
7.2	Password management.....	15
7.2.1	Security Password 1 and its functionality .....	15
7.2.2	Reading of parameters.....	16
7.2.3	Date and time update with system data .....	18
7.2.4	Download of the stored log.....	18
7.2.5	How to change Password 1.....	20
7.2.6	Security Password 2 and its functionality .....	21
7.2.7	Erasing memory .....	22
7.2.8	How to enable firmware upgrade .....	23
7.2.9	How to change Password 2.....	23
8.	FW Upgrade .....	25
9.	Hard Reset .....	29
10.	SPYLOCK battery recharge.....	29
11.	Warranty and liability conditions.....	31

## Table of pictures

FIGURE 1 - SPYLOCK OVERVIEW .....	4
FIGURE 2 - SPYLOCK TOP VIEW .....	5
FIGURE 3 - SPYLOCK SIDE VIEW .....	5
FIGURE 4 - SPYLOCK REAR VIEW .....	5
FIGURE 5 - SPYLOCK VIEW OF OPEN CABLE .....	6
FIGURE 6 - SPYLOCK VIEW OF CLOSED CABLE .....	6
FIGURE 7 - SPYLOCK VIEW OF CONNECTORS .....	6
FIGURE 8 - UNPACKING SPYLOCK .....	7
FIGURE 9 - DISPLAY OF THE MESSAGE "DEVICE CLOSED" .....	8
FIGURE 10 - BATTERY LEVEL DISPLAYED .....	9
FIGURE 11 - LAST EVENT DISPLAYED .....	10
FIGURE 12 - DISPLAY SCROLL 1 .....	10
FIGURE 13 - DISPLAY SCROLL 2 .....	10
FIGURE 14 - DISPLAY SCROLL 3 .....	10
FIGURE 15 - DISPLAY SCROLL 4 .....	10
FIGURE 16 - SPYLOCK MANAGEMENT SOFTWARE USER INTERFACE .....	11
FIGURE 17 - DISPLAY SHOWS THE DEVICE ENTERING PROGRAMMING MODE .....	13
FIGURE 18 - HOW TO DETECT THE CONNECTED COM PORT IN A WINDOWS XP BASED PC .....	14
FIGURE 19 - HOW TO DETECT THE CONNECTED COM PORT IN A WINDOWS 7-8 BASED PC .....	14
FIGURE 20 - LOG INFORMATION ABOUT COM PORT OPENING .....	15
FIGURE 21 - PASSWORD 1: EXAMPLE OF INSERTING .....	16
FIGURE 22 - READING IN PROGRESS .....	16
FIGURE 23 - READ OPERATION COMPLETED .....	17
FIGURE 24 - SPYLOCK PARAMETERS RETRIEVED .....	17
FIGURE 25 - DATE AND TIME CHANGED VIA THE "GET SYSTEM TIME" COMMAND .....	18
FIGURE 26 - EVENTS DOWNLOAD COMPLETED .....	18
FIGURE 27 - "FILE EVENTS" FOLDER STORING DIFFERENT DOWNLOAD FILES .....	19
FIGURE 28 - LOG FILE: AN EXAMPLE .....	19
FIGURE 29 - INSERTING THE CURRENT SECURITY PASSWORD 1 .....	20
FIGURE 30 - INSERTING THE NEW SECURITY PASSWORD 1 .....	20
FIGURE 31 - SECURITY PASSWORD 1 MODIFIED .....	21
FIGURE 32 - INSERTING SECURITY PASSWORD 2 .....	21
FIGURE 33 - ERASE MEMORY: CONFIRM OPERATION .....	22
FIGURE 34 - ERASE MEMORY PERFORMED .....	22
FIGURE 35 - DEVICE IN BOOT LOADER MODE AND READY TO UPGRADE .....	23
FIGURE 36 - INSERTING THE CURRENT SECURITY PASSWORD 2 .....	23
FIGURE 37 - INSERTING THE NEW SECURITY PASSWORD 2 .....	24
FIGURE 38 - CONFIRMING THE NEW SECURITY PASSWORD 2 .....	24
FIGURE 39 - SECURITY PASSWORD 2 MODIFIED .....	25
FIGURE 40 - DEVICE IN BOOT LOADER MODE AND READY FOR FW UPGRADE .....	25
FIGURE 41 - BOOTLOADER HOST .....	26
FIGURE 42 - USB HUMAN INTERFACE DEVICE CLASS TO BE SELECTED .....	27
FIGURE 43 - SELECTION OF FW UPGRADE FILE .....	27
FIGURE 44 - FW FLASHING OPERATION ACTIVATED .....	28
FIGURE 45 - FIRMWARE UPGRADE STARTED .....	28
FIGURE 46 - FIRMWARE UPGRADE COMPLETED .....	29
FIGURE 47 - USB CONNECTOR .....	30
FIGURE 48 - USB CABLE CONNECTION .....	30
FIGURE 49 - CHARGING OPERATION EVIDENCE .....	30

## 1. Description of the device

SPYLOCK is an electronic reusable locking system of latest generation, designed for specific application in industry, transport and logistics and ideal solution to monitor moving of bags, cases, trolleys, etc. Easy to install and use it needs minimum maintenance and can work autonomously for very long time.

The following picture shows the main components of the device:

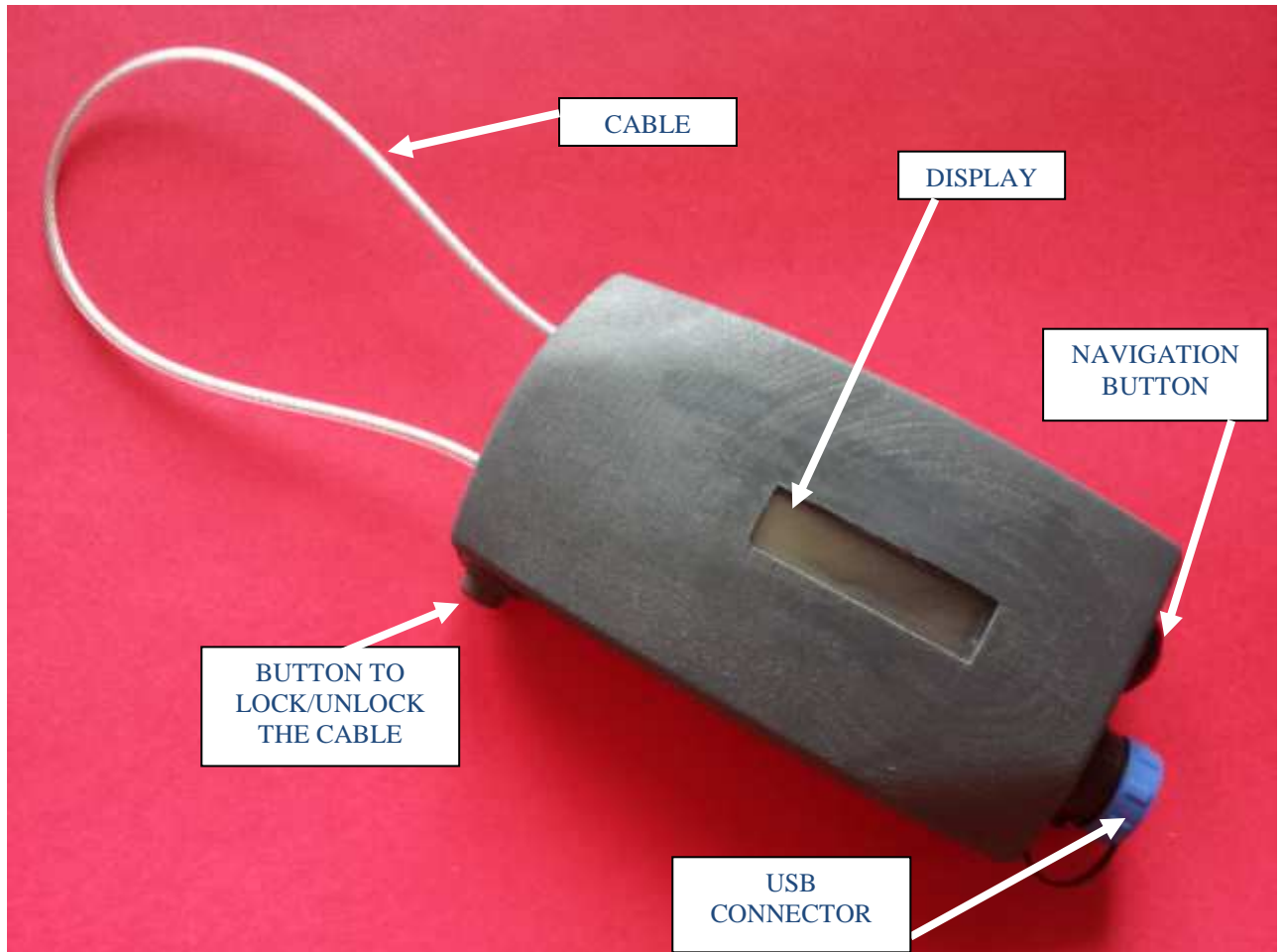
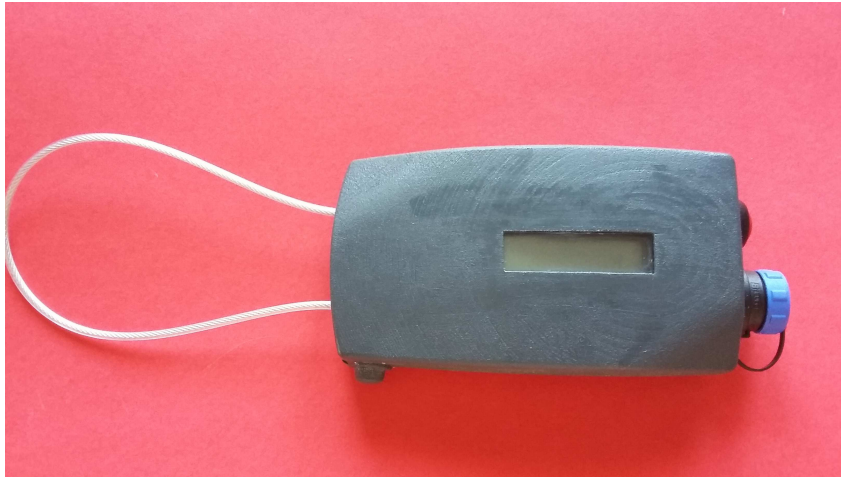
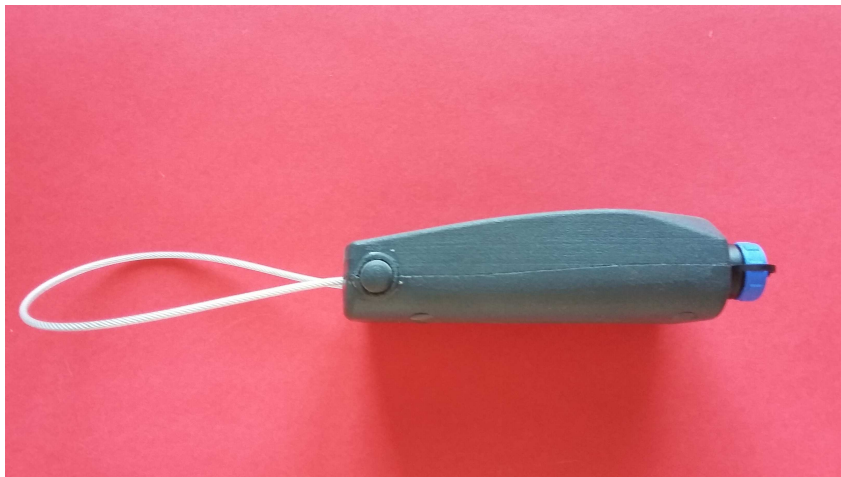


Figure 1 - SPYLOCK overview

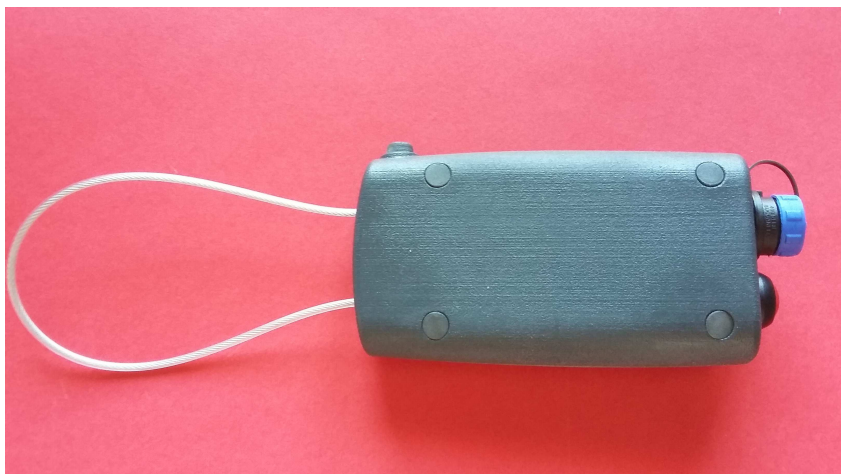
## 1.1 SPYLOCK views



**Figure 2 - SPYLOCK Top view**



**Figure 3 - SPYLOCK side view**



**Figure 4 - SPYLOCK rear view**



**Figure 5 - SPYLOCK View of open cable**



**Figure 6 - SPYLOCK View of closed cable**



**Figure 7 - SPYLOCK View of connectors**

## 2. Notice

- Keep carefully this User Guide for future use.
- Keep SPYLOCK far from children.
- Do not plunge the device into water or other liquids.
- When opening the package, check the device integrity and specifically check that SPYLOCK is not damaged because of improper transportation or handling.
- SPYLOCK is a maintenance-free device.
- SPYLOCK is power supplied by a rechargeable, Lithium long-life battery, which assures long operation time.
- SPYLOCK cannot be opened by the user, to access internal electronics.
- Opening the device can lead to damage of the same, to alter the characteristics of the product and void your warranty.

