

Equipment  
for indoor laser tag

Platform

**G A L A X Y**

Game kit ECLIPSE

User's manual

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This manual is relevant for the following minimum firmware numbers for hardware microcontrollers and versions of computer applications:

- Blaster/vest kit – 3\_13\_5B94C698
- Station SIRIUS – 5.1.15
- Multistation – 5\_5\_CF183658
- Domination box Smart – 4.4.56
- Bomb SUPERNOVA – 1.9
- application Lasertag Operator – 3.2.3. and higher
- application Lasertag Tv-Out - 1.3.20.45d59d5 and higher

## 1 Game Kit Description

Indoor laser tag is a dynamic real-time game that takes place in dark rooms, usually decorated in a space wars theme. Participants wear vests and blasters that glow in their team's color, and when hit by an opponent's blaster beam, they flash white briefly.

Aim of the Game is to hit by blaster's beam the sensors which are attached on opponent's vest or weapon (the sensors may be attached on extra equipment as well). Player and its team are earned points for each successful action (hit the opponent, base, domination box, etc. capture). Depending on the settings, points are deducted for opponent's hit into the sensors of opposite team player, respawn, unsuccessful shot, etc. Statistics are quickly transmitted to the control computer and can be displayed on a screen of a monitor, projector or television.

The minimum set for playing arena laser tag consists of sets of blaster + vest, router and chargers. Setup, management of the game kits, and also statistics accounting and broadcast is done through the Lasertag Operator application (Android operating system).



**General view of the kit**

Also, for a variety of gameplay, electronic devices manufactured by our company can be used: Smart Domination Boxes, Multistations, SIRIUS station.

## 2 Blaster

The blaster is a simulator of "space" weapons, using harmless infrared beams to "hit" the opponent.

To increase realism, the IR beam during the shot is duplicated by a light beam like a laser pointer.

The blaster body is made of impact-resistant ABS-plastic. It has no moving parts, and it is designed to withstand large loads.



**The main elements of the blaster**

The bumper part of the body is made of expanded thermoplastic elastomer, which reduces the risk of physical injury in possible collisions.

The blaster is connected to the vest through a flexible cable, reinforced with a sleeve.

The blaster is equipped with a frontal hit sensor built into the bumper of the body, which allows the opponent to hit the player not only in the vest, but also in his weapon. Flashing white RGB LEDs on this sensor and a sound signal informs the player that he has been hit.

In addition to the hit sensor in the front of the blaster body, there is a shot illumination panel in the color of the team.

A capacitive hand sensor is installed in the body, which makes it impossible to play the game while holding the blaster with one hand. There is a vibration motor installed in the body to simulate recoil, as well as a gyroscope and a pedometer for counting steps in the game and signaling about blaster aggressive movements.

Blaster features a multicolored screen that operates in 3 modes:

Pre-game mode displays initial parameters of the kit;

Game mode displays actual player's info during the game round;

Summary mode displays game statistics after the game is over.

At the same time, the screen can display more than 10 indicators: dynamic scales of health and ammunition levels, the number of hits on the opponent, the type of weapon, the selected preset, rating, and much more.

The image shows three screenshots of the game interface with various UI elements labeled:

- Pre-game mode:** Shows two weapon options (Weapon 1 and Weapon 2) with their respective ammunition counts (63 and 33). Labels include: "Weapon 1", "Battery charge level", "Number of cartridges in the clip", "Weapon 2", and "The number of clips at the beginning of the game".
- Game mode:** Shows a central timer (12/34), health level (53), and ammo level (63). Labels include: "Server connection indication", "Kit ID", "Timer", "Fire mode", "Health level", "Superpower status indicator", and "Ammo level".
- Summary mode:** Shows "GAME OVER" text, number of defeated opponents (599), and number of defeats from the opponent (967). Labels include: "Place in rating", "Number of steps in the game", "Number of gained points", "The number of defeated opponents", and "The number of defeats from the opponent".

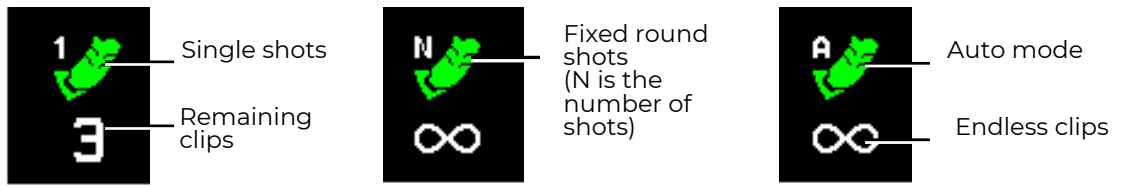
**Information displayed on the blaster's IPS-screen**

The image shows seven screenshots of the game interface, each representing a different preset:

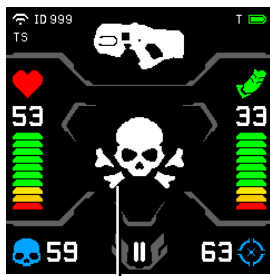
- Default preset ("Special Forces"):** Shows a blue helmet icon, 30 and 33 cartridges, and 3 and 6 clips.
- Preset "Doctor":** Shows a red cross icon, 63 and 33 cartridges, and 3 and 6 clips.
- Preset "Vampire":** Shows a vampire face icon, 63 cartridges, and 3 clips.
- Preset "Zombie":** Shows a green skull icon, 63 cartridges, and 3 clips.
- Preset "Hostage":** Shows a blue handcuffs icon, 63 and 33 cartridges, and 3 and 6 clips.
- Preset "Sniper":** Shows a green eye icon, 63 and 33 cartridges, and 3 and 6 clips.
- Preset "Stormtrooper":** Shows a Stormtrooper helmet icon, 63 and 33 cartridges, and 3 and 6 clips.

**Displaying presets with weapon type before playing**

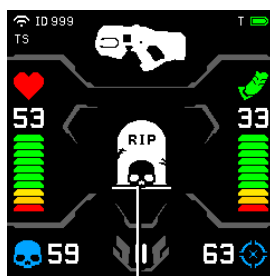
When the Change weapon mode option is turned on in the scenario, it is possible to choose to fire single shots, a fixed burst and an endless burst until the magazine is empty. Mode switching - short double press on the recharge button.



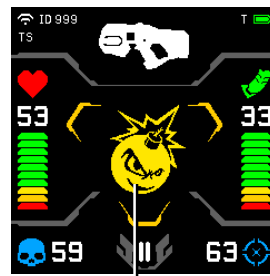
**Pictograms keys of firing modes**



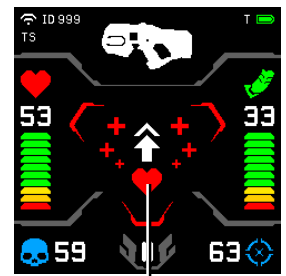
The player defeated an opponent



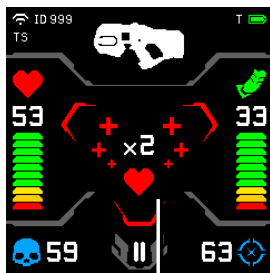
The player was defeated



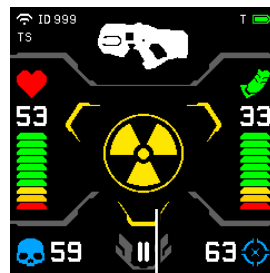
The player has activated the Bomberman supermode (explosion of others)



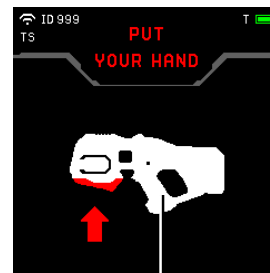
The kit was affected by the Medkit



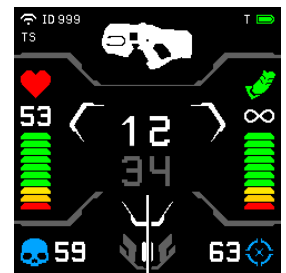
The player has doubled the number of health points



The player was affected by Radiation



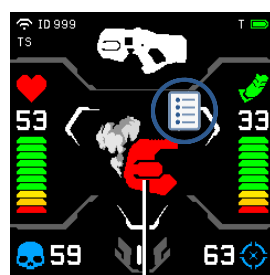
Two-hand absence sensor tripped



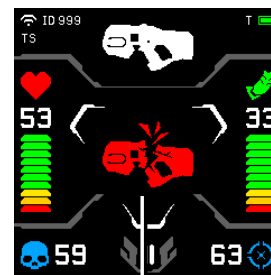
The player is playing with the default preset (game timer is in the center)



The player has replenished ammunition

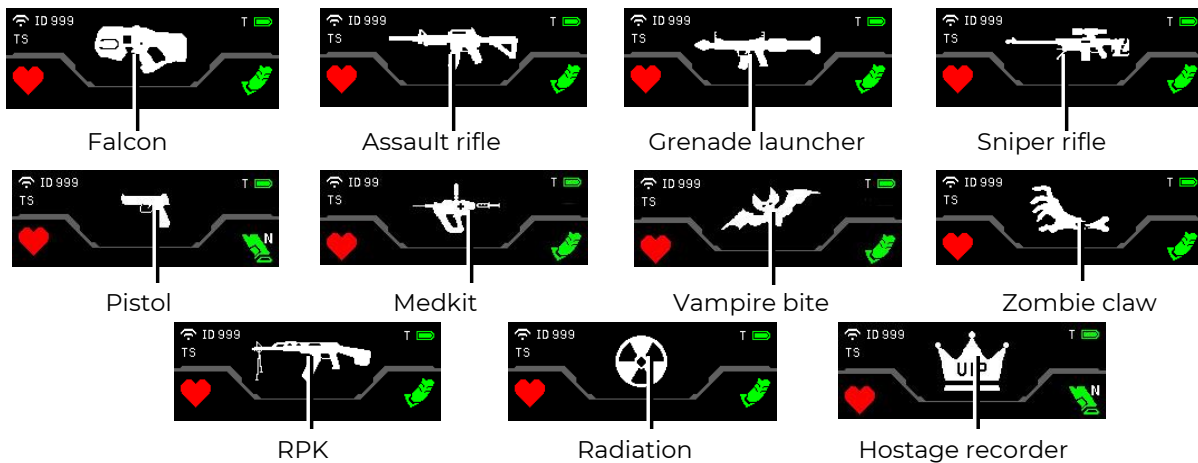


The weapon does not fire due to overheating of the barrel



Breakage of weapons (with the type of defeat in the weapon - deactivation)

**Game situations displaying on the screen of the blaster**



### Displaying the weapon type of the kit

In the kit settings, the player can have two virtual weapons. To switch them, you must press the function button on the blaster.

When a player activates a new arena playset option - superpowers, corresponding colorful icons are displayed on the blaster screen. In addition, there is a light indication of each mode on the vest (see Ch. 2 of this manual) and setting the modes in the application (see Ch. 9.3.2 of this manual).

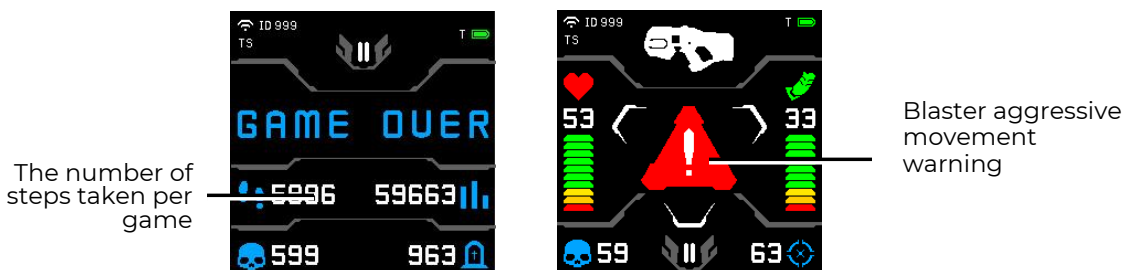


### Displaying superpowers upon activation

The blaster also contains two additional devices - a gyroscope and an accelerometer.

The gyroscope records the player's activity, i.e. the approximate number of steps taken during the game. The result is displayed on the blaster screen.

The accelerometer detects sudden and dangerous movements with a blaster. Information about this appears on the instructor's tablet screen, and the player himself receives a warning about a safety violation in the form of a sound signal and a corresponding notification on the blaster screen.



### The results of the gyroscope and accelerometer on the blaster screen



### 3 Vest

The vest is an integral part of the indoor laser tag game kit and is connected to the blaster with a special cable.

There are 14 hit and indication sensors on the vest grouped in 4 sections - in front, back and on the shoulders. The hit sensors and the vest control unit are equipped with vibration and RGB light indication, and are protected by shock-resistant polycarbonate bodies. The capacitive sensor allows the player to activate certain functions by touch. The supermodes in particular.

The outer layer of the vest textile base is made of eco-leather. The inner part of the vest is a PVC material, which has a water-repellent property. The size of the vest can be adjusted using two adjustable straps on the sides.

The kit is powered by 2 Li-ion batteries located in the vest control unit (7.4 V, total capacity – 4800 mAh).



**Basic elements of the vest**



**External elements of control unit**

The kit provides an opportunity to give the player superpowers - with a certain frequency, the player can receive a significant improvement in functionality.

The application chooses which superpower can be granted to the player in the current kit setting. The following modes are available in the current firmware:

- Ninja
- Healer
- Max damage
- Power shield
- Bomber man



The Ninja mode presupposes a temporary shutdown of the light indication of the kit - the kit blinks at a large interval (every 10 seconds there is a short blinking of the team color). Accordingly, in the darkened room of the arena, the player is practically invisible - only the illumination of the shot and the indication of hitting a specific sensor are visible.

Such a superpower can be useful for a player hiding in an ambush or, if necessary, quietly approach the opponent's base.



The Healer mode allows the player to "heal" himself and those around his team with the protocol command "Medkit", distributed over the infrared channel by the vest emitters with a frequency of  $\frac{1}{4}$  seconds. Wherein, the radius of impact on the kits is up to 0,5 meters. For each impulse, 25 health points are restored. During activity, the vest flashes quickly in the team color.

The mode can be used, for example, when several players attack together, one of which activates the "Healer" super ability. For the period of activity, his kit quickly restores the "health" of the group's vanguard.



The Max Damage mode increases the damage of the current weapon to 100 units per shot. The vest flashes every 0.5 seconds in the team color.

The increased damage, temporarily, can significantly change the balance of power of the playing teams.



The Power Shield mode sets the player's temporary invulnerability to an opponent's beam hitting his kit. The vest LEDs flash alternately white and team color.

This mode can be especially useful when capturing a Domination Box or team base of a different color.



In the Bomber Man mode, the emitters of the vest with a frequency of  $\frac{1}{4}$  seconds hit adjacent sets with 100 damage. Upon activation, a message sounds with a countdown to the explosion. Then the sound of explosions is played from the speakers, during which only the opposing teams are hitting nearby players, if "friendly fire" is disabled, or all players, if it is enabled. Wherein the explosion does not affect the player himself. The vest flashes in team color.

The peculiarity of this mode is in the preliminary sound notification about the upcoming "explosion". Therefore, despite his "destructive", the opponent has the opportunity to either retire to a safe distance, or in time to deactivate Bomber-Man.

You can also choose to grant different superpowers randomly throughout the round.

Before the opportunity to activate this function, a colorless image of the mode logo appears on the blaster screen and the color of the superpower status indicator changing as it is ready. When all three indicators and the logo become colorful, a special signal sounds, notifying the player about the opportunity to activate a new mode.

To activate it, you need to hold it with your hand for a few seconds (the time is set in the application, by default - 3 seconds) a capacitive sensor on the front vest hit sensor. The LEDs on the sensor light up in a circle, and when the circle is completed, the superpower is activated. In this case, a sound message about activation is played by the vest speakers. As the powers is spent, the status indicators will lose their color. The player is also informed about the stop of the mode by a sound message.



**Displays status indicators and superpower logo on the blaster screen**

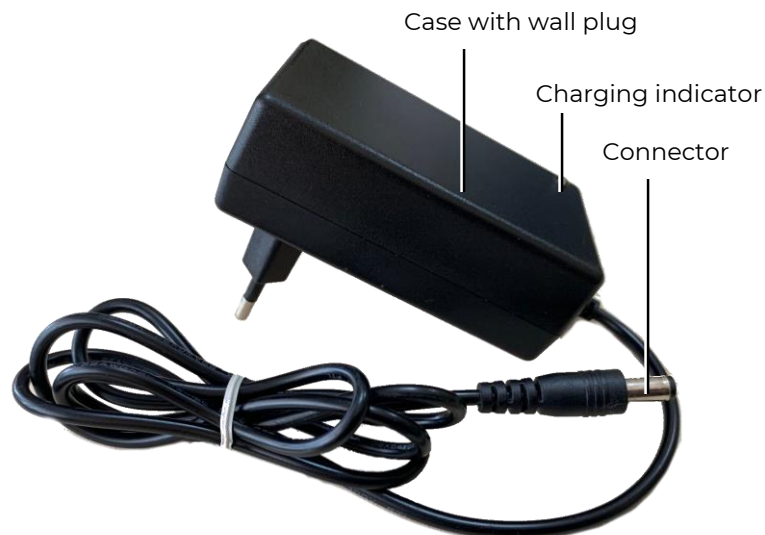
The duration of the superpower is configured in the application (see Ch. 11 of this manual).

Configuring, game kits controlling, as well as removing statistics, is carried out using the Lasertag Operator application, which is included in the package.

## 4 Battery Charger

To charge the batteries of the arena laser tag equipment, the delivery set includes a charger connected to a 220 V electrical network.

The output voltage is 8.4 V, the maximum charge current is 2 A.



Charging device

### Battery charging

Indoor laser tag equipment, produced by Lasertag.net uses lithium-ion batteries with an internal overcharge, deep discharge and shortcut protection circuit.

Nevertheless, serious attention shall be paid to safe handling with Li-ion batteries.

Use ventilated and fireproof room to charge the batteries. In case of possible inflammation of batteries, it shall not cause fire in the entire premise.

Temperature mode of Li-ion batteries charge affects their capacity being reduced during charging process in the cold or heat environment. The charge shall be done under environmental temperature in the range of +4 °C to +40 °C, but optimum charging temperature is +24 °C.

Insert charger outlet cable into appropriate connector on the vest control unit. Insert battery charger plug into 220 V socket.

Average charging time of a kit is 3,5 hours.

Safety precautions for the process of batteries charging are presented in a special section of this manual (chapter 13).

## 5 Wi-Fi router

As a Wi-Fi router in the set of laser tag equipment, the company supplies the Tp-link Archer C80 AC1900 device.

To ensure proper operation of the equipment, it is necessary to use the included router of the specified model. The company does not guarantee stable operation of the equipment with any other router. If for any reason the Tp-link Archer C80 AC1900 router is not suitable for your tasks, you should contact the company's technical support service to find a solution to your question. Technical support contacts can be found via the [link](#) or by scanning the QR code.



The router is based on a 1.2 GHz MediaTek network processor, which has a single core capable of performing two threads.

In the 2.4 GHz range, there is a processor that provides 802.11n protocols, supports MU-MIMO 3×3 and has a maximum connection speed of 600 Mbps.

For 5 GHz and 802.11ac is the processor, also working with MU-MIMO 3×3, and the maximum connection speed it is 1300 Mbps.



**The appearance of the router**

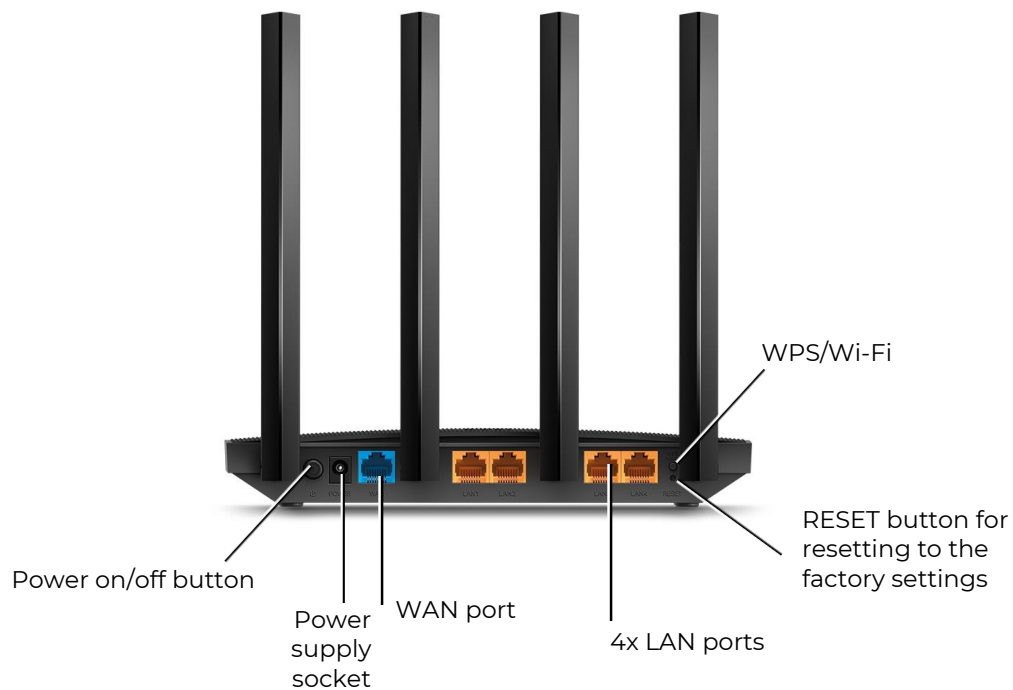
The router is equipped with an external power supply (12 V, 1 A (EU Version) or 12 V, 1.5 A (US Version)) and RJ45 Ethernet cable.

- ❗ **Caution! When using a portable power supply (Power Bank) for the operation of the router, it is necessary that the output voltage on it corresponds to the nominal supply voltage of the router – 12 V.**
- ❗ **Do not use the power supply of the router to charge the batteries of laser tag equipment!**

On the mounting side of the router, the following objects are located:

- power on/off button;
- power connector;
- WAN – port for connecting the provider's cable;
- LAN1...LAN4 – four ports for connecting to the router of other devices, without indicators;
- WPS/Wi-Fi button – for simplified connection/disconnection of devices to the Wi-Fi network of the router;

- RESET button – reset the router settings to the factory settings.



#### The appearance of the router from the mounting side

- ! The device is delivered fully configured for use with software and laser tag equipment produced by the company and does not require any additional changes.

Wi-Fi network setup is described in the chapter 10 of this manual.

## 6 Domination Box Smart

The Smart Domination Box (DBs) – an additional device that allows you to implement one of the most interesting scenarios in the indoor laser tag - "Capture a domination box". The main difference is the presence of 3 indicator scale, that shows the capture degree of each command, as well as 5 modes, which allow to record the capture for both - time and shots.

Capture is made by an infrared ray pulse directed from the blaster into the sensor. The sensor is placed in the lower inner part of the device, so the emitter must be placed vertically downward relative to the base plane of the Domination box.

The device is powered by Li-ion batteries (7.4 V, total capacity 5200 mAh) located in the case. The batteries are charged from the mains with a standard charger with an output voltage of 8.4 V and a maximum charge current of 2 A.



**Smart Domination Box general view**

The device consists of a stand and a case, on the outside of which there are three racks with 16 LEDs in each. On the case itself, there is a connector for the charger, a service button and a power button. Three IR-emitters are mounted on the top cover, another 3 are mounted in the upper part of the case on three sides, providing a circular effect on the kits of players. There is an electronic board with an infrared receiver, a speaker and batteries inside the case.

The goal of the Domination Box is to record its "capture" by players of different teams, summarize the total capture time or the number of hits in the DB infrared receiver and determine the winner.

The device parameters are configured and controlled in the Lasertag Operator application via Wi-Fi (chapter 11.3.2.2.5 of this manual).

The Smart Domination box has three operating modes: standby, game and service.

## Standby Mode

Upon power-up, the Domination Box switches to the standby mode. Two central LEDs are lit with the color of the current DB mode. To find out the battery's charge level in this mode you should press and release the service button. The number of glowing purple LEDs will indicate the battery charge: 16 LEDs – 100 %, 8 – 50 %, etc.

## Game Mode

The domination box can work in 5 display modes (Capture for time; Capture with shots; Tug of war; Triple capture and Raise the flag), each of which is configured either by the number of shots or by time DB holding required to determine the winner of the round. Indication of the settings is carried out by the glow of 10 central LEDs.

In the capture modes for time, you can set the timer for 1, 2, 4, 5, 7, 10, 15, 20, and 30 minutes.

In the modes of capture by shots, the number of hits in the device receiver is set from 50 to 500 in increment of 50.



### Time Capture Mode.

2 to 4 teams are participating.

This is a classic mode. At the first shot at the DB sensor, the lower LEDs of all indicator posts are lit by the color of the team of the hit player and the timer of the captured team starts. If at the same time there is no interception by another team, the LEDs will be lit sequentially from the bottom upwards and will show the capture level. The glow of each LED corresponds to 1/16 of the set hold time.

When the box is captured by another team, the timer of the new team starts. The LED strip begins to show the capture level in the relevant color. The timer of the previous team stops and does not reset, but resumes its work after the first team again captures the Domination Box.

After the timer of one of the teams participating in the round reaches the set time (all 16 LEDs light up), the victory is assigned to this team. The Domination Box plays an audible signal and flashes the color of the winning team.



### Shot Capture Mode.

2 to 4 teams are participating.

It differs from the previous mode in that the capture does not take place in terms of retention time, but in the number of shots fired by players at the DB receiver. Also, so that players do not linger near the Domination Box, the device by default is constantly in the "Radiation" mode during the game in this scenario. At the same time, after the time set in the application, players in the zone of influence of the IR-emitters of the device will be taken away health units. If necessary, this function can be disabled.

At the first hit, the lower LEDs of all racks are lit with the color of the player's team. On next hits, the LEDs will sequentially fill the racks from the bottom up to a multiple of the set capture value. For example, if the setting value is set to 100 hits, then the ignition of each LED will correspond to  $100/16 = 6$  hits.

When players of other teams enter the DB receiver, the LEDs will show the degree of capture by these teams in the appropriate color. At the same time, the achieved level of the remaining teams is not reset.



When a team reaches the set value of hits, the Domination Box plays a audible signal and starts blinking in the color of the winning team.



#### Tug of War Mode.

2 teams are participating. Time capture.

It differs in that the indication of the degree of capture is made for two teams in real time on all three indicator rack, as shifting each other vertically.

When a point is captured by the first team, its timer is activated and the lower 8 LEDs immediately are lit with the color of this team. At the same time, they pulsate and until the point is captured by another team, the glow gradually rises from the middle up. The second team ignites the upper part of the rack with its hit, and now the indicators of its color will shift down the LEDs of the second team. The glow of each LED corresponds to 1/16 of the set hold time.

When all the LEDs are lit in the same color, the Domination Box plays an audible signal and starts blinking in the color of the winning team.



#### Triple capture Mode.

2 to 3 teams are participating. Time capture.

It differs in that the indication of the degree of capture of the Domination Box is made in real time for each of the teams in different indicator stands. It allows you to constantly monitor the degree of capture of the point by opponents.

After the first hit, the timer of the capturing team is turned on, and the lower LED of one of the indicator racks starts to flash smoothly with the color of this team. As the timer works, the LEDs will light up from bottom up, each of which will correspond to 1/16 of the set hold time. After a player hits another team, they start to light up and flash the LEDs of the second indicator rack from bottom to top. The timer of the previous team stops and does not reset, but resumes its work after this team again captures the Domination Box. The LEDs of this rack stop flashing and remain lit at the achieved level. It similarly occurs after hitting the third team. The DB does not respond to the fourth team.

After all the LEDs of one of the indicator racks light up, the Domination Box plays an audio signal and starts flashing with the color of the winning team.

You can use this mode for two teams as well, but you need to set the Domination Box so that the racks of both participating teams are visible, for example, near a wall.



#### Flag Raising Mode

Two teams are participating. Capture by shots.

It differs in that the capture is carried out by shots, and the indication of the degree of capture is carried out simultaneously on all indicator racks on the basis of the flag raising principle.

After the first shot, the lower LEDs of all three racks are lit with the color of the player's team. When the number of shots is equal to 1/16 of the set capture parameter, the LEDs light up sequentially. If the second team makes a "re-capture", then first the LEDs of the color of the previous team will go out sequentially (the flag of the first team "drops"), and then they will light up with the color of the newly captured team (the flag of the second team is "raised").

Also, as in the Capture by shots mode, during the game the IR-emitters of the device by default issue the Radiation command, and players who are in the zone of influence of the emitters will be taken health units.

The winner is the team that first "raises" the flag / LED strip of its color. The Domination Box plays an audible signal and flashes the color of the winning team.

### **Service Mode**

The Domination Box control board is equipped with a Wi-Fi module. Thanks to this, it is possible to flash the microcontroller of the device "by air". The need for it arises when updating the firmware (it is planned to increase the number of Box modes to at least 10), as well as to restore the current one.

The transition to the service mode is carried out by turning on the device with the service button held down.

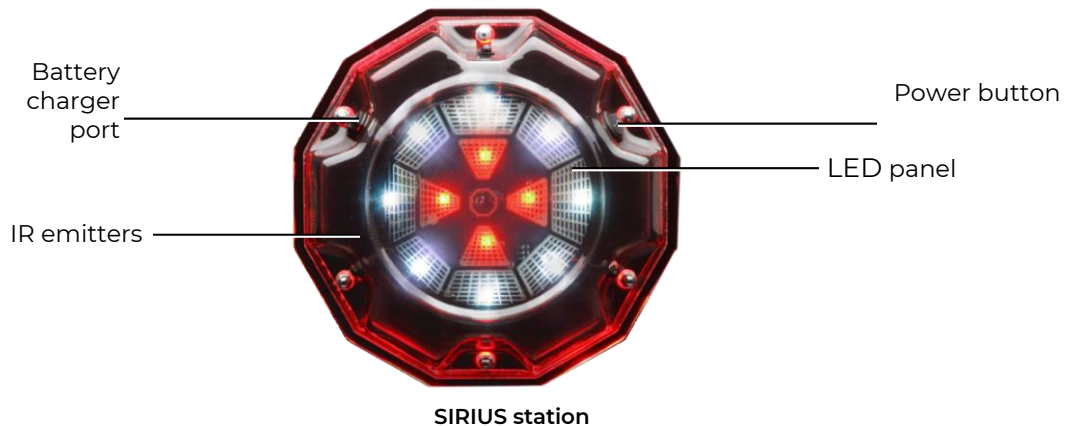
The transition to this mode will be indicated by a blinking power indicator above the power button.

Due to the transition to a new data transfer protocol at the Domination Box, flashing is possible only remotely. To implement it, you need to contact the technical support of the company <https://lasertag.net/support/>.



## 7 SIRIUS station

The SIRIUS station is an additional device that, thanks to its capabilities, allows you to create a huge number of interesting laser tag scenarios. Distinctive features of the station are 8 game modes, a display panel, a touch sensor and a futuristic case with side backlight.



Power supply: 220 V network via a power supply unit (8.4 V 1 A) or a built-in 7.4 V 2600 mAh battery. Sound: buzzer.

The activation of the device (impact on the kits of players) occurs, depending on the mode, in three ways: by firing a shot at the device (modes Bonus and Flag), automatically by timer (other modes) and forced - when the body is briefly covered with the palm, the touch sensor is triggered (modes Medkit, Respawn and Arsenal).

Range with direct visibility: 5-7 meters.

### Standby Mode

In sleep mode (before the start of the game and at the end), when the connection with the server is established, the station LEDs light up smoothly and fade alternately in different colors.

### Game Mode

When the game starts, the device starts working in the selected mode with the settings specified in the application (the frequency of issued commands, the impact on players of certain teams, the number of shots for deactivation, etc.). Indication will correspond to the mode.

In the current release, the SIRIUS station can operate in eight game modes: Respawn, Radiation, Medkit, Arsenal, Random, Bonus, Base and Flag.



In the Respawn mode, the central four LEDs constantly flash in the color of the team that the device is acting on (if the LEDs are lit in four colors, it respawns everyone). The outer circle of LEDs in this mode performs the function of a timer - the LEDs that are set multiple times in the time application turn on the LEDs in white counterclockwise. After the 8th LED lights up, the device is triggered and respawns the players (restores the starting value of health units and ammunition). Activity is indicated by the frequent flashing of all LEDs in purple. Then the timer starts again and the cycle repeats.



The device can be deactivated by firing at it the number of times that can be configured in the application. Team players, who the device in this scenario is not affected on, can do it. If it is set to "Affect all", then players of all teams can deactivate. The station responds to a hit in the IR-receiver by the frequent flashing of all LEDs in blue. During the self-healing period, the central indicators flash periodically, while the external ones display a countdown timer.

Due to the built-in touch sensor, you can forcibly activate the Respawn command without waiting for the timer to work - by briefly touching the device with your palm.

The mode is used in scenarios with a limited number of health units and disabled auto-respawn. One of the options is to install one SIRIUS each on the team bases, having previously configured them to act on a specific team. You should note that the device respawns only those players whose kits have 0 health units, i.e. only the "dead". The rest when the station is active, it refills the last magazine.



Radiation - the internal and external LEDs blink yellow, rotating counterclockwise. Activation (the player takes out the number of health units set in the application) is accompanied by the frequent blinking of all the LEDs in purple.



SIRIUS station in the Radiation mode can also be deactivated similarly to the Respawn mode. The difference is that to put the device on pause, it is possible for the team that the team acts on or all, if it is set to affect all.

The device in this mode can be used as an anomaly that will protect, for example, an artifact or approaches to the base, if you choose a selective effect on a specific team.



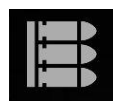
Medkit Mode - the central and closest 4 LEDs of the outer circle form an image of the cross of the color of the team that the device is acting on. The cross cyclically lights up and fades out. The outer circle of LEDs also serves as a timer - the LEDs that are set multiple in the time application turn on the LEDs in turn counterclockwise. After the eighth one is lit up, the device is triggered and replenishes the number of lives set in the application for players. In this case, all LEDs flash violet frequently. Then the timer starts again and the cycle repeats.



You can activate the Medkit command forcibly, while waiting for the timer to work - by briefly touching the device case with your palm.

As in previous modes, in the Medkit it is possible to temporarily stop the distribution - after getting into it a certain number of times in the scenario by players who are not affected by the device (with the parameter "Affect all" - all players).

The mode can be used to replenish the lives of "wounded" players (but no more than the value at the start of the game), and you can configure it to "heal" only one team or all teams.



Arsenal - a row of three LEDs of the outer circle and one adjacent LED from the central circle form a blue sector that rotates counterclockwise. At the time of activation, the device adds to the player



the number of cartridges or magazines set in the application (but no more than the starting value), which is accompanied by the frequent flashing of all the LEDs in purple.

As well as in the Medkit mode, in the Arsenal mode, the possibility of forced activation is available by touching the device case with your palm.

In this mode, it is not possible to configure the selectivity of the distribution of ammunition by commands, but you can configure the distribution of either cartridges or magazines and their quantity. As in the previous modes, the station can be deactivated.

Using the Arsenal mode is convenient in scenarios with limited ammunition - the device can be installed on bases (for example, by setting the maximum number of "lives" for kits, but only one magazine) or in separate zones for replenishing ammunition.



In the "Random" mode - the central 4 LEDs perform the timer function - they turn on counterclockwise in turn when the time set in the application is multiple. LEDs in the outer circle flash in different colors. When exposed to players, all LEDs often blink purple.



In this mode, the impact also occurs on players of all teams.

Since during activation one of the commands is distributed in random order: Double lives, Arsenal (the magazine is completely filled) or Radiation (health points are taken away), the SIRIUS station in the "Random" mode can be used in scenarios with anomalous zones - an element of unpredictability adds interest to the game.



Base mode - the indication is similar to the Respawn mode, i.e. if the base is red, then the central LEDs glow red. The difference is that they do not blink like in Respawn, but glow constantly. The outer circle in white also displays a timer. When commands are issued, all LEDs often flash purple.



When activated, the device gives out two commands at once - Respawn and Radiation. Moreover, the impact on teams is made in different ways - if the team of the Reds is selected in the application as the "mistress" of the base, then only this team will be respawned, and the rest will be affected by "Radiation". As in the Respawn mode, SIRIUS in the Base mode respawns only "killed" players. If the player has health units, the station refills only the last magazine.

To deactivate a foreign base, it is necessary to shoot a certain number of times in the scenario settings. Hits are indicated by the frequent flashing of all LEDs in blue. After deactivation, the central LEDs often flash, and the external LEDs display a countdown timer until self-healing.

The Base mode is one of the most popular in scenario laser tag games. Based upon the name, the device in this mode is installed on the team bases in scenarios with a limited number of health units and ammunition. Moreover, it protects itself from deactivation by players-opponents.



Indication in the Bonus mode is as follows: the outer circle of LEDs shimmers in a rainbow clockwise, the center ones do not glow. The mode



differs from others in that there is no automatic distribution. The impact on the player (double health units) occurs only after a shot at the device. Distribution is accompanied by frequent flashing of all LEDs with the color of the team of the player who fired.

Bonuses are distributed to all players, regardless of the team color.

In the application, you can set a limited number of distributions of bonuses, after which the device pauses and resumes its work after the time set in the application. During inactivity, only the central LEDs shimmer with a rainbow.



Flag mode: the sense of this mode is as follows. The player's kit has a new status - Flag bearer. It arises after the player from close range falls into the SIRIUS of the opposing team during the game according to the scenario of this series. In this case, the device sends a coded infrared signal to the kit of the firing player, which must be received by the vest or blaster hit sensors (the "flag is captured" sound signal). After the player becomes a flag carrier, now his task is to deliver the virtual flag to his base unharmed. The procedure for surrendering the flag is the same - shoot at your team's SIRIUS until you receive the "Flag accepted" confirmation.



Each of the SIRIUS generates a virtual flag for their team. In this case, the central LEDs of the devices glow with the team color, and the white LED "rotates" clockwise along the outer circle. In parallel, the devices every 60 seconds distribute the protocol command Respawn via the IR-channel and restore the initial settings of the kit to the deactivated players whose station is.

After passing the flag, the player's role settings return to the start preset. The game ends when one of the teams fulfills the game end condition.

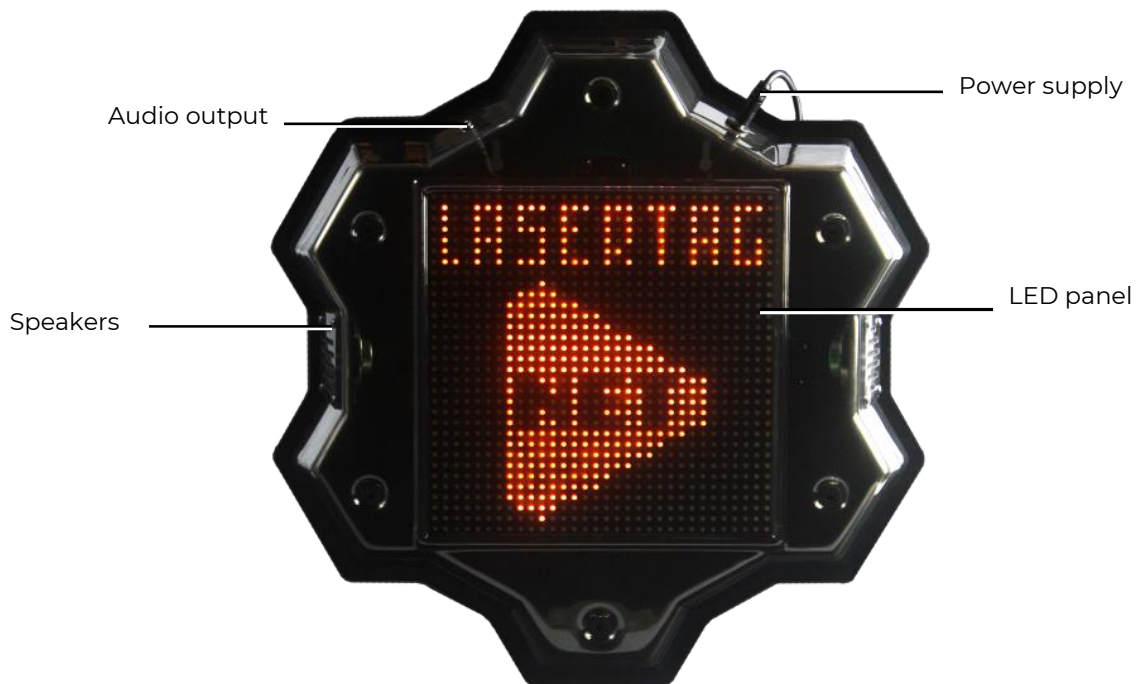
Due to the transition to a new data transfer protocol at the SIRIUS, flashing is possible only remotely. To implement it, you need to contact the technical support of the company <https://lasertag.net/support/>



## 8 Multistation

The Multistation (MS) is a multifunctional additional device for playing laser tag which significantly increase the list of possible scenarios.

