Laser tag equipment
of LASERTAG.NET company

Operation manual

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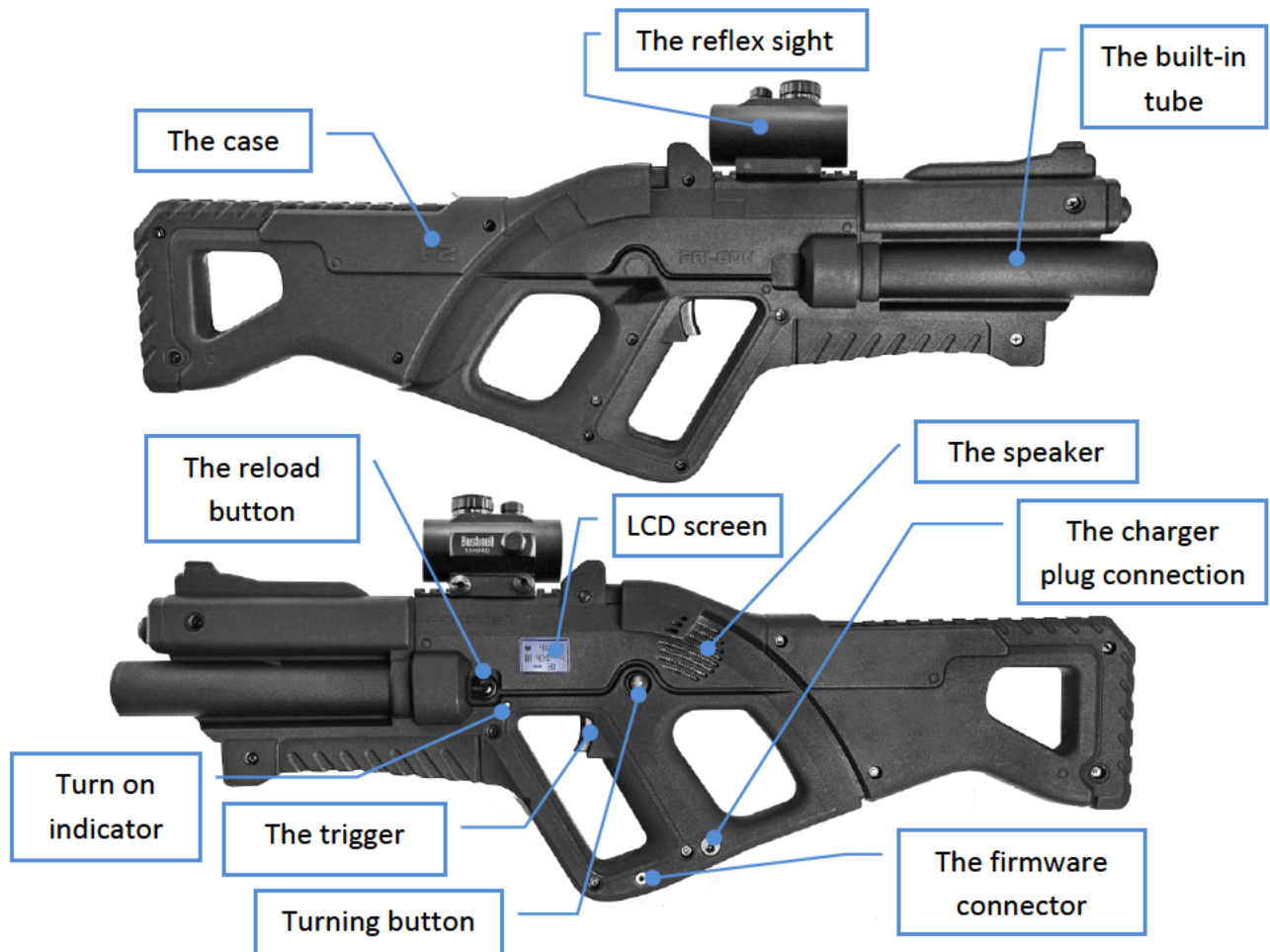
Laser tag is a fascinating military-sport game in real time and space, that develops players' movement speed, physical endurance, mental speed, tactical ingenuity and team spirit. The team players' task is to fulfill the mission (depending on the script) before the competitor team, while hitting the foreign players by the tagger ray and not letting to hit yourself.

LASERTAG.NET company supplies various equipment for the laser tag games organization. The main components of the equipment: a tagger with a headband, a remote control, a control point, a universal point, a radio base, chargers. Also, for the purpose of a varying the game play electronic simulators can be used "land mine", "explosive bomb", artifacts, personal first aid kits, a shooting range etc. Each player is given a wireless set – a tagger and a headband.

1. The tagger

The tagger is an imitator of a fire arm that "shoots" harmless infrared rays with a signal carrier frequency of 56 kHz and a wave-length of 940 nm. To increase the realism the IR ray is duplicated by light ray during the shot. After the contact of the IR ray with any of four sensors on the opponent's headband the defeat indicator works, that approves by flashing the headband RGB-indicators, vibration and audible warning of "injury" or "defeat" of the player.

The reflex sight

The built-in tube

The case

The reload button

LCD screen

The speaker

The charger plug connection

Turn on indicator

The trigger

Turning button

The firmware connector

The main elements of tagger on the example of the rifle FALCON F2

The tagger elements assignment

№	Item name	Assignment	Note
1.	The case	Contains all the elements of electronics, including Li-ion batteries	
2.	The tube (optical system)	For focusing the infrared ray and imitation of laser radiation	Consists of infrared diode, LED and optical lens system
3.	Button and turn on indicator	For turning on the power of tager and availability alerting	
4.	The trigger	For closing the contact of the microswitch and shot imitation	
5.	The reflex sight	For aiming at sensors on the opponent's headband	
6.	The reload button	For imitation of weapons reloading if the cage is empty	
7.	The speaker	For voice alerts, imitations the sounds of gunfire, misfires, recharge etc.	
8.	The charger plug connection	Forinternal battery charging	
9.	The firmware connector	To firmware the tagger software with the latest version and sounds change	

Tagger can work in three modes - "Service", "Holding " and "Games".

Service mode

The service mode activates by turning button holding the trigger button or pressed reload button At the same time the green LED indicator lights up below the push- button and a short sound signal plays. This mode allows you:

- to know the degree of tagger and headband charging;
- to assign any headband ID markers (to bind any headband to the tager).

