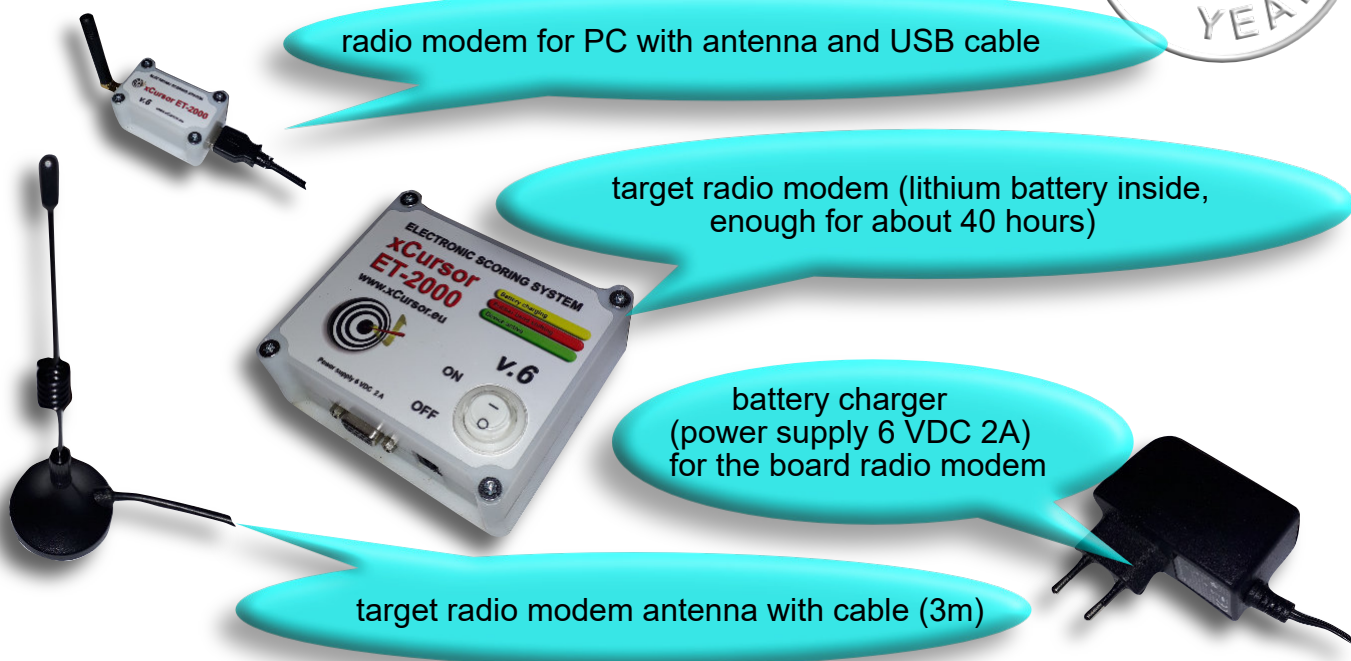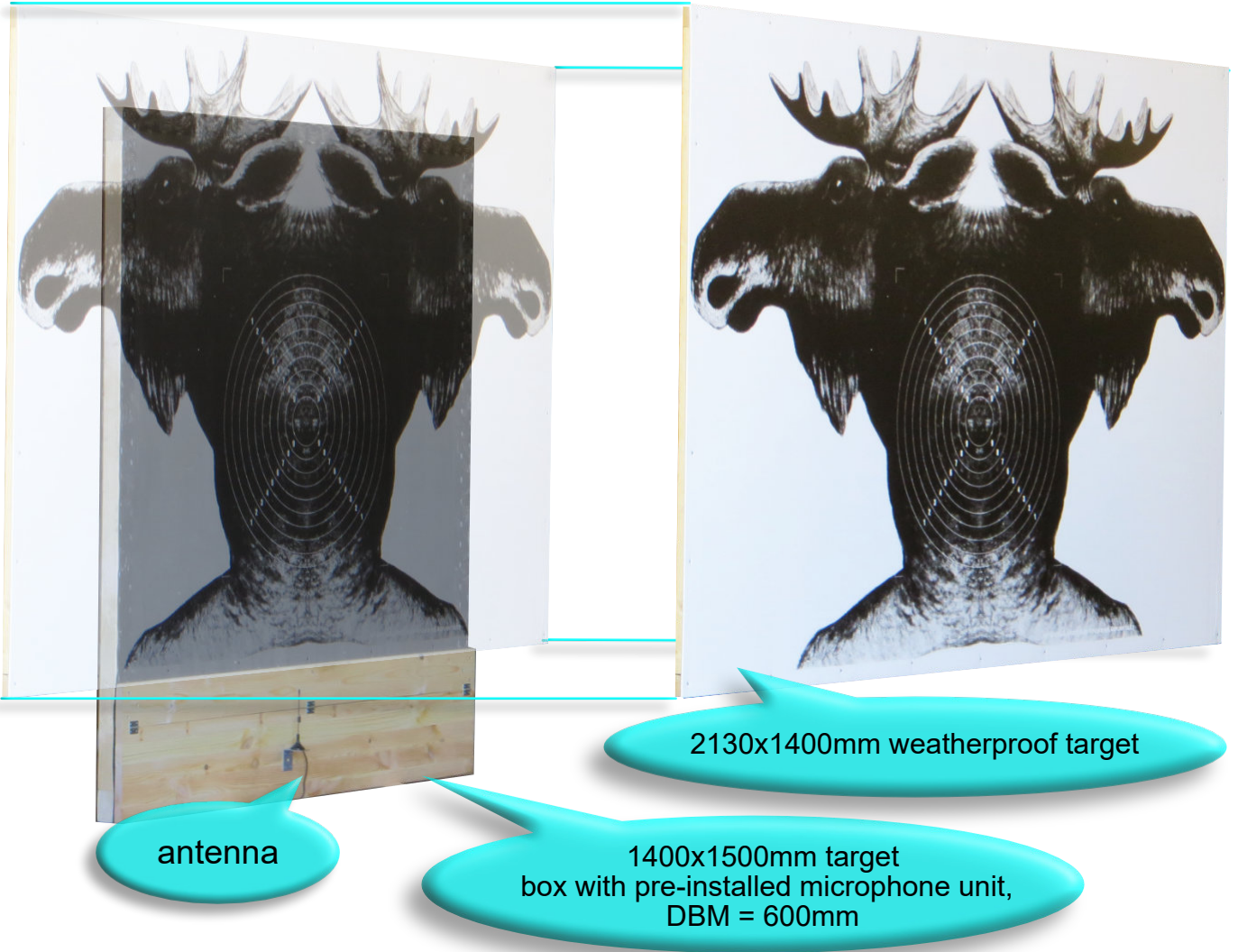# ELECTRONIC SCORING SYSTEM xCursor ET-2000