The main advantage of this device is the availability of the LED screen (panel 192x192 mm, 1024 pixels), which clearly shows the mode the station is being used in. Also, thanks to a futuristic design, interactive animation and side lighting, Multistation makes the games more colourful and spectacular and becomes an adornment of any platform.



### External Elements of the Multistation

Power supply: 220 V network via 8.4 V 2 A.

Sound: built-in speakers + audio output.

The Multistation is inherently the development of a standard laser tag device - the Utility Box. But besides this, it acquired the functions of a Domination Box, an Electronic bomb and a Base.

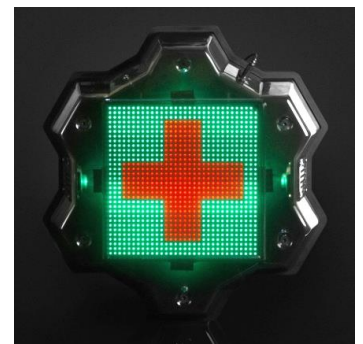
In the current release, the Multistation can work in seven modes: Medical Kit, Arsenal, Respawn, Bomb, Check Point, Radiation and Base.

When the game round starts, on the LED screen of the Multi-station, instead of the company logo, a picture appears showing in which mode the device is operating. Moreover, the screen, like the device itself, is interactive and can respond to the actions of players.



In the Medkit mode, health units are distributed over the IR-channel with the interval set in the settings. Moreover, at the time of activation, the image of the red cross changes on the screen.

In the application, you can set a parameter when the effect



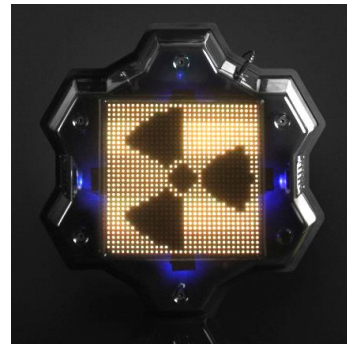
is made on one or all teams. The mode is used in "survival" scenarios with a limited number of health units.



In the Radiation mode, at given intervals, health units are taken away. In this case, the standard radiation sign makes a turn on the screen.

Also in this mode, you can set which team the device affects – for one or for all.

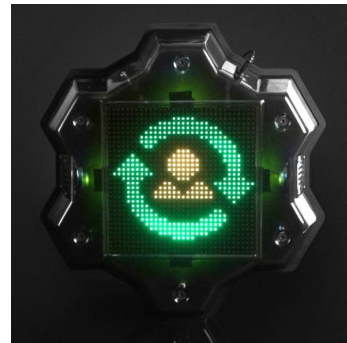
In this mode, the Multistation is best used in scenarios with artifacts.



In the Respawn mode, the Multistation restores the number of health units and the ammunition of the kit to the starting state.

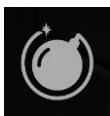
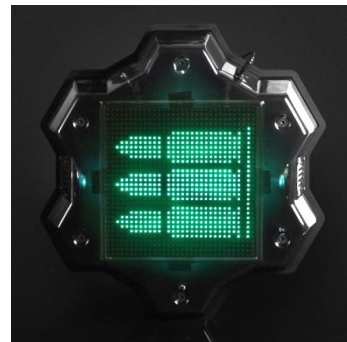
It is valid only if the player at this moment has no health units left. To the "Alive" it replenishes the last magazine. At the moment of activation, a silhouette of a person flashes on the screen. Just as in previous modes, you can choose which team players will respawn the device.

The mode is used in many scenarios with a limited supply of health units and ammunition.



In the Arsenal mode, cartridges or magazines can be replenished in one of the ways - by waiting for the automatic distribution or by firing from the blaster into the device (can be configured). At the same time, in the clips shown on the screen, the upper cartridge is sent to the chamber, and two lower ones rise in its place. After using the third cartridge, the "conveyor" loads the next package of ammunition. In the application, you can choose to add either cartridges or magazines and their quantity.

The mode is used in survival scenarios with limited ammunition.



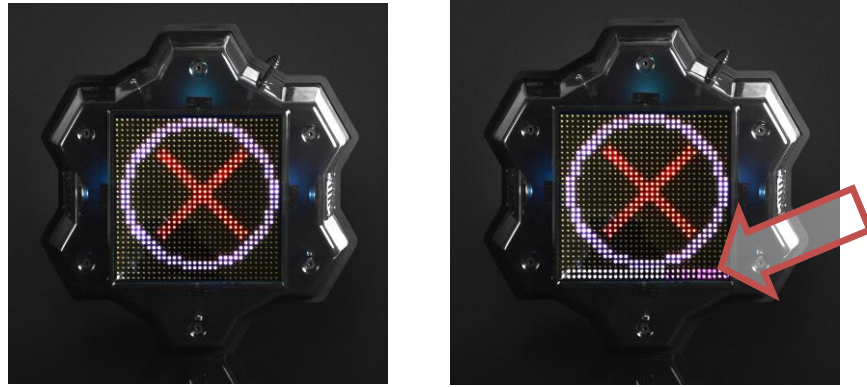
The Bomb mode allows you to conduct scenarios that resemble one of the episodes of the computer game "Counter-Strike". Namely, "Bomb Defusal". Starting with the multistation firmware version MS\_v2.1.14, the mode functions in a new format.

Initially, players are divided into two teams - miners, who set the bomb and sappers, who must disarm it.

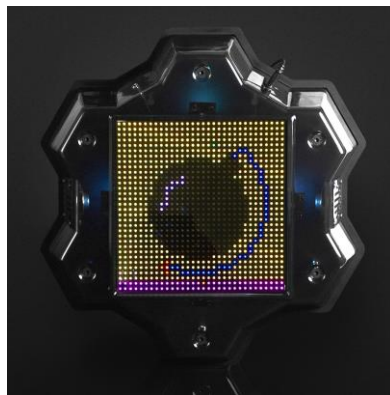
Simplified scenario of a game using Multistation in the "Bomb" mode is as follows:

- A team of miners sets a bomb with shots the number of which is set in the application. The team of sappers at this time is trying to prevent this, hitting the players of the miners team. The dynamics of the installation can be observed on a progressive scale at the bottom of the screen of the Multistation. Moreover, the device does not respond to sapper shots.



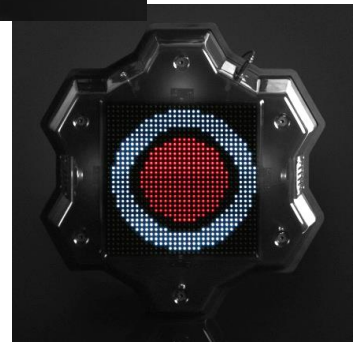


- If during the game round the installation did not complete, or the bomb did not explode, the victory is awarded to the team of sappers.
- If a bomb was installed, the speaker of the Multistation reports: "Bomb has been planted" and the timer starts, which is graphically displayed on the screen as a burning wick of an old grenade. The "wick" is lit in proportion to the time set in the "Clock work" field. Now tasks of the teams become diametrically opposed - the team of sappers needs to disarm the bomb during the timer work, hitting the device (shots are also controlled by the lower two rows of screen LEDs), and the miners must counteract this by hitting the opponent. Accordingly, the station now does not respond to shots from miners.
- The following are two options. The sappers manage to disarm the bomb, and it returns to its original state - the message "Bomb has been defused" sounds and the ring with a crosshair appears on the screen again. Or the bomb explodes.



One of the most popular additional laser tag devices is the Domination Box. The Multistation can work in this mode. But the device's functionality as such takes into account the specifics of the indoor laser tag.

When the round starts, a white target-ring appears on the screen. When a blaster beam hits the device, a color circle of the player's team appears in the center of the screen. On subsequent hits by players of the same team, the circle will increase. The circle growth dynamics corresponds to the value "Number of shots for activation/deactivation" set in the application, i.e. if 5 units are set, the circle will fill after 5 shots, if 20 - after 20.



If a player of another team hits the device, a circle of color of the second team appears in the center (the circle of the first team does not reset) and with subsequent shots the circle of the new team begins to increase in size.

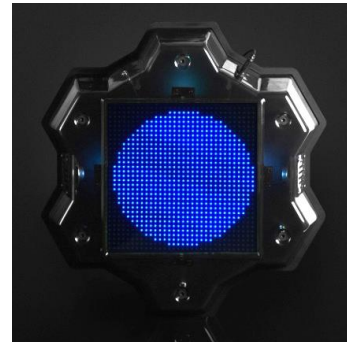
The task of the players is to fill the entire circle with the color of their team first, after which the point is considered captured and only after that points will be awarded to the capturing team (1 point in 1 second of retention).

After the capture, the task of the players of other teams is to intercept the point. By firing shots at the device, they fill the circle with their color, and players of the captured team reduce it with shots. If the other team nevertheless intercepts the point, then points accrue to it already.

In order to prevent players from accumulating near the Multistation operating in the "Domination Box" mode, you can set the "Radiation" parameter in the application (the distribution period and the damage done are also set in the application).

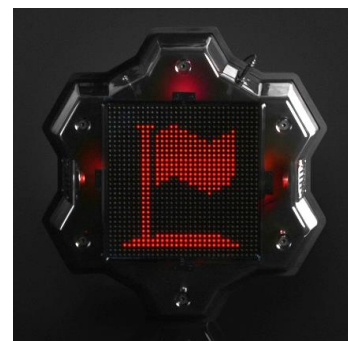
This mode can be used in scenarios with the completion condition of the Team points limit (Menu Scenarios/Scenarios tab/Game end conditions/Team points limit). Meanwhile, the game ends ahead of schedule with the victory of the team that scored the set number of points, and the image of the cup of the winning team color is displayed on the screen.

If the parameter of early termination is not turned on and the game ends in time, the team that scored the most points by this time wins. If two or more teams have equal number of points, the victory is awarded to the team that owns the point by the time the game timer stops.



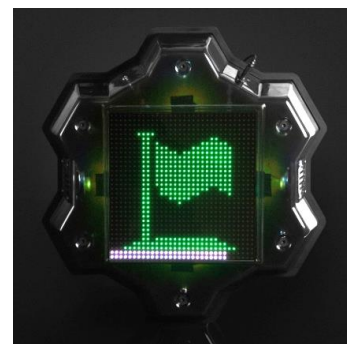
The mode Base has been added in the list of modes for additional devices comparatively recently. Its main difference is the respawn and radiation lesion of selectively players of teams of different colors. It is also possible to destroy (deactivate) the opponent's base.

After the scenario starts, an image of a waving flag of the team color appears on the screen of the Multistation. The LEDs of the side illumination also glow in the same color. At the time intervals set in the application, the device distributes the Respawn command via the IR channel, which restores the initial values of the health units and ammunition of the players of its team (does not work on "alive" ones - only the last magazine is replenished). With the same frequency, the Base distributes the Radiation command, which acts on players-opponents. With these activities, a corresponding picture appears briefly.



To destroy the opponents' base, you need to shoot at the device set in the scenario settings the number of times. In this case, the white bar at the bottom of the screen will graphically display the degree of destruction. After the strip reaches the right edge, an explosion animation is displayed on the screen and the crossed-out flag appears. From this moment, the Base is inactive.

If the "Base captured (times)" parameter is enabled in the scenario (Menu Scenarios/Scenarios tab/End game conditions/Base captured (times)), the game ends ahead of schedule with the victory of the team that captured the



opponent's base the number of times set in the application.

If this parameter is disabled, then after the time set in the "Inactivity time" setting (Menu Scenarios/Additional devices tab/MS Settings/Base/Inactivity time) the base will self-recover.

The Base mode can be used in any scenario with a limited number of health units and ammunition.

The device is controlled from the Lasertag Operator application via a Wi-Fi channel. Setting up the Multistation is described in chapter 11.3.2.2.5 of this manual.



Due to the transition to a new data transfer protocol at the SIRIUS, flashing is possible only remotely. To implement it, you need to contact the technical support of the company <https://lasertag.net/support/>.



## 9 Supernova laser tag bomb

The SUPERNOVA laser tag bomb is an additional device that makes it possible to implement in laser tag scenarios with the installation and clearance of "time bomb", including the scenario "Bomb planting" from the computer game Counter Strike.

The device consists of two parts:

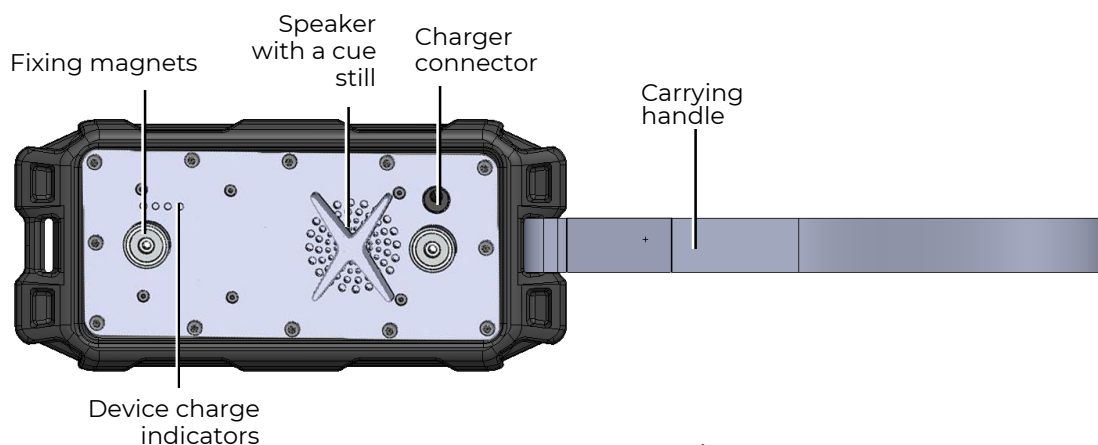
- portable bomb;
- stationary NFC platform (at least 2 pcs).

The bomb is activated/deactivated only when it is on the platform. The number of platforms can be more than the number of bombs, and they can be placed in different places on the site.



### Components of the Laser Tag Bomb

A portable bomb is a device with a plastic body framed by expanded thermoplastic elastomer. The bomb has an autonomous power supply from built-in batteries, a speaker, a charger connector, an action button, an electronic timer and a carrying handle. The electronic circuit board is equipped with a Wi-Fi module for communication with the server and NFC-module to contact with the platform.



Portable bomb. Back view

The stationary platform is equipped with special mounting holes for installation on vertical or horizontal surfaces of the site. A recess in the body of the platform and built-in magnets allow the bomb to be securely fixed in case of installation. An NFC card (mark) is also embedded in the platform, which identifies the place where the bomb was planted.

The bomb is turned on by pressing the action button for 3 seconds. After turning on, the device goes into the "Out of game" mode and the digital display shows a smoothly blinking indication in the form of horizontal segments with a colon in the middle: «--:--».



In out-of-game modes, it is possible to see the charge of the built-in batteries - pressing the action button for 1 second activates four white LEDs located on the back part of the device body. The glow of 4 diodes corresponds to a charge of more than 75%. When the charge is 50 to 74%, three LEDs light up. 25 to 49% - two LEDs. Blinking of one indicator means a critical value - less than 24%.

Turning off in the "Out of game", "Bomb deactivated", "Bomb detonated", "Service" modes is performed by pressing the action button for 2-3 seconds until the "OFF" message appears on the screen.



In game mode, to turn off the power, press and hold the button for 90 seconds. In this case, if you release the button during this time, the progress is reset, and to turn off you need to press the button again for 90 seconds.

Before the game stationary NFC platforms are installed in different places of the playground, and the players are divided into two teams:

- miners (or terrorists like in the game Counter Strike), by default, it is the team of red;
- sappers (special forces), by default, it is blue team.

After adding a device to the Lasertag Operator application (it should be displayed in the "Additional devices" tab of the main application menu) The bomb turns on the "In game" mode, which is indicated on the bomb timer dial by clockwise stripes moving in a clockwise direction.



The bomb is handed to one of the players on miners team and the round starts.

The task of miners is to plant a bomb on one of the platforms.

The task of sappers is to prevent the planting, and to deactivate the bomb before the explosion if it is planted.

The bomb is planted as follows:

1. After the player with the bomb and who still has health units, manages to approach the planting point - one of the stationary platforms (to the plant - as it

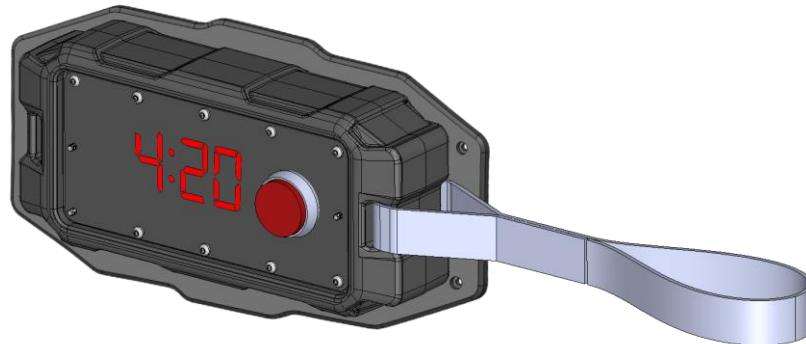
is called in CS), the player must insert a portable bomb into its socket (the button should be on the right).

2. The device switches to the "Bomb installed" mode - the numbers on the display start blinking, showing the time at which the timer is set.

The clockwork is configured in the appropriate section of the Lasertag Operator application (Scenario Settings/Additional Devices/Bomb Settings). By default, it is 1 minute.

In this case, the bomb reader receives data from the NFC card embedded in the platform, and information about its number is transmitted to the server.

If in this mode the bomb is removed from the platform, it switches to the previous mode "In the game" and the corresponding indication turns on.



3. After a few seconds, which are accompanied by a sound signal, a hint will appear on the bomb screen - the inscription "Shot". It says that the player from the miners team must confirm that his individual kit is active - it is necessary to shoot from his blaster at the bomb receiver located behind the front panel of the body.



4. The successful confirmation is indicated with a green LED in the upper right corner of the screen and then the next hint appears on the screen - the inscription "Hold". If a player of the sapper team shoots at the device, the LED turns red, and the device doesn't switch to the next mode.



5. Next, you need to press and hold the action button for 3 seconds. The bomb activation process is indicated by the absence of flashing of the timer display and the sound from the device speaker. If a player of miners team did not hold the button for 3 seconds, or at that moment a player of sappers team fired at the bomb, the activation process will be canceled. The miner should shoot the bomb again and repeat the pressing of the action button.

6. As soon as the bomb switches to the "Bomb is activated" mode, the countdown timer starts - the display shows the time decreasing every second until the explosion. At the same time, a short beep will be played by the bomb speaker every second. During the last 10 seconds before the explosion, the frequency of signal playback increases up to several times per second.



- If during the operation of the clockwork the bomb is not deactivated, an "explosion" occurs - the inscription "Booo" blinks on the display, LED flashes with overflow of colors, a corresponding sound is played and all kits within a radius of about 10 m are hit via the Wi-Fi channel. The amount of damage is selected in the Lasertag Operator application (Scenario Settings/Additional Devices/Bomb Settings). The default is 100 health points.



If sappers team failed to prevent the installation and activation of the bomb, it must be deactivated. Such procedure can be done while the timer is running, but not later than the time set in the "Clearance time" parameter of the bomb settings in the application.

To deactivate the bomb you need to:

- The player of the sapper team, who approached the planted bomb, also needs to confirm the activity of his kit - shoot from their blaster into the front panel of the device. The device displays the "Hold" hint, but the device timer continues to count down.
- The player is given 3 seconds to press and hold the action button for a set clearance time (10 seconds by default). If the sapper does not have time to hold down the button in 3 seconds, the screen displays the inscription "Shot" again and for the next attempt it is necessary to repeat the shot from the blaster. The device reacts to the shots of miners with a red LED glow and does not switch to the next mode.
- If the clearance process is started when the timer has less time than is necessary for clearance, the explosion still occurs, i.e. it is impossible to deactivate the device during this time.
- In the operating mode of the clockwork, there is a "protection against violations of the game rules": if at this time the bomb is removed from the platform, the sound "Alarm" is played and the device switches to the "Out of game" mode. The inscription "Error" (error) is displayed and the instructor must restart it to continue the game.



- Successful deactivation of the bomb is accompanied by a timer stop and a special sound signal, the screen displays the inscription "SAFE", the LED glows blue.



- To reuse the bomb, it must be removed from the platform and handed to the instructor.

You can choose various scenarios playing with the Bomb device. For example, it can be configured so that each team has its own portable bomb in a round. In this case, a team of

miners and sappers is selected for each device, and then the color of the bomb tile decoration in the application will correspond to the color of miners team.

You can create such a scenario when not two, but three or four teams participate in the game. Each team has its own bomb color coded (for example, using colored tape). In the settings of each mine, a different color for the miners team is selected, and in the settings for the color of sappers team, "All" is selected. Then a player of any team can execute bomb clearance, and so that he does not accidentally begin to deactivate the bomb of his team, the player must pay attention to the marking color.

In long-lasting laser tag games, more explosions and clearances than there are bombs can be set to fulfill the game finishing condition. In this case, after the explosion or clearance by the instructor, the bomb is removed from the platform, transferred to the starting position of the miners team, and re-launched into the game (it is removed from the game in the application and added again). Each successful action of teams is reflected in the final statistics.

Alternatively, you can further bring the scenario closer to the computer game Counter Strike if exclude from the settings any "respawn" of players and add one more condition for the end of the game: "One team left". In this case, the game ends either with a bomb explosion, or mine deactivating, or when all the players of one team are deactivated.



## 10 Setting up a router (Wi-Fi network)

If the settings of the router for any reason were violated (for example, you accidentally pressed the RESET button or made changes to the settings that led to incorrect operation of the router), you should configure the router yourself using a personal computer. To do this, you should:

1. Position the antennas vertically;
2. Connect the computer directly to the router via any of the 4 LAN connectors using an Ethernet cable (included in the delivery set);
3. Turn on the power of the router and wait for it to load;
4. In any browser installed on the computer (Opera, Google Chrome, Internet Explorer), enter the address <https://192.168.0.1> in the URL input line;

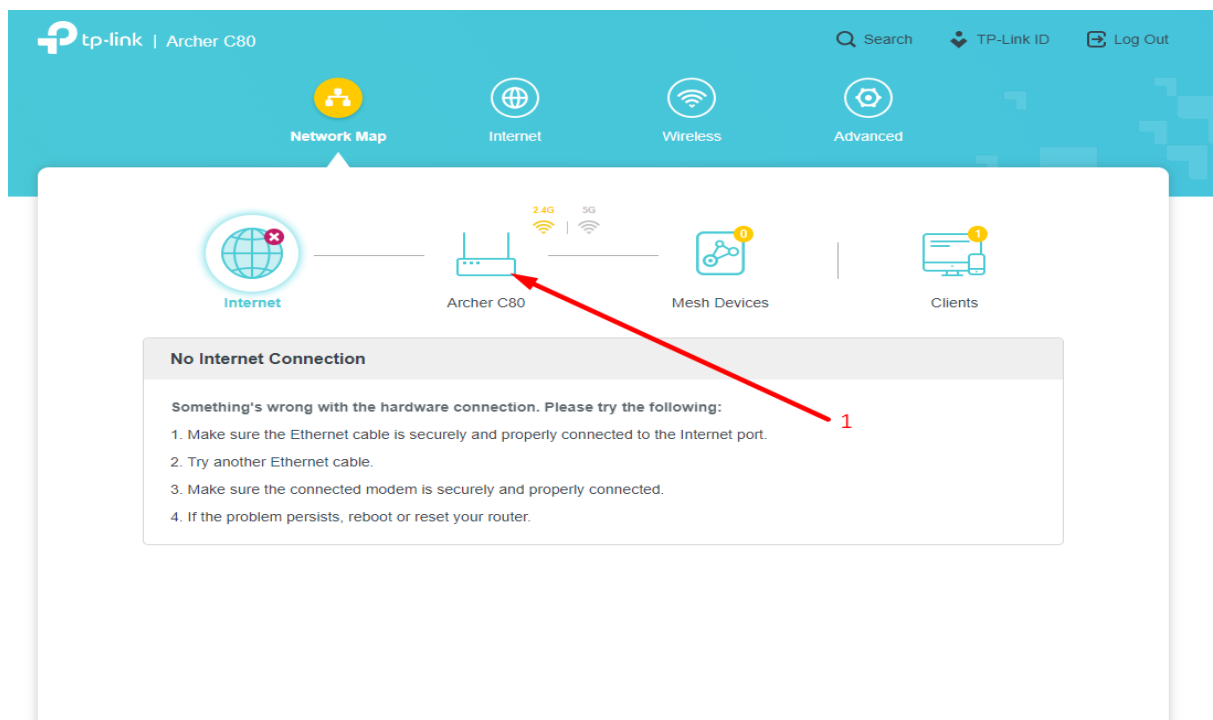
If the router settings page does not open, you should reset the router to the factory settings – on the mounting side of the router, hold down the RESET button and wait for the indicators to turn off for a moment, then release the button.

Reopen the router settings page.

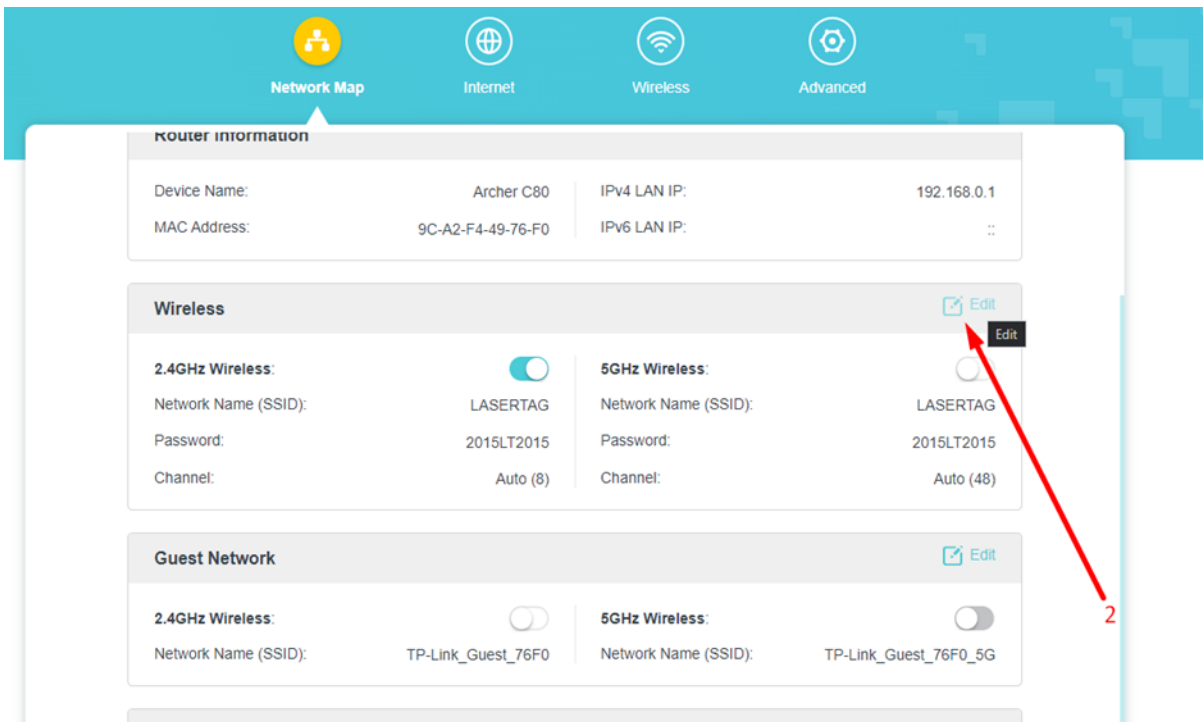
5. On the back panel of the router, read the login and password from the sticker tapped by the company's QCD and enter the settings menu.

To do this, in the window that opens, enter the username and password in the appropriate fields;

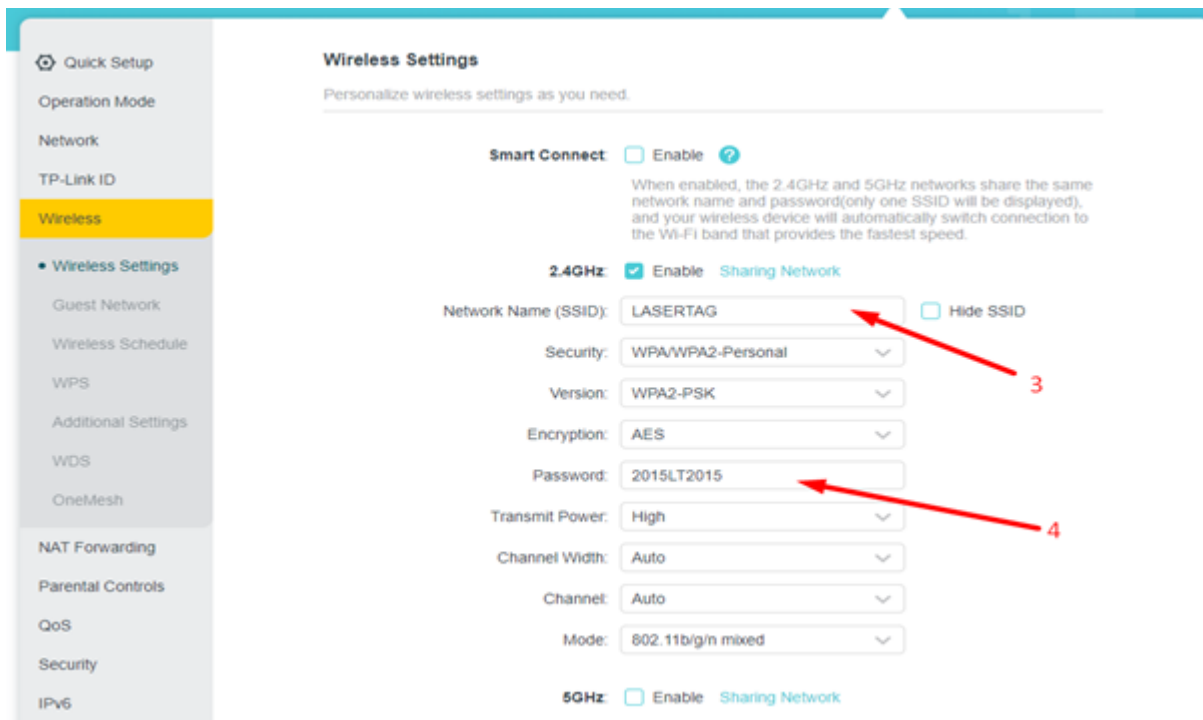
6. In the window that appears, click on the name of the Archer C80 router:



7. Next, in the Wireless menu, click Edit.



8. In the window that appears, enter the LASERTAG network name in the Network Name (SSID) field, and enter the 2015LT2015 password in the Password field. Check that the remaining fields are filled in according to the picture.



The router is ready to operate.

# 11 Setting up and controlling equipment using the Lasertag Operator application

The application Lasertag Operator is designed to set up the equipment, control the game and record statistics using devices supporting the Android operating system (smartphones, tablets). The application interface language is automatically selected depending on the device settings.

## Minimum hardware requirements:

- Snapdragon 450 chipset;
- RAM 4 GB;
- ROM 16 GB;
- Android operating system version 10.0 and higher.

The connection of the Android device with the laser tag equipment is carried out via a router.

## 11.1 Connecting Android device



1. Download the Lasertag Operator application on the device - available at <https://play.google.com/store/apps/details?id=net.lasertag.operator>
2. Install the application.
3. Turn on a router configured for a specific hotspot. At factory settings, the hotspot name is LASERTAG, the password is 2015LT2015.

Note: the system supports 5 more names:

LASERTAG-NET, password -2018LTN2018

MGO, password - 2018MGO2018

Test mode, password 2018TM2018

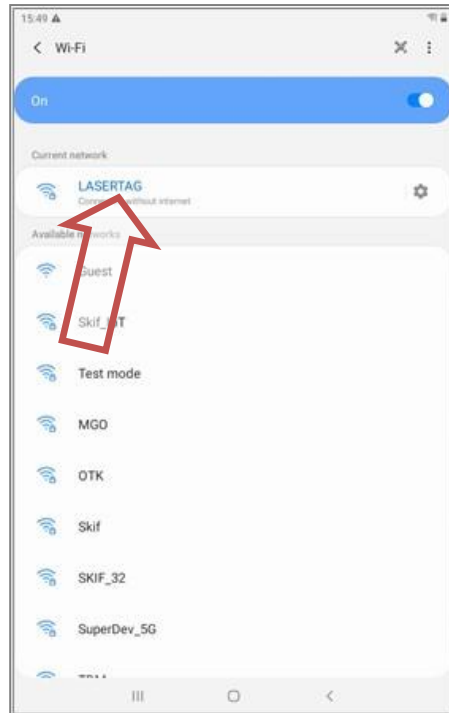
OTK, password - 2018OTK2018

TechSupport, password - 2018TS2018

In these cases, the hotspot, as well as all the laser tag equipment used at one site, should be configured in accordance with the selected name and password.

**!** **To prevent interference between routers it is recommended to locate routers at a minimum distance of 10 meters.**

4. On your Android-device, turn on the Wi-Fi network connection mode (Settings/Connections/ Wi-Fi) and search for the Hotspot. (The setup procedure may differ depending on the version of the operating system and device model).
5. After finding the LASERTAG Hotspot, select it and enter the password 2015LT2015 in the window that appears.
6. Touch the Connect button. A connection entry should appear under the LASERTAG inscription, marked "no Internet access".

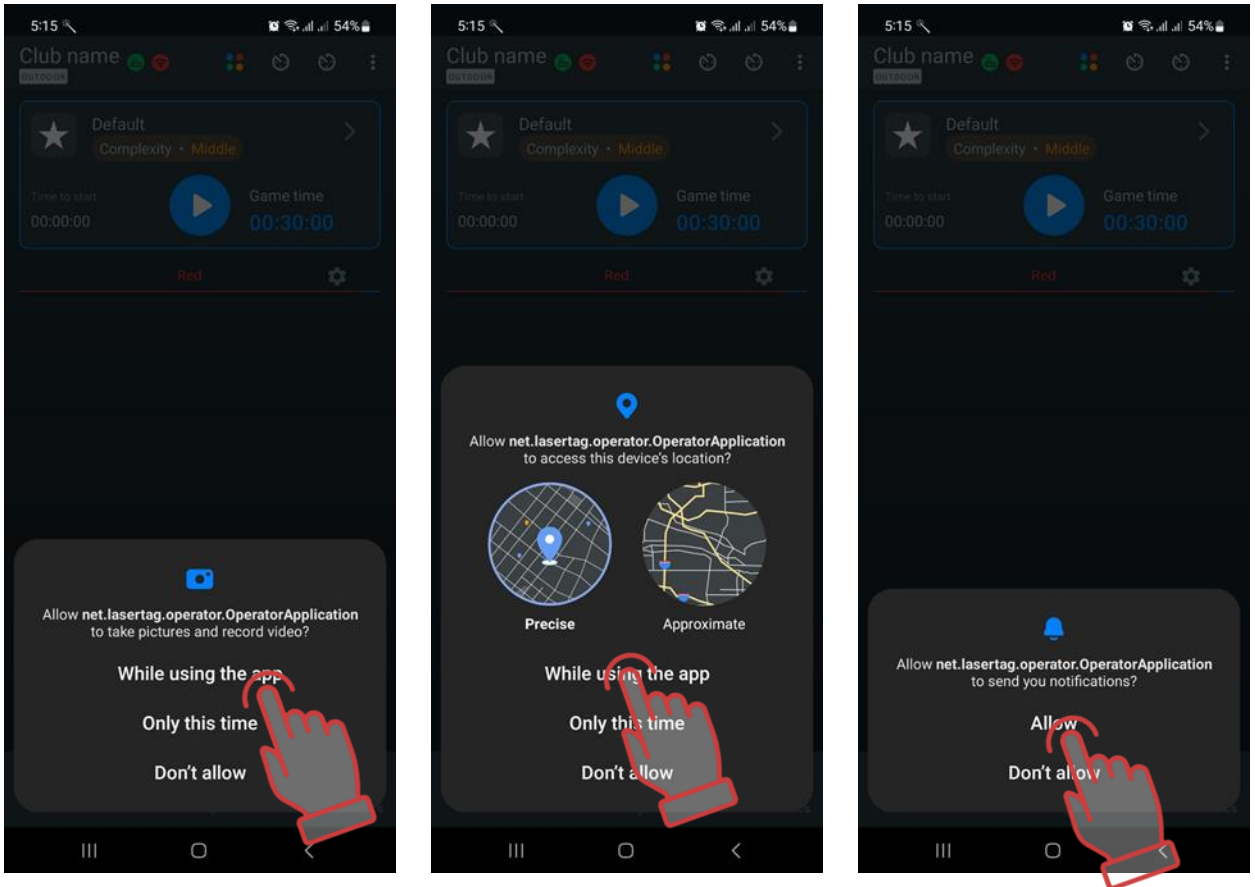


## 11.2 Launching Lasertag Operator

The installed Lasertag Operator app (LTO) will be displayed on the home screen or in the app menu.

To launch the application, click on its icon.

First, the app asks for permission to take pictures, record video and audio, access the device's location, access for LTO to send notifications to the developer about issues that arise in the application, and access photos and multimedia on the device with the installed application.

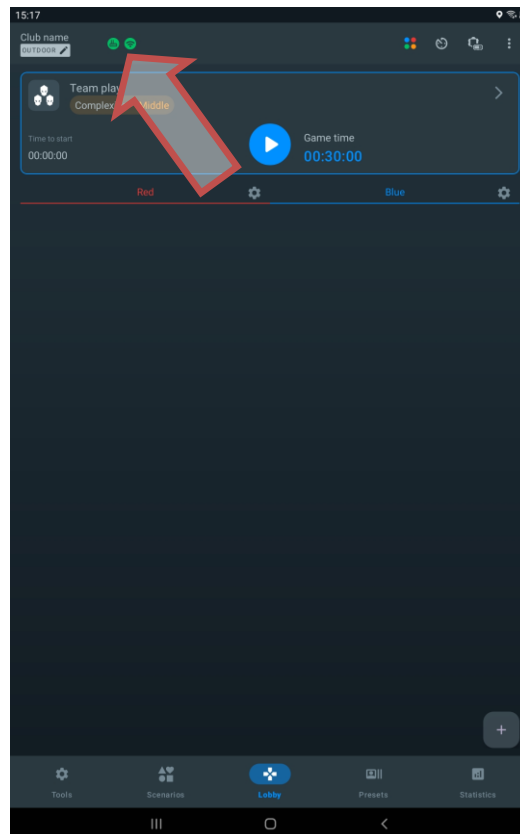


It should be noted that access to location data is needed to control Wi-Fi network data and correctly display the game network.

### 11.3 Setting up the application


Before you start setting up the application, make sure your device is connected to the network you want to use. There should be two green icons at the top of the main screen of the app. The first indicates a connection to your router, and the second indicates a connection to the correct Wi-Fi network.

If one of the icons is red, the device is connected to the Wi-Fi Internet network and not to one of the local networks dedicated to lasertag games. In this case, you need to reconnect to one of the following networks: LASERTAG, LASERTAG-NET, etc.