Information about the battery charge status

The Li-ion battery that built into the tagger body charges through the charger (p.16), which is connected via a special connector. mediately after the getting tagger into the service mode there is a testing of the battery charge degree and the sound notification of the status of "Weapons Battery 100%", "Weapons Battery 75%", "Weapons Battery 50%", "Weapons Battery 25%" or "Weapons Battery discharged".

To determine the degree of headband charging (p.7), it is necessary to switch the button on the control unit in the immediate vicinity of the tagger (up to 5 meters), when it is in service mode. With

that the white single shot RGB-indicators light on the headband and the information appears through the tagger speaker about the headband battery status (also five degrees - "Headband Battery 100%," 75%, 50%, 25%, and "Headband battery discharged").

Tagger and headband connection

Both tagger and head band have their own numbers (ID), which should correspond with each other. In service mode, it is possible to "connect" tagger with any headband. To do this you have to turn the headband on, which we want to connect, and make a shot in any of its sensors. To prevent accidental response, the power of infrared ray should be 1% in the connection mode, so you need to make a shot almost point-blank. In case of a successful connection the headband RGB sensors flash once with white, and it gets the tagger ID. To start the game you need to exit the service mode (turn off and on tagger and headband).

Holding mode

While turning the tager on through the button the build in electronics searches the headband with the same ID. At the same time every 3 seconds beeps take place. In case of finding out the identical bandage the audible warning says: "Everyone check your weapons and get ready", the headband responds by flashing light corresponding to the color of the team, and the set is ready to play the game.

Game Mode

To start the game you have to activate the set. For this purpose, turn on the tagger, a headband and a remote control (). Direct the remote control to any of the headband sensors and press the button "New Game"   In case of the successful activation the audio message says "Let's go, go, go!" and the headband RGB-sensors go down.

The purpose of tagger is to get by a focused infrared ray into any of the 4 hit sensors on the competitor team player's headband.

In the factory settings the single "shot" comes if you press the trigger briefly, tagger shoots three-round burst if you clamp the trigger. On default, the tagger is filled with 7 chargers of 30 bullets each new game. When a player shoots the charger, he hears the sounds that imitate misfires. For renewing the game you have to press the recharge button, a distinctive breechblock sound comes and the tagger is again ready for the game. This process takes three seconds. Recharge can be done before emptying the cage. Also it is possible to switch firing modes by pressing and holding recharge button. All tagger parameters (the number of chargers, bullets in them, recharge time, rate of fire, the interval of the player's survivability, etc.) are programmed by the radio base and LASERTAG.NET Operator program ().

The reflex sight

The battery
compartment

The rheostat

Vertical
adjustment

Horizontal
adjustment

The mounting
Clamp

The reflex sight is a lens or a lens system, projecting the aiming reticle in the direction of the player's eyes by means of the parallel flow, thereby it is enough to combine just two points for precise targeting - a gleaming mark, which you can see through the eyepiece and the aim itself. Moreover, even shifting the look aside the shooter still can see the aiming reticle.

The reflex sights can be open and closed.

The aiming reticle is red and green dots in Bushnell 1x0 RD model. The color and brightness of the aiming reticle is set by the 12-position rheostat.

To fix the sight on the tagger case you should to insert it into the Picatinny top rail and tight the fixation screws. To power on (lithium battery CR-2032, 3V) turn the rheostat in any direction, the aiming reticle must light by red or green.

Horizontal and vertical adjustment of the collimator sight angular correction makes by turning the adjustment screws that are closed with protective caps.

The tagger check fire with fixed sight can be done by using an electronic shooting range or other tagger-headband set ().

2. Headband

The sanitary cuff

The control unit

The base

Hit and display sensor

The headband is a part of the set of each player and consists of a base (with the possibility of changing the size), the control unit, 4 sensors (one of which is built into the control unit) and the sanitary cuff.

The headband base

The headband base consists of 4 layers - the camouflage outer layer, the carcass belt, the layer of PVC-inserts to protect electronic components from the human body fume and the inner layer with polyester mesh (creating an air gap with the ferrule) and velcro strip (for fastening the sanitary cuff that can be easily separated for sanitization). To change the size of the headband you can use the textile fastener on the base which is set in the appropriate range. The headband has an elastic insert for fixing on the player's head.

The control unit

There is a vibrating device and a headband battery inside the control unit that charges () through a special connector . There is also the power button and one of the hit and display sensors.

Hit and display sensor

The sensor is an electronic circuit board and includes the IR receiver, RGB-detector and other supportive elements which placed in a transparent box.

Sensors are located on the headband evenly and have 360° reception sector, that exclude the effect of "dead zones."

IR receiver fixes the IR ray hit from the competitor tagger.

The headband RGB-detector can glow with 5 colors depending on the task: red, green, blue, yellow and white. It can show the color of the team player that can be changed by means of the remote control (p.11), indicates the competitor ray hit, responds to its switching-in, connecting to tagger (p.5) and etc.

The headband activation

The connection between the sensors and the tagger is wireless.

The headband switches on by the button   he control unit. At this time a short vibration signal shows that the headband is on. Then the headband searches the tagger with the same ID, in case of failure it shows 3 colors winking every 5 seconds. I case of finding powered "related" tagger the display sensor starts to blink with team player color with a frequency of 1 sec. During the working mode the headband electronics constantly controls the availability of weapon. If at this moment tagger with the same ID turns off, the 3 color winking will light every 5 seconds with the team color.

Game Mode

At the time of the start of each round of the game RGB-detector goes out after pressing the remote control button "New Game" (p.11). If the ray sensor of the competitor team tagger gets into the infrared receiver, the headband responds as follows: If a player still has health units, RGB-detector flashes with team colors, a short vibration signal goes and the tagger speaker says about the player's injury ("I am wounded" or "The Last Life"). However, the player is invulnerable during the particular time, which is set by the LASERTAG.NET Operator program (p.18). This option is made to not force out the player by burst of gunfire.

If you get into the player's sensor, who has the last "life", the headband responds with the constant team color glowing and long vibration signal. The tagger speaker says: "The player is lost - back to base" and the weapon stops to work. After 10 seconds the headband switches to the flashing mode and the player must leave for the base for recovery.

