



# RS420

Portable stick reader

## USER MANUAL

Version 1.9



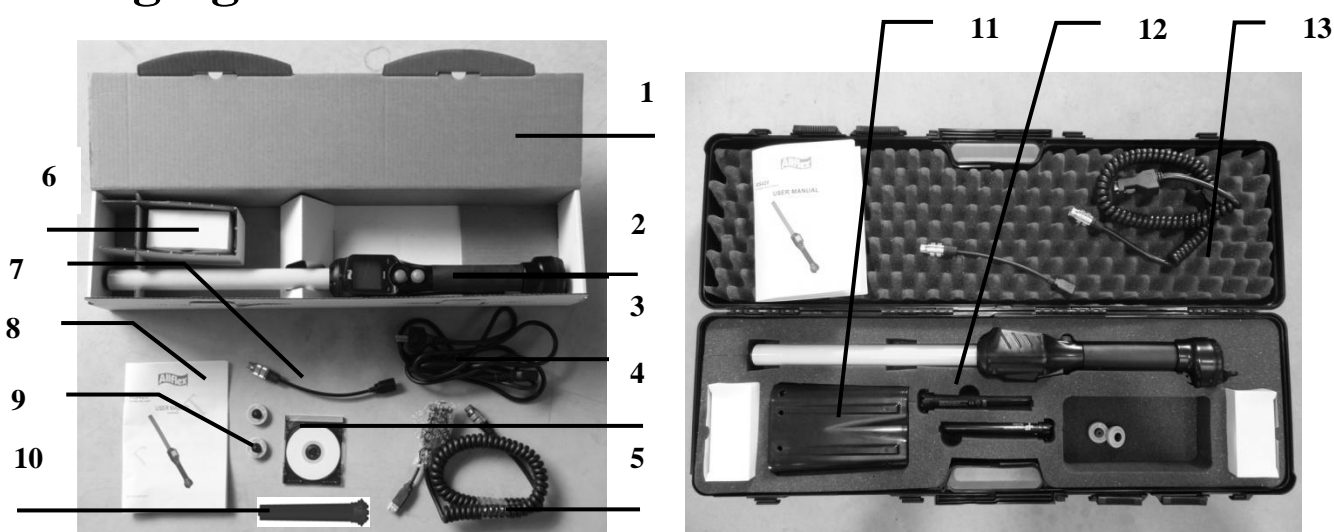
# Description

The **RS420** reader is a rugged portable hand-held scanner and telemeter for RFID tags specifically designed for livestock applications. The reader fully complies with ISO standards ISO11784 / ISO11785 for FDX-B and HDX technologies.

In addition to its tag reading functions, the reader can store up to 100,000 IDs in different work sessions, each associated with a time/date stamp, in its internal memory and transmit them to a personal computer via a USB interface, an RS232 interface or a Bluetooth® interface.

The device has a large display window which allows you to view the “Main Menu” and configure the reader to your specifications.

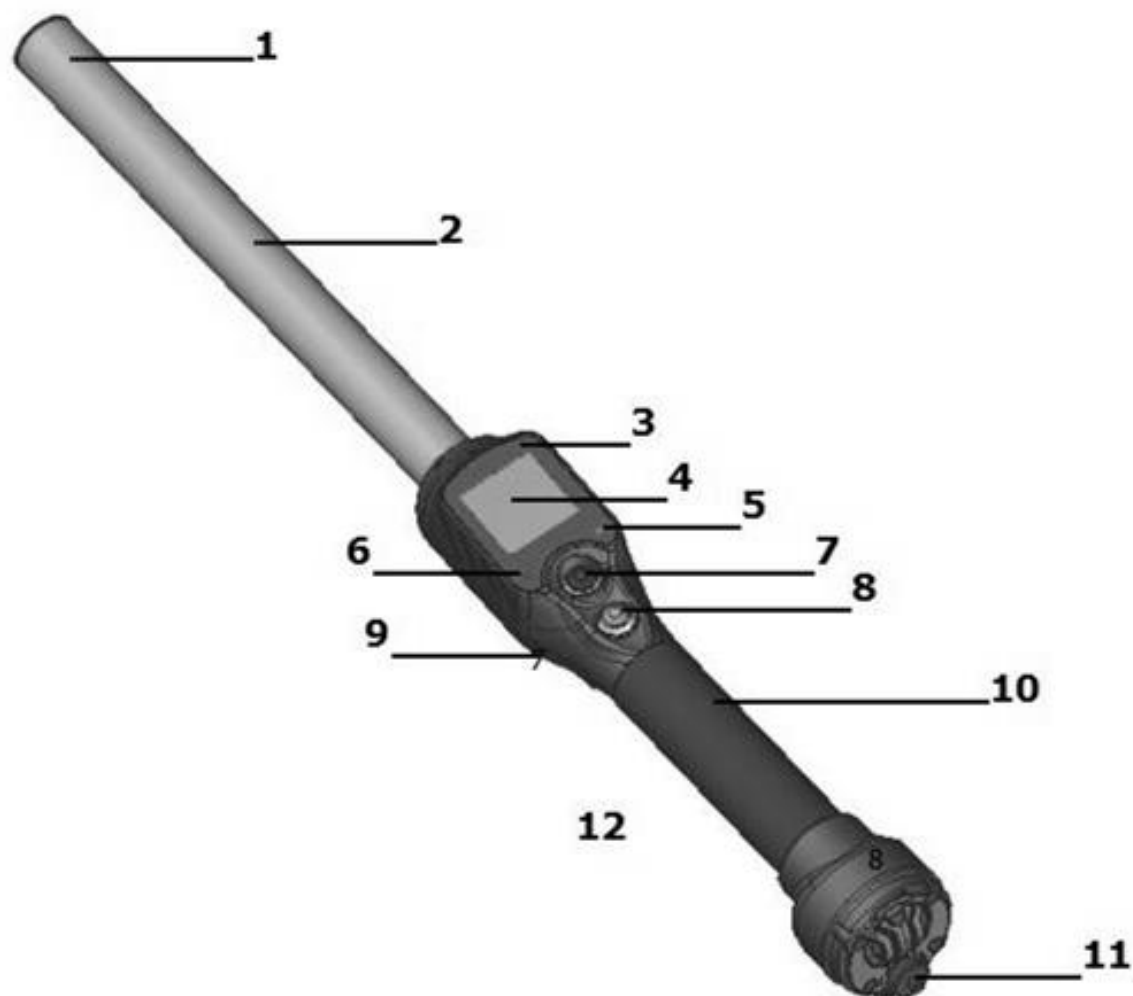
## Packaging list



Item	features	Description	Part Number
1	Cardboard	Used to transport the reader	E01VE025
2	Reader	-	-
3	IEC cable	Supply cable to power the external adapter	-
4	CD-ROM	Support for user manual and reader datasheets	E88VE018
5	Data-Power Cable	Conveys external power to reader and serial data to and from reader.	E88VE017
6	External Power Adapter	Powers the reader and charges the battery	E88VE016 (North-America) E88VE028 (UK) E88VE020 (other)
7	USB flash drive adapter	Allows the user to connect an USB stick to upload or to download data to or from reader.	E88VE015
8	User Manual	-	E88VE014
9	Ear Tags	2 ear tags to demonstrate and test FDX and HDX reading capabilities.	E88VE012
10 & 12	Rechargeable Li-Ion battery	Supplies the reader. Adds expected battery life	E88VE013
11	External Power Adapter	Powers the external fast charger	E94VE00x <sup>1</sup>
13	Plastic case	Use to transport the reader and accessory in a robust case.	E88VE027

