uRTime

Nano documentation

User manual

uRTime
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3 Introduction

The uRTime Nano is a handheld RFID reader made for trail and other outdoor races. It is the perfect solution to scan runners at remote checkpoints, without electrical supply.

The touchscreen and intuitive software allow you to easily read and program RFID chips. Data is saved on a micro SD card and can be directly sent to your computer or your website, using GPRS, XBEE wireless communication, Wi-Fi or satellite transmission. Use the uRLive service receive data online.

This document presents the Nano, its different menus, the setup possibilities, the connectivity, and the update procedure.

4 Getting started

You will also find a quick start-up guide in these videos:

- English: *https://www.youtube.com/watch?v=S7Ih3g2kS24*
- French: *https://www.youtube.com/watch?v=A7Xc8Sf_S40*

4.1 Nano device

4.1.1 ON / OFF switch

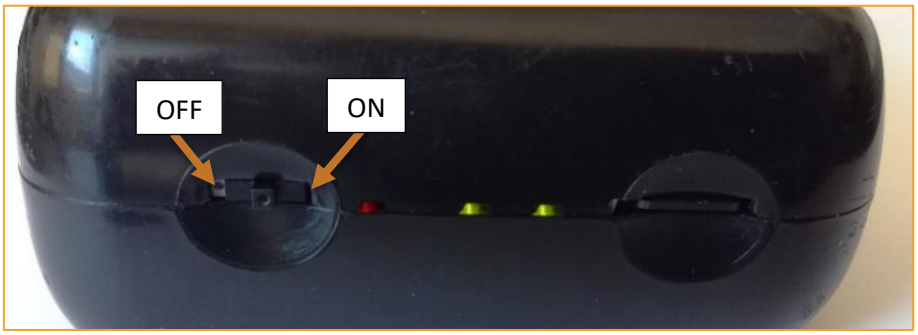


Figure 1 : Side of the Nano

Use the power switch to start the Nano. The Nano vibrates, and the screen turns on.

Note: the Nano doesn't start if there is no SD card in it.

4.1.2 Battery

Turn the Nano over and remove the cover to access to the battery. The battery lifetime is about 3 hours in normal use. To preserve the battery lifetime, please charge the battery only if it is completely empty. The white strip helps you to remove the battery; don't forget to place it under the new battery. The polarity must be carefully respected to avoid irreversible damages.

Figure 2 : Battery replacement

4.1.3 Red button

Figure 3 : Red button used to control the RFID reader

The red button controls the RFID reader with four available modes:

- ***Scan until Time Out:*** when the user presses the button, the reader is enabled for a certain time. After every read, the timer starts again. If no tag is read for about 10s, the reader is disabled. This mode is recommended for most races.

- ***Hold and scan:*** the user must hold the button down to enable the reader. This mode is optimized for test or office use.

- ***Press to enable / Press to disable:*** press the button to enable the reader and press it again to disable it.

- ***Reader always on:*** the button is disabled. The reader is always on.

4.1.4 Screen

When turned on, the screen of the Nano displays some important information.

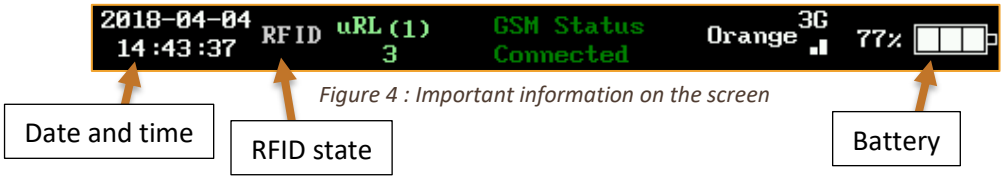


Figure 4 : Important information on the screen

RFID is written in red letters when the reader is on.

4.2 Reading chips

When switched on, the Nano displays the below window (reader mode). Press the button and place the Nano next to a chip to scan it. The last three reads (or manual inputs) are displayed.

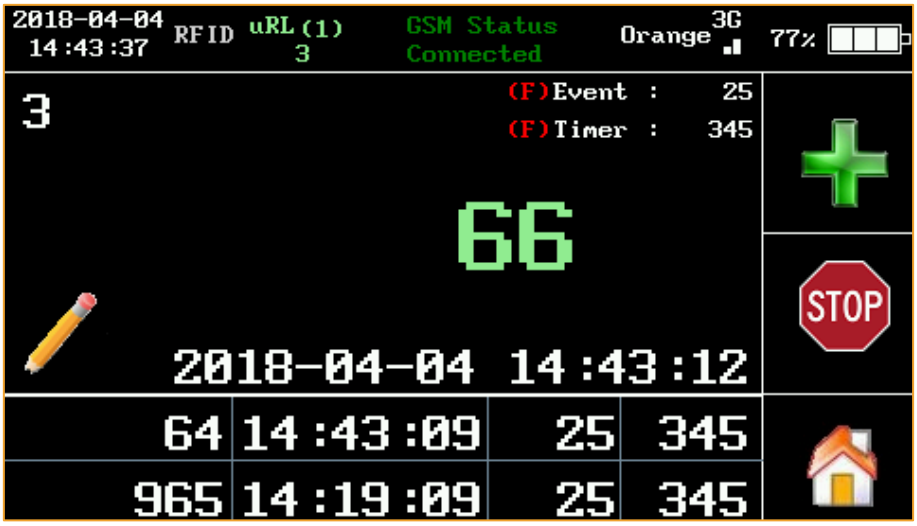


Figure 5 : Reader mode

To signal that a runner has dropped out of a race, scan his chip and then press the Stop icon. A confirmation window appears. A dropped-out runner bib is written in RED. “DNF” (Did Not Finish) is also displayed, as shown in *Figure 6*.

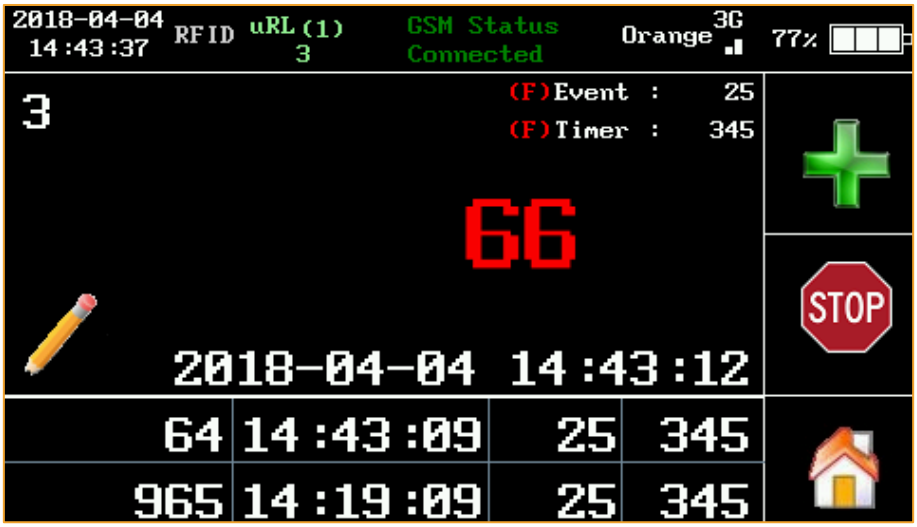


Figure 6 : Runner pulled out in reader mode

If you’re unable to scan an RFID chip, you can enter the chip number manually by pressing the green “plus" or the pencil icon.

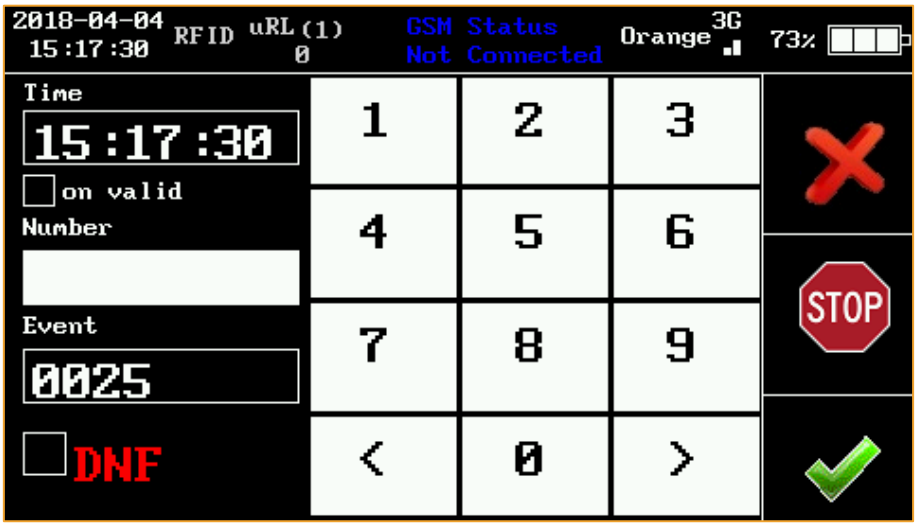


Figure 7 : Manual input in reader mode

Enter the chip number with the numeric keypad. Press the green tick to validate, or the stop icon to DNF that runner.

4.3 Programming chips

The *Encoder* mode allows you to program chips. You can find it in the menu:

Main menu > Apps menu > Encoder

First, to program a chip, set the Event number, the Timer number, the chip number and number of chips per number. You can enter the chip number by typing (a numeric keypad will appear if you press the number) or using the arrows.

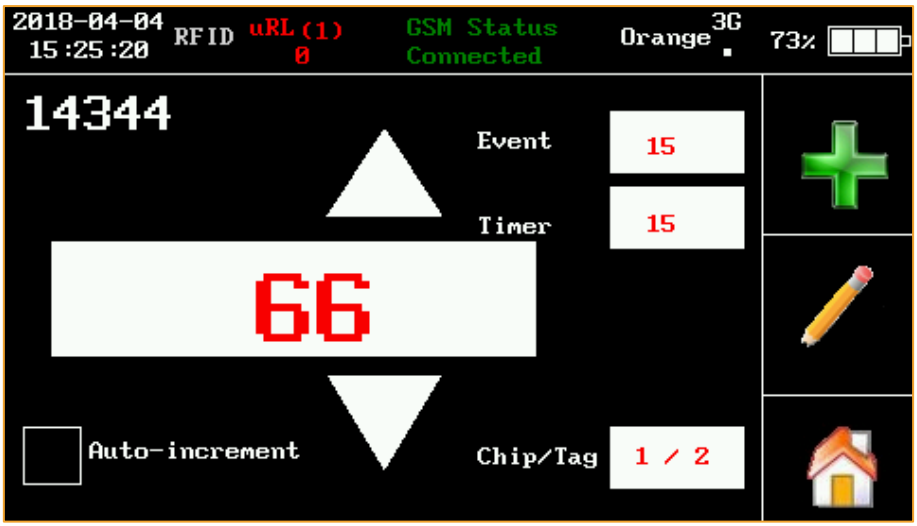


Figure 8 : Writer mode

To program a chip, place the Nano close to a chip, and press the pencil icon. Wait until the chip number background turns green (*Figure 9*).

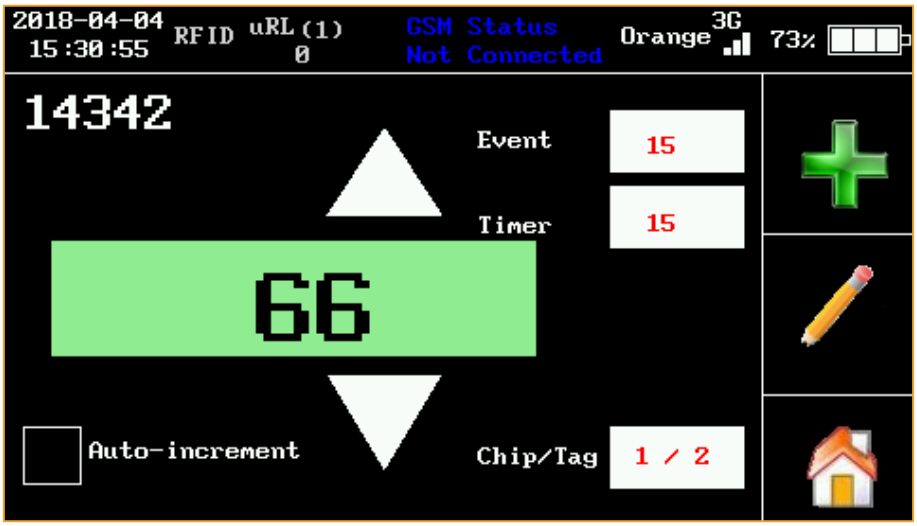


Figure 9 : Encoder mode after encoding successfully

If the Nano doesn't detect any chip to program, an error message appears ("No tag in field. Approach tag and try again"). Press "ok" to close the error message box. The desired number will be written on an orange background, as shown on *Figure 10*.

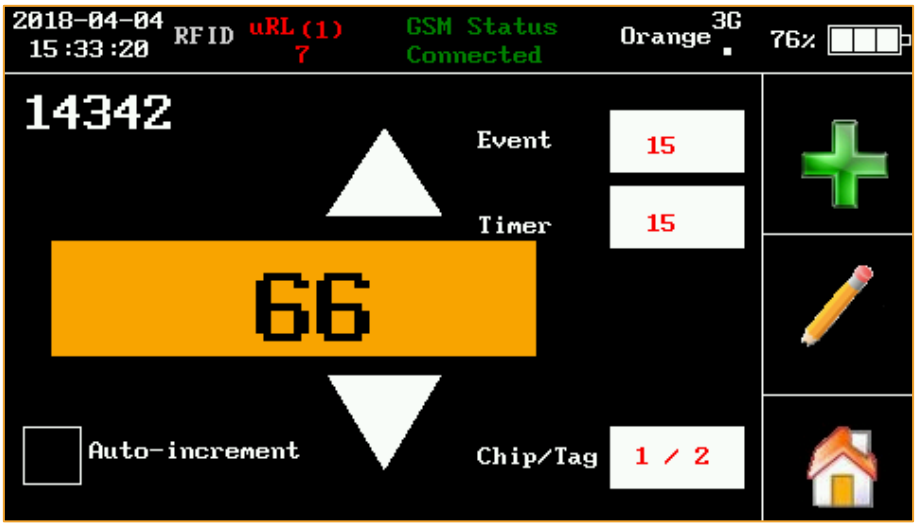


Figure 10 : Encoder mode when no tag in field

5 Gear

5.1 ON / OFF switch

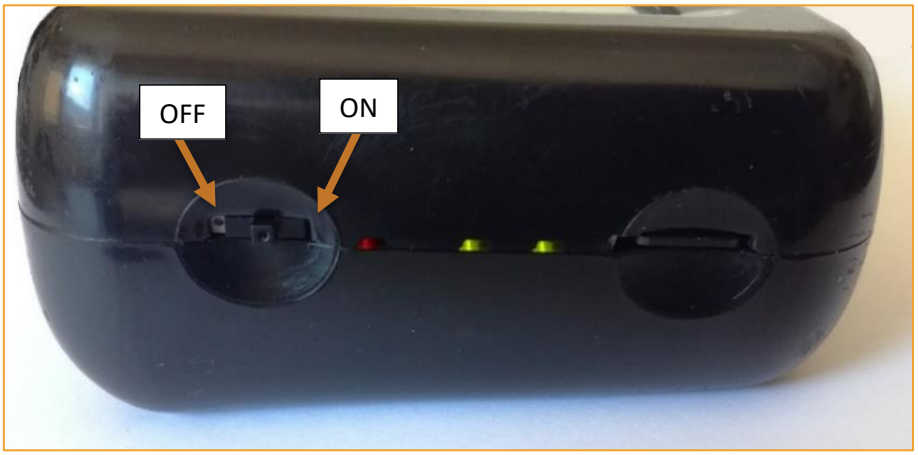


Figure 11 : ON/OFF switch in the ON position

Use the power switch to start the Nano. The Nano vibrates (if *vibration* is enabled) and the screen will turn on.

Note: the Nano does not start if there is no SD card inside it.

When the power switch is in the OFF position, the battery is completely disconnected and won't discharge. The charger (see *5.4 USB Connector*) also works when Nano is off.

5.2 SD card

Nano data is saved on the micro SD card, especially information about chips read (see *8.1 Output file* to learn more). Please note that the Nano doesn't start if there is no SD card inserted.

A micro SD card is provided by RF Conception with each Nano. You are free to use a SD card of your choice, but it must be a micro SD card. RF Conception is not liable in case of damage when another SD card is used.

Figure 12 : MicroSD Card Slot

A micro SD card must be inserted with its connectors facing up.

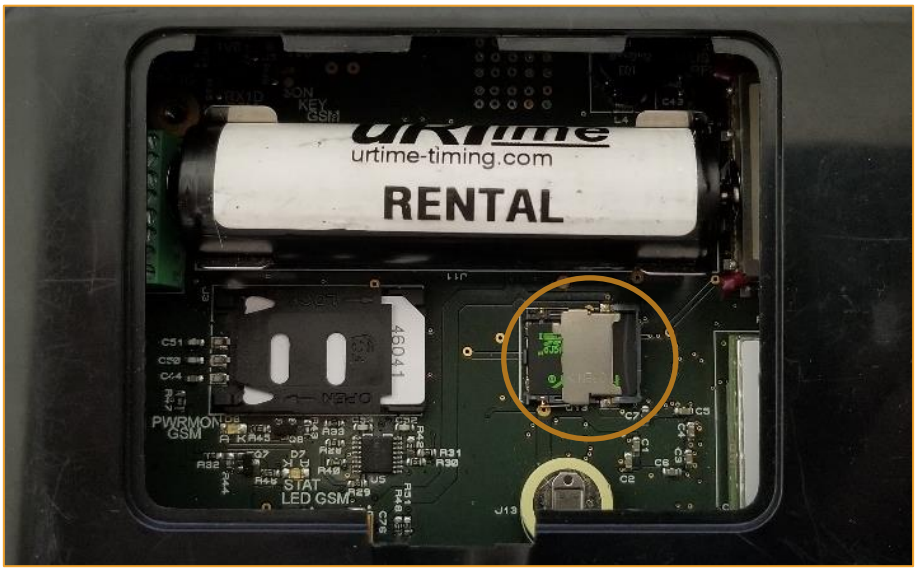


Figure 13 : MicroSD internal card Slot

5.3 Bottom cover

The back cover of the Nano can be easily removed to access to the battery and the SIM card (and SD card in latest version Nanos).

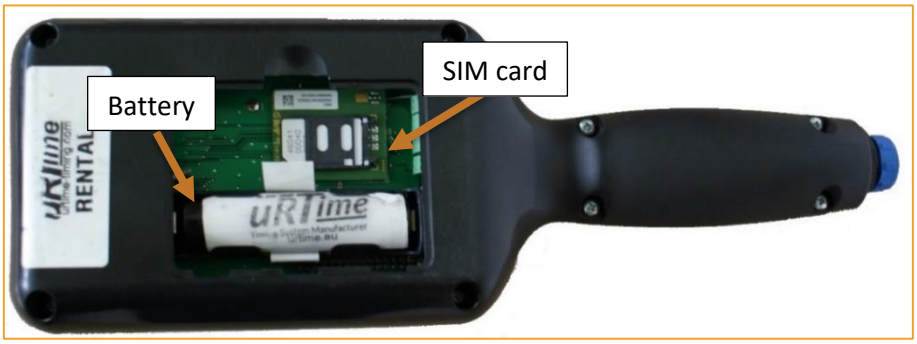


Figure 14 : A Nano without its back cover

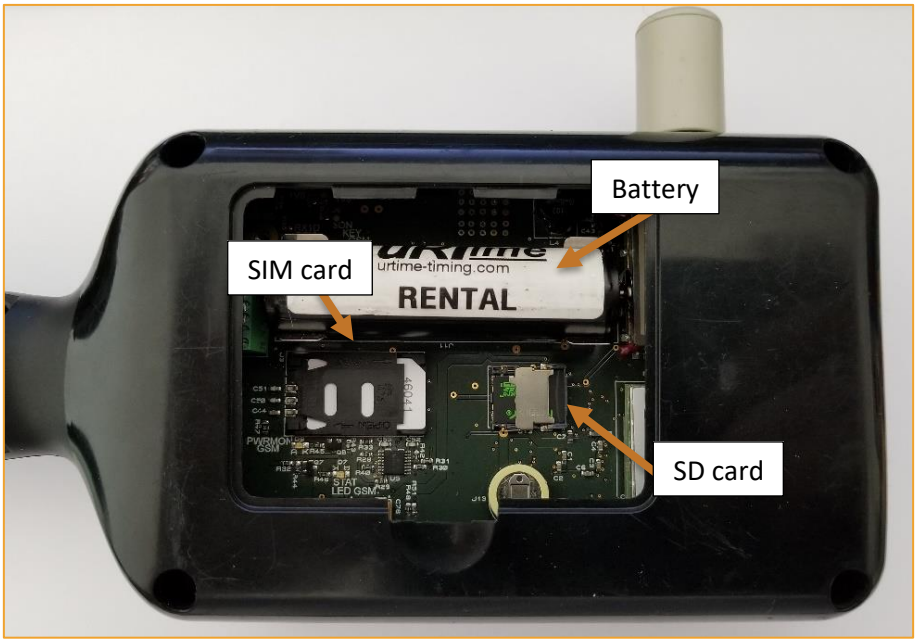


Figure 15 : A Nano without its back cover

5.3.1 Battery

A single lithium ion battery used in Nanos. The battery lifetime is about 3 hours in normal use. The lifetime is strongly affected by the use of RFID and modems. The Nano has an internal battery charger powered by the USB cable.

The battery can also be easily replaced by opening the battery cover. The white strip helps remove the battery; don't forget to place it underneath the new battery. The polarity must be carefully respected to avoid irreversible damages. To preserve the battery lifetime, please charge the battery only if it is completely empty.

Figure 16 : Battery replacement

Only use batteries provided by RF Conception. RF Conception is not responsible of the damages caused by another battery. Please note that the battery contains chemical products and MUST NOT BE thrown into the common bin.

5.3.2 SIM card

The Nano has an internal GPRS Modem used to send data via 2G or 3G. To use this GPRS modem, please insert a SIM card. RF Conception can provide the SIM card if needed. To know how to configure the modem, see *6.4.2 Modem menu* and *7.1.5 Modem configuration*.

5.4 USB Connector

Figure 17 : USB connection

The USB connection is used to charge the Nano or power it with an external source. The USB connection can also be used to communicate with a PC. The USB connector is IP65 certified when used with the cable provided.