## 3. Accessories

When opening the package, check it include the following accessories:

- Pcs 1 SPYLOCK
- Pcs 1 USB memory stick with user guides, documentation, application software, drivers.
- Pcs 1 USB cable



**Figure 8 - Unpacking SPYLOCK**

## 4. Device set up

SPYLOCK installation is easy and fast. Quick user guide for device set up :

- Put SPYLOCK in place;
- Pass the SPYLOCK cable inside container handle holes and insert its tail into the SPYLOCK hole by keeping the locking button pushed;
- When the cable is in release the locking button to block the cable;
- Pull the cable up to check that it is properly closed. If the operation is done correctly, the device display shows the message “CLOS” to acknowledge the proper locking (see picture below).



**Figure 9 - Display of the message “device closed”**

- The device is in operation and ready to log events.

## 5. Technical specifications

Material	ABS
IP Protection	IP65
Operative Temperature	- 20°C / +55 °C
Storage Temperature	- 20°C / +55 °C
Size	131 x 67 x 35 mm
Wire standard length	110 mm
Wire diameter	2,5 mm
Wire material	Stainless steel
Weight	180 g
Mechanical closure	Closing actuator coupling with spring button
Display	Backlit White, 32 characters (2 x 16)
Communication interface	USB
Battery	Rechargeable 1100 mAh 3,7V
Memory storage	1000 data record
Password protection	Software
Tamper security	Sensor to detect case opening
Manufactured Code	UID CODE
Management Code	Software Code
RFID	HF NFC Tag



## 6. Device functions

The working principle of SPYLOCK is very simple: it acts as a logger of vents on the lock. It can register if and when one or more of the following events take place:

- Cable open OPEN
- Cable closed CLOS
- Cable cut CUT
- Tamper when case open TAOP
- Tamper when case closed TACL
- Low battery LOW
- General Error ERR

Moreover the device gives information about the battery level, at any switch on of the device:

- Valore 100 Battery fully charged;
- Valore 0 Battery fully discharged.

When the battery level is below level 36%, the display show the additional information of LOW BATTERY. In the LOW BATTERY mode the display backlight is deactivated.

When the battery level is below 20% SPYLOCK enters protection mode and automatically switches off. Battery recharge is necessary to switch it on again.

Typical battery life is of 700 cycles, where each cycle is composed by the three events opening/closure/push of the navigation button.

### 6.1 Description of the device functioning

SPYLOCK is an electronic device permanently idling in its stand-by status until one of the above mentioned events occur.

When one of those event occur SPYLOCK starts operating with the following operations:

- The display lights showing the detected event
- The event is stored into the device memory (type of event and time stamp)
- It is possible to display at any time SPYLOCK battery level by pressing for 1 sec. the navigation button. If the button is kept pushed the vent log is show step by step in a descending time mode.

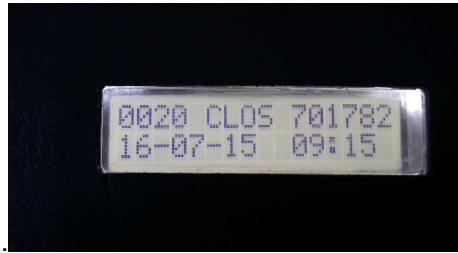
The device is supplied by an USB rechargeable battery (see section 10 *SPYLOCK recharge*).

When pushing the navigation button the display shows for 2 sec. the battery level:



**Figure 10 - Battery level displayed**

Immediately after the last stored event is displayed for 5 sec. and if no other event is activated, the display switches off automatically.



**Figure 11 - Last event displayed**

The message displays the following information:

- Serial identification number of the event (e.g. 0020)
- Event short description (e.g. CLOS = cable closed)
- Number associated to the vent and randomly generated by SPYLOCK (e.g. 701782)
- Event date (e.g. 16-07-15)
- Event time (e.g. 09:15)

If after displaying the last occurred even the navigation button is sequentially pushed, the display scrolls the SPYLOCK stored events by descending time of registration.



**Figure 12 - Display scroll 1**



**Figure 13 - Display scroll 2**



**Figure 14 - Display scroll 3**



**Figure 15 - Display scroll 4**

## 7. Spylock Management Software

“SPYLOCK MANAGEMENT Software” allows connecting PC to the device to modify its date and time, to modify the security passwords, to display and download events log, to erase memory, to display firmware version and eventually upgrade it.

When launching the program, the following main application window opens:

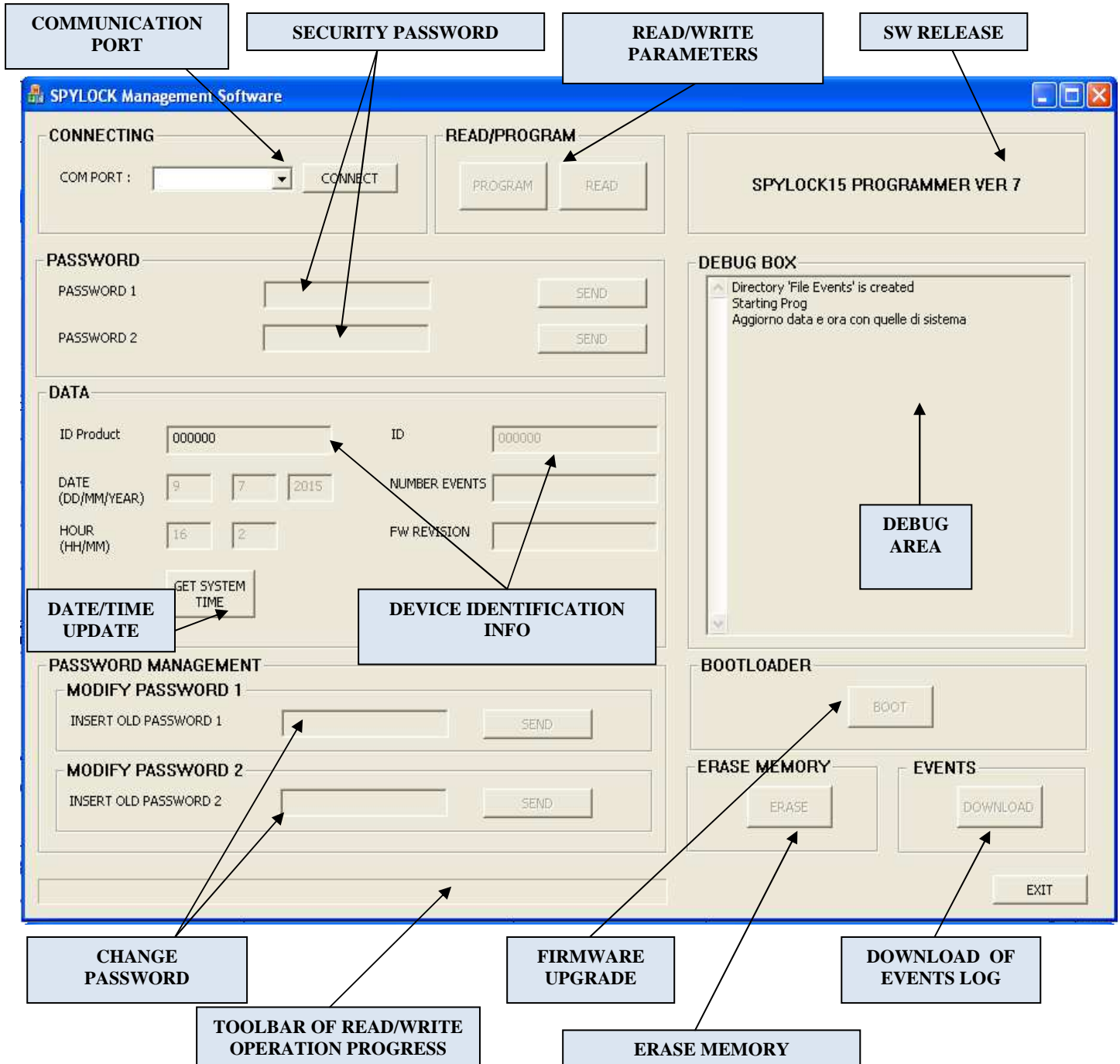


Figure 16 - SPYLOCK MANAGEMENT Software user interface



---

NOTE: "SPYLOCK MANAGEMENT Software" is an application software able to work under the environment of WINDOWS OS, 32 and 64 bit (Win XP, Win 7, Win Vista, Win8.1).

**"CONNECTING" area:**

**COM PORT:** shows the COM port number as assigned by Windows OS to which the SPYLOCK is to be connected (see also Section 7.1. – *Programming Mode*).

**"PASSWORD" area:**

Manage passwords useful to set/manage SPYLOCK

**PASSWORD 1:** security password PSW1: 000000 (n° 6 zeros).

**PASSWORD 2:** security password PSW2: 000000 (n° 6 zeros).

(see also Section 7.2 - *Password Management*)

**"READ/PROGRAM" area:**

**READ/PROGRAM DEVICE PARAMETERS**

"READ" button: when pushed it retrieves current SPYLOCK settings.

"PROGRAM" button: used to program new settings into the SPYLOCK.

**"SW RELEASE" area:**

It displays the release number of the "SPYLOCK MANAGEMENT Software"

**"DATA" area: Information about the SPYLOCK device**

ID Product: Numerical and univocal ID device code set by the manufacturer (6 digits)

ID: Numerical ID device code set by the user (6 digits)

DATE: Displays the date set on SPYLOCK

HOUR: Displays the time set on SPYLOCK

NUMBER EVENTS: Displays the number of events stored inside SPYLOCK memory

FW REVISION: Displays SPYLOCK firmware version

GET SYSTEM TIME button: Update date and time on SPYLOCK

NOTE: date and time are updated by using PC settings, so please check that PC date and time are correct.

**"DEBUG BOX" area:**

**DEBUG**

Displays operation currently performed by SPYLOCK (log of messages exchange between SPYLOCK and the management software).

**"PASSWORD MANAGEMENT" area:**

**MODIFICA PASSWORD**

Allows setting or change of security passwords.

(see also Section 7.2 - *Password Management*)

**"BOOTLOADER" area:**

**UPGRADE FW**

"BOOT" button: SPYLOCK exits from operational mode and enters into UPGRADE Firmware mode.

(see Section 8.0 - *FW Upgrade*)

NOTE: it is strongly recommended that this operation is performed by a highly qualified technical staff or with the support of the device manufacturer.

**TOOLBAR READ/WRITE PROGRESS**

---

Toolbar that display the progress of current SPYLOCK activity.

**“ERASE MEMORY” area:**

**ERASE MEMORY**

“ERASE” button: permanently erases all the events stored in SPYLOCK.

**“EVENTS” area:**

**DOWNLOAD OF REGISTERED EVENTS**

“DOWNLOAD” button: enables the download of all the registered events from the SPYLOCK to the PC.

NOTA: downloaded data are permanently removed from the SPYLOCK.

