134.2 kHz
Rfid System

OS 400P

Safety Instructions / Warning - Read before start-up!

- The device may only be used for the intended purpose designed by the manufacturer. The operation manual should be conveniently kept available at all times for each user.
- Unauthorized changes and the use of spare parts and additional devices that have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.
- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- Repairs may be executed by the manufacturer only.
- Only qualified personnel should carry out installation, operation, and maintenance procedures.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.
- When working on devices the valid safety regulations must be observed.

Indice

1. Introduction

Easy to use, the portable rfid reader **OS 400P** with integrated antenna can identify animal transponders of type FDX-B and HDX (134.2 kHz working frequency), conforming to the ISO 11784 and ISO 11785 standards. The reader is powered by a simple 9V PP3 alcaline or lithium battery. The reader is equiped with a real time clock and a non volatile memory that can contain up to 1024 transactions; each valid reading of a transponder will be recorded in the memory as a transaction containing the code of the transponder and the date/time of the event. The reader can be connected through an USB link to a host Personal Computer running the program 'AR400_USER.EXE'; this program allows the execution of specific functions to set the working parameters and the data/time of the reader, and to acquire the recorded transactions from the memory of the reader.

2. Technical specifications

Power supply	9V PP3 alcaline or lithium battery
Operating frequency	134.2 kHz ± 2 kHz
Max dimensions	180 x 90 x 65 mm
Weight	210 g including the battery
Supported tags	FDX-B, HDX conforming to the ISO 11784 and ISO 11785 standards
Communication interface	USB (mini B connector)
Activation	Push button
Display	Graphical lcd 64 x 128 pixel, viewing area di 19 x 32 mm
Visual signalling	Bicolor led red/green
Acoustic signalling	Buzzer
Storage temperature	-10°C … +60°C
Operating temperature	-0°C … +50°C

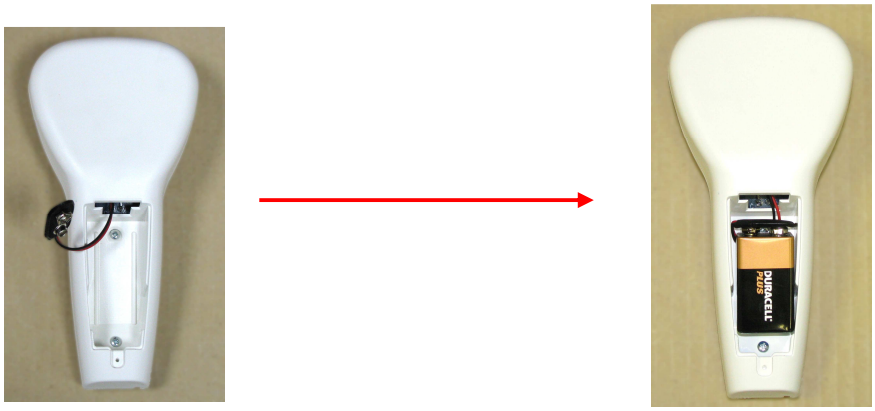
3. Working features

3.1. Battery installation

In order to install the battery, the following steps must be carried out:

- Open the rear battery compartement (remove the locking screw).

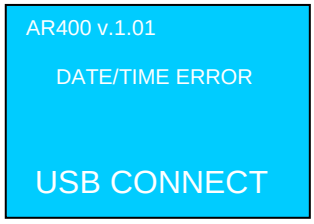
- Connect the battery.



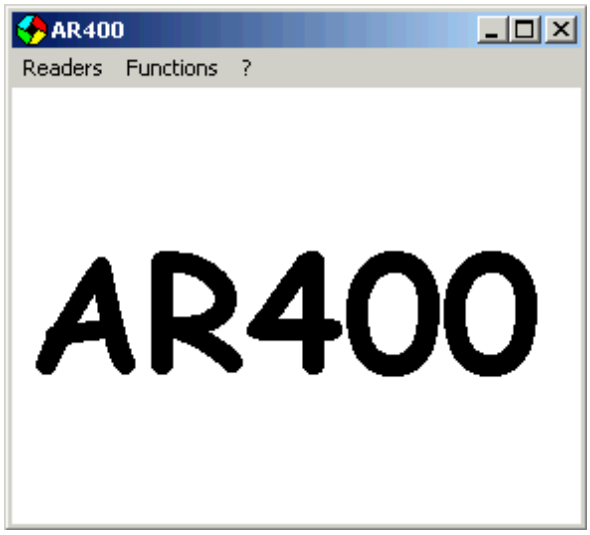
- Close and screw up the cover of the battery compartement.

At this point, it is necessary to set the date/time of the reader carryint out the following operations:

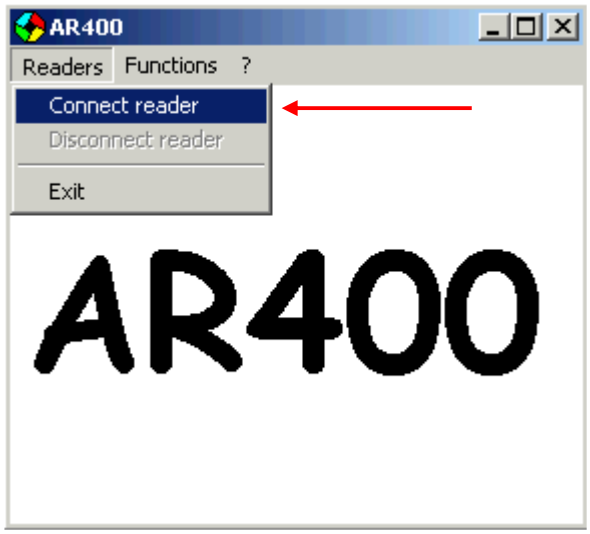
- connect the usb port of the reader to the PC usb port (use an usb cable with A and mini B connectors); the reader will turn on showing the following information on the display and the message 'date/time error'