5.5 LED (charge, read,status)

The Nano has three status LED, giving information about the charge status, the file access status and the RFID status.

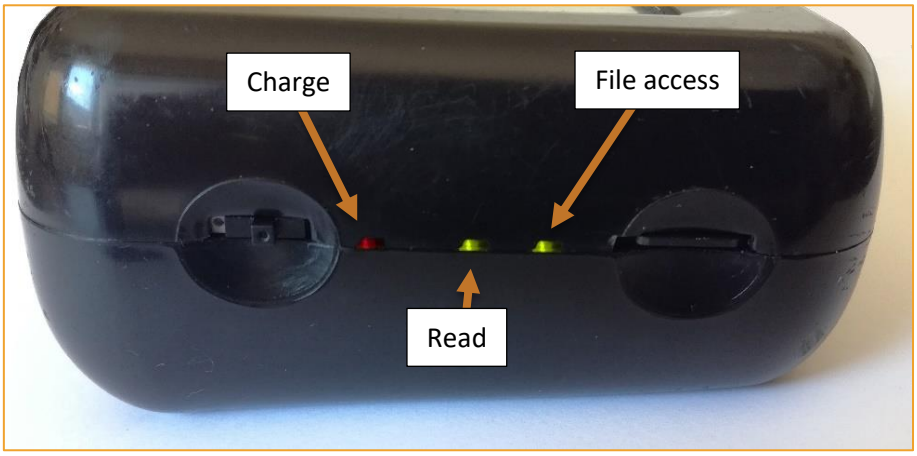


Figure 18 : Status LED

- Charge LED
  - Red: charging
  - Off: fully charged or not powered through USB plug
- File access LED
  - Green blink on each file access (reading and writing on the SD card)
- RFID LED
  - Green when reading RFID.

5.6 Red button

Figure 19 : red button used to control the RFID reader

The red button controls the RFID reader with four available modes:

- ***Scan until Time Out:*** when the user presses the button, the reader is enabled for a certain time. After every read, the timer starts again. If no tag is read for about 10s, the reader is disabled. This mode is recommended for most races.

- ***Hold and scan:*** the user must hold the button down to enable the reader. This mode is optimized for test or office use.

- ***Press to enable / Press to disable:*** the user first presses the button to enable the reader, and then press it again to disable.

- ***Reader always on:*** the button is disabled. The reader is always on.

You can change the mode in the settings menu (*see 7.1.4 Power management*).

6 Screen

6.1 Top banner

6.1.1 General information

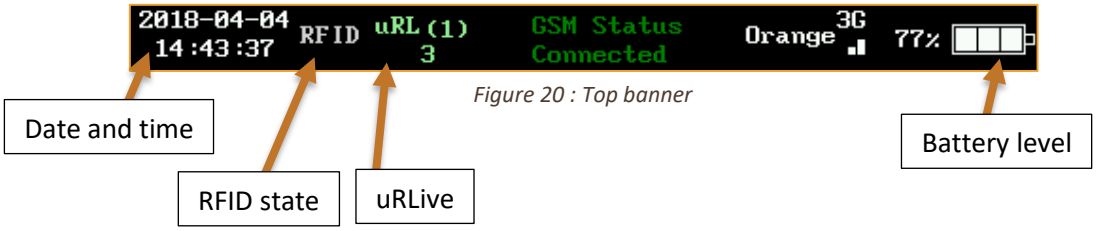


Figure 20 : Top banner

The date and time, the RFID status, the uRLive status and the battery level are always displayed.

- Date & Time
  - This is the Nano's current date and time.
  - The clock is also running when the Nano is off.
  - The date and the time are automatically synchronized using the modem. However, please note that the year is not synchronized.
  - See *6.3.3 Clock* for date and time setting.
- RFID Status
  - White when scan is off
  - Red when scan is enabled
- uRLive Status
  - The number in brackets is the checkpoint ID
  - The number below is the number of lines sent to uRLive
  - White when the uRLive is disabled
  - Blue when the Nano is connecting to uRLive
  - Red when the Nano is sending data to uRLive
  - Green when data was successfully sent
  - Orange when data sending didn't work
  - See *6.4.1 uRLive menu* and *7.1.8 uRLive service* for configuration details
- Battery Level
  - To preserve the battery lifetime, please charge the battery only when less than 20% battery life are left.
  - See *4.1.2 Battery* to know how to replace the battery.

Data is sent to uRLive through the GSM modem, Wi-Fi or satellite transmission. You can choose how the data is sent in the uRLive settings (see *6.4.1 uRLive menu*). The selected route is displayed (GSM, Wi-Fi, XBEE or Satellite).

6.1.2 GSM configuration

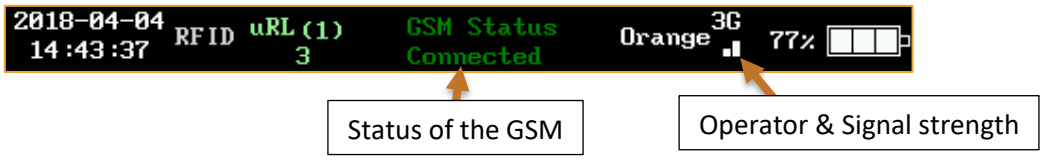


Figure 21 : Top banner for a GSM configuration

GSM status:

- OFF (GRAY): GSM not active. To enable it, enable uRLive.
- Init (PINK): The GSM module is being initialized.
- Not Searching (BLUE): The GSM module is not searching an operator.
- Searching (BLUE): The GSM module is searching an operator.
- Registration (RED): The GSM module can't register on the network. (forbidden network)
- Not Connected (BLUE): The GSM module is not connected on the network. If the Nano stays on this status for a long time, check the APN.
- Connected (GREEN): The GSM module is connected and can send the data on the server.
- Init failed (RED): The initialization has failed.
- SIM card (RED): The SIM card is not detected.

6.1.3 Wi-Fi configuration

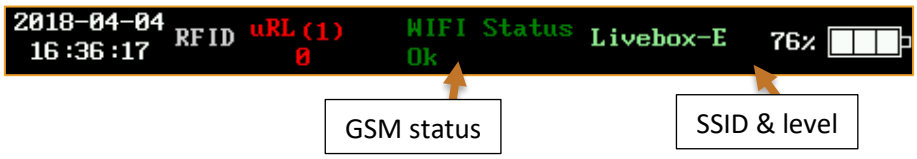


Figure 22 : Top banner for a Wi-Fi configuration

Wi-Fi status:

- OFF (GRAY): Wi-Fi not active. To enable it, enable uRLive.
- Init (PINK): Wi-Fi module is being initialized.
- Ok (GREEN): Wi-Fi module is ready.

6.1.4 Xbee configuration

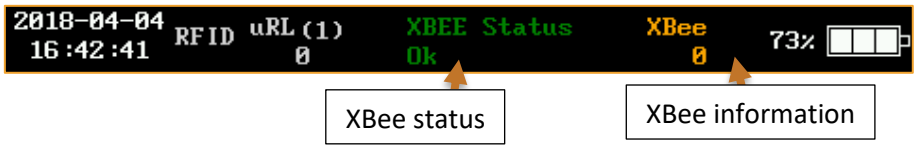


Figure 23 : Top banner for an Xbee configuration

XBee status:

- OFF (GRAY): XBee not active. To enable it, enable uRLive.
- Init (PINK): XBee module is being initialized.
- Ok (GREEN): XBee module is ready.

XBee information:

- The number indicates the number of lines sent.
- Red when the Nano is sending data with XBee.
- Orange when data sending did not work.

6.1.5 Satellite configuration

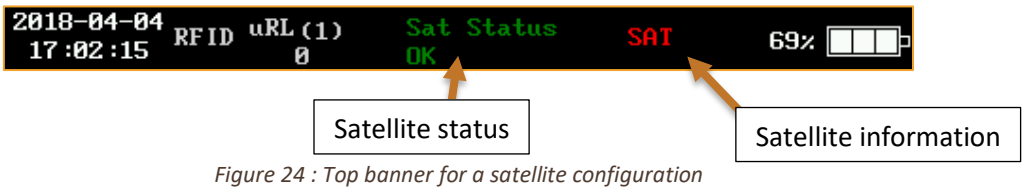


Figure 24 : Top banner for a satellite configuration

Satellite status:

- OFF (GRAY): Satellite not active. To enable it, you need to enable uRLive.
- Init (PINK): The satellite module is being initialized.
- Antenna (RED): The satellite module has an antenna problem.
- Module (RED): The satellite module is not connected.
- Ok (GREEN): The satellite module is ready.

Satellite information:

- Red when the Nano is not connected to a satellite.
- Green when the Nano is connected to a satellite.

6.2 Menu

Figure 25 : Home menu

Press “Reader” to read chips (see *6.2.1 Reader*)

Press “Messages” to display the text messages received by the Nano (see *6.2.2 Messages*)

Press “Explorer” to read the output files containing the reads (see 6.2.3Explorer)

Press “Settings” to access the settings menu (see *6.3 Settings menu*)

Press “Apps” to access the apps menu where you can program chips and set connectivity options (see *6.4 Apps menu*).

Go back to the home menu by pressing the home icon.

6.2.1 Reader

Place the Nano next to a chip to scan it. Depending on the scan mode selected (see *6.3.2 Power management*), you may have to press the red button first to activate RFID reading. The last three reads (or manual insertions) are shown.

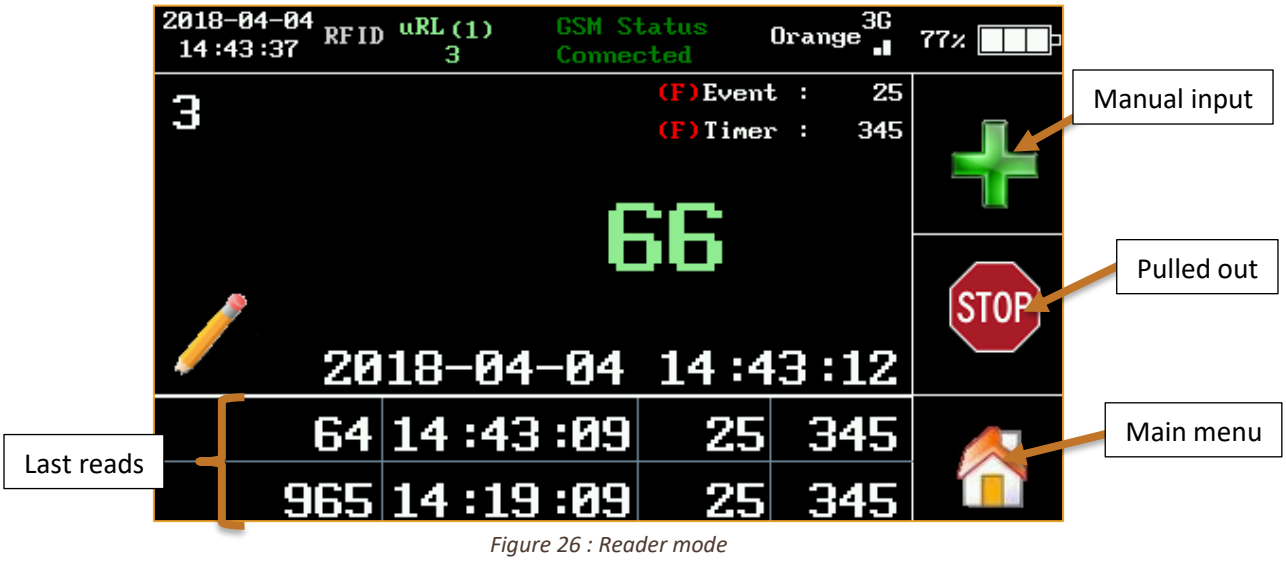


Figure 26 : Reader mode

To signal a runner dropping out, scan his chip and press the *Stop* icon. A confirmation window will appear. The runner’s bib number appears in RED. The acronym DNF (Did Not Finish) is also displayed, as shown in *Figure 27*.

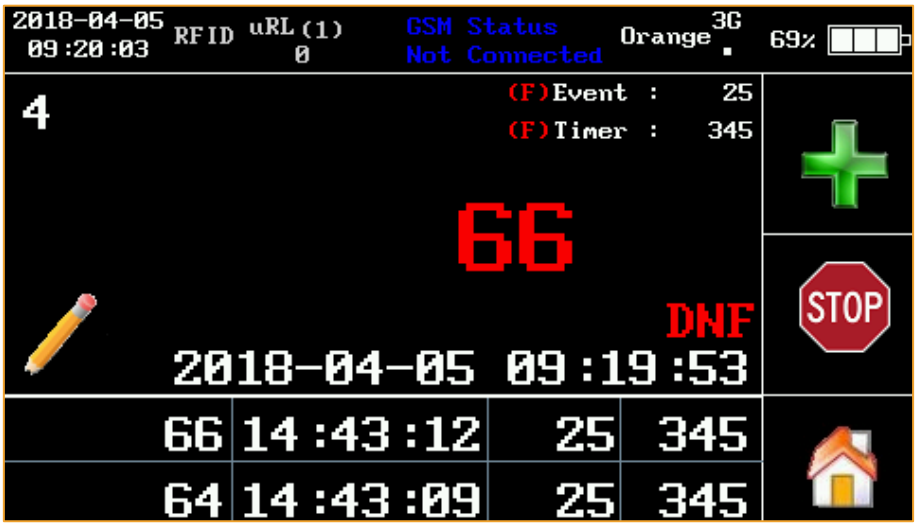


Figure 27 : Runner dropping out in reader mode

If you're unable to scan an RFID chip, you can enter the chip number manually by pressing the green "plus" or the pencil icon.

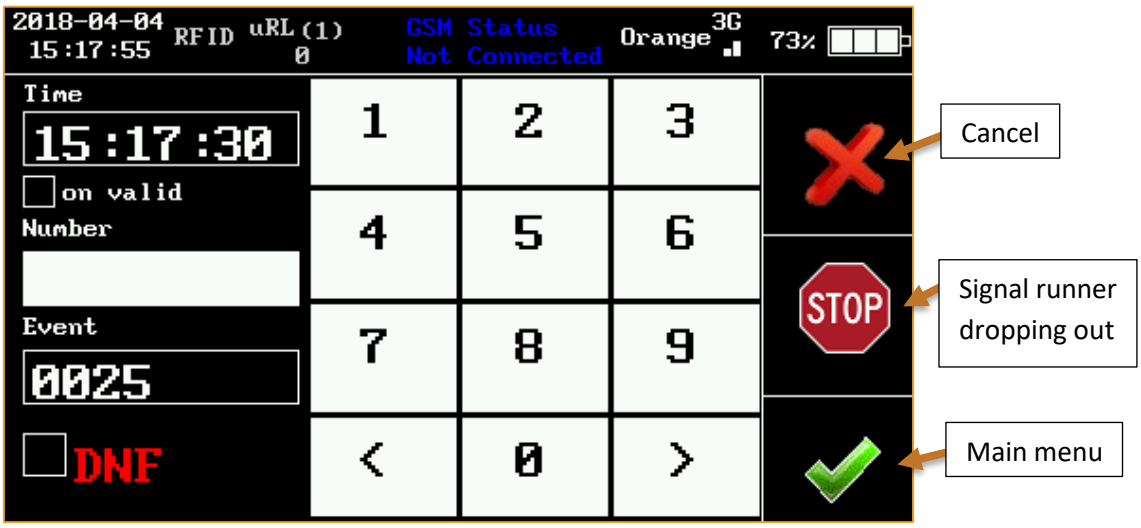


Figure 28 : Manual input in reader mode

Enter the chip number with the numeric keypad. Check "DNF" to signal a runner dropping out. If the box "on valid" is ticked, the manual insertion will be registered with the current time of the Nano. For instance, on *Figure 28* above, the time of the insertion is 15:17:55. If the box had not been ticked, the time saved would be 15:17:30.

6.2.2 Messages

Messages can be sent to the Nano by the race organiser. This can be useful when staff using the Nano must be contacted quickly.

When the Nano receives a new message, an "I" icon appears in the top left corner of the screen. Touch it to read the message. The icon disappears once you've read the message.

You can read those messages again using the menu. Press the bin icon to clear the message history.

6.2.3 Explorer

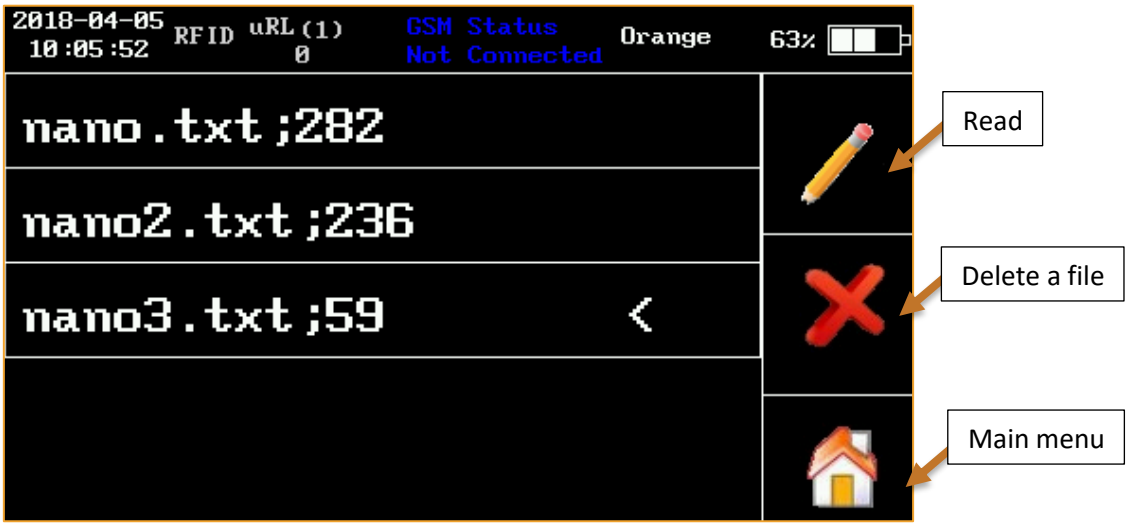


Figure 29 : List of output files in Explorer

The output files are listed, and the current active file is specified with the symbol "<" (on *Figure 29* above, the current file is "nano3.txt"). For each file, its name and its size (in bytes) are shown.

To read a file, select it and press the pencil icon. To delete a file, press the red cross.

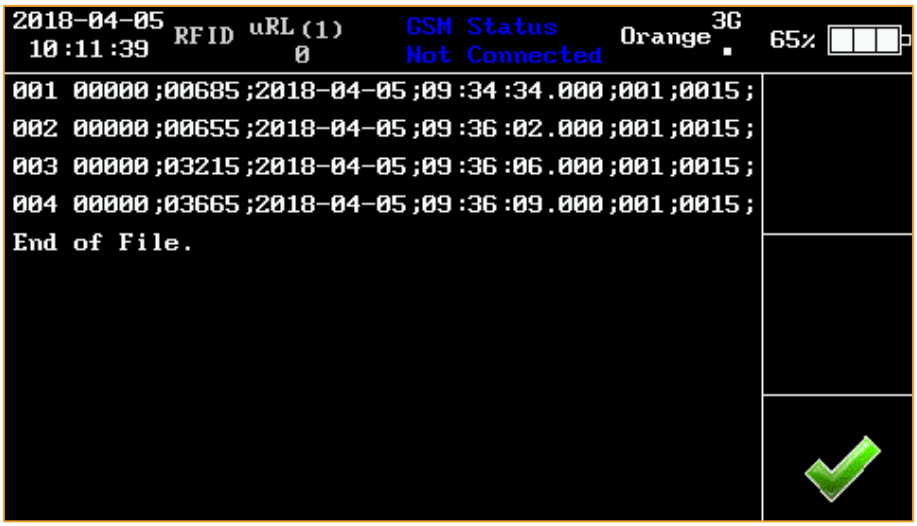


Figure 30 : An output file

6.3 Settings menu

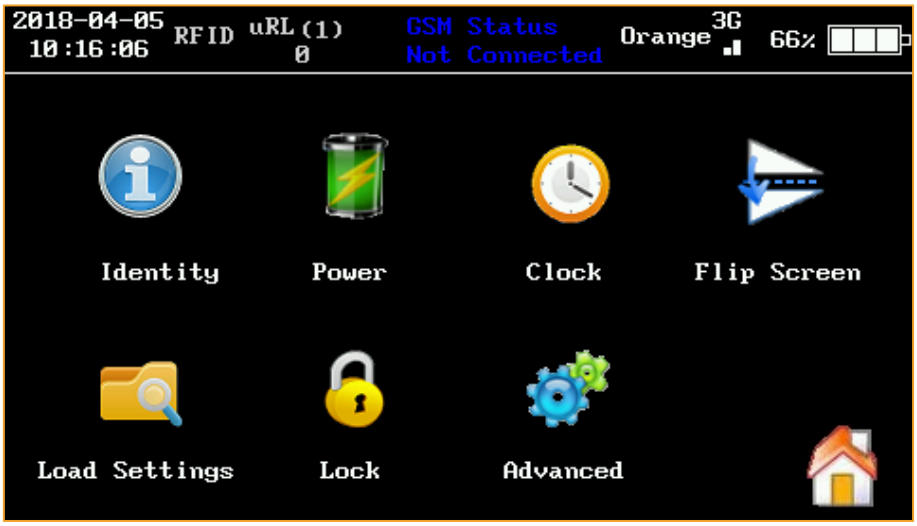


Figure 31 : Settings menu

Note that after changing the settings, you may have to turn the Nano off and on again to ensure that the changes are effective.

6.3.1 Nano identity

You can check and change the main parameters of the Nano (Nano ID, Timer code, Event code, etc.) as shown in *Figure 32*.