<sup>1</sup> E94VE001 = Europe (EU) except United-Kingdom (UK), E94VE002 = UK and E94VE003 = World except EU and UK

**Figure 1 - Reader features and user interface.**



**Table 1 – Reader features and description of use**

Item	Feature	Description of use
1	Antenna	Emits activation signal and receives transponder signal.
2	Fiberglass Tube Enclosure	Rugged and watertight enclosure.
3	Audible beeper	Beeps once on first transponder reading and 2 short beeps for repeat.
4	Large graphical readout with backlight	Displays information about current reader status.
5	Green indicator	Illuminates whenever a transponder data has been stored.
6	Red indicator	Illuminates whenever antenna is emitting activation signal.
7	black MENU button	Navigates in the reader menu to manage or to configure it.
8	green READ button	Applies power and causes activation signal to be emitted for reading transponder
9	Vibrator	Vibrates once on first transponder reading and short vibrates for repeat.
10	Handle grip	Rubber anti-slip gripping surface
11	Cable connector	Electrical interface for attaching Data/Power cable or USB stick adapter.
12	Bluetooth®	Wireless interface to communicate data to and from reader (not pictured)

# Operation

## Getting Started

It is necessary to first fully charge the Battery Pack as described below and to have a few electronic identification ear tags or implants available for testing. **It is very important to carry out the three steps described in this section before using the reader (see “Battery handling instructions” section for more information)**

### Step 1: Installing the battery pack in the device.



1

Insert the battery in the reader. The pack is keyed for proper installation.



2

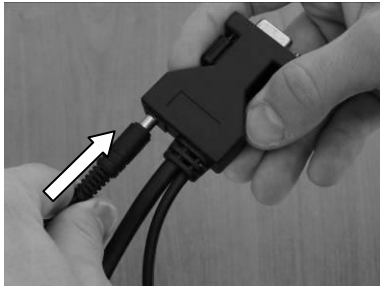
The stationary key should be up towards the display. The battery pack will “snap” into place when it is properly inserted. DO NOT FORCE the battery into the reader. If the battery does not insert smoothly, verify it is properly orientated.

### Step 2: Charging the battery pack.



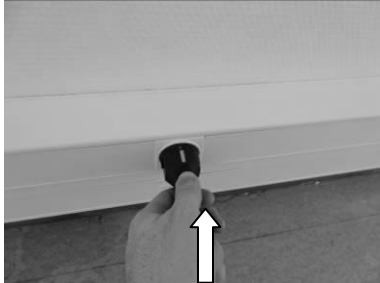
1

Unscrew the protective cap which guards against foreign material contamination.  
Insert the data-power cable by engaging the connector and rotating the lock-ring.



2


Plug the power cord into the cable socket located at the end of the data-power cable.



3

Plug the adapter into a power outlet. The icon of the battery level indicates that the battery pack is in charge (the level bars flash inside the icon) and gives the battery charge level.

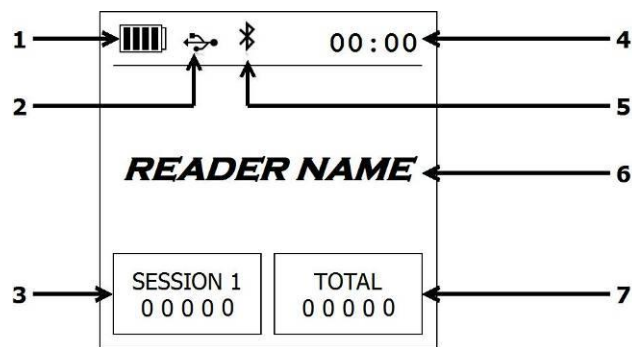
4

The icon of the battery level will be  when charging has finished. Charging takes approx. 3 hours.

Remove the power cord.  
Unplug the adapter from the power outlet, and remove the data-power cable inserted in the reader.

## Power on instructions

Press the **green** button on the reader handle to power on the reader. The main screen will appear on the display:



Item	Feature	Description of use
1	Battery level	The battery level shows the fully charged level as well as the charge level during the charge mode.
2	USB connection	Appears when the reader is connected to a computer via USB port. <u>NOTE:</u> The reading mode is disabled if there is no battery and no external power supply. Therefore it is not possible to read a transponder although the other functions are fully active.
3	Current number of ID codes	Number of read and saved ID codes in the current session.
4	Clock	Clock time in 24 hour mode.

5	Bluetooth connection	Check the Bluetooth® status and connection (see section “Bluetooth® management” for more details).
6	Reader name	Displays the reader name. It appears only upon power on and until a tag is read.
7	Number of ID codes	Total number of read and saved ID codes in all recorded sessions.

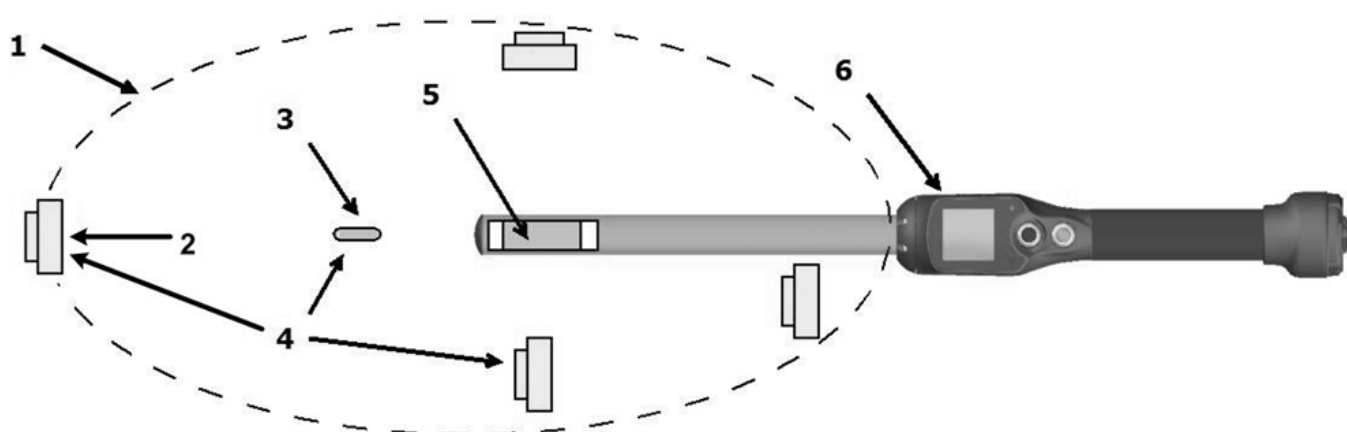


**Note 1** - Once activated, the reader will remain activated for 5 minutes by default, if it is powered only by its battery pack.

## Read Range Performance

Figure 2 illustrates the reading zone of the reader, within which tags can be successfully detected and read. Optimum read distance occurs depending upon the orientation of the tag. Tags and implant read best when positioned as shown below.