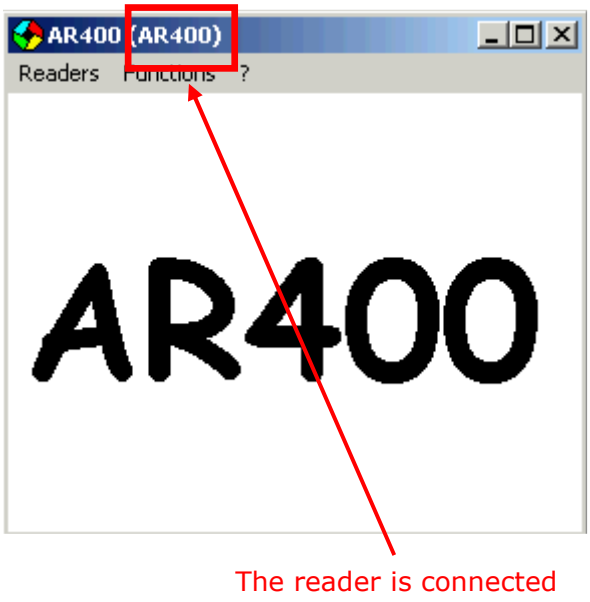


- start the program "AR400_USER.EXE" on the PC; the following window will appear.

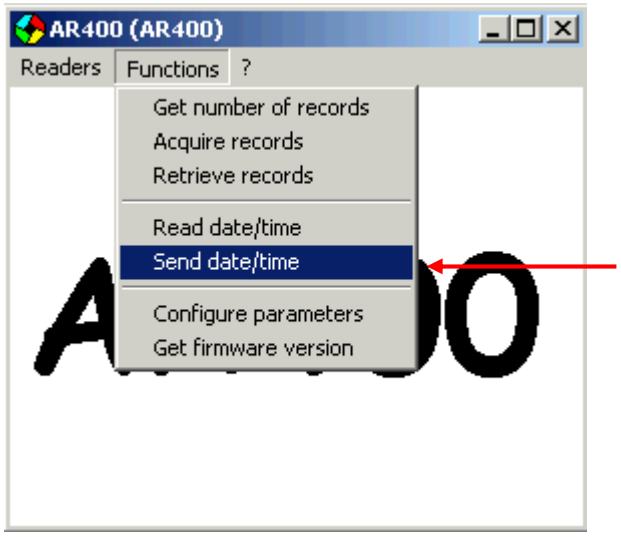


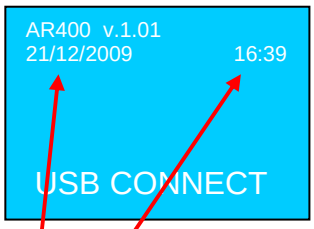
- start the communication with the reader (click on 'connect reader')





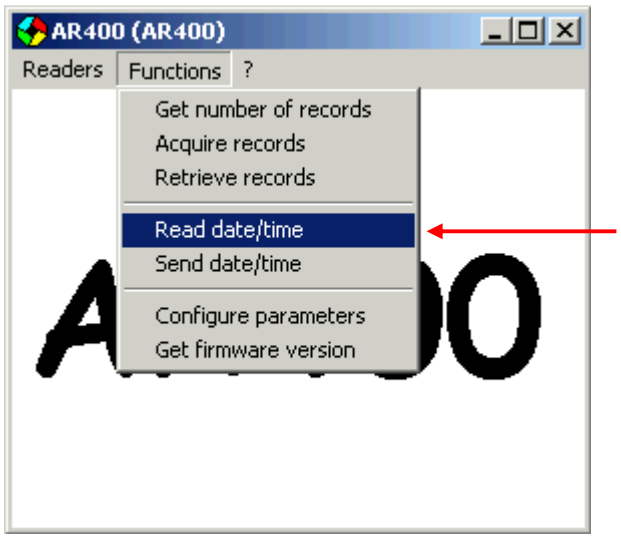
- select the command to set the date/time of the reader (click on 'send date/time')

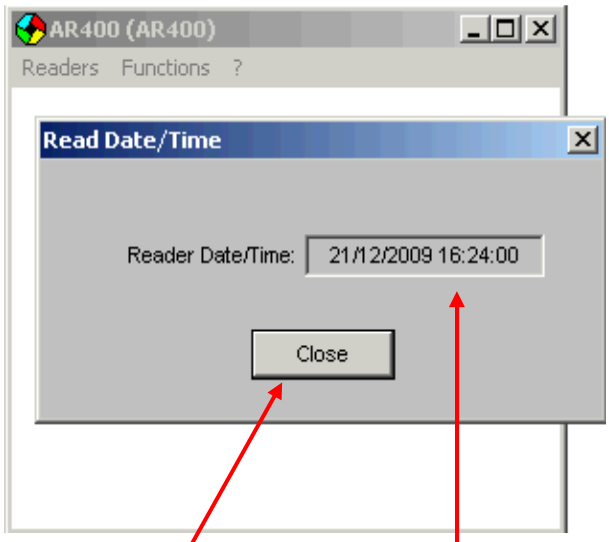




the date/time of the reader is updated

- select the command to read the date/time of the reader (click on 'read date/time')

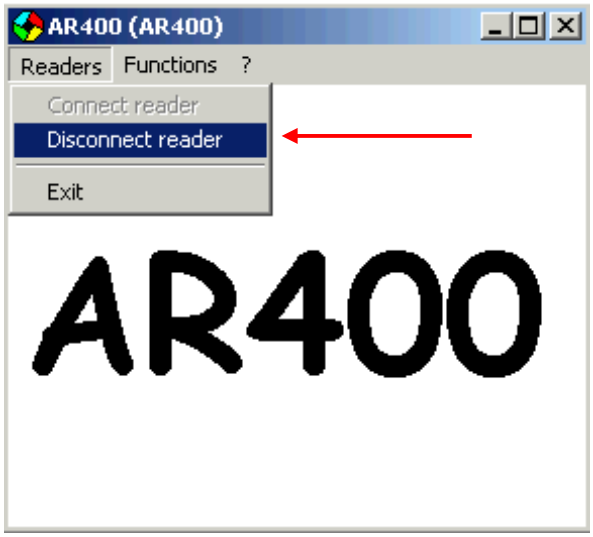




click on 'close' to terminate

date/time is updated 'continuously'