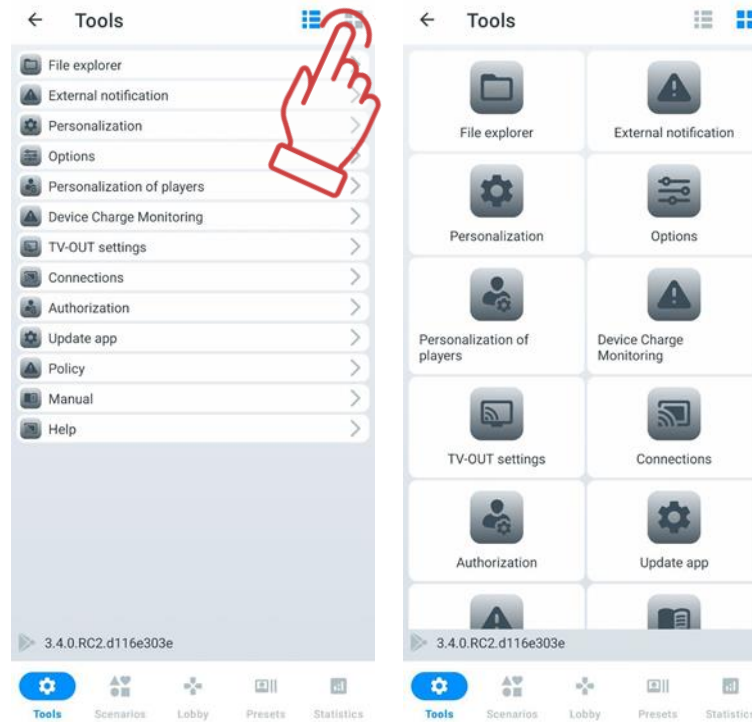


The tab bar at the bottom of the screen contains the main controls that allow you to quickly switch between different sections of the app.

### 11.3.1 Tools tab

To access the Settings menu, click the gear icon  on the tab bar.

By default, the Tools menu items are displayed in a table, but you can choose to display them in tiles. To do this, click on the tile icon in the top right corner of the screen. The icon for the selected display type will be highlighted in blue.



The settings menu contains 13 items.


### 11.3.1.1 File explorer

The File Explorer item contains the 'pdf', 'Scenarios', 'Presets', 'Logs', and 'Manuals' tabs.

The 'pdf' tab displays all the PDF files saved in the app. In particular, it stores statistics of past games: achievement table, personal stats file, team statistics file. You can also select everything, delete all or individual files, share via email or social networks.

The Scenarios tab displays scenarios that you have created in the app or when someone shared a scenario with you and you opened it through the app.

The Presets tab displays presets that you created yourself in the app or when someone shared a preset with you and you opened it through the app.

Scripts and presets in these tabs can be saved to your tablet/smartphone or sent via email/messenger. To do this, select the scripts/presets you want from the list, click the Share button  in the top right corner of the screen, select any file sharing service available on your tablet/smartphone from the list of available file sharing services, and save the scripts/presets.

The Logs tab displays the log files - text files that are automatically created each time the game is launched and contain data on all user actions. If there are any issues with the game, the Administrator or Club Owner may submit these files to Technical Support, allowing them to understand a particular technical issue in detail.

The "Manuals" tab contains PDF files of user manuals for laser tag equipment downloaded from the company's website at <https://lasertag.net/support/manuals/indoor>.



### 11.3.1.2 External notification

The equipment produced by the company uses two types of sound effects that are reproduced:

- blaster's speakers;
- external acoustic system.

The blaster speakers reproduce the sound of a weapon being used (a shot, radiation, a medkit, a zombie growl, etc.), a misfire, a ricochet sound, as well as some system signals (weapon breakage, barrel overheating, etc.).

The sound scheme of the set can only be changed if the microcontrollers of the devices are flashed by the technical service using a special application.



The External Alert tab contains the Event Table and Background Sound tabs.

The Event Table tab contains the sounds of the voice messages that will be played automatically when situations occur in the game.

Lasertag Operator application allows you to listen to voice messages and, if necessary, play them in manual mode. The external speaker system is connected to the server device using either an audio jack or Bluetooth

To activate audio commentary for in-game events, toggle the "Play music randomly" switch to the active position.

The "Enable/Disable system settings sounds" option allows you to adjust the sound playback when system parameters are changed:

- If the switch is turned on , the tagger will play the system sound each time settings are changed.
- If the switch is turned off , the tagger will operate in silent mode, applying settings without playing system sounds.

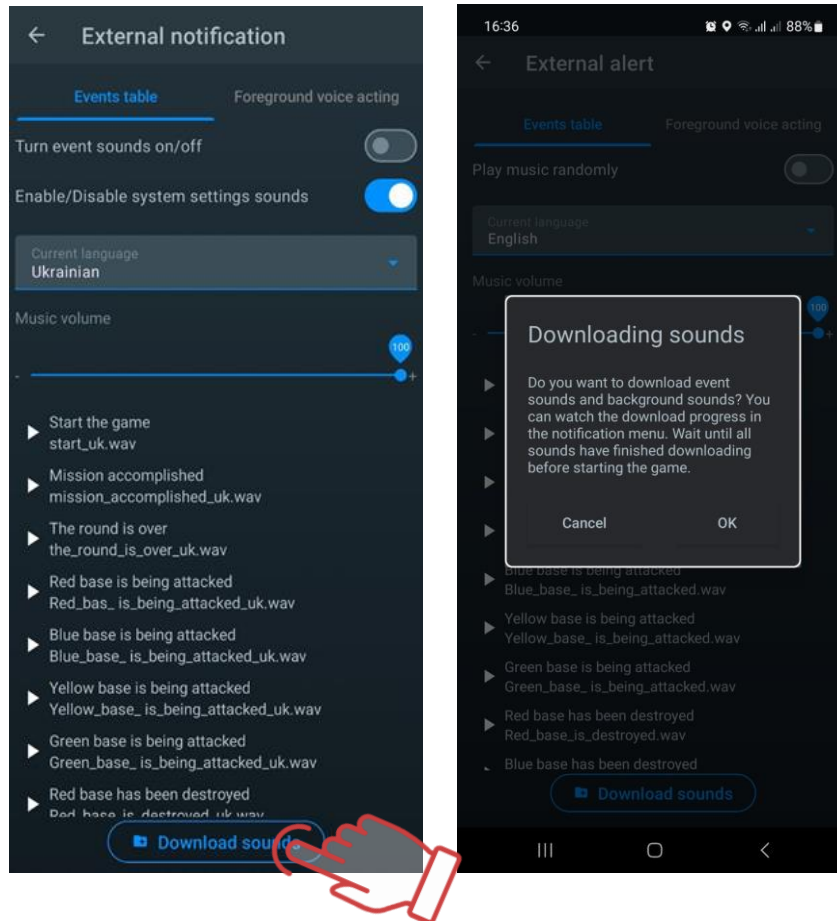
Next, in the Current Language menu, select the playback language from the drop-down list. In this version of the application, Ukrainian, Russian, English, Spanish and French are available.

Next is the volume control for music playback - the default setting is 100%. If necessary, you can quickly adjust the volume.

To download sounds to your device for playback during the game, click Download Sounds and confirm with OK.

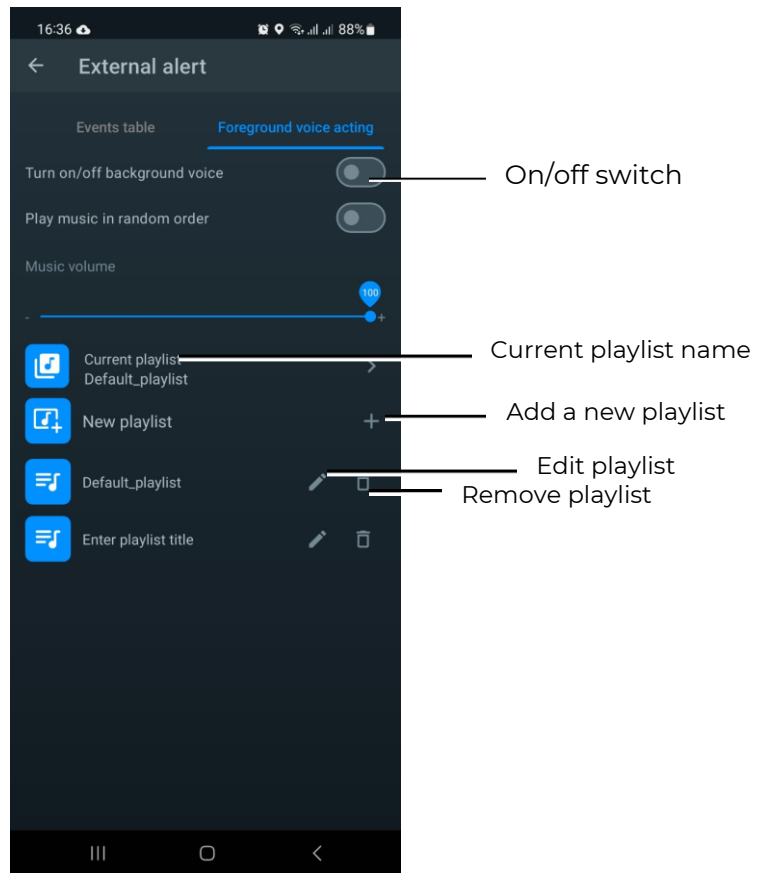
When you click on the selected line of the message, the sound is played in parallel by the speakers of the tablet and the external acoustic device.





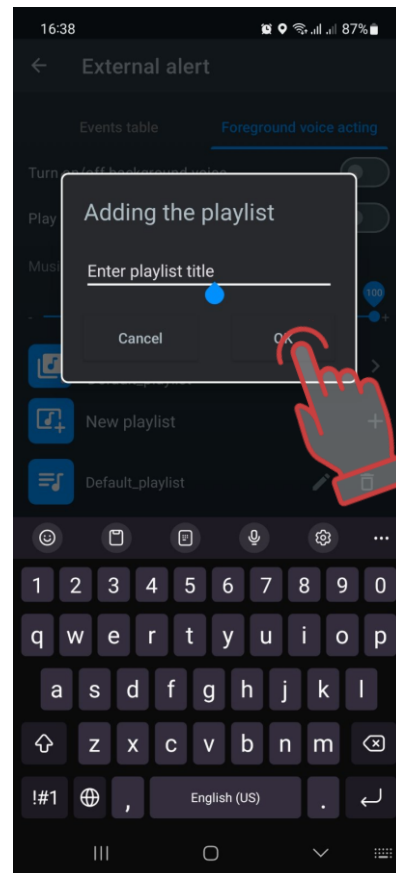
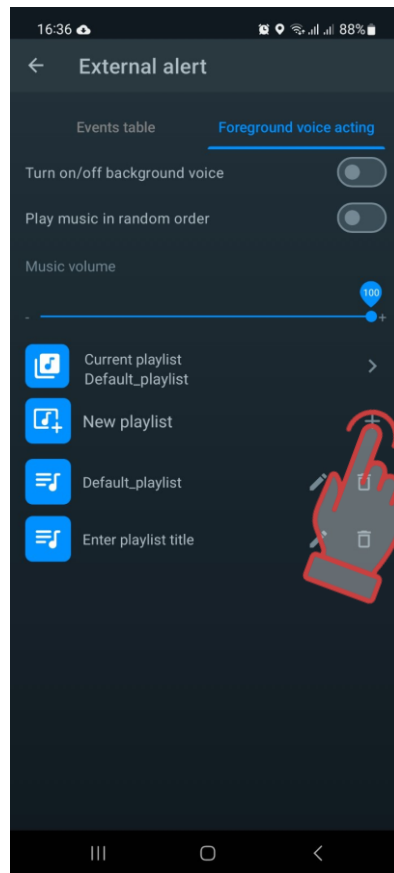
The Background Sound tab allows you to control the music that plays on the field during the round.

The app allows you to turn the background sound on/off, turn the music on/off in random order, adjust the volume, and create, select or edit a pre-defined playlist (music playlist). To do this, click on the selected line.




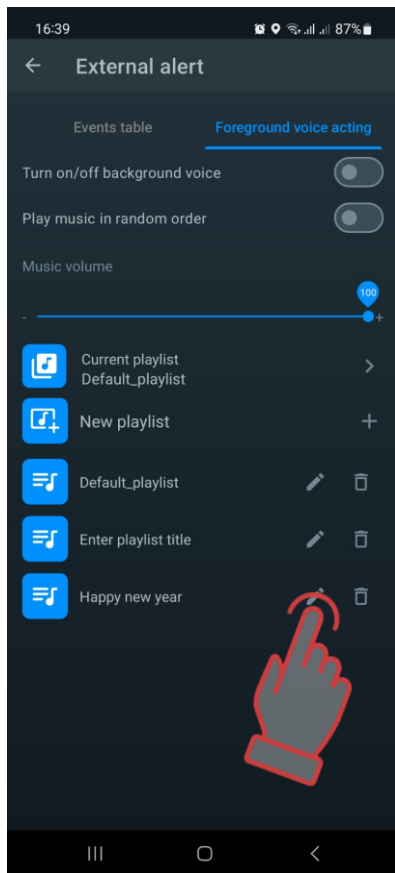
To create a new playlist, click New Playlist. The application will ask you to name the playlist. The name can be linked to a particular scenario, game theme, event (such as a birthday) or player category.



After confirmation with the OK button, the playlist name will appear in the general list.



Now the playlist needs to be created:

1. Press the pencil button .
2. In the window that opens, click on the Add New Sounds line. The device file system window opens.



3. Select the required music compositions (files with the .wav, .mp3 and .flac extensions are supported). The file search order depends on the version of the tablet or smartphone operating system.
4. The file names appear in the song list. If you wish, you can rename it by clicking on the pencil button .
5. The list can be supplemented (repeat the process for adding to the playlist) or shorten it by clicking the trashcan icon  to the right of the file name

The playlist itself is deleted in the same way.

Now, when the switch ON/OFF BACKGROUND SOUND is turned on during the game, the melodies will be played depending on the selected playlist and in the order as they are located in the list. The playlist is controlled from the standard player of the operating system. Volume is controlled by adjusting the volume of the device and the speaker system.

You can also delete or change the built-in voice in the default playlist.

Clicking the pencil icon  opens a list that can be edited.

To change the order of playing melodies, you need to click on the song line, hold it and move it to the selected place. A short press on the song line plays it, a second press stops it.

If necessary, you can rename (button ) or delete the selected track (button )

### 11.3.1.3 Personalization

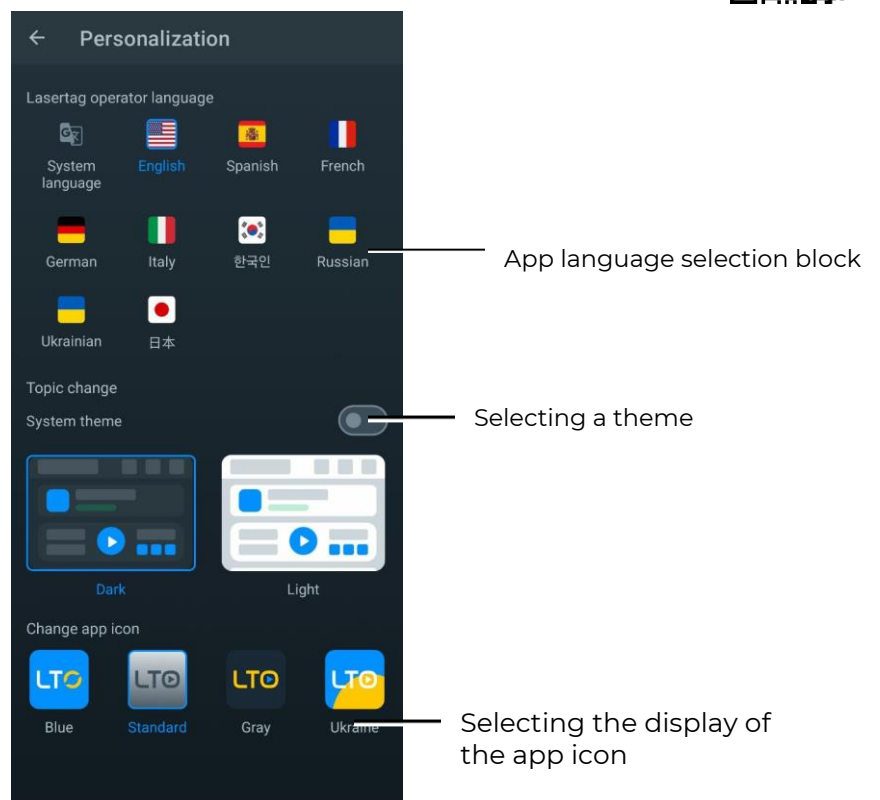
The Personalization option allows users to tailor the application to their own needs.

The top section contains the choice of application language. To change the language, click on the appropriate icon. By default, the application opens in the same language that the operating system is currently running in. When you change the language, the application restarts.

If your system language is not in the list, the interface will automatically switch to English.

Next, you can change the app's system theme from dark to light and choose how the application icon appears on the desktop and the icons of the menu items within the application.

You can watch a video tutorial on how to change the light or dark theme by following the [link](#) or by scanning the QR code.



### 11.3.1.4 Options

The Options item contains club specific information settings and global settings.

In the Club Information section, you can change:

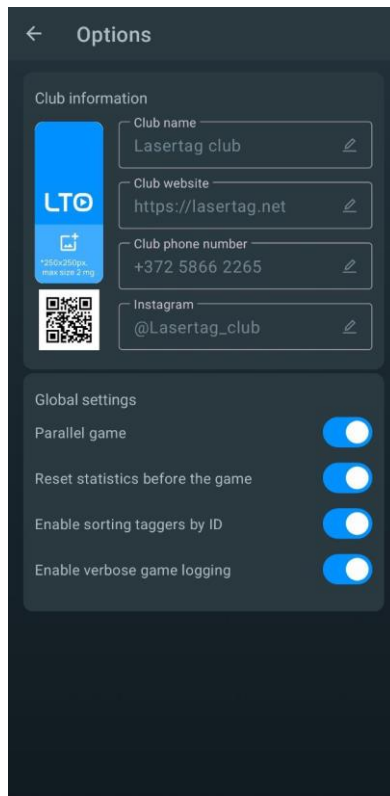
- club logo;
- club name;
- club website;
- club phone number;
- club Instagram profile.

These data will be shown on the forms for printing statistics.

To change the club logo, click on the current logo and select the desired image in the window that opens. The image file size should not exceed 2MB. The recommended logo size is 250x250 pixels. When uploading a larger image, the image will be automatically adjusted to the specified size. It is not recommended to load a smaller logo, because the picture is stretched and the image will be of poor quality.

To enter the latest information about the club, tap on the corresponding line and use the keyboard that appears to enter the name, website address, phone number and Instagram.

The QR code will be automatically generated from the Instagram line.



The GLOBAL SETTINGS section has 4 items: Parallel game, Reset statistics before the game and Enable sorting taggers by id, Enable verbose game logging.

The PARALLEL GAME item is necessary when games are played simultaneously on several playgrounds, bounded by each other, for example, only by nets. In this case, a player participating in the game on another ground may be hit from a blaster.

Control over the observance of the parallelism of games is possible only when the settings and management of games are performed from different servers. In this case, the PARALLEL GAME item (Main menu/Settings) must be checked on the control tablets. The algorithm for conducting parallel games is as follows:

1. When the game starts, the server resets the identified numbers of the kits participating in the round to the blasters.
2. After the IR-signal of the opponent's blaster hits the player's kit sensor, the ID number is compared with the list of numbers participating in the game on this site.
3. If the number is on the list, the hit counts. If not, it is ignored.

It is possible that the kits on one of the parallel games are not connected to the server, but are controlled with the Remote Control. In this case, these kits cannot hit kits connected to a server at another ground. This is due to the fact that the IDs of the kits controlled from the Remote Control will not be included in the list of kits that take part in the game with the server, reset at the start. At the same time, kits controlled from the Remote Control can be affected by kits connected to the server, so they are not told about the numbers that should be ignored.

The checked box COLLECTION OF STATISTICS AFTER THE GAME allows you to automatically reset the game statistics after each round.

If you check the box ENABLE SORTING TAGERS BY ID, then in the Game room window the tiles of the players will be arranged in order - numbers in ascending order from top to bottom. Otherwise, the tiles will be arranged in random order.

The marked menu item ENABLE VERBOSE GAME LOGGING allows user to display the maximum number of game events. If the item is not checked, in the sub-item of the main menu "Game events" during the game, only the main events in the game are displayed - the start and end of the game, the base capture, the capture of the Domination Box, etc. If the item is checked, this submenu displays all game events, including all hits and defeats of players against each other

### **11.3.1.5 Tab "Personalization of Players"**

The "Personalization of Players" menu option allows you to choose one of the built-in avatar themes or create your own, customize participants' names and avatars, and personalize the appearance of profiles.

This feature is useful if your club has a specific theme and needs unique player names to support the concept.

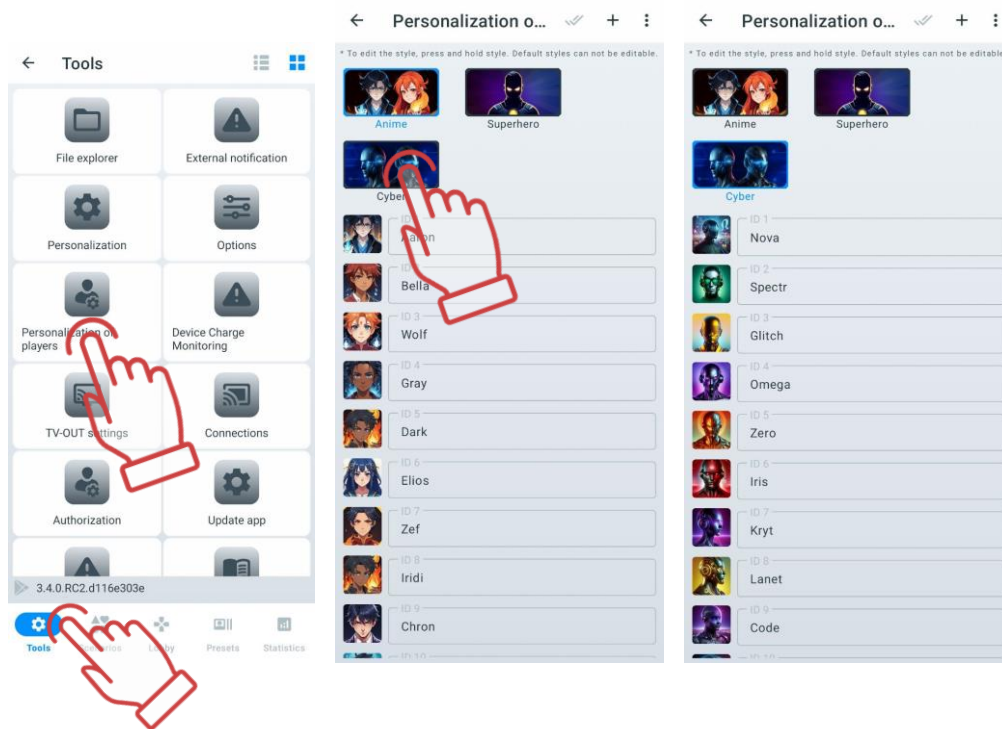
**!** **Note: Starting from LTO version 3.3.5, avatars are no longer linked to teams. Names and avatars are now tied to specific device IDs rather than teams. This means that each participant has a unique avatar and name, regardless of team composition.**

#### **11.3.1.5.1 Selecting a Standard Theme**

Each standard theme in the "Personalization of Players" menu (anime, superheroes, cyber) contains a set of 127 avatars with preset names. Built-in avatars and names cannot be edited or changed.

To choose a built-in theme:

- 1 Go to the "Tools" tab and open the "Personalization of Players" menu.
- 2 In the window, select one of the themes by clicking on its icon.
- 3 The selected category will be highlighted in blue.



### 11.3.1.5.2 Creating a Custom Theme

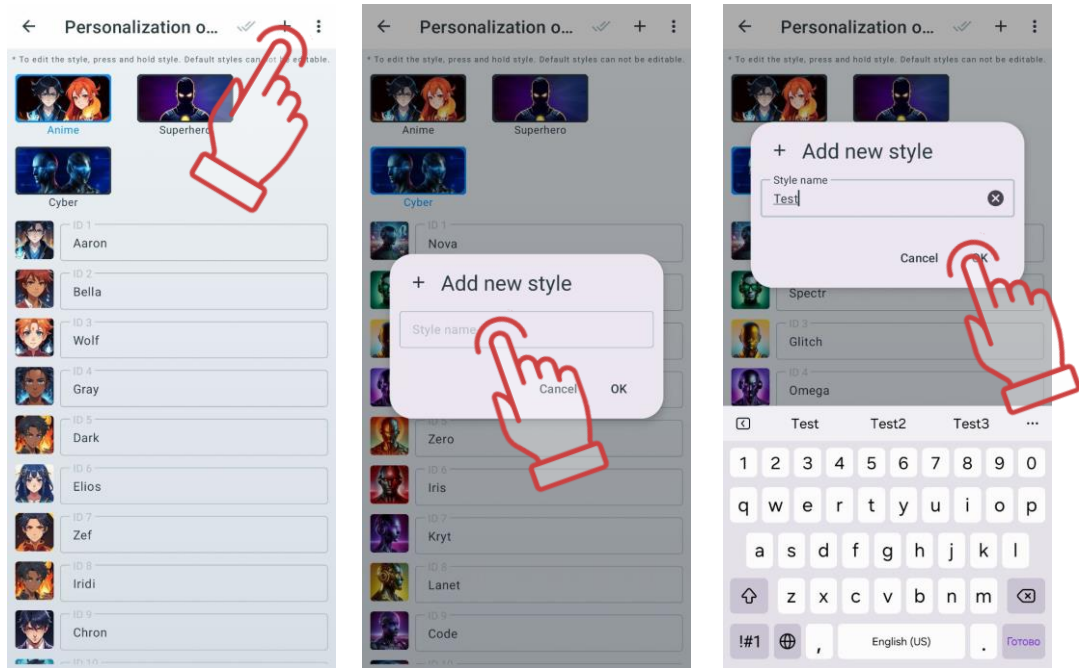
If the standard avatar themes do not suit your needs, you can create your own theme by setting unique style names and avatars for participants. This allows you to adapt profile designs to your club's style, thematic games, or players' individual preferences.

By default, the created theme has standard images for all IDs, and the ID number is used as the name. You can change them later.

To create a custom theme:

- 1 Go to the "Tools" tab and open the "Personalization of Players" menu.
- 2 In the upper right corner, click the button **+**.
- 3 In the pop-up window, enter the name of the theme.
- 4 Click "OK" to confirm.
- 5 To apply the custom theme, click on its icon.



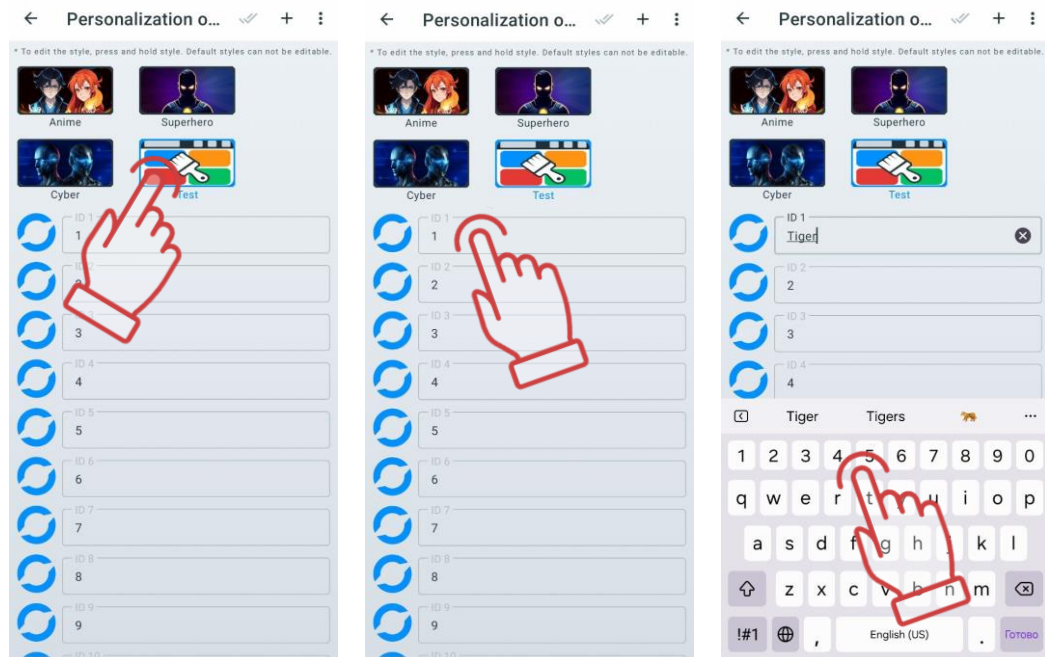



### 11.3.1.5.2.1 Editing Names and Avatars

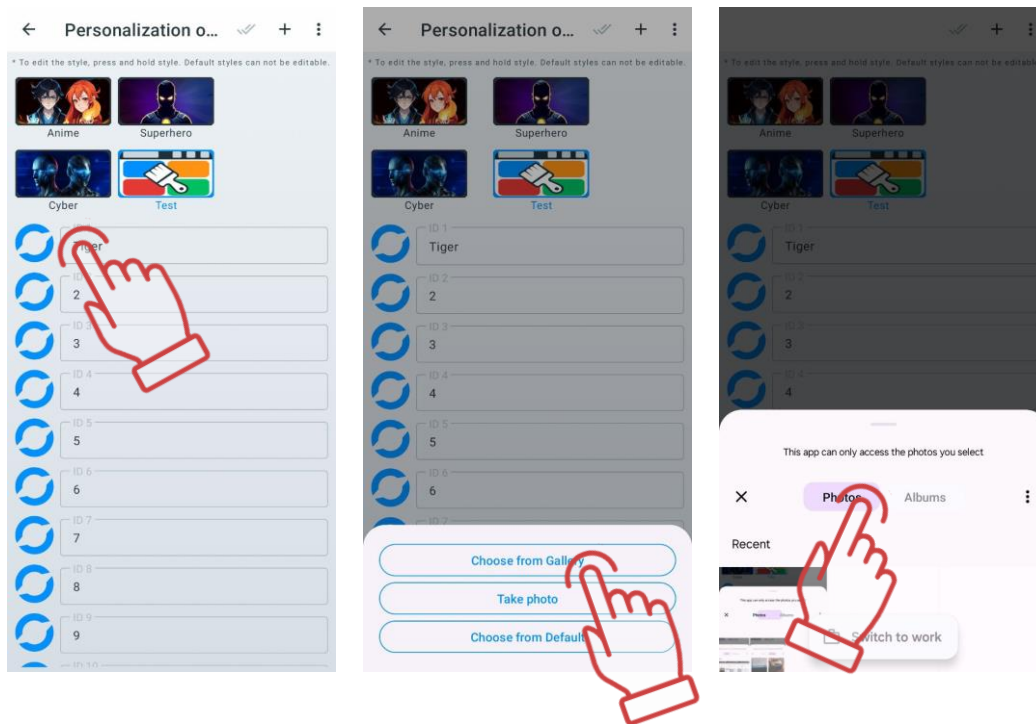
After creating a custom theme, you can change participants' names and avatars as you prefer.

To change a name and avatar:

- 1 In the "Personalization of Players" tab, select the desired theme by clicking on its icon.
- 2 Choose the ID by clicking on the field with its name.
- 3 Enter a new name using the keyboard.



- 4 Click on the avatar located to the left of the specified name and select an image using one of the available methods in the menu:
  - Choose from Gallery – open the device's file manager, select the desired image by clicking on it;
  - Take a Photo – point the device's camera at the desired object or person and press the capture button;
  - Choose from Defaults – in the "Default" tab, select an available avatar or use the "Custom" tab to choose a previously uploaded image. To save your choice, click the button .

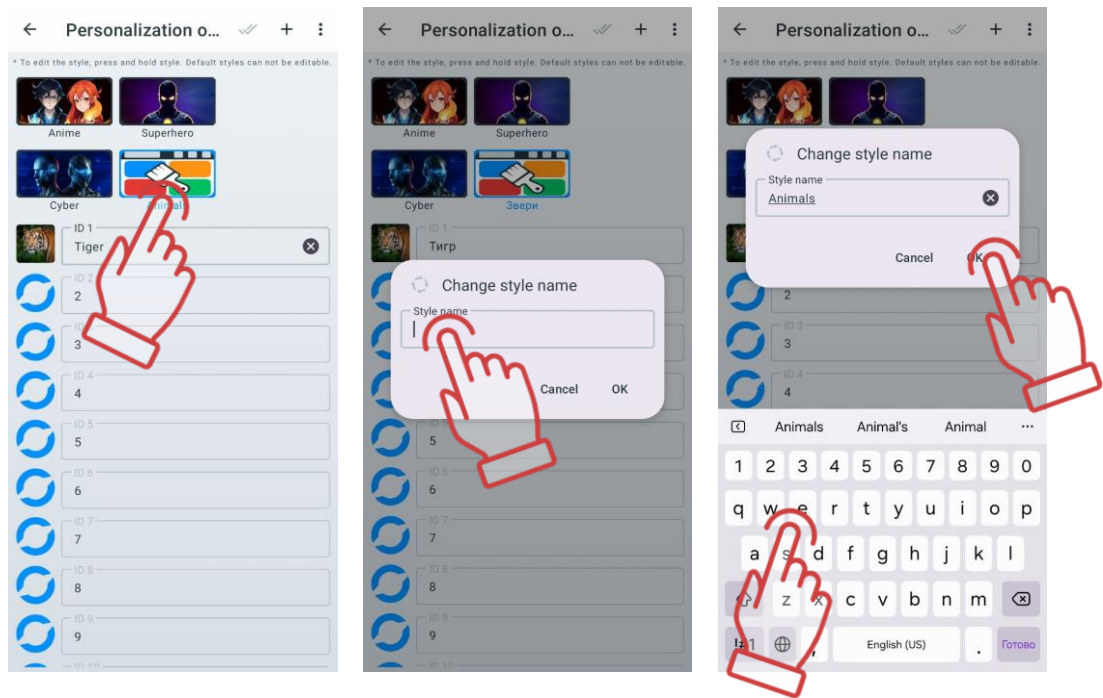


You can also change participants' icons and names on the player cards in the "Lobby," but these changes will only be saved for the current session. For more details, see section 11.3.3.10.1.

### 11.3.1.5.3 Editing the Theme Name

To change the name of a created theme:

- 1 Press and hold the theme icon until the edit window appears.
- 2 Enter a new name using the keyboard.
- 3 Click "OK" to confirm.




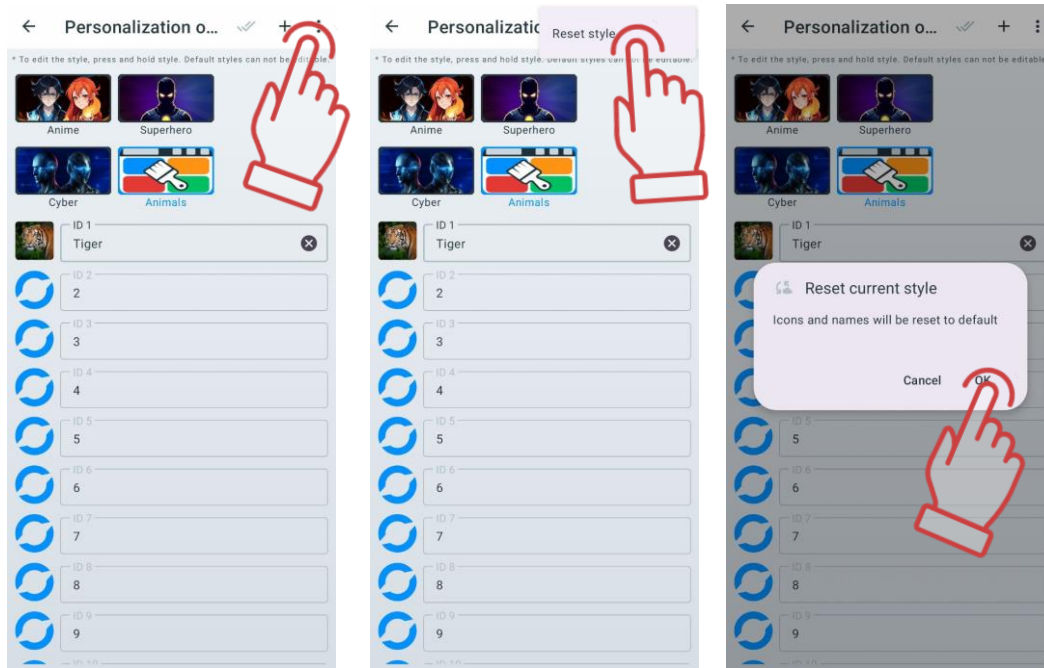
#### 11.3.1.5.4 Resetting Theme Settings

Resetting a theme allows you to return all names and avatars to their default settings. This is useful if you need to quickly restore standard values without editing each profile individually.

Note: The reset function is unavailable for built-in themes!

To reset a theme:

- 1 Click on the icon of the custom theme whose settings you want to reset.
- 2 In the "Personalization of Players" settings menu, click the three dots button  to open the additional settings menu.
- 3 Select "Reset Style" and click "OK" to confirm.






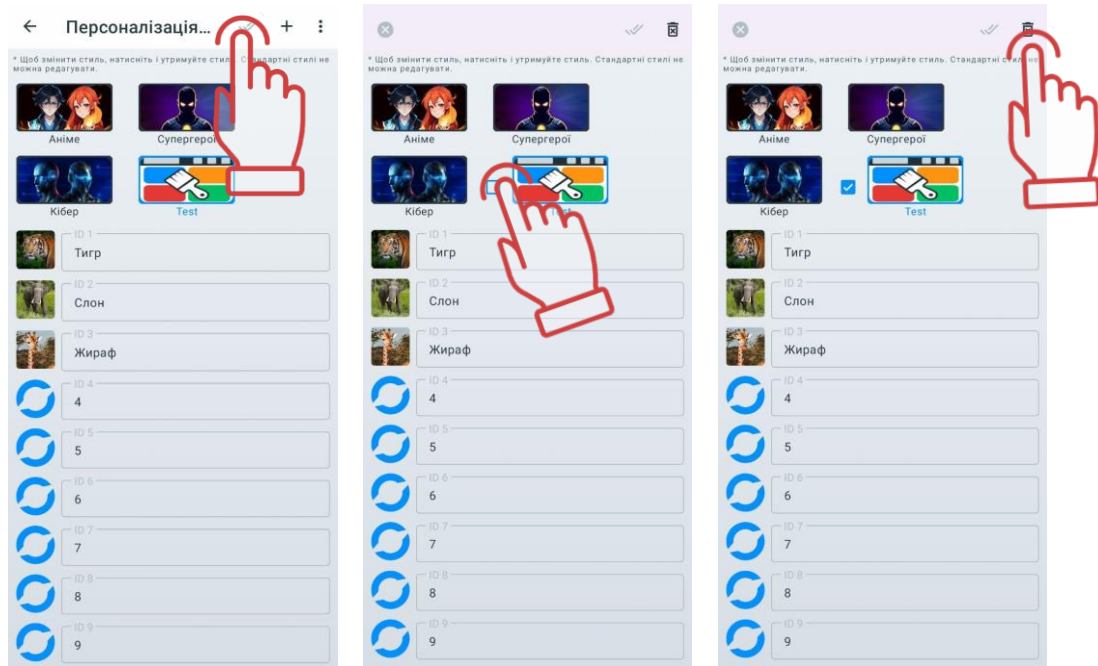
Player names and avatars will revert to default values (the ID number will be displayed instead of the name, and the participant's avatar will be blank).

You can also reset player names in the "Lobby." For more details, see section 11.3.3.4.1 .