Connector for the charger

RGB-detectors

The body

The power button

The seat
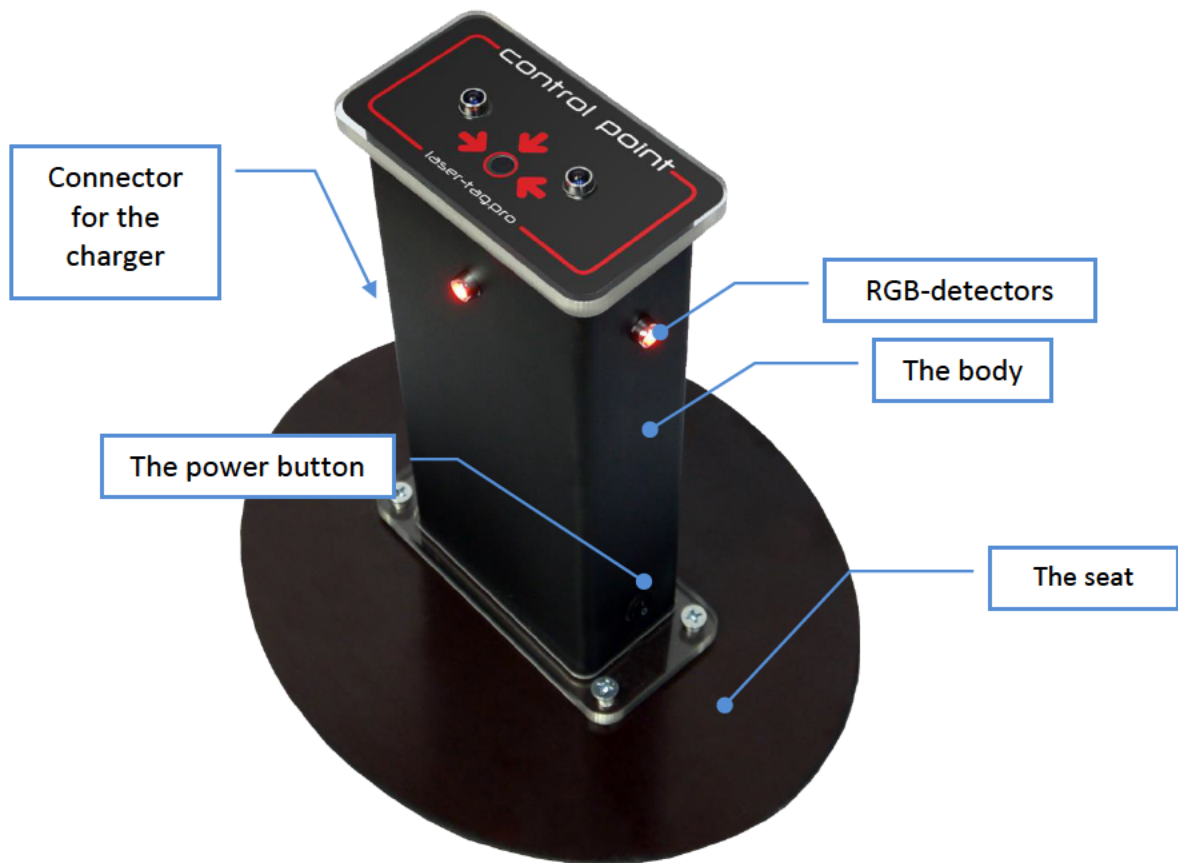
Control point is one of the main elements in lots of laser tag game scripts; especially one of the most popular is «The checkpoint capture".

The device consists of the stand and the body frame that has RGB-detectors, a power button and a connector for the charger on the outer side. There is an electronic circuit board with IR receiver and IR sender, a speaker and a battery in the body frame.

Control point settings

The control point task is to fix its "capture" by the different teams' players, to summarize the total capture time of each team and determine the winner.

The holding time of checkpoint for determining the winner of the round is programmed by the remote control (). For settings you have to turn the control point on by the button   at the bottom of the body frame. The detector tape will light up with white color. Next you have to turn on the remote control.

To increase the holding time for one minute you have to direct remote control infrared transmitter vertically on the upper part of the control point, press the "life x2" button   . The maximum you can set 10 minutes time. To decrease for one minute - press the "team color" button

 . Each time you press the certain buttons of the remote control the checkpoint will respond with the indicator tape short white flashes, the amount of flashes will correspond with the set time minutes of the holding checkpoint.

Game Mode

When you switch the control point on it reproduces the sound and light alarm with white color.

For fixing the control point capture you have to direct the tagger transmitter on its upper part, holding the weapon at an acute angle to the vertical, as if you are shooting inside the device. The IR receiver of the hit sensor is situated in the lower part of the control point. Such a position of the sensor excludes the false response from a far distance. Each capture stops the holding timer of the previous "invader", the timer of his team switches on, the checkpoint beeps and starts to light one of the 4 colors (red, blue, yellow, green), according to the color of the invader team. In addition to this all the player's Taggers say: "Checkpoint captured."

If you recapture the checkpoint by the competitor, it starts to glow by the color of invader team and play sound of capture timer countdown. The timer constantly summarizes the holding time of each team and, if the maximum time is reached, the checkpoint signals the end of the round by the sound of "bang" and the flashing of detector tape by the color of the winning team.

Restarting the checkpoint - the button "New Game" he remote control (). The device responds in the same way as when first turned on.

4. Remote control

The IR emitter

Indicator of turn on button

Control buttons

The power button

The Shift Button

The body

shift+1 storm trooper
shift+2 hostage
shift+3 last hero
shift+4 zombie
shift+5 commandos

new game
power
life x2
team color
remove

The **Remote Control** (RC) is designed to change the tagger characteristics, the checkpoint settings, the multi-purpose point and to control the gameplay. Power: battery type PP3/9V.

Settings mode

The remote control turns on by the button ⊙ . To change the settings of weapons the tagger-headband set has to be within sight, optimally within 5 meters. Turn on the tagger (p.3) and the headband (p.7). If the set is attached properly (p.5), the headband will blink with previously selected team color and the tagger speaker will say "Everybody check the weapons and get ready".

Direct the remote control IR transmitter to any of the headband hit and display sensors. Pressing the button 2 "Power" you can change the power of the ray that is radiated by the tagger infrared diode. This option varies depending on the conditions of the game - outdoors, in sunny weather it is necessary to increase the power of the ray; in the evening, indoors, to reduce the rebound effect, you have to decrease it. The remote control allows you to set two gradations - 100% and 50%, which will change with each press. In the first case, the tagger speaker play the sound of the certain weapon shot at decreased power - the sound of the weapon shot with a silencer. At the same time the distance of the shot and the optical LED brightness will change. You can set the power of the IR ray with an accuracy of 1% with the help of radio base (p.17).

Pressing the button 3 "Life x2" you double the number of hits required to defeat a player in this game round. The tagger will play sounds like the Morse code, and their number corresponds to the number of health units. You can program 255 hits maximum.