**EXIT button:**

Exits the program.

## 7.1 Programming Mode

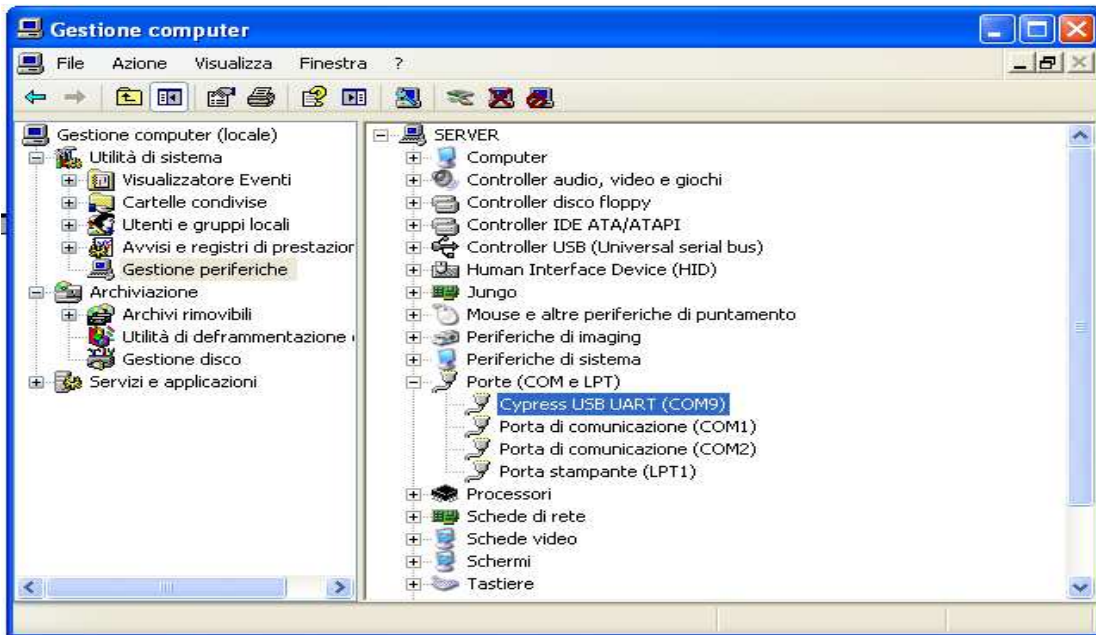
This is the procedure to enter device programming mode:

- 1 Launch “SPYLOCK Management Software”
- 2 Check that the device is with open cable  
NOTE: Only if the SPYLOCK cable is OPEN, the device can enter programming mode
- 3 Connect the USB cable between SPYLOCK and the PC (when the operation is properly done the SPYLOCK display shows the message “Programming”).

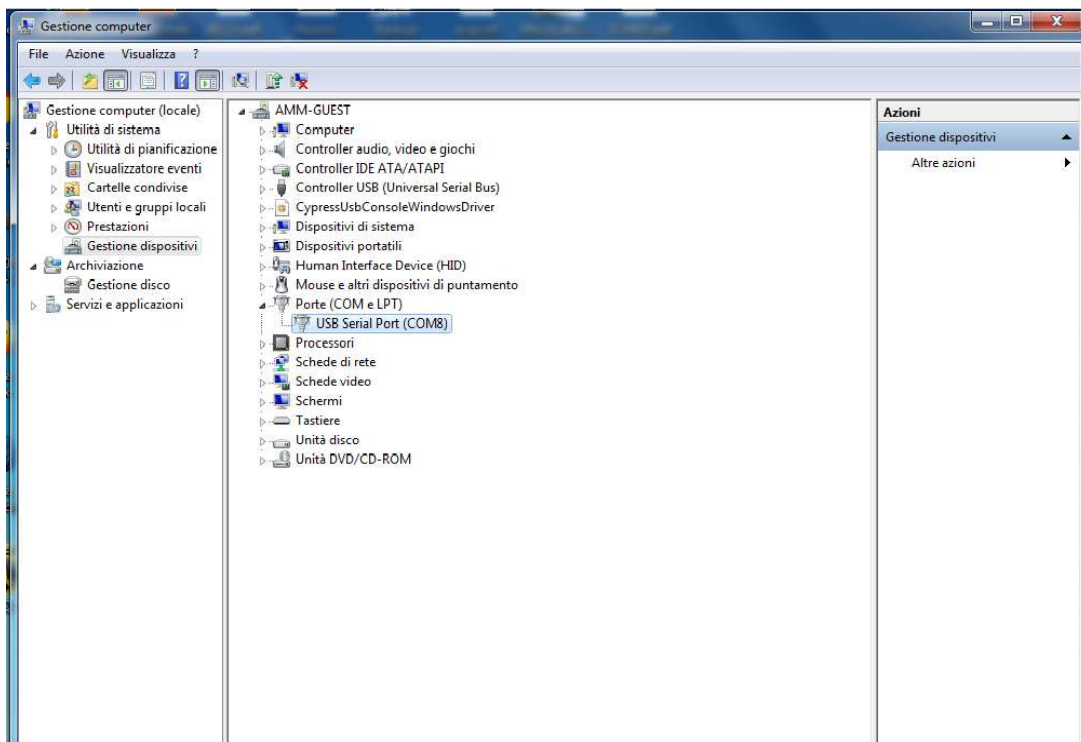


**Figure 17 - Display shows the device entering Programming Mode**

- 4 Check at which COM port the device has connected. For PC Windows®: right click of the mouse on *This PC* → *Manage* → *Device Manager* e aprire il menù *Ports (COM & LPT)* has shown in Figure 18 and Figure 19. The device port can be easily identified as “Cypress USB UART (COM X)” where X is the port number to be inserted into the Spylock Management Software window for connection.



**Figure 18 – How to detect the connected COM port in a Windows XP based PC**



**Figure 19 - How to detect the connected COM port in a Windows 7-8 based PC**

Insert the right COM Port number into the software user interface, push the “CONNECT” button; when the COM port communication is properly set the button status changes from “CONNECT” to “DISCONNECT”.

If the COM port number is higher than 9 it is possible to insert the COM port number manually: for instance if the detected COM port is the number 32, please digit into the relevant field COM32.

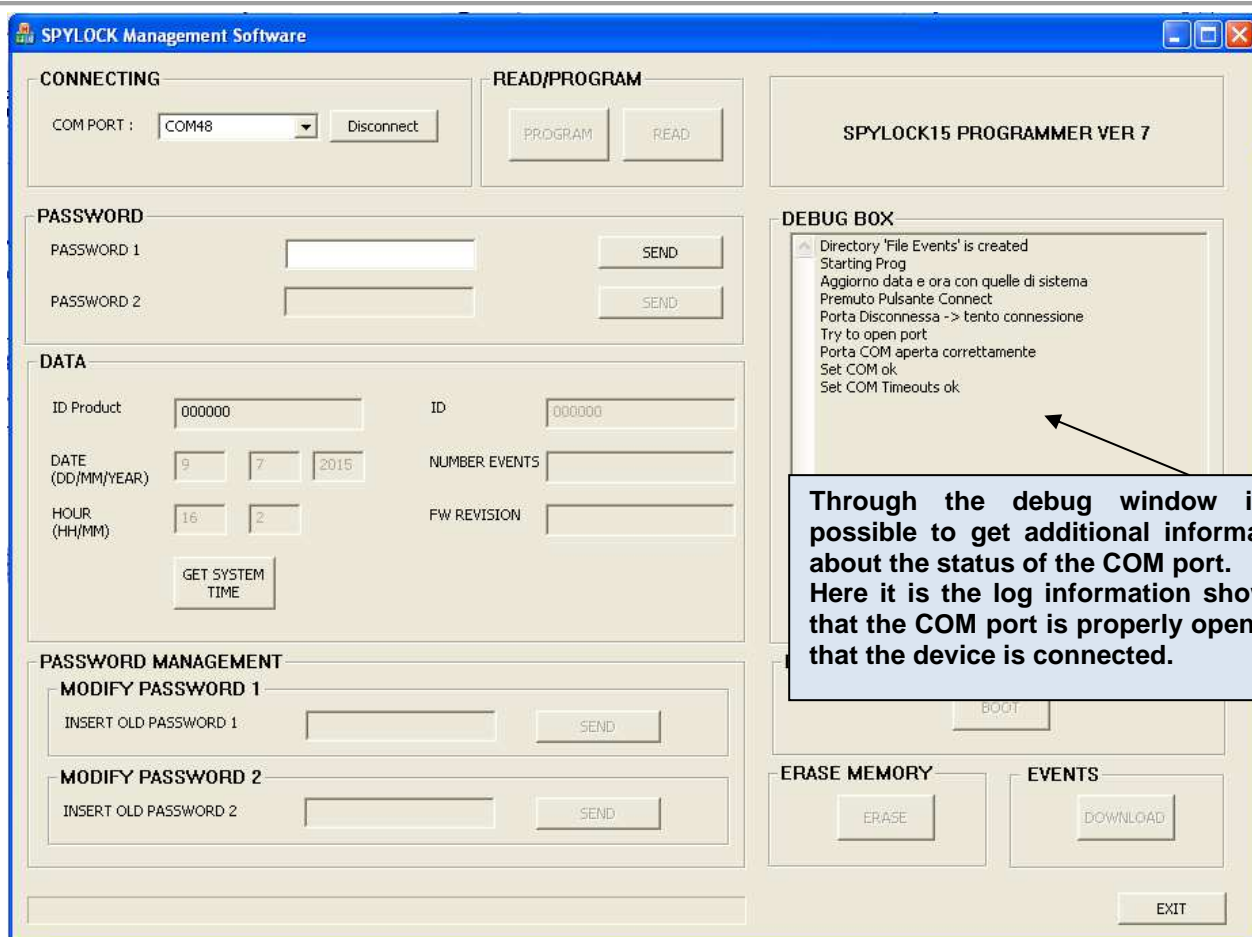


Figure 20 – Log information about COM Port opening

## 7.2 Password management

SPYLOCK security is guaranteed by a two-level password. Security Password no. 1 is requested to access the standard settings of the device and of its main functional parameters. Security Password no. 2 is required for the management of advanced settings. These passwords are stored inside the SPYLOCK Flash Memory.

Default:

Security password PSW1: 000000 (6 zeros)

Security password PSW2: 000000 (6 zeros)

NOTE: In case you forgot the passwords, you need to contact the manufacturer back.

### 7.2.1 Security Password 1 and its functionality

To access "SPYLOCK Management Software" it is necessary to insert Security Password 1 and push the button SEND. Once inserted this password correctly, it will be possible, other than performing the parameters reading, to set date and time by synchronising them with the PC ones, change Security Password 1, download registered events, etc.

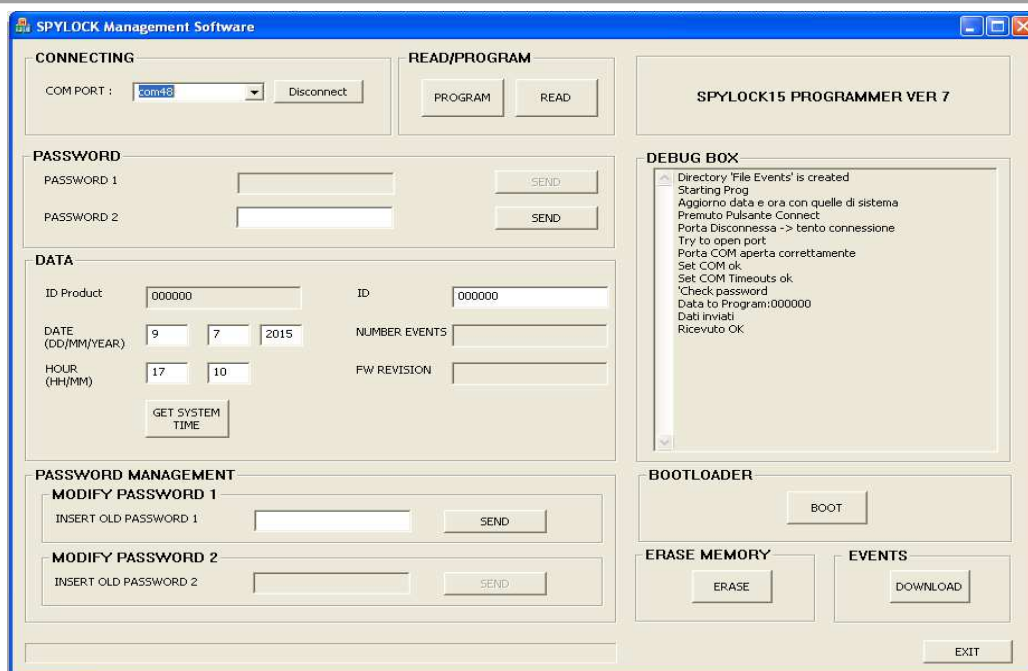


Figure 21 – Password 1: example of inserting

## 7.2.2 Reading of parameters

Push the READ button to get the working device parameters. The toolbar will show the progress of this operation.