### 11.3.1.5.5 Deleting a Theme

To delete a custom theme:

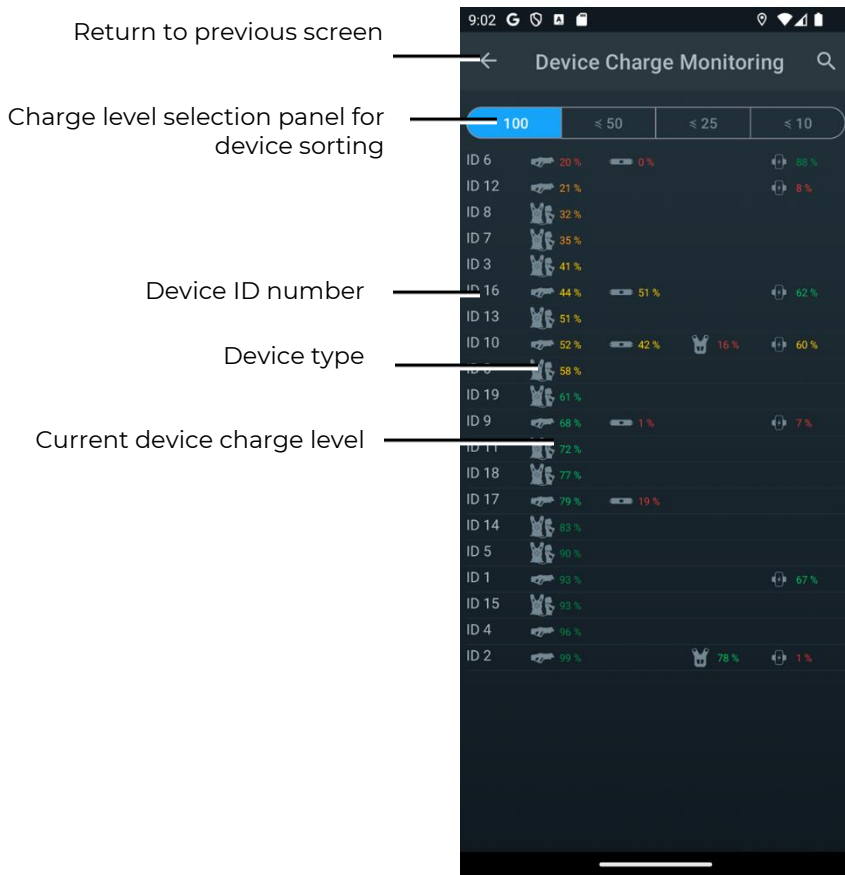
- 1 In the "Personalization of Players" settings menu, click the button .
- 2 Check the themes you want to delete.
- 3 To select all custom themes, click the button  again.
- 4 Click the trash bin icon  in the upper right corner.



### 11.3.1.6 Device Charge Monitoring

This tab becomes relevant after the game kits are connected to the same local network to which the mobile device is connected. It is not necessary to assign them to teams on the "Lobby" tab.

This tab allows you to sort sets (blaster + vest) by their charge level that are currently connected to the LTO.



To filter the devices by their charge level, four levels are provided: 100,  $\leq 50$ ,  $\leq 25$ ,  $\leq 10$ .

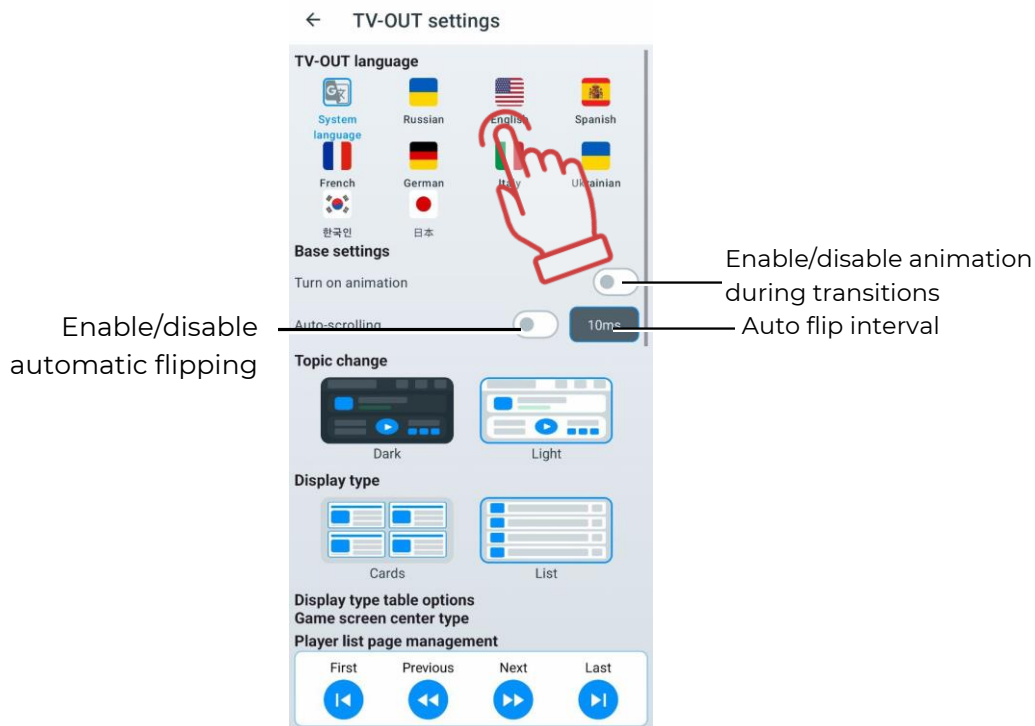
By clicking on the icon with the desired level, the list of sets is automatically updated, displaying only those devices that match the selected charge level.



### 11.3.1.7 Tv-Out settings

The Tv-Out Settings item contains settings for broadcasting live and post-game statistics on a TV screen or projector outside the game area, and allows you:

- during a game round, control individual statistics of players, mode and status of additional devices;
- to involve players who are waiting for their turn and their supporters in the game process by monitoring the operational changes in statistics;
- to provide each player with the opportunity to evaluate their performance and the team's achievements immediately after the game;
- to use as one of the advertising elements to attract new visitors.




TV OUT language allows you to change the language displayed on the external screen. To select a language, briefly click on the language icon.

System language is the language set as the main language in the user's device. If desired, the user can select another available language from the list provided in LTO, and the client will automatically see the interface in English if their system language is not in the list.

In the "Base settings" submenu, there is an option to enable or disable animations when switching event screens.

Below is the player navigation settings menu, which works for the "List view" display mode. If more than 10 players participate in the game, it is possible to display the results of all players alternately on the screen by switching pages with automatic flipping.

Automatic flipping can be enabled by moving the toggle switch  to the active position. After that, you can set the flipping interval from 2 to 60 ms (default – 10 ms).

Manual flipping is performed through the "Player list page management" menu fixed at the bottom of the screen. In manual flipping mode, you can navigate to the first, last, previous, and next pages of the player list.



During the game, the list is dynamic, with players with the highest scores displayed at the top. During a pause, the most productive players up to the moment of the pause are displayed at the top of the list.



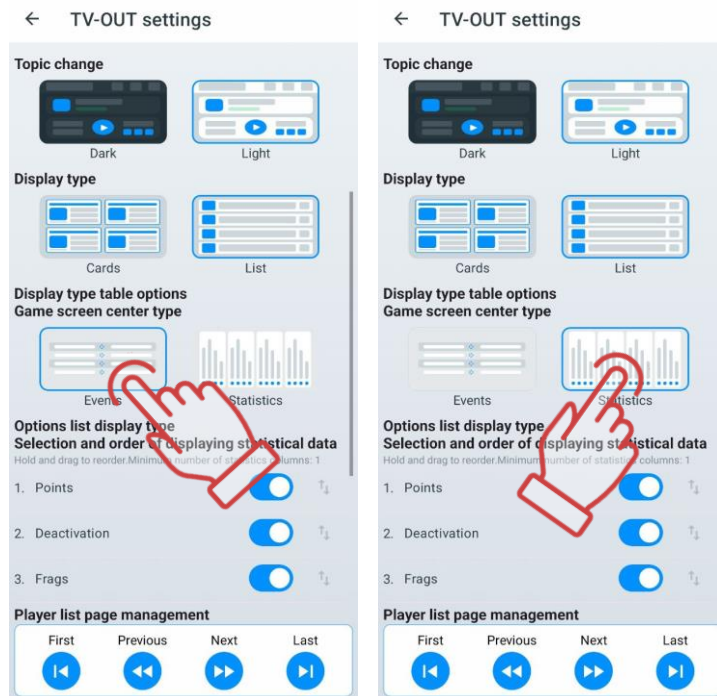
Topic change – changing the theme. You can apply a light or dark theme.


Display type – changing the way player game statistics are displayed. You can choose to display it as a list of players or as a table.

During the game, the list is dynamic, with players with the highest scores displayed at the top. During a pause, the most productive players up to the moment of the pause are displayed at the top of the list.



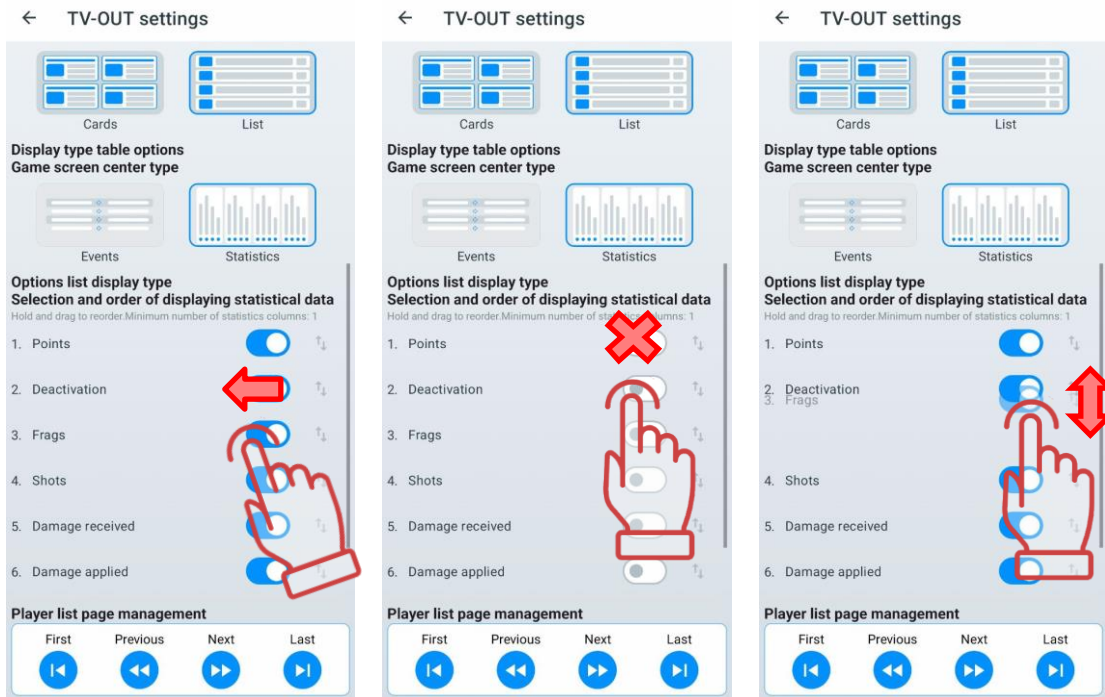
The next setting applies only to the table display type and provides two options for displaying events in the center of the screen – events (logs) and statistics.



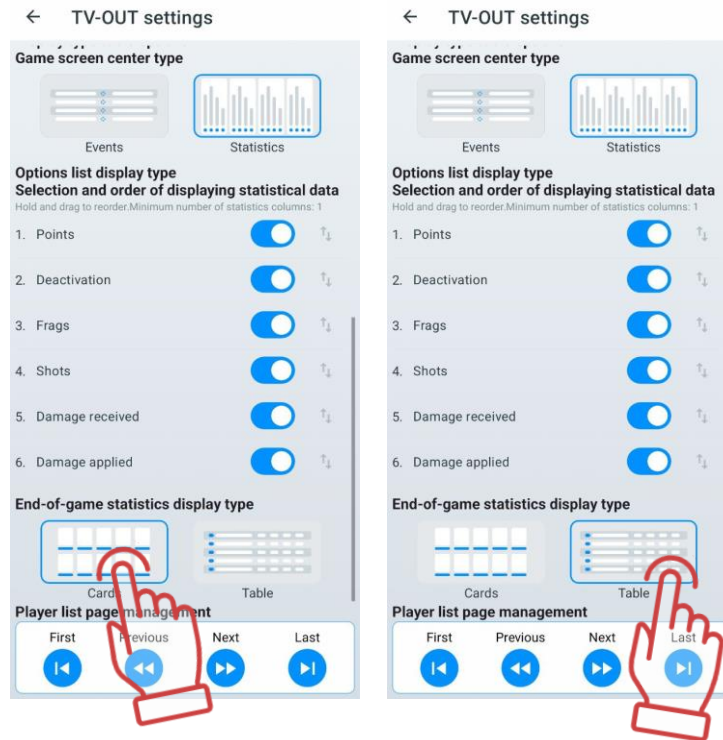
Another setting is available for the event list display option and allows enabling/disabling certain parameters displayed in the list, as well as changing the order of parameters. Parameters can be toggled on or off with a switch . By default, all parameters are enabled.

At least one parameter must be enabled in the final settings. Disabling the last remaining parameter is blocked by the program.

The order of display is changed by "dragging" parameters in the list.



The final setting in this menu allows selecting how statistics are displayed on the screen at the end of the game – as cards (standard) or as a table (identical to the list display type during the game).



### 11.3.1.8 Connections

The Connections item provides information about your connections - network name, router IP address, and mobile device IP address.

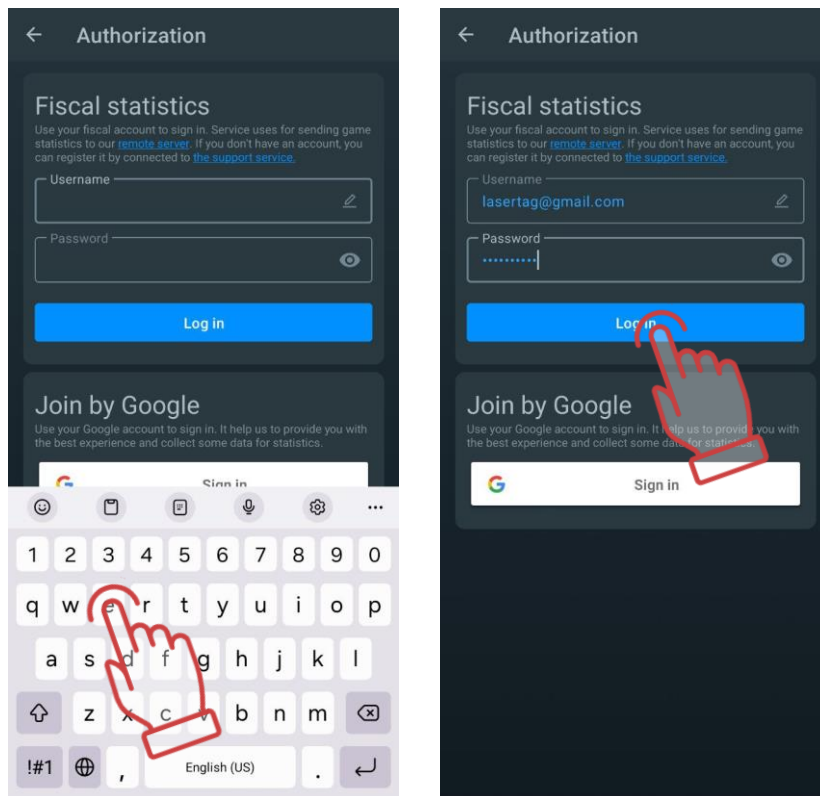
### 11.3.1.9 Authorization

When you enter your personal area, you can register via the LTO mobile app or sign in with your Google account.

Also, the user may not need to log in to use the mobile application. However, if you do not log in, you will not be able to save your personal LTO settings in cloud storage Firebase, and if you reinstall the application, you will lose all previously saved personalised settings (created scenarios and presets, saved files and statistics of past games).

Firebase acts as a file store. Firebase storage provides reliable file uploads and downloads for the application. Cloud storage of video, audio or any other type of file is supported by Google Cloud Storage.

### 11.3.1.9.1 Access to the fiscal statistics server

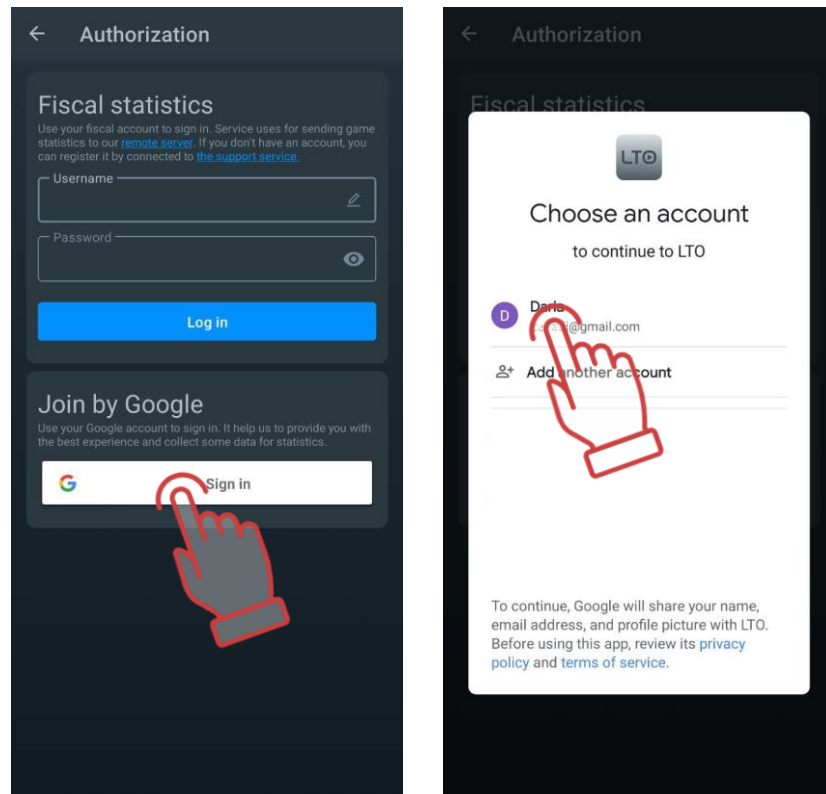


For authorization to send fiscal statistics to the server, it is necessary to use login and password provided by the technical support service of the company.

### 11.3.1.9.2 Authorization with a Google account

The current version of the application now has an option for authorizing the application via Google account.

To sign in, click the Sign In button with the Google icon in the main menu at the bottom of the screen, select your account and sign in.



#### 11.3.1.10 Update app

This item allows you to search for updates for the application and, if found, download and install them.

#### 11.3.1.11 Policy

The Policy item contains information on how personal data is collected, used, processed and protected when using the application

#### 11.3.1.12 Manual

The Manual item contains manuals and guides for users on how to use the main and optional equipment.

#### 11.3.1.13 Help

This item displays a feedback form where you can leave your feedback about the application, as well as questions and suggestions for improving its functionality.

### 11.3.2 Scenarios tab

The Lasertag Operator software has a number of ready-made scenarios that have been tested in real-world conditions. Based on one of these built-in scenarios, you can create your own and customise it according to the size of the venue, number and composition of players, etc.

Clicking Scenarios in the tab bar opens the Scenarios list window with the following tabs:


- Default: This tab contains built-in scripts that are ready to use without additional settings;

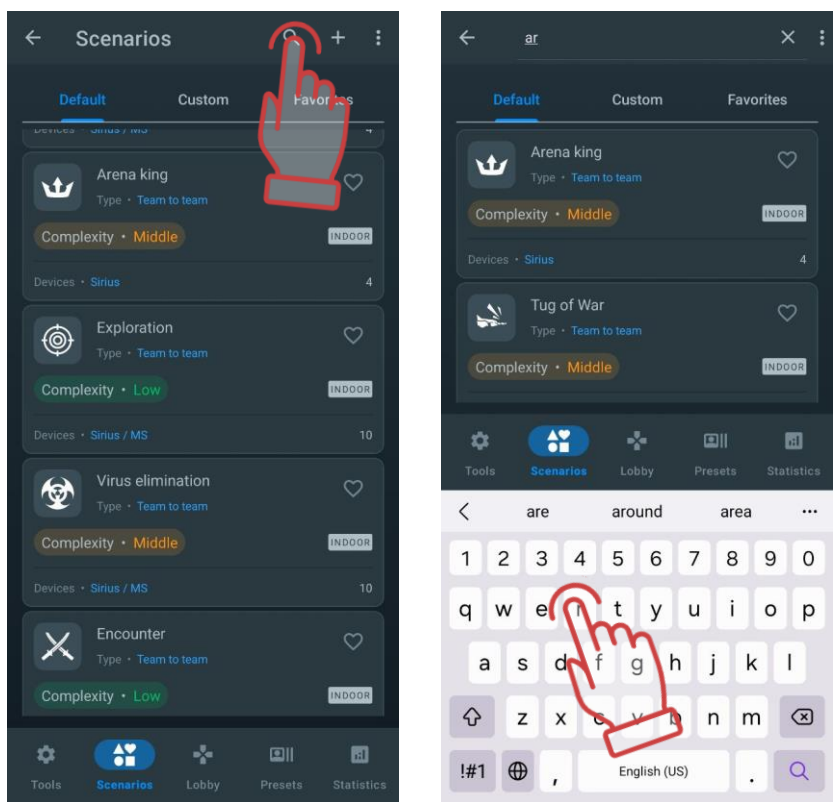
- Custom: In this tab, the user can create their own scenarios, customised to their own needs;
- Favorites: This tab stores the scripts that the user has added to their Favourites for quick access.

### 11.3.2.1 Default

Clicking on a scenario tile will display information about that scenario, including the difficulty level and a brief description.

Each of the scenarios has its own settings, and these will be different for each scenario.

To speed up finding the scenario you want, you can click on the search icon  in the top right-hand corner of the screen and type the first few letters of the name on the keyboard that appears. Scenarios beginning with these letters will appear. Press and hold the desired tile to apply the selected scenario.



Built-in scenarios cannot be edited or deleted, but you can create your own scenarios based on them.

#### 11.3.2.1.1 Description of built-in scenarios

The scenarios built into the Lasertag Operator application are focused on a typical indoor laser tag playground with numerous shelters and an area of 200 m<sup>2</sup> or more. In the arsenal of additional equipment, it is recommended to have at least 1 Multistation (optimally 3), 5 SIRIUS stations and one SMART Domination Box.

The current version of the Lasertag Operator software comes with 15 ready-made scenarios:

- Warm up. One of the simplest scenarios, which does not require special manuals and allows you to get comfortable on the playground and get acquainted with the features of

laser tag weapons. The scenario works well as a starting round for both beginners and children.

The players have the same settings and they each play for themselves in one color - red.

Each player has 100 health points at the start. Weapon - Falcon with 25 damage, i.e. for each hit in the opponent's sensors, 25 points are deducted from the latter.

After the 4th hit, the player's kit is considered deactivated, the weapon stops firing, but in this scenario, after 5 seconds, the player automatically "respawns".

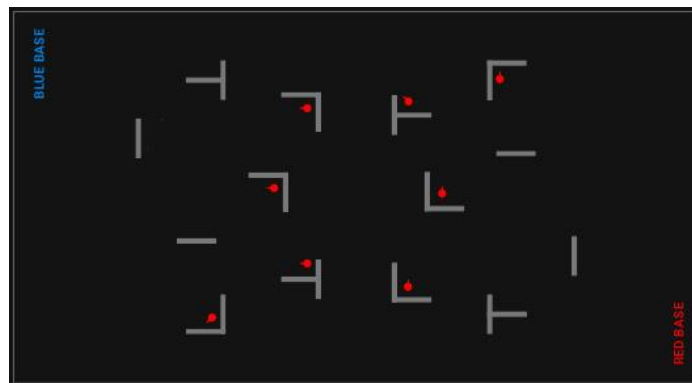
Auto-reloading is turned on (no need to press the reload button when emptying the magazine) and an endless number of magazines is turned on. The second hand sensor is switched on.

To prevent injury to players by the body of the weapon, the Stop aggression parameter is enabled - when the blaster moves sharply, a warning signal sounds and a corresponding notification appears on the screen.

Additional devices are not used.

For hitting an opponent's kit, 1 point is awarded.

The round starts from random place.

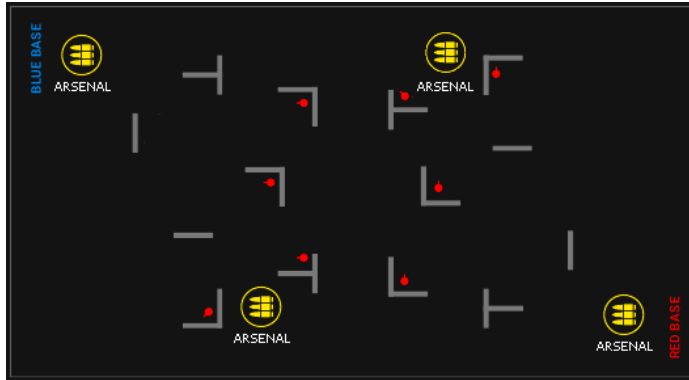


Timed end of the game. The player with the higher score wins.

- Deathmatch. The peculiarity of this scenario, where the players play each for themselves, is that points are awarded only for the deactivation of an opponent, i.e. the first three hits to the player are not counted (at the start, the player has 100 health points, weapon damage - 25 points).

Since the players have limited ammunition (7 magazines with 30 cartridges each, auto-recharge is enabled), the scenario provides for the use of additional devices - two Multistations and two SIRIUS stations operating in the Arsenal mode. They can add 1 magazine to the player every 5 seconds (but less than the starting value). The player can deprive opponents of the opportunity to replenish ammunition - 4 hits in the body of the device deactivate it for 30 seconds.

At the start, the players take random places on the playground.



Timed end of the game. The player with the higher score wins.

- In the Arena King scenario, the game goes to elimination - deactivated players do not have the opportunity to respawn and leave the playground. Accordingly, the winner is the last remaining "alive" player - "King of the Arena".

Points are not awarded for any player's actions in this scenario. To automatically stop the game, the condition for automatic ending the game - "One man standing" is turned on.

All kits glow in one (blue) color. Players play every man for himself (friendly fire is on) - sensors record hits from any blaster.

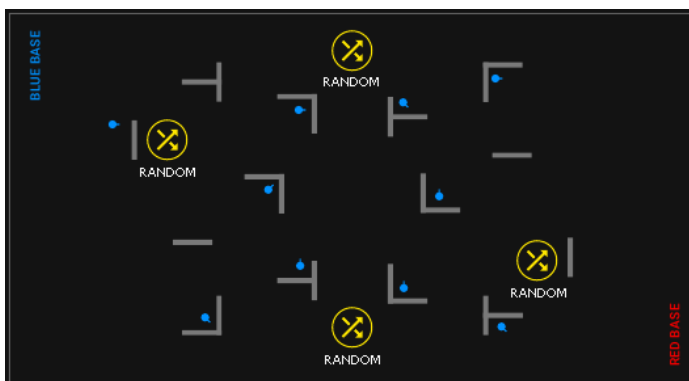
Weapon damage is reduced to 15 points. Accordingly, the player leaves the playground after the 7th hit in his kit.

In order not to turn the game into a pointless firefight, the player's ammunition is limited to 20 magazines of 20 cartridges each. In addition, the Barrel overheating mode is enabled - if you fire more than 10 shots, the weapon turns off for 3 seconds with a corresponding indication on the blaster screen.

Although there is no way to respawn, the player can still "heal" during the game - the health for steps parameter is enabled. For each step fixed by the blaster gyroscope, the player is added 1 point of health. This will stimulate the player not to sit in ambush, but to take active actions in the arena.

The scenario uses 4 SIRIUS devices, which in the Random mode every 5 seconds affect the players who are in the zone accessible to the device's IR-emitters with one of the protocol commands: Double lives, Arsenal (the magazine is full) or Radiation (25 points of health are taken away).

Before the start of the round, players are placed on the playground in random order, preferably behind shelter.



End - upon reaching the end of the game, i.e. when there is only one player left on the playground.



It is recommended to use the scenario as the final round, therefore the timer should be set to the maximum value (99 minutes) so that the game does not stop prematurely. In case of a long-lasting round, the game should be forcibly stopped with the announcement of the result Draw.

- Exploration. A simple scenario in which players need to deactivate targets with blaster shots. The targets are SIRIUS stations (up to 8 points) and Multistations (2 points), located evenly throughout the playground.

The players have the same settings, the color of the kit LEDs is green. The blaster has unlimited magazines and auto-reload.

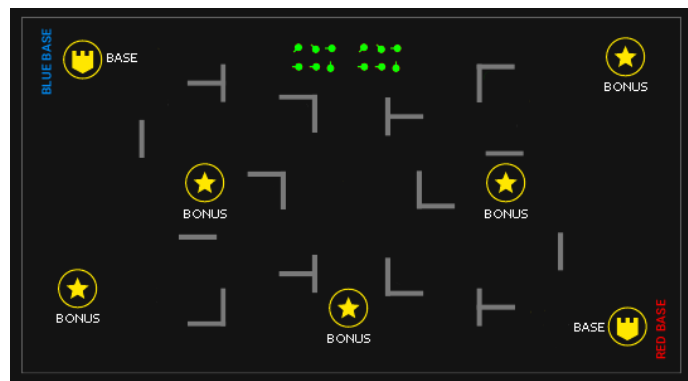
For each hit on the target, the player gets 1 point. Points are not awarded for hitting the opponent.

SIRIUS stations are set to Bonus mode in such a way that these targets are hit on the first shot. In operation, the LEDs on the outer ring of the panel are iridescent. When the player's blaster beam hits them, only the central 4 LEDs glow brightly and the device pauses for 30 seconds. After the end of the period of inactivity, SIRIUS is again set to arm.

The Multistation is used in the scenario in the Base mode (no radiation is distributed) - a yellow flag flutters on the screen. You can earn 3 points on it, i.e. to deactivate it, you need to hit it 3 times. The degree of destruction is graphically indicated by the lower bar on the screen. The restore time is 60 seconds.

Since the defeat of targets does not occur simultaneously, and wait for the next recovery for a long time, players are forced to look for devices that are currently active.

It is preferable to start the round from one point of the playground, as far as possible from the targets.



Timed end of the game. The player with the higher score wins.

If the club has a smaller number of additional devices, it is recommended to reduce the time of their inactivity after being hit. This will give players more opportunities to score points.

The scenario is suitable for children whose parents do not want them to shoot at each other. In this case, the opponent is the Arena itself.

- Virus elimination. A more complex version of the previous scenario. You also need to hit target viruses. As in the scenario Exploration, points for hitting an opponent are not awarded, but there is an opportunity to "freeze" him. Players are given a virtual weapon - a machine gun with the ability to switch the firing mode (single shots, a fixed burst of 3 cartridges or an endless burst). The blaster beam, hitting the sensors of the opponent's kit, disables his weapon for 5 seconds. It allows you to easily get points on the defeat of additional devices, among which SIRIUS stations in the Bonus mode and Multistations in the Yellows' base mode are also used.

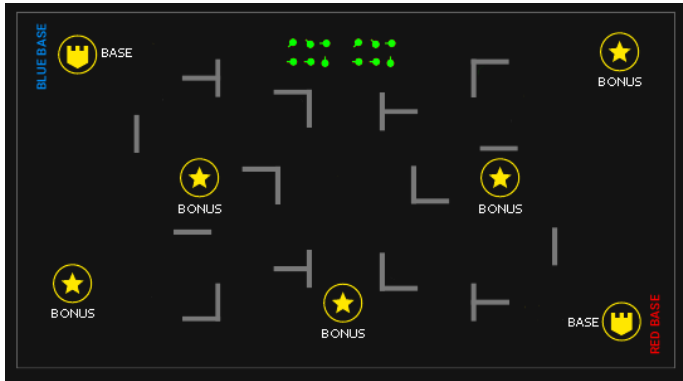
During the "freeze" the player cannot be hit.

For deactivating SIRIUS, the player gets 1 point, for the Multistation – 1 point (in accordance with the number of hits in the device). Unlike the Exploration scenario, the Radiation protocol command is turned on the Multistation - a player can lose 25 health points every 5 seconds.

Recovery time for SIRIUS station - 30 seconds, Multistation - 60 seconds.

Players have an unlimited number of magazines, but when the magazine is empty, the weapon must be reloaded with the corresponding button on the blaster.

It is recommended to start the round from one point of the playground, as far as possible from the targets.



Timed end of the game. The player with the higher score wins.

The scenario is best to use for players who are sufficiently prepared, who have already mastered the equipment and the playground.

- Encounter. Simple team game for younger children and beginners.

Players are divided into two teams - red and blue. For hitting an opponent - 1 point, for deactivating him (after 4 hits) - 2 points.

The weapon has endless magazines and automatic reloading.

After deactivation, the player returns to the game after 5 seconds.

Before the start of the round, the teams are deployed to their bases.



Timed end of the game. The winner is the team with the highest score.

- Team deathmatch. A team game with limited ammunition for experienced players.

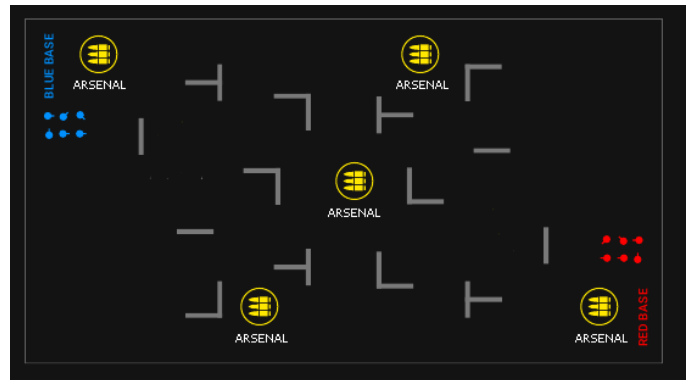
The players are divided into two teams with the same settings - red and blue. Points can only be earned by deactivating a player after 4 hits.

The main feature of this scenario is the limited ammunition: 3 magazines with 30 cartridges each. To replenish it, SIRIUS and Multistations are randomly placed throughout the arena, which in the Arsenal mode every 10 seconds distribute 1 magazine with cartridges (but the player can only replenish up to 3).

The scenario also uses a superpower - Max Damage mode. Every 90 seconds, the player is given the opportunity to turn it on and thereby increase the damage of his weapon to 100 points for 10 seconds, i.e. the opponent's kit will be deactivated with one hit.

After deactivation, the player is automatically returned to the game after 5 seconds.

Before the start of the round, the teams are deployed to their bases.



Timed end of the game. The team with the highest score wins.

For more variety, some of the additional devices can be used in other modes, such as Medkit or Radiation.

- Confrontation. Team game for experienced players with base respawn.

There are two teams opposing each other - blue and red.

For hitting an opponent, a player gets 1 point, for deactivating him (after 4 hits) – 2 points.

At the start, players have 100 health points, weapon damage 25. There is no auto-respawn - the deactivated player must return to his base, where Multistations or SIRIUS stations in Respawn mode are installed. In this mode, the devices return the starting number of health and ammunition points to the kits only of their own color every 5 seconds (7 magazines with 30 cartridges each). Please note that devices respawn only deactivated players. The only thing that players who still have health points, but only a few cartridges can get from the device, is to fill the last magazine to the end.

After emptying the magazine, you need to press the blaster reload button.

The scenario requires sufficient endurance of the players - one has to return to base quite often, and the team's fighting efficiency depends on the speed of recovery.

The round starts on the bases.



Timed end of the game. The team with the highest score wins.

- Base assault. Team game with the capture of someone else's base and with the respawn on the home base.

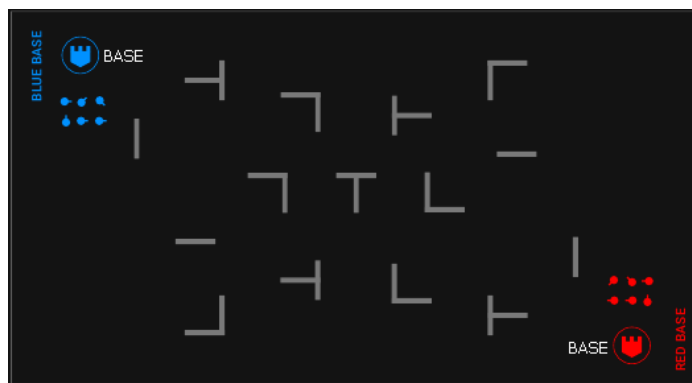
The peculiarity of this scenario is the increased number of points received for getting into the opponent's base (10). In addition, you can earn points by hitting a player (1) or deactivating him (2).

SIRIUS or Multistations are used as a base, set to the Base mode and located on opposite sides of the playground. In this mode, the devices not only respawn the players of their team every 5 seconds, but in addition, with the same frequency, they inflict 30 points of damage with the Radiation protocol command to the players of opposite team. After 4 hits to the device by the opposing player, they pause for 20 seconds (neither respawn nor distribute radiation), and then resume their work.

To facilitate infiltration into a foreign base, the player can turn on the Ninja superpower once every 1 minute - the sensor LEDs go out for 30 seconds.

Ammunition - 7 magazines of 30 cartridges.

The round starts on the bases.



Timed end of the game. The team with the highest score wins.

- Sniper battle. A team game with limited ammunition, increased damage, low rate of fire, and respawn on the base.

In this scenario, players can deactivate each other with one shot from a sniper rifle (weapon damage is equal to the starting number of health points). At the beginning of the round, the player has 10 magazines, but each has only one cartridge. One point is awarded for hitting an opponent, a point is deducted for hitting an ally.

It is recommended to play the round without musical accompaniment in order to emphasize the specifics of the game and the absence of the margin for error.

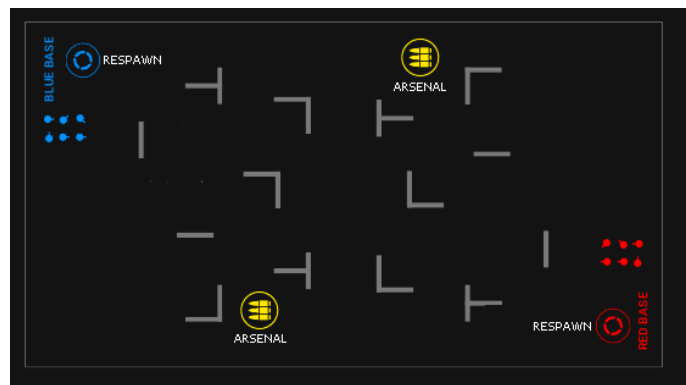
SIRIUS or Multistations are installed at a team base, during the game they work in the Respawn mode (the frequency of activity is 5 seconds).

At least two more SIRIUS stations are located in arbitrary places on the playground. They are tuned to the Arsenal mode and can add one magazine with one cartridge to the player every 5 seconds. The maximum number of magazines is 10, but there is a high risk of being detected by the players of the opposing team, because with each increase in ammunition, the blaster speaker reproduces the message Ammunition replenished, which in silence unmasks the player.

Another feature of the scenario - when hitting a weapon, the damage is not scored up, but the blaster is inactive for 10 seconds.

Since there is only one cartridge in the magazine, it is recommended for players to keep their finger on the blaster reload button and press it immediately after firing.

The round starts on the bases.



Timed end of the game. The team with the highest score wins.

- Zombie Attack. Scenario with "dragging" opponents to your team. The two teams have the same settings, the only difference is in the color of the vest LEDs glow and the blaster shot illumination. All players have a weapon - a Zombie Claw, which has the property, to turn an opponent into an ally after the second impact (weapon damage 50 points with a starting value of health points of 100).

For hitting into the kit of a player from another team, 1 point is awarded for deactivation and, accordingly, 2 points are awarded for capture of a player.

At the start, the player's kit has 10 magazines of 10 cartridges. Auto-recharge is on, but the IR power is lowered - only 40 %.

In order for the player to have a chance to stay in his team, the ability to receive 5 health for steps for each step on the playground is enabled. Therefore, after being "wounded" the player can hide from the one who attacks (the invulnerability time is increased to 5 seconds) and by moving around the arena to restore the stock of health points. Players also need to economically spend ammunition - there is no way to replenish it.

The round starts on the bases.



The condition for completing the game "One team remains" is enabled - the team that repainted all players in its color wins. At the end of the timer game, the winner is determined by points.

If the scenario ends quickly, player can reduce the damage of the weapon to 25 points - then, in order to capture the player, player needs to hit it 4 times.

- Vampire Feud. A team game, which has a distinctive feature: when hitting an opponent, a player both take away points of health from his opponent and add them to himself. The teams have the same settings, except for the color. Weapon - Vampire Bite. Respawn at the bases.