The team player color changes by means of the button 4 "Team color" ch time you press the button 4 the cyclic color change of RGB-detectors will take place on the headband, "red-blue-yellow-

green", that go with an audible tagger signal. The shot power, the number of lives and the color of the team you can change even during the game mode.

Game Mode

After setting up all the game set, with pressing the 1 button "New Game" 1🔴 round starts. To do this, you need to direct the remote control IR transmitter on the headband sensors of the players (in line of sight up to 5 meters) and press the button. All the headbands respond with a short flash of the team color and go out, the tagger's speakers play audio command "Let's go, go, go!». Teams go to bases and waiting for the start signal. The judge can restore the player without returning him to the base using the "New Game" button.

The judge can also remove the player during the game by means of the remote control, for example, if he breaks the rules. To do this, he should to direct the remote control on the headband of this player and press button 5 "Remove" 5🔴 The reaction of the tagger and the headband would be as if you get into the player who had the last live (p.5).

Extended functions of remote control buttons

The button "Shift", located on the side surface, expands the number of teams two times. If you press it at the same time with the other remote control button it allows to select different military specialties for players according to the selected script, "Storm trooper", "Hostage," "The Last Hero", "Zombie" and a standard one - "Special Forces". They differ in the number of health units, clips, cartridges, etc., which is shown in the following table:

The table of the player and tagger characteristics depending on the script of the game

| Mode | Turning the mode on | Number of | | | | Damage per shot | "Friendly" fire |
		Units of health	Clips	Ammunitions in the clip	Shots in the burst		
Storm trooper	Shift+1	4	40	30	3	1	no
Hostage	Shift+2	6	-	-	-	-	yes
The Last Hero	Shift+3	2	7	30	3	1	yes
Zombie	Shift+4	8	40	40	5	2	yes
Special Forces	Shift+5	2	7	30	3	1	no

Damage per shot means the number of the health units that are taken from the competitor player for one hit by the tagger ray in his headband detector. "Friendly" fire - a mode in which the player can cause damage to the teammates. Check what specialty has got the player, and you can change it with the help of the LASERTAG.NET Operator program (p.18).

Control point setup mode

Remote control is also used to set the Control point (detail -).

You have to direct the remote control IR transmitter vertically in the upper part of the checkpoint. Each press of "doubling the life" button increase 🔴 holding time of the checkpoint for one minute that is important for determining the winner of the round. Pressing the "color change teams" reduces 🔴 lding time for one minute.

Universal point setup mode

To set the multi-purpose point, you have to activate the remote control and the multi-purpose point () by means of turn on buttons 🔘 .

Pressing the button 🔴 "New Game" cyclically changes the mode of the multi-purpose point: "Revival" - "Radiation" - "First-aid-kit" - "Shuffle" ().

The remote control also set the operating range of each mode. Each press of "doubling the life" 🔴 increases the time by 10 seconds, and the buttons " Team color " 🔴 reduced by 10 seconds.

Summary table of remote control commands buttons by default

Mode \\ Button	Tager and headband settings	Check point settings	Universal point settings	+ Shift Selecting a military specialty	Game mode
🔴 "New game"		Checkpoint restart	Mode switching	Storm trooper	The start of the round, the restoring of the player
🔴 МОЩНОСТЬ "Power"	Power change IR-ray			Hostage	Changing the IR-ray power
🔴 "Life x2"	Doubling health units	+ 1 minute of holding time	+10 seconds of working time	The Last Hero	Doubling health units
🔴 "Team color"	Changing the team color	- 1 minute of holding time	-10 seconds of working time	Zombie	Changing the team color
🔴 "Remove"				Special Forces	Removing the player

The special characteristic of the remote control is the ability to reprogram any button on the other team via radio base and LASERTAG.NET Operator program ().

5. Universal point

The universal point is an indispensable attribute of many scenic laser tag games. The device that

is supplied by «LASERTAG.NET» company can work in 4 modes: **"Revival"**, **"Radiation"**, **"First-aid-kit"** and **"Shuffle"**. After certain periods of time, which are called the working intervals, the multi-purpose point sends a pulse, adding or reducing the number of players health units ("Lives"), which are in range of the device at this moment.

On the outer surface of the body frame is set a power button and a connector for the built-in battery, 5 infrared emitters, which completely cover the gaming area. On the upper surface of the multi-purpose point there are three LEDs, which are indicators of mode.

In addition to the battery there is electronic board with IR receiver and speaker.

Universal point setup

The universal point mode is set by means of the remote control. To change the mode you have to turn on the remote control and the control with the power buttons   hen one of the LED will light and the speaker will play the short signals, the amount of which will correspond to ten seconds of the previously selected working range mode.

You have to hold the remote control in such a way so its infrared transmitter "looks" into inside of the universal point.

Each pressing the "new game" button on the remote control changes the universal point mode cyclically. So when you first turn on the device the red LED under the icon lights up and 3 signal sounds - which means that at the moment universal point is set on **"Revival"** mode with a work period of 30 seconds. With this setting, every half a minute, the device restores all players' lives within the working range, which is about 5 meters. As a rule, the universal point as a "respawn" is set on the base behind the shelter, so there is no direct line of sight with the players in the field.

When the health units are restored the player's headband stops flashing and the tagger speaker says: "Go, go, go!".

Another pressing of the "new game" button on the remote control set the universal point on **"Radiation"** mode - the yellow LED lights up under the icon . In this mode the device sends an impulse to take away one health unit from all the players in the zone of "defeat" in a scheduled working range. At this time the tagger speaker plays a sound like a Geiger counter clicks, but as for the rest the reaction of laser tag set is the same as while hitting the player ().

The next pressing the "new game" button sets the **"First-aid-kit"** mode. As a mode indicator the green LED lights up under the icon impulse that is generated by the device adds one unit of health to the players who are close to the universal point in a scheduled working range. The tagger speaker says: "First-Aid-Kit» and RGB-detectors on the headband answer with a short flash of the team colors.

The last mode of the multi-purpose point is **"Shuffle".** The display of this mode is all three LEDs glowing, and a reminder of this mode is the icon with all three LEDs picture under it. In this mode the point becomes "Revival", "Radiation", "First-Aid-Kit" at random.

The scheduled working range of the generating impulse is set by means of the remote control. Each pressing of "doubling the life" button increases the interval by 10 seconds, pressing the "change team colors" button - reduces the interval. The 90 seconds interval is maximum and it corresponds to nine beeps and LED flashes that is how the universal point responds on the reset.