xCursor ET-2000 is an easy to use electronic scoring system for rifle shooting

- no more constant walking to the target to find hitting points
  instant feedback after the shot, audio score of and hit point from the PC screen
- real-time results service also for viewers with color display (optional)
- easy installation, radio link (433.9 MHz) up to 300 meters (normal antenna) and 1500 meters (directional antenna)
- fits both standing and moving targets
- easy-to-use software (Windows) with lots of different targets as background and the ability to add them as needed
- low maintenance costs
- fits for rifle and ram-fire (for supersonic and subsonic bullets), sensitivity adjustable on PC screen

WARRANTY 2 YEARS

xCursor ET-2000 included:

radio modem for PC with antenna and USB cable

target radio modem (lithium battery inside, enough for about 40 hours)

battery charger
(power supply 6 VDC 2A)
for the board radio modem

target radio modem antenna with cable (3m)

weatherproof target

A lot of other targets are also available, here MOOS for example.

2130x1400mm weatherproof target

antenna

1400x1500mm target
box with pre-installed microphone unit,
DBM = 600mm

Installing a target radio modem

The target radio modem is reasonable to attach, to the bottom of the target, on bent underlay from the HARDOX board. The elongated elastic cord is best suited for that.

In 3 microphone targets is reasonable, to mount the modem to the bottom of the target, to the wooden stick, using an elongated elastic cord. It is good so, that by relocating the target, cables remain undamaged.

NB! The antenna cable tend to broke near to the A plug, please handle carefully.