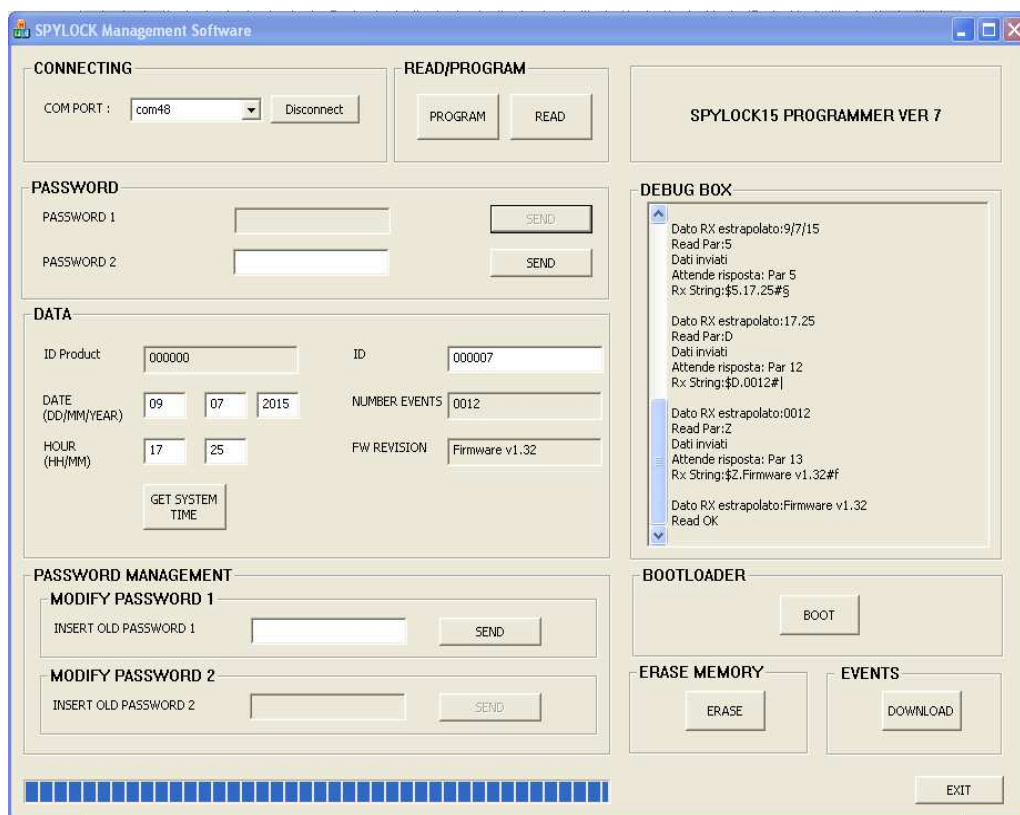


Figure 22 – Reading in progress



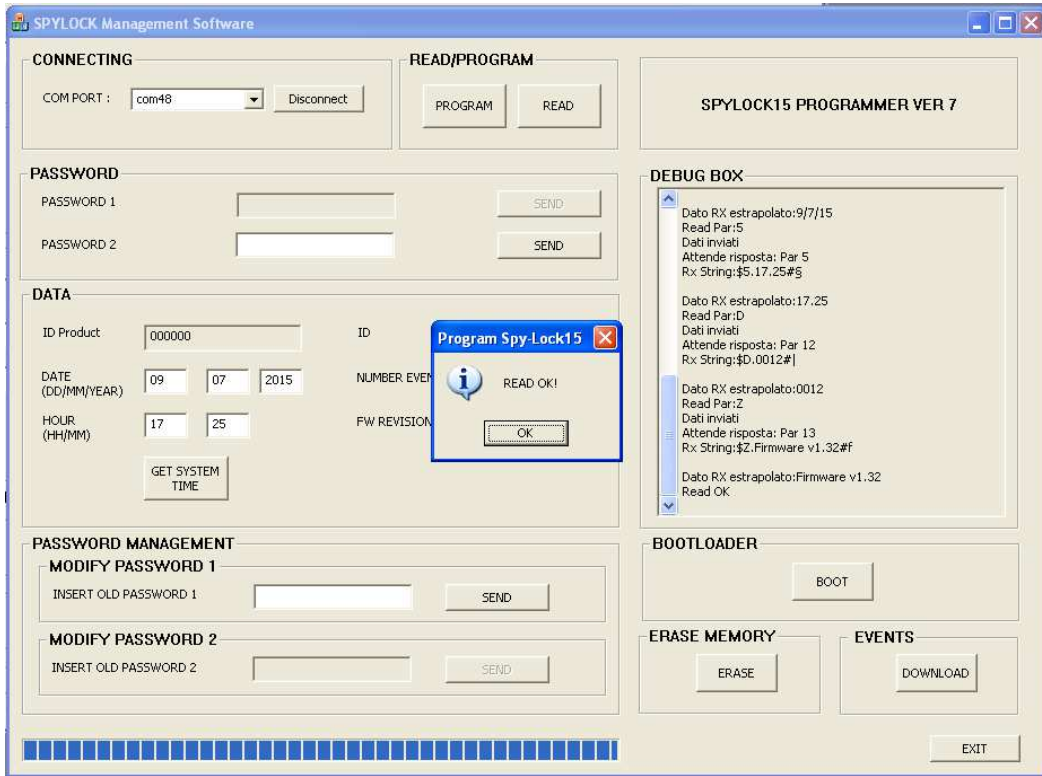


Figure 23 – Read operation completed

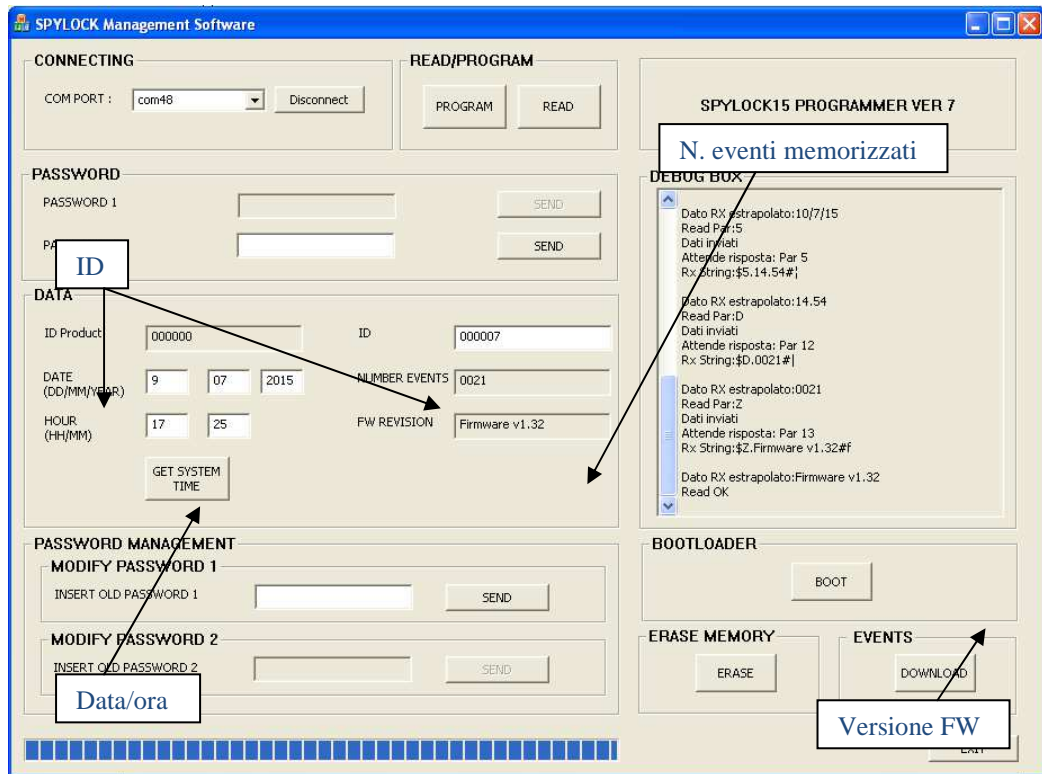


Figure 24 – SPYLOCK parameters retrieved

## 7.2.3 Date and time update with system data

Push the button “GET SYSTEM TIME” to acquire date and time currently set inside SPYLOCK.

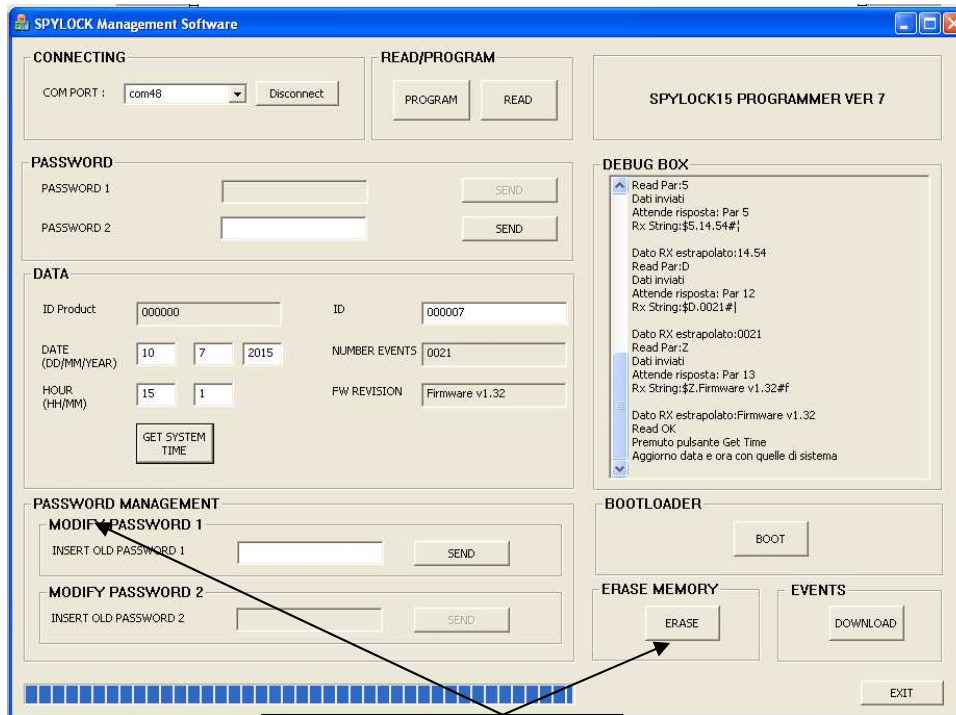


Figure 25 – Date and time update with system data using the “GET SYSTEM TIME” command

## 7.2.4 Download of the stored log

Push the “DOWNLOAD” button to download all the events stored in the SPYLOCK memory. The log is automatically retrieved and saved as cvs file in the folder “File Events”, at the same where is the folder of the application SW “SPYLOCK Management Software”.