6. Charger

The connector

The body

LED charge detector
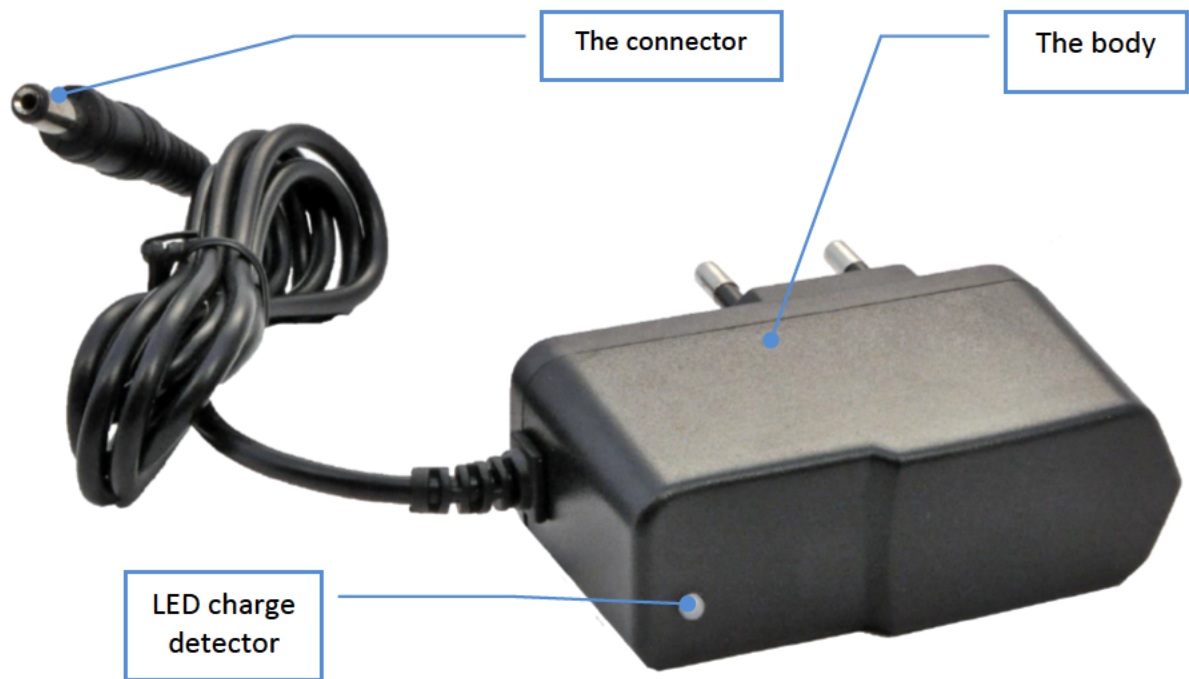
Charger for the tagger and the headband

The charger is designed to charge the built-in laser tag equipment batteries. The feature of this device is that the current reduces automatically and the color of the LED charge detector changes from red to green when the battery power is full and the battery still continues to grow.

As far as the battery capacity in the battery and the headband is 700 mAh, in the tagger, universal point, checkpoint, electronic shooting range and the electronic bomb - 2400 mAh, the recommended charging time is as follows:

- for the headband and radio base: 3 - 4 hours;

- for the tagger, the multi-purpose point and checkpoint, an electronic shooting gallery and electronic bomb: 5 - 6 hours;

It is recommended to avoid a complete battery discharge to prolong their working term.

7. Radio base

Connector
for
reflashing

Indicator
of turn on

The power
button

The body

chrg   usb   boot
data pow

IR

radio base

switch

ant

WiFi

batt

The radio base "LASERTAG.NET" is used to program and set the equipment, to control the game and to get the statistic. It can work in two modes: radio and infrared.

The working frequency of the radio base and game set is 868 MHz.

The device connects via USB connector with the computer exchange the data with the software. There is also a plug connection for reflashing of the electronic tagger.

All the radio base actions are done by means of LASERTAG.NET Operator program that must be installed on the computer. The minimum requirements: processor 1 GHz, RAM 512 MB, operational system Windows XP, 2000, NT, Vista, 7.

LASERTAG.NET Operator program allows you to generate game Miles II protocol commands.

Tagger Programming

The start screen of the LASERTAG.NET Operator program

The Equipment programming goes via radio - the program finds all turned on game sets in a radius of 30 meters and allows you to change more than 15 options. At the same time you can configure up to 120 game sets.

To program the tagger you have to connect radio base via USB-cable to your computer and run the LASERTAG.NET Operator program. On the home insert "Connect" you have to press "Search", and if there was no auto connection, select a port and push "Connect" button. In the "Type of base" you have to cancel "Radio".

Go to the insert "**Select ID**". Turn on taggers, which must be programmed and searched for ID. Move the found tagger icons in the "Selected ID» field with "in selected" button:

ID" insert

Then go to the insert "**Management**". In the "Command" section select the desired command from the list or enter the command code manually. There are 29 commands available, among them: "Add X units of health", "Add X bullets," "Pause / remove the pause", "Switch shot power", "Rise the firing speed", "First-aid-kit", etc. You can change the characteristics of the selected commands in this section. For example, selecting "Set preset X", you can set 5 types of players military specialty - 0 for "Storm trooper" specialty, 1 - "Hostage", 2 - "The Last Hero", 3 "Zombie" and 4 - "Special Forces" .
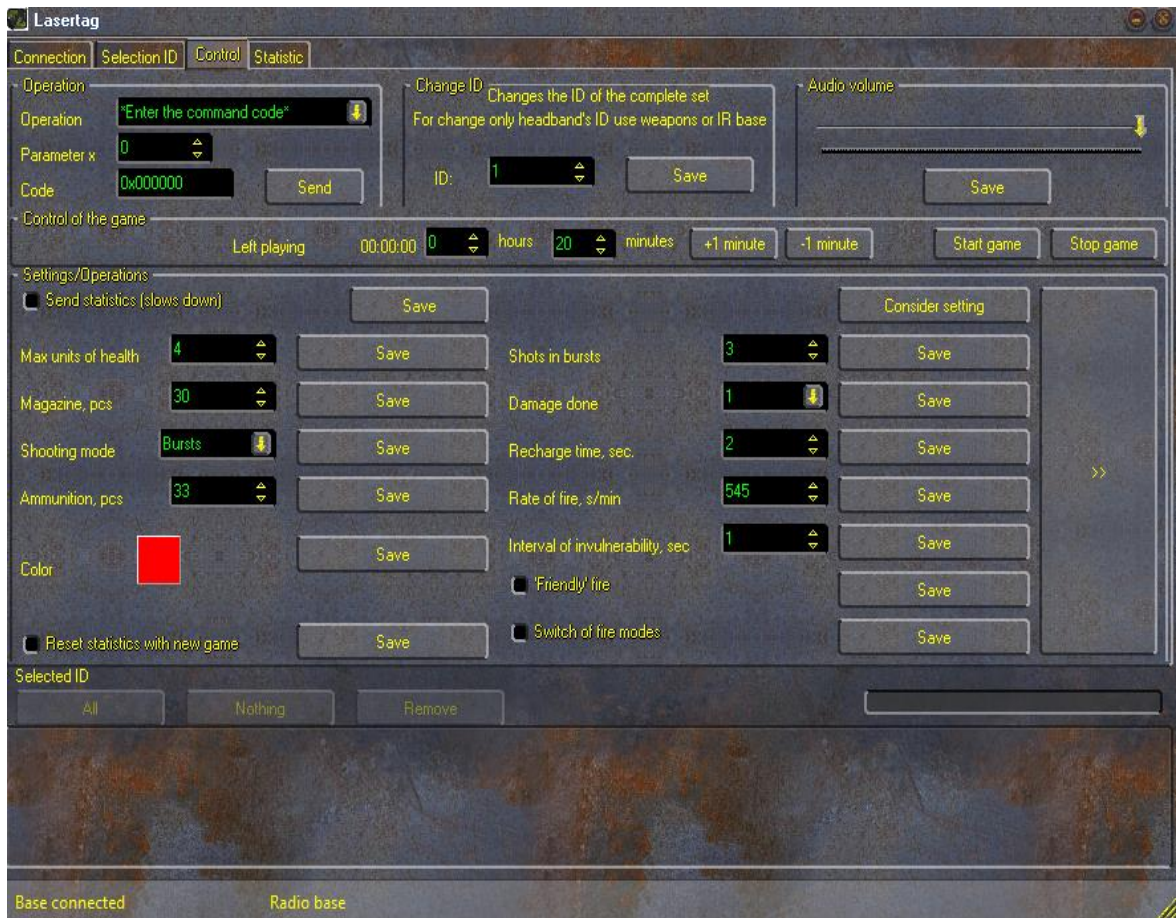
"Control" insert

You can set from 1 to 255 health units; the shot power is from 1 to 100%, the number of bullets in the cage - from 1 to 255, the number of clips - from 1 to 255, First-aid-kit - from 1 to 100 health units, radiation takes away from 1 to 255 health units.

After changing the command parameters press "Send".

Some commands have no parameters.

You can change the entire set of individual numbers (only for the headband ID changing you have to use the radio base in the infrared mode (p.22) or the tagger in the service mode (p.4)).

All the settings can be done in the service mode. To change the volume of the tagger speakers you have to set the new volume level in the "Audio Volume" selection and click "Save."

Tactical and technical tagger characteristics can be changed in the "Strategy game set up" selection. Also there is "**Statistics**" insert in the program, where you can enter individual numbers for the selected player's name, and then to read, clear, save and print game statistics for each ID.
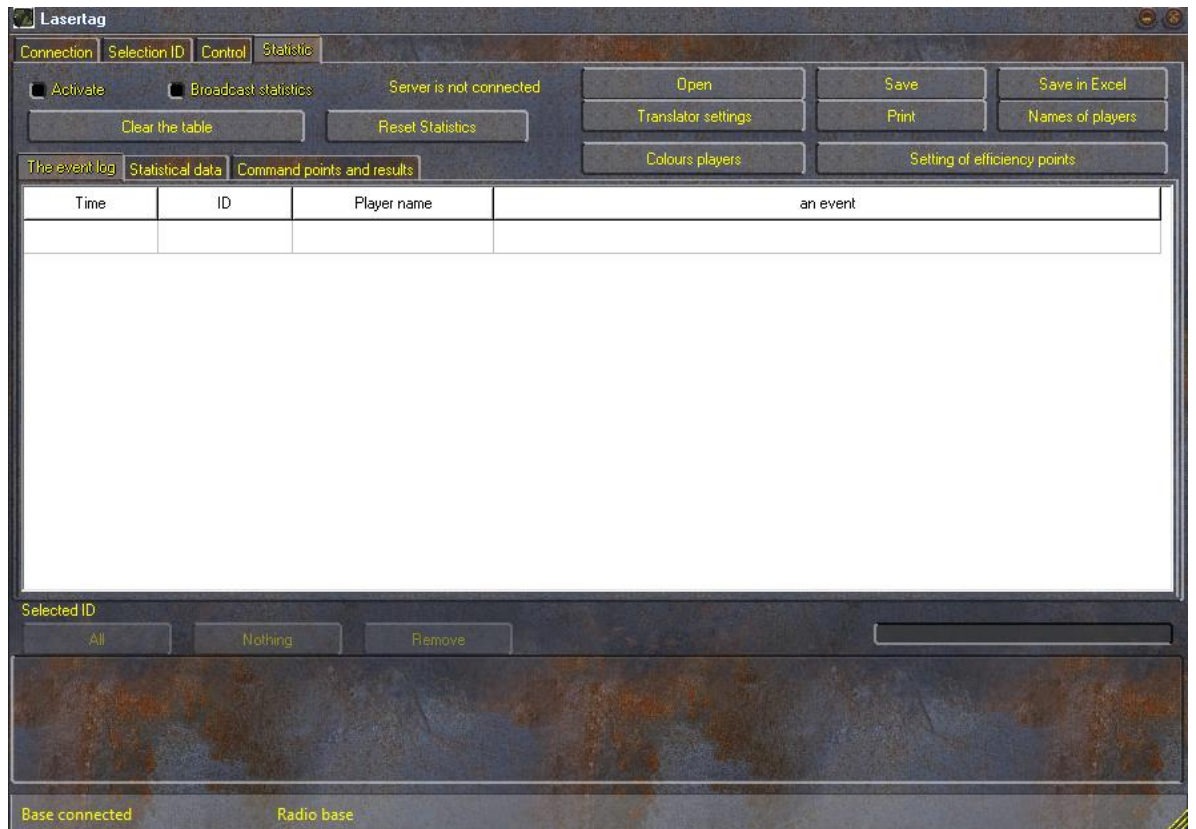
"Statistics" insert

Insert "**Sound loader**." To download the sounds the tagger must be in the service mode and the radio base must be in the "**Sound loader / firmware**" mode.