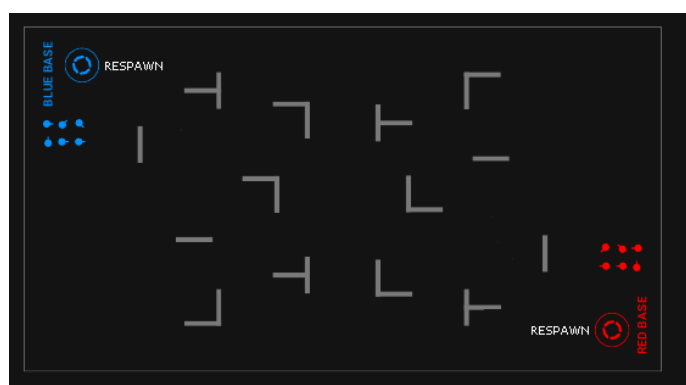
At the start, players have 200 health points. Weapon damage 25. When the opponent hits the kit, the player receives "bonus" health points. Their number is equal to the damage of their own weapons, but the total number cannot exceed the starting number. I.e. if the current number health points of a player equals to 190, then after hitting the opponent, not 25 points are added to the player, but only 10.

Player should also remember about the specifics of the Vampire role - every 5 seconds Vampire automatically loses 2 points of health - it is so-called "thirst for blood".

To add some entourage to the game, every 60 seconds a player has the opportunity to turn on the superpower Ninja for 10 seconds - like a vampire, he turns into fog and becomes invisible for this time.

Ammunition - 30 magazines with 10 cartridges each.

The round starts on the bases.



Timed end of the game. The team with the highest score wins.

- CS: Bomb has been planted. This scenario is primarily intended for use in the SUPERNOVA laser tag bomb game. There are two teams: red - miners and blue - sappers. The task of miners is to plant the bomb and prevent sappers from defusing it. The task of

sappers is to prevent a bomb from being planted, and if it happens, they need to defuse the bomb before it detonates.

The algorithm for setting and defusing the bomb is described in Chapter 9 of this manual.

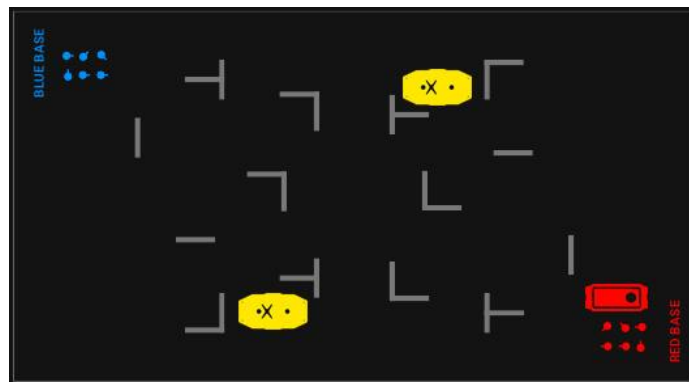
The SUPERNOVA bomb is used as an additional device. It has a clock mechanism installed (time to explosion) - 60 seconds, demining time - 10 seconds.

The round starts at a team's bases.

Points are awarded for hitting a player (1 point), as well as for an explosion and for defusing a bomb (100 points each). The kit settings are standard, they are the same for both teams.

The recovery of health points is not provided - the defeated players leave the arena.

Explosion damage (100 health points) is performed on all players via WI-Fi, so this function is supported only by kits with firmware higher than 3.1.



The game includes three conditions for completing the scenario "Detonate bombs" (1 time), "Defuse bombs" (1 time) and "One team left". The game ends when any of these conditions are met.

- The Tug of war scenario is a classic scenario with a capture of the Domination Box, but in the indoor laser tag entourage.

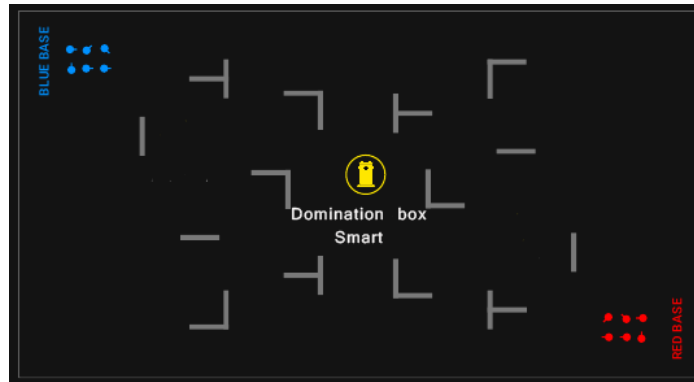
Points in the game are awarded for completing the mission – 100 points and for deactivating the opponent – 1 point. The condition for completing the "Capture of the Domination Box limit (1)" is enabled, that is, at the first capture of Domination Box of one of the teams, the round ends.

There are two teams in the game – red and blue. The settings are team-based, but they are the same for both teams. Players have 100 health points, invulnerability time and shock time – 1 second, the main weapon – Falcon, with damage 25, reloading time – 2 seconds, 100 magazines with 30 cartridges. Auto-reload, friendly fire and endless magazines off, sensor of the second had is on.

Players start from their bases. Approximately in the center of the playground there is a Domination Box operating in the "Tug of war" mode. DB damages 10 points of radiation every 5 seconds.

The team that will be the first to make the final capture of the Domination Box wins.

If necessary, you can add other additional devices to the scenario – SIRIUS or Multistation in the First Aid Kit, Respawn or Base modes located on bases of the teams.



- The "Big Boss" scenario has its own specifics, which makes its use relevant for birthdays or games with elements of quest. There are two teams in the game, but there is only one player in the green team – the Boss, who has an increased maximum number of health points and has the opportunity to respawn. The task of the red team, which includes all the other players, is to "defeat the Boss".

For completing the mission in the game, the winning team receives 100 points, for deactivating the opponent – 1 point, but for hitting an ally the team loses 1 penalty point. The game includes the condition for ending the game "One team left".

For the Red team, which contains most of the players, the settings are more standard: 100 health points, invulnerability time and shock time – 1 second each. Health is replenished through regeneration (1) and health for steps (5), that is, in order not to be disabled, players must constantly move. At least two players on the red team are recommended to be assigned the Medic preset. Weapon damage is reduced to 10 and reload time is increased to 2 seconds. But at the same time, auto-reload and endless magazines are included. The weapon in Falcon mode shoots in burst of 3 cartridges, friendly fire is on.

The "Boss" of the green team, which can be a birthday person, an animator, etc. – has 999 health points and 3 seconds of invulnerability after respawn. Regeneration and health for steps are the same as for the red team, but SIRIUS of the green team working in the appropriate mode can respawn the Boss within an interval of 5 seconds. The weapon of the green team player – RPK, deals damage of 25 points, reloading time – 5 seconds. Auto-reload, friendly fire, and endless magazines are turned off. Only 10 magazines with 250 cartridges and the rate of fire, compared to the standard, is increased to 600.

If necessary, depending on the playground configuration and the total number of players, the number of players of the green team can be increased – 2, 3 and so on.

The start of the round of the green team player – from their base, SIRIUS, the start of the players of the red team – from any place on the platform.






### 11.3.2.2 Custom


On this tab, you can create a new scenario or edit an existing one.

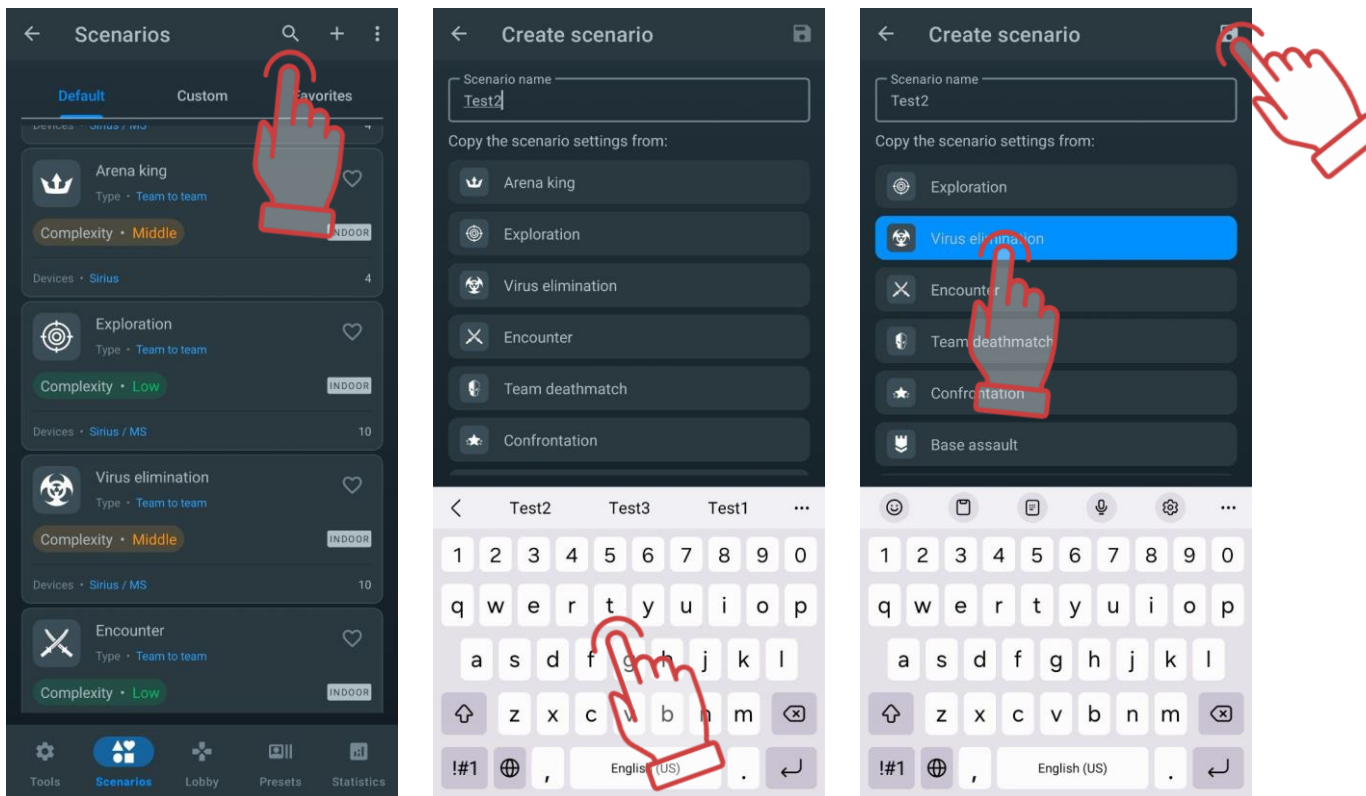
A video tutorial on how to create a custom script and add it to 'Favourites' is available via [link](#) or QR code.



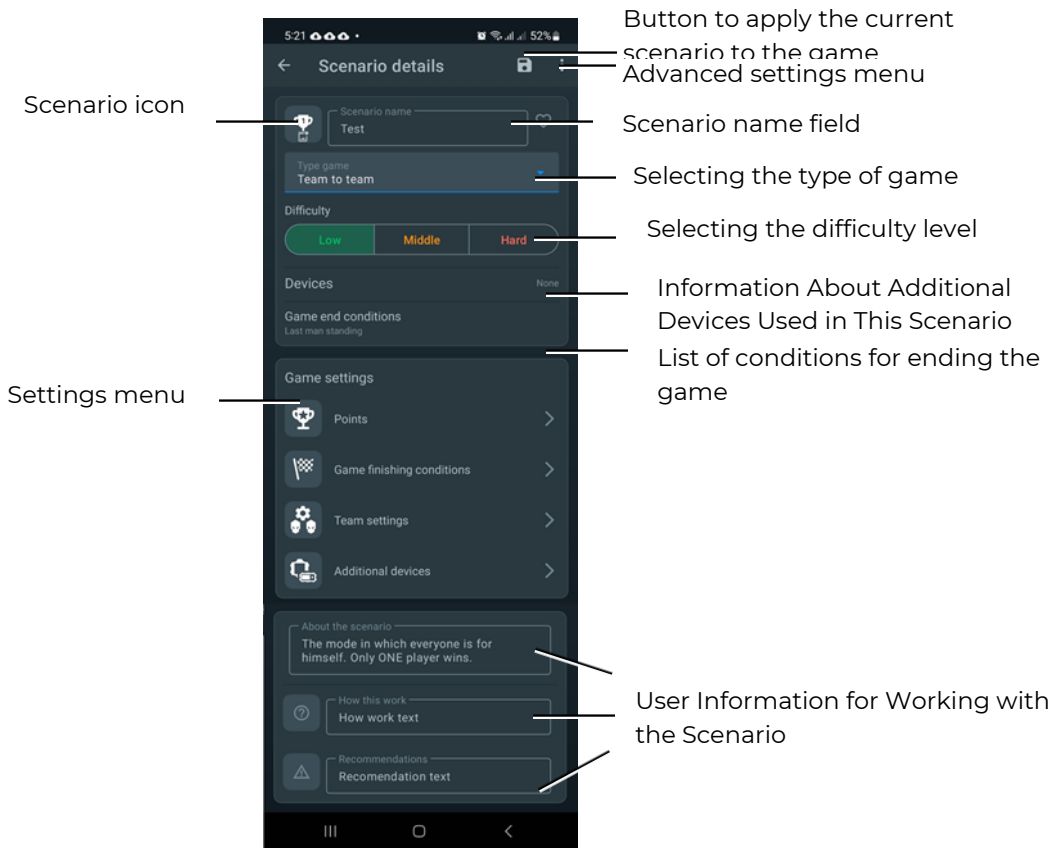
#### 11.3.2.2.1 Create your own scenarios

To create your own scenario, click on the button  located in the upper right corner of the screen.

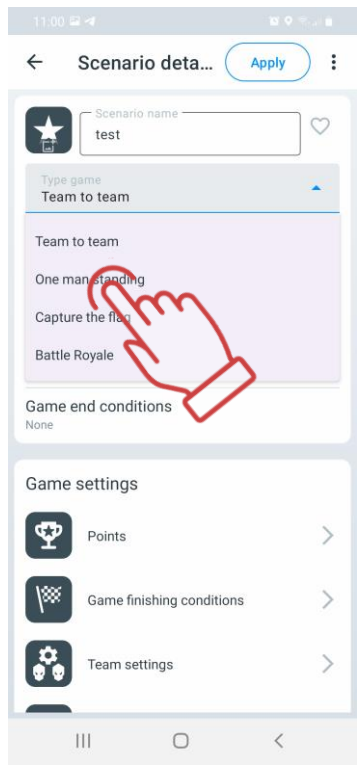
The first step is to enter the name of the new scenario and the second step is to select a template from which to create the new scenario, i.e. to copy the settings from the scenarios currently available in the software. Press the disc button  to continue.



The Scenario Editor window opens.



Here you can select the complexity of the scenario, the type of game (Team to team, one man standing, battle royal, capture the flag), a brief description of the scenario, and the necessary parameters for the equipment and the scenario itself.




The user can also change the scenario icon. To do this, click on the scenario icon and in the window that opens, select the desired icon from the suggested ones and confirm with OK.

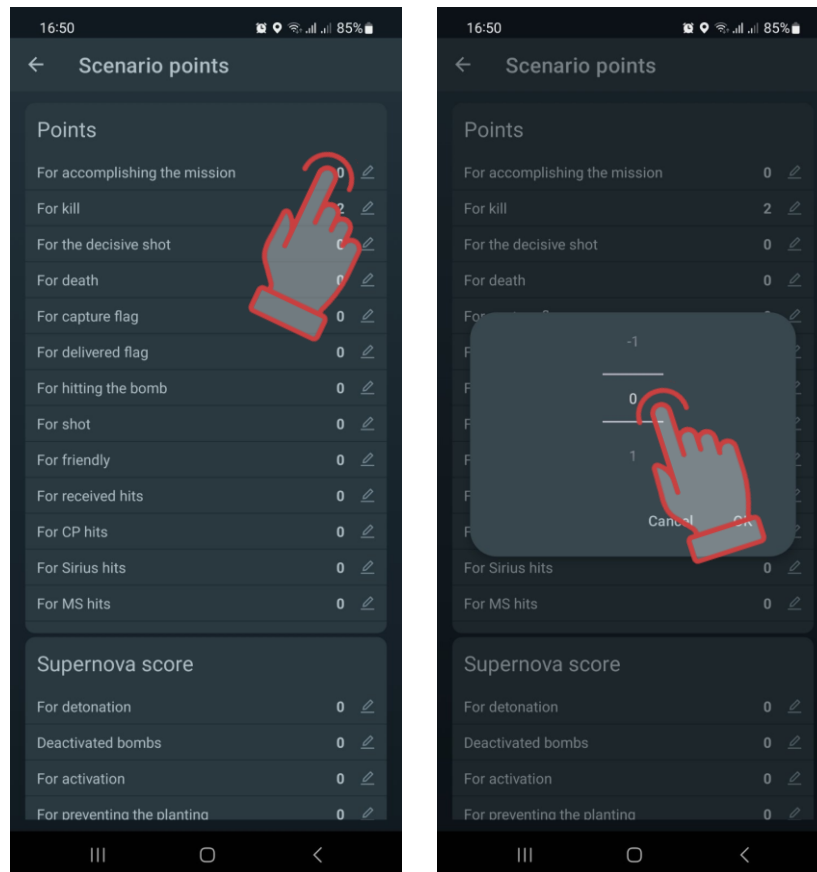
Changes are applied automatically when you exit the scenario settings.

Let's take a closer look at the Game Settings for each of the parameters.

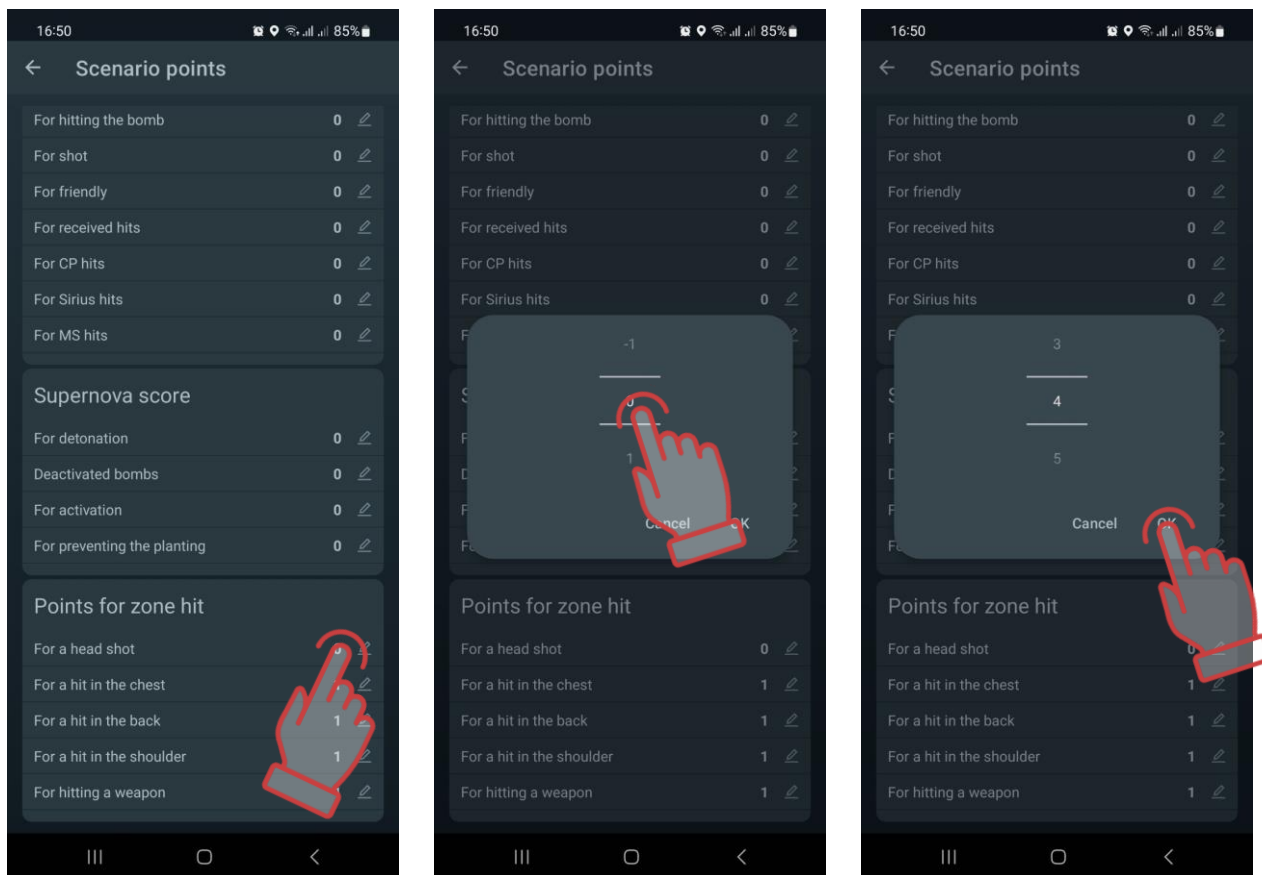
### 11.3.2.2.2 Points

Points: Displays the number of points awarded or deducted for various in-game events such as winning, disabling an opponent, delivering a flag, capturing a control point, etc.

The number of points is already built into the scenario selected as the basis for the new scenario. To change the numerical value, click on the pencil icon  and set the desired value in the window by scrolling vertically or using the numeric keypad (appears when you tap on the number).



If the design and equipment of the kit allows it, you can set differential damage, i.e. the number of points for hitting different zones of the kit - in the back, in the arm, head or chest. The setting is made in the section POINTS FOR ZONE HIT.




### 11.3.2.2.3 Game finishing conditions

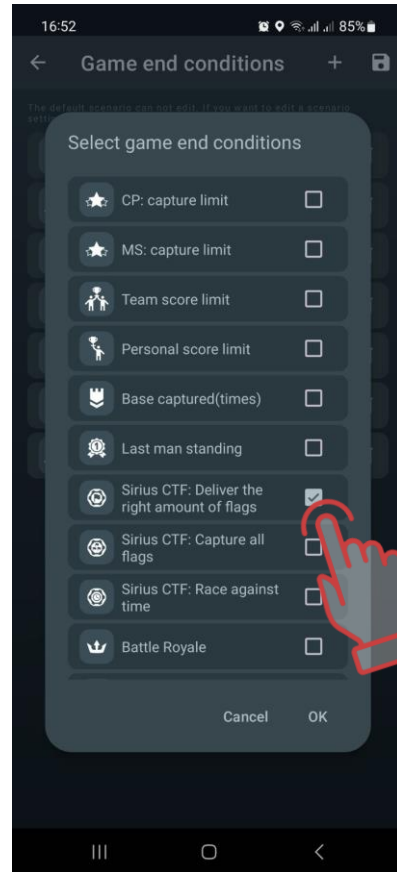
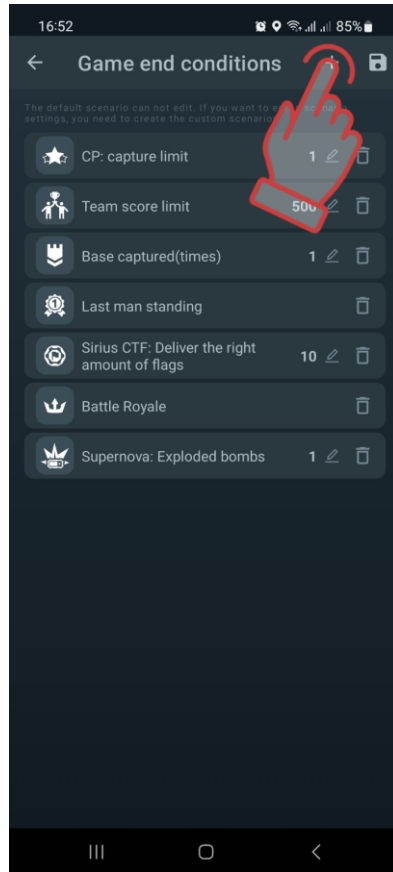
This parameter contains the conditions for the end of the game (scenario). The end conditions can already be added to the scenario selected as the basis for the new scenario.


To learn more about how to set the end of round conditions, watch the video tutorial at the [link](#) or by scanning the QR code.

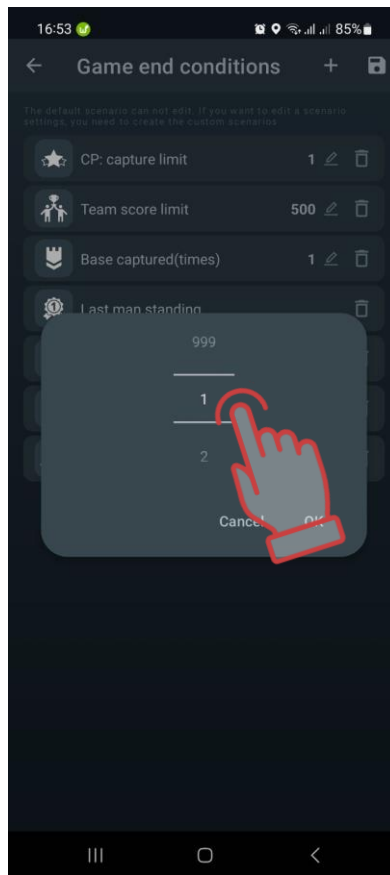
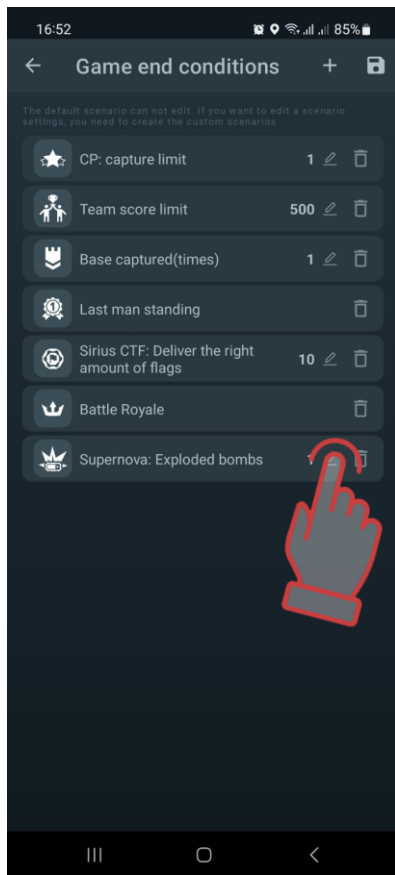


You can add a new ending condition by clicking on the plus button . A window will open allowing you to select the conditions required to complete the game. Click on the OK button to confirm.

You can select several conditions at once - then the game will end if any of the given ones are fulfilled.





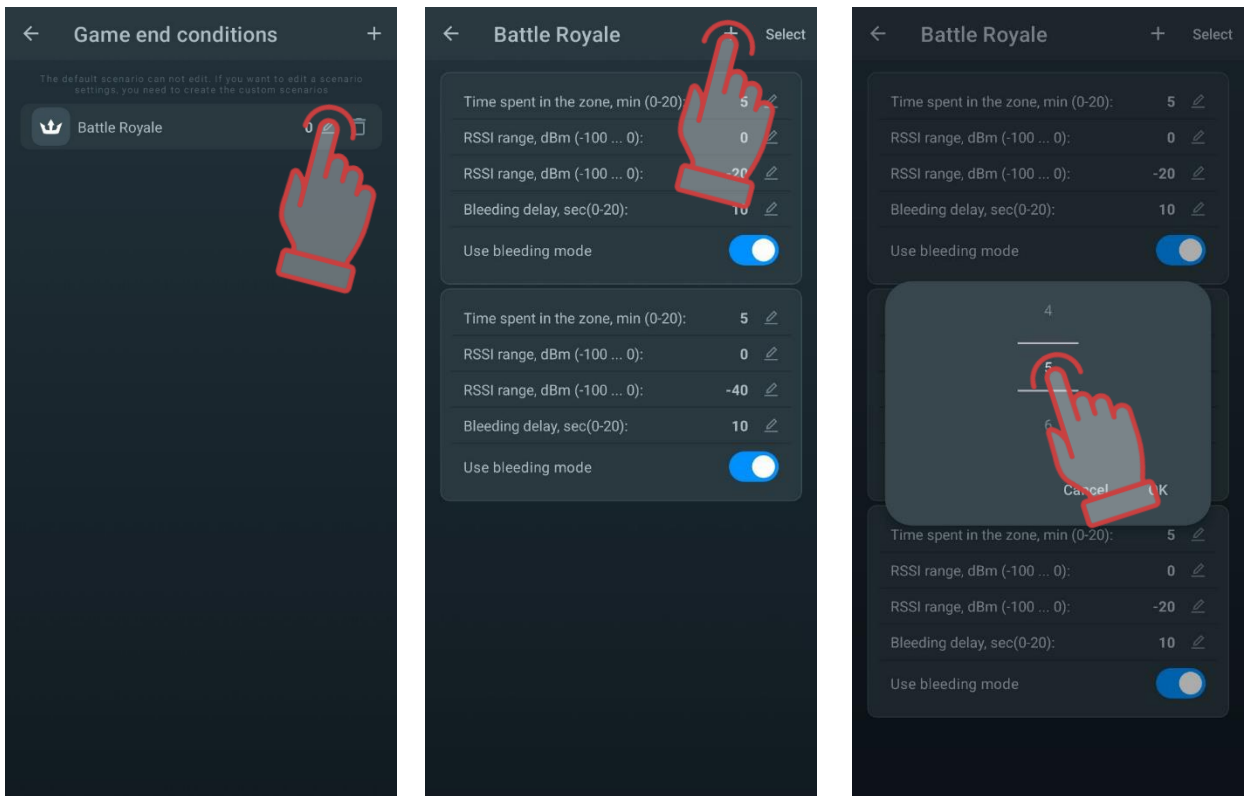
Some conditions have their own parameters, the numerical values of which are displayed to the right of the condition line and can be changed. To do this, click the button  to the right of the name and select the desired value.



The ROYALE BATTLE condition has an advanced setting. This is due to the principles of the game, borrowed from the genre of the same name of computer games: the players are minimally armed and the safe zone in which the players can be is constantly decreasing during the round. The last survivor wins.

The principle of narrowing zones is implemented through RSSI (Received Signal Strength Indication) control, which monitors the strength of the Wi-Fi signal received from the router. At specified intervals, if a player's kit has an RSSI lower than a certain value defined in the scenario, 'bleeding' occurs—a continuous decrease in health points. To stop this process, the player needs to move closer to the router.

Access to the setup mode for this round-ending condition is granted by pressing the button  on the right side of the row. To add the desired number of zones, press the plus button  in the top right corner of the screen.



Three conditions for ending the game relate to a series of CAPTURE THE FLAG (CTF) scenarios: CTF: DELIVER THE RIGHT AMOUNT OF FLAGS, CTF: CAPTURE ALL FLAGS, and CTF: RACE AGAINST THE TIME.

Conditions can be removed by clicking on the trashcan button .

Press the disc button  to save the changes.


#### 11.3.2.4 Team settings

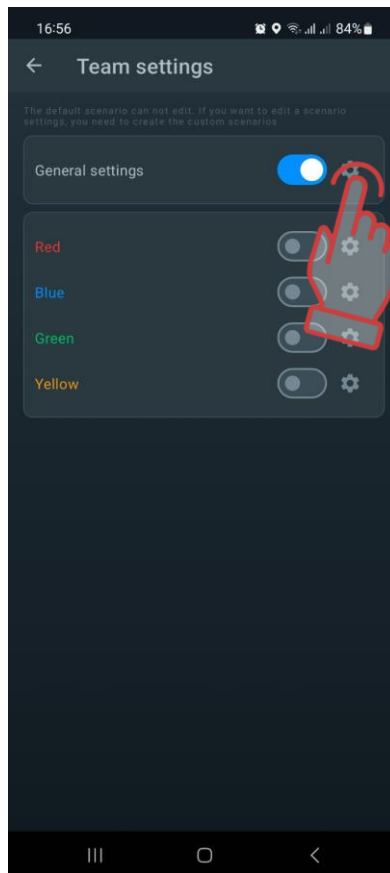
A video tutorial on the process of setting parameters for teams can be viewed in the video tutorial, which can be accessed via a [link](#) or QR code.



In a scenario, kit of players from different teams can have either the same settings or different ones. Common settings for all teams are called by touching the line GENERAL SETTINGS.

On the tab, by moving the slider to the right or simply tapping on it, you can select the number and colors of the teams involved in the scenario.

To access the General Settings menu, click the gear icon  next to its name.



In the window that opens, you can configure over 40 kit parameters.

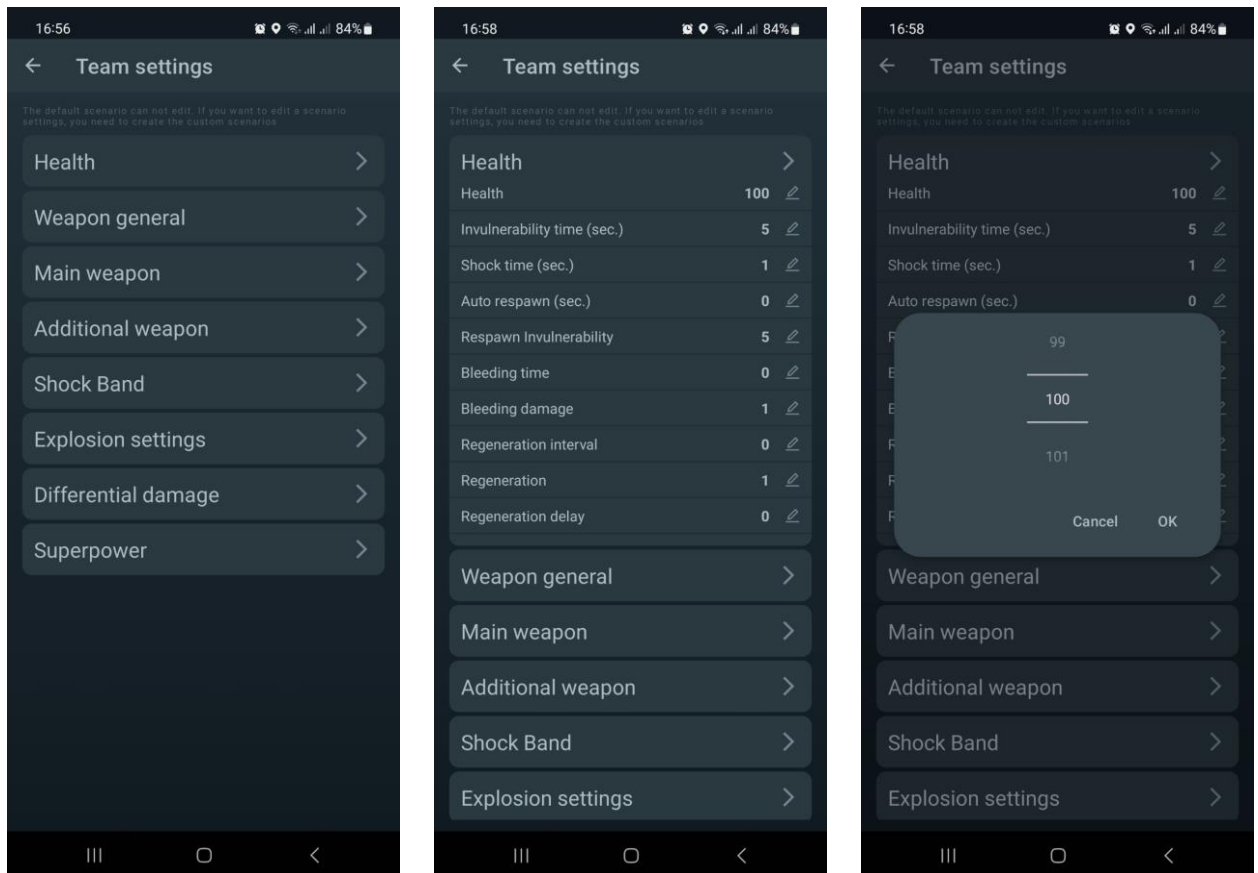
All of them are divided into groups: Health, Weapon General, Main Weapon, Additional Weapon, Explosion Settings, Differential damage, «Superpower».

Each tab expands into sub-tabs by clicking on the line or the arrow next to its name.

The table of configurable parameters is almost the same for general settings as well as for team or individual settings.

To change each specific parameter inside the tabs, you must click on its title - a corresponding window will appear, with the help of which either the change is made, or the switch changes its state.





To collapse a group - Click on the title bar of the group, or on the arrow in the same bar.

To exit the window, click on an arrow in the upper left corner of the window.

Below is a description of the parameters.

#### Section HEALTH:

- Health units - the starting amount of health units (0-999 units).
- Invulnerability time (sec) - the period during which the player cannot be damaged after being hit (0-10 seconds, in increments of 0.1). In this case, the player is prevented from being deactivated by one burst of shots.
- Shock time (sec) - the period of inactivity of the weapon after the opponent's beam hits the kit (0-10 seconds, in increments of 0.1).
- Auto respawn (sec) - the time after which the deactivated player automatically re-enters the game (0-254 seconds, 0 - off).
- Respawn invulnerability - the time during which the kit cannot be hit after the respawn (0-100 seconds). The parameter was introduced to prevent players from being "pinched" on their bases.
- Bleeding time - the frequency with which health units are taken away after exposure to the kit of the opponent's blaster's beam or the Radiation command of additional devices (0-255 seconds, 0-disabled).
- Bleeding damage is the number of health units taken during the bleeding period (1-100 units). I.e. with a bleeding period of 5 seconds and damage of 10, after being included in the kit, the player's health will worsen by 10 units every 5 seconds.

Bleeding can be stopped only after exposure to an accessory operating in the MEDKIT mode.

- Regeneration interval - the frequency of automatic addition of health units (0-100 seconds, 0-disabled).
- Regeneration - the number of health units restored during the regeneration period (1-100 units).
- Regeneration delay - delay time before the start of regeneration (0-100 seconds). Thus, setting, for example, an interval of 2 seconds, a regeneration of 5 points and a delay of 10 seconds, we get the following game situation: a player, having received damage, can hide behind a shelter and after 10 seconds, 5 health units will be automatically added to him every 2 seconds.

#### Section WEAPON GENERAL:

- Cooldown time (sec) - the time after which the blaster resumes firing after the barrel overheats (0-255 seconds).
- Shots till overheat - the number of shots in a continuous burst, after which the BARREL OVERHEATING mode is activated for the blaster and it stops shooting (0-255, 0 - off).
- Auto turn-off (min.) - the period after which the kit will automatically shut down in the absence of any game actions (0-100 min).
- Weapon deactivation (sec.) - the time of inactivity of the weapon after the opponent's beam hits it with the selected parameter DEFEAT WEAPON - Deactivate (0-100 seconds).
- Tager`s hits - selection of the kit's reaction to the hit of the opponent's beam on the sensors of the player's blaster hit (Damage/Ignore/Deactivation). When you select the DAMAGE parameter, the damage is counted in the same way as hitting the sensors of a headband or vest. If you select IGNORE, then hitting the blaster is not counted. The selected parameter DEACTIVATE disables the weapon for the time set in the next parameter - DEACTIVATE WEAPON.
- Recoil - permission to use impulse recoil on the blaster (yes/no).
- Through shot - permission to activate the function of through wound, when, when hitting a headband or a vest, the sensors of these devices hit standing players behind with their IR emitters (yes/no).
- 3D sensor - This feature is currently unavailable and will be introduced in future LTO updates;
- Change firing mode - permission to change the firing mode of a weapon from a single shot to a fixed or endless burst and back (yes/no). The mode change is carried out by double pressing the blaster recharge button with an interval of less than 1 second.
- Capacitive hand sensor - Enables/disables the second hand sensor.
- Friendly fire - permission to turn on the mode when the kit can be hit by the players of their team (yes/no). The parameter is turned on in the games of the "Death match" series, as well as for adding spice to the gameplay of any scenario.  
  
If Friendly Fire is enabled in the settings, all players except Zombies can deal damage to allies. If Friendly Fire is turned off in the settings, only enemies are damaged.