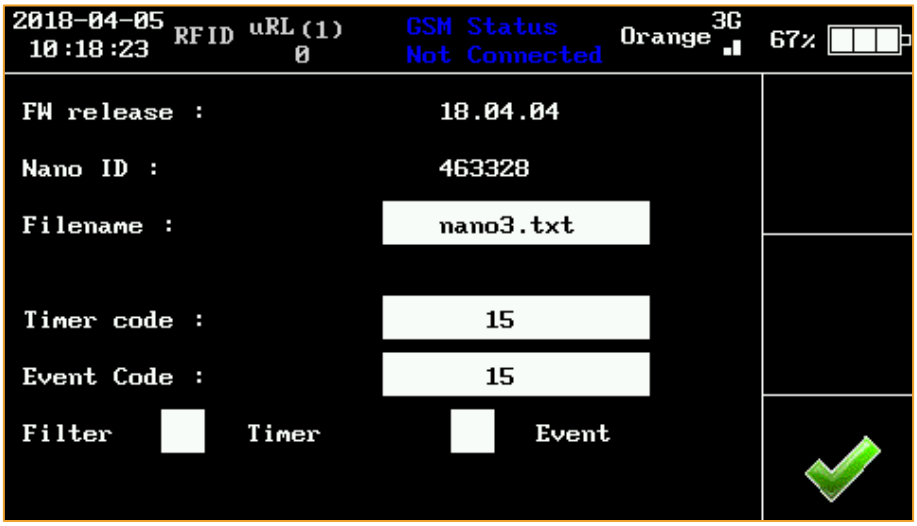


Figure 32 : Nano identity

- Nano ID is specific to the Nano and cannot be changed.
- Filename is the name of the output file where the readings are saved.
- The Timer code is a number specific to the company using the Nano. If the filter is enabled, the Nano will only scan chips with the specified timer number.
- The Event code is a number specific to the race. If the filter is enabled, the Nano will only scan the chips with the specified event number.

6.3.2 Power management

Figure 33 : Power menu

Press “Vibrate” to enable or disable the vibration of the Nano. If enabled, the Nano will vibrate every time you press the touchscreen (thus confirming it is recording your finger actions).

Press “Screensaver” to set the display standby delay (Once the screen is in standby mode, press it to reactive it). Use the arrows to set the time and then validate with “OK”.

Press “Button” icon to choose the scan mode you want (cf. *Figure 34* below).

- Scan until Time Out
- Hold and scan
- Press to enable / Press to disable
- Reader always on

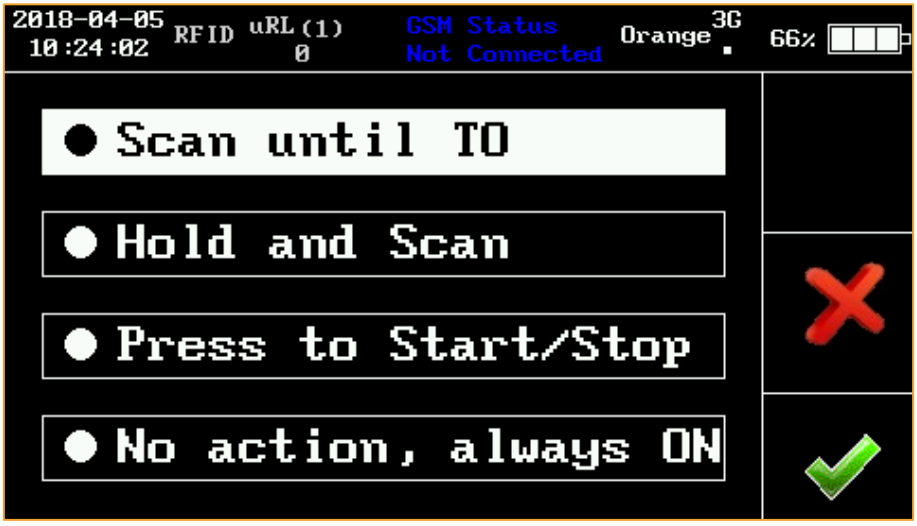


Figure 34 : Scan mode selection

6.3.3 Clock

Use the arrows to set the time.

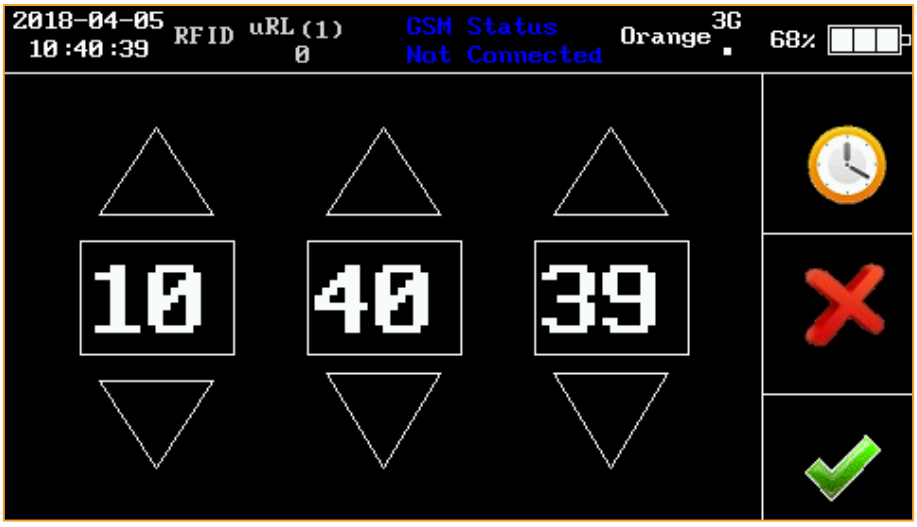


Figure 35 : Time setting

Set the date with the arrows.

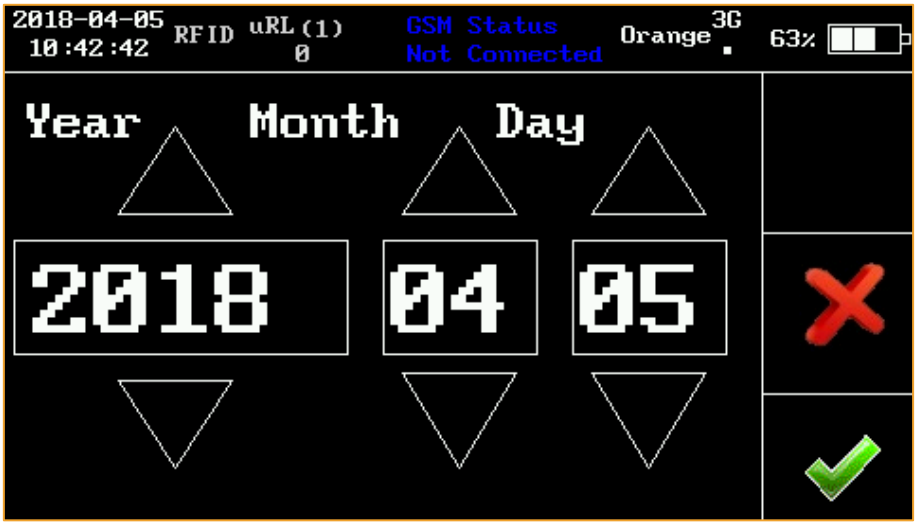


Figure 36 : Date setting

6.3.4 Flip Screen

It can be useful to flip the screen for left-handed people. Press the icon “Flip Screen” to activate it.

Figure 37 : Left-hander screen (on the left) and right-hander screen (on the right)

6.3.5 Load Settings

All the configuration parameters can be set up from the user interface, but if you want to configure faster the Nano, prepare configuration files (please read *7 Configuration files* to know more about configuration files). Place these files on the SD card, in the "\conf\models" folder (you may have to create this folder if it doesn't exist). Then, load these files in the menu "Load Settings".

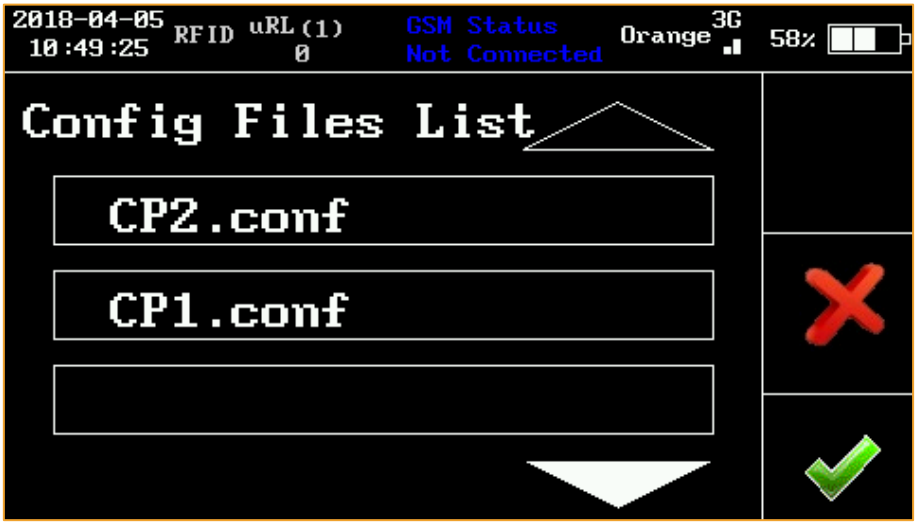


Figure 38 : List of configuration files

Navigate with the arrows until you find the desired file. Select it by pressing its name. Confirm your choice with the green tick icon. Cancel with the red cross icon: you will go back to the Settings menu.

Note that if you change the current parameters, it will edit the "nano.conf" file but not your prepared files.

The prepared configuration files can be useful if you want to use a Nano at different checkpoints in the same race, for instance.

6.3.6 Lock

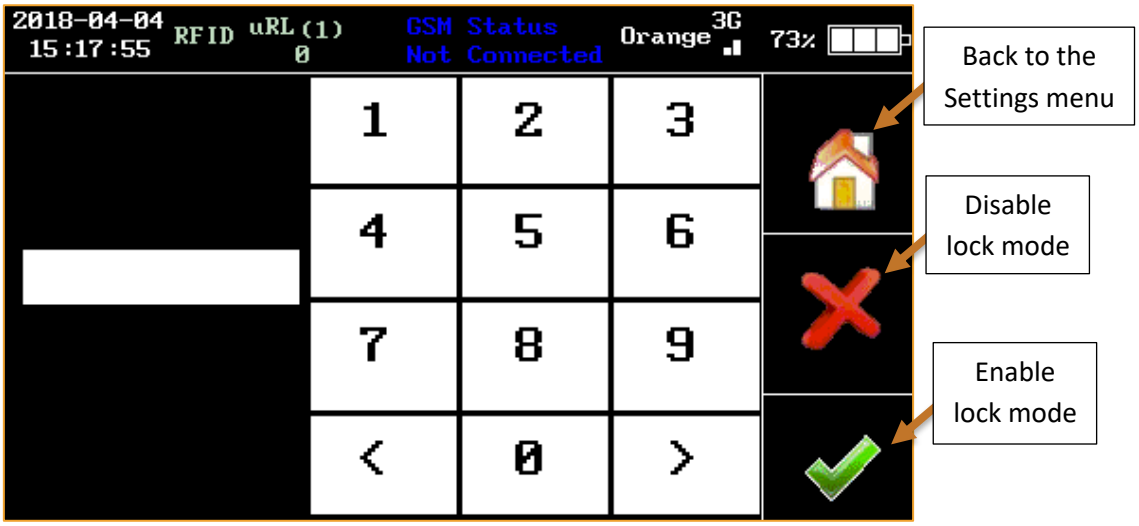


Figure 39 : Numeric keypad to enter password

To enable the lock mode, enter the right password, and then press the green tick icon. To disable it, enter the right password, and then press the red cross icon. A confirmation window will appear (it may take a while) but it is required to turn off and on the Nano for the change to be effective.

6.3.7 Advanced

Figure 40 : Advanced settings menu

You can select:

- ***Language:*** The language of the Nano (English or French)
- ***Nano Type:*** The Nano type
- ***RFID Power:*** The power of the RFID reader, from 0 to 100%. The reading distance is proportional to this number. It can be useful to reduce the RFID power to avoid scanning multiple chips at the same time.
- ***Up Screen:*** To update the files of the screen. Place the files IMAGES.GCI and IMAGER.GCI to the folder /conf/ (see *9.2.3 Images screen update*)

A password is required to enter Nano Type, RFID Power or Up Screen. The password is "urtime".

6.3.7.1 *Nano Type*

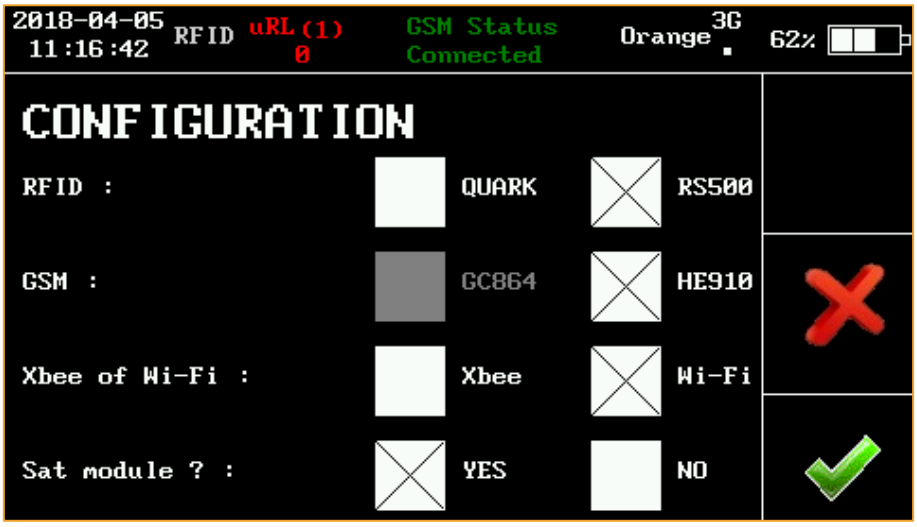


Figure 41 : Nano type menu

There are three types of communication (XBee, Wi-Fi and Satellite), two types of GSM module (GC864 – 2G and HE910 – 3G) and two types of RFID readers (Quark and RS500).

6.4 Apps menu

The Apps menu changes depending on the communication type selected. You can check the Nano type in the advanced settings menu (see *6.3.7 Advanced*).

To select the communication type, select the uRLive menu.

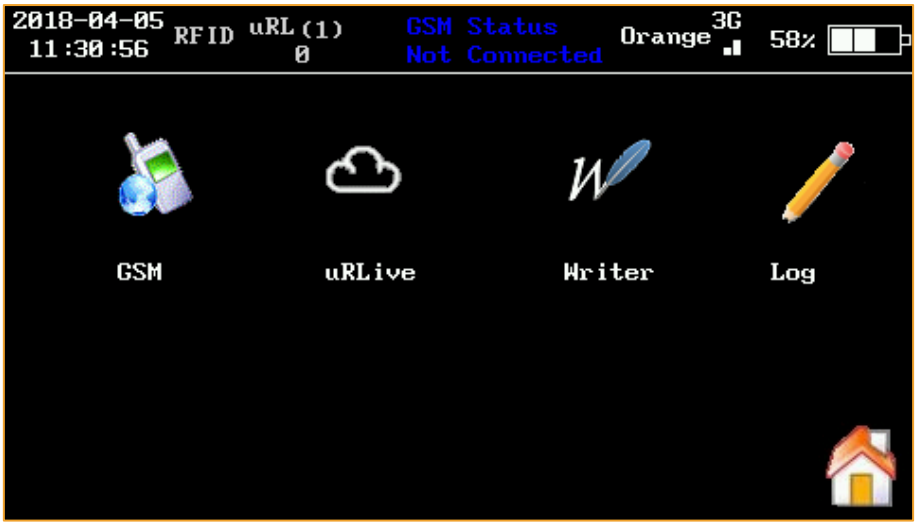


Figure 42 : Apps menu - GSM

Figure 43 : Apps menu – Wi-Fi

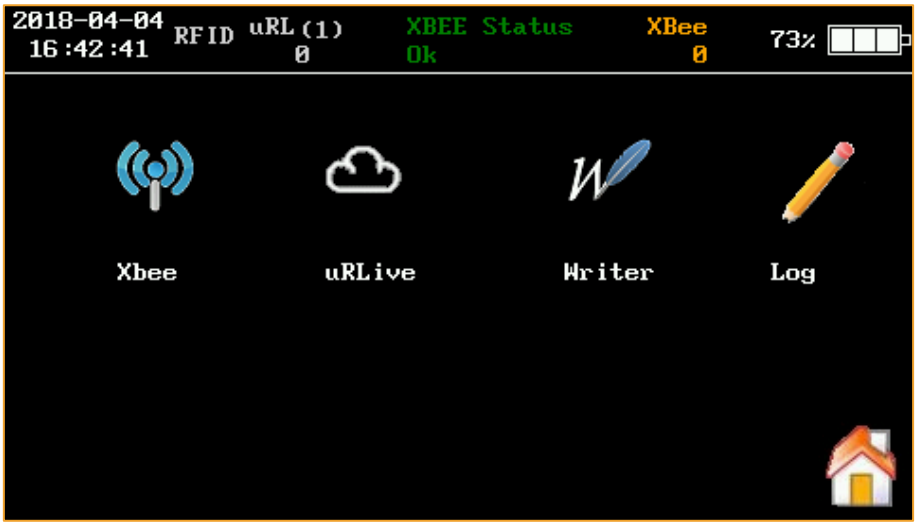


Figure 44 : Apps menu - XBee

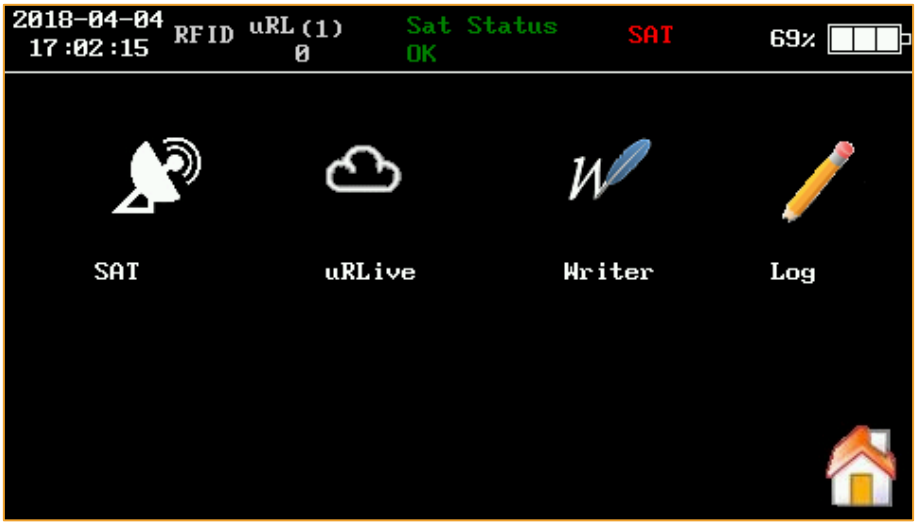


Figure 45 : Apps menu – Satellite

6.4.1 uRLive menu

In this menu, set parameters for your connection to uRLive. To enable (or disable) the connection to uRLive, press “DISABLED” (or “ENABLED”). Press the fields to edit them.

- “Period” is the time (in seconds) between two uploads onto uRLive. The recommended value is 5.

- “Line/Post” is the number of lines sent to uRLive per post. For adequate transmission, please do not exceed 5.

If you are using a satellite Nano (see *6.3.7 Advanced* to know your Nano type), the Nano will wait a pre-set amount of time or number of lines to broadcast, to reduce the amount of data used. Therefore, “Period” is the maximum time (in seconds) that the Nano will wait between two uploads, and “Line/Post” is the minimum number of lines that the Nano will wait before sending data. The Nano sends data when one of these two numbers is reached. RF Conception recommends to set “Period” to 180 seconds, and “Line/Post” to 5 lines.

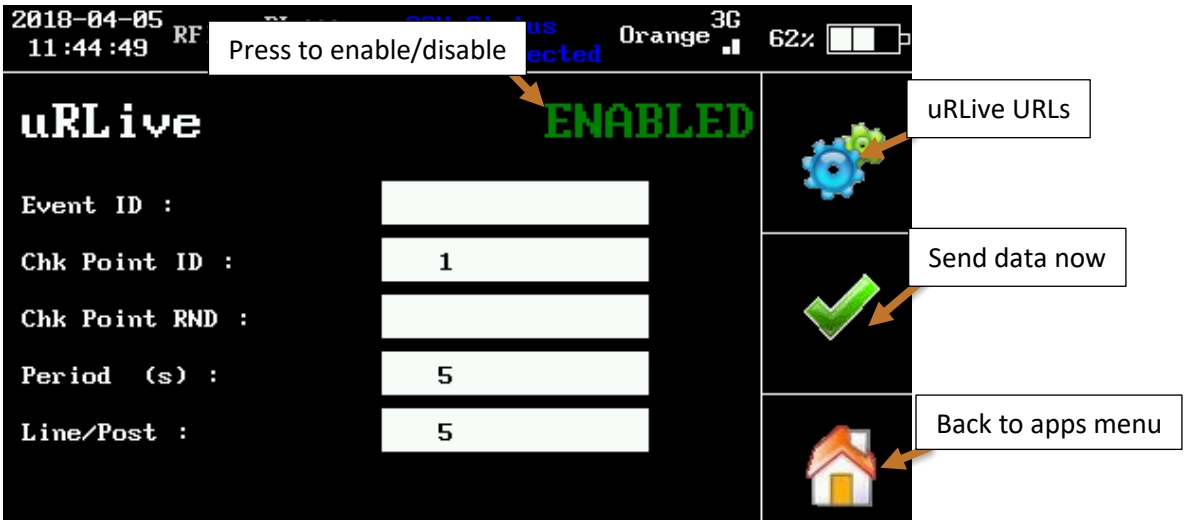


Figure 46 : uRLive settings

Force the Nano to send data to uRLive by pressing the green tick.

Set the URLs settings by pressing the gears icon. Choose how the data is sent to uRLive. If you have a Wi-Fi Nano, you can choose between Modem and Wi-Fi. If you have a Satellite Nano, you can choose between Modem and satellite. If you have an XBee Nano, data will be sent using the GSM modem. If your hardware dates back from mid-2018 onwards, it is possible to have a Nano with a Modem, a Wi-Fi and a Satellite module and choose one of the three (*Figure 47*).