The shifting of the radio base in the sound or firmware loader mode

The sound in the laser tag "LASERTAG.NET" equipment is realistic and is reproduced with a bitrate of 176 kbit /s and a sampling rate of 22 kHz. For its storage you can use a flash memory. In total you can program 40 different sounds, starting from the sound of a shot and hit and finishing bullets flying by imitation.

"Sounds loader" insert

On this insert you can replace the default sounds on downloaded sounds. In the "File" selection you can download the audio file (supported by Windows PCM format with the extension .wav), delete, record and listen it both in the program and in the tager."Session" section allows you to load, record and store the whole set of sounds in a session. The radio base can also update the tager firmware. To do this you have to go to the "Connections" insert and in the "Firmware Loader" section click "Upload" button.

Window "Loader"

Connect by means of the special cable connectors through the "mini-jack" in the radio base and the tager. Then press the keys of recharge and trigger simultaneously and turn the tageron. After

installing the connection the "Select firmware" button becomes active. After you select the firmware (file with the extension .lzt), the tager firmware will start. After finishing the firmware you have to turn off and turn on the tager. The radio base has another function - assign any game command on the programmable remote buttons. To do this, you have to convert it to an infrared mode on the "Connect" insert, to remove the top cover of the remote, turn it on, select the required command on the control insert and press the right button on the remote in the "Programming the remote" selection, then press "Save".

"Control" insert through the infrared ray

Also, in the radio base infrared mode it is possible to imitate the tager shot and change the headband ID. For this the headband should be in the close quarters of the radio base IR transmitter. Go on the "Control" insert to the "Changing ID» section, set the desired number and click "Save". The shot from the tager in the base in infrared mode allows you to read ID of weapons, team color and the amount of damage. These parameters can be seen in "The Shot" section. In the same way you can read the code of each command on the remote buttons.

Reflashing USB radio base

For reflashing radio base you have to run the «Load_USB» program

The program window of the firmware USB radio base loader

Then select the USB radio base firmware file (file extension .lzt). Connect the "mini-jack 3.5" radio base plug connection to the cable and set cover plug on the other end of the cable. Then connect the USB cable to the radio base. After detecting the radio base USB by the «Load USB» program, the reflashing starts automatically. Close the «Load USB» program after reflashing and plug off the radio base from the USB connector of the computer.

8. Electronic shooting range
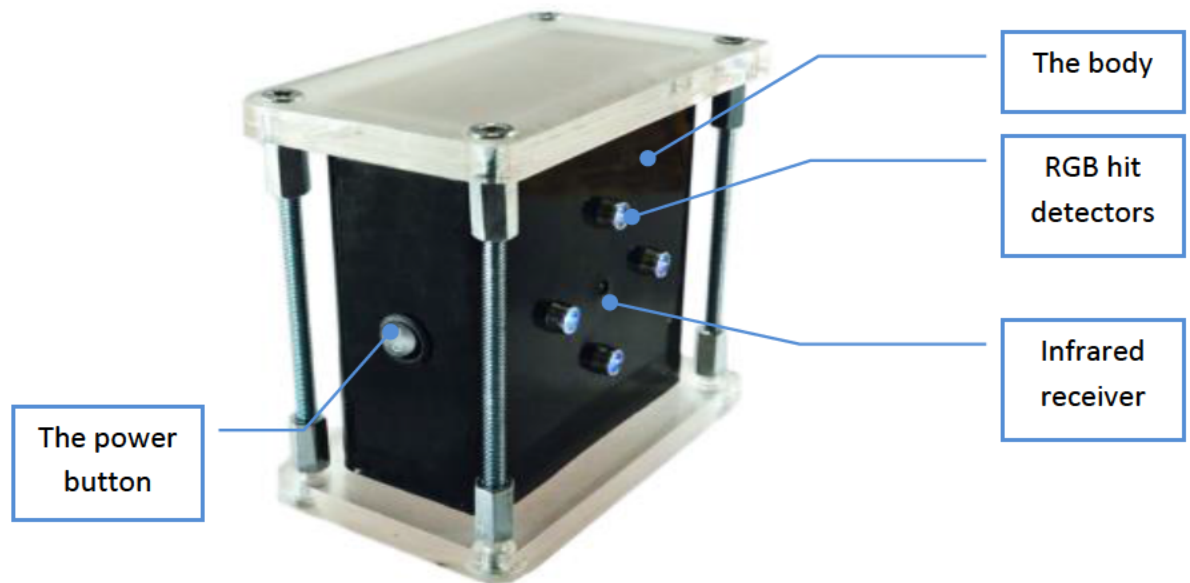
Electronic shooting range is designed for sighting the tagger. Besides, the shooting range can be used in the game script and as a separate attraction. On the body frame of the electronic shooting range there is a power button, a connector for the charger, infrared receiver and four RGB hit detectors. Power - built-in Li-ion battery (7.4 V).

To use the device you have to install it on the required distance (60-80 m for tagger sighting) and turn the button ⬜ The white LEDs will light up and the electronic shooting range is ready. At each hit of the IR ray the electronic shooting range answers with 2-second flash of the team color and the sound of piezoelectric element and then it changes back to a white glow.

The tagger and the headband can be used as the target. For this you have to set one tagger and one headband on the other team color and add 128 health levels (press ⬜ on the remote control button 7 times).

Place this tagger and headband at a distance of 60-80 m from the calibrate set. Turn on both sets and give a start by button ⬜ on the remote control. Aim at the collimator mark and make a shot in the headband target marker 2-3 times. If you miss shoot below, above or aside. Remove the protective caps of the adjusting screws and correct it for the exact hit.