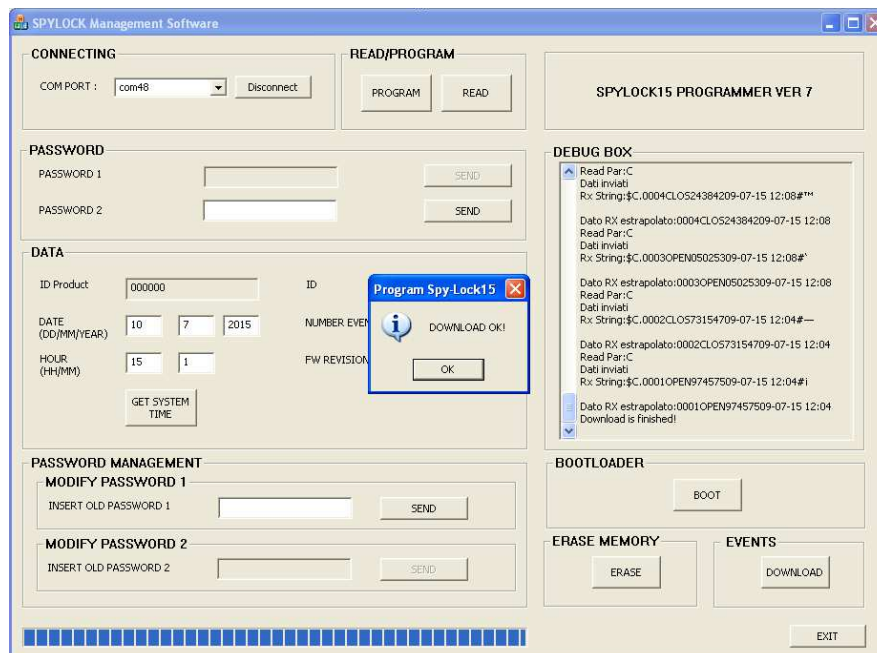
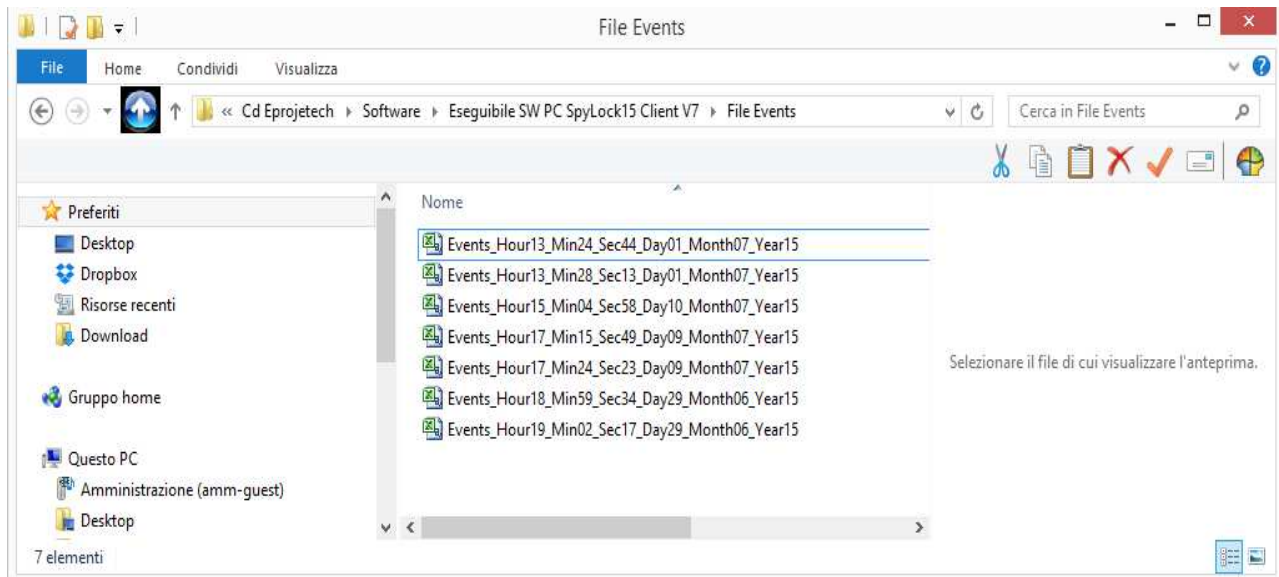


Figure 26 – Events download completed



**Figure 27 – “File Events” folder storing different Download files**

“SPYLOCK Management software” automatically generates event log files downloaded from the SPYLOCK device. At each download operation a new file is generated and labelled with date and time at which the operation occurred.

1	Data:	01/07/2015			
2	Ora:	13.24.44			
3					
4	ID Product :	123456			
5	ID :	2			
6					
7	NUMBER EVENT	TYPE	NUMBER RANDOM	DATE	HOOR
8	84	OPEN	218460	01/07/2015	11.35
9	83	CLOSE	598004	30/06/2015	18.28
10	82	OPEN	325501	30/06/2015	18.28
11	81	CLOSE	976482	30/06/2015	18.28
12	80	OPEN	141181	30/06/2015	18.28
13	79	CLOSE	125611	30/06/2015	18.28
14	78	OPEN	25670	30/06/2015	18.28
15	77	CLOSE	471589	30/06/2015	16.59
16	76	TACL	109769	30/06/2015	16.56
17	75	TAOP	50519	30/06/2015	16.55
18	74	TACL	766496	30/06/2015	16.55
19	73	OPEN	180768	30/06/2015	16.54
20	72	CLOSE	314847	30/06/2015	16.54
21	71	OPEN	544492	30/06/2015	16.54
22	70	CLOSE	776871	30/06/2015	16.54
23	69	OPEN	359630	30/06/2015	16.54
24	68	CUT	38776	30/06/2015	16.54
25	67	CLOSE	125873	30/06/2015	16.54

**Figure 28 – LOG File: an example**

## 7.2.5 How to change Password 1

To change Security Password 1 please follow the next steps:

- 1 Insert the current Security Password into the textbox "INSERT OLD PASSWORD 1" and press "SEND" button

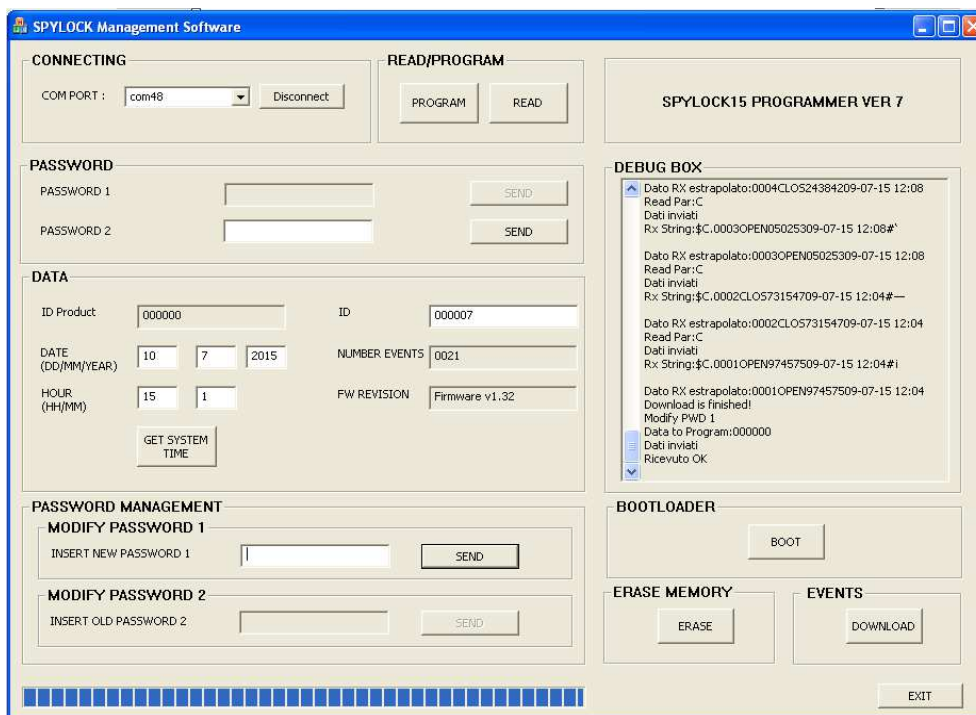


Figure 29 – Inserting the current Security Password 1

- 2 Insert the new Security Password into the textbox "INSERT NEW PASSWORD 1" and press "SEND" button

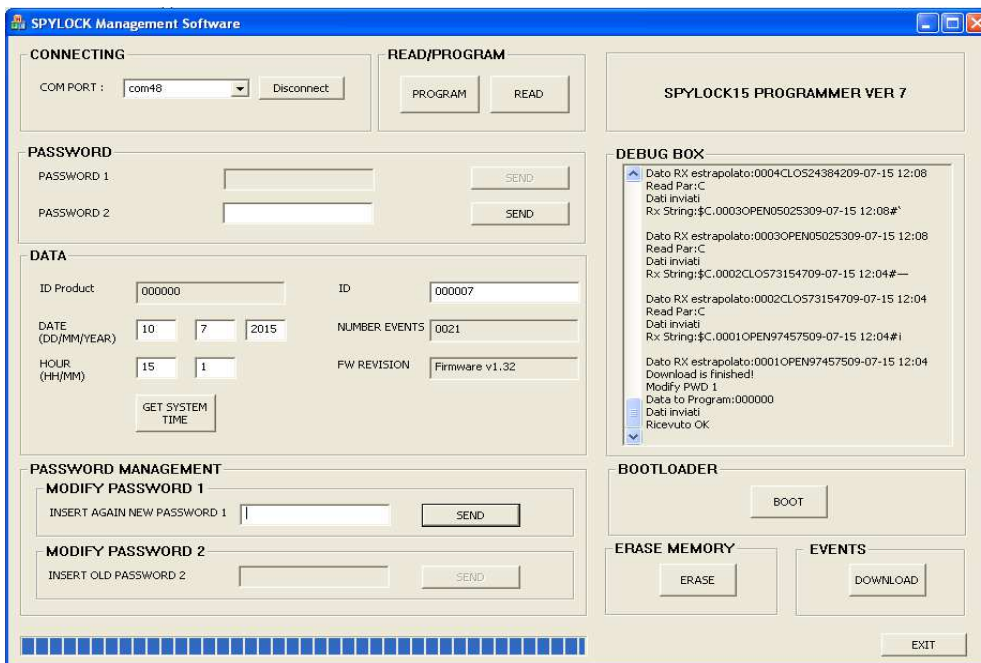


Figure 30 – Inserting the new Security Password 1

### 3 Confirm the new password

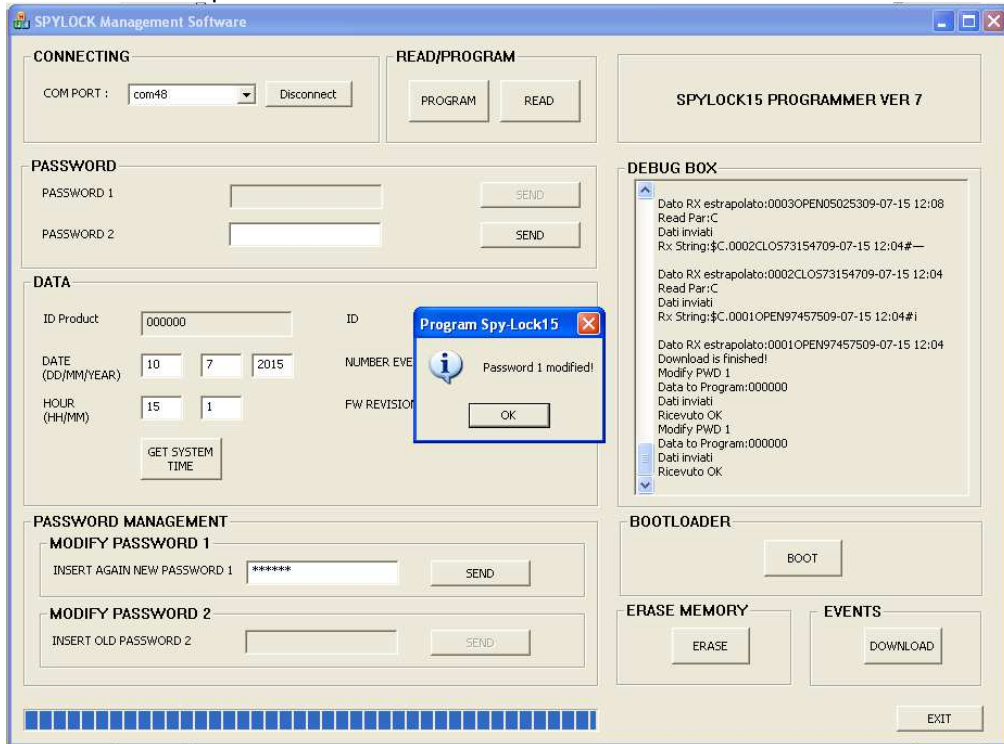


Figure 31 – Security Password 1 modified

### 7.2.6 Security Password 2 and its functionality

Security Password 2 enables accessing advanced operations, as described in section 7.2 and in particular:

- Permanently erasing SPYLOCK memory
- Enabling FW upgrade
- Change Security Password 2

The level of Security Password 2 is accessed only after inserting properly security Password 1.