- terminate the communication with the reader (click on ‘disconnect reader’)

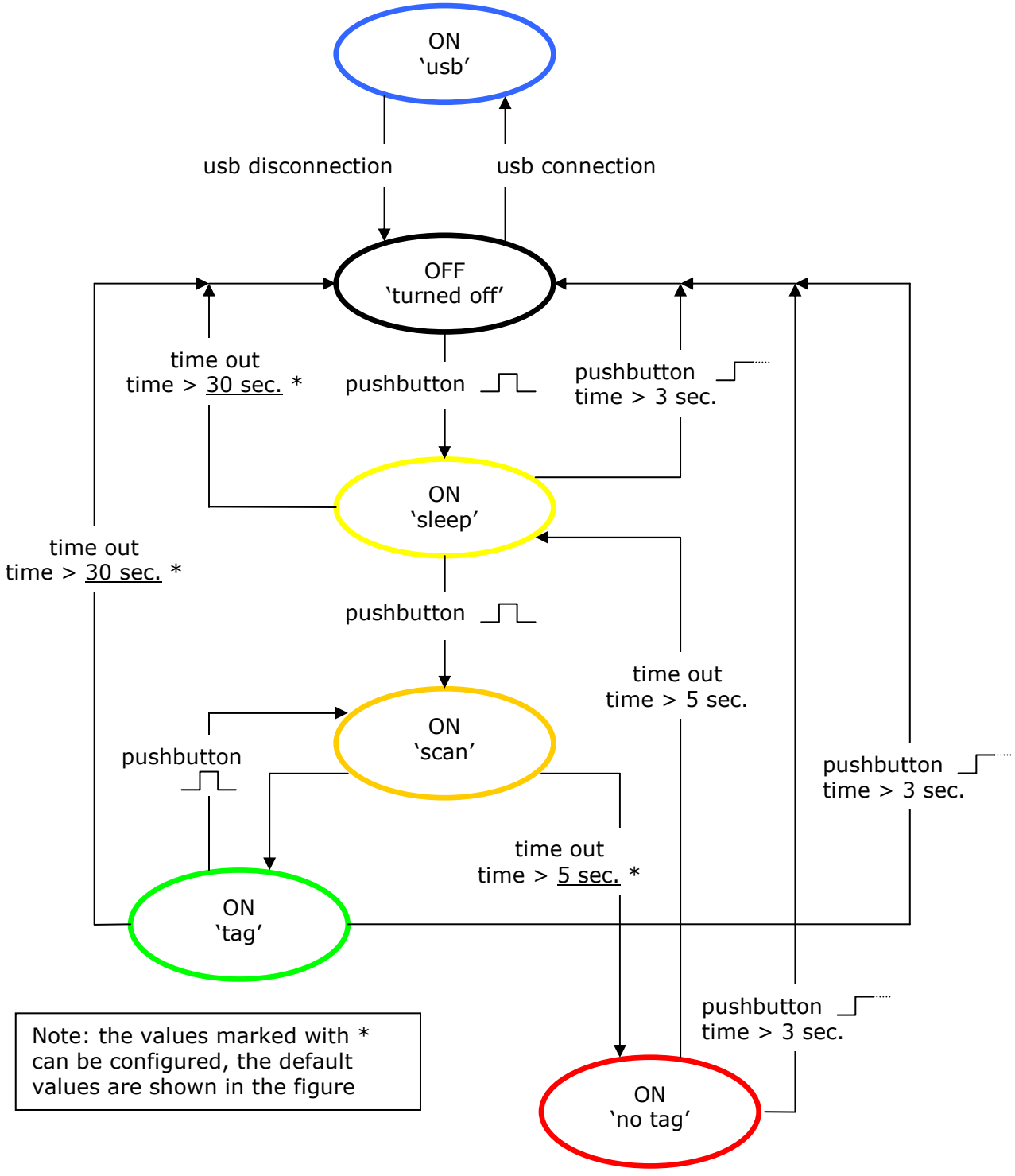


- disconnect the usb port of the reader; the reader will turn off automatically

3.2. Working features

3.2.1. States of the reader

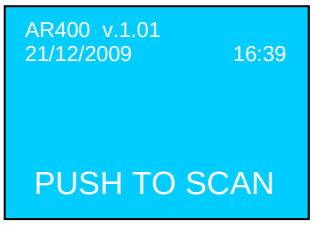
The state diagram of the reader is depicted in the following figure:



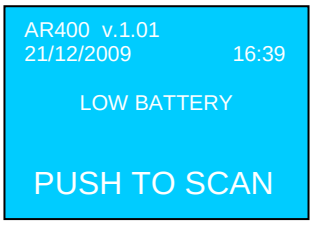
3.2.2. State ON 'sleep'

To turn on the reader (transition from the state OFF 'turned off' to the state ON 'sleep'), press briefly the pushbutton (at least until the bicolor led lights on); during the turning on, the reader will activate briefly the bicolor led showing in sequence the 'yellow' color (green led + red led together), the red color and the green color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will show the following information on the display (one of the four cases):

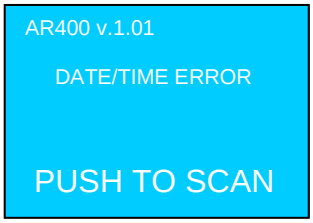
a1)



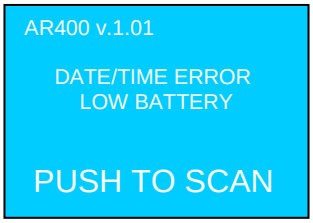
a2)



b1)



b2)



The case (a1) represents the 'normal' case (date/time updated, efficient battery). In the case (a2), the reader presents the flashing message 'low battery' to indicate that the battery is discharged and then to suggest the user to replace it (see the previous chapter). The cases (b1) and (b2) differ from the cases (a1) and (a2) only by the fact that the date/time of the reader is not updated; in order to set it proceed as indicated in the previous chapter.