- Aggression stop - parameter that enables recording of sharp blaster movements made by the player (yes/no).
- Aggression sensor sensitivity - the degree of response to sharp blaster movements (0-100%), by default - 0%

Section MAIN WEAPON:

- Enable - permission to use the main weapon in the kit (yes/no).
- Damage - the number of health units that are taken away from the opponent's kit when the player's blaster ray hits it (1-100 units).
- Reload time (sec.) - a pause during which the weapon cannot fire after pressing the reload button on the blaster (0.2-25.4 seconds, in 0.1 increments). As a rule, the value is set close to the reload time of real samples of small arms.
- Number of magazines - the numerical value of the number of magazines given to the player (1-255).
- Bullets in a magazine is the value of the magazine capacity at the start or after reloading (1-999). May correspond to the number of cartridges in the magazine of real weapon.
- Number of Shots in a burst - the number of shots fired by the blaster after the trigger is pressed in the FIXED BURST mode (1-255).
- Fire rate - the frequency of rounds per minute, with which the blaster shoots when the trigger is pressed, if the weapon provides for and automatic firing is allowed (1-999). The optimal value for small arms is 565 rounds per minute.
- IR strength (%) - the percentage of IR-radiation power when the blaster shoots (1-100%). The range of the shot and the active spot depend on the power. It also affects the ricochet from walls and obstacles on the playground. In sunny weather, in an open area, it is recommended to set the power of the IR-beam to a high level, when using kits in arenas, 20-40% is enough.
- Damage type - the type of virtual weapon that is selected when configuring the player's kit presets. (Falcon/ Automative/ Grenade/ Sniper/ Pistol/ Healing/ / Rpk/ Radiation). When choosing a type of damage, the following parameters are automatically set by default for this particular type of weapon. But each of them can be changed later. Only the icon on the blaster screen and the sound reproduced by the blaster speaker when fired remain unchanged.

FALCON, AUTOMATIVE, SNIPER, PISTOL and RPK actually differ only in the amount of damage, rate of fire, power of the IR-beam and ammunition.

The GRENADE type (underbarrel grenade launcher) allows you to "explode the player" when, after hitting the player, the sensors of his kit, with their emitters, affect the nearby players of their team.

The type HEALING (Medkit) does not take away, but adds units of health when it hits the player. However, this does not apply to players with the ZOMBIE and VAMPIRE presets - the opposite effect is performed on them.

Starting with LTO 3.3.4, the Zombie and Vampire damage types are available in the preset settings (for more information, see 11.3.4.2.1.1).

The specificity of the damage RADIATION is that it takes away units of health from all players, and heals players in the roles of Zombies and Vampires.

! To change weapons, you must hold down the reload button for about 3 seconds until the sound signal starts to play.

- Firing mode - selection of default firing mode - single shots, shot burst (short shot burst), automatic (for more details see 11.3.2.2.4.1).
- Autoreload - permission to automatically reload the weapon magazine without pressing the corresponding blaster button (yes/no). A useful feature for children's scenarios.
- Infinite magazines - a parameter that removes the limitation in the starting number of magazines with cartridges (yes/no). Most often used in games with young children who have difficulty using the Recharge button.

Section ADDITIONAL WEAPON:

The parameters are the same as in the Main weapon section. To activate it, you also need to allow it to be used in the Enabled parameter.

EXPLOSION SETTING section

- The explosion IR power (%) is actually the power of the IR-pulse emitted by the sensors of the headband or vest when receiving damage with the Grenade type (0-100%). The radius of damage when the player explodes depends on this value.
- Explosion wave length is a parameter that determines the repeatability of the explosion wave (1-16). When the value is 1, the blast wave affects only those players who are in the zone of influence of the headband emitters of the player hit by the grenade. With a value of 2, players hit by the blast wave hit the next players with their emitters, if they are in the zone of their radiation, etc.
- Explosion - permission to use the function, when after hitting a player with a beam with the Grenade type of damage, his kit with emitters built into the sensors, hits the nearby players of his team (yes/no).

Section Differentiated Damage

- Chest (0-300%, 0 – the parameter is disabled).
- Back (0-300%, 0 – the parameter is disabled).
- Shoulder (0-300%, 0 – the parameter is disabled).
- Weapon (0-300%, 0 - the parameter is disabled)


- coefficients by which the received damage in a certain zone is multiplied. For example, if the selected value of differential damage is 50% in the back and the beam hits this zone with 90 units of damage, the actual damage will be 45. But at 300% the same hit will deal damage of 270 health units.

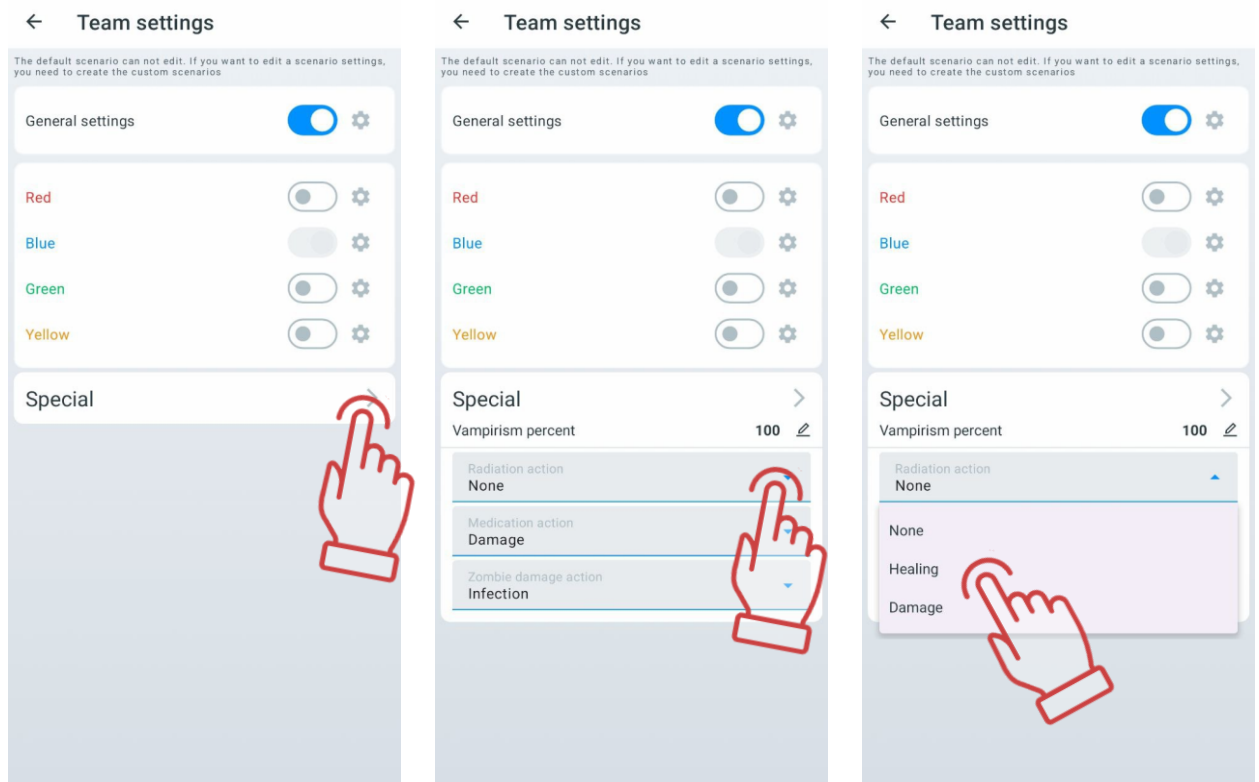
Section SUPERPOWER:

- Activation time (sec) - the time of clamping the capacitive sensor on the frontal hit sensor of the vest to activate the superpower (1-10 seconds).
- Activity time (sec) - the period during which the kit uses the super ability after its activation (1-99 seconds).
- Recovery time (sec) is the pause between the last use of the superpower and the next opportunity to turn it on (1-999 seconds).
- Type superpower - the choice of a temporary improvement in the functionality of the kit (Random/Ninja/Healer/Force shield/Bomber man/Super damage/Off). When choosing the type Random, the superpowers are given to the player randomly throughout the round. For more details see Ch. 2 of this manual

Starting from LTO version 3.3.4 and higher, the "Special" menu is now located under the "Team Settings" tab.

The "Special" menu includes settings for radiation effects, healing, damage from zombies, and vampirism percentage.

By clicking the arrow button  next to the "Special" menu, the following configuration parameters become available:



- Vampirism percent - Determines what percentage of health a participant restores from the damage they inflict on an opponent.
- Radiation action - (None/Healing/Damage) Allows changing the impact on participants' health within the radiation zone. For players with the "Vampire" or "Zombie" presets, healing causes damage, while damage heals. For all other presets, the opposite applies: healing restores health, and damage decreases it.
- Medication action – Determines the effect of a medkit on various participants:
  - None – The medkit has no effect on participants.
  - Healing – When a medkit hits a player, health points are added to all players except those with the "Zombie" or "Vampire" presets; for them, the effect is reversed.
  - Damage – The opposite of the healing effect.
- Zombie Damage action – Determines the consequences when a player takes damage from a zombie. The following options are available:

- Infection – When a zombie hits a player, the player transforms into a zombie and joins the zombie team.
- Change Team – When a zombie hits a player, the player only changes teams without turning into a zombie.
- Off – A zombie kills a player after two hits.

#### 11.3.2.2.4.1 Weapon Firing Mode Change

Attention: The weapon firing mode change feature is available for tagers with firmware version 3\_13\_5B94C698 or higher. To update the tager firmware to version 3\_13\_5B94C698 or higher, contact technical support. The current technical support contacts are listed on the company's website at: <https://lasertag.net/support>. You can use a QR code for quick access to the website.

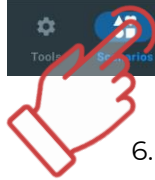
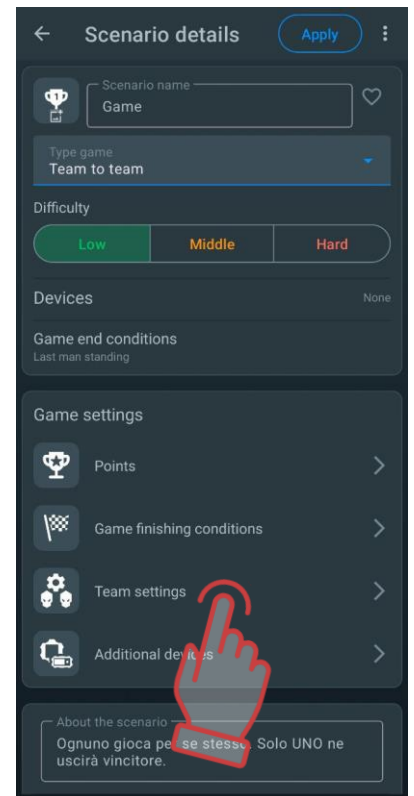
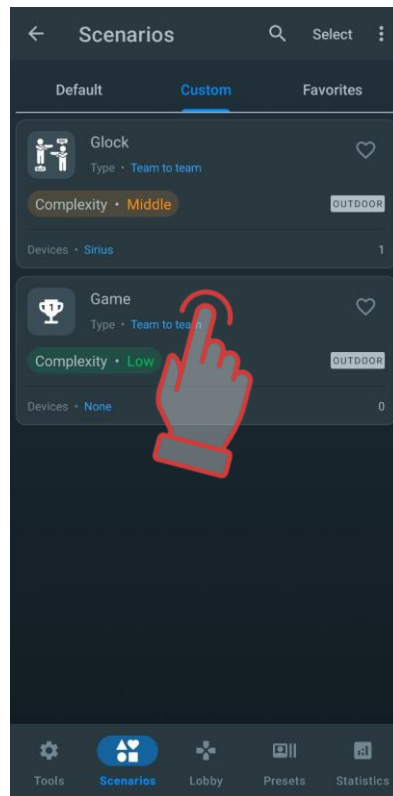
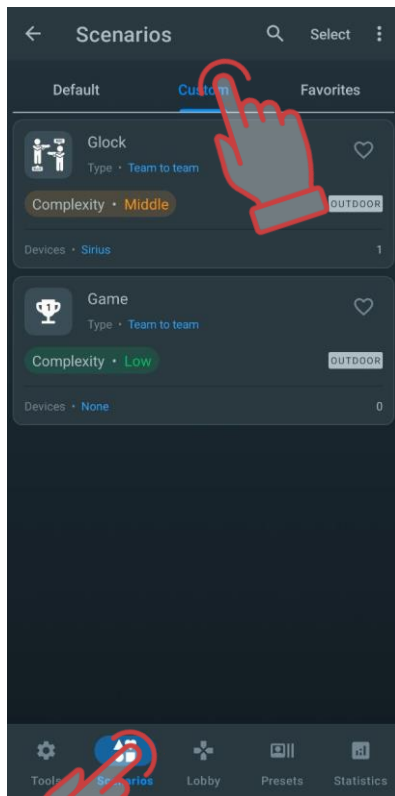



In the current version of the application, three firing modes are available:

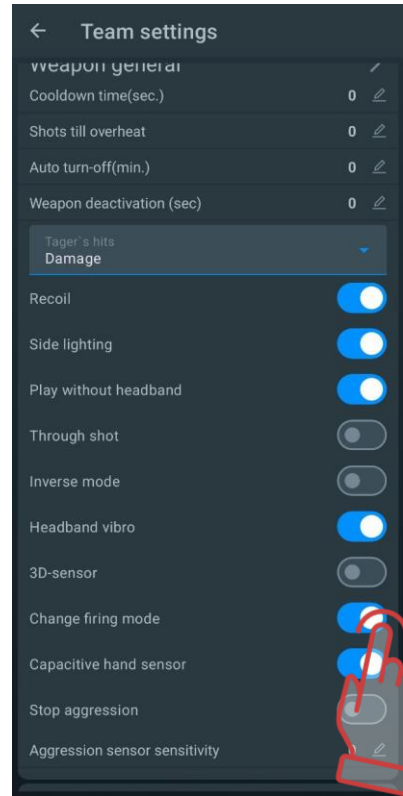
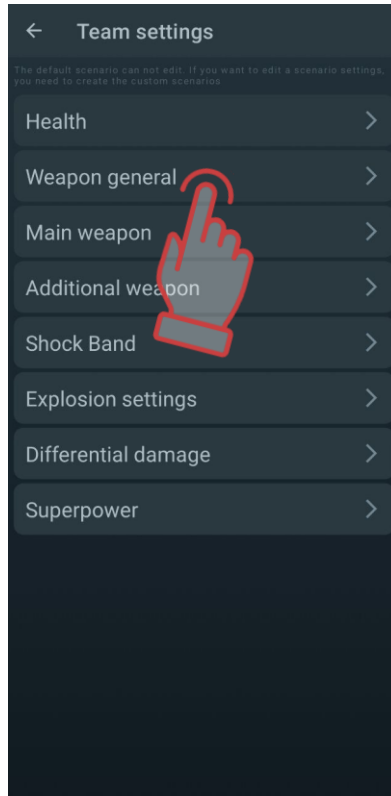
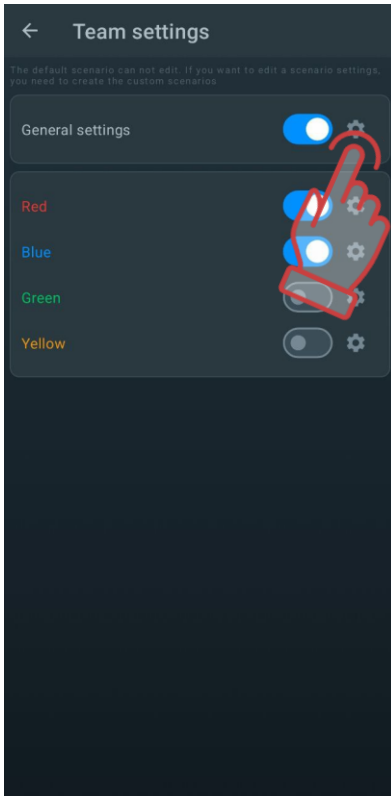
- "Automatic";
- "Single" – single shot firing;
- "Shot burst" – firing in bursts of 3 shots.

To enable the option to change the firing mode using the "Reload" button during gameplay, follow these steps:

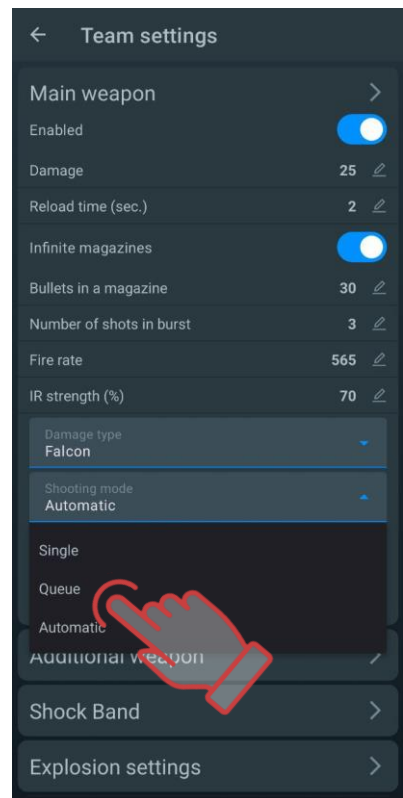
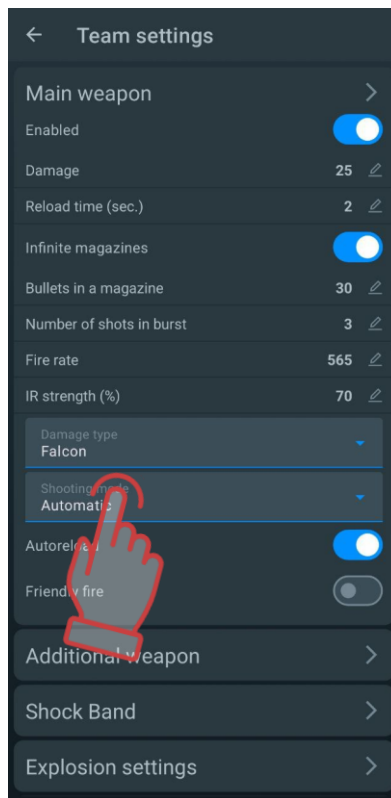
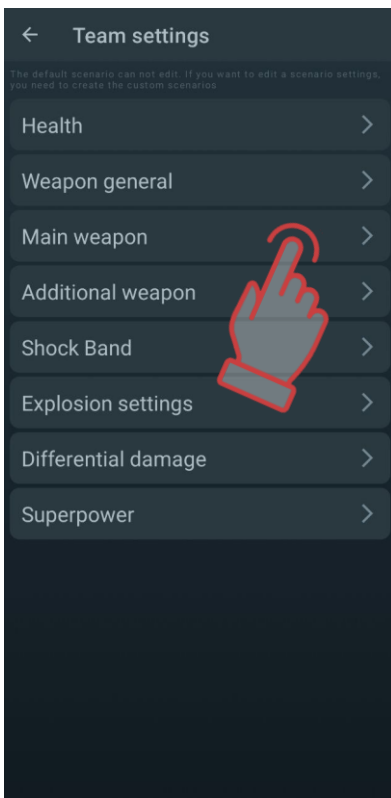
1. Open the "Lasertag Operator" application.
2. Go to the "Scenarios" menu.
3. Open the "Custom" tab.
4. Select the required scenario from the list by clicking on its name or create a new one. The process of creating a scenario is described in section 11.3.2.2.1.
5. After opening the scenario settings, select "Team Settings." You can change the settings for all players at once (in the "General Settings" section) or for individual teams participating in the game.



6. Click on the gear icon  next to the selected team or general settings.
7. In the opened menu, select " Weapon General".
8. Find the "Change firing Mode" parameter and activate it by moving the slider to the right.




9. Then go to the "Main Weapon" section and select the initial firing mode from the drop-down list.
10. Similarly, select the initial firing mode from the drop-down list in the "Additional Weapon" section.





If the "Change firing Mode" parameter in the "Weapon General" menu is disabled, the player will not be able to change the firing mode using the reload button. In this case, the firing mode set in the "Main Weapon" and "Additional Weapon" settings will be used.

The feature is similarly customized for individual players after adding players to teams - by clicking on the icon  in the individual player settings.

### 11.3.2.2.5 Additional devices

This option allows you to add additional devices to the game (Sirius, MS (MULTI STATION), DB Smart, Supernova (Bomb Supernova)) and change their settings.

To add a SMART Domination Box, SIRIUS, Multistation or laser tag bomb Supernova to a scenario, go to the ADDITIONAL DEVICES tab and click on the corresponding button at the bottom of the window.


A video tutorial on how to add and configure a Sirius station to a scenario is available by clicking [here](#) or by scanning the QR code.

A video tutorial on how to add and configure a SMART control point in a scenario is available by following the [link](#) or scanning the QR code.

A video tutorial on how to add and configure a SUPERNOVA bomb in a scenario is available by following the [link](#) or by scanning the QR code.

To do this, go to the Additional Devices tab and click on the plus button  located at the bottom of the additional device icon.

The number of each device is limited to 15 units, but this is quite enough to implement the most complex scenario.

The added devices will appear in the window. To remove them, click the trashcan button  to the right of the added device name; to set them up, click the tile.

In the window that appears, depending on the device being configured, you can change the device ID number, adjust the IR beam power of the emitters, set the volume of the sounds played (for Control Point Smart and MULTI STATION), select the team color with which the additional device will interact (for Sirius and MULTI STATION), and set the required game mode for the device.

To select a mode, click on the tile and select the desired game mode from the drop-down list.

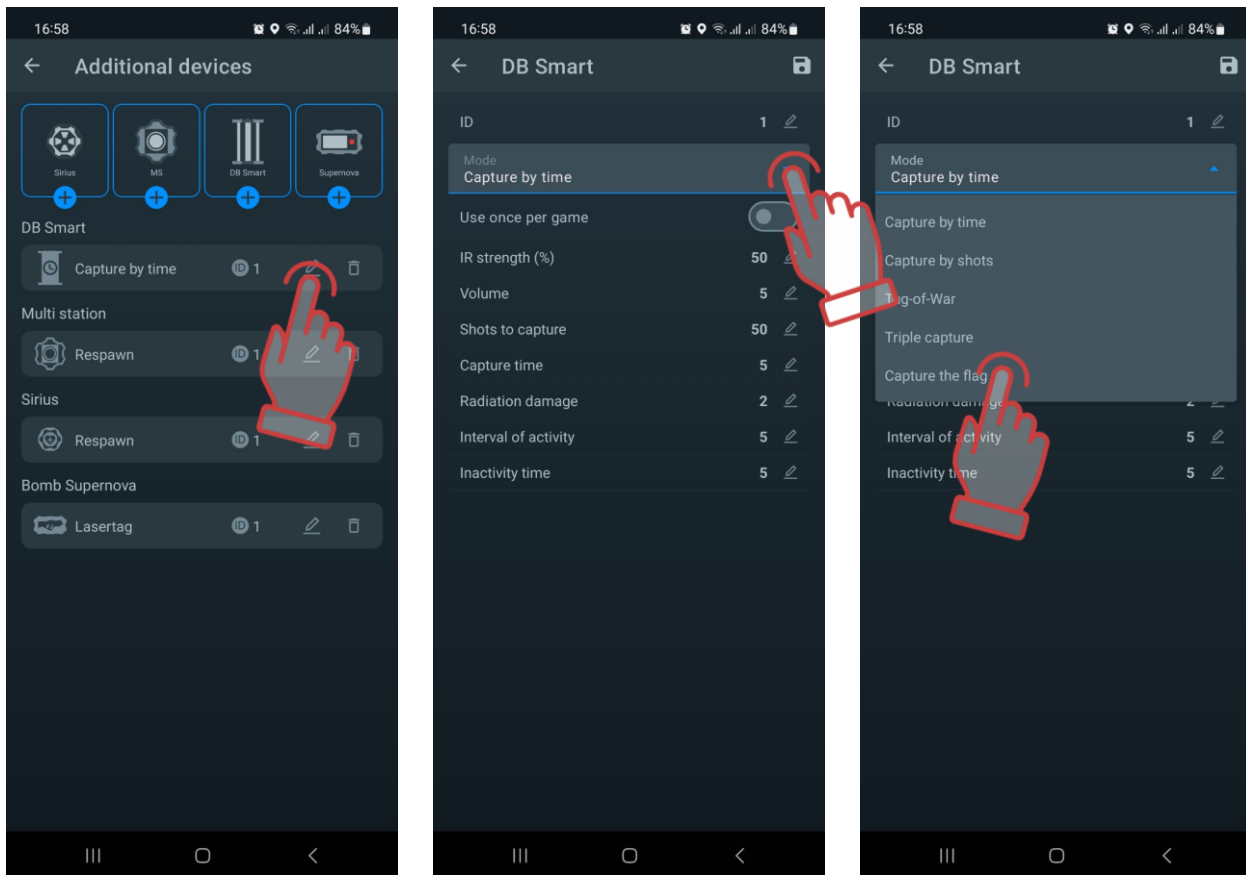
For each of the modes there is an individual setting for both numerical values (damage for deactivation, interval of activity, time of inactivity, etc.), and the ability to affect all or certain teams.

Deactivation damage is the amount of damage that must be dealt by shots to the device to deactivate it (1-254).

The interval of activity is the interval after which the device produces some effect on the players (1-254 s.).



Inactivity time is the time it will take for the device to renew its effect on players after it has been deactivated (1-254 s.).





The SMART domination box is configurable to one of five available modes:

- CAPTURE BY TIME - the classic mode, in which the device controls the holding time of the point of each of the teams. The indication in all columns is the same. Up to 4 teams can participate.
- CAPTURE BY SHOTS - capture occurs by the number of shots fired by players into the DB receiver. In game, only from 2 to 4 teams are allowed to participate.
- TUG-OF-WAR is a capture by time, but the indication shows the percentage balance of the hold. 2 teams are participating.
- TRIPLE CAPTURE is also a capture by time, in which the degree of capture is displayed for each of the teams in different indicator columns. 2-3 teams can participate.
- CAPTURE THE FLAG - a mode for 2 teams, in which the capture occurs according to the number of hits in the receiver of the device. The indication is made according to the following principle - one team raises the LED column with shots, and the second tries to lower it.



To confirm the settings, press the disc button , to cancel the changes, press the button  to return to the previous page.

The SIRIUS station can be used in eight modes:

- RESPAWN - during its activity, the station restores the starting value of health and ammunition units of deactivated players, as well as the starting type and firing

mode of the weapon. When impacting on a player who still has health units, only the last clip and only the main weapon are replenished.



- RADIATION MODE - the station at regular intervals reduces the supply of units of health for ordinary players, and in the roles of Zombie and Vampire, it increases.
- MEDKIT - the device periodically replenishes the players' health units (but no more than the value at the start of the game). Another function is to stop "bleeding" in kits that have this parameter enabled by software. It worsens health for Zombie or Vampire.
- RANDOM - when activated, one of the three game commands is distributed in random order: Double lives, Arsenal or Radiation.
- BASE - when triggered, the device sends out two game commands at once - Respawn for its players and Radiation for opponents.
- ARSENAL - the device adds to the player the number of cartridges or clips set in the application (but not more than the starting value).
- BONUS MODE - after firing a shot at the device, all kits within the range of influence of the SIRIUS IR-emitters double their health units (up to 999 units). There is no automatic distribution.
- FLAG is a new mode that allows you to play "Capture the Flag" (CTF) scenarios. During the game, SIRIUS generates virtual flags which players of the opposing team can capture by shooting several times at the device. After receiving confirmation of the capture, the player becomes a flag carrier, and then he must fetch the flag to his base. To surrender the flag, the flag carrier must also fire at his SIRIUS before receiving the FLAG ACCEPTED confirmation.

To confirm the settings, press the disc button , to cancel the changes, press the button  to return to the previous page.

The MULTI STATION in scenarios can operate in seven game modes. The functions of the device in the modes MEDKIT, ARSENAL, RADIATION, BASE and RESPAWN are similar to the functions of the same modes in the SIRIUS station.

Besides, Multistation has two more game modes:

- DOM BOX capture is an analogue of the Domination box, but with its own specifics. The capture is made by shots, and points are awarded for holding the box.
- MS: BOMB - the mode allows to conduct scenarios reminiscent of an episode of the PC game "Counter-Strike", namely, "Laying the bomb". Initially, the players are divided into two teams - miners, who plant a bomb with shots at the device and sappers who must defuse it.

To confirm the settings, press the disc button , to cancel the changes, press the button  to return to the previous page.

Bomb Supernova can be used in the following modes: laser tag or paintball. The "paintball" mode does not provide for confirming the activity of the player's kit with a shot from a blaster before planting and demining a bomb. Also, there is no need to start with the Remote Control button - after its turning on, the bomb is ready to be installed on the platform.

The Bomb Supernova also has its own settings:



Damage - the number of health points taken from players of all teams when a bomb explodes.

Bomb defusal time (sec) - holding time of the control button to deactivate the bomb.


Clock mechanism (sec) (10-600 s) - the time during which the sapper team needs to deactivate (clear) the bomb after it was activated by the miners team.

Miners install the device - you can choose the color of the team that plants the bomb.

Sappers defuse the device - select the colour of the team that will defuse the bomb.

To confirm the settings, press the disc button , to cancel the changes, press the button  to return to the previous page.

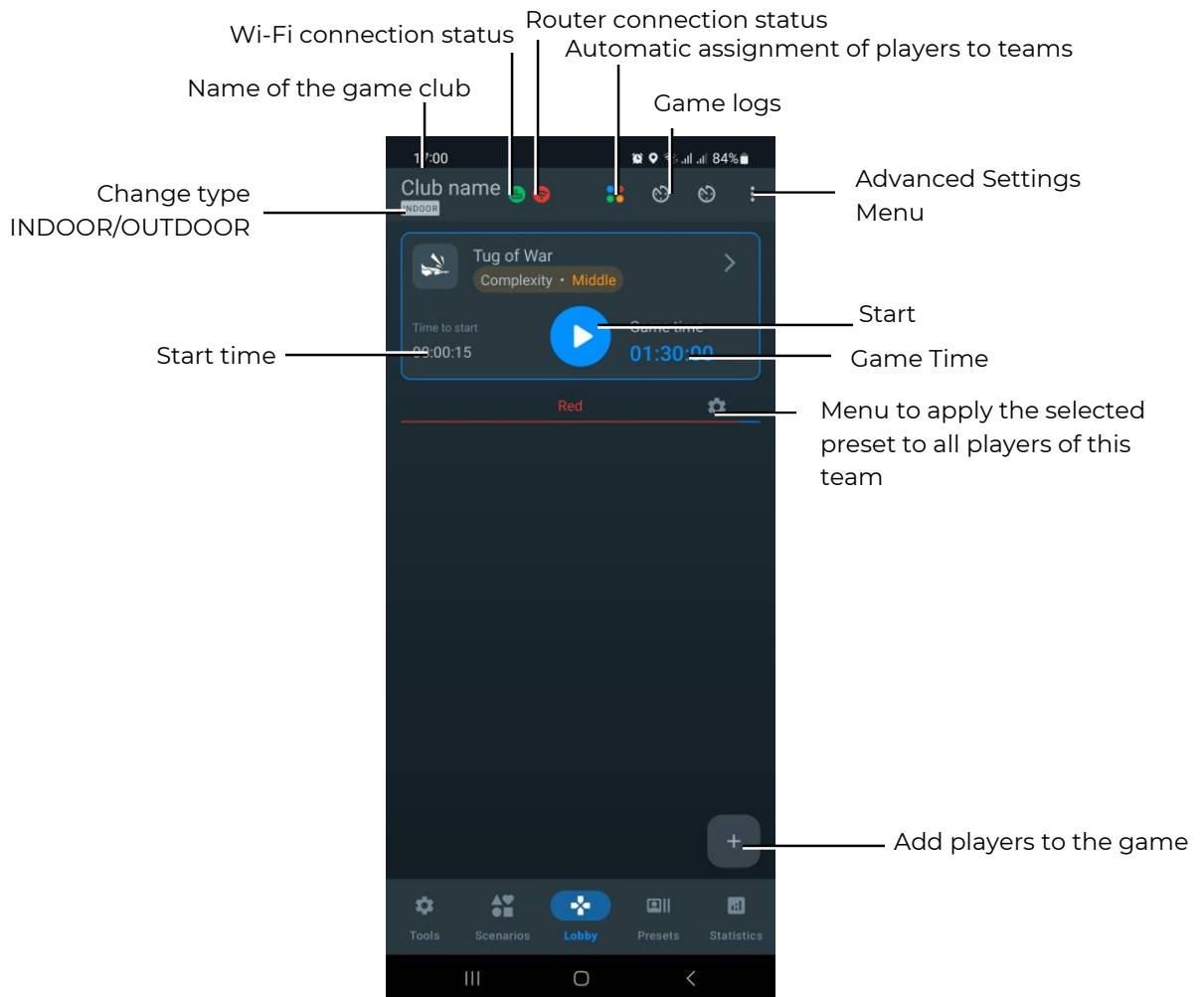
### 11.3.2.3 Favorites

The Favourites tab allows you to quickly find and easily manage your favourite scripts, as it is designed to store your favourite or most used scripts. Each time you click the heart icon  next to a scenario's name, it is automatically added to this tab.

You can add both standard and custom scenarios to your Favourites.

### 11.3.3 Lobby tab

The Lobby is the most visited place in the LTO mobile app. This tab is used to add players to the game, assign a team colour, view current game statistics and start the game. The main elements of the window are shown in the image below.



### 11.3.3.1 Changing the type of equipment

The LTO application automatically recognizes the type of connected equipment and sets the corresponding operating mode: OUTDOOR or INDOOR. It is recommended not to connect two types of equipment simultaneously, as some functions may not work correctly.

### 11.3.3.2 Wi-Fi network connection status

There are two statuses of the Wi-Fi connection:

- green 📶 - the signal is stable;
- red 🛑 - the signal is not stable or the game participants are far from the Wi-Fi network.

For the devices to work properly, it is important that the Wi-Fi indicator is green during the game.


### 11.3.3.3 Router connection status

There are two statuses of the router connection:

- green 🟢 - the router is connected to the correct network;
- red 🛑 - the router is connected to the wrong network.

If the icon is red, you need to change the selected network to the network specified in.11.1.

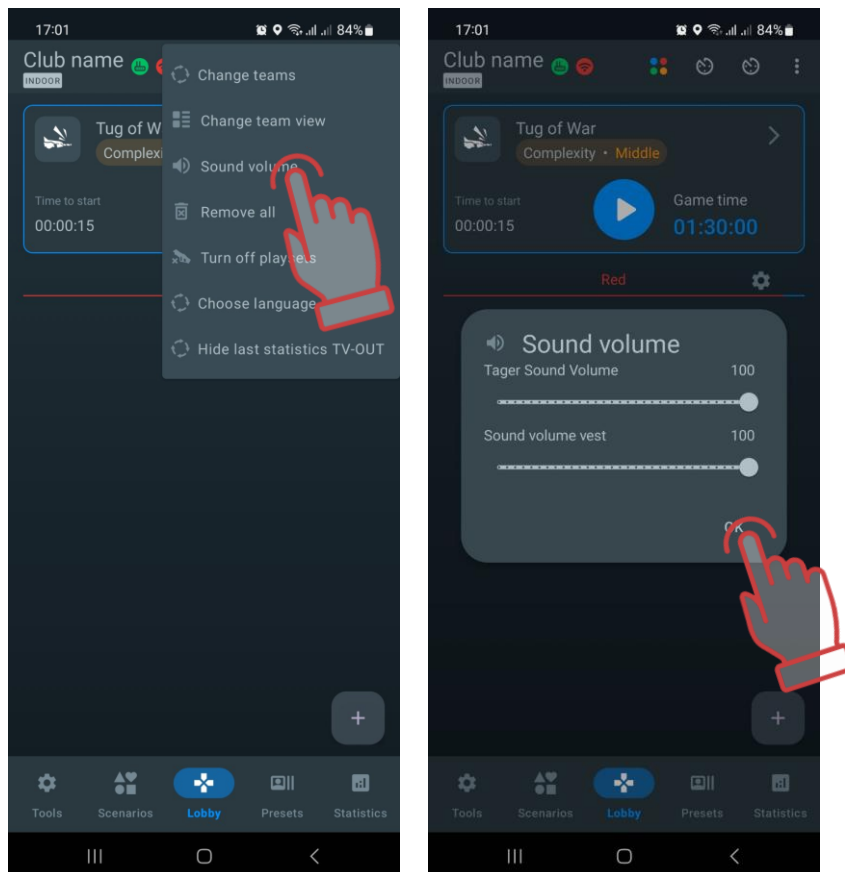
### 11.3.3.4 Advanced settings Menu

Pressing the three-dot button  opens an additional menu containing the following items:

- Change teams - allows you to change teams;
- Change team view - allows you to change the display type of the player's card (table or tile);
- Sound volume - allows you to change the volume on the main device (blaster);
- Remove all - allows you to delete all players that have been added;
- Turn off playsets - allows you to turn off all game kits.
- Hide last Tv-Out statistics - allows you to hide the latest Lasertag Tv-Out statistics.

To select an item, tap the name of the desired item.

In some menu items, after selection, a pop-up window appears. Here you should select the options and click the OK button to confirm your choice.

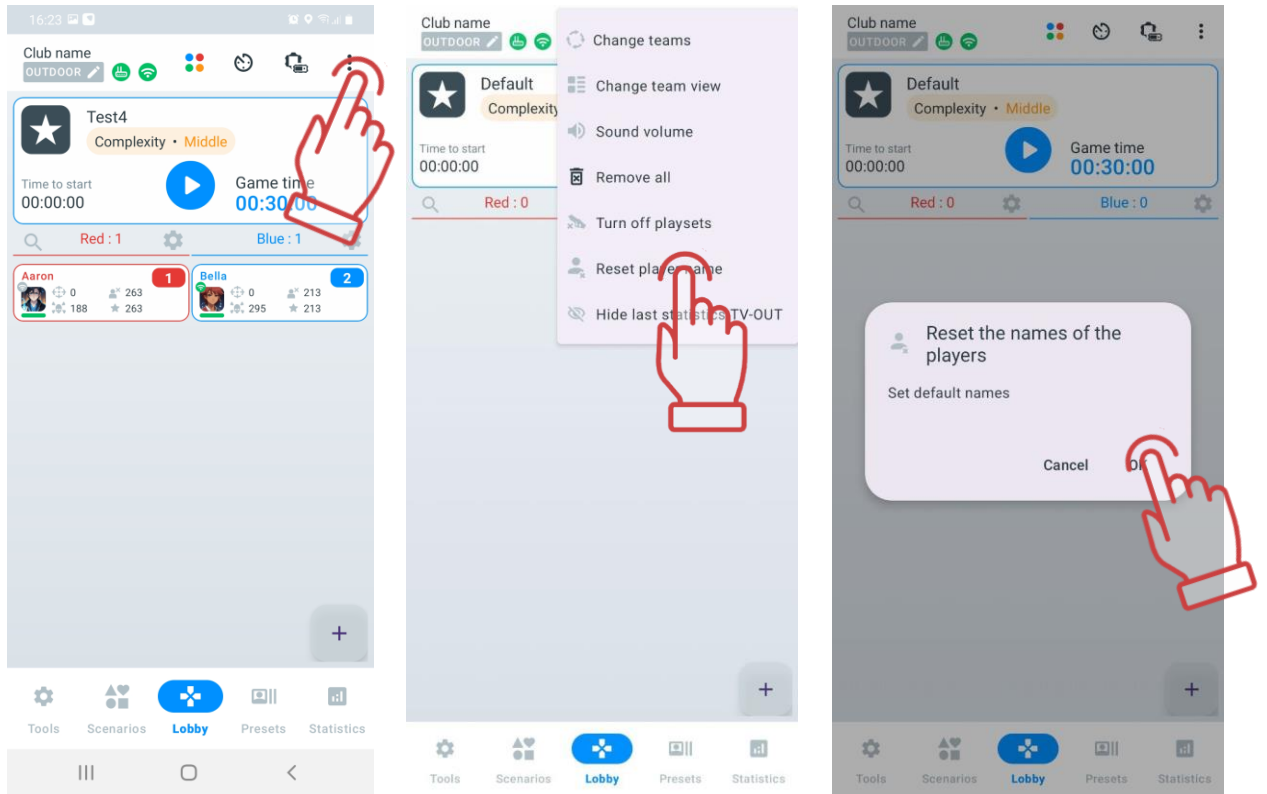


#### 11.3.3.4.1 Resetting Player Names in the "Lobby"

To reset all custom names assigned through the player card to the default theme values, follow these steps:

- 1 In the "Lobby," click the button  in the upper right corner of the screen.

- 2 In the options list, select "Reset Player Names."
- 3 Confirm the action in the pop-up window by clicking "OK."