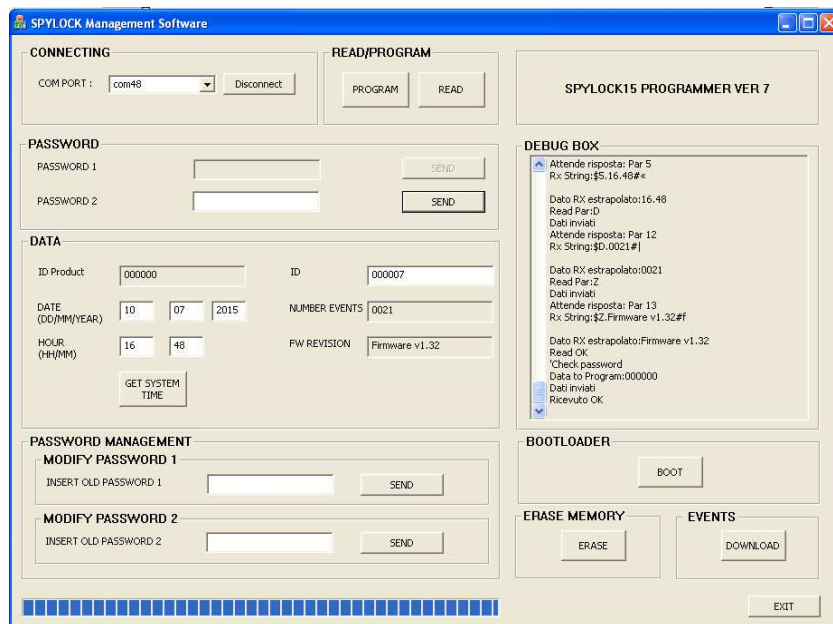


Figure 32 – Inserting Security Password 2

## 7.2.7 Erasing memory

Push the “ERASE MEMORY” to format the device memory.

**ATTENTION: all the stored events will be deleted !!!**

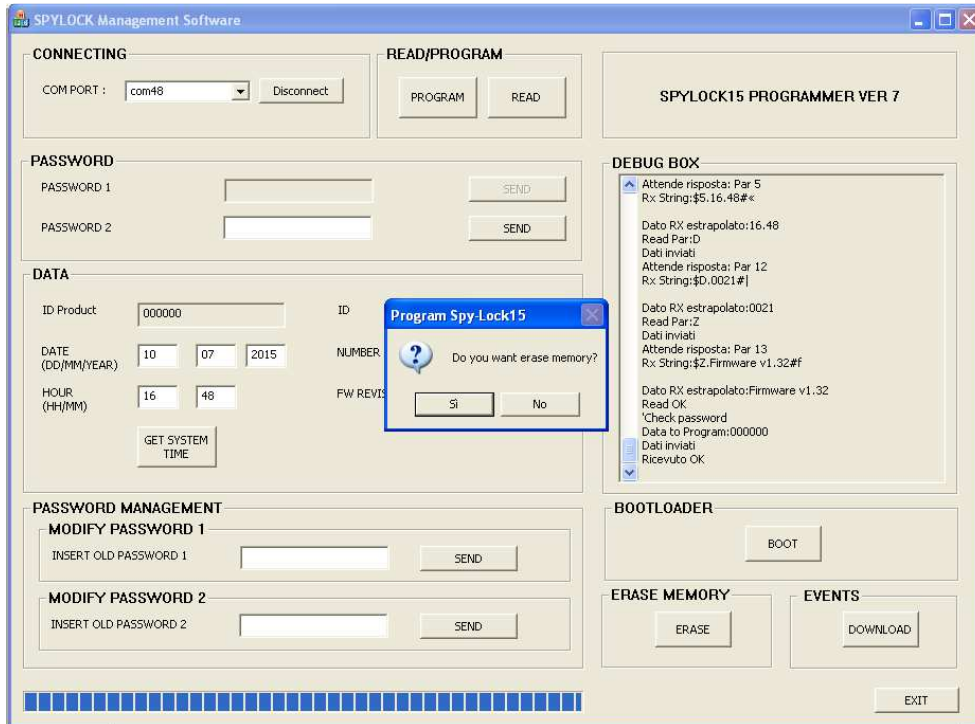


Figure 33 – Erase memory: confirm operation

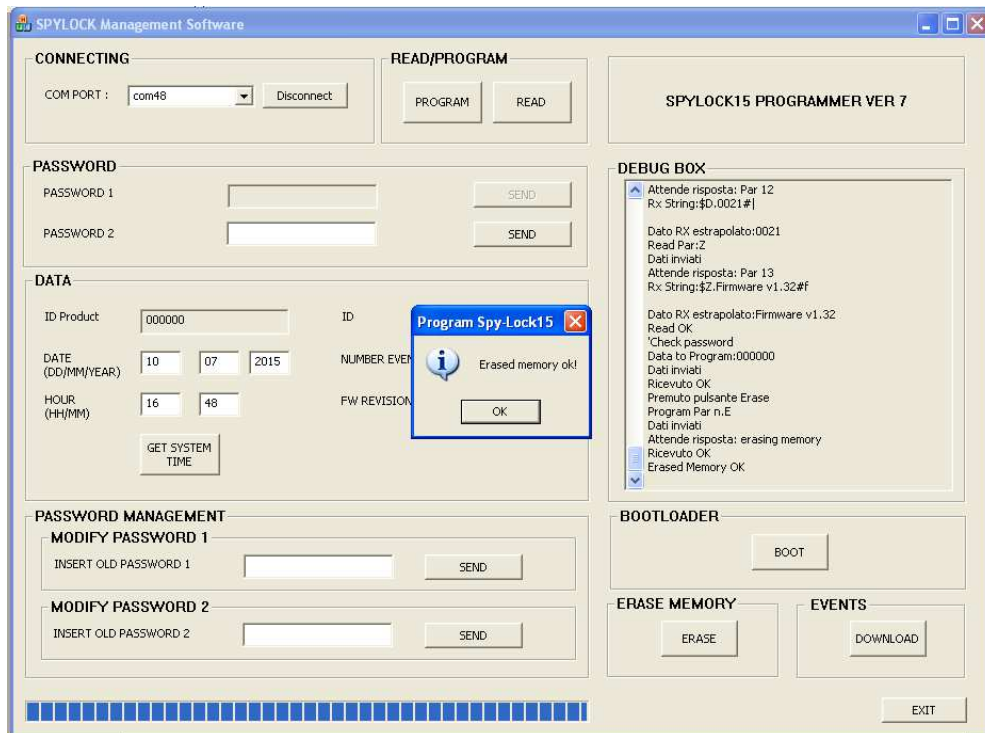
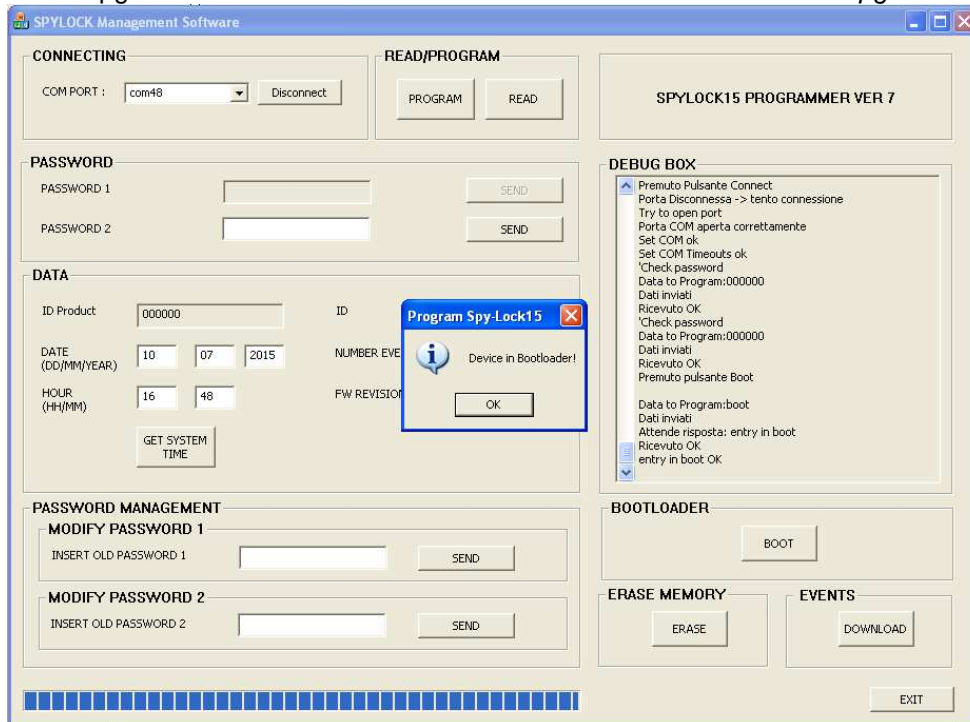


Figure 34 – Erase memory performed

## 7.2.8 How to enable firmware upgrade

Push the “BOOT” button; SPYLOCK display turns into “blank”, the device exits the operational mode and enters Boot Loader mode to upgrade the firmware. Please refer also to section 8 – *Firmware upgrade*.

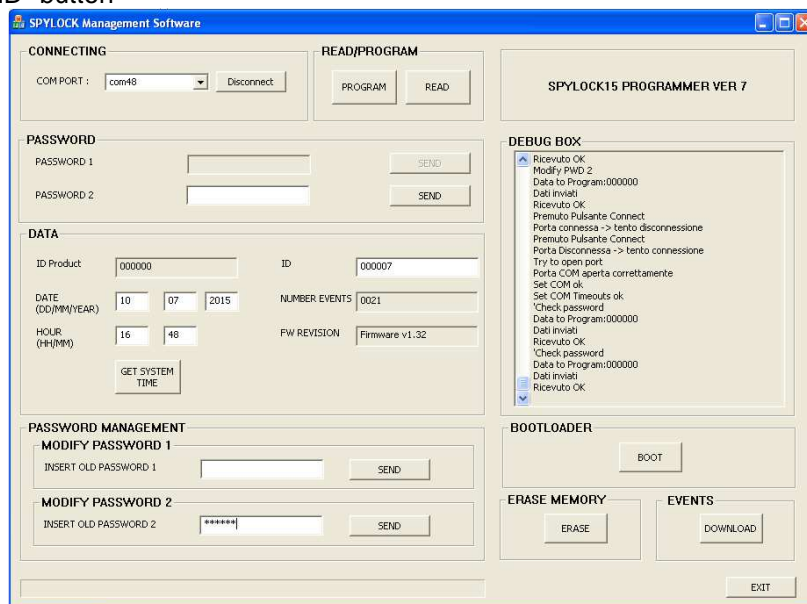


**Figure 35 – Device in Boot Loader mode and ready to upgrade**

### 7.2.9 How to change Password 2

To change Security Password 2 please follow the next steps:

- 1 Insert the current Security Password into the textbox “INSERT OLD PASSWORD 2” and press “SEND” button



**Figure 36 – Inserting the current Security Password 2**

- 2 Insert the new Security Password into the textbox “INSERT NEW PASSWORD 2” and press “SEND” button