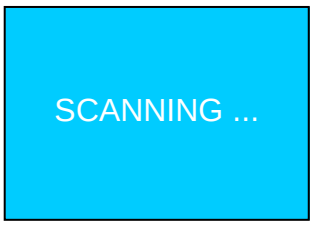
The information on the display remains for max 30 seconds (this value can be set in a range of 1 … 255 seconds, default value 30 seconds, see parameters configuration); at the end the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

In the meanwhile:

- if the pushbutton is pressed briefly, the reader will start the identification activity (transition to the state ON 'scan'),
- if the pushbutton is pressed for more than 3 seconds, the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

3.2.3. State ON 'scan'

To start the identification activity (transition from the state ON 'sleep' to the state ON 'scan'), press briefly the pushbutton; when the pushbutton is released, the reader start the reading (rf field activation) for max 5 seconds (this value can be set in a range of 1 … 20 seconds, default value 5 seconds, see parameters configuration) and show the following information on the display:

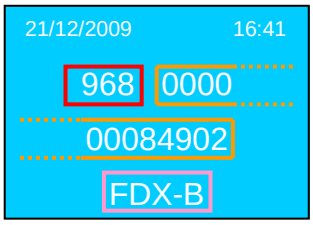


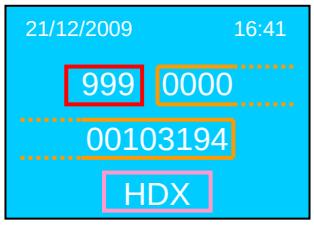
If a transponder is identified, the reader will go in the state ON 'tag', otherwise at the end of the activation time, the reader will go in the state ON 'no tag'.

If during the identification activity the pushbutton will be pressed again for more than 3 seconds, the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

3.2.4. State ON 'tag'

If a transponder is identified (transition from the state ON 'scan' to the state ON 'tag'), the reader will deactivate immediately the rf field, it will record the transaction (full transponder code and date/time of reading) in the memory, it will activate briefly the bicolor led showing the green color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will show the following information on the display:





With highlighted the country code (3 numeric), the national identification code (12 numeric) and the transponder type (FDX-B / HDX).

The information on the display remains for max 30 seconds (this value can be set in a range of 1 … 255 seconds, default value 30 seconds, see parameters configuration); at the end the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

In the meanwhile:

- if the pushbutton is pressed briefly, the reader will start the identification activity (transition to the state ON 'scan'),
- if the pushbutton is pressed for more than 3 seconds, the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

3.2.5. State ON 'no tag'

If no transponder has been identified at the end of the activation time (transition from the state ON 'scan' to the state ON 'no tag'), the reader will deactivate immediately the rf field, it will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep-bep- (if this feature is enabled, see the parameters configuration) and finally it will show the following information on the display:

The information on the display remains for max 5 seconds; at the end of this wait time, the reader will go automatically in the state ON 'sleep'.

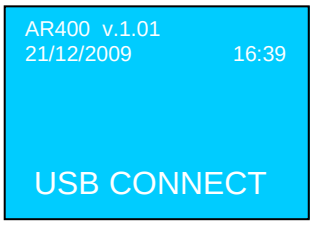
In the meanwhile:

- if the pushbutton is pressed briefly, the reader will restart the identification activity (transition to the state ON 'scan'),
- if the pushbutton is pressed for more than 3 seconds, the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

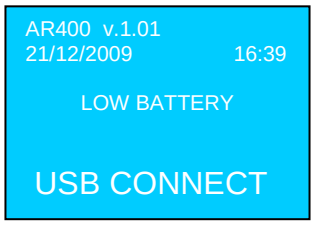
3.2.6. State ON 'usb'

In order to activate the reader in usb link mode (transition from the state OFF 'turned off' to the state ON 'usb'), connect the usb port of the reader to the PC usb port (use an usb cable with A and mini B connectors); the reader will turn on, the reader will activate briefly the bicolor led showing in sequence the 'yellow' color (green led + red led together), the red color and the green color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will show the following information on the display (one of the four cases):

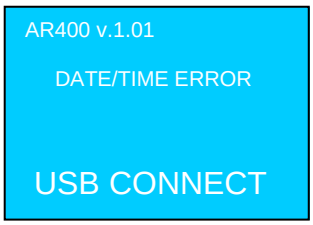
a1)



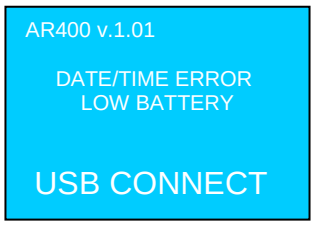
a2)



b1)



b2)



The case (a1) represents the 'normal' case (date/time updated, efficient battery). In the case (a2), the reader presents the flashing message 'low battery' to indicate that the battery is discharged and then to suggest the user to replace it. The cases (b1) and (b2) differ from the cases (a1) and (a2) only by the fact that the date/time of the reader is not valid and then need to be updated. In the following chapter, the use of the PC program 'AR400_USER.EXE' is described; this program allows the execution of specific functions to set the working parameters and the data/time of the reader, and to acquire the recorded transactions from the memory of the reader.

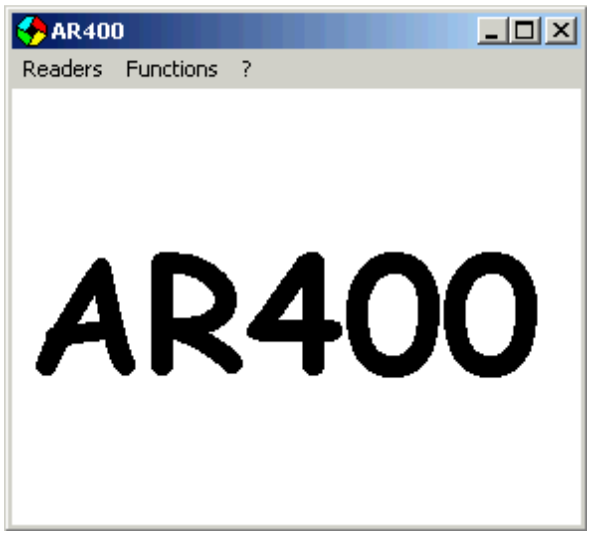
In order to quit the usb link mode, disconnect the usb port of the reader removing the usb cable, the reader will activate briefly the bicolor led showing the red color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration) and finally it will turn off automatically.