After resetting, player names will revert to the default settings of the custom themes in the "Personalization of Players" menu, while the avatar will remain unchanged.

### 11.3.3.5 Game Log Filter

Starting from version LTO 3.2.0.a5ff03f7d, a new feature has been added – the game event (log) filter.

As a result, the option to enable/disable detailed game logging in the "Options" section of the "Settings" tab is no longer available.

Instead, a quick access button for configuring game events  is now available in the "Lobby." Here, the user can not only enable or disable the display of events but also configure their display separately.

To enter the event display settings menu, click the button  located in the upper-right corner.

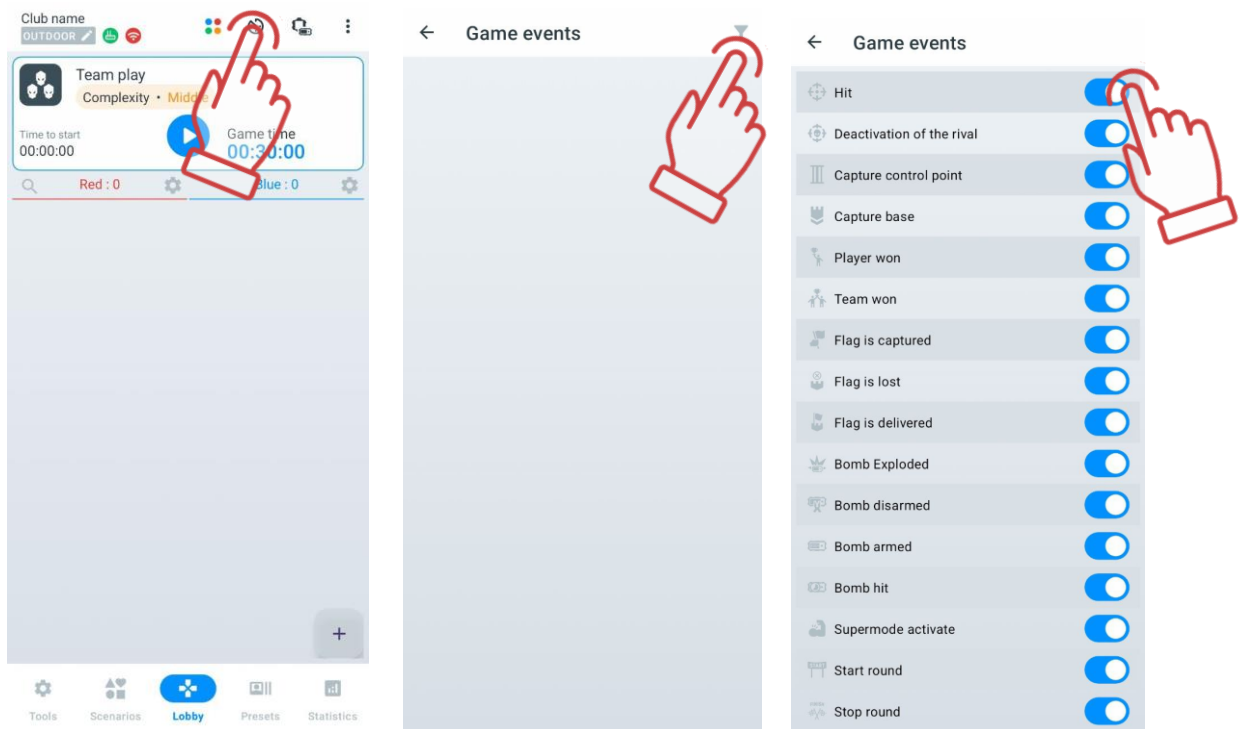
By default, the display of all events is enabled. The filter is applied simultaneously to both LTO and Lasertag Tv-Out.



The list of game events that can be enabled or disabled is as follows:

- Hit;
- Deactivation of the rival;
- Capture control point;
- Capture base;

- Player won;
- Team won;
- Flag is captured;
- Flag is lost;
- Flag is delivered;
- Bomb Exploded;
- Bomb disarmed;
- Bomb armed;
- Bomb hit;
- Supermode activate.

In addition to the listed events, you can also enable or disable notifications for the start (Start Round) and end (Stop Round) of a round.



The switch, located to the right of the event name, allows you to enable (state ) or disable (state ) any logs from the list individually.

According to these settings, events received from the server will be displayed on the Lasertag Tv-Out screen during the game based on the active filter. If the filter is changed after events have been displayed on the screen, the log will be displayed according to the new settings when the log packet is resent.

It is important to note that the full list of events is stored in the LTO logs (\*Settings => File Explorer => Logs\*), regardless of any changes made to the filters during the game.

### 11.3.3.6 Setting the game start timer and game time

Video on how to set game and pre-start timer is available by clicking this [link](#) or via QR code.





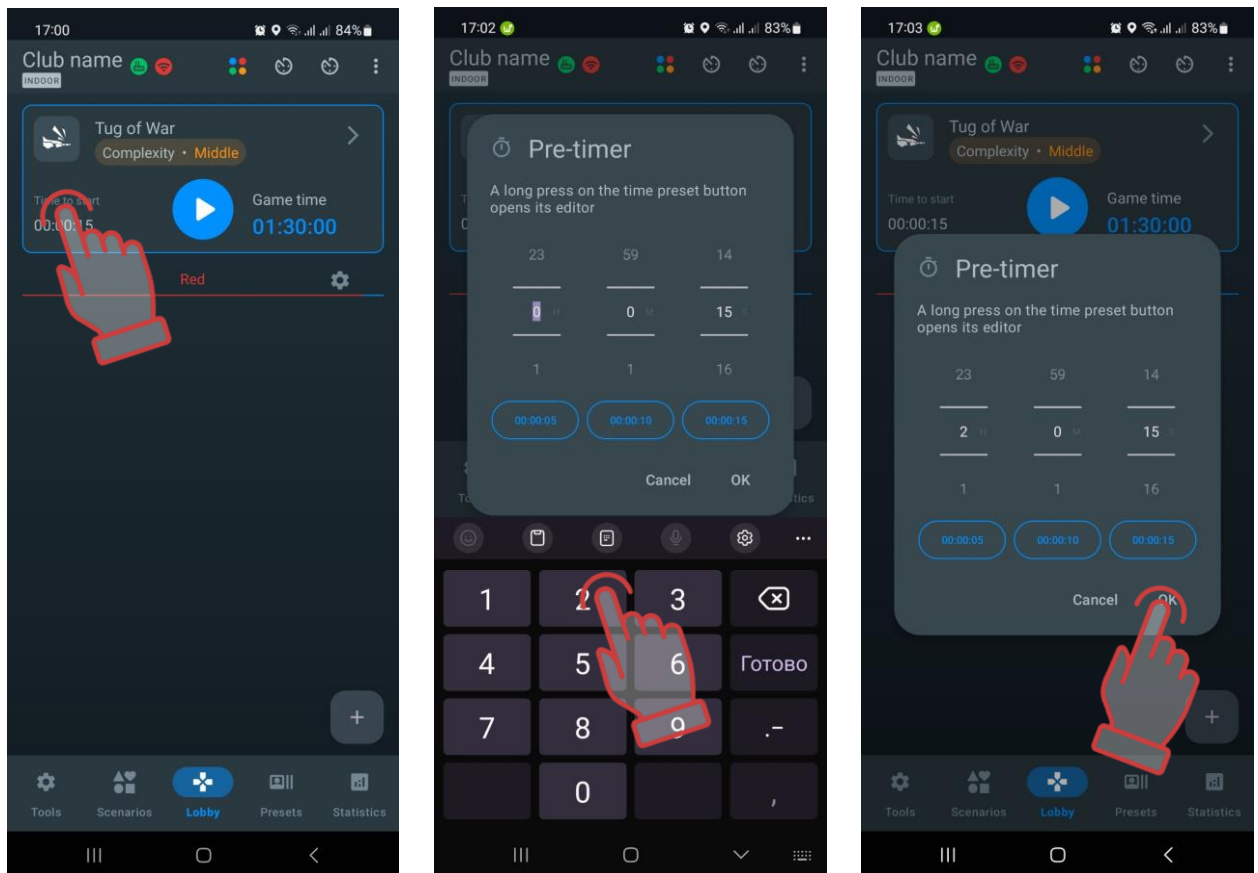
### 11.3.3.6.1 Setting the game start timer


The Time to Start function allows you to select a convenient time to start the game by clicking on it.

This function allows you to select the hours, minutes and seconds. To select the desired value, swipe up or down on the screen. For your convenience, the set time before the game starts is also shown at the bottom. To select the suggested time, click on the desired timer. To save the set time, click OK, to cancel, click Cancel. Possible time before start to set: from 0:0:0 to 23:59:59.

To change the suggested time, you need to:

- 1 Hold down with your finger the timer that you need.
- 2 When a separate window appears, use the slider or keyboard to select a convenient time. You can also select one of the suggested time options in the blue boxes below.
- 3 Click OK to save the changes. To cancel the action, click Cancel.



Pressing the Start button  will start the countdown to the start of the game. The countdown is accompanied by a special sound and is displayed in large numbers on the screen. When the countdown is over, the game will begin.

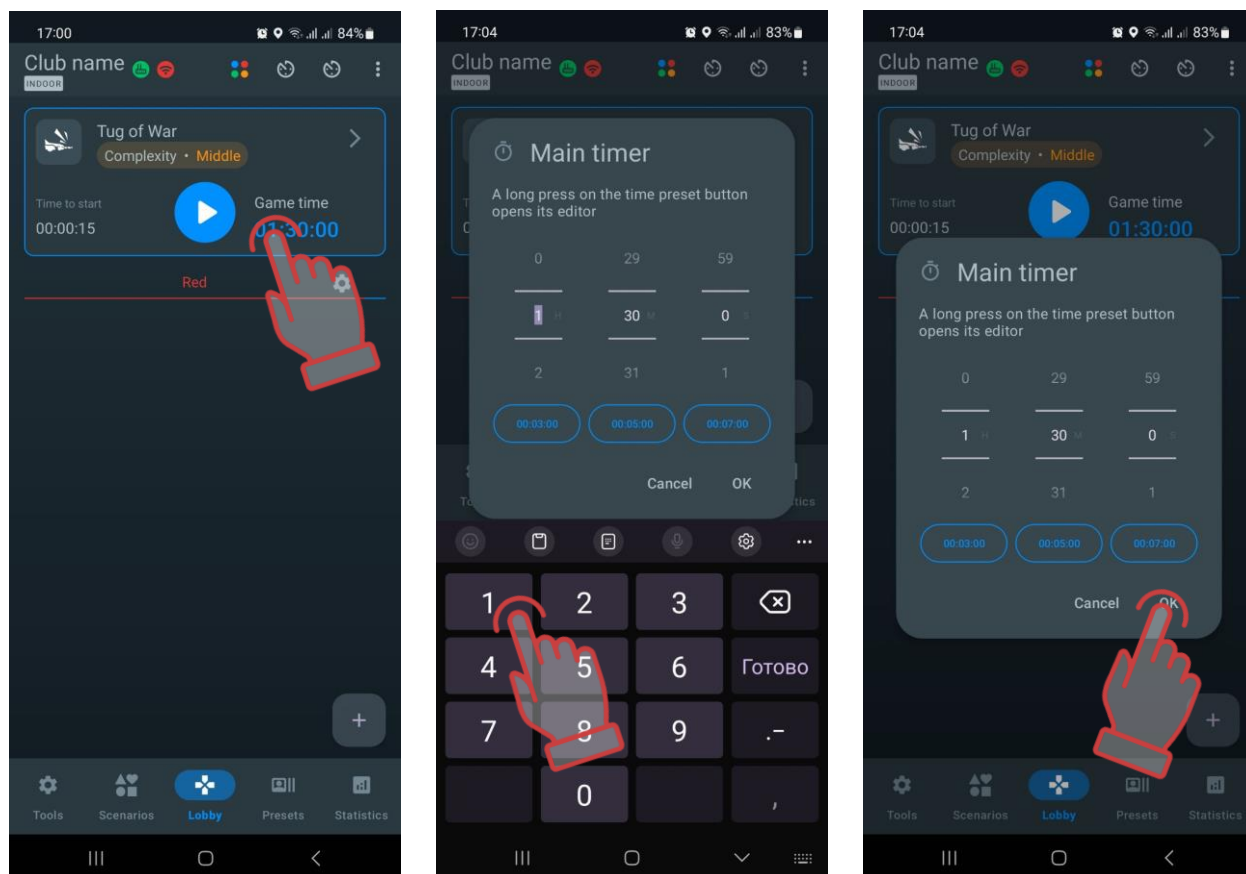
### 11.3.3.6.2 Setting the round time

The duration of the round is chosen depending on the scenario and the availability of conditions for the end of the game.

The Game Time function shows how long the game session will last. The default game time is 30 minutes. Click on the timer to set a more convenient time.

Set the time in the same way as setting the timer in the "Time to start" function (see 11.3.3.5).


The screen also shows the colours of the teams. The team colours may change depending on which scenario you have selected for the game. The colours can change to yellow and green.




### 11.3.3.7 Adding players to the game

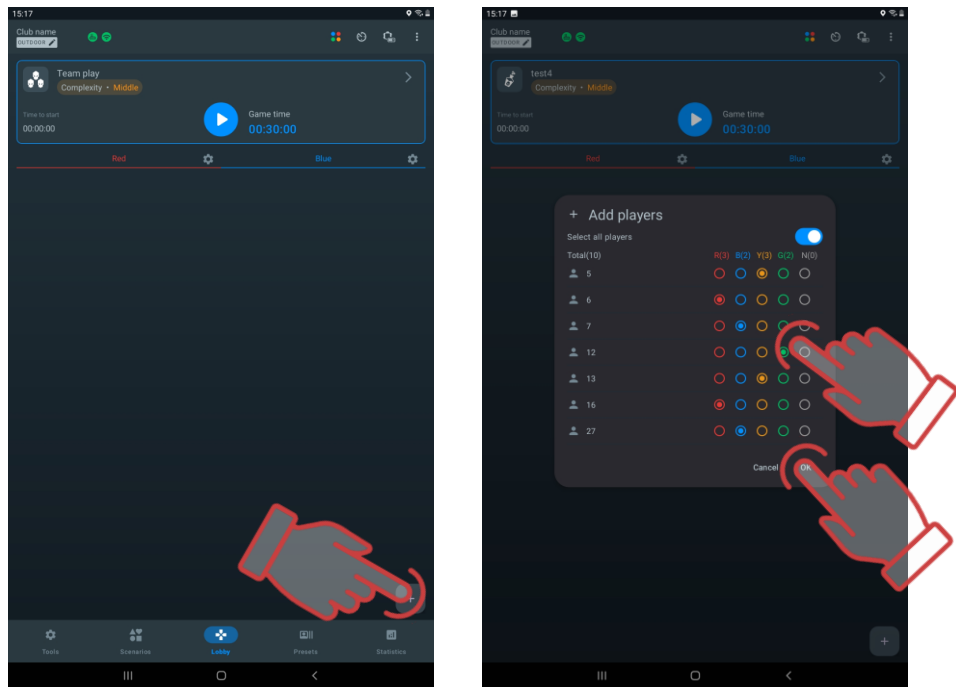
You can learn more about how to add players to your team in the video tutorial at the [link](#) or by scanning the QR code.



To add players to the game, click on the button  located in the lower right corner of the window.

Before you click the button , the command panel will be empty. In most cases, the lobby will show 2 commands – blue and red. However, if you create your own scenario or choose a different one, the command colours may be different.

If there is a team, the name of the team will be highlighted in the team's colour, if there is no team, the name will be grey.




### 11.3.3.8 Forming teams

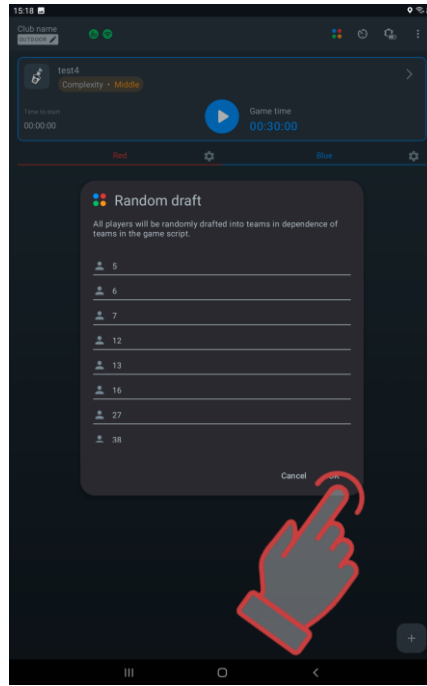
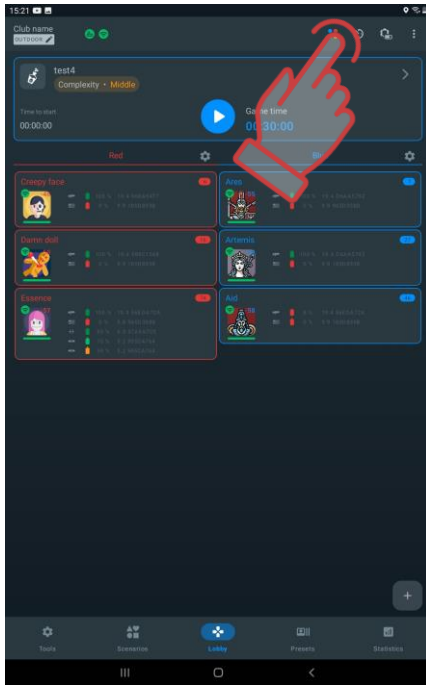
There are four teams in the app: red, blue, yellow and green.

Even if the scenario is carried out according to the principle "death match", it is recommended to assign different colors to the kits to improve the visibility of statistics and add color to the game.


You can assign players to teams automatically or manually.

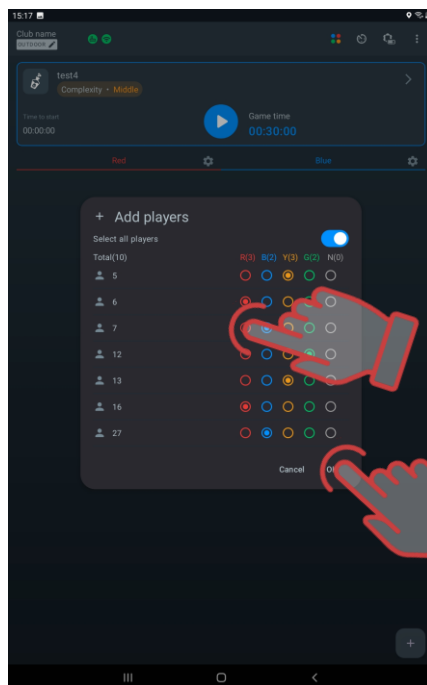
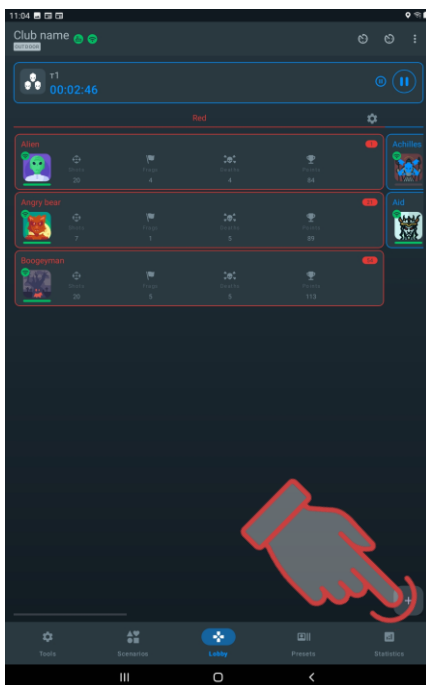
To automatically assign players to teams, click the button  located at the top of the screen.

In the window that opens, click OK to confirm. Players will be randomly assigned to teams.

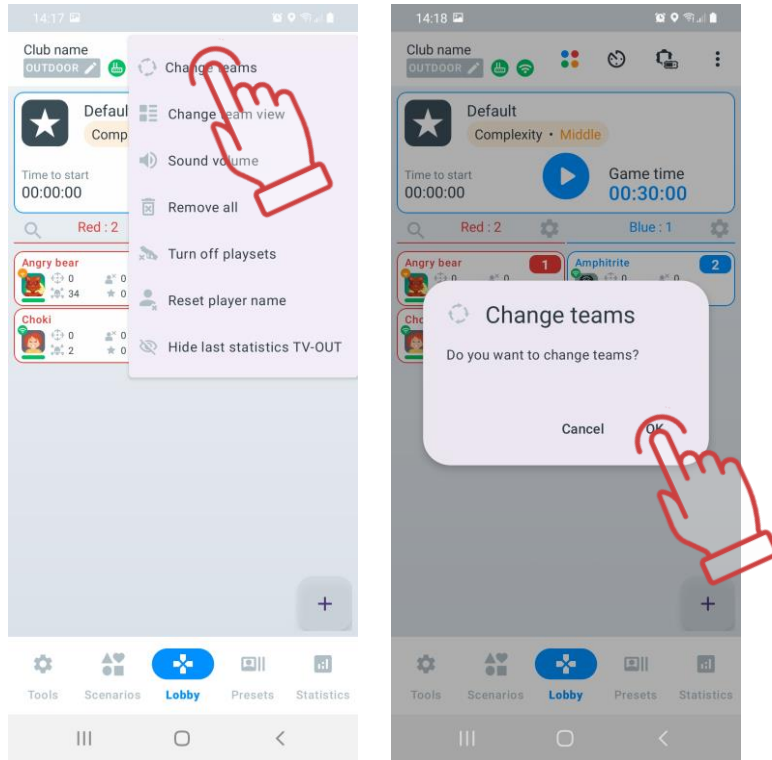


To assign players to teams manually, you need to:

- 1 Click on the plus button  located in the lower right corner of the window.
- 2 When assigning players to teams, you will need to place a circle next to the user's team.
- 3 Click OK. If you do not want to use automatic assignment, click Cancel.

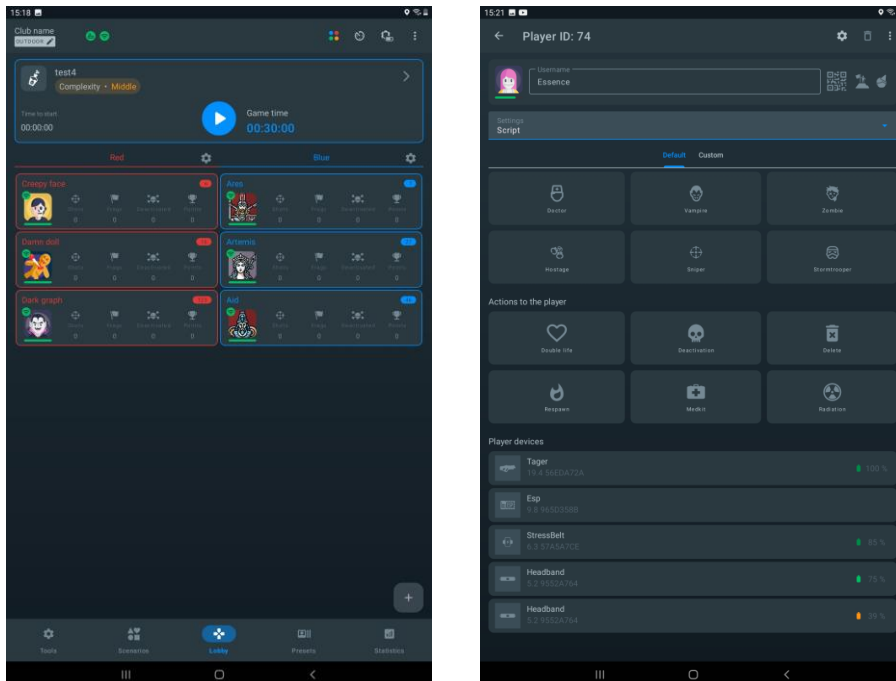


The application provides one more opportunity for editing the distribution by teams - pressing the Change teams button changes the color of the teams. If there are more than two teams, the color change is performed "circle wise".











### 11.3.3.9 Setting up player cards

The player card features double-sided design. One side displays the player's game statistics, which automatically appears after players are assigned to teams. The other side of the card, called the "service" side, shows information about equipment firmware versions, battery charge level, and RSSI level (received Wi-Fi signal strength).












The main screen of the card may contain the following information:

- Angry bear – player's name;
- ID 125 – player's ID;
- Wi-Fi connection strength:
  -  – high;
  -  – medium;
  -  – low;
  -  – none.
-  – player's health level;
-  75% – blaster charge level;
-  75% – vest charge level;
- firmware numbers of the devices.

To see the information on the other side, click on the three dots  in the upper right and select the Change Card function.

The second screen of the card contains the following information:

- Iron Man – player's name;
- ID 125 – player's ID;
- Wi-Fi connection strength:
  -  – high;
  -  – medium;
  -  – low;
  -  – none.
-  – player's health level;
-  – hitting the opponent with a shot;
-  – deactivation of the opponent;
-  – deactivation of the player with this card;
-  – points earned during the game.

A video tutorial on how to change the name and avatar on your player card can be viewed by clicking on the [link](#) or scanning the QR code.



### 11.3.3.10 Individual kits settings

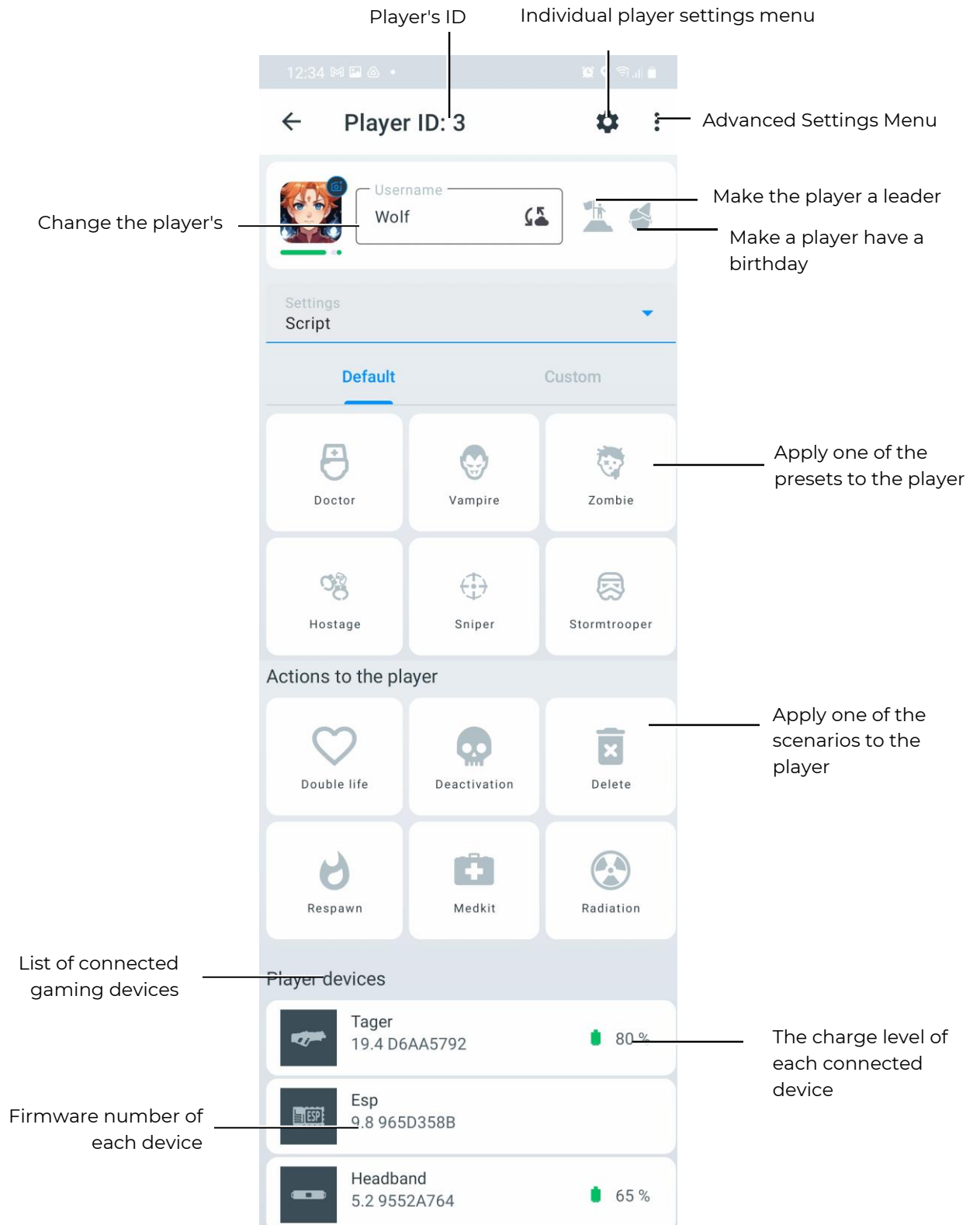
As a rule, in the scenario, the kits of players are assigned either general settings that are the same for everyone, or team settings that are different for different teams, but the same within the team. But there is a need to single out individual players, endowing them with specific abilities and capabilities. It can be both the birthday person and the animator participating in the game. It is useful to designate some players as medics or snipers.

In the application, in addition to using scenario settings, there are three options for assigning specific abilities to a player - individual settings, presets (pre-formed preset settings) or settings from the remote control.

Individual kit settings are called only after the kits are connected to the server, and they will be selected in one of the teams.

You can change the settings for each player during the game session. This card is also available after the game.

To open a player's card, click on it.

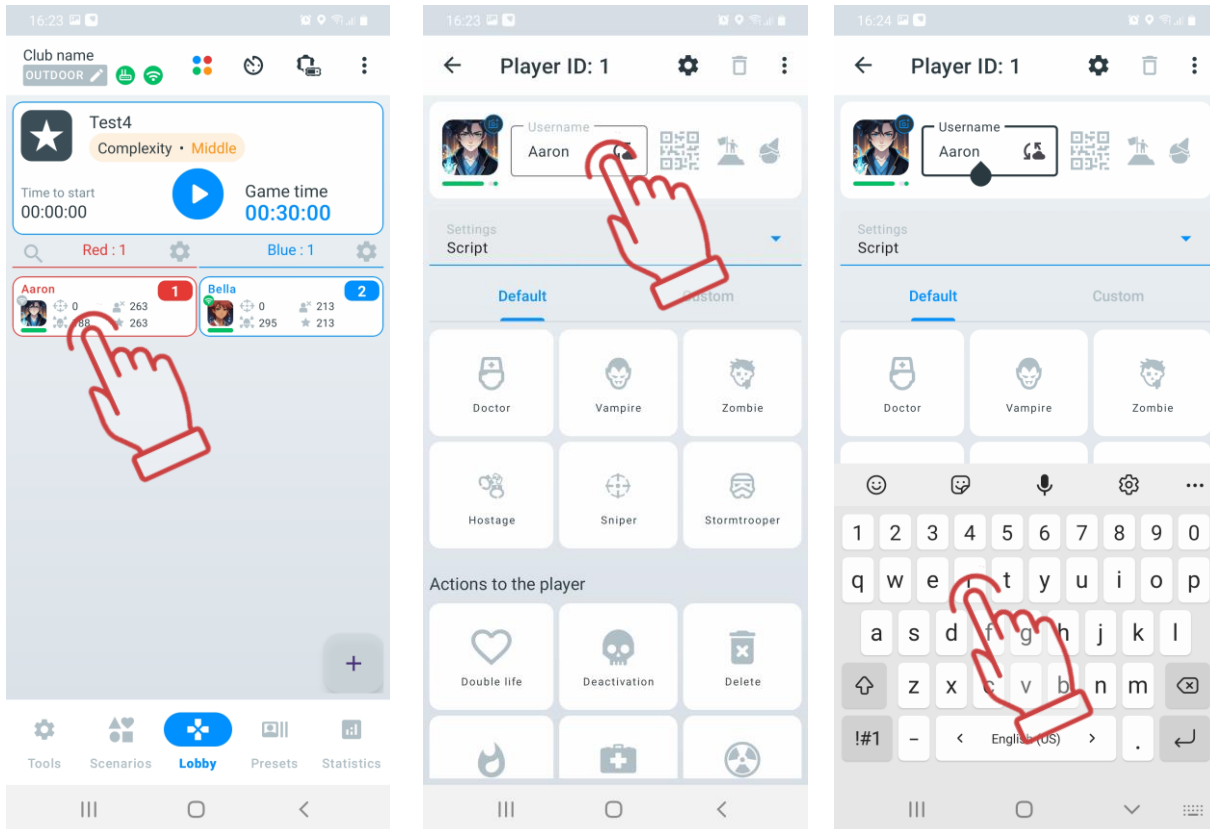


### 11.3.3.10.1 Changing the Player Avatar and Name in the "Lobby"

**!** Note: When you change a name and avatar through the player card in the "Lobby," the changes are saved only until the application is closed or the equipment is turned off. The data entered in the "Personalization of Players" menu will not be displayed.

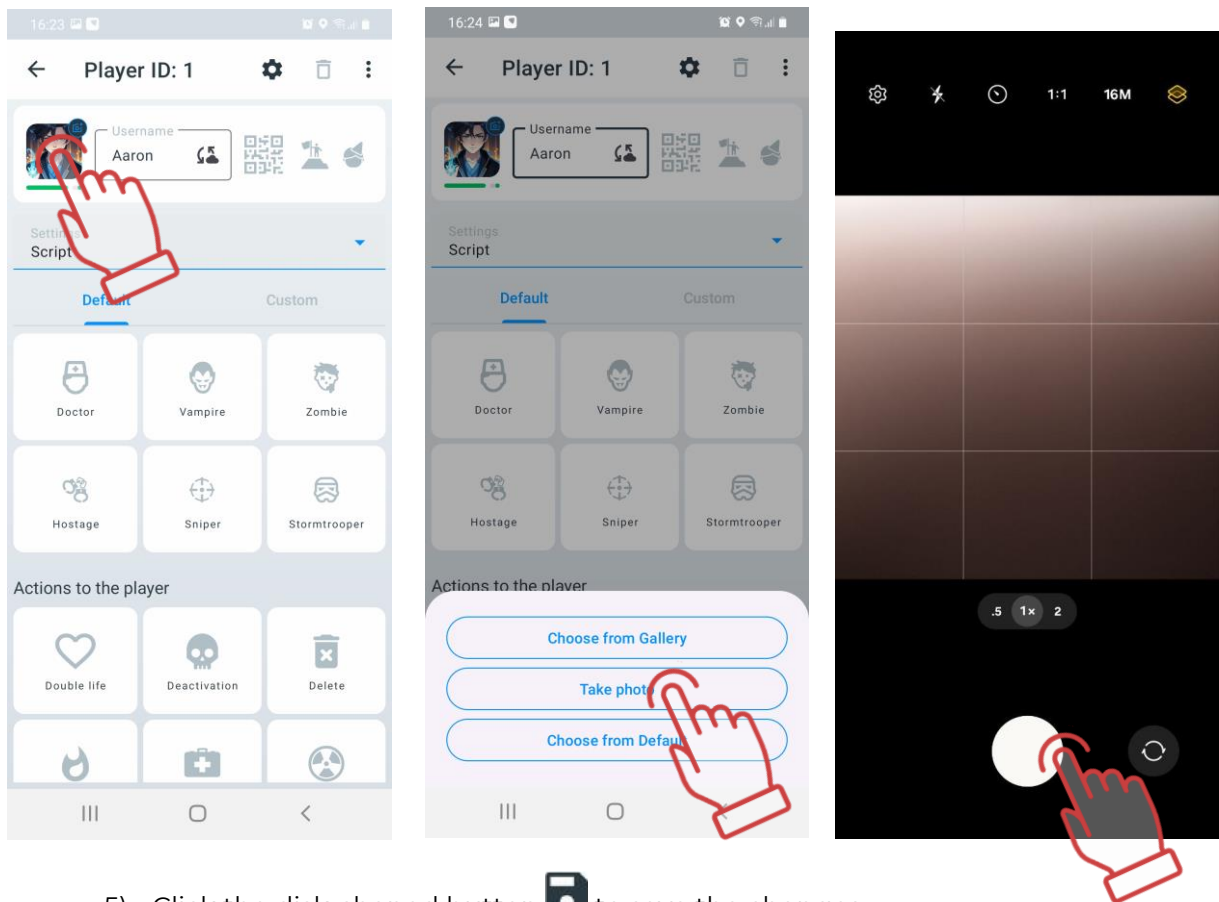
To change the avatar and name on the player card:


- 1) In the "Lobby" tab, click on the player card.
- 2) Enter a new name in the "Username" field.




- 3) Click on the current profile icon to open the menu.
- 4) Choose one of the available options:
  - Choose from Gallery: Upload an image from your device (phone/tablet) or select an icon file from Google Photos.
  - Take a Photo: Select the "Take a Photo" option. The app will open your device's camera. Point the camera at the desired object or person and press the capture button.
  - Choose from Defaults: A window with available icons will open, including pre-installed and previously uploaded ones. Select the desired icon and confirm by clicking "OK."





5) Click the disk-shaped button  to save the changes.



6) Return to the "Lobby" (the arrow button  in the upper left corner) — the updated avatar and name will be displayed on the player card.

### 11.3.3.10.2 Assigning a Role to a Player

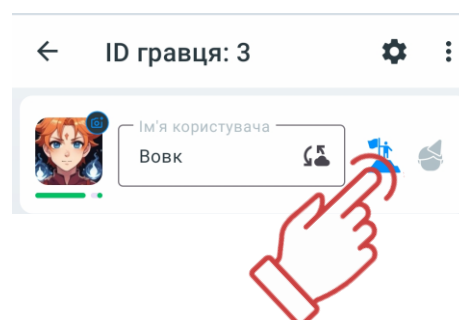
The application currently offers two roles for quick assignment:

- Leader – the team commander role; the leader's tagger will produce a corresponding sound.
- Birthday Player – a role for celebratory games.

To assign a role to a player, click the corresponding icon to the right of the user's name:

-  – to assign the Leader role.
-  – to assign the Birthday Player role.


Once a role is assigned, the corresponding icon will be highlighted in blue.

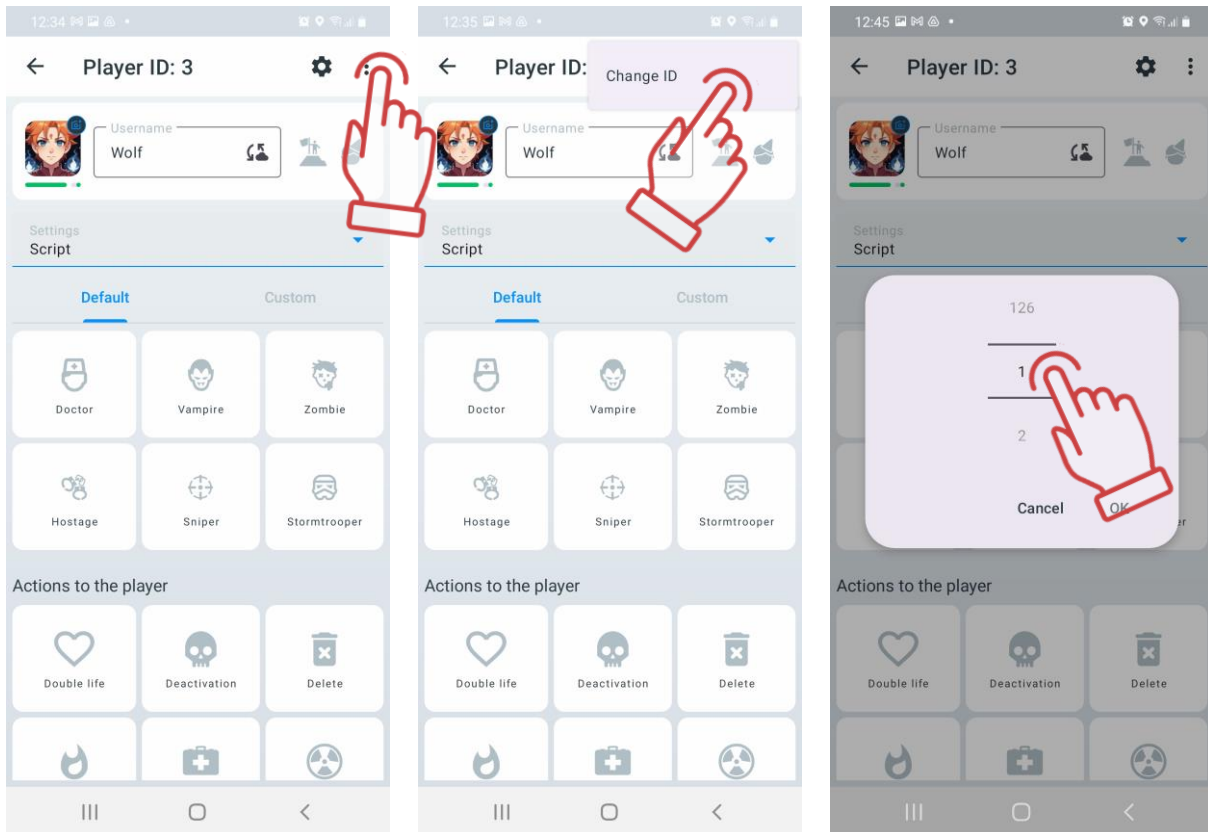


he selected player role will be displayed in the game statistics.