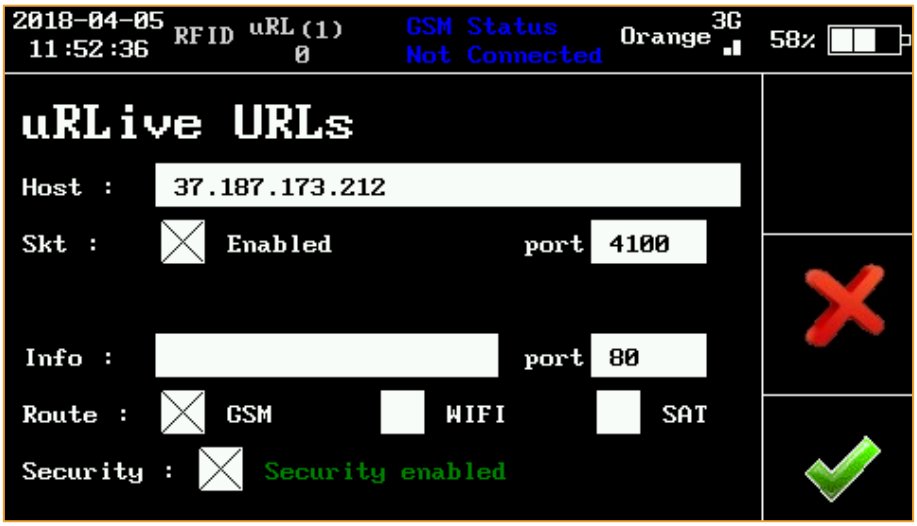


Figure 47 : uRLive URLs configuration for send data with the GSM and with socket enabled

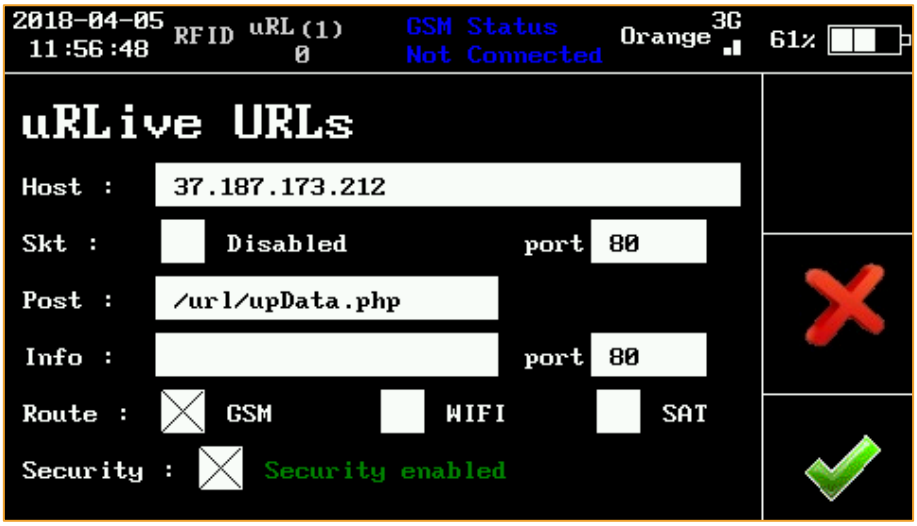


Figure 48 : uRLive URLs configuration for send data with the GSM and with socket disabled

Host: *[urlHost]*
This is the hostname or the IP to connect to.
uRTime recommends using the IP, which avoid the time of domain name resolution.

Skt: *[uRLSktEnabled]*
This checkbox defines the protocol of communication used by the Nano.
If checked the Nano use the socket protocol (much lighter) with LiveTrail or Nextgen of uRLive website and the port *[uRLPortSkt]* is given by uRLive or LiveTrail.
If not checked, the Post (HTTP) parameter must be used and the Nano will send detections using HTTP protocol (much heavier but simpler). In general, the port *[uRlPortDataPost]* is 80.

Post: *[uRLDataPost]*
This is the path to the webpage without the host.

Info: *[uRLUrlConsult]*
Is only used with LiveTrail. Corresponding port *[uRLPortConsult]* is given by LiveTrail.

Security:

If the Nano have a satellite module, a security can be used. In GSM and Wi-Fi, if the security is enabled, the Nano check every 10 min if he can ping the server set in “Host”, the Google Public DNS (8.8.8.8) and the uRTime server. If all the ping tests fail, the Nano switches automatically to Satellite configuration for 1 hour. After the Nano comes back to the configuration set to the file “nano.conf”.

You can disable the security with the button on the uRLive URL menu.

This security is used to prevent network issues that can be encountered during a race.

To send data using satellite transmission, chose whether you want to send the Timer code and the Event code (as shown on *Figure 49* below). Not sending them reduces transmission costs.

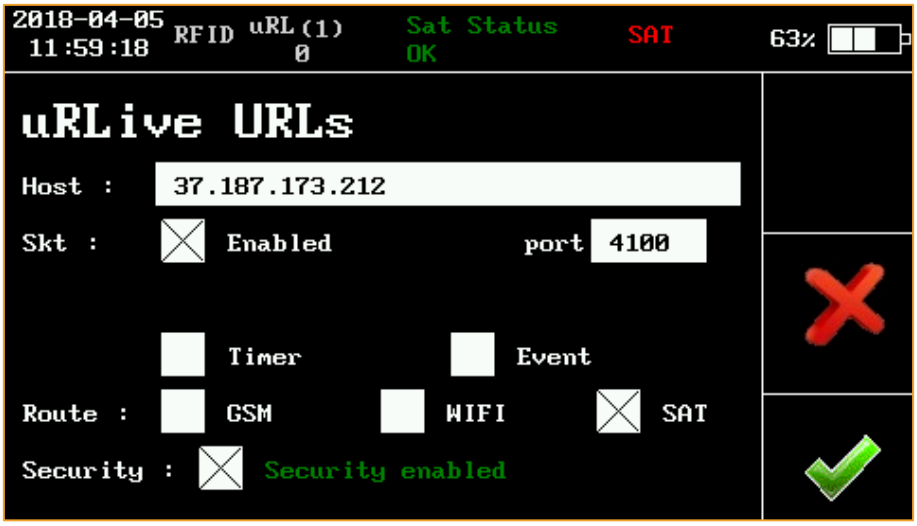


Figure 49 : uRLive URLs configuration to send data via satellite

6.4.2 Modem menu

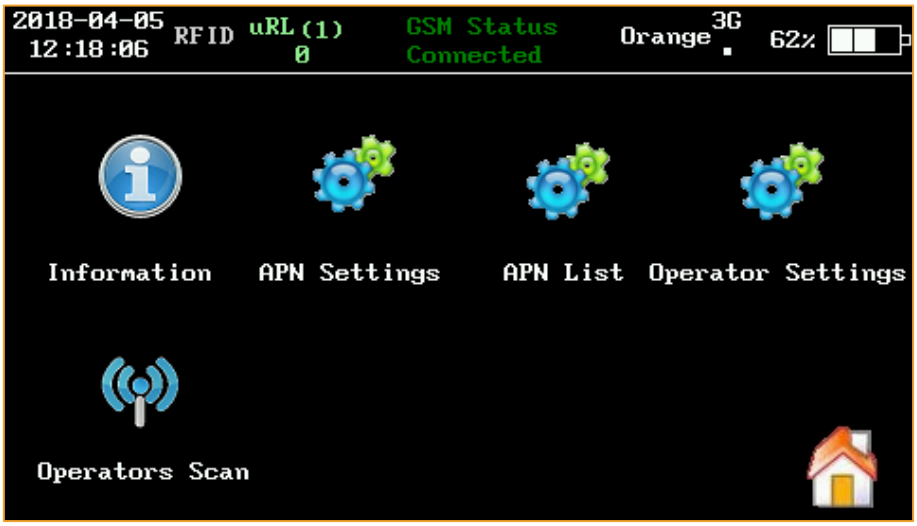


Figure 50 : Modem menu

6.4.2.1 *Information*

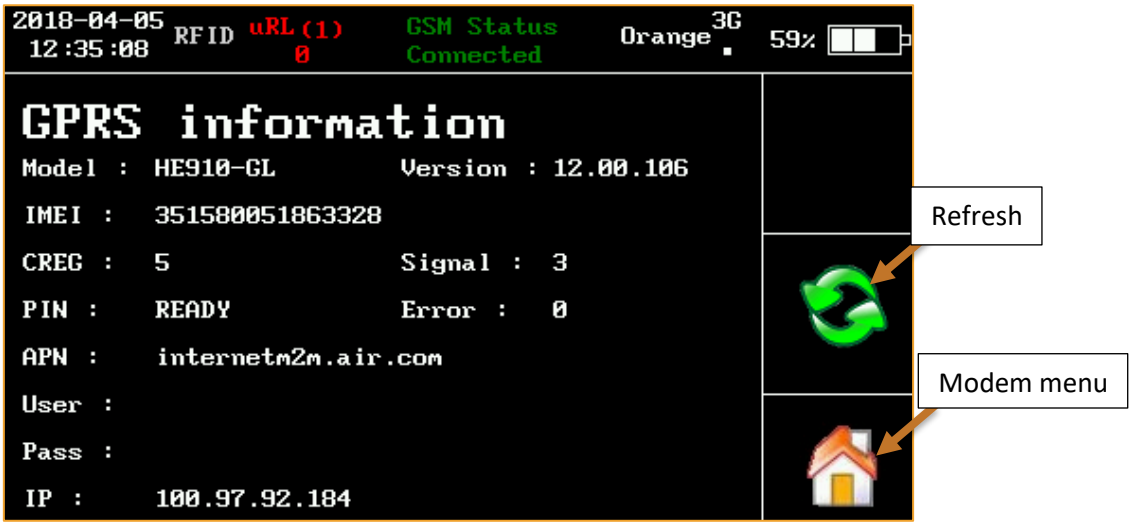


Figure 51 : Modem information

This menu shows the GPRS modem status. You can check the APN and the IP address.

CREG:

- 0: not registered, ME is not currently searching a new operator to register to
- 1: registered, home network
- 2: not registered, but ME is currently searching a new operator to register to
- 3: registration denied
- 4: unknown
- 5: registered, roaming

Signal:

- 0 (poor) – 32 (best): signal level.
- 99: not registered

PIN:

- Ready: all good
- SIM PIN: pin code error. Please try to disable pin code or set it into the config file
- NO SIM: please insert a sim card

APN: configured APN.

IP: IP address obtained by the module.

6.4.2.2 *APN settings*

Figure 52 : APN Settings

If you are using a SIM card provided by RF Conception, please choose APN "***internetm2m.air.com***" or "***NXT17.NET***" (respectively for sim cards purchased before or after March 2018). The "User" and "Pass" fields are generally left empty but are required for some APN. Depending on your telephone operator, you might want to disable the roaming to avoid extra costs in case of use in a foreign country. To do that, uncheck the box.

6.4.2.3 *APN list*

Figure 53 : APN List

You can access an APN List saved on the SD card (see *7.3 APN List* to know how to create this list. It might not exist by default.). Navigate the list with the arrows and confirm your choice with the green tick icon. Cancel and go back to APN settings by pressing the red cross.

By default, the APN for RF Conception SIM card is always present in the list.

6.4.2.4 *Operator information*

With this menu, force the GSM modem to connect to a specific operator. For this you need to specify the MCC MNC of the Operator, the Operator name is used to remember the name of this operator. You can use the website *http://www.mcc-mnc.com/* to know the different MCC MNC of all operators.

Enable or disable operator forcing with the button.

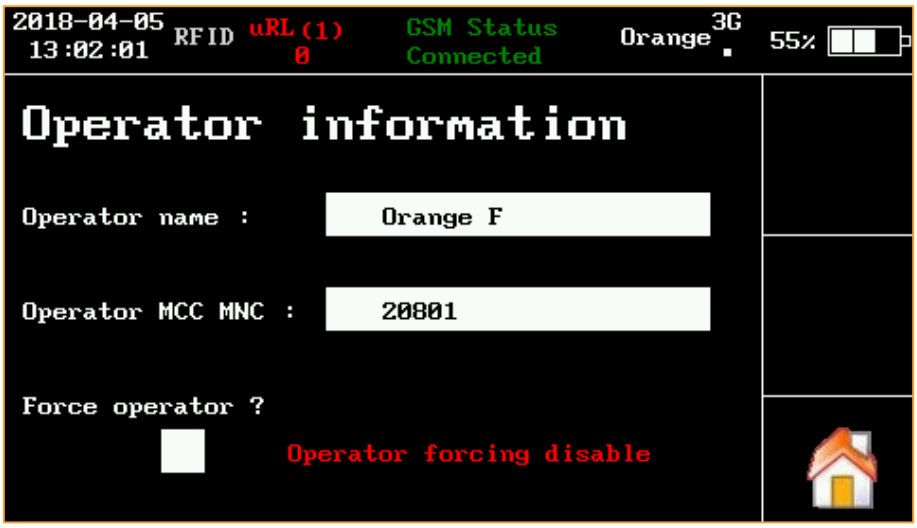


Figure 54 : Operator information

6.4.2.5 *Operators scan*

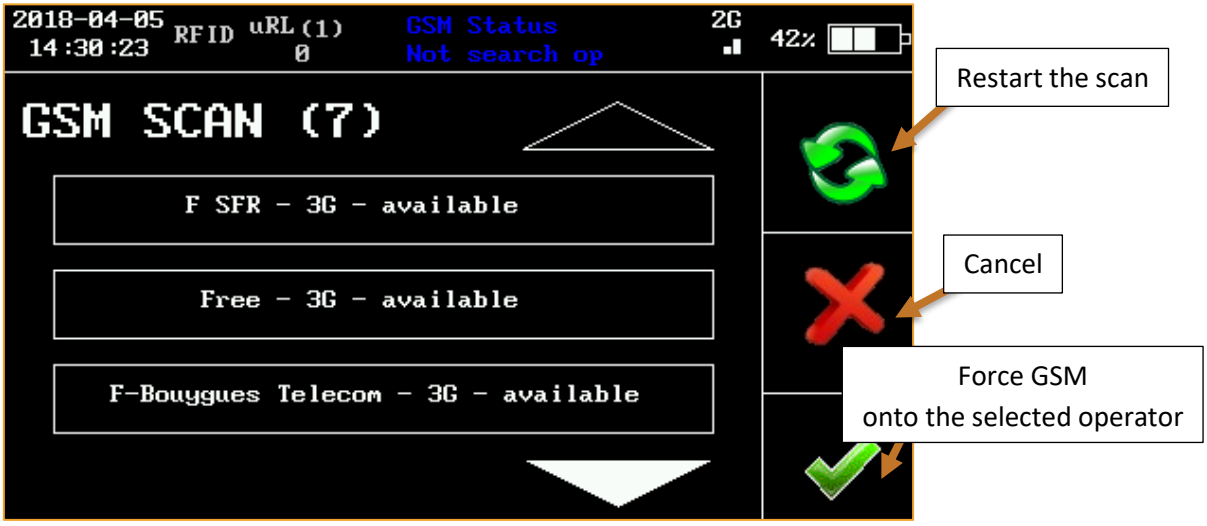


Figure 55 : Operator's scan

The scan looks for any operator. It can take up to 5 minutes. When you select an operator and accept, the operator is automatically used.

6.4.3 Wi-Fi menu

This menu shows the Wi-Fi status. For instance, on *Figure 56*, the Nano his connected to the "Livebox-E522" Wi-Fi network, as specified by the "Status" field.

Figure 56 : Wi-Fi status

You can modify the settings by pressing the gear icon.

- "ESSID" is the name of the Wi-Fi network.
- "Key" is the password (if needed).
- "LM" (on the *Figure 56* above) and "Debug" (on the *Figure 57* below) show information for technical support.

Figure 57 : Wi-Fi settings

You can see all the Wi-Fi networks available by pressing the magnifier icon.

Figure 58 : Wi-Fi scan

You can choose the encryption type (Open, WPA, WPA2 or WEP) type by pressing the padlock icon.

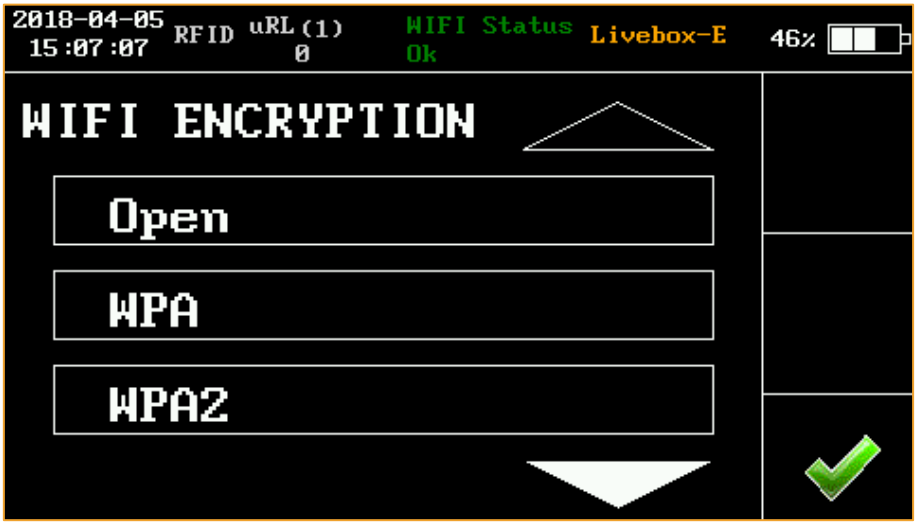


Figure 59 : Wi-Fi encryption type

Once the Nano correctly connected to the Wi-Fi, the status will be “ready” and the name of the Wi-Fi network will be written in green (see *Figure 60* below).

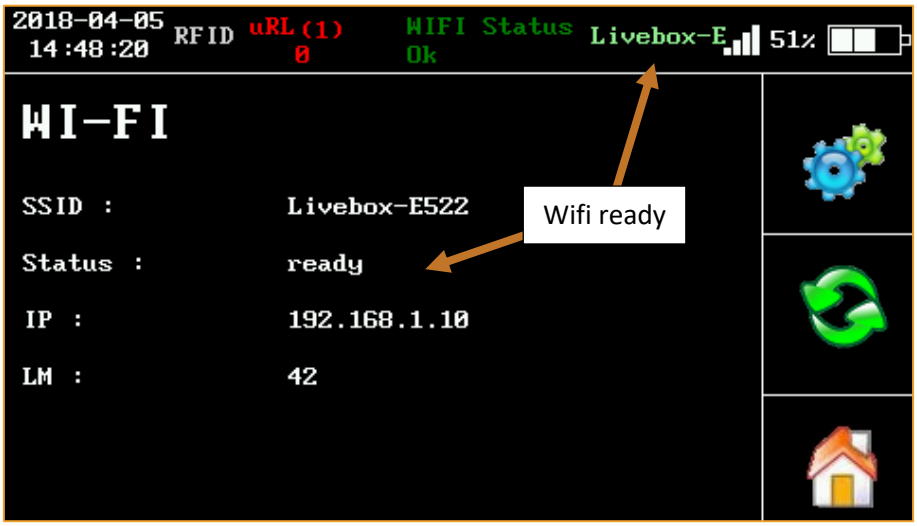


Figure 60 : Nano correctly connected to Wi-Fi

6.4.4 XBee menu

This menu only exists if your Nano type is "XBee" (please see *6.3.7 Advanced*). The XBee protocol is used when the Nano is connected to a NanoStation.

You can select the channel used by the XBee protocol. It is useful when you need to use several Nanos with several NanoStations: in this case, it indicates to which NanoStation the Nano is connected.

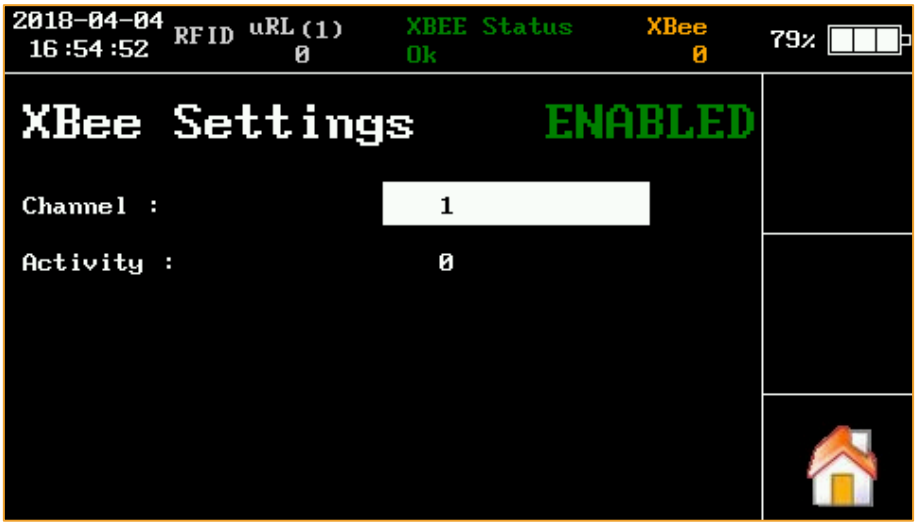


Figure 61 : XBee settings

6.4.5 Satellite menu

That menu displays satellite information.

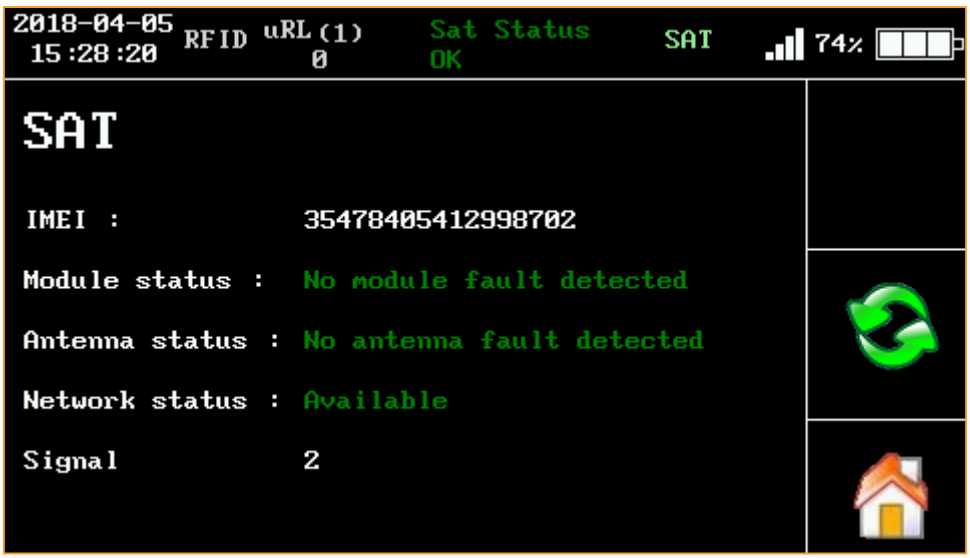


Figure 62 : Satellite menu

6.4.6 Encoder

This menu allows to program chips. First, set the Event number, the Timer number, the chip number and number of chips per tag. Enter the chip number by typing (a numeric keypad will appear if you press the number field) or using the arrows. Choose if you want to auto-increase the chip number by ticking the box “auto-increment”. It is useful if you want to program many chips with consecutive numbers.