**Figure 2 - Optimum Read Distance Tag Orientation**



Item	Legend	Comments
1	Reading zone	Area in which the ear tags and the implants can be read.
2	RFID Ear tag	-
3	RFID Implant	-
4	Best orientation	Best orientation of the ear tags regarding the reader antenna
5	Antenna	-
6	Reader	-

Typical read distances will vary when reading different types of ear tags, in the optimum tag orientation at the end of the reader (as shown in Figure 2), the reader will read up to 42cm depending tag type and orientation.

## Power off instructions

The reader can be powered off by simultaneously depressing BOTH buttons for approximately 3 seconds

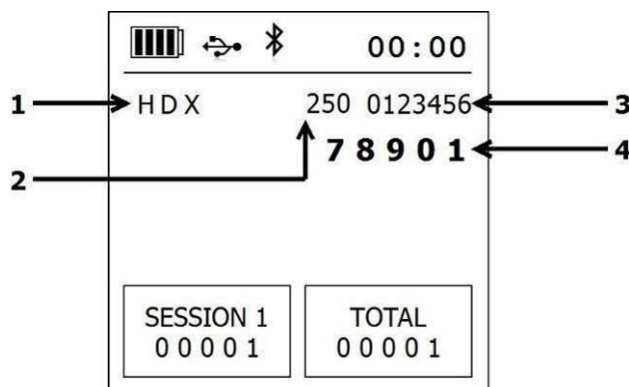
## Reading an RFID Transponder

### Scanning animals

Place the device near the animal identification tag to be read, then press the green button in order to activate the reading mode. The screen backlight switches on and the red light will be flashing.

During the reading mode, move the reader along the animal to scan the transponder ID. The reading mode remains activated during a programmed duration. If the green button is held down, the reading mode remains activated. If the device is programmed in continuous reading mode, the reading mode remains indefinitely activated until you press the green button a second time.

The following picture shows the result of a successful reading session:



Item	Feature	Description of use
1	Transponder type	ISO standard 11784/5 has approved 2 technologies for animal identification: FDX-B and HDX. When the reader displays the word "IND" as transponder type, it means that its transponder is not coded for animals.
2	Country code / Manufacturer code	The country code is according the ISO 3166 and ISO 11784/5 in numeric or in alpha coding. Manufacturer code is according to ICAR assignment.
3	First digits of ID code	First digits of the identify code is according the ISO 11784/5.
4	Last digits of ID code	Last digits of the identify code is according the ISO 11784/5. The user can select the number of last bold digits (between 3 and 8 digits).

When a new EID transponder is successfully read, the green light flashes and the reader stores the ID code in its internal memory after its first reading (and if the option “duplicate search” is activated) with the current date and time (if the option is activated).

The number of read ID codes in the current session is increased.

The buzzer and the vibrator will sound and/or vibrate with every scan.



**Note 2** –The ‘Date and Time Stamp’, and the sound/vibration features are options that can be turned on or off according to your specific applications.

Each time a tag is scanned, the identification code is transmitted automatically via the USB cable, the RS232 cable, or Bluetooth®.

## Tips for efficient reading

Tag reader efficiency is often linked with reading distance. The device's read distance performance is affected by the following factors:

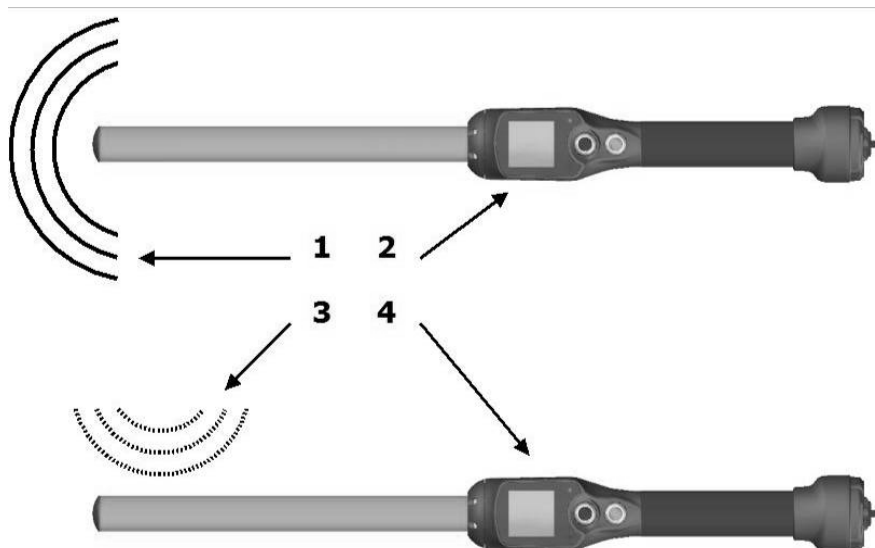
1. Transponder orientation: to obtain maximum reading distance, the axes of the transponder and reader antenna coils must be optimally orientated as shown in Figure 2.
2. Transponder quality: Each transponder manufacturer uses their own unique manufacturing process. Consequently, it is normal to find that many common transponders from different manufacturers have different read range performance levels.
3. Animal movement: If the animal moves too quickly, the transponder may not be located in the read zone long enough for the ID code information to be obtained.
4. Transponder type: HDX and FDX-B transponders generally have similar reading distances, but tag manufacturers and environmental factors such as RF interferences may affect overall tag performances.
5. Nearby metal objects: Metal objects located near a transponder or reader may attenuate and distort the magnetic fields generated in the RFID systems therefore, reducing the reading distance. An example, an ear tag against a squeeze chute significantly reduces the read distance.
6. Electrical noise interference: The operating principle of RFID transponders and readers is based on electromagnetic signals. Other electromagnetic phenomena, such as radiated electrical noise from other RFID tag readers, or computer screens may interfere with RFID signal transmission and reception, therefore, reducing the read distance.
7. Transponder/reader interference: Several transponders in the reception range of the reader, or other readers that emit excitation energy close by may adversely affect reader performance or even prevent the reader from operating.
8. Discharged battery pack: As the battery pack discharges, the power available to activate the field becomes weaker, which in turn reduces the read range field.



## Wireless synchronization

A reader which is in the vicinity of a second reader is very likely to transmit its activation signal during the listening pause of the second reader and vice versa. The result is that neither reader will be able to receive the HDX telegram.

Wireless synchronization can be used to control the coordination of readers. The proviso is that the electrical noise in the environment is low and the RFI noise is constant, for the type of readers in use.



Item	Legend	Comments
1	Activation signal - of reader 1	
2	Reader 1	reader 1 in transmitting mode.
3	Activation signal - from reader 1	
4	Reader 2	reader 2 in listening mode.