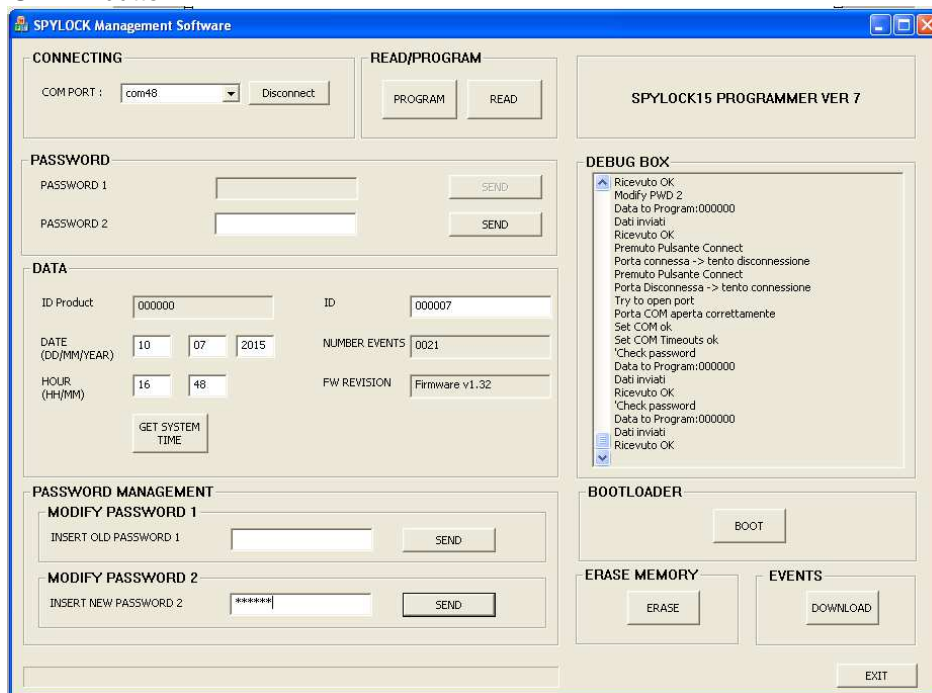


Figure 37 – Inserting the new Security Password 2

- 3 Confirm the new password

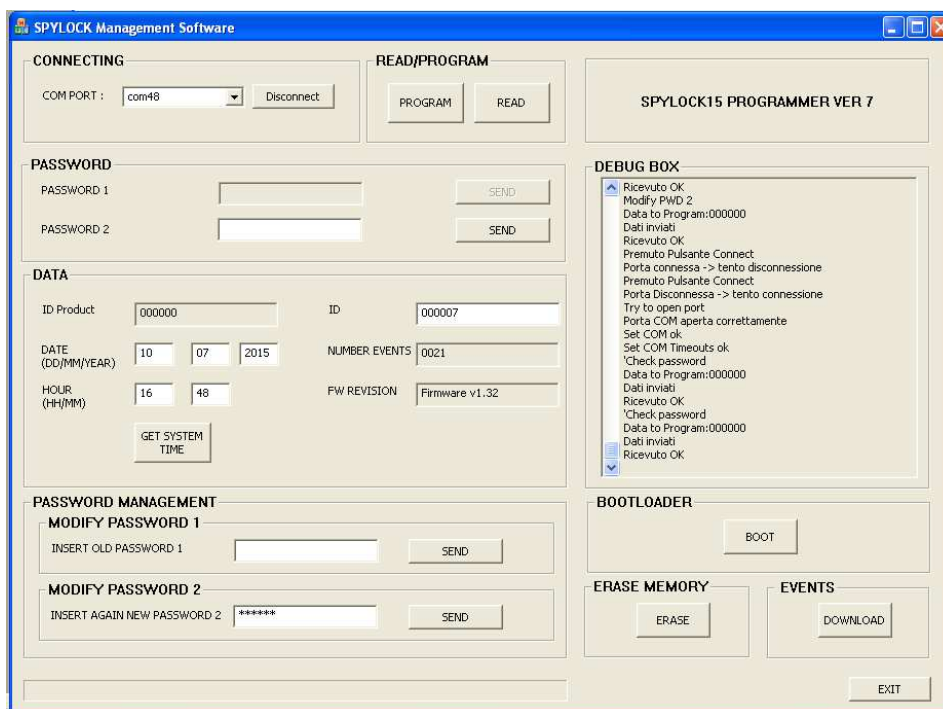


Figure 38 – Confirming the new Security Password 2



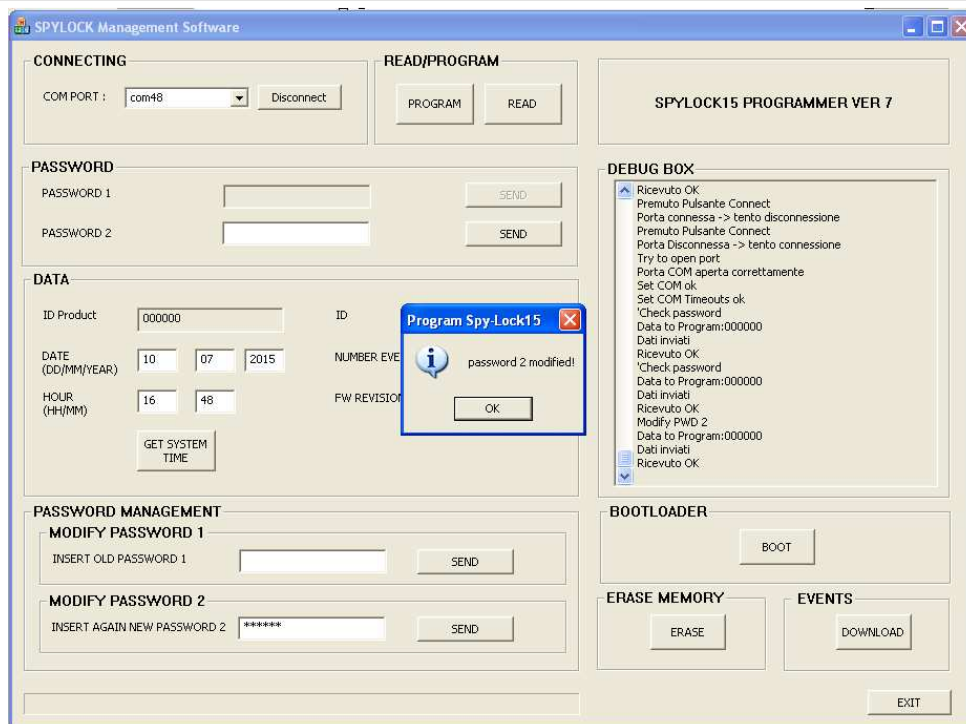


Figure 39 – Security Password 2 modified

## 8. FW Upgrade

**ATTENTION** – in case of firmware upgrade operation it is important to remember that:

- The FW upgrade must be necessarily performed by qualified personnel;
- The FW upgrade will erase any data previously configured on the device, so you will need to save your settings and data before proceeding with the reconfiguration of the device;
- Upon the occurrence of errors during the procedure, you must perform a hard reset of the device (please refer to Section 9– *Hard Reset*).

From “SPYLOCK Management Software” application software user interface push the “BOOT” button.

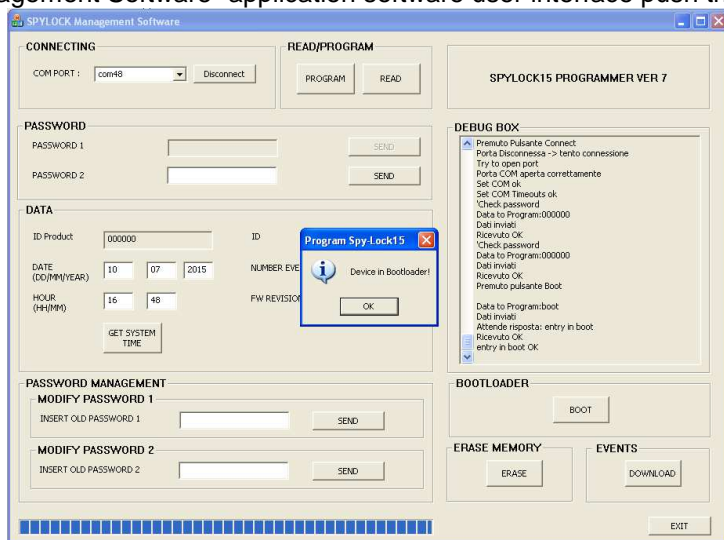


Figure 40 – Device in Boot Loader mode and ready for FW upgrade

When the device completes its entering into the Boot Loader mode the display automatically switches off.

Firmware upgrade steps:

1. Close the application “SPYLOCK Management software”;
2. Start the application “Bootloader\_Host” (Figure 41);
3. Select the item “USB Human Interface device” in the program window (Figure 42); it is not necessary to install any driver to carry out this operation.
4. Select from the menu File → Open the location where the firmware file to be uploaded on the device was saved (Figure 43);
5. Click the “PROGRAM” button and wait to the completion of the uploading process (Figure 46).

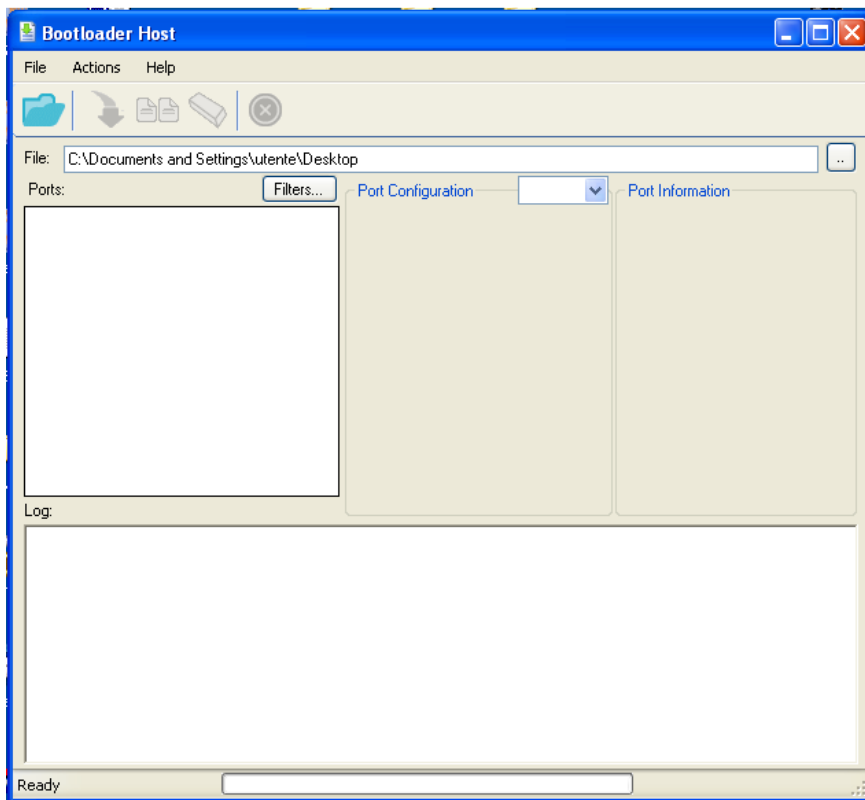
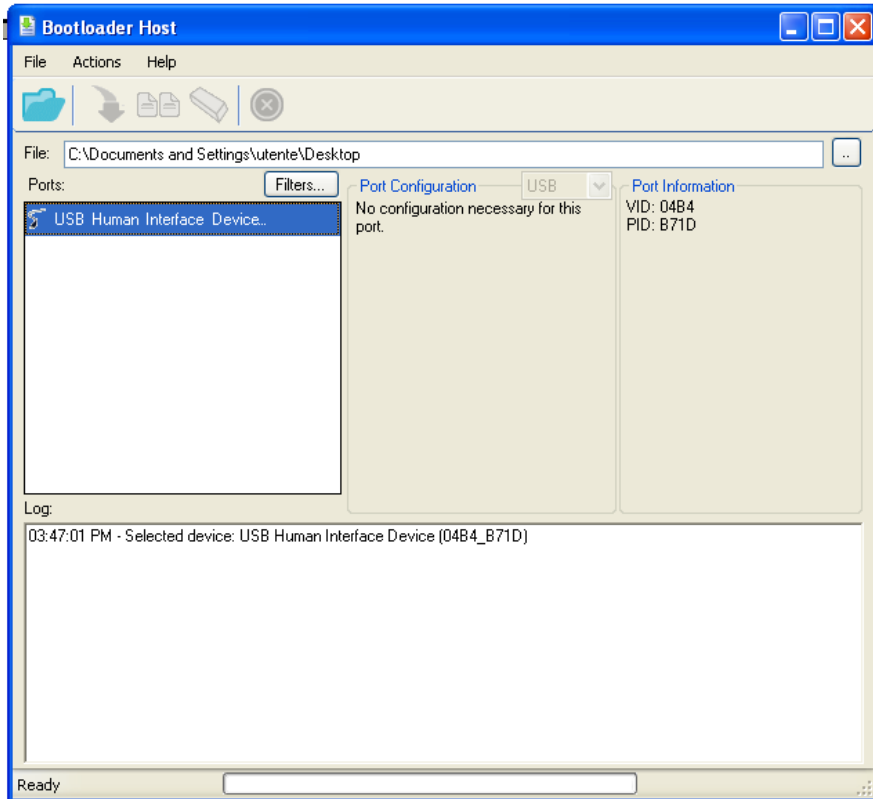
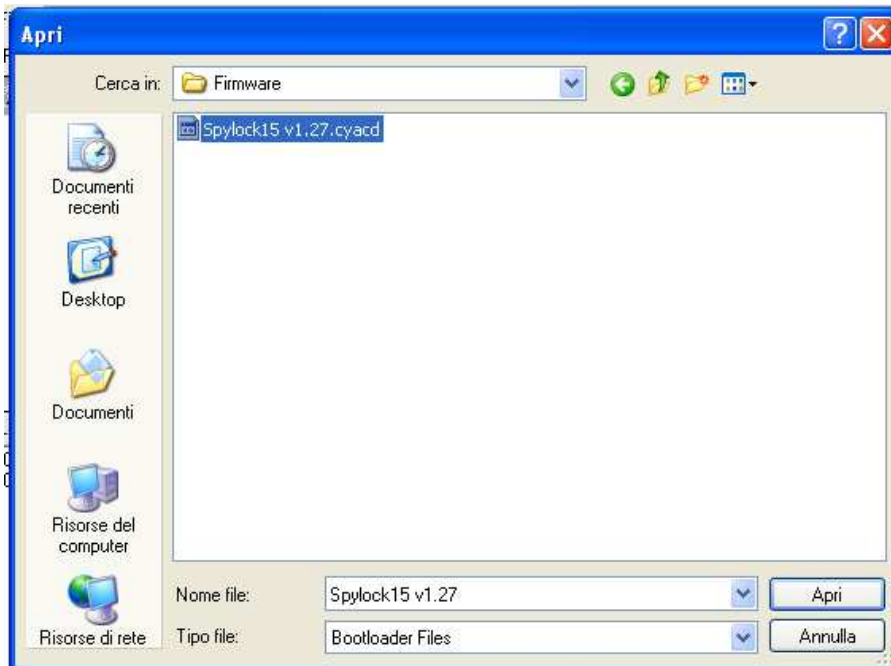