Installing a Computer Modem Driver

In order for your computer to recognize a computer modem connected to a USB port, you must first install the corresponding driver on your computer. The driver can be found on the web, at www.xCursor.eu/downloads/.
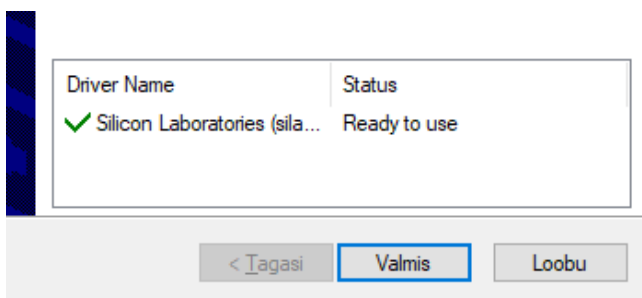

After extracting the file, install the driver on the PC you are using

Depending on what Windows operating system your computer is on (XP, 64-bit or 32-bit), you can choose the right one (no problem, if you accidentally choose the wrong one, the computer will reject it).
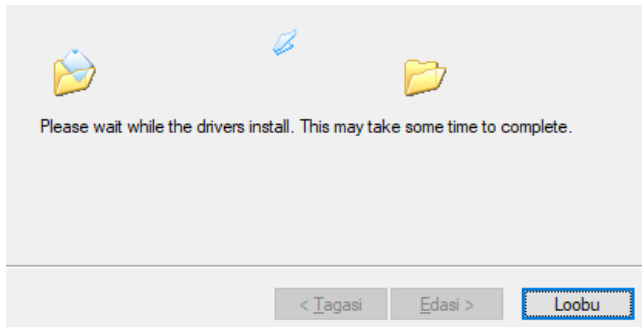
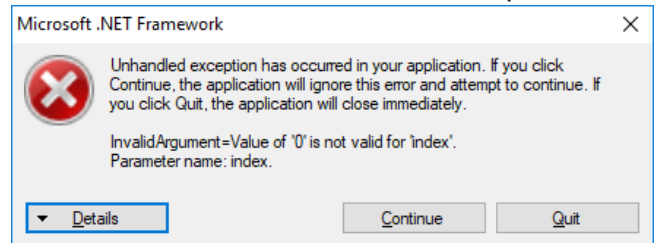

After that, the driver is installed.


Coping a user application to the computer

The xCursor software can be found at www.xCursor.eu/downloads/. The xCursor application is just one *.exe file that does not require installation on a computer, it can simply be lifted by "copy-paste" functions to any location (folder or desktop). In this same folder, xCursor app will later make 9 *.dat files, for holding shooting results of each target. NB! each time, by clicking "New Series", this data files will be overwritten (using data currently in Results Window table, so if you will keep them over a longer period, you have to save them with different name!

First-time software setup

When clicking on the xCursor app icon, the following window opens, the driver is not installed on the computer, or the computer modem is not connected to a USB port.

Once the driver is installed and the computer modem is plugged into the USB port, opens an "opening window" at first (the application in addition has a "target window" and "results window").
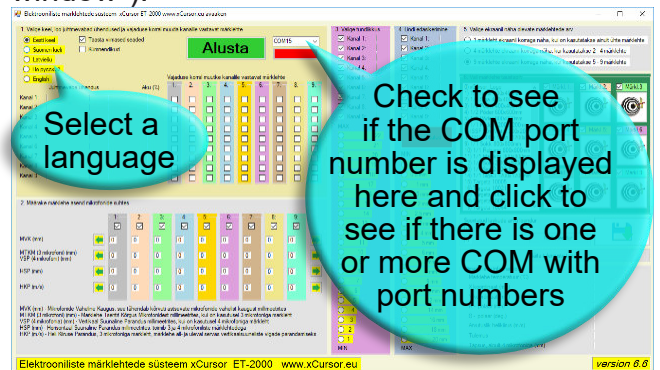
1. First, you can select the language.
2. You should check if the COM port and its numbers are visible, then click on COM port textbox to check if there is only one or more COM ports visible. If there is more than one, you need to look at the device manager in your computer to see which one is right (see picture below) and select it.
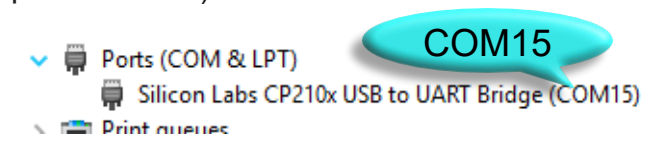
3. Switch ON the target modem or modems (the green light on the modem will blink) and click "Start" on computer application.