*“A mobile transceiver by nature cannot directly be connected to other transceivers. To prevent a mobile transceiver interfering with the interrogation protocol of other transceivers, it must be able to detect the presence of additional active transceivers through the reception of activation signals.*

*If no activation signal is detected within 30 ms, the transceiver is out of reach of other active transceivers and its activation signal will not interfere with other interrogation processes. The transceiver can therefore safely use the protocols defined in clause 6 of this International Standard. If the mobile transceiver detects an activation signal it must wait for the rising edge of the next activation signal and activate during a fixed period of 50ms.” (cf. ISO1185 – Annex C chapter 3)*



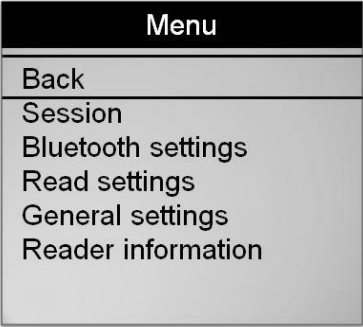
**Note 3** – Activate the wireless synchronization feature only with readers which comply with the ISO11785 timings.

# Managing the menu

## Using the menu

With the reader powered on, press the black button for over 3 seconds.

**Menu 1 – Menu listed after pressing of the black button for over 3 seconds.**

	Item	Sub-Menu	Definition
	1	Back	Return to the main screen
	2	Session	Enter into the session management sub-menu (see Menu 2)
	3	Bluetooth settings	Enter into the Bluetooth management sub-menu (see Menu 6)
	4	Read settings	Enter into the reading management sub-menu (see Menu 8)
	5	General settings	Enter into the device settings sub-menu (see Menu 14).
	6	Reader information	Gives information about the reader (see Menu 19).




**Note 4** – To enter into a sub-menu, move the horizontal lines by pressing the green button and press the black button to select it.



**Note 5** - The reader automatically closes the menu if no action occurs for 8 seconds.

## Session management

**Menu 2 - Menu “session”**

	Item	Sub-Menu	Definition
	1	Back	Return to the previous screen
	2	New working session	Create a new work session after validation by the user. This new session becomes the current one and the previous one is closed.
	3	Open working session	List all stored sessions and indicates the number of existing saved ID codes per each session.
	4	Export session	Enter into the export sub-menu.
	5	Import from flash drive	Import sessions from flash drive (memory stick) and store them into the reader flash memory.
	6	Delete session	Enter into the delete sub-menu



**Note 6** – Each ID Code is stored internally in the reader’s memory until the user erases the stored ID codes after downloading them to a PC or other recording device, such as an USB stick. Up to 100,000 ID codes (10,000 ID codes per sessions) can be stored and retrieved later at the user’s convenience.



**Note 7** – If enabled, the reader provides a time and date stamp for each ID number stored.

The user can enable the date and time through a communication interface (USB, Serial, or Bluetooth® port) and the software program.

#### Menu 3 - Menu “export session”

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Current session	Open the Menu 4 to select the channel to export the current session.
3	Select session	List the stored sessions and once a session is selected, open the Menu 4 to select the channel to export the selected session.
4	All sessions	Open the link sub-menu to select the channel to export all sessions.

#### Menu 4 - List of channels to export the session(s):

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Bluetooth	Send session(s) via the Bluetooth link
3	USB flash drive	Store the session(s) on flash drive (memory stick) (see Note 9)
4	USB link	Send session(s) via the USB link
5	Serial link	Send session(s) via the Serial link



**Note 8** – Connect your flash drive (memory stick), establish an USB connection, a serial connection or a Bluetooth® connection before to select the session importation or the session exportation.



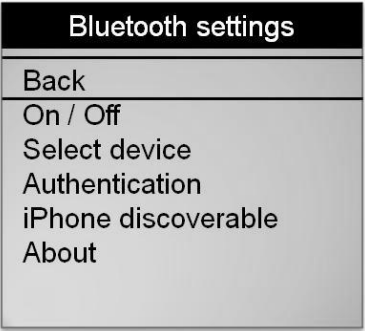

**Note 9** – Connect your flash drive (memory stick) before exporting the session otherwise the message “No drive detected” is displayed, check that the drive is well-connected then please retry or cancel.

#### Menu 5 – Menu “delete session”

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Select session	List the stored sessions, and once a session is selected, it is deleted after confirmation.
3	All sessions	Erase all stored sessions after confirmation.

# Bluetooth® management


## Menu 6 - Menu “Bluetooth®”

	Item	Sub-Menu	Definition
 <p>Bluetooth settings</p> <ul style="list-style-type: none"> <li>Back</li> <li>On / Off</li> <li>Select device</li> <li>Authentication</li> <li>iPhone discoverable</li> <li>About</li> </ul>	1	Back	Return to the previous screen
	2	On/Off	Enable or Disable the Bluetooth® feature.
	3	Select device	Configure the reader in SLAVE mode or scan and list all Bluetooth® devices in the reader proximity to configure the reader in MASTER mode.
			 <p>Select device</p> <ul style="list-style-type: none"> <li>Back</li> <li>Slave</li> <li>&gt; MZ220</li> <li>Allflex's iPhone</li> <li>Search new device...</li> </ul>
	4	Authentication	Enable or disable the security feature of the Bluetooth®
	5	iPhone Discoverable	Make the reader discoverable by iPhone, iPad and iPod.
	6	About	Provide information about the Bluetooth® features (see Menu 7).




**Note 10** – When the reader is discoverable by iPhone, iPad or iPod, a message “pairing finished?” is displayed. Press “Yes” once, the iPhone, iPad or iPod is connected via Bluetooth®.


## Menu 7 – Information about Bluetooth®

	Item	Feature	Description of use
 <p>About Bluetooth</p> <p>Name: RS420 Addr: 00:04:3E:AA:BD:BA Pairing: Slave Security: OFF PIN: 1234 Version: 120506B IDPS</p>	1	Name	Name of the reader.
	2	Addr	Address of the Bluetooth® module.
	3	Pairing	“Bluetooth® address of the device” when the reader is in MASTER mode or term “SLAVE” when the reader is in SLAVE mode.
	4	Security	On/Off – the Bluetooth® connection is secure or not.
	5	PIN	Pin code
	6	Version	Version of the Bluetooth® stack.

### Note 11 – Understanding the Bluetooth® icon:

When the Bluetooth® module is enabled but not connected, an icon  is displayed and is blinking.



If the icon  doesn't blink, that means the device is connected in SLAVE mode.

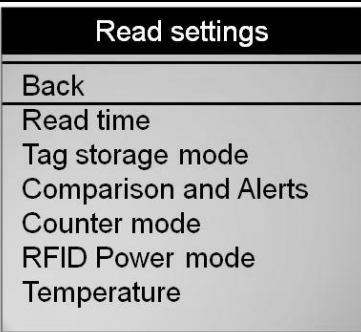
If the icon  is displayed, a connection has been established in MASTER mode.



**Note 12** – 1 beep is emitted and 1 message is displayed when the Bluetooth® connection is established and 3 beeps are emitted when the connection is removed.