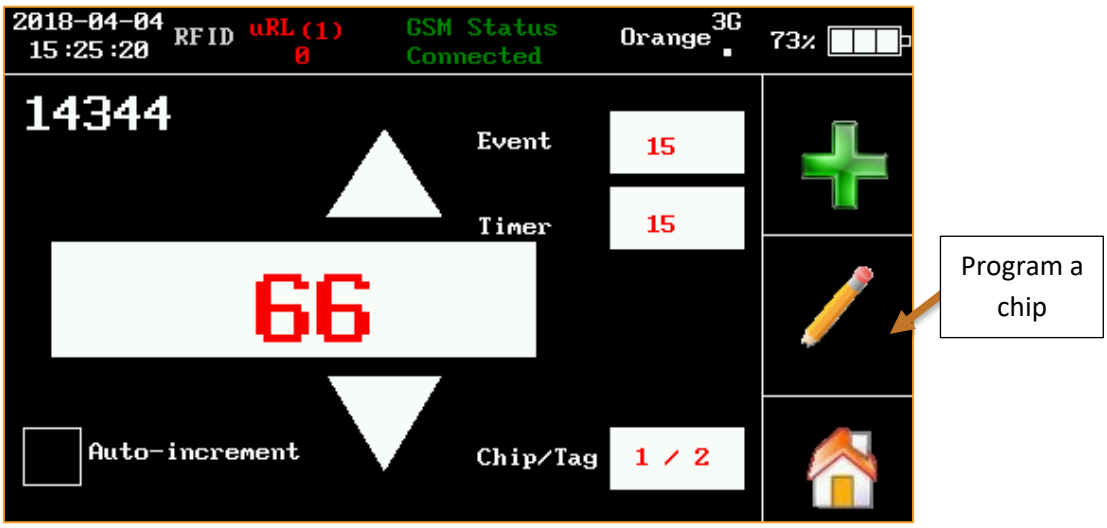


Figure 63 : Encoder mode

To program a chip, place the Nano close to a chip, and press the pencil icon. Wait until the chip number is written on a green background.

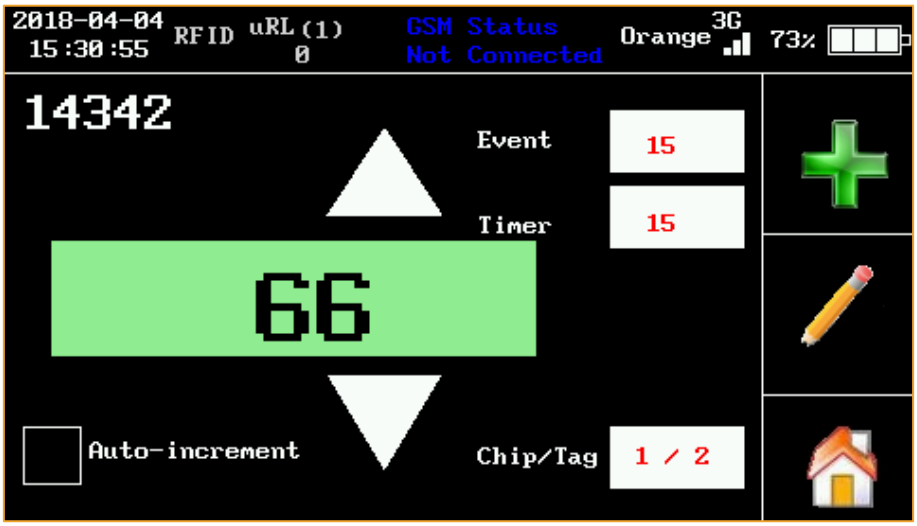


Figure 64 : Encoder after encoding successfully

If the Nano doesn't detect any chip to program, an error message will appear ("No tag in field. Approach tag and try again "). Press "ok" to close the error message box. The desired number will be written on an orange background, as shown on *Figure 65* below.

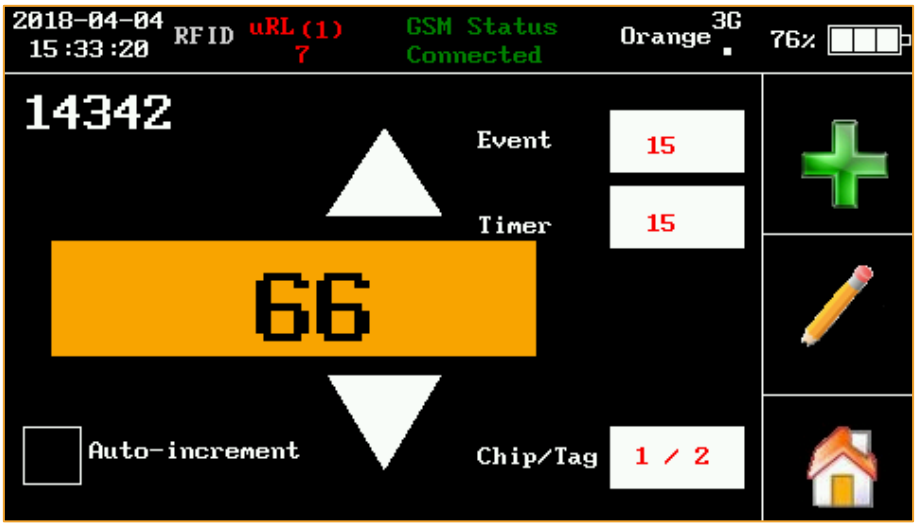


Figure 65 : Encoder mode when no tag in field

The RFID scan (reader mode) is available in Encoder mode. You may have to press the red button to enable it, depending on the selected scan mode. It is used in the case of an already programmed chip, to program another chip with the same number. Scan the first chip: the Nano will show its number, and you will not have to enter it manually to program the second chip.

The number of chips you can program (called your credit) is written in the top left corner of the screen (see *Figure 66*). If you need to program more chips, press the green 'plus' icon to add credit to the Nano. Enter the key (contact RF Conception to have a key) in the corresponding field and confirm by pressing the green tick. Once the credit added, a success window should appear ("Load success"). Otherwise, an error window will appear ("Load failed").

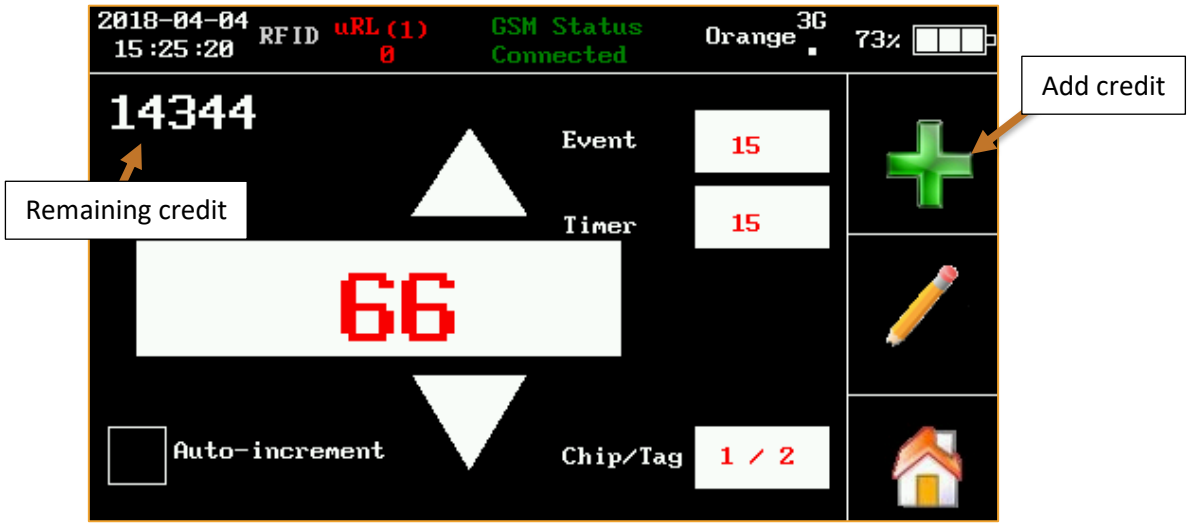


Figure 66 : Remaining credit in writer mode

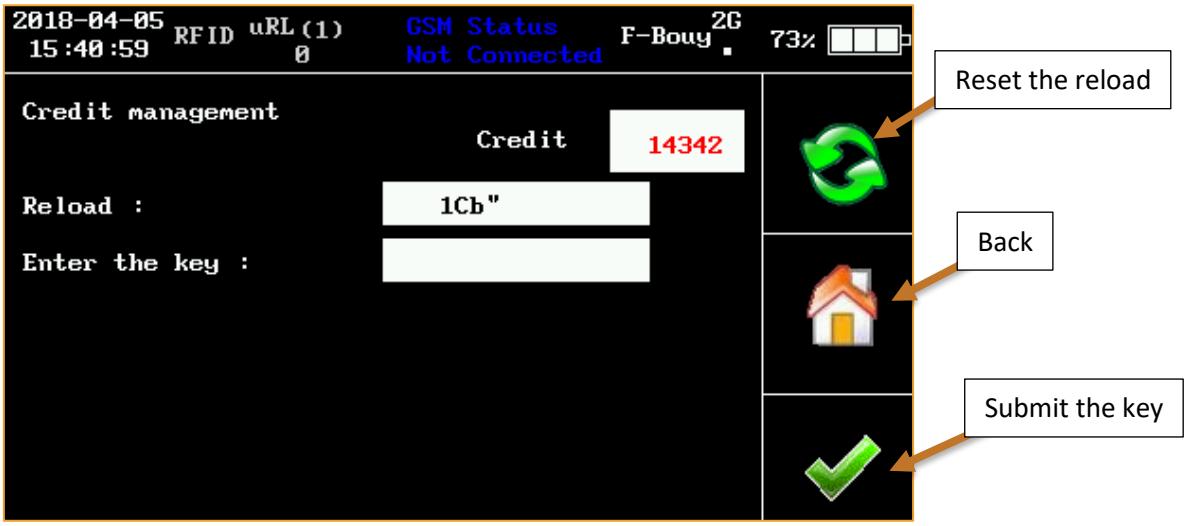


Figure 67 : Reload credit in Encoder mode

7 Configuration files

7.1 Global configuration file

All the parameters set up from the user interface are saved on the SD card, into the folder "\conf\nano.conf".

You can modify or create the configuration file on a computer, and then load it onto the Nano, in the Settings menu, submenu Load Settings (see *6.3.5 Load Settings*). Note that the order of the parameters has no importance, and that a missing parameter will take its default value and be added to the file.

The prepared configuration files can be useful if you want to use a Nano at different checkpoints in the same race, for instance. In this case, only the parameters "filename", "uRLCheckPointId" and "uRLCheckPointRND" need to be changed.

The following tables describe the parameters.

Note: the Boolean parameters takes the value 1 if enabled and the value 0 if disabled.

7.1.1 Nano identity

You can edit these parameters in the Settings menu, in the submenu "Identity" (*6.3.1 Nano identity*).

Parameter name	Description	Default value	Range of values
filename	Name of the output file (.txt file)	nano.txt	
timerCode	Number given by uRTime. It identifies the company using the nano.	0	0 - 65535
eventCode	Number given by uRTime. It identifies the event. Increases with each new event.	0	0 - 65535
filterTimer	If the filter is enabled, the nano will only scan the chips with the specified timer number.	0	0 or 1
filterEvent	If the filter is enabled, the nano will only scan the chips with the specified event number.	0	0 or 1

7.1.2 General settings

You can edit these parameters in the Settings menu (see *6.3 Settings menu*). The "chipPerTag" parameter can be changed Writer mode (see *6.4.6 Encoder*).

Parameter name	Description	Default value	Range of values
markTimeNow	Indicates which time will be saved when doing a manual insertion. If enabled (value 1), the Nano's current time will be saved. If disabled, the input time will be saved	1	0 or 1
lockEnabled	Indicates if the settings menu and the apps menu are locked by a password.	0	0 or 1
lockPass	Password to (un)lock the settings menu and the apps menu.	0000	0000-9999
orientation	Indicates if the screen is flipped. It takes the value 1 if the screen is flipped, 0 if not.	1	0 or 1
dateSyncEn	Indicates if the synchronization of the date via the modem is enabled. If enabled, the date is synchronized every 10 minutes. When working with socket, the date synchronization is disabled.	1	0 or 1
timezone	If the date synchronization is enabled, it indicates the time zone to be synchronized with.	Europe/ Paris	

7.1.3 Encoding

Parameter name	Description	Default value	Range of values
chipPerTag	Number of chips per bib	2	1 to 255

7.1.4 Power management

You can edit these parameters in the Settings menu, in the submenu "Power" (see *6.3.2 Power management*).

Parameter name	Description	Default value	Range of values
vibrateEnabled	Indicates whether the vibration of the nano is enabled.	1	0 or 1
screenSaverDelay	Delay (in seconds) before the screen switches off	60	1 to 255
scanMode	Indicates the scan mode chosen: 0 - Scan until time out 1 - Hold and Scan 2 - Press to Start/Stop 3 - No action, always on	0	0 to 3

7.1.5 Modem configuration

You can edit these parameters in the Apps menu, in the submenu "Modem" *(see 6.4.2 Modem menu)*.

Parameter name	Description	Default value	Range of values
pin	The PIN code of the SIM card	0000	0000 - 9999
roaming	Indicates if the roaming is enabled. Depending on your telephone operator, you might have to disable the roaming to avoid extra costs.	1	0 or 1
modemApn	Access Point Name, given by your telephone operator. If you are using a SIM card provided by RF Conception, please choose "internetm2m.air.com" or NXT17.NET.		
modemUser	Username given by your telephone operator. Generally empty.		
modemPass	Password given by your telephone operator. Generally empty.		
modemNetwork	This functionality is not available yet. If your using a multi-operator SIM card, it will allow you to choose a specific operator. Leave blank for auto.		
modemForceOpertator	Enabled if you want force the nano to connect à specify operator	0	0 or 1
modemOperatorName	Name of the operator		
modemOperatorMCCMNC	Mobile Country Code and Mobile Network Code necessary to select the operator. A list of the MCC & MNC are available on the website *http://www.mcc-mnc.com*	0	

7.1.6 Wi-Fi configuration

You can edit these parameters in the Apps menu, in the submenu "WIFI" (see *6.4.3 Wi-Fi menu*)

Parameter name	Description	Default value	Range of values
wifiEssid	Name of the Wi-Fi network you want to connect to		
wifiKey	Password to access the Wi-Fi network.		
wifiEncryption	Encryption type of the Wi-Fi network: 0 - Open (no password) 1 - WPA 2 -WPA2 3 - WEP	0	0 to 3
wifiTO	Wi-Fi time out.	60	

7.1.7 XBee configuration

The XBee channel can be changed in the Apps menu, in the submenu "Xbee" (see *6.4.4 XBee menu*).

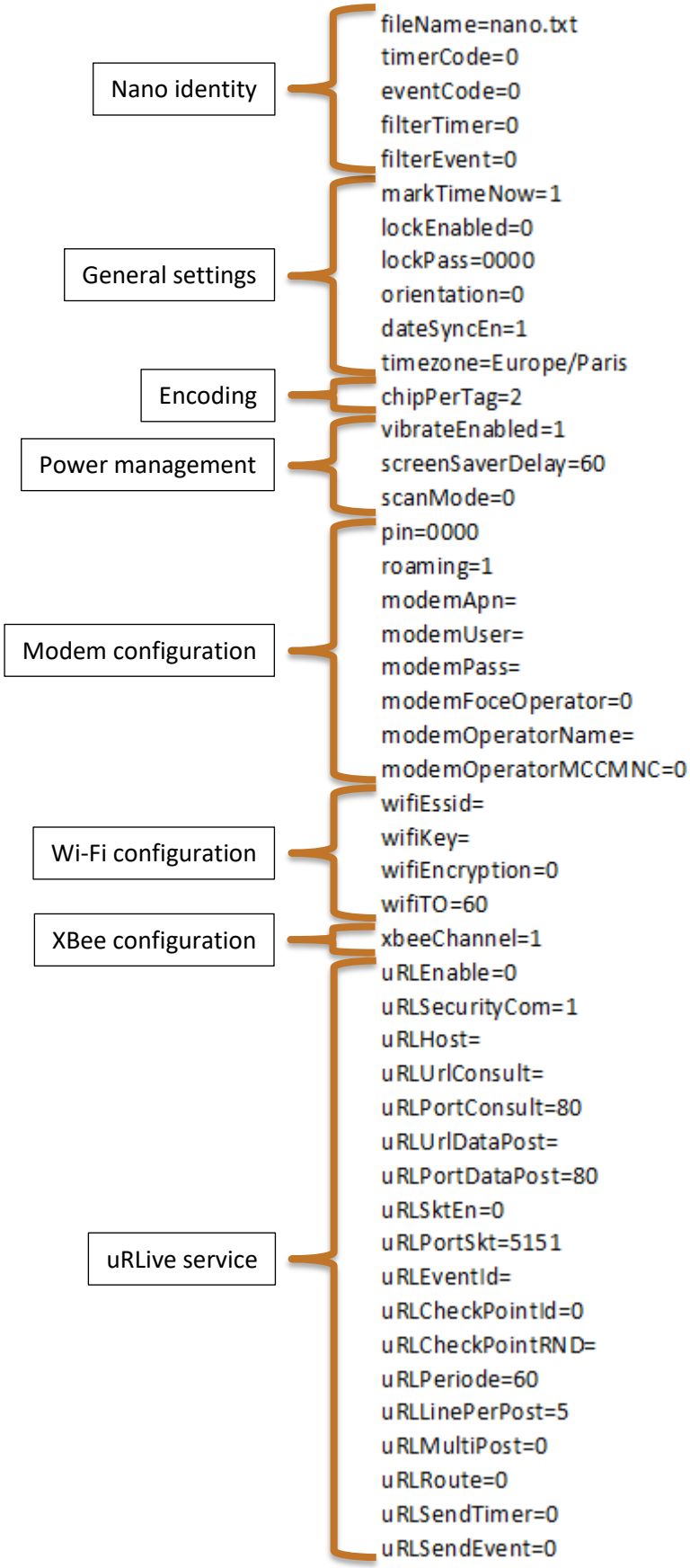
Parameter name	Description	Default value	Range of values
xbeeChannel	Channel used for Xbee transmission.	1	1 to 50

7.1.8 uRLive service

You can edit these parameters in the Apps menu, in the submenu "uRLive" (see *6.4.1 uRLive menu*).

Parameter name	Description	Default value	Range of values
uRLEnable	Indicates if the uRLive service is enabled. Need to be enabled if you want to use the GSM, Wi-Fi / Xbee or Satellite module.	0	0 or 1
uRLSecurityCom	Enable the security communication. When it is enabled, if after 10 minutes the nano can't communicate with the server (in GSM an Wi-Fi) the nano switch automatically to satellite configuration (if the nano has a satellite module)	1	0 or 1
uRLHost	IP address of the host server.		
uRLUrlConsult	Relative address of the page called to consult the data.	80	
uRLPortConsult	Port number to consult the data.		
uRLUrlDataPost	Relative address of the page called to post data incrementally.		
uRLPortDataPost	Port number to post data incrementally.	80	
uRLSktEn	Indicates if the socket transmission is enabled.	0	0 or 1
uRLPortSkt	Port number for socket.	5151	
uRLEventId	ID of the event. With LiveTrail, this parameter is useless.		
uRLCheckPointId	ID of the CheckPoint.		
uRLCheckPointRND	Key to validate the settings. With LiveTrail, this parameter is useless.		
uRLPeriode	Time (in seconds) between two posts to uRLive. The recommended value is 5 for GSM and Wi-Fi and 60 for Satellite.	60	
uRLLinePerPost	Number lines sent per post to uRLive. For correct transmission, please do not exceed 5.	5	1 to 5
uRLMultiPost	For R4A only.		
uRLRoute	Indicates the protocol used to send data. 0 – GSM / 1 - Wi-Fi / 2 – XBEE / 3 - Satellite If you choose a bad protocol, where do the nano don't have the module, the nano select automatically the GSM protocol	0	0 to 3
uRLSendTimer	Send the Timer code (just for R4A)	0	
uRLSendEvent	Send the Event code (just for R4A)	0	

7.2 Example file



7.3 APN List

To avoid writing the APN name every time you need to change, a list of available APN can be stored in the file "/conf/apn.conf". You can access it in the Apps menu, in the submenu "Modem" (see 3.4.1).

One APN is written per line. The line is composed of the following fields delimited by one semicolon ";".

- APN
- User
- Password
- Roaming enabled (take the value 1 or 0)

The following box is an example file.

```
websfr;;;0
orange.fr;;;0
ebouygtel.com;;;0
gprs.swisscom.ch;;;1
speedidata.com;;;1
maxroam.com;;;1
roamline;;;1
```

8 Connections

8.1 Output file

All the scanned chips are saved by the Nano, in an output file. The output files mainly contain the numbers of the scanned chips, and the corresponding date and time.

8.1.1 Description

The output file format of the Nano is the same as those of all uRTime devices, except for certain fields that remain empty or constant. Like the output file of the uRTime, the output file of the Nano is composed of the following fields separated by semicolons ";". This format is fully compatible with ".csv" extension.

Index;Number;Date;Time;Count;RaceCode;TimerCode;Chrono;Source;TagDate;RSSI;NbDetection;Status\r\n

8.1.2 Field description

- Index: always "00000". Maybe incremented in future versions.
- Number formatted in 5 digits filled with "0".
- Date formatted as following: "YYYY-MM-DD".
- Time formatted as following: "HH:mm:ss.SSS". "SSS" are the milliseconds and are always "000".
- Count: always "001".
- Race Code formatted over 4 digits filled with "0".
- Timer Code formatted over 4 digits filled with "0".
- Chrono: null.
- Source: correspond to the Checkpoint ID.
- Tag Date: null.
- RSSI: null.
- Read count: null.
- Status: 1 = withdraw, 0 = normal.