3.3. USB link

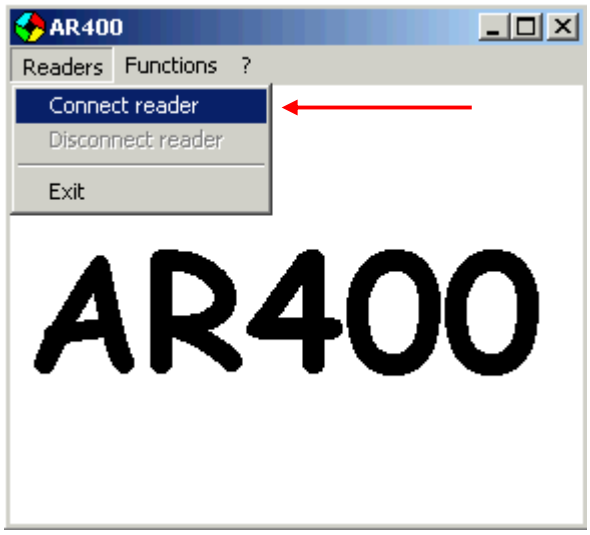
3.3.1. Introduction

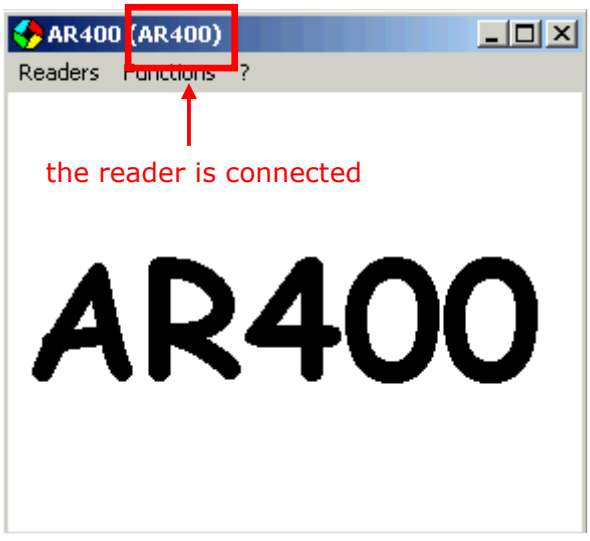
In order to activate the reader in usb link mode (see details in the previous chapter), connect the usb port of the reader to the PC usb port (use an usb cable with A and mini B connectors); the reader will turn on, the reader will activate briefly the bicolor led showing in sequence the 'yellow' color (green led + red led together), the red color and the green color, it will then activate briefly the buzzer –bep- (if this feature is enabled, see the parameters configuration).

Start the program "AR400_USER.EXE" on the PC.

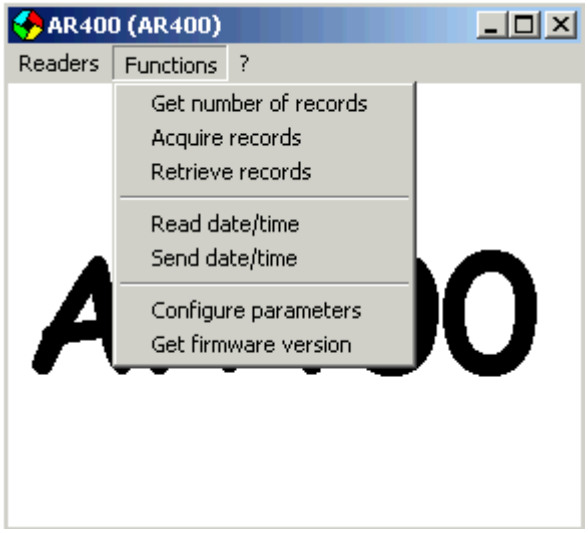


Start the communication with the reader (click on 'connect reader').

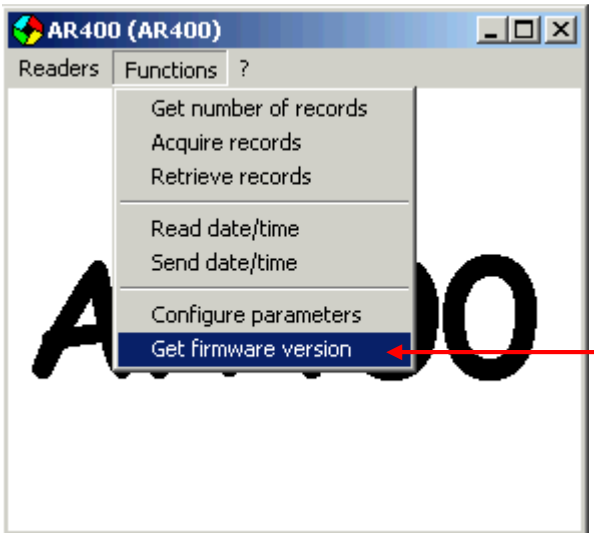




The available functions are listed in the following picture and will be described hereinafter.