4. Now you will see the modems that are "found" and are in the wireless connection, the modem settings and the modem battery usage percentage are also visible (Modem settings can also be accessed wireless if desired, please use the "xCursor_5.0_ ChangeTargetModemSettings" utility application (suitable for v5 and v6 devices), available at www.xCursor.eu/downloads/). The computer assigns a corresponding target for the channel (channel1-target1, in this example). This setting can be changed if needed. Reasonable is to line up targets so, that the channel numbers increase to the right, then is no need to make changes.
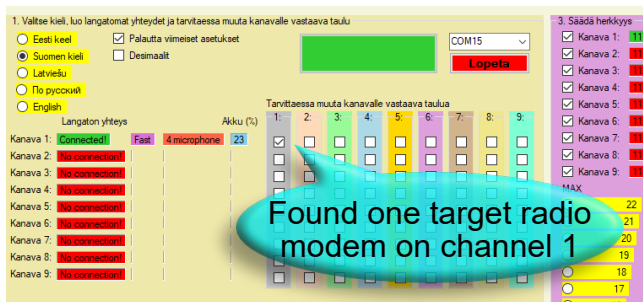
5. Now you have to set the corresponding settings on the target in the software, the position of the board relative to the microphones.
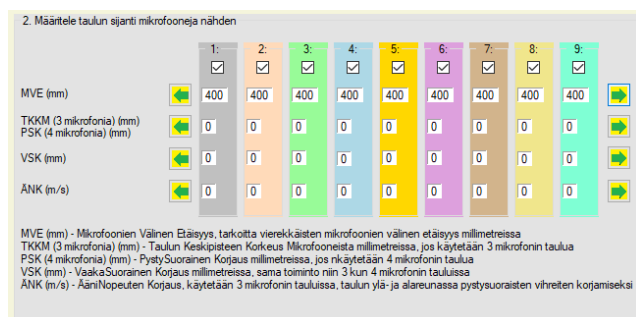
The settings table has 4 rows and 9 columns. You can change the settings by clicking the arrow icons at the end of the corresponding row. The first line is the distance between microphones (DBM) in millimeters.
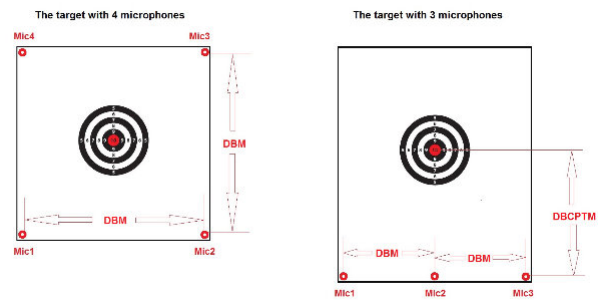
The xCursor ET-2000 can be used on 3 to 4 microphone targets (the modem setting is displayed in the opening window when the modem is connected). In the 3 microphone target, the microphones must be at the bottom of the board. In the 4 microphone target, the microphones must be at the corners of the target (must be square). Usually, 4 microphone boar targets have DBM = 400mm, 4 microphone free pistol on target DBM = 530mm and 3 microphone moose on DBM = 600mm.

DBM is an acronym from Distance Between Microphones, and DBCPTM meaning is, Distance Between Center Point of the Target and Microphones.

When using 3 microphone target, insert the height of the center of the target from the microphones (DBCPTM), in millimeters, into the second row. After a few test shots, that setting obviously has to be adjusted (for example, when the actual hit point is lower, as the hit point is inferred by the computer, the DBCPTM number must be increased accordingly and vice versa).

When using a 4 microphone target, leave the second row first with zero and after a few test shots you can put a vertical correction in millimeters (for example, when the actual hit point is lower, as the hit point is inferred by the PC, the PSK number must be reduced accordingly and vice versa).

In the third row, you can put a Horizontal Correction (HC) in millimeters. First, leave HC = 0mm and after a few test shots, make the corresponding correction in millimeters. For example, when the real hit point is to the right comparing the hit point the on computer display you have to put a positive number and vice versa.

In the last row, you can put Sound Velocity Correction (SVC). Usually zero is left here.

Next, you need to configure the two columns in the opening window. The left (3. Adjust Sensitivity) is on the target modem to adjust the sensitivity. When firing at speeds below sound, the sensitivity should be above 18 or higher, when firing at sound speeds, the sensitivity should be about 11 or bit more. This setting is in volatile memory, so by switching target modem OFF and ON again, this setting will be lost.