## Read settings

### Menu 8 - Menu “Read settings”

	Item	Sub-Menu	Definition
	<b>1</b>	Back	Return to the previous screen
	<b>2</b>	Read time	Manage the scanning time of reading (3s, 5s, 10s or continuously scanning)
	<b>3</b>	Tag storage mode	Manage the storage of read tag (no storage, on read and on read but no duplicated in the memory)
	<b>4</b>	Comparison and Alerts	Manage comparison and alerts regarding read tags (see Menu 12).
	<b>5</b>	Counter mode	Manage the counters displayed on main screen
	<b>6</b>	RFID Power Mode	Manage the power consumption of the device (see Menu 10)
	<b>7</b>	Temperature	Manage the temperature detection. <b>This option is useful with Bio-Thermo® implants.</b>

### Menu 9 - Menu “Counter mode”

Item	Sub-Menu	Definition
<b>1</b>	Back	Return to the previous screen
<b>2</b>	Session   Total	1 counter for all IDs stored in the current session and 1 counter for all IDs saved in memory (max. 9999)
<b>3</b>	Session   Unique tags	1 counter for all IDs stored in the current session and 1 counter for all unique IDs stored in memory (max. 1000). <b>The tag storage mode is automatically changed to “ON READ” (referred to item 3 in menu above).</b>

## Menu 10 - Menu “RFID power mode”

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Save power	Puts the device in low power consumption with shorter reading distances.
3	Full power	Puts the device in high power consumption

## Menu 11 - Menu “Temperature”

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Disabled	Disable the temperature measurement
3	Enabled	Enable the temperature measurement



**Note 13** – When the reader is in low consumption, the reading distances are reduced.

## Menu 12 - Menu “Comparison and Alerts”

	Item	Sub-Menu	Definition
<div> <div>Comparison and Alerts</div> <div> Back  Select compare  Disable compare  Alerts </div> </div>	1	Back	Return to the previous screen
	2	Select compare	List all sessions saved inside the reader and select the comparison session used to compare the read ID codes.
	3	Disable compare	Disable the comparison.
	4	Alerts	Enter into the menu “alerts” (see Menu 13).

## Menu 13 - Menu “Alerts”

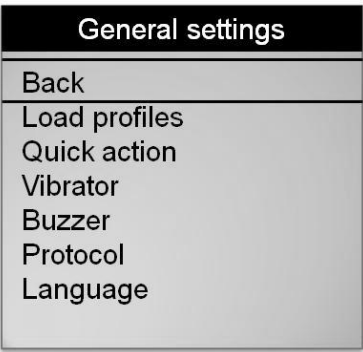
	Item	Sub-Menu	Definition
<div> <div>Alerts</div> <div> Back  Disabled  On animal found  On animal not found  From compare session </div> </div>	1	Back	Return to the previous screen
	2	Disabled	Disable the alert management.
	3	On animal found	Produce an alert signal when the read ID code is found in the comparison session.
	4	On animal not found	Produce an alert signal when the read ID code is NOT found in the comparison session.
	5	From compare session	Produce an alert message if the read ID is tagged with an alert within the compare session.



**Note 14** – When a tag is read and compared successfully to an ID code stored in a selected comparison session, supplementary information stored in the comparison session, can be displayed on the reader’s screen (ex: visual id code, supplementary data...)

## General settings


### Menu 14 - Menu “general settings”

	Item	Sub-Menu	Definition
	1	Back	Return to the previous screen
	2	Load profiles	Allow to recall profiles saved in the reader. By default, the factory settings can be reloaded.
	3	Quick action	Attribute a second feature to the black button (see Menu 15).
	4	Vibrator	Manage the vibrator (see Menu 16).
	5	Buzzer	Manage the audible beeper (see Menu 17).
	6	Protocol	Select the protocol used by the communication interfaces (see Menu 18).
	7	Language	Select the language used by the device (English, French or Spanish).



**Note 15** – A profile corresponds to the current settings of the reader which can be dedicated to a custom use. The user can save up to 4 profiles.

### Menu 15 - Menu “quick action”

	Item	Sub-Menu	Definition
	1	Back	Return to the previous screen
	2	Disabled	No feature attributed to the black button
	3	Enter menu	Fast access to the menu.
	4	New session	Fast creation of a new session.
	5	Re-send last tag	Last read tag is re-sent on the communication interfaces.



**Note 16** – A quick action is a second feature attributed to the black button. The reader performs the selected action after a short keystroke of the black button.



**Note 17** – If the user holds the black button for over 3 seconds, the device displays the menu and the quick action is not performed.



**Note 18** – The symbol “>” is in front of the current selected option.

## Menu 16 Menu “vibrator”

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Disabled	Disable the vibrator
3	Enabled	Enable the vibrator

### Note 19



- A short vibration indicates that the reader has previously read the tag during the current session.
- A vibration of medium-duration means that the reader has read a new tag which has NOT been previously read during the current session.
- A long vibration means that there is an alert regarding the tag which has been read.

## Menu 17 - Menu “buzzer”

Item	Sub-Menu	Definition
1	Back	Return to the previous screen
2	Disabled	Disable the audible beeper.
3	Enabled	Enable the audible beeper.

### Note 20



- A short beep indicates that the reader has switched on or that the Bluetooth® connection is established.
- Two short beeps mean that the reader has previously read the tag during the current session.
- Three short beeps mean that the Bluetooth® connection is removed.
- A beep of medium-duration means that the reader has read a new tag which has NOT been previously read during the current session
- A long beep means that there is an alert regarding the tag which has been read.

## Menu 18 – Menu “protocol”

	Item	Sub-Menu	Definition
	1	Back	Return to the previous screen
	2	Standard protocol	Select the standard protocol defined for this reader (see specifications Protocol_Document_V1.0).
	3	Allflex RS320 / RS340	Select the protocol used by ALLFLEX’S readers RS320 and RS340.



**Note 21** – All commands of ALLFLEX’S reader are implemented but all functionalities are not implemented (see specifications Protocol\_Document\_V1.0).



## About the reader

### Menu 19 - Menu "Reader information"

	Item	Feature	Description of use
<b>Reader information</b> S/N: C000 00000 FW: XX.YY.ZZ P/N: 3000X-XXX Memory used: 1% Files used: 1/400 Batt: 0%	1	FW	Indicates the firmware version of the reader
	2	HW	Indicates the hardware version of the reader
	3	Memory used	Indicates the percentage of the memory used.
	4	Files used	Indicates the number of files saved in the reader.
	5	Batt	Indicates the battery charge level in percentage.

## Connect the reader to a PC

This section is meant to describe how to connect the reader to hand held computer (PDA) or to a personal computer (PC). The device can be connected to a PC in 3 ways: a wired USB connection, a wired RS-232 connection, or by a wireless Bluetooth® connection.

### Using USB interface

The USB port allows the device to send and receive data via a USB connection.

To establish a USB connection, simply connect the reader to a PC or a PDA with the data-power cable.



1

Remove the protective cap which covers the reader's cable connector, and guards the reader against foreign material contamination.

Install the data-power cable by engaging it into the connector and rotating the lock-ring.



2

Plug the USB extension into a USB port on your computer.



**Note 22** – Once the USB cable is connected, the reader is automatically powered on and it will remain activated until the cable is disconnected. The reader will be able to read a tag if a sufficiently charged battery is inserted. With a depleted battery, the reader will not be able to read a tag, but will remain on and can only communicate with computer.

When connecting to a PDA or a PC, you may need to install specific drivers supplied by manufacturer. When connecting to a Windows PC, the operating systems start the Device Manager (more details provided by the manufacturer on the CDROM).

## Using serial interface

The serial port allows the device to send and receive data via an RS-232 connection.

To establish a USB connection, simply connect the reader with a PC or a PDA with the data-power cable.