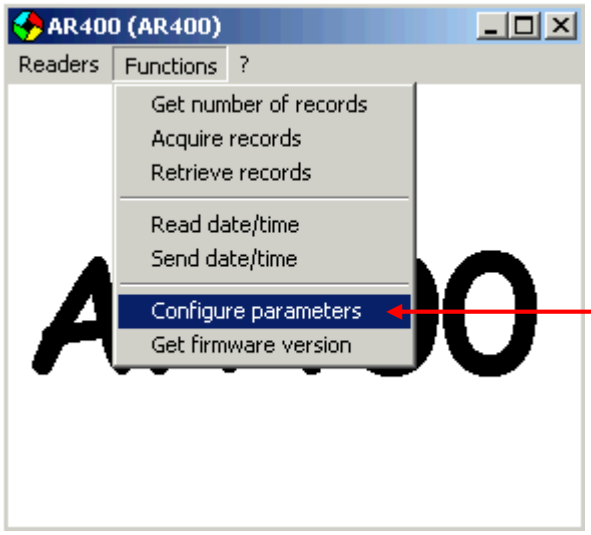
3.3.2. FW version reading



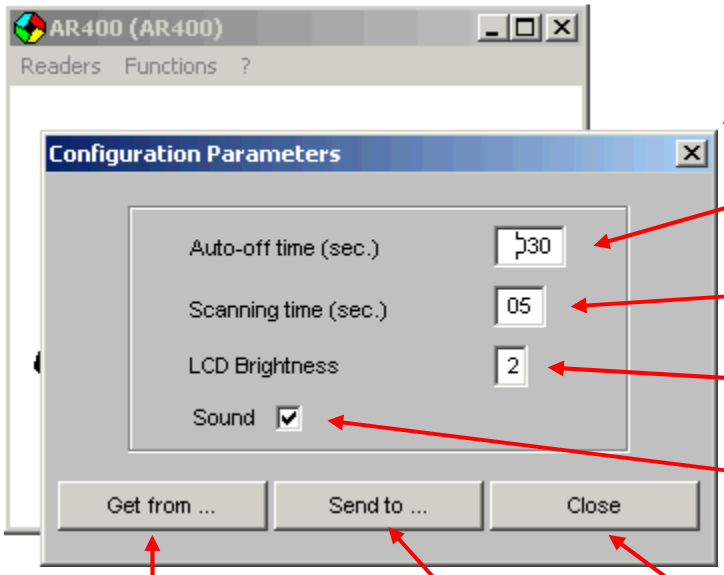
click on 'Get firmware version'

answer

3.3.3. Parameters configuration



click on 'Configure parameters'



entering the function, the current value of the parameters operative in the reader will be displayed

auto turn off time,
1 … 255 seconds, default 30

max scanning duration,
1 … 20 seconds, default 5

LCD display brightness
0 … 4, default 0 (minimum)

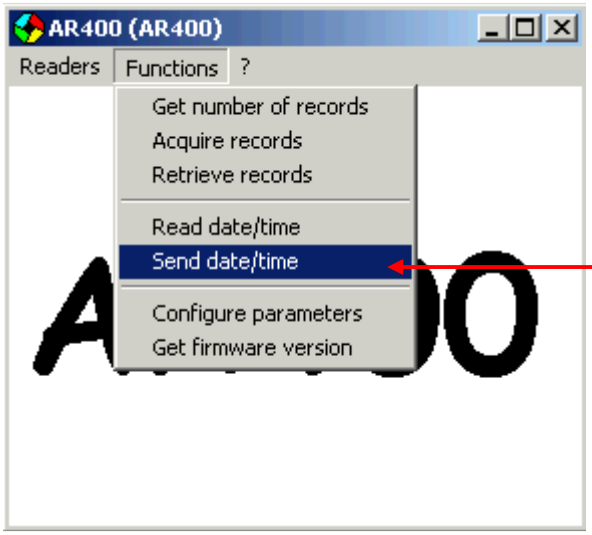
enable/disable buzzer
yes/no, default yes

click to read the current value of the parameters from the reader

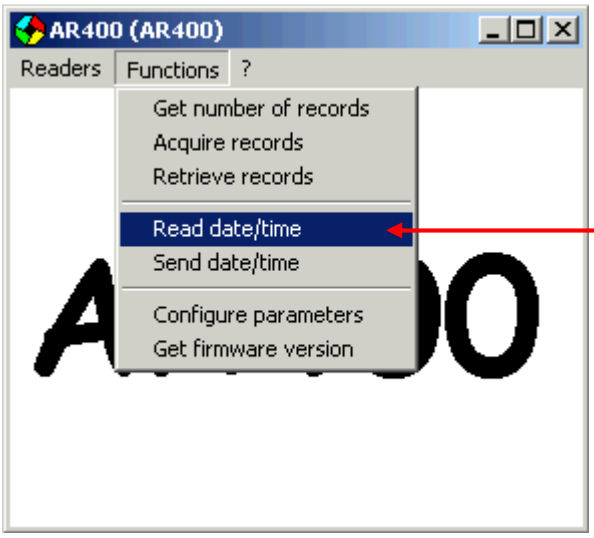
click to transfer to the reader the value of the parameters actually displayed on the window

click to terminate

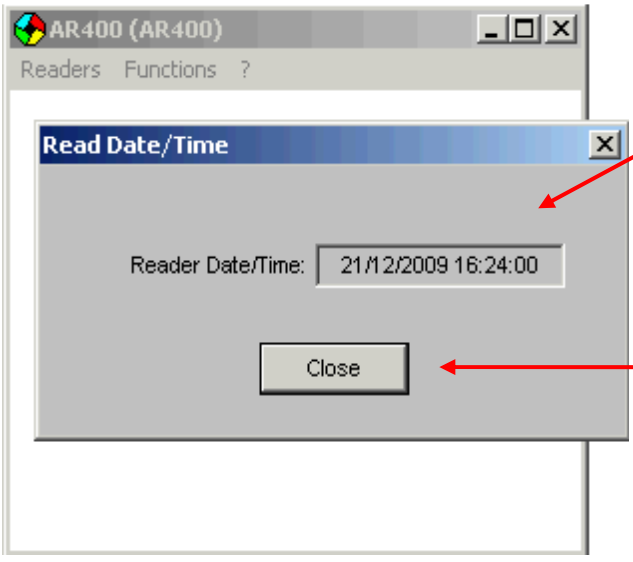
3.3.4. Date/time management



click on 'Send date/time' to set the current date/time of the PC in the reader



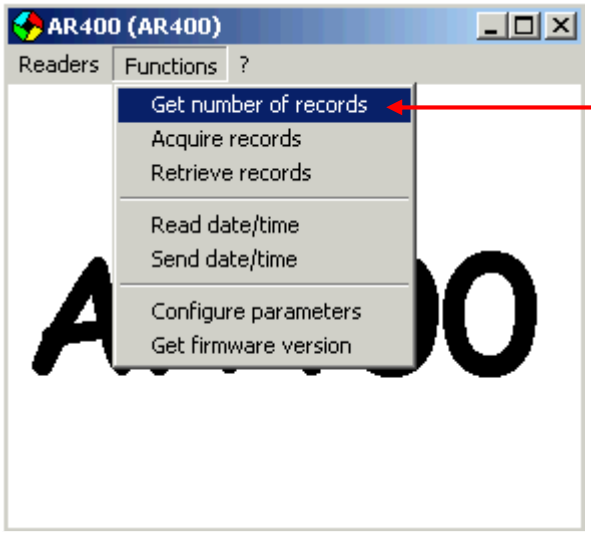
click on 'Read date/time' to get the current date/time of the reader