NB! Sensitivity should not be too high! If sensitivity is too high, device will show up incorrect results.

The right pillar is 4. rubber or paper tape movement (a mangle is a v6 accessory), after each shot. By using a v5 target modem, must always turn this setting OFF.

These two settings remain in the target modem's memory until the power is turned OFF ("volatile memory"). It means, that if target modem is swched OFF and ON agene, must PC app also be colosed and reopened, in order to make those two settings in target modem!
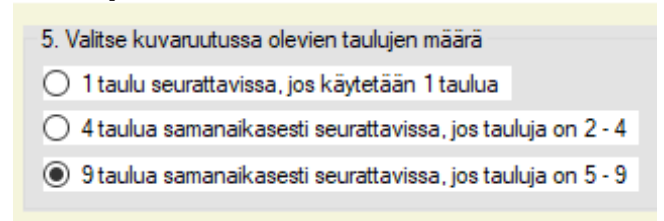
The fifth menu is for specifying the number of targets that can be displayed at a time in the target window. One computer can be used to track the results of 1-9 targets simultaneously.

5. Valitse kuvaruutussa olevien taulujen määrä
- ○ 1 taulu seurattavissa, jos käytetään 1 taulua
- ○ 4 taulua samanaikasesti seurattavissa, jos tauluja on 2 - 4
- ● 9 taulua samanaikasesti seurattavissa, jos tauluja on 5 - 9

The sixth menu allows you to define a suitable target background for the target you use. In order to display the correct results, it is necessary to select a suitable background image for the target. Each picture in the target has a check box, you can only define the background when the check box is selected. Important is to take into account the dimensions of the background image, for example 1/2 MOOSE 600x600mm (ram-fire rifle deer) looks the same as 1/1 MOOSE 1200x1200mm.

6. Valitse taulun taustakuva
- 0) xCursor_Logo
- 1) 1/1 Luodikko
- 2) 1/1 Kar
- 3) 1/2 Hir
- 4) 1/2 Hirvi 6
- 5) 1/1 Hirvi 800x
- 6) 1/1 Hirvi 1200x1200mm
- 7) ISSF 50m Luodikko 200x2
- 8) ISSF 300m Luodikko 1200
- 9) 1/1 Kauris 800x800mm
- 10) 1/1 Kettu 800x800mm
- 11) 1/1 Capricorn 800x800m
- 12)
- 13)
- 14)
- 15) Targetz 10005
- 16) Targetz 10021
- 17) Targetz 10037
- 18) Targetz 10052
- 19) Targetz 10064

□ Taulu 1:   □ Taulu 2:   □ Taulu 3:
□ Taulu 4:   □ Taulu 5:   □ Taulu 6:
                            ☑ Taulu 9:

Click to select the background

Clicking on the image opens the target window (also opens automatically after the first shot)

To keep all the settings in memory (when you close the app and reopen it), you need to save them by clicking the button where the disk image is located. NB! By relocating the app in a different folder, all settings will be lost. So you can copy app in many different folders and save different settings to them, it makes easier to work with different targets and settings.

when the number turns green, the target modem is set up and feedback is received

*rubber sheet movement must be swiched OFF when this optional acessory is not installed*

3. Säädä herkkyys
- ☑ Kanava 1: 11
- ☑ Kanava 2: 11
- ☑ Kanava 3: 11
- ☑ Kanava 4: 11
- ☑ Kanava 5: 11
- ☑ Kanava 6: 11
- ☑ Kanava 7: 11
- ☑ Kanava 8: 11
- ☑ Kanava 9: 11
MAX
- ○ 22
- ○ 21
- ○ 20
- ○ 19
- ○ 18
- ○ 17
- ○ 16
- 14
- 13
- 12
- ● 11
- ○ 10
- ○ 9
- ○ 8
- ○ 7
- ○ 6
- ○ 5
- ○ 4
- ○ 3
- ○ 2
- ○ 1
MIN

sensitivity is set on 11

4. Nauhan kelaus
- ☑ Kanava 1:
- ☑ Kanava 2:
- ☑ Kanava 3:
- ☑ Kanava 4:
- ☑ Kanava 5:
- ☑ Kanava 6:
- ☑ Kanava 7:
- ☑ Kanava 8:
- ☑ Kanava 9:

Pois päältä

MIN
- ● 0 mm
- ○ 0.5 mm
- ○ 1 mm
- ○ 1.5 mm
- 2 mm
- 2.5 mm
- 3 mm
- ○ 4 mm
- ○ 5 mm
- ○ 6 mm
- ○ 7 mm
- ○ 8 mm
- ○ 9 mm
- ○ 10 mm
- ○ 12 mm
- ○ 14 mm
- ○ 16 mm
- ○ 18 mm
- ○ 20 mm
MAX

Click here to write down the settings to memory

kuri

taulua

When you shoot at the target, the target window opens automatically and the result is heard as audio. If this does not happen, you can increase the sensitivity of the device and try again. If a PC inferred hitpoint is very wrong (you shoot 10 but say zero for example) then the sensitivity could be too high. There is always the right sensitivity for the device to work properly with wide range different types of bullets.
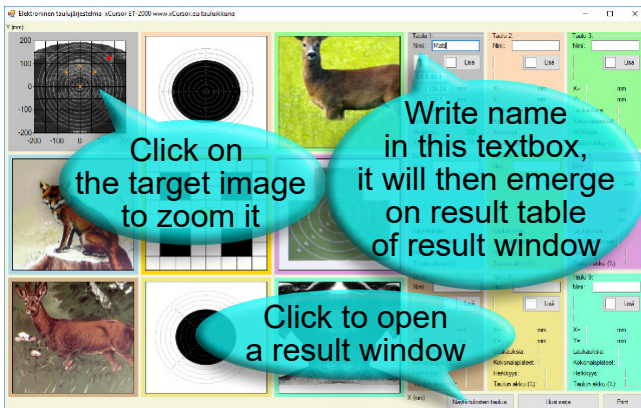
The image below is also a target window, but when there is a number of targets on the screen with the "1 target monitored"
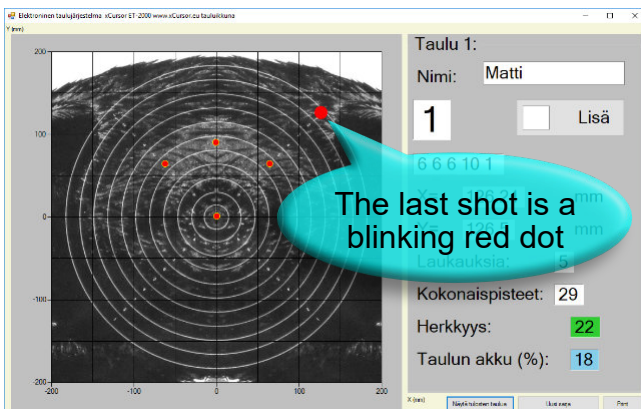
At the bottom are 3 "buttons": show result window, new series and print. The result window shows the shooter's name and the time it was fired. Clicking on a new series, cleans the target image from the red spots with hit points and greats 9 new *.dat files (one for each target) in the same folder where the software I use is located. Each time you click on a new series button, all these files will be owerwritten. These files can later be viewed using software such as "Microsoft Notebook". Clicking on the print button will print the target window to the printer which is set on your computer as the default printer.

There are two buttons at the bottom of the results window: copy the selected area and restore the last archive. First you need to define (computer mouse) the desired area of the table (it will turn blue) and click on the copy button. You can open the Microsoft Excel spreadsheet and paste it into the spreadsheet. Restore last archive opens data, written in *dat files in results windows table. This can be used when shooting is interrupt and app is closed, then after opening app agene you can bring shooting results back in to the table and continue shooting.

By each shot, bullet go through the rubber sheets (two 2mm rubber sheet) on the target, leaving a small hole behind. As a result, there will be a bigger hole in the center of the target, causing the device to stop working properly. Simply glue (with contact clue) a piece of rubber sheet of suitable size onto the hole, remove the rubber slugs that hang from the surface and clean the surfaces with sandpaper. When the membranes are already broken over a larger area, the entire membrane must be renewed. When applying a new sheet, make sure that no wrinkles remain on. The films on the moving targets must also be quite taut so that they do not swing as the target moves on the rails. Usually the moose membranes needs to repair the membranes after about 3000 shots and the boar membranes after about 1000-2000 shots.

Microphones should be also cleaned periodically from rubber granules and particles! NB! carefully, sensitive temperature sensor is also located on top of microphone block!