8.1.3 Example

00000;08765;2012-08-30;14:01:44.000;001;0006;0006;;19;;;;0
00000;08002;2012-08-30;14:01:48.000;001;0006;0006;;19;;;;0
00000;09506;2012-08-30;14:02:09.000;001;0006;0006;;19;;;;0
00000;09679;2012-08-30;14:03:58.000;001;0006;0006;;19;;;;0

8.1.4 Location

The output files are located at the root of the µSD Card. The filename is fully specified by the configuration of the Nano. It can be set up graphically in the menu:

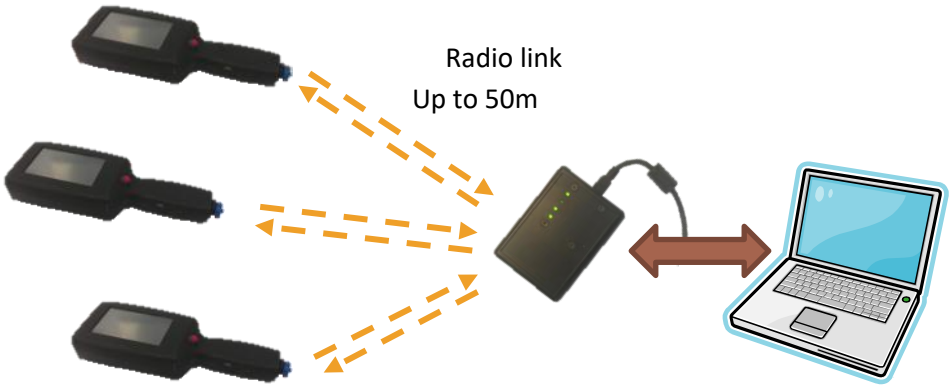
Main menu > Setting menu > Identity > Filename

Or by editing the line "filename" in the configuration file.

8.2 XBee connection

The XBee is a radio communication protocol based on the 802.15.4-2003 standard, working at 2.4GHz. It offers a good communication distance (50m) with reduced power consumption.

The XBee link is used to create a serial link between one NanoStation and one or more Nano.



The following text describe how to install and connect a NanoStation, and then how to use it to send tags to a Nano.

8.2.1 Driver installation

Connect the NanoStation to your computer: a new device should appear in the windows device manager.

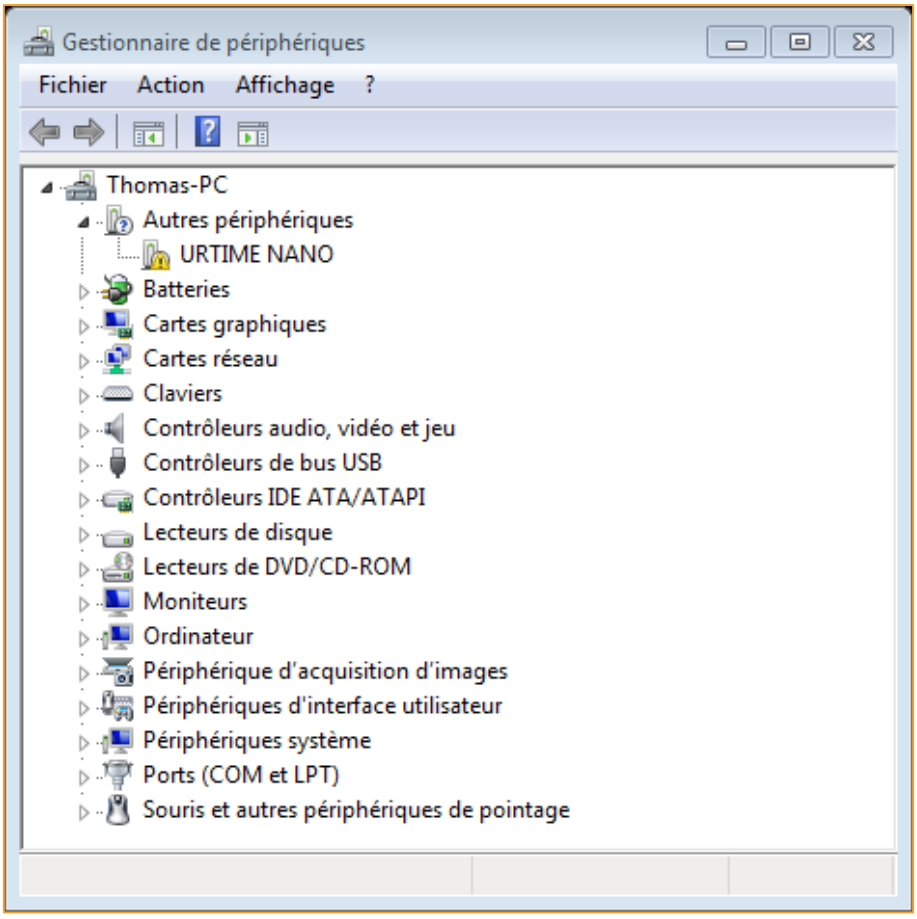


Figure 68 : Uninstalled NanoStation in the device manager

As the interface is a commonly used device, it can occur that the driver for the NanoStation will automatically be installed. In this case just skip this step.

If you get a windows blue screen when connecting the device, you'll need to first update the driver, as described below.

Download the last version of the driver from the constructor website:

http://www.ftdichip.com/Drivers/VCP.htm

Then, install the driver, by following the instructions corresponding to your operating system:

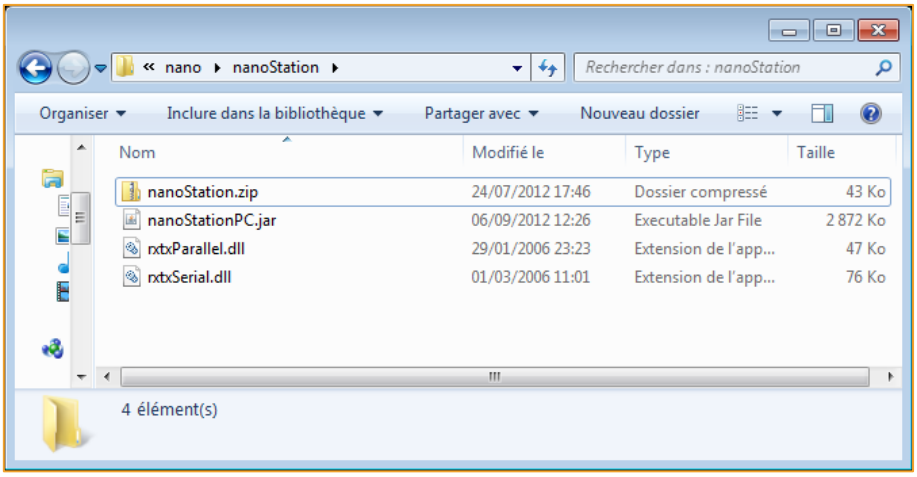
.\installNanoStation\AN_119_FTDI_Drivers_Installation_Guide_for_Windows7.pdf

.\installNanoStation\AN_103_FTDI_Drivers_Installation_Guide_for_VISTA(FT_000080).pdf

.\installNanoStation\AN_104_FTDI_Drivers_Installation_Guide_for_WindowsXP(FT_000093).pdf

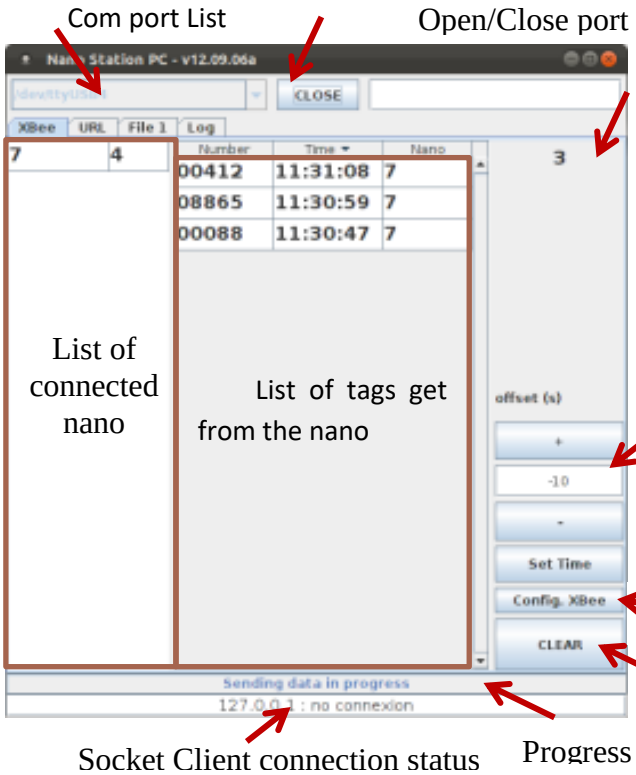
8.2.2 Software installation

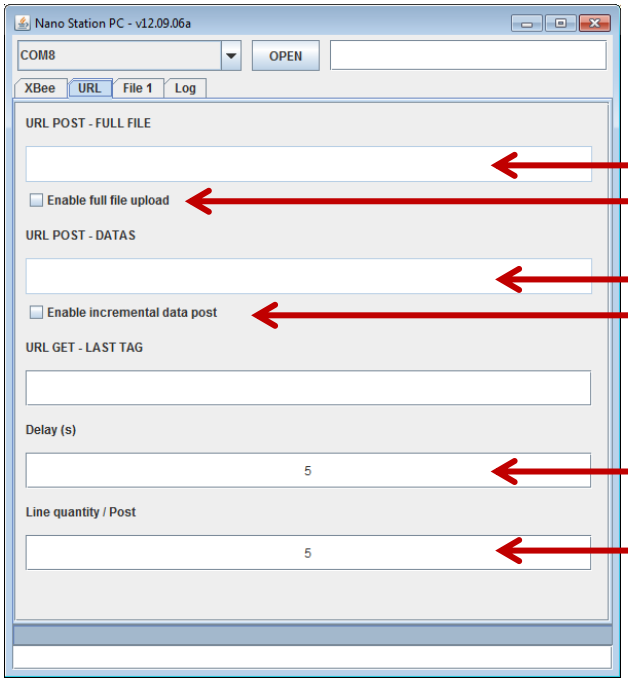
Download the latest version of the NanoStation for PC from our website (*http://support.rfconception.com/uRTime/nanoStation/*). Unzip it in a directory of your choice. (Ex: "C:\nano\nanoStation\").

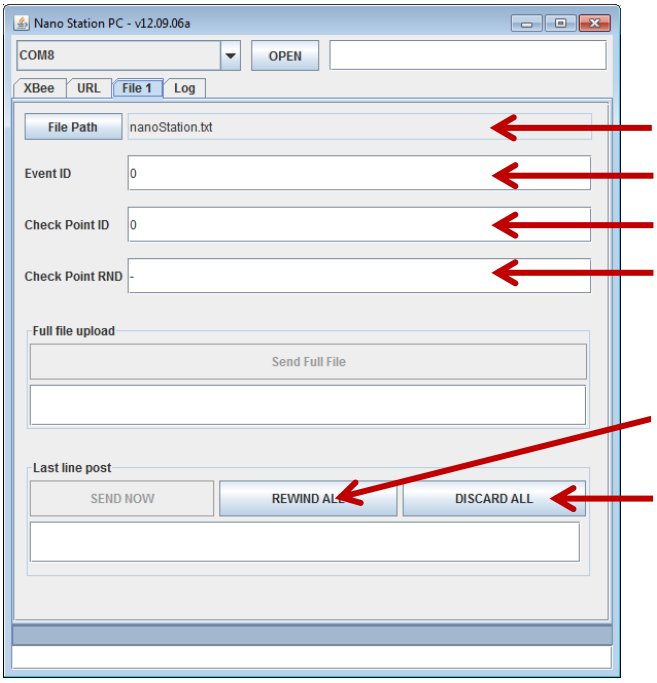


8.2.3 Starting the NanoStation for PC

Start the file “nanoStationPC.jar”







Path of written / sent file

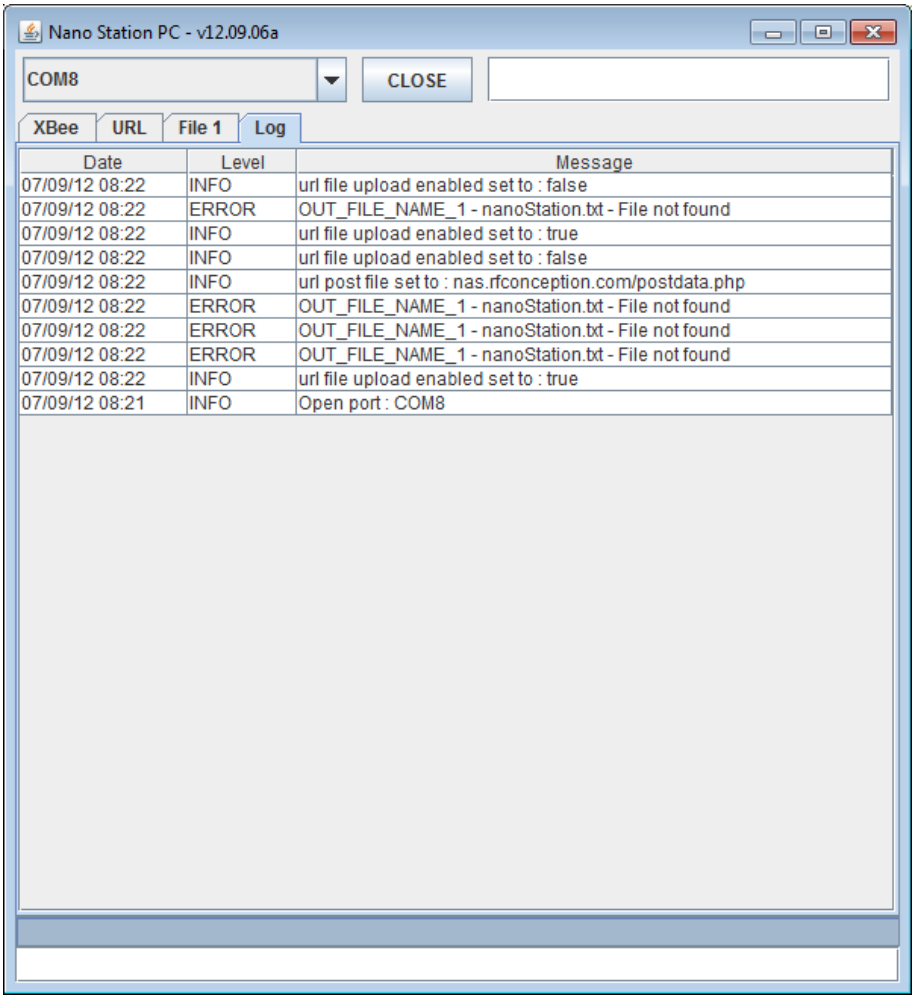
Event ID

Check point ID

Check point RND

Resend all the data from the first line

Directly go to the end. Discard all tags.



8.2.4 Nano XBee protocol

8.2.4.1 *Tag Transmission*

The XBee connection works according to this algorithm (*Figure 69*):

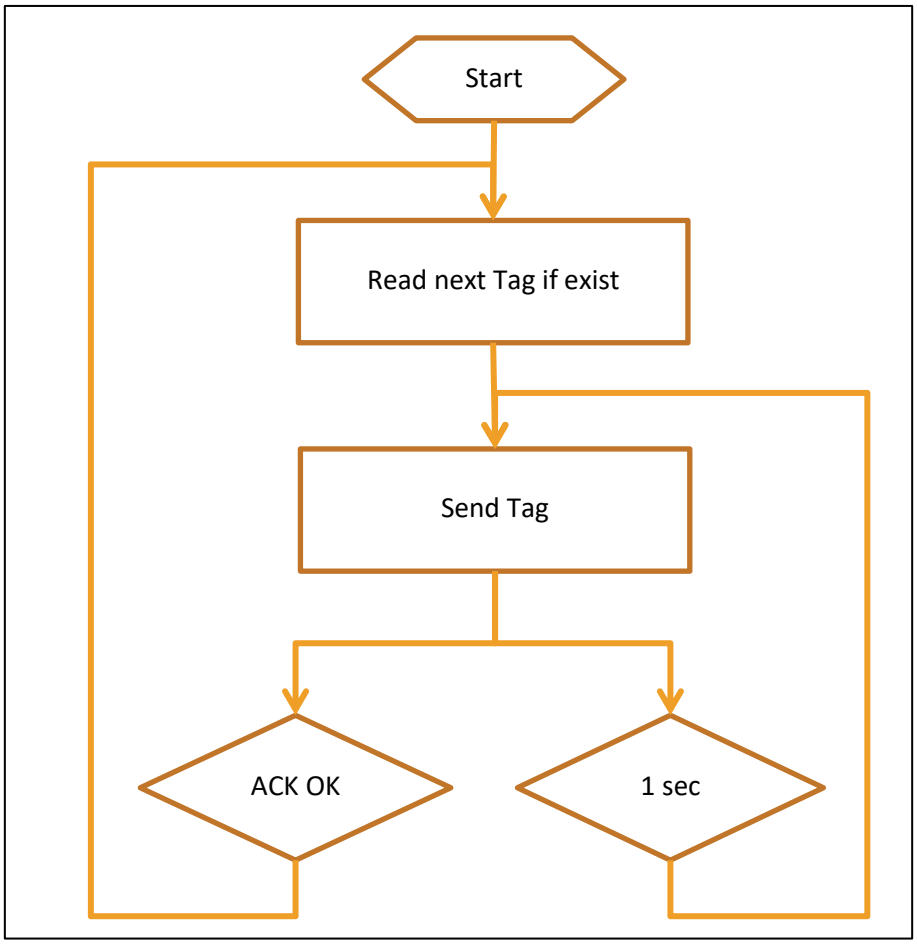


Figure 69 : XBee algorithm

Tags are automatically sent through to the station if XBee is activated.

The message for a tag is built as following:

{<number>;<Date Time>;<TimerCode>;<eventCode>;<nanoId>,<checksum>}\r\n

The field <Date Time> contains the date and the time formatted as “yyyy-MM-dd HH:mm:ss”. (Year over 4 digits, hours on 2 digits from 01 to 24).

As multiple Nanos can be connected to the station simultaneously, the nanoId permits to identify it.

Example:

{88;2012-09-07 11:30:57;6;3; 463328;28}
{8865;2012-09-07 11:31:09;6;3; 463328;21}
{8865;2012-09-07 11:31:09;6;3; 463328;21}
{412;2012-09-07 11:31:18;6;3; 463328;33}

The host PC must acknowledge the Tag with the following message:
ACK <number>\r\n

Example:
ACK 88

ACK 8865
ACK 412

If the Nano correctly received the ACK, it directly sends the next tag if present.
If not, the same tag will be sent after a delay of 1 second.

8.2.4.2 *Synchronization*

In order to avoid transmitting all detection after rebooting the Nano, the following command can be used to set the XBee transmission to a specific tag.

SYNC <nanoId> <number> <date (yyyy-MM-dd)> <time (HH:mm:ss)>\r\n

- nanoId: identify the targeted Nano
- number: is the number to be synchronized with
- date and time: are the date and the time of the specific number.

Example:
SYNC 463328 8865 2012-09-07 11:31:09\r\n //synchronize nano 7 to tag 8865 read at 11:31:09

The Nano answer:
SYNC OK\r\n in case of success
SYNC NOT OK\r\n if the Nano is unable to find the tag
No answer if the arguments are not correct.

8.2.4.3 *Rewind*

In order to transmit all detection again from the beginning, the following command can be used. This use the synchronization command with number = 0 and any date and time.

SYNC <nanoId> 0 XXXX-XX-XX XX:XX:XX\r\n

- nanoId: identify the targeted Nano
- number: must be zero
- date and time: must be present but not relevant.

Example:
SYNC 463328 0 2012-09-07 11:00:00\r\n //rewind nano 7

The Nano answer:
SYNC RESET\r\n in case of success
No answer if the arguments are not correct.

8.2.4.4 *Set the time*

You can set the time of the Nano from the NanoStation. This action is initiated by the Host software using the following command: **setTime HH mm ss\r\n**

- "**HH**": Hour in 24H format
- "**mm**": minutes on 2 digits
- "**ss**": seconds on 2 digits

Example:
setTime 13 30 00\r\n //set the time at 13:30:00 (1:30 pm)
No response is given by the Nano.

8.2.4.5 *Set the date*

You can set the time of the Nano from the NanoStation. This action is initiated by the Host software using the following command:
setDate yy MM dd\r\n

- "**yy**": Year, only the last 2 digit. Example "12" for year "2012"
- "**MM**": month on 2 digits (1..12)
- "**dd**": day of the month on 2 digits

Example:
setDate 12 09 29\r\n //set the date at the 29 september 2012.

No response is given by the Nano.
An invalid date leads to an unknown effect.

8.3 GPRS data post & consultation

8.3.1 Definitions of the identifiers

- uRLEventId (Max Len: 15)

This is the id of the event. It can differ from the number encoded into the Tags.

- uRLCheckPointId (Max Len: 7)

Identify the check point. Many CheckPointID are usually present in the same Event. It can differ from the nanoId.

- uRLCheckPointRND (Max Len: 47)

It can be used as a checksum or a key to protect the parameters.
All the parameters are processed as a String. The values are let free to the user.

8.3.2 Incremental data post

8.3.2.1 *URL*

Data are sent incrementally to the address composed of the 2 parameters:

- %uRLHost%
- %uRLUrlDataPost%

Example:
uRLHost: "*www.rfconception.com*"
uRLUrlDataPost: "/postData.php"
Final address: "www.rfconception.com/postData.php"

8.3.2.2 *Post method*

The data are send in a POST HTTP method.
The request contains the following fields:

Post parameter	Nano parameter
EID	uRLEventId
CPID	uRLCheckPointId
RID	nanoId
RND	uRLCheckPointRND
outputData	see *8.3.2.3 Data Format – uRTime Light*

8.3.2.3 *Data Format – uRTime Light*

In order to reduce the amount of transferred data and also improve the transfer rate in case of bad connection, only the following data are transmitted.

Number;Date;Time;RaceCode;TimerCode;Source;Status\r\n

1. **Number**
2. **Date** formatted as following "YYYYMMDD".
3. **Time** formatted as following "Hhmmss". (No ms).
4. **RaceCode**: race code encoded in the Tag
5. **TimerCode**: timer code encoded in the tag.
6. **Source**: nanoId
7. **Status**: 1 = withdraw, 0 = normal.