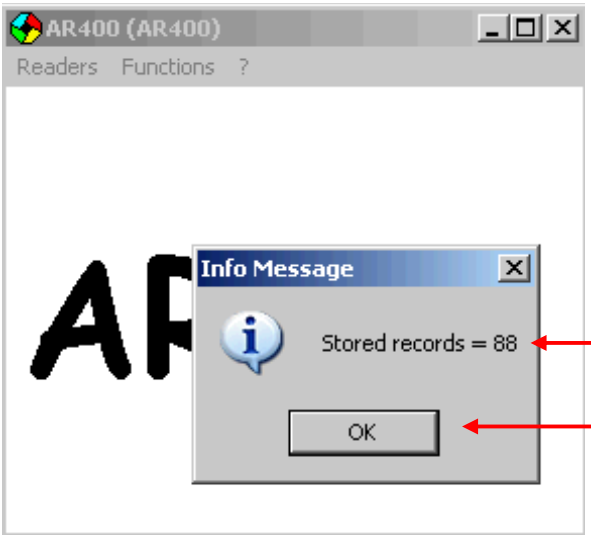
the readed date/time will be updated 'continuously'

click to terminate

3.3.5. Records management

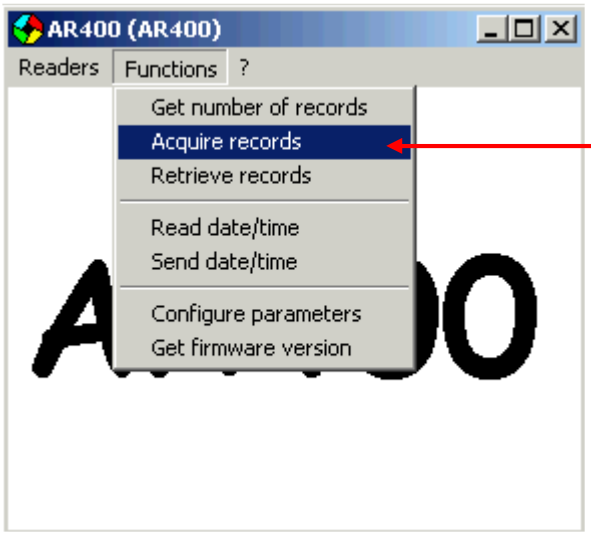


click on 'Get number of records' to get the number of records present in the reader and not yet acquired