### 11.3.3.10.3 Changing a Player's ID Number

To change the ID:


- 1) Click the  to open the settings menu.
- 2) Select "Change ID".
- 3) From the dropdown list, select an ID (from 1 to 126).
- 4) Click "OK" to confirm.



### 11.3.3.10.4 Selecting the Settings Type

When players are added to a game, scenario settings (those defined in the selected scenario) are applied by default.






To choose the settings type in the player's settings menu:

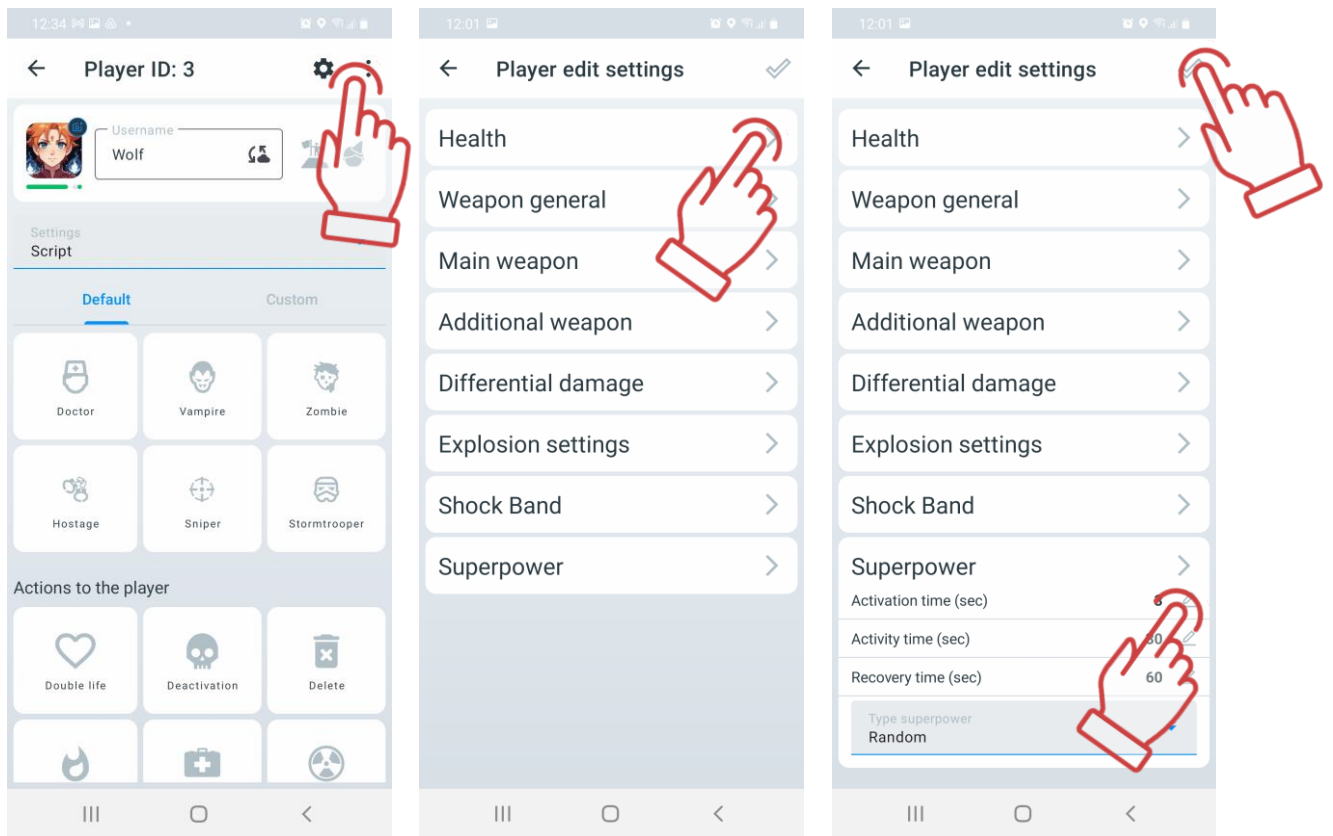
- 1) Click the arrow to the right of "Settings" .
- 2) From the dropdown menu, select a settings type:
  - Scenario Settings – uses the standard scenario settings.
  - Custom Settings – applies individual scenario settings.
  - Preset Settings – applies the settings of a selected preset.
  - Remote Control (currently in development).

Note: If parameters are changed in the player card, the settings type will automatically switch accordingly.

### 11.3.3.10.5 Individual Player Parameters

To modify a player's parameters:

- 1) Click the  in the top-right corner of the window. The individual settings menu will open, displaying options corresponding to the scenario's team settings.
- 2) To expand a section, click its name or the arrow next to it .
- 3) To modify a specific parameter within a section, click its name – a window will appear where you can make changes or toggle the switch (  -Active /  -Inactive).
- 4) To apply the changes, click the  in the top-right corner of the window.



After saving, you will return to the player card settings page, where "Custom Settings" will be automatically selected in the Settings menu.

A video tutorial on customising player settings is available by clicking [here](#) or via QR code.

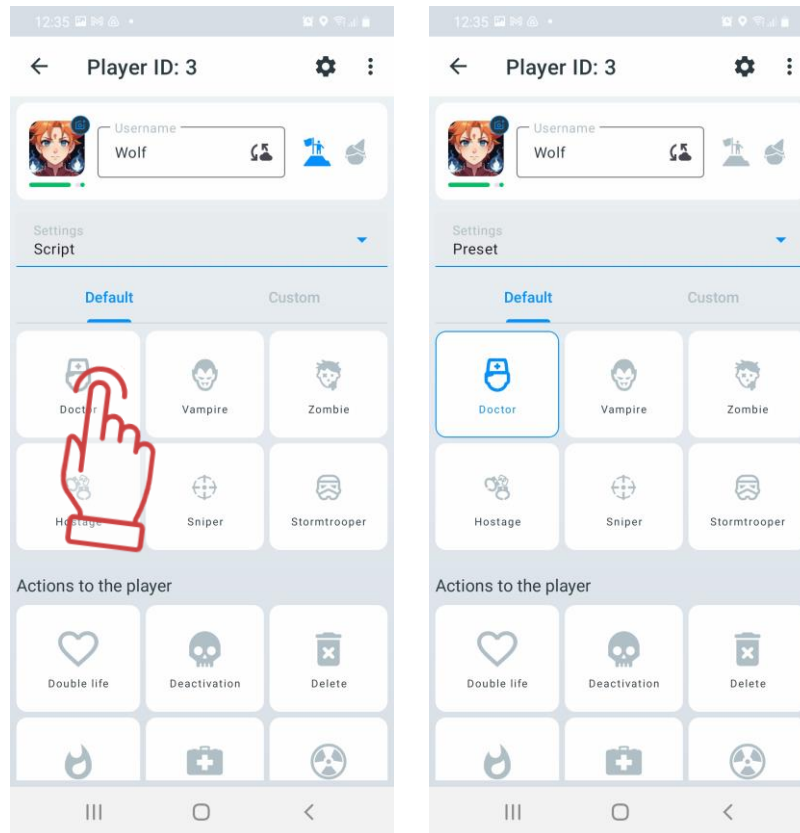


### 11.3.3.10.6 Applying a Preset to a Player

To apply a preset:

- 1) Select either the "Default" or "Custom" tab.

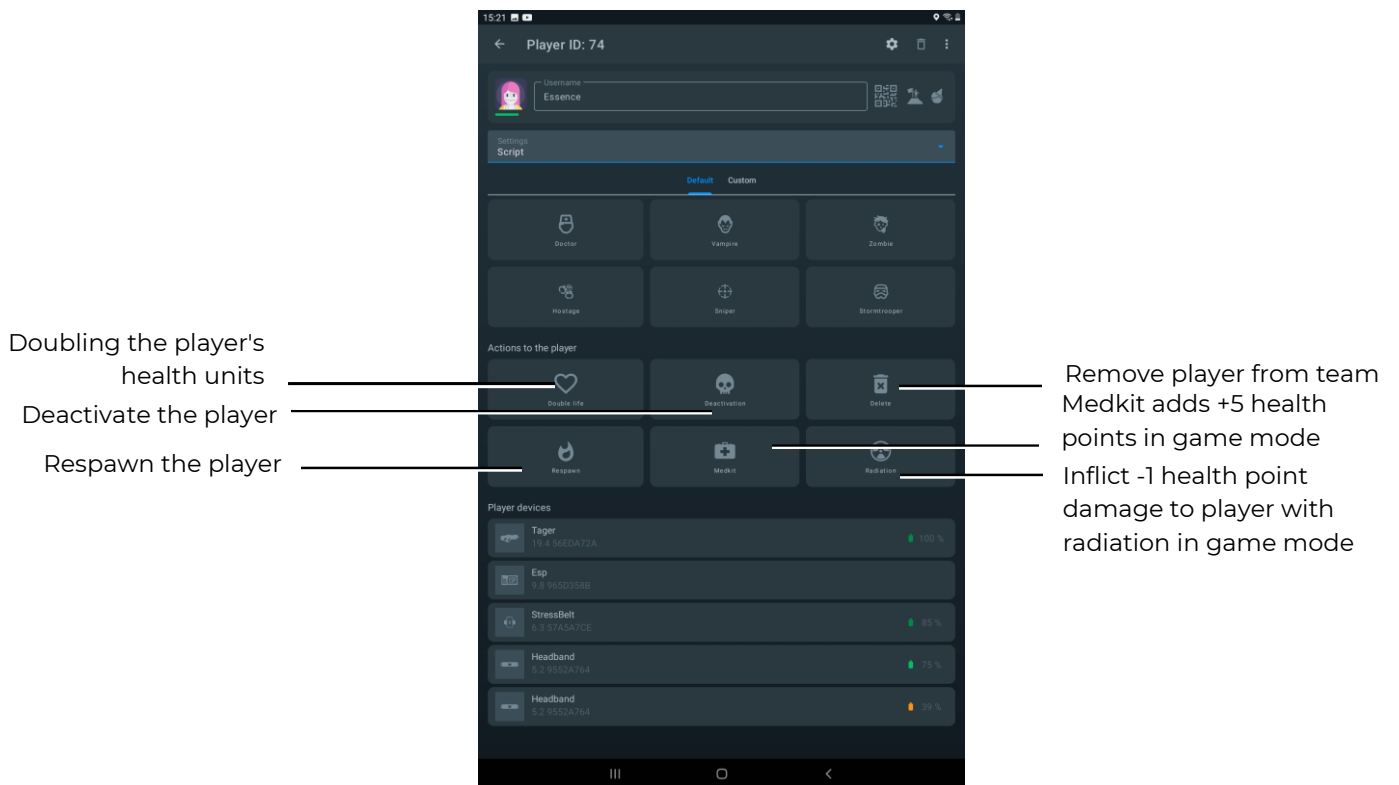
- 2) Click on the preset icon with its name.
- 3) Once the preset is applied, the icon will be highlighted in blue, and "Preset Settings" will be automatically selected in the Settings menu.



To revert to scenario settings, click the selected preset icon again or choose "Scenario Settings" in the Settings menu.

### 11.3.3.10.7 Applying Actions to a Player

Quick Command box that allows you to send a protocol command to the selected set directly from the server will be located below.



When selected (by pressing the corresponding button), the icon will be highlighted in blue.

The Deactivate function is used only during the round to deactivate the selected player.

The Double Life function is only used during the round to double the player's health. For example, if the player currently has 75 health, clicking the Double Life button will increase the player's health to 150. After another click, the player's health will be 300, and so on.

The Radiation function is only used during the round to hit a specific player with radiation. This function is not turned off, but accepted in real time. The number of units lost is equal to the number of times you click the Radiation button. Each click costs the player 1 health.

The Medicine function is used during the round to restore health to the selected player. Health is added up to 100 units. No health is added if the player already has 1 unit of health. The Medicine function does not turn off in real time (during the game) and each click on the Medicine button adds 1 unit of health to the player.

The Rebirth feature is used during a round to respawn the player to continue the game.

The Delete function is used to remove a player.

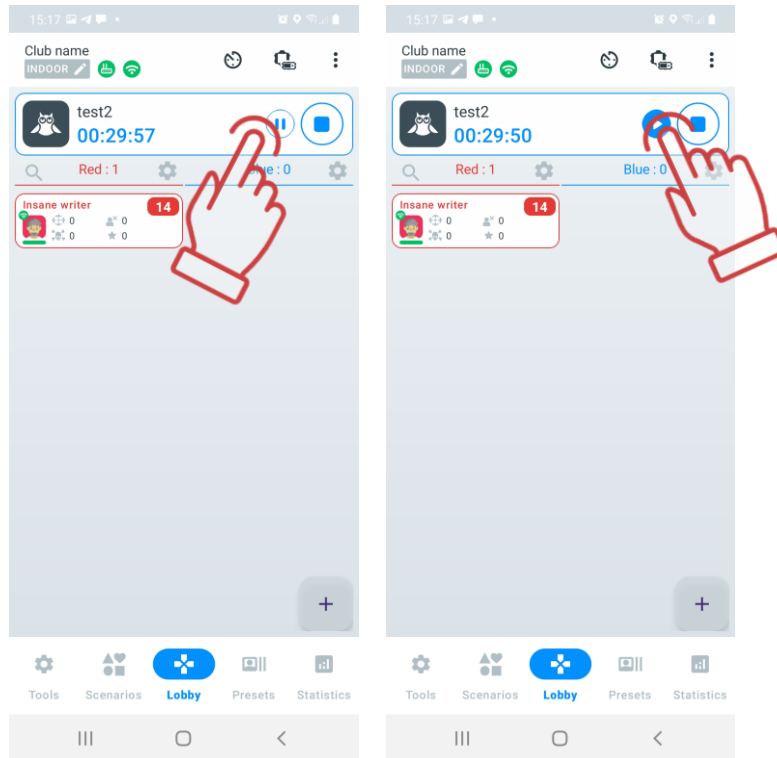
### 11.3.3.11 Game Start

Once you have added players to the teams and changed the player and timer settings if necessary, you can start the game by clicking Start.

Attention: It is not recommended to change settings using the remote control (RC) during the game or between rounds when using the server. This may lead to incorrect equipment configurations and errors in statistics!

### 11.3.3.12 Pause

For Kits starting from firmware version 3\_13\_5B94C698, after the start it is possible not only to finish the game, but also to pause the game for some time. Instead of the "Start" button, two buttons appear at once - the "Pause" button and the "Stop" button. The game is paused/restarted/ended by pressing the corresponding button in the menu.



The Lasertag Tv-Out application also shows that the game is paused (see section 12.5.2).

**Warning!** If the firmware is lower than 3\_13\_5B94C698, the game will pause in the application, but the timer will continue to work on the taggers themselves and pausing will not happen, players can continue to interact, which may lead to errors in the game statistics. Before using the pause function, we recommend updating the firmware after contacting the company's technical support.

### 11.3.3.13 Finishing the game

The term GAME means a gameplay in which the same teams play a certain number of rounds. It can be either one or several rounds.










ROUND is a gameplay with a certain scenario, limited either by time frames, or ending when a condition specified in the scenario occurs (capture of DB, reaching a specified level of points, etc.).

The round can also end forcibly - by pressing the STOP button in the main menu, which appears in place of the START button.

After the end of the game round, access to full statistics is provided through the 'Statistics' menu (see section 11.3.5). To return to the main menu, press the 'Lobby' button located at the bottom of the screen.

Pressing the 'Start' button will launch the game with the same team composition, parameters, and game conditions that were applied in the previous game.

Also on this screen, player cards with personal data are displayed, on which the following actions can be performed:

- **Player 1**  – change player's name;
- **ID 125**  – change player's ID;
- Monitor the Wi-Fi signal strength:
  -  – high;
  -  – medium;
  -  – low;
  -  – none.
-  – monitor the level of player health;
-  – monitor the connection of devices;
-  47% – monitor the charge level of devices.

Game logs (actions) should be viewed from bottom to top.

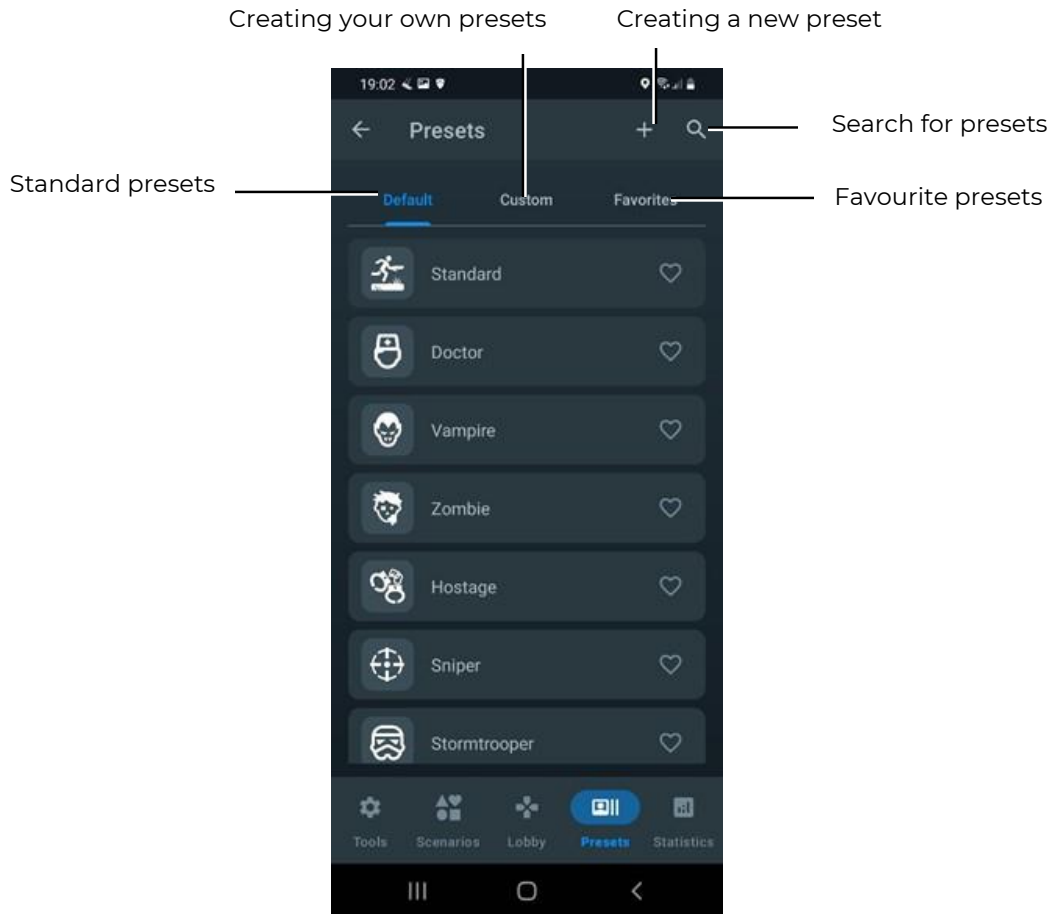


The display shows:

- world time, and then at what minute of world time the game actions were performed.
- Game events from the list configured in section 11.3.3.5 (at what minute of the round and which of the two teams performed the game actions. Blue and red are the colours of the teams. Thor and Frash are the names of the teams).

### 11.3.4 Presets tab

Presets are ready-made setups that can be quickly assigned to individual players after connecting devices to the app.



If the game is controlled from a tablet, the kits connected to the server receive the settings set in the Lasertag Operator application.

Factory settings are used by default, but you can create your own presets.

Moreover, it is possible to do this without kits connected to the server.

When connecting to LTO, sets with previously assigned presets from the remote control immediately apply the scenario settings of the last activated scenario. Depending on the settings applied - a default preset, a custom preset, changing individual settings for a set or applying a preset to the whole team - a notification will appear in the Settings box in the window when you click on the player icon.

The Presets section contains three tabs:

- Default – Standard presets that cannot be changed or deleted;
- Custom – A tab for creating and storing your own presets;
- Favorites – The tab that contains the presets that the user has added to their favourites.

#### 11.3.4.1 Default

The LTO mobile app has 7 built-in presets that give the kit specific abilities.



By clicking on the appropriate icon, the player can choose one of the following roles: Doctor, Vampire, Zombie, Hostage, Sniper, Stormtrooper or Standard. In this case, the selected icon will become brighter, highlighting the preset you have chosen.

The following settings are recommended for different types of weapons:

Damage type/ Parameter	Dama- ge, health units	Auto- reload	Rechar- ging time, sec	Fri- endl y fire	Endless maga- zines	Number of maga- zines, pcs.	Number of cartridges in magazine, pcs.	Shots in the burst, pcs.	Speed of fire, shots/ min	IR- beam power, %
Falcon	25	-	2,0	-	-	10	30	3	565	40
Assault rifle	25	-	3,0	-	-	10	30	3	565	40
Grenade	100	-	6,0	-	-	3	1	1	100	30
Sniper	100	-	4,0	-	-	5	10	1	30	100
Gun	25	-	2,0	-	-	3	15	1	180	50
Healing	25	-	2,0	-	-	10	30	1	300	40
Vampire	25	-	2,0	-	-	10	30	1	300	40
Zombie	50	-	2,0	-	✓	10	30	1	300	40
RPK	50	-	3,0	-	-	10	45	3	565	40
Radiation	25	✓	2,0	-	✓	10	30	1	300	40
Hostage	0	✓	2,0	✓	✓	100	100	3	565	2

#### 11.3.4.1.1 Doctor preset



Doctor: Restores health with your main weapon and deals damage with an additional weapon - a pistol.

By default, Doctor has 100 health. He has two weapons - a first aid kit, which restores 25 health when hit by a team member, and a pistol (15 damage).

#### 11.3.4.1.2 Vampire preset



Vampire: A player who regains health by inflicting damage on opponents. Radiation replenishes the health of the player playing with this preset.

In the factory settings, Vampire has 250 health.

It has one weapon - a bite, which not only takes 25 health units from the opponent player, but also attaches them to itself. The peculiarity of this preset is that during the game the kit loses 1 unit of health every 5 seconds (the so-called "thirst"), as well as the fact that radiation adds units of health to it, and the Medkit takes away.

#### 11.3.4.1.3 Zombie preset



Zombie: Deals heavy damage by turning players into zombies that can infect other players. Radiation restores health.

In the factory settings, Zombie has 200 health units.

By default, the scenario settings for the "Zombie" role are configured with the "Infection" parameter, meaning that when a zombie hits a player, they transform into a zombie and join the zombie team.

If friendly fire is enabled, zombies can attack their allies. However, if both infected players are on the same team and use the "Zombie" preset (custom or default), they cannot damage each other or become re-infected.

A player can only be infected once. Re-infection is impossible due to immunity. If a player leaves the game or disconnects from the server during gameplay, their infected status

will be preserved upon reconnecting. When infected, the player receives the same settings as the 'Zombie' that shot him, if he is connected to the server. When playing the game without a server, the settings of the default Zombie preset are applied.

It has an inverse glow of the kit - the headband or vest is constantly glowing. Doesn't respawn. Doesn't hit zombies. Just like a vampire, radiation adds health units, and a Medkit takes away. In firmware version 19.4 and higher zombies have the ability to kill zombies in the opponent team. However, the damage done and received in the statistics may not be displayed correctly.

#### 11.3.4.1.4 Hostage preset



Hostage: A story role in which a player must be transported unharmed from one point on the field to another. Their weapon cannot harm other players, but they can be hit by all of them.

In the factory settings, Hostage has 300 units of health.

The weapon is a recorder, with which the hostage is marked upon reaching the final point of the route. The glow color of the kit is purple. Can be hit and healed (with kits as a Medic) by players of any team.

#### 11.3.4.1.5 Sniper preset



Sniper: Deals high damage with a sniper rifle with a long reload time. The second weapon is a pistol.

In the factory settings, Sniper has 100 health, two weapons - a sniper rifle (100 damage) and a pistol (25 damage). Strikes players of any team, including own one.

#### 11.3.4.1.6 Stormtrooper preset



Stormtrooper: Armed with an assault rifle with medium damage. The second weapon is a grenade launcher.

In the factory settings, Stormtrooper has 100 units of health. Only affects players of other teams. Has two weapons - an assault rifle (damage 25 units), which shoots in bursts, and an under-barrel grenade launcher, which has 6 seconds of recharge, but damage is 100 units.

#### 11.3.4.1.7 Standard preset



Standard: Fast game mode.

In the factory settings, a player with the standard preset has 100 health. The weapon is an assault rifle with medium damage. Treatment - the influence of the doctor.

### 11.3.4.2 Custom

This tab contains the presets you have created. You can create presets based on the built-in standard presets.


A video tutorial on how to create a custom preset is available at the [link](#) or via QR code.

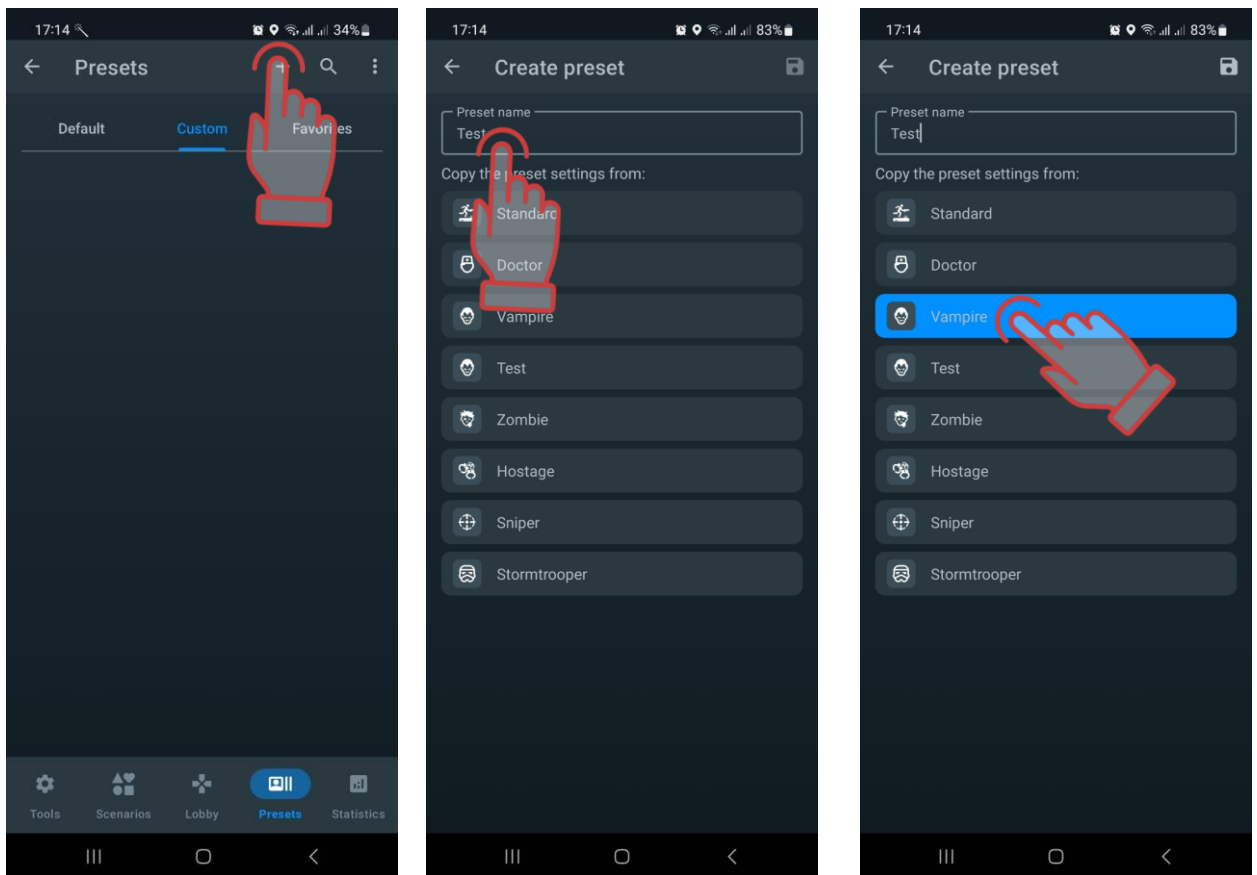


#### 11.3.4.2.1 Creating your own presets

To create your own preset, click the button  located in the upper right corner of the window.

In the Preset Name field of the window that opens, enter the name of the preset and select the preset from the list of default presets on which the new preset will be based.

To confirm, click the disc button  in the top right-hand corner of the window.



In the window that opens, you need to set the new preset settings.

To change the icon of a new preset, click on the preset icon and select a new icon in the window that opens.

In the Description field, you can change the short description of the preset, select the base role from the drop-down list below, and customise the settings.

The role selection algorithm is described in paragraph 11.3.4.2.1.111.3.4.2.1.1.

To open each setting, click on the arrow button .

The settings table is similar to the individual settings table.

If you do not configure any of the suggested parameters, the value of the internal, unconfigured parameters will be 0 or set by the application by default.


To edit the values of the parameters, click on the icon , and then you can set and adjust the values as needed.

Each preset can be assigned 2 virtual weapons. Each type of weapon has a different effect (adding or subtracting health) and a different sound.

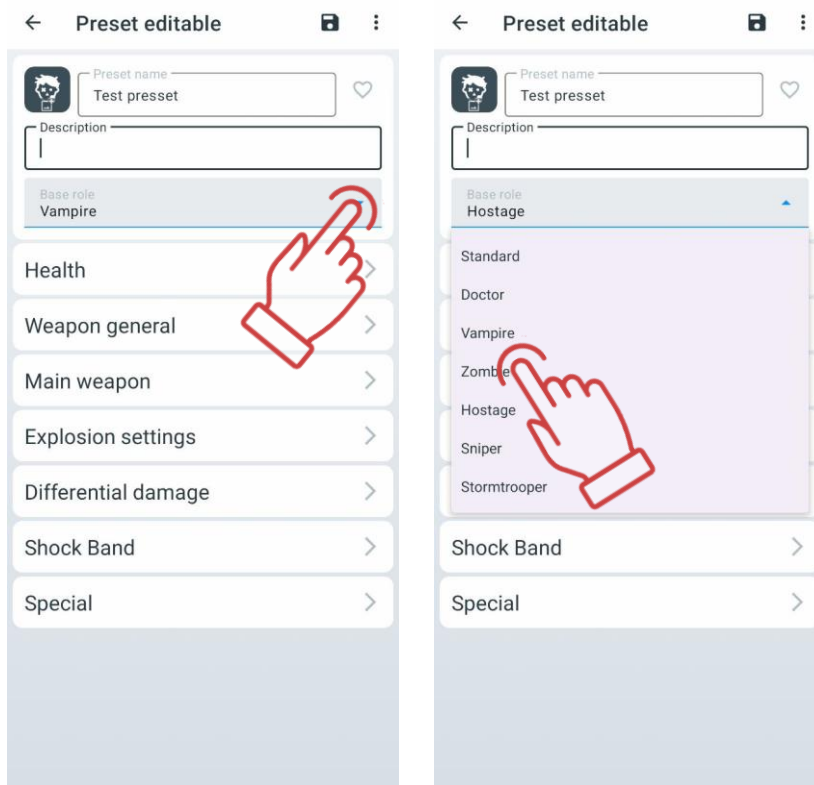
**!** If the player has two weapons in the preset, to switch between them, hold down the reload button on the blaster for 3 seconds until you hear a beep.

### 11.3.4.2.1.1 Configuring "Zombie" and "Vampire" Roles

To activate the "Zombie" or "Vampire" role, which were previously selectable through team scenario settings or individual player settings, you now need to select the corresponding role in the preset settings. To do this:

1. Click on the name of the desired preset to open its settings.
2. Locate the "Base Role" parameter and click the button  to the right of the role name.
3. Select the desired role from the drop-down list.

Note: After selecting the "Vampire" or "Zombie" role, it will no longer be possible to change the type of damage in the additional weapon settings!




To save the settings, click on the button .

Settings can be selected both before the round and changed during the running game. If the scenario does not change between rounds, then the individual settings are saved for the next game.

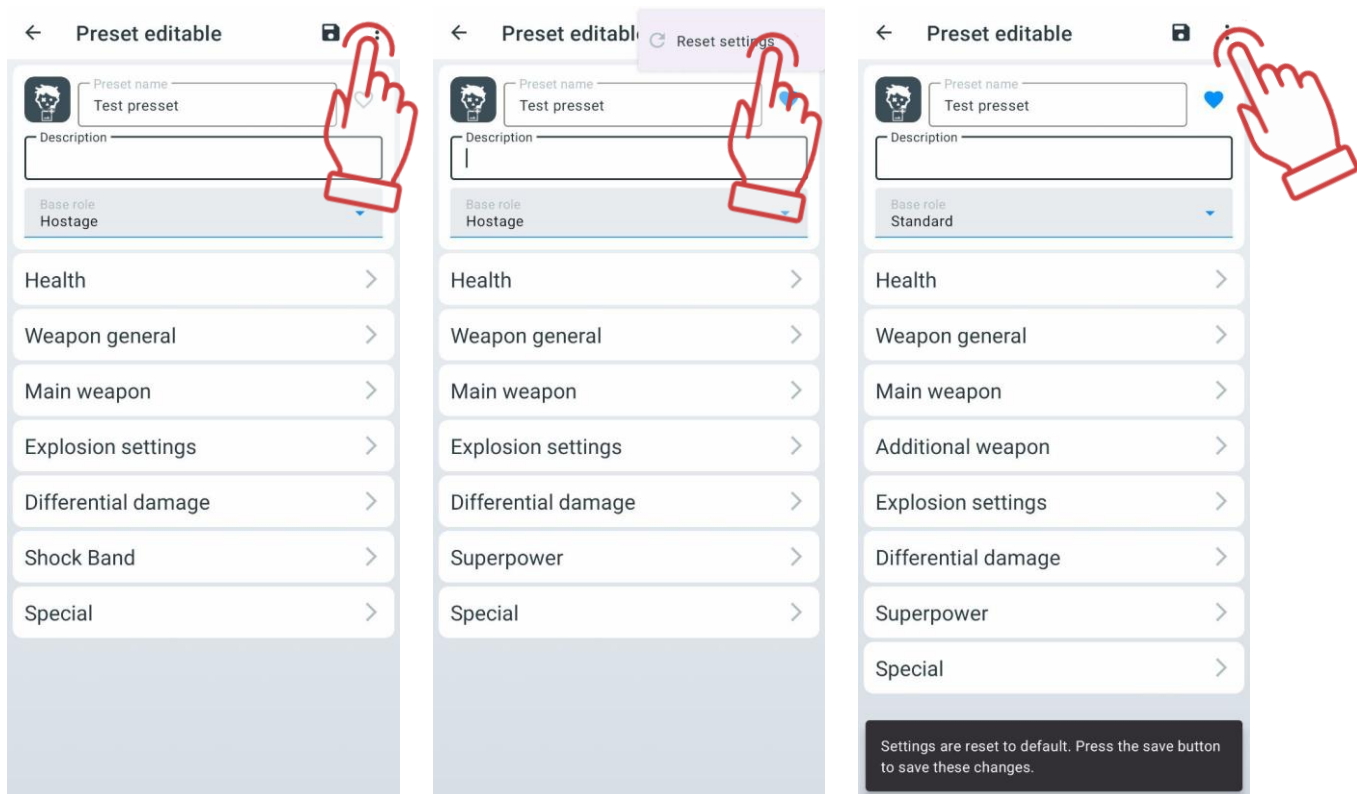
### 11.3.4.2.2 Resetting Preset Settings

Resetting a preset's settings is necessary to return the player to the default preset configuration corresponding to the base role.



To reset a preset's settings:

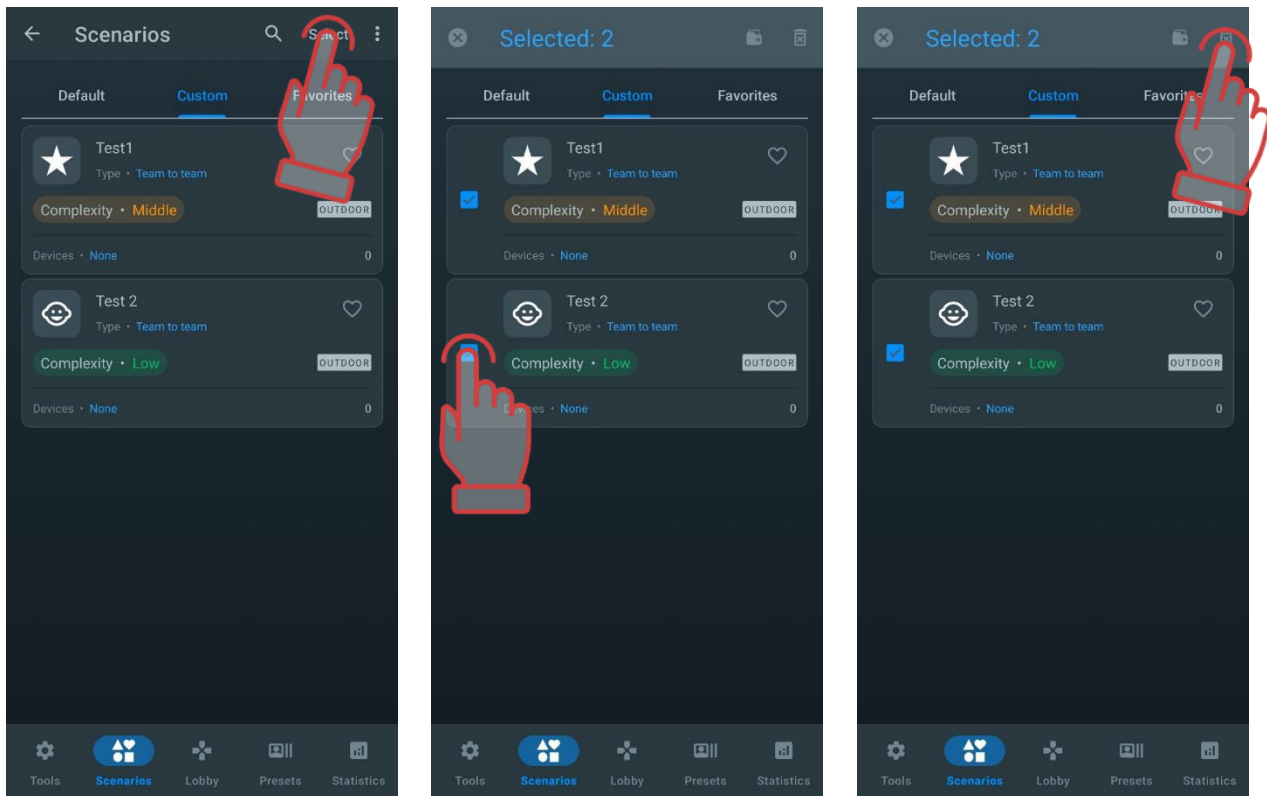
1. Open the preset settings menu by briefly clicking on its name.
2. In the upper-right corner of the screen, click the button .
3. From the dropdown menu, select "Reset Settings."

4. To save the changes, click the  button in the upper-right corner of the window.




### 11.3.4.2.3 Exporting and deleting presets

To export or delete presets created manually, you need to go to the "Custom" tab, click on "Select", check the necessary files, and then press the corresponding button in the top right corner of the window (  for export,  for delete).



### 11.3.4.3 Favorites

The Favorites tab allows you to quickly find and easily manage your favorite presets, as it