Example:
32367;20120611;173801;18;5;463328;0
37;20120611;173912;18;5; 463328;0
561;20120611;174021;18;5; 463328;0

8.3.3 Request of the last received tag

8.3.3.1 *Introduction*

The Nano can ask the last received tag to the server in one of the following cases:

- Start: an initial synchronization is done to avoid sending all the data again.
- After a timeout or bad terminated post: the Nano resynchronize itself to the last well-transmitted tag.
- Periodically: to inform the server of its presence.

8.3.3.2 *URL*

The terminal makes a GET HTTP request to the following address:

- %uRLHost%
- %uRLUrlDataPost %

Example:
uRLHost: "www.rfconception.com"
uRLUrlDataPost: "/postData.php"
Final address: "www.rfconception.com/postData.php"

8.3.3.3 *GET method*

The parameters are sent in a GET HTTP method.
The request contains the following fields:

Get parameter	Nano parameter
EID	uRLEventId
CPID	uRLCheckPointId
RID	nanoId
RND	uRLCheckPointRND

8.3.3.4 *Server response*

The server answers at least the 2 following lines:
number=####\r\n
time=yyyy-MM-dd HH:mm:ss\r\n

8.3.4 Instant Messages

8.3.4.1 *Introduction*

The Nano can be used to display short messages. This can be useful when people don't have their mobile phone on the pocket but are still using the Nano and must be contacted quickly. The Nano then displays the message in a message box with yes/no answer options.

8.3.4.2 *URL*

The instant message service use the same address as the Incremental data post (8.3.2) and Request of the last received tag (8.3.3) services.

- %uRLHost%
- %uRLUrlDataPost%

Example:
uRLHost: "www.rfconception.com"
uRLUrlDataPost: "/postData.php"
Final address: "www.rfconception.com/postData.php"

8.3.4.3 *Server response*

The message is transmitted from the server to the Nano as an additional line into the standard response of Incremental data post (see *8.3.2 Incremental data post*) and Request of the last received tag (see *8.3.3 Request of the last received tag*).

Error Code: %error code%
%error message%

msg : <msgId>;<msg>;<res1>;[<res2>;[<res3>;[<res4>]]]

- The line start with **"msg : "**. Note that the space before and after the ':' are necessary.
- **<msgId>:** must be a number and serve to identify the messages. It must be different for each message.
- **<msg>:** is the core message. It must have a length of maximum 80 characters.
- **<res1..4>**: answer displayed to the user. The text will be textually sent back to the server according to the choice of the user.
-

8.3.4.4 *Messages answers*

As the message has a multiple-choice answer possibility, the answer of the user is transmitted into a standard Request of the last received tag (see *8.3.3 Request of the last received tag*) message.

The request contains the following additional fields:

Post parameter	Description
MsgID	Id of the related message
MsgResp	Answer, according to the <res1> … <res4>

8.3.4.5 *Data Format – uRTime Light*

To reduce the amount of transferred data and also improve the transfer rate in case of bad connection, only the following data are transmitted.

Number;Date;Time;RaceCode;TimerCode;Source;Status\r\n

1. **Number**
2. **Date** formatted as following "YYYYMMDD".
3. **Time** formatted as following "Hhmmss". (No ms).
4. **RaceCode**: race code encoded in the Tag
5. **TimerCode**: timer code encoded in the tag.
6. **Source**: nanoId
7. **Status**: 1 = withdraw, 0 = normal.

Example:

32367;20120611;173801;18;5; 463328;0
37;20120611;173912;18;5; 463328;0
561;20120611;174021;18;5; 463328;0

8.3.5 Consultation

8.3.5.1 *Introduction*

The Nano can also act as a terminal to consult data which are provided by the server.
The same address is used with different parameters to get the following information:

- List of the run in this event
- Head of the run (Mix or Woman)
- Search by name or number
- Number of waited persons to this checkpoint

8.3.5.2 *URL*

The base of the url is the same for all the request and made as following:

- %uRLHost%
- % uRLUrlConsult %
-

Example:
uRLHost: "www.rfconception.com"
uRLUrlDataPost: "/pdaInfos.php"
Final address: "*www.rfconception.com/pdaInfos.php*"

8.3.5.3 *List of the runs*

As an event can be composed of multiple runs, the following parameter permit to obtain the list of the runs and their associated abbreviations.

- Parameter: "type=clist"

Example:
The client make a GET HTTP request to the address:
www.rfconception.com/pdaInfos.php?type=clist

The Server answer a plain text page made as following:
Full Name run 1|run1\r\n
Full Name run2|run2\r\n
…
Example:
Ultra Race MB|urmb
The big montain|tbm
Run For Ever|rfe

The short name is used to make specific request to the run.

8.3.5.4 *Head of the run*

Request

Two parameters are given to the url:

- type=
  - tt%run short name% (M&W)
  - tf%run short name% (W only)
- idpoint=%uRLCheckPointId%

Example:

The client make a GET HTTP request to the address:

www.rfconception.com/pdaInfos.php?type=tttbm&idpoint=4

Server answer

The response of the server is composed of 10 lines at maximum. Each line contains the following fields:

1. Rank
2. Number
3. Category and sex
4. Name
5. First name
6. Last reached point name
7. Last reached point time
8. Status (0: normal, 1: withdraw)
9. Next point name
10. Next point time estimation

Fields are separated by the pipe character "|"

Example:

1|746|V1 H|SHERPA|Dachhiri Dawa|Vallo|L-14:32|0||\r\n
2|16|V1 H|REY|JEAN YVES|Vallo|Me-17:02|0||\r\n
3|139|V1 H|VILBERT|Fabien|Vallo|D-13:00|0||\r\n
4|334|SE H|BRUN|Christophe|Vallo|D-13:01|0||\r\n
5|4|SE H|RANCHIN|Emmanuel|Vallo|L-18:00|0||\r\n
6|15|V1 H|GIGUET|Pascal|Tour|L-11:47|0|Posett.|L-12:38\r\n
7|14|SE H|BAUMANN|Ryan|Tour|L-11:53|0|Posett.|L-12:44\r\n
8|94|ES H|BRIGNON|MATTHIEU|Tour|L-12:06|0|Posett.|L-12:56\r\n
9|580|SE H|DUSSEX|Eric|Tour|L-12:06|0|Posett.|L-12:56\r\n
10|728|V4 H|RIGHELE|MIRKO |Tour|L-12:11|0|Posett.|L-12:55\r\n

8.3.5.5 *Search engine*

Request

One parameter is given to the url:

- rech=%searchStr%

The %searchStr% can be a string representing a piece of the name or the number.
Example:
The nano make a GET HTTP request to the address:
For a search based on a part of the name:
www.rfconception.com/pdaInfos.php?rech=gab
for a search based on the number:
www.rfconception.com/pdaInfos.php?rech=123

Server answer

The response of the server is composed of 5 lines at maximum.
The line structure is the same as in 0.

8.3.5.6 *Number of awaited runners to this checkpoint*

Request

- type=cb%run short name%
- idpoint=%uRLCheckPointId%

Example:
The client makes a GET HTTP request to the address:
www.rfconception.com/pdaInfos.php?type=cbtbm&idpoint=4

Server answer

The Server answers a plain text page containing only the number.

Example:
315

9 Update procedure

9.1 Installation of the tools

The following steps need to be done on a computer that you will use to update the Nano, only once. The complete procedure is also described in this video:

https://www.youtube.com/watch?v=OuAOvbmSp9U (French version)

https://www.youtube.com/watch?v=ZSikI0ePTeY&t (English version)

9.1.1 FLIP software installation

Go onto the ATMEL website to download the FLIP software:

http://www.microchip.com/developmenttools/productdetails.aspx?partno=flip

If you're using Windows, download the FLIP version with Java Runtime Environment included, as shown on Figure 54 below. It will first check if have Java Runtime Environment and install it if not.

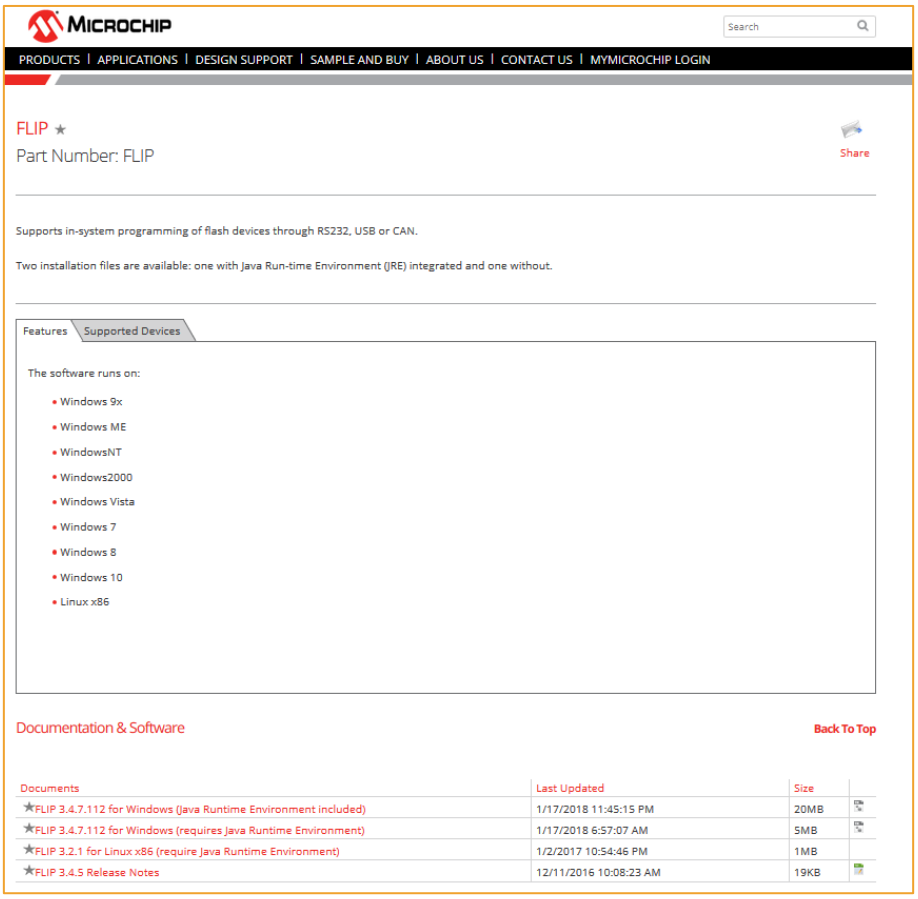


Figure 70 : Microchip website to download FLIP Controller

Execute the installer you've just downloaded. Install Java Runtime Environment if needed (*Figure 71* below), and then, install Flip. Accept the terms in the License Agreement, and let the default values, as shown in *Figure 72* below.

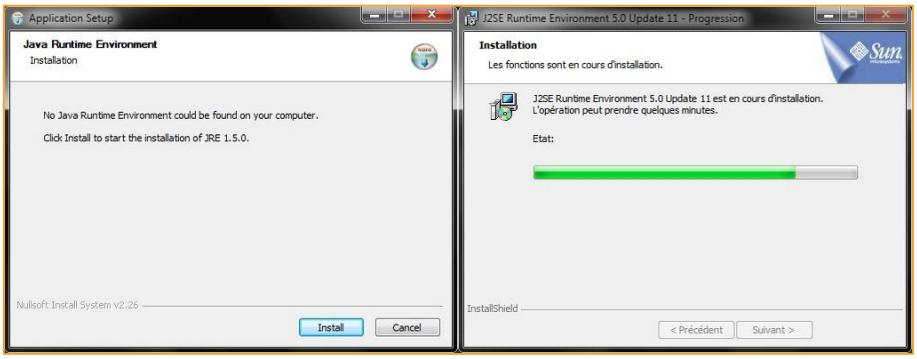


Figure 71 : Java Runtime Environment installation

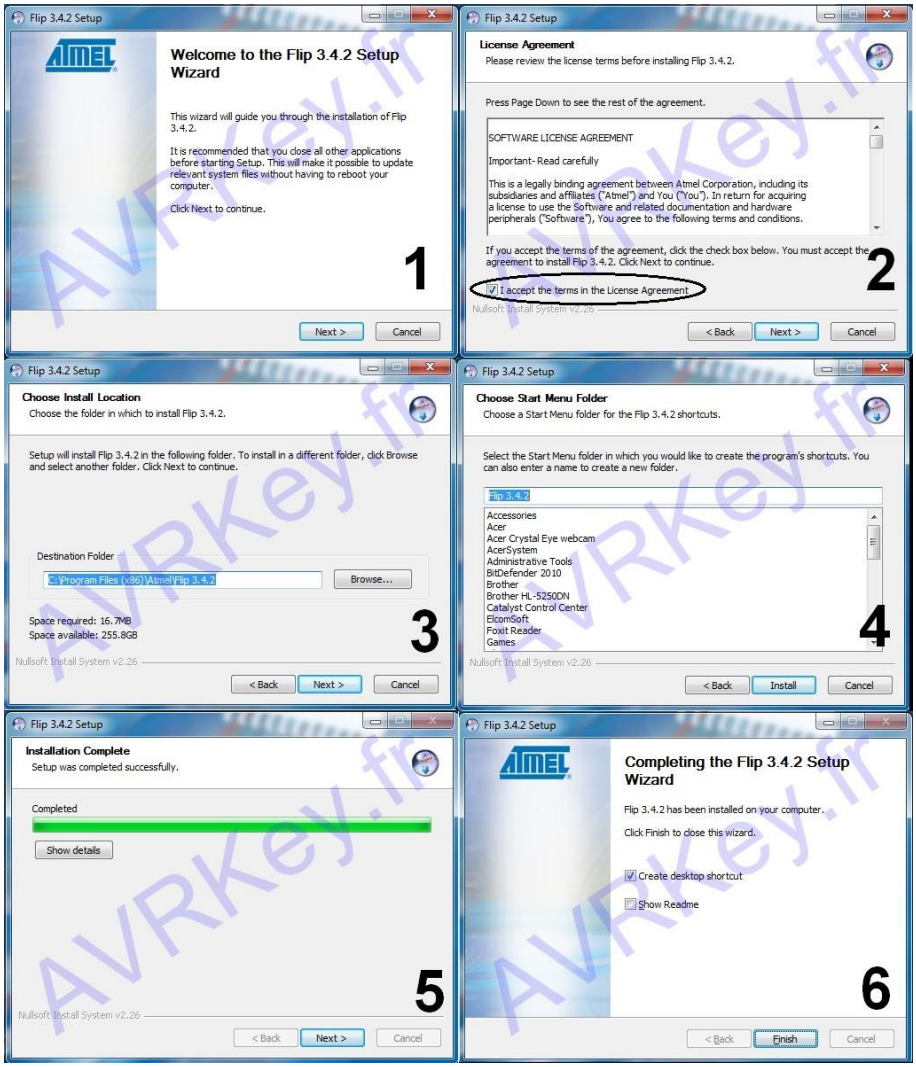


Figure 72 : Flip installation

9.1.2 Device installation

First, connect the Nano to the computer, in bootloader mode:

1. Switch off the Nano (on/off button).
2. Connect the USB cable to the PC and the Nano.
3. Switch on the Nano while holding the red button down.

The first time you connect your Nano to your computer, you will have to install the correct driver. Open the device manager. The Nano will be in “Other devices”.

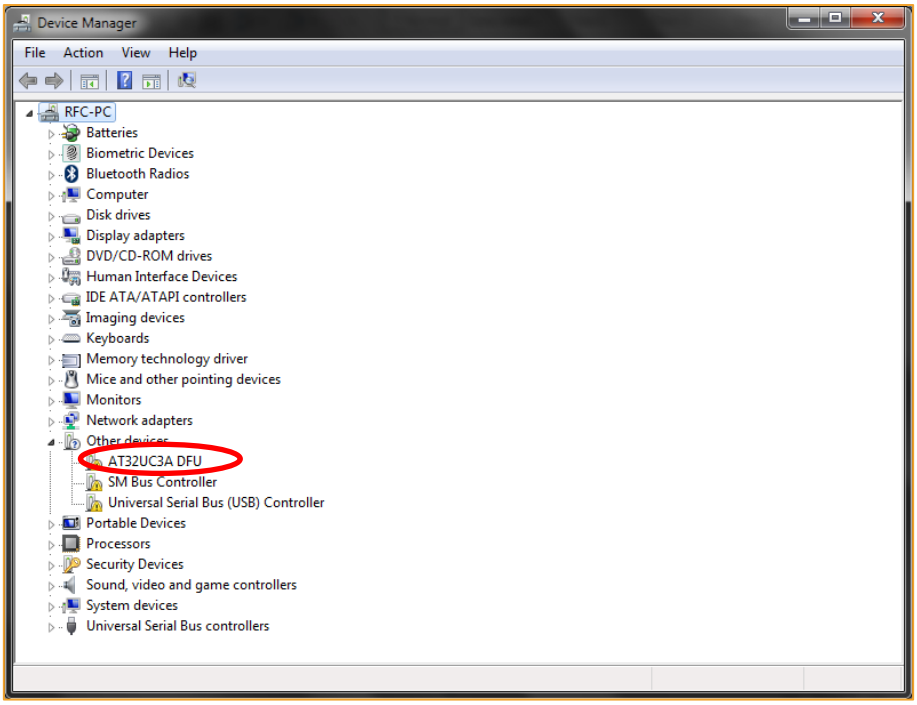
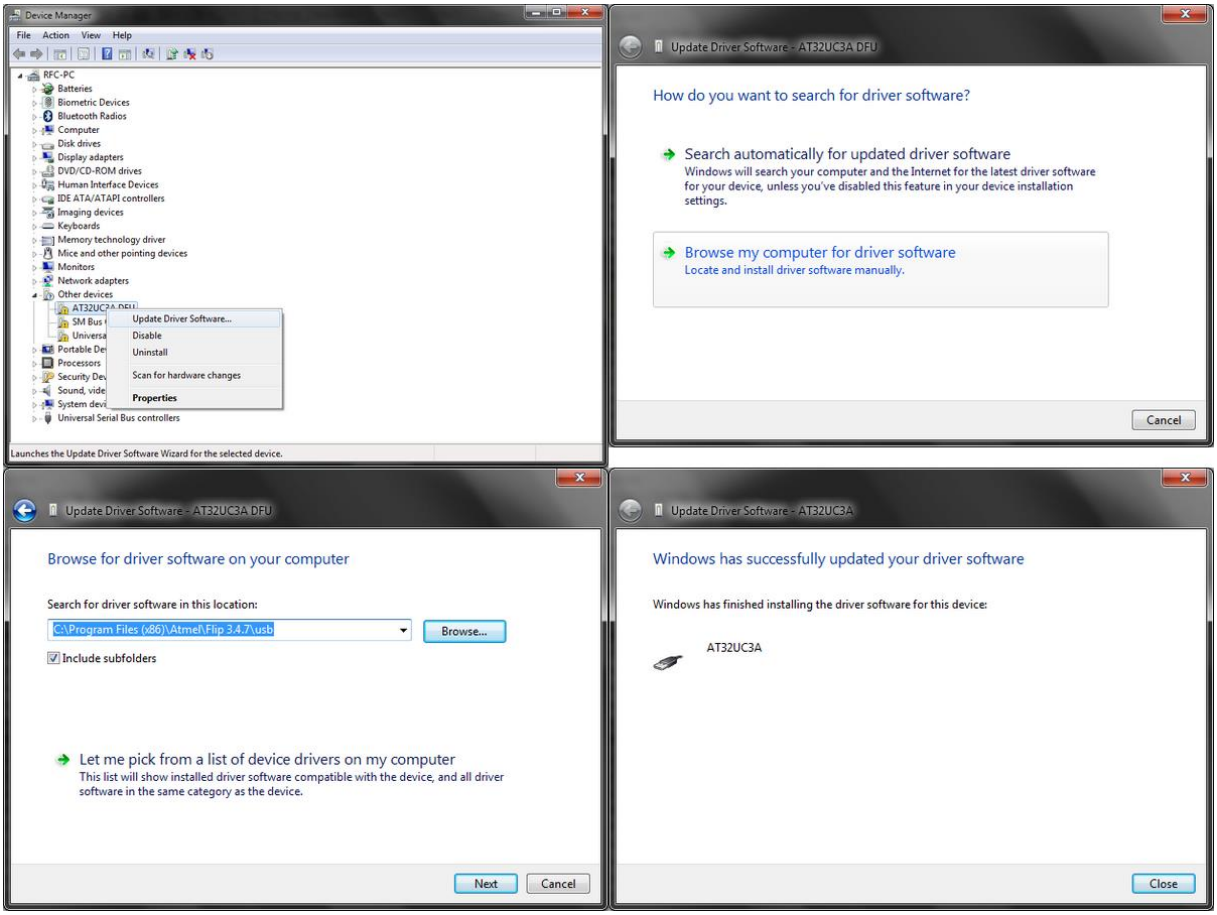


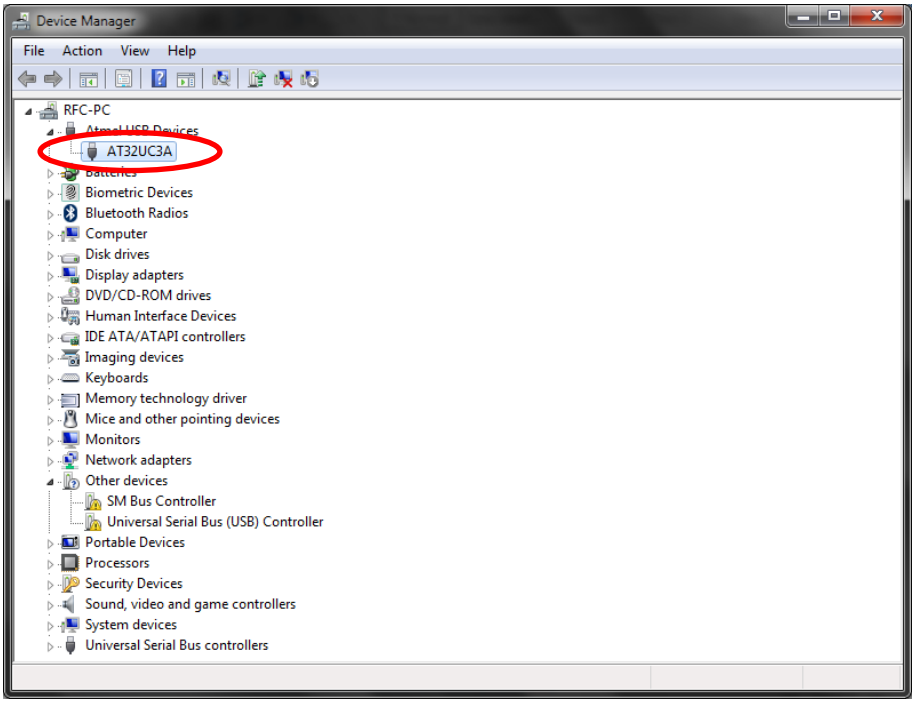
Figure 73 : Device manager with an uninstalled Nano

Click right on it to update driver software. Search the driver on your computer. If you have let the default values when installing Flip, the driver will be in the folder:

“C:\Program Files(x86)\Atmel\Flip 3.4.7\usb”



Once the driver correctly installed, the Nano will be recognized as an Atmel USB Device in the Device manager.