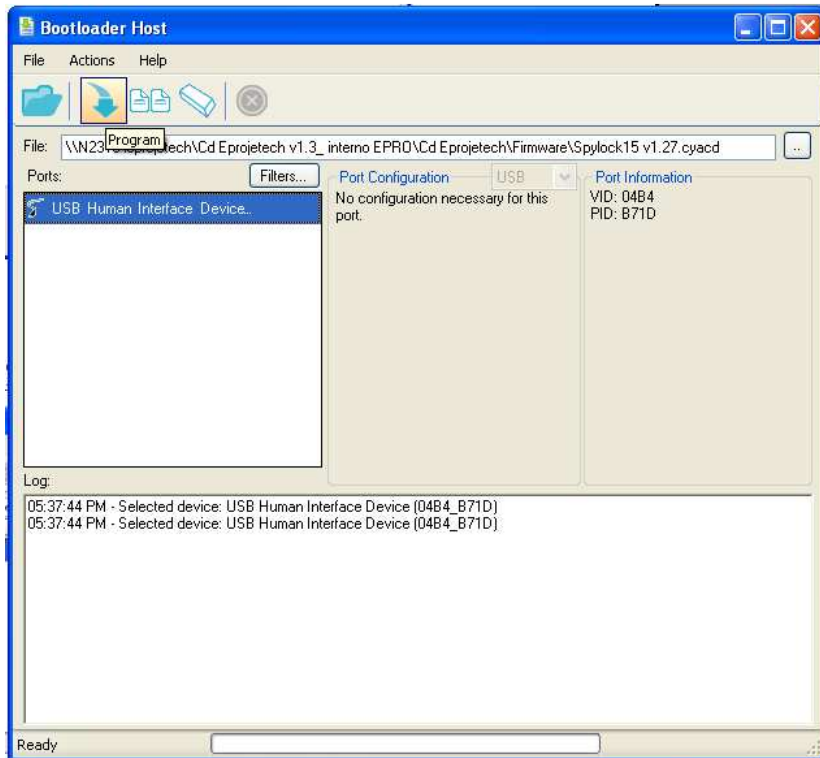
Figure 41 – Bootloader host



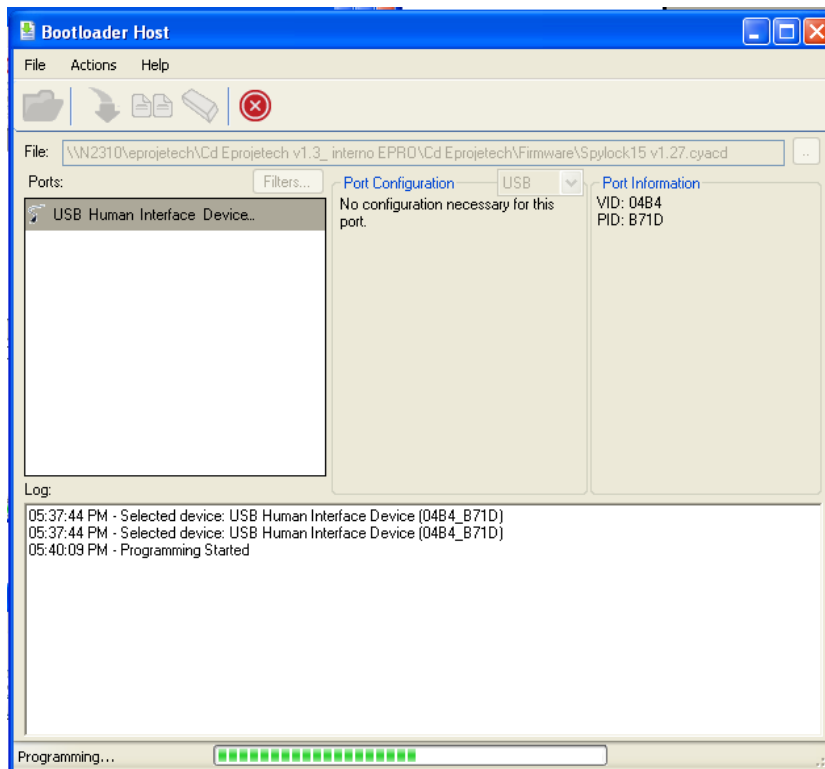
**Figure 42 – USB Human Interface Device class to be selected**



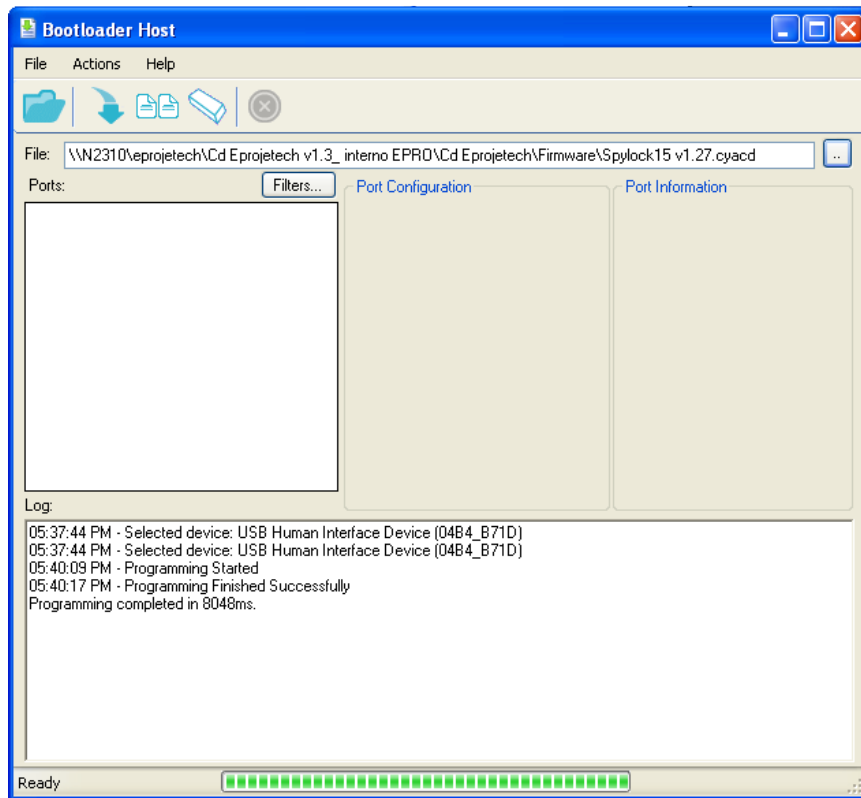
**Figure 43 – Selection of FW upgrade file**



**Figure 44 – FW flashing operation activated**



**Figure 45 – Firmware upgrade started**



**Figure 46 – Firmware upgrade completed**

NOTE: the Upgrade Firmware procedure does not require the installation of any driver: Windows OS automatically detects the SPYLOCK device.  
The display automatically switches on again at the completion of the firmware upgrade process.

## 9. Hard Reset

When a hardware reset is required the following procedure has to be followed:

- Open the SPYLOCK cable;
- Keep the navigation button pressed for 15 sec.;
- At the button release the display will show “**Spylock 15 Firmware X.XX**” to confirm that the reset operation has completed successfully;
- SPYLOCK automatically goes back into its operational mode.

NOTE: Hard Reset of the device does not cause data loss.

## 10. SPYLOCK battery recharge

SPYLOCK is supplied by a USB rechargeable battery.

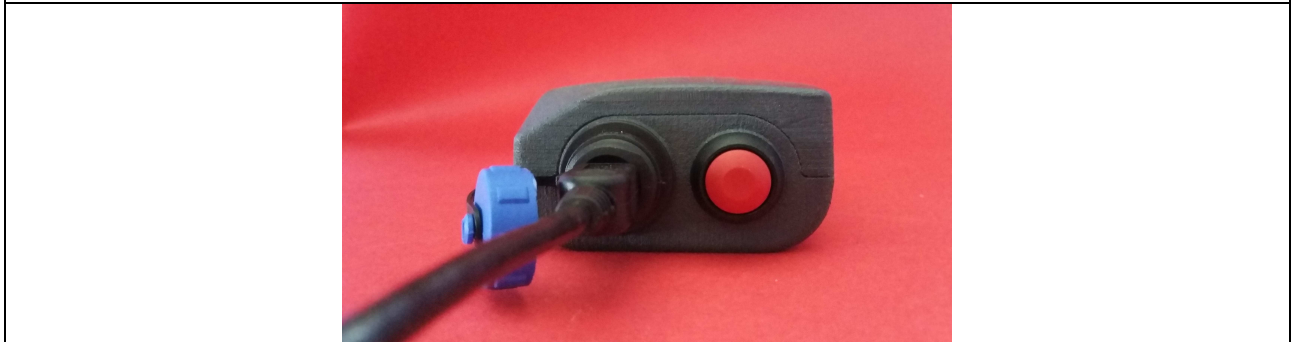
At its very first use a 8-hours battery charge is recommended. To recharge SPYLOCK battery:

- Open the SPYLOCK cable;

- Remove USB port plastic protection;
- Connect the USB cable to the SPYLOCK on one end and to the main at the other end, via the universal power adapter supplied with the device;
- The display shows for 6 sec. “Charging” and then it automatically switches off.



**Figure 47 – USB Connector**



**Figure 48 – USB cable connection**



**Figure 49 – Charging operation evidence**

## 11. Warranty and liability conditions

LEGHORN srl ensures that the SPYLOCK product is free from defects in materials and workmanship and also ensures that the product is fully compliant with the declared specifications.

However, in case of claimed product defects or non-compliances LEGHORN srl guarantees a warranty period of twelve (12) months in accordance with the regulation of the manufacturing country. The period of warranty starts from the date of purchase. During the warranty period it will be up to LEGHORN srl to decide whether to repair or replace the returned product. The above warranty does not cover defects from improper or inadequate maintenance, repairs or calibrations performed by the customer or by a third party not authorized by the manufacturer; hardware, software, interfaces or materials supplied by the customer or by third parties; use or operation outside the product's specifications; damage, negligence in use, accidents, loss or damage during travel.

THE ABOVE WARRANTIES ARE EXCLUSIVE AND EXCLUDE ALL OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED.

This device complies with the safety requirements required by law. Anyhow the equipment and the related documentation should be carefully examined to familiarize yourself with the safety instructions before starting with the operating procedures. To ensure a proper and safe use, the user of this apparatus will have to follow all the information and warnings contained in this document.

During the recharging operation this device must be connected to an electrical system which respects the national legislation force.

The information in this document is subject to updates without notice.

LEGHORN srl is not liable on any improper use of the product that breaches the rules of law, civil, criminal and labour code.

In the event that the device is not functioning or gives evidence of functional anomalies, please contact your local distributor or the manufacturer.