9. Electronic bomb

The activation button

The body

The power button

RGB detectors

The speaker
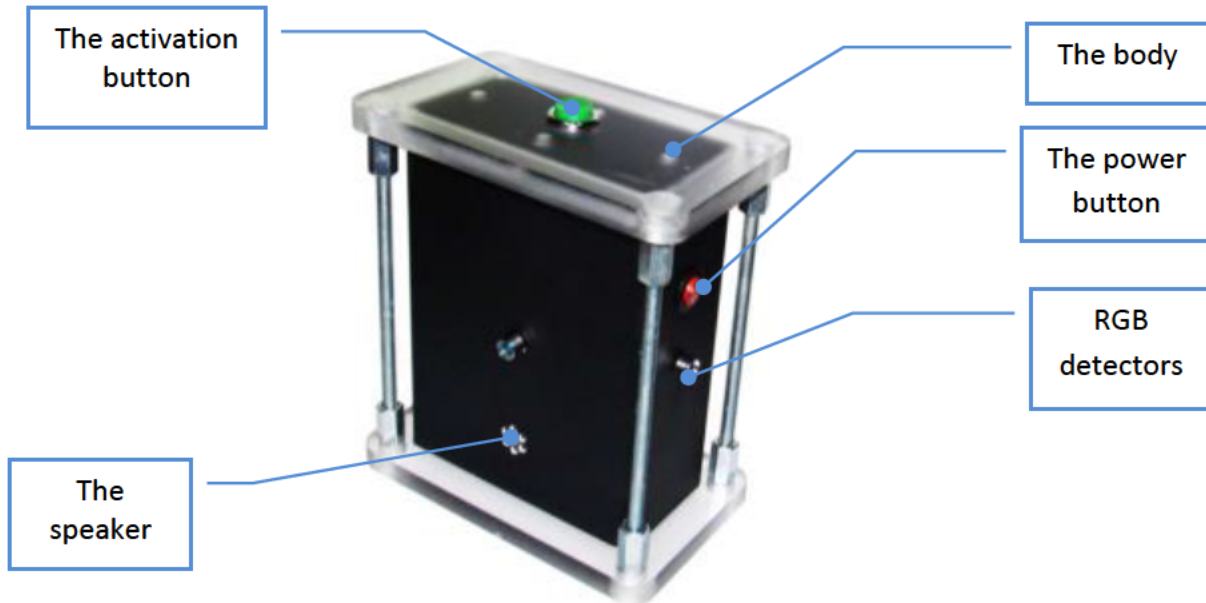
This **bomb** fits perfectly into the dynamic scripts, thanks to its simple and reliable device. To activate or deactivate a bomb, you have to hold the activation button for 10 seconds.

After activating the bomb, the timer turns on, the delay time is set by using the remote control: upwards - button 3, to decrease - button 4, in increments of 20 seconds, the default value is 20 seconds.

After the timer expires, there is an explosion which affects all participants in the range of the bombs. The range of the bomb is 6 - 12 meters, depending on the environmental conditions. As an indicator RGB-LEDs are used. The countdown and an explosion is signaled by the built-in speaker.

10. Accident prevention

The elements of laser tag set equipment, supplied by "LASERTAG.NET" company, are complex devices that require careful and precise handling.

The light and infrared rays emitted by the tagger, are perfectly safe for both vision and the human body as a whole.

When charging equipment with built-in battery, observe **the electrical safety rules**.

Charge at ambient temperature within 4 ° C - 40 ° C. Optimal charging temperature is 24 ° C.

Use only the supplied battery charger and original batteries. Failure to follow this rule can damage the battery and the equipment, cause a short circuit and fire, create a danger of explosion and so on.

Before using the battery charger (charger) check the quality and correctness of the connection of the wires. In case of the damage of any charger wires they must be replaced before using of the device.

During charging, install the equipment on a flat, stable, non-combustible surface. Remove the nearest flammable objects.

Do not leave equipment unattended while charging.

When during charging there is a specific smell and /or smoke, unplug the charger from the mains, remove the battery from the charger.

Do not close the battery contacts, it may overheat or inflame.

Do not store the battery in places with high temperature or in high humidity areas. Do not throw the batteries in a fire, it might explode.

Do not disassemble or repair the battery. It can depressurize and leak, overheat, explode and inflame.

Attention: If the battery is damaged do not recharge it.

Avoid getting moisture inside the unit. If this happened - quickly turn off the equipment and allow it to dry for 4-5 hours at room temperature.

It is not recommended to keep the charger into a power outlet, if it is used not for its intended purpose. At disconnecting the unit from the mains, remove it from the socket, holding the plug, not the electric cord.

To avoid accidents do not use the swollen batteries, which require the mandatory replacement. In case of contact the electrolyte of the depressurize battery with your hands or eyes, immediately rinse the affected area with running water for a long time and consult a doctor.

Please be careful with **the optical elements** of the set (collimator sight, the tube lens) - Protect them from mechanical damage and contamination. In case of contamination, clean them with special wipes.

Protect the plastic equipment from the excessive mechanical efforts.

If the equipment was at a negative temperature - while using in heated rooms, to prevent the electronic components damage because of condensation you have to keep it in the warm room for at least 2 hours before turning on.

In the cold season wear the headband over the headwear. In the hot period use the hygienic cuff which you have to take off after each game and sanitize.

Do not use the taggers, especially that imitates real combat weapon, for games out of laser tag places - the reaction of passers-by and the law-enforcement agencies can lead to irreparable consequences.

11.   Frequently Asked Questions

- **The tagger defeat is very large (I kill several players without aiming).**
  Solution - the diameter of the ray defeat can be adjusted individually to the conditions of the place with the help of radio base (insert the control / commands / replace shot power).
- **When I press the trigger there is no shot.**
  Solution - make sure you click mechanically on the micro switch (You should hear a click), if the press takes place, and the shot does not occur, disassemble the tagger and ping the wires from the motherboard to the micro switch.
- **When I turn on the tagger nothing happens.**
  Solution - plug in the charger and switch the tagger on (the deep discharge of the battery is possible) if the tagger still does not work - measure the voltage of the battery when the power button is closed at supplying power to the board.
- **The multi-purpose point moves to the next mode by itself.**
  Possible cause - the switching of the multi-purpose point modes is via "new game" command and if there are two switched multi-purpose points, standing next to each other, they can transfer one to another different mode.
  Solution - eliminate the line of sight between the multi-purpose points.
- **There is no connection with the headband, the tagger makes repeated sound of the connection lack.**
  Solution - to make the re-connecting of the headband to the tagger via a shot from the close distance in the administrative tagger mode.
- **The multi-purpose point "revives" badly.**
  Solution - check with a digital video camera (digital camera, phone) each IR diode - at the time of working the camera should capture a white flash. Make sure that there is the line of sight between the sensors and infrared emitters have. Charge the multi-purpose point.
- **One tagger doesn't kill another one.**
  Solution - make sure that the taggers of the teams have different colors; that the function "friendly fire" is off; that the taggers have no matching numbers ID.
- **The radio base does not "see" the taggers and does not send commands.**
  Solution - make sure that the radiobase driver is installed and it does not conflict with the system in the device settings (My Computer / Properties / Devices); make sure that the base is connected (LASERTAG.NET Operator / Connection / Base is connected); make sure that there is the green detector in the radio base.

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