9.2 Nano update

9.2.1 Update preparation

You need to see the current firmware release of the Nano (*6.3.1 Nano identity*).

If the Nano have a firmware release less than 18.XX.XX you need to prepare the update. On the other hand, you can go to the paragraph *9.2.2 Firmware update*.

Update preparation:

- ⇨ To prepare the SD, create the file "\conf\nano.nv"
- ⇨ Add a line into this file according to your screen
  - For SCE: nvScreen = 0
  - For PICASO: nvScreen = 1
- ⇨ delete the file nano.conf
- ⇨ Update the firmware (*9.2.2 Firmware update*)
- ⇨ When updated, check the hardware settings (*6.3.7.1 Nano Type*) according your hardware (see *10. Identifying the hardware*)

In case of you have a doubt for the hardware determination, call uRTime

Note: file nano.nv is automatically deleted after use.

9.2.2 Firmware update

Execute the following steps every time you want to update your Nano firmware.

To download the latest Nano software release, go to the support website:

http://support.rfconception.com/uRTime/nano/

A password, provided by RFConception, will be required to log in.

Download the firmware: the filename contains the date of the version.

Figure 74 : Latest Nano software release to be downloaded on the support website

Once downloaded, unzip the file. You should have two files: "flashNano.bat" and "nano.elf".

Connect the Nano in bootloader mode:

1. Switch off the Nano (on/off button).
2. Connect the USB cable to the PC and the Nano.
3. Switch on the Nano while holding the red button down.

Execute the “flash.bat” file (by double clicking on it). A window will appear and the update start. It will take a few minutes. Once the update finished, press any key to close the window.

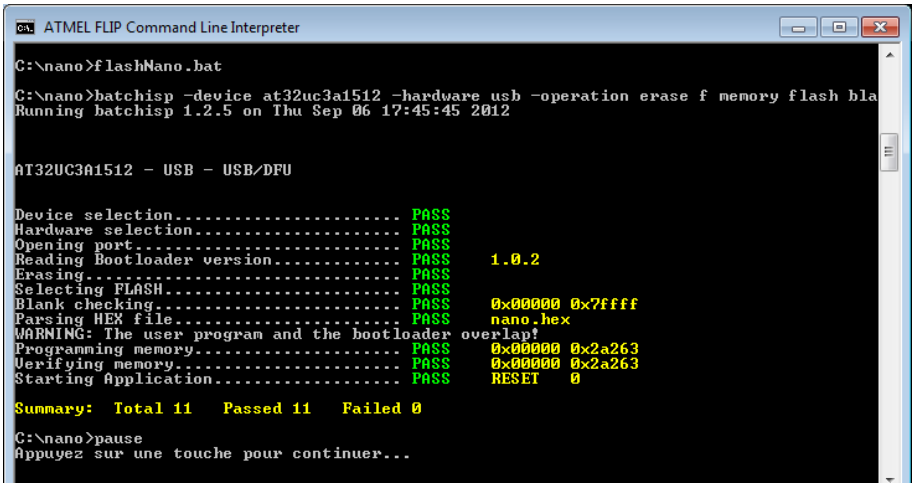


Figure 75 : Nano update window

9.2.3 Images screen update

As of April 2018, firmware versions use new icons.

To make the update, get the files IMAGES.GCI and IMAGER.GCI from the support website (*http://support.rfconception.com/uRTime/nano/01_icons/new*).

Place the files IMAGES.GCI and IMAGER.GCI to the /conf/ folder

To update the images of the screen, go to the advance menu (*6.3.7 Advanced)*

Figure 76 : Advanced menu

Select “Up Screen” to perform the transfer.

With the PICASO screen the file transfer can take up 5 minutes par files.
With the SCE screen the file transfer can take up 40 minutes par files.

In case you experience difficulties, call uRTime.

10 Identifying the hardware

10.1 Screen

1. Switch off the Nano (on/off button).
2. turn on the Nano while holding the red button down.

SCE screen:

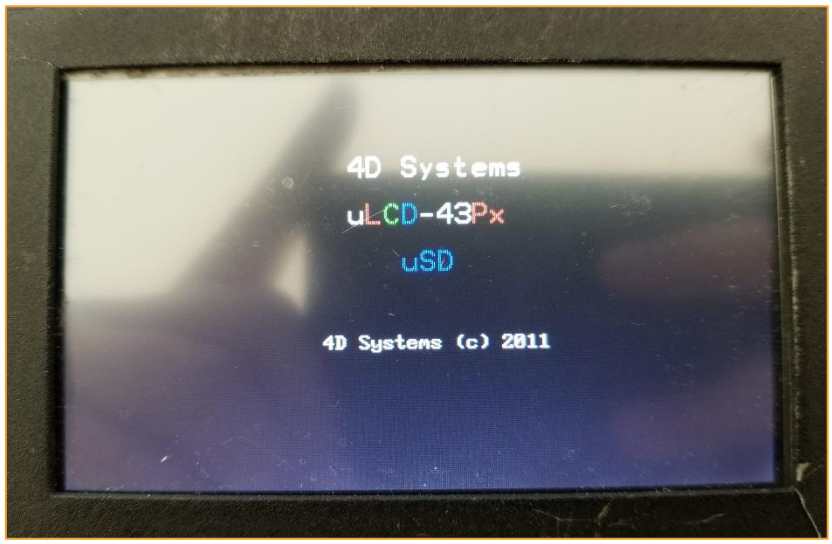


Figure 77 : SCE screen

PICASO screen:

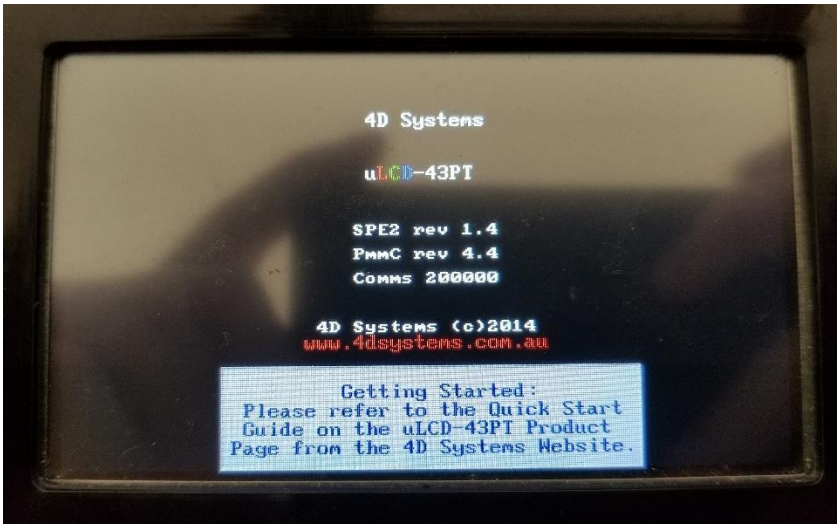


Figure 78 : PICASO screen

10.2 RFID reader

Remove the bottom cover to see inside of the Nano.

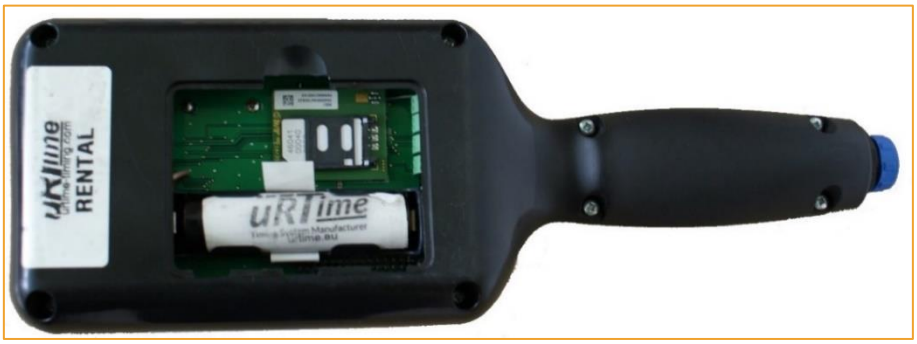


Figure 79 : QUARK RFID

2G modem is visible.

⇨ RFID reader is QUARK

Figure 80 : QUARK RFID

New battery holder, direct sim card holder (3G) but no SD inside.

⇨ RFID reader is QUARK

Figure 81 : RS500 RFID

New battery holder + direct sim card holder (3G) + SD inside.

⇨ RFID reader is RS500.

10.3 Modem type

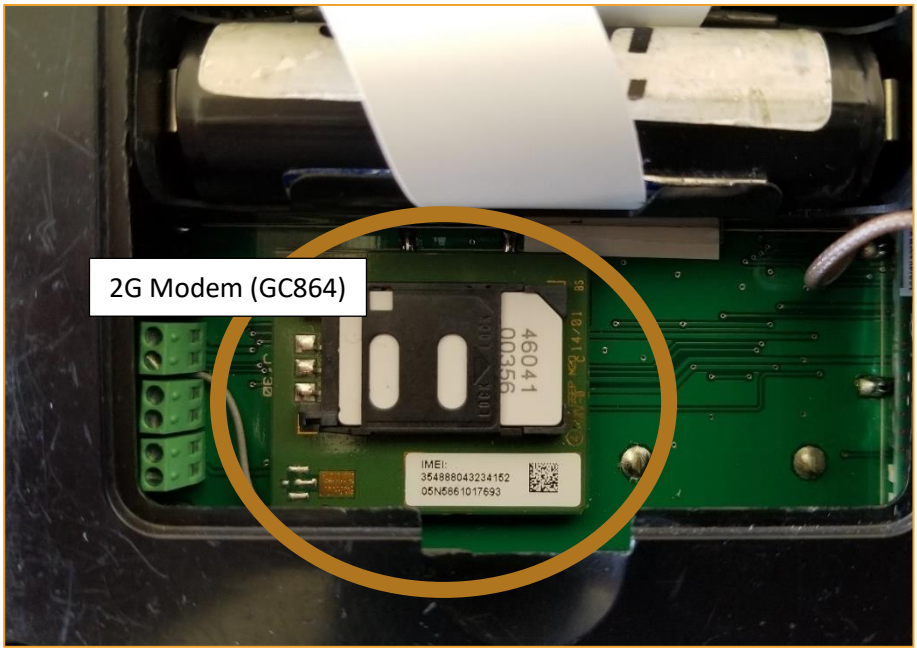


Figure 82 : 2G GSM module (GC864)

⇨ 2G modem (GC864).

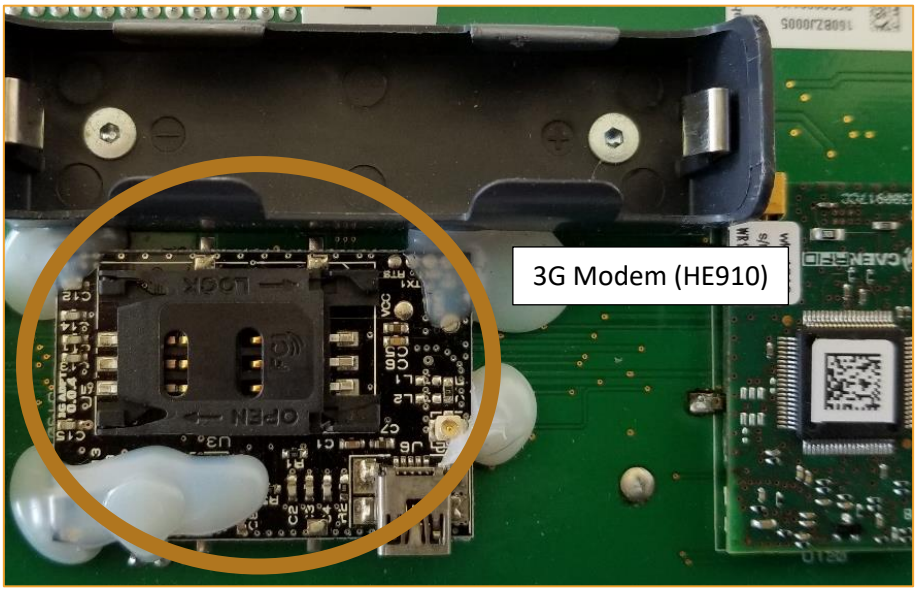


Figure 83 : 3G GSM module (HE910)

⇨ 3G Modem (HE910). **However, you need call immediately uRTime.**

Figure 84 : 3G GSM module (HE910)

⇨ 3G modem (HE910)

Figure 85 : 3G GSM module (HE910)

⇨ 3G modem (HE910)

10.4 Wi-Fi / XBee module

Remove the bottom cover to see inside of the Nano.

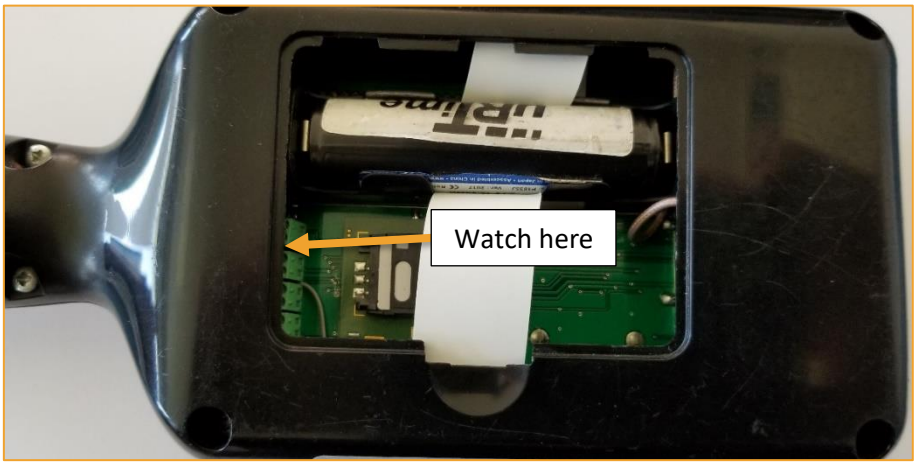


Figure 86 : Module position

Figure 87 : Wi-Fi module

For WIFI module, you can read "***MODEL: XBEES6B"*** or "***XB2B***" on the module.

Figure 88 : XBee module

If the Nano, have an old hardware version, and have a satellite module, he doesn't have a Wi-Fi or XBee module.

Figure 89 : Intermediate version

Figure 90 : New version with Wi-Fi module

10.5 Satellite module

Remove the bottom cover to see inside of the Nano.

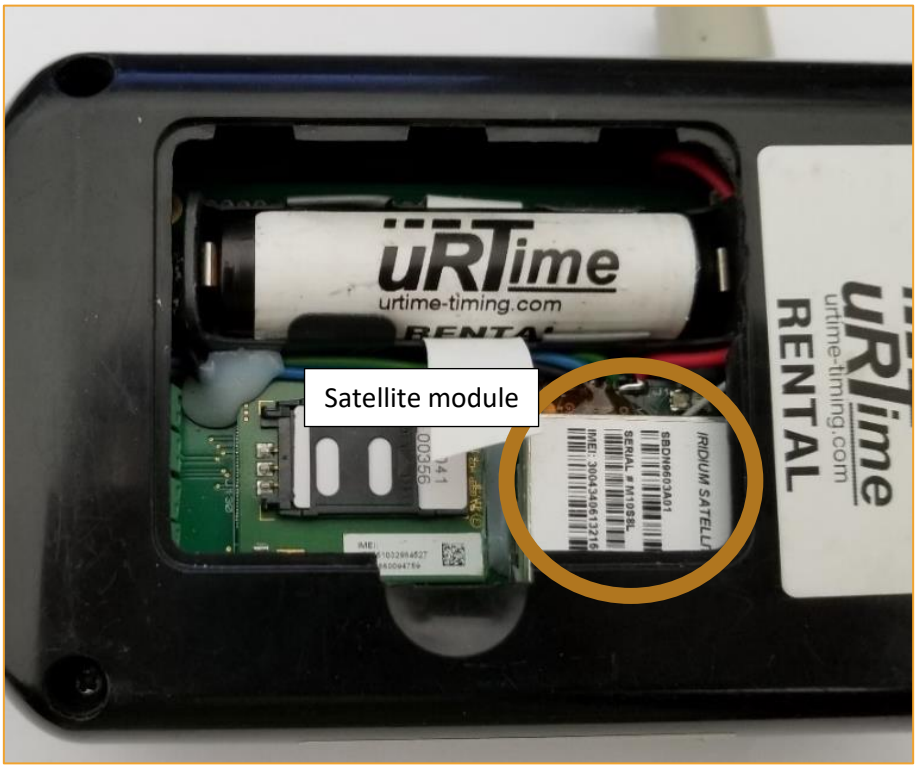


Figure 91 : Satellite module on old hardware version

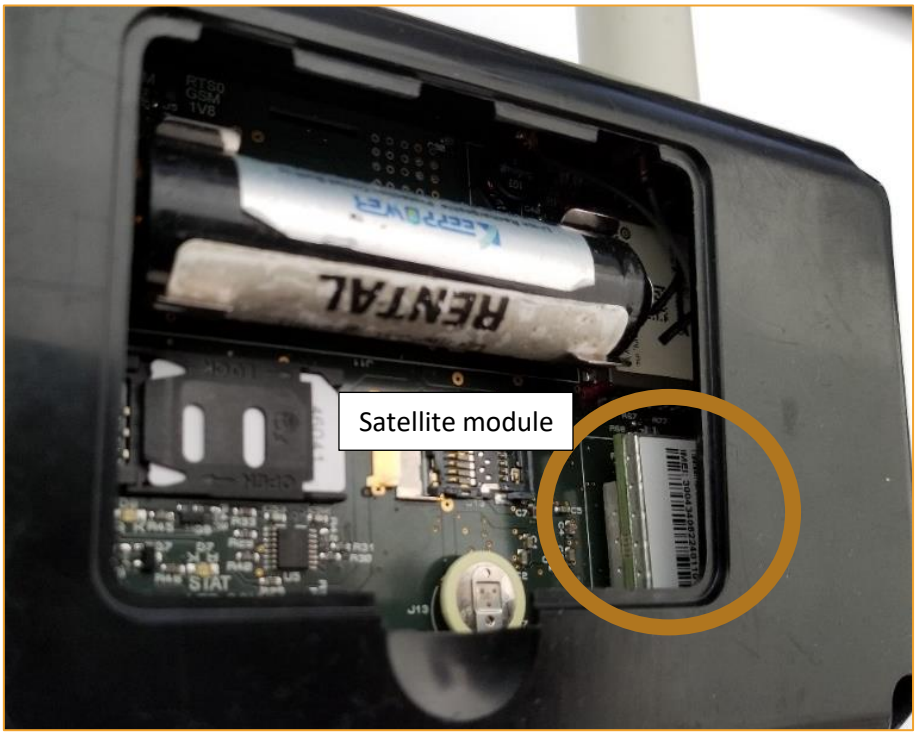


Figure 92 : Satellite module on new hardware version

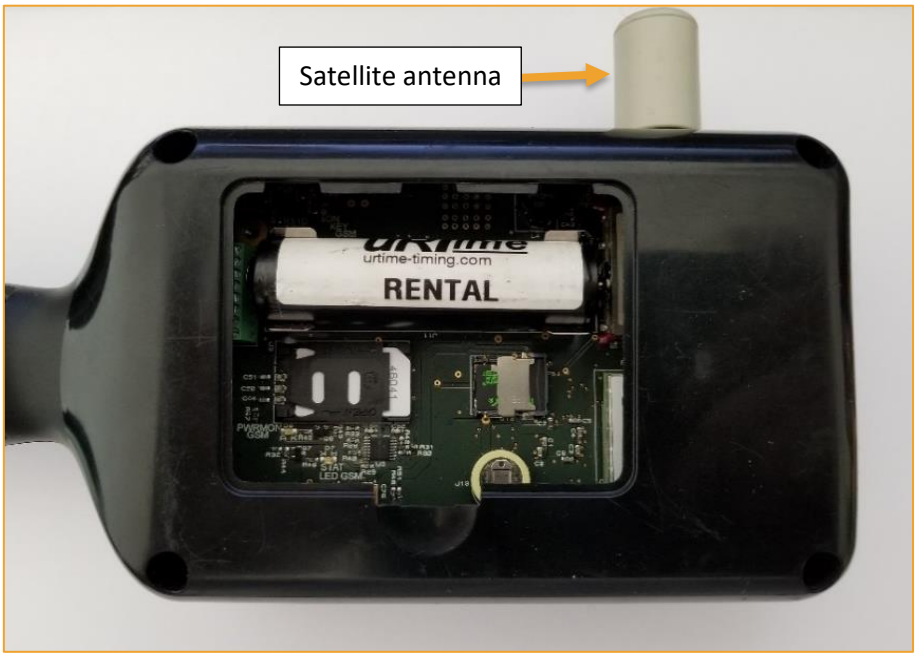


Figure 93 : Nano with satellite antenna

If you see this module and the antenna, you have a satellite module.

10.6 NV Settings

Some settings are stored directly into the Nano itself (not the SD card).

Those settings can be overrided by adding lines into the file "\conf\nano.nv".

Name	Parameter
nvLang	0 – French 1 – English
nvModemType	0 – 2G Modem (GC864) 1 – 3G Modem (HE910)
nvScreen	0 – SCE screen 1 – PICASO screen
nvNanoId	0
nvPower	100
nvRfidType	0 – QUARK 1 – RS500
nvWifiXbee	0 – No Wi-Fi and no XBee 1 – Present XBee module 2 – Present Wi-Fi module
nvSat	0 – No satellite module 1 – Present satellite module

If you use "nvWifiXbee" and "nvSat", put "nvNanoId" to "0" to update the nanoId.

Example:

This is an example of nano.nv configuration file for :

- Quark RFID module
- SCE screen
- Wi-Fi module

```
nvScreen = 0
nvRfidType = 0
nvWifiXbee = 2
nvNanoId = 0
```