The RS232 serial interface comprises a 3-wire arrangement with a DB9F connector, and consists of transmit (TxD/pin 2), receive (RxD/pin 3), and ground (GND/pin 5). This interface is factory configured with the default settings of 9600 bits/second, no parity, 8 bits/1 word, and 1 stop bit (“9600N81”). These parameters can be changed from PC software.

Serial output data appears on the device’s TxD/pin 2 connection in ASCII format.



**Note 23** - The RS232 interface is wired as a DCE (data communications equipment) type that connects directly to the serial port of a PC or any other device that is designated as a DTE (data terminal equipment) type. When the device is connected to other equipment that is wired as DCE (such as a PDA), a “**null modem**” adapter is required in order to properly cross-wire transmit and receive signals so that communications can occur.



**Note 24** - The reader’s serial data connection can be extended using a standard DB9M to DB9F extension cable. Extensions longer than 20 meters (~65 feet) are not recommended for data. Extensions longer than 2 meters (~6 feet) are not recommended for data and power.



## Using Bluetooth® interface

Bluetooth® works on a premise that one end of the communication will be a MASTER and the other a SLAVE. The MASTER initiates communications and looks for a SLAVE device to connect to. When the reader is in SLAVE mode it can be seen by other devices such as a PC or PDA. PDAs and computers usually behave as MASTERS with the reader configured as a SLAVE device.

When the reader is configured as a MASTER it cannot be seen by other devices other than the device it is paired to. Readers are typically used in a MASTER mode configuration when

it only needs to be paired with a single device such as a scale head, PDA, or Bluetooth printer

The reader is equipped with a Class 1<sup>2</sup> Bluetooth® module and is compliant with the Bluetooth® Serial Port Profile (SPP) and the Apple's iPod® Accessory Protocol (iAP). The connection can be in slave mode or in master mode.

When the module is enabled, the icon  is displayed and is blinking. Once the communication is established between the reader and another device, if the reader is SLAVE, the icon is the same and if the reader is MASTER, the icon is . In both cases, the icon stops to blink.

If you are using a PDA, it will require software (Not supplied by the manufacturer). Your software supplier will explain how to connect the PDA.



**Note 25** - We advise that to achieve successful Bluetooth® connection with your reader, simply follow the implementation methods listed (see the following).



**Note 26** - If these implementation methods are not followed, the connection may become inconsistent, thus causing other reader related errors.



**Note 27** - When Windows 7 installs Bluetooth® drivers, it will not find the driver for "Bluetooth® Peripheral Device" but this is normal (see picture below). Windows cannot install this driver because it corresponds to Apple iAP service needed to connect with iOS devices (iPhone, iPad).

For reader to PC connection, only "Standard Serial over Bluetooth link" is needed.



<sup>2</sup> Operating distance of communication is around 100 m (330 ft).

## Bluetooth® – Known Successful Methods

There are 2 scenarios to correctly implement the Bluetooth® connection. They are as follows:

1. Reader to a Bluetooth® adapter connected to a PC, or to a Bluetooth® enabled PC or PDA.
2. Reader to a Bluetooth® adapter connected to a scale head, or to a Bluetooth® enabled device, such as scale head or printer.

These options are discussed in further details below.

### Reader to a Bluetooth® adapter connected to a PC, or to a Bluetooth® enabled PC or PDA

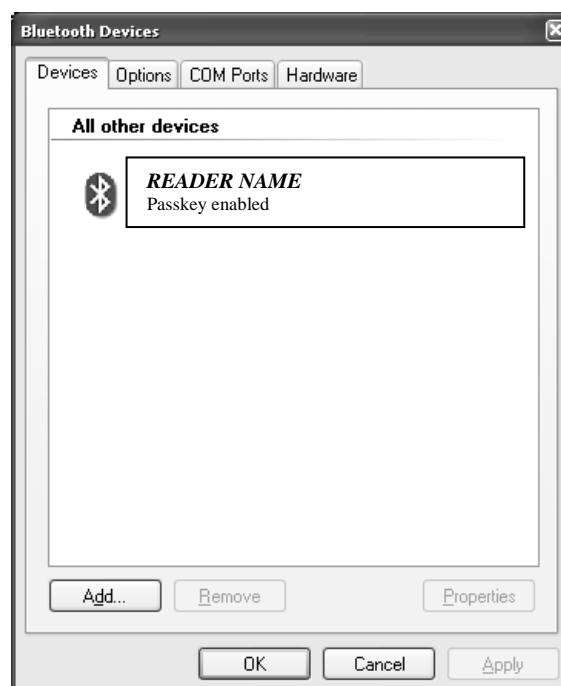
This scenario requires that a process called « Pairing » be undertaken. On the reader, go to the menu “Bluetooth”, and then select “slave” in the sub-menu “select device” to remove the previous pairing and allow the reader to return to SLAVE mode.

Start your PC Bluetooth® Manager program or PDA Bluetooth® services,

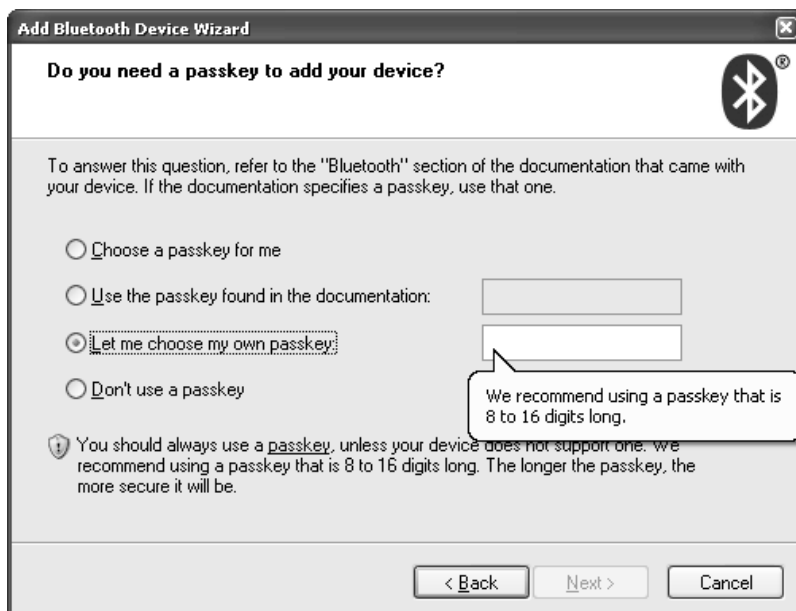
Depending on which Bluetooth device your PC is using the Bluetooth Manager may vary in how it pairs a device. As a general rule the program should have the option to “Add a Device” or “Discover a Device”.



With the reader turned on, select one of these options. The Bluetooth® program should open a window within one minute showing all Bluetooth enabled devices in the area. Click on the device (the reader) you want to connect to and follow the steps provided by the program.



The program may ask you to provide a “Pass Key” for the device. As noted in the following example, select the option “Let me choose my own passkey”. The default passkey for the reader is: **1234**



The program will assign 2 communication ports for the reader. Most applications will use the outgoing port. Make note of this port number for use when connecting to a software program

If this fails use the following links, search the reader in the peripheral list and connect it. You have to add an outgoing port that makes a connection to the device. Follow the steps described in the links below.