Next to the start button are 2 check boxes.
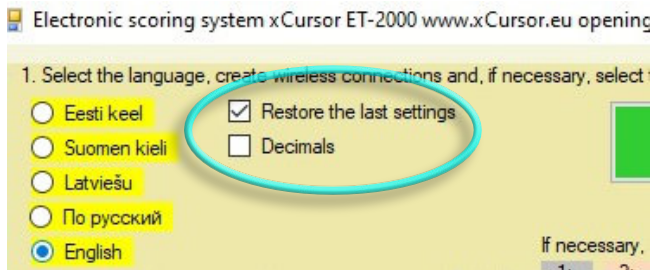
If "Restore the last settings" is checked before pushing Start, then all settings (numbers in text-boxes, check-boxes and target background images) will be restored as they was by saving settings to the computer memory.

Checkbox "Decimals" gives an option to show results more precisely like 8,6 or 10,4 instead of 8 and 10 for example. Total will be also calculated by adding decimals.

After clicking on Start button, computer starts to look for available target radio modems. Find modems show up (Connected), also will be displayed current modem settings ("Fast" and "4 microphone" in this example) and target modem battery level. For each founded modem (channel) will be determined a target (see the checkbox).
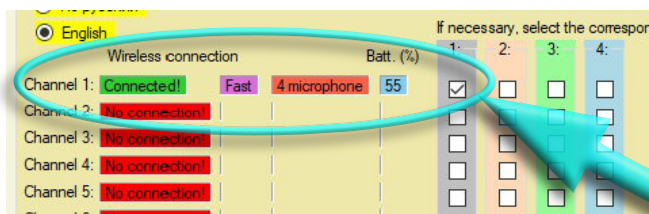
Shooting mode "Fast" is for fast (up to 5 shots per second) shooting in to the same target. Downside is that by shooting simultaneously to the different targets, data of both shots could get lost, when 2 (or more) shots take place in exact same time (within 0.02 seconds). Shooting mode "Slow" allows to shoot in many targets simultaneously and no data will be lost. Downside is that between the shots must be minimum 1 second.

In current example the second modem setting is "4 microphone". This setting must be correspond to the actual target! If 3 microphone target is used, this modem setting must be "3 microphone".

(Modem settings can be accessed and changed wireless if desired, please use the "xCursor_5.0_ChangeTargetModemSettings" utility application (suitable for v5 and v6 devices), available at www.xCursor.eu).
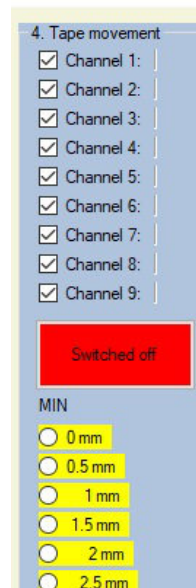
4. Tape movement is for optional device, a mangle that scrolls a rubber band after each shot. Mangle allows to shot more shots, without maintaining the target in between. Normally this mangle system is redundant while rubber sheet could be repaired by using contact glue a piece of rubber sheet. If mangle is not installed, tape movement must be switched OFF, in other case targeting system will be blocked (it could be seconds).

Check-boxes above allowed us to make this settings for each channel separately.

Computer can*t find a modem? Radio connection is poor. Antenna cable is broken or target to far or obstacles and "mirrors" disturb radio connection. Radio waves also reflect from different surfaces, cause a harmful interference. Change antenna, make sure that between antennas are no obstacles, especially metallic. Spatially move antennas to the different location, on both ends, until you find a good place. Also check the COM port number (next to the Start button), click on text-box, if more than one visible on drop-box, then go to the PC "device manager" and find right on as described earlier.

Modem connected but after shot no response? At first check, is a checkbox checked in this row, witch you use, and is a right target chosen (see left). Then check, correspond the actual target to the target modem setting shown up in app (3 or 4 microphone).Then check the sensitivity, it could be too low (it must usually be 11-15 by rifle and 17-19 by ram-fire shooting). Then check, is a microphone unit cable connected to the target modem (DB9 connector). If still no improvements then some microphone or microphone cable could be damaged.

After shot the system respond, but result is very wrong? Check app settings (location of the target in relation to the microphones. Check the background image (NB! some background look same but size is different). Then check sensitivity, set sensityvity lower a little bit.

xCursor ET-2000
www.xCursor.eu