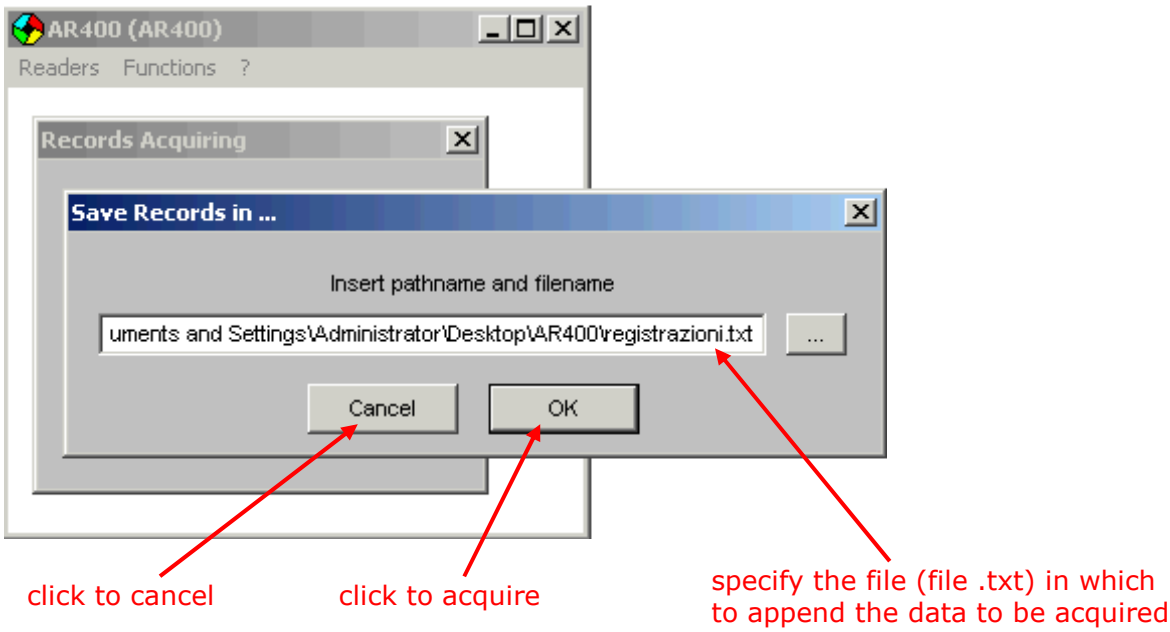


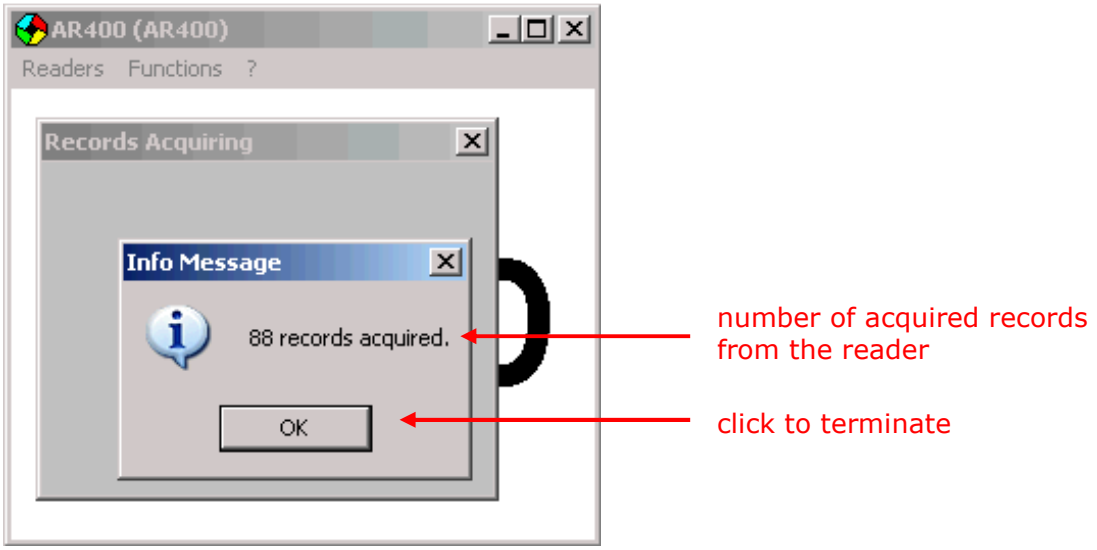
number of records present in the reader not yet acquired

click to terminate



click on 'Acquire records' to get the records present in the reader and not yet acquired





Extract of the file containing the acquired records:

```
0 999 000000255132 0 00 00 18/12/2009 10:15
0 999 000000255132 0 00 00 18/12/2009 10:15
1 999 000000103185 0 00 00 18/12/2009 10:15
1 999 000000103185 0 00 00 18/12/2009 10:15
0 999 000000255132 0 00 00 18/12/2009 10:23
0 999 000000172855 0 00 00 18/12/2009 10:23
0 999 000000172855 0 00 00 18/12/2009 10:23
```

transponder type:
'1' → HDX,
'0' → FDX-B

country code

identification code

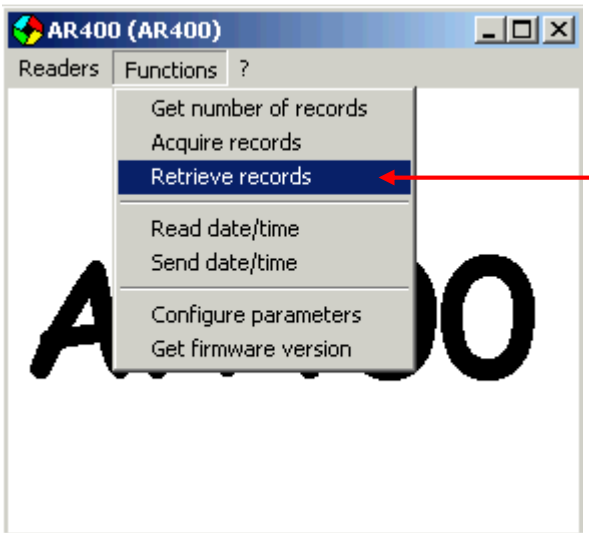
date/time of recording

reserved for future use

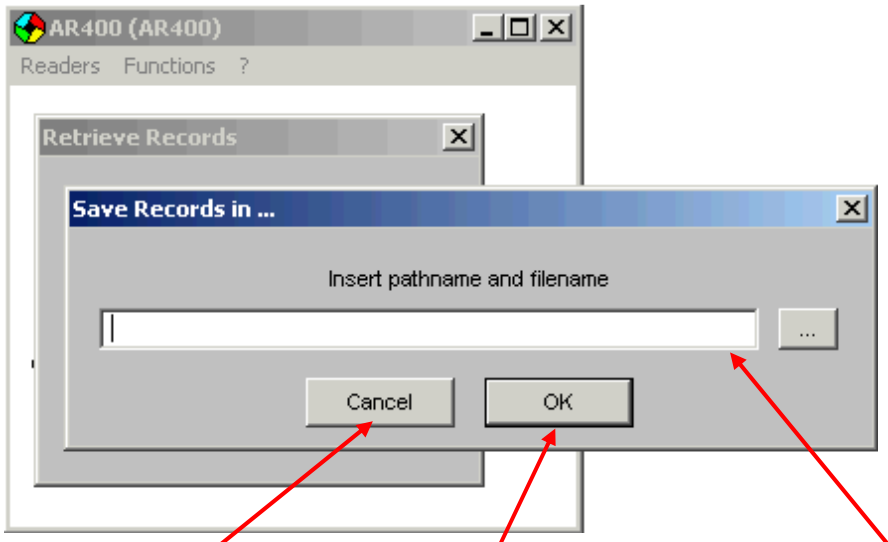
animal type

retag counter

Note: if the date/time of the reader is not updated, the records will have the following date/time "00/00/2000 00:00"



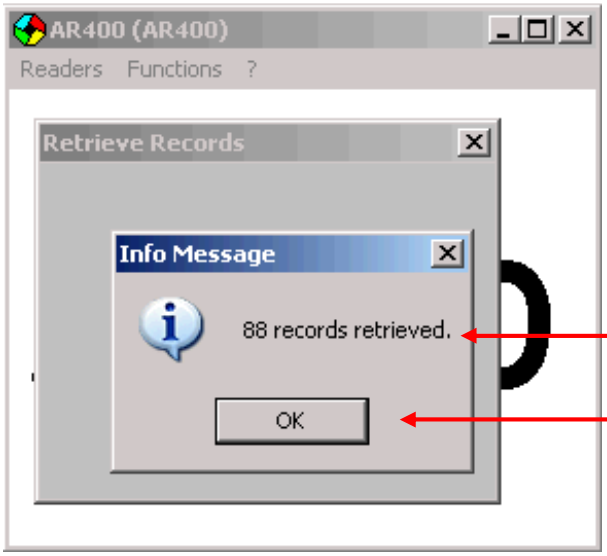
click on 'Retrieve records' to acquire again all the records present in the reader that have been acquired previously



click to cancel

click to acquire

specify the file (file .txt) in which to append the data to be acquired



number of acquired records from the reader

click per terminate