For Windows XP: <http://support.microsoft.com/kb/883259/en-us>

For Windows 7: <http://windows.microsoft.com/en-US/windows7/Connect-to-Bluetooth-and-other-wireless-or-network-devices>



**Note 28** - Sometimes, a PIN code is required to connect the reader to the PC, PDA... In such case, the PIN code to use is **1234**.

### **Reader to a Bluetooth® adapter connected to a scale head, or to a Bluetooth® enabled device, such as scale head or printer.**

This scenario requires that the reader lists the Bluetooth® peripherals. Go to the menu “Bluetooth”, then the sub-menu “Search device” which launches the Bluetooth® scanning. The device you want to connect to will be displayed on the reader. Use the green button to scroll to the desired device. Select the device by depressing the black button on the reader. The reader will now connect in “slave” mode.

To connect the reader in ‘Master’ mode the reader will need to be configured using the Tag Manager program<sup>3</sup>. In the “Reader setup” section of the Tag Manager Program, the user can enter the 12 character address of the device they want to connect to. Once this is done the reader will be in Master mode when it connects to that device.

<sup>3</sup> Detailed instructions about EID Tag Manager are documented in a Help file.



**Note 29** - Sometimes, the security and check features have to be disabled on the reader to establish the connection with a printer. So use PC software provided with the reader, to configure the reader's Bluetooth® security (refer to PC software documentation).

## Connect the reader to an USB flash drive

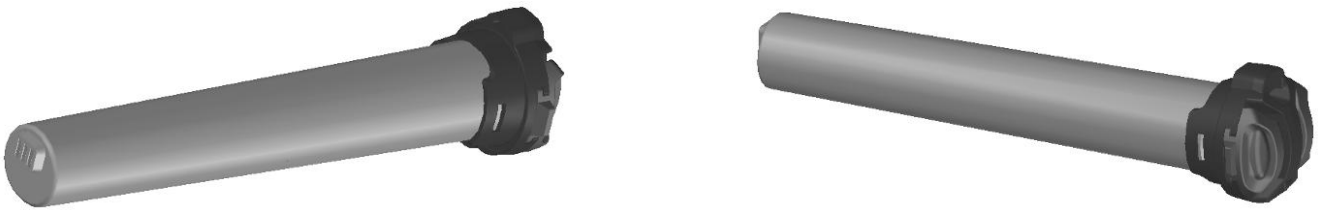
USB adapter that allows you to connect to a USB Flash Drive.

With this equipment, you can import and/or export sessions (see Note 9). The sessions can be working sessions stored in the reader or comparison sessions which contain details and information about each animal ID code.

## Power Management

### Reader Power Sources

The reader contains a 7.4VDC – 2600mAh Li-Ion rechargeable battery pack, which serves as its primary power source. This feature adds hours of scans with a fully charged battery.



Alternately, the reader can be powered and used indoors only by the following methods:

1. From its AC Adapter. Once the external AC adapter is connected, the reader is powered-up, it will remain on until the AC adapter is disconnected and the Battery Pack is charged. The reader can be powered regardless of the charge state of the Battery Pack. The AC Adapter can be used as a power source even if the Battery Pack has been removed from the device. If the AC Adapter has been connected, the user may proceed with configuration and performance testing while the Battery Pack is charging. This configuration could affect reading performances.
2. From its DC power supply cable with alligator clips<sup>4</sup>: You can connect your reader to any DC power supply (between minimum 12V DC and maximum 28V DC) such as a car, truck, tractor, or battery. The reader is connected through the socket located on the back of the reader data-power cable as shown in step 2 (see chapter “Getting Started”).

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<sup>4</sup> Not proposed for sale in Europe

## Step 1: Connect to a battery

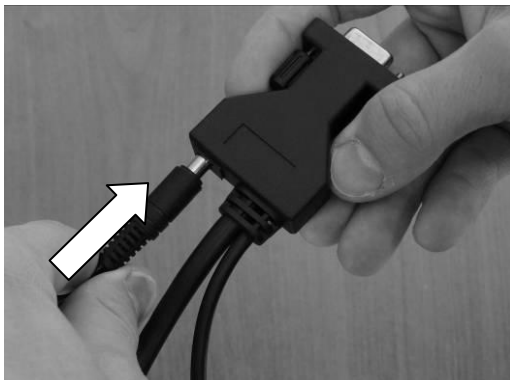


- 1 Connect the **black** alligator clip to the negative terminal (-). Connect the **red** alligator clip to the positive terminal (+).

## Step 2: Connect to the reader



- 1 Remove the protective cap which covers the reader's cable connector, and which guards the reader against foreign material contamination.  
Install the data-power cable by engaging the connector and rotating the lock-ring.







- 2 Then connect the other end of the battery cable into the power socket located at the end of the reader's data-power cable

## Step 3: Checking the reader



- 1 Once you are connected to a power source, the reader display's backlight will turn on.  
Press the green button momentarily and notice the flashing red light. This indicates that the reader is receiving power.

At the top of the screen, the icon of the battery level shows the discharge level as well as the charge level during the charge mode.

Display	Summary
	Good.
	Quite good.
	Slightly depleted, but sufficient
	Depleted. Recharge the battery.
"LOW BATTERY"	Depleted. Recharge the battery.

## Reader power instructions



**Note 30** - The reader is designed to operate only with the Battery Pack provided. The reader will not operate with individual battery cells of either disposable or rechargeable variety.



### CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.



**Note 31** - Do not use this reader near water when connected to the AC/DC adapter.



**Note 32** - Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.



**Note 33** - Do not charge the battery pack from AC main sources during electrical storms or when unused for long periods of time.



**Note 34** - The reader is protected for reverse polarity connections.

## Battery handling instructions

Please read and follow the handling instructions for the battery before use. Improper use of the battery may cause heat, fire, rupture, and damage or capacity deterioration of the battery.





## Caution

1. Do not use or leave the battery in high heat environments (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat, ignite, or battery performance will be degraded, thus shortening its service life.
2. Do not use it in a location where static electricity is rich, otherwise, the safety devices may be damaged, causing a harmful situation.
3. In case the electrolyte gets into the eyes due to the leakage of battery, do not rub the eyes! Rinse the eyes with clean running water, and seek medical attention immediately. Otherwise, it may injure eyes or cause a loss of sight.
4. If the battery gives off an odour, generates heat, becomes discoloured or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device and place it in a contained vessel such as a metal box.
5. Power or charge failure may occur due to the poor connection between the battery and the reader if the terminals are dirty or corroded.
6. In case the battery terminals are corroded, clean the terminals with a dry cloth before use.
7. Be aware that discarded batteries may cause fire. Tape the battery terminals to insulate them before disposal.



## Warning

1. Do not immerse the battery in water.
2. Keep the battery in a cool dry environment during storage periods.
3. Do not use or leave the battery near a heat source such as fire or heater.
4. When recharging, use only the battery charger from manufacturer.
5. The battery charge should be realized indoors at a temperature between 0° and +45°C.
6. Do not let the battery terminals (+ and -) contact any metal (like ammunition, coins, metal necklace or hairpins). When carried or stored together this may cause short-circuit, or severe bodily damage.
7. Do not strike or puncture the battery with other objects, or use in any way other than its intended use.
8. Do not disassemble or alter the battery.



## Notice

1. The battery should only be charged and discharged using the proper charger supplied by the manufacturer.
2. Do not replace the battery with other manufacturer's batteries, or different types and /or models of batteries such as dry batteries, nickel-metal hydride batteries, or nickel-cadmium batteries, or a combination of old and new lithium batteries together.
3. Do not leave the battery in a charger or equipment if it generates an odour and/or heat, changes color and/or shape, leaks electrolyte, or cause any other abnormality.
4. Do not discharge the battery continuously when it is not charged.
5. It is necessary first to fully charge the Battery Pack as described in the section “Getting Started” before using the reader

# Accessories for the reader

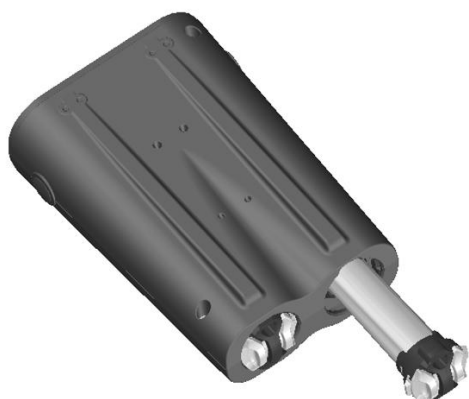
## Battery pack fast charger

The fast charger for indoors use only can charge up to 2 battery packs simultaneously in 3 hours. A light indicates the status of each battery charging.

Green light	Red light	Charger status
Off	Off	Not Charging – Standby or Shutdown
Off	On	Bad-Battery fault
On	Off	Normal Charging
On	On	Temperature fault



**Note 35** – The lights switch off when the batteries are fully charged.



The battery charger can be placed horizontally or vertically on a table.



Make sure the battery orientation is correct before insertion into the charger.

## Plastic Carry Case

Durable Plastic Carry Case is available as an optional extra or is included in the “Premium Kit” Package.



# Specifications

General	
Norms:	ISO 11784 and full ISO 11785 for FDX-B and HDX tags IP67
User interface:	Graphical display 128x128 dots 2 keys Buzzer and Vibrator Serial port, USB port and Bluetooth® module
USB interface:	CDC class (Serial emulation) and HID class.
Bluetooth® interface:	Class 1 (up to 100m) Serial Port Profile (SPP) and iPod Accessory Protocol (iAP)
Serial interface	RS-232 (9600N81 by default)
Memory:	>100,000 animal IDs (10,000 animal IDs per session)
Battery:	7.4VDC – 2600mAh Li-Ion rechargeable.
Date/Time autonomy:	1 month without reader usage @ 20°C
Battery charge duration:	3 hours

Mechanical and physical	
Dimensions:	<i>Long reader:</i> 670 x 60 x 70 mm (26.4 x 2.4 x 2.8 in) <i>Short reader:</i> 530 x 60 x 70 mm (20.9 x 2.4 x 2.8 in)
Weight:	<i>Long reader with battery:</i> 830 g (29.3 oz) <i>Short reader with battery:</i> 810 g (28.6 oz)
Material	ABS-PC and fiberglass tube
Operating temperature	-20°C to +55°C (+4°F to +131°F)
Storage temperature	-30°C to +70°C (-22°F to +158°F)
Humidity:	80%

Reading	
Distance for ear tags (cattle):	Up to 42 cm (16.5 in) depending on tag type and orientation.
Distance for implants:	Up to 20 cm (8 in) for 12-mm FDX-B ear tags.
Distance for ear tags (sheep):	Up to 30 cm (12 in) depending on tag type and orientation.

## **Reader physical integrity**

The device has been built from rugged and durable materials to withstand use in harsh environments for long periods of time. However, the reader contains electronic components that can be damaged if they are deliberately exposed to extreme abuse. This damage can adversely affect, or stop the reader's operation. The user must avoid deliberately striking other surfaces and objects with the device. Damage that results from such handling is not covered by the warranty described below.

## **Limited Product Warranty**

Manufacturer guarantees this product against all defects due to faulty materials or workmanship for a period of one year following the date of purchase. The warranty does not apply to any damage resulting from an accident, misuse, modification or an application other than that described in this manual and for which the device was designed.

If the product develops a malfunction during the warranty period, manufacturer will repair or replace it free of charge. The cost of shipment is at the customer's expense, whereas return shipment is paid by manufacturer.

Refer all servicing to qualified service personnel. Servicing is required when the reader has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## **Regulatory information**

### **USA-Federal Communications Commission (FCC)**

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the distance between the equipment and the receiver.

Connect the equipment to outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

The user must be at 20 cm of the reader antennas.

Notice to Consumers:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **Canada – Industry Canada (IC)**

This device complies with RSS 210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.”

L ‘ utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) Il ne doit pas produire d’interférence et (2) l’utilisateur du dispositif doit être prêt à accepter toute interférence radioélectrique reçu, même si celle-ci est susceptible de compromettre le fonctionnement du dispositif.

Avis aux consommateurs:

Toutes modifications non expressément approuvées par la partie responsable de la conformité peuvent annuler le droit de l'utilisateur à utiliser cet équipement.

L'utilisateur doit se tenir à 20 cm des antennes du lecteur.

### **Apple - Legal Notice**

iPod® is a trademark of Apple Inc., registered in the U.S. and other countries.

iPhone® is a trademark of Apple Inc., registered in the U.S. and other countries.

iPad® is a trademark of Apple Inc., registered in the U.S. and other countries.

“Made for iPod,” “Made for iPhone,” and “Made for iPad” mean that an electronic accessory has been designed to connect specifically to iPod®, iPhone®, or iPad®, respectively, and has been certified by the developer to meet Apple performance standards.

Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards.

Please note that the use of this accessory with iPod®, iPhone®, or iPad® may affect wireless performance.

# Regulatory Compliance

## ISO 11784 & 11785

This device complies with the standards set forward by the International Standardization Organization. Specifically with standards:



11784: Radio frequency identification of animals -- Code Structure

11785: Radio frequency identification of animals -- Technical Concept.

## FCC NQY-30002

## IC 4246A-30002

## CE Marking

	<b>DECLARATION OF CONFORMITY</b> <i>According to the R&amp;TTE Directive 99/05/EC</i>																	
<b>Manufacturer's Authorized Representative:</b> ALLFLEX EUROPE S.A.S. Route de Eaux ZI de Plagué B.P. 90219 35502 VITRE Cedex, FRANCE +33 (0)2 99 75 77 00																		
<b>Type of Equipment:</b>	<b>Short Range Device (SRD) - Low Frequency Radio Frequency Identification (RFID) Scanner</b>																	
<b>Brand Name / Trademark:</b>	Allflex																	
<b>Type Designation / Model No.:</b>	RS420-XX (XX can be 45 or 60)																	
Allflex Europe declares on its sole responsibility that the products listed above are in conformity with the essential requirements of the R&TTE Directive.																		
The products comply with the following harmonized European Standards or technical specifications:																		
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August 27, 2012																		
By:																		
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Dominique BOIRON Allflex Europe - RFID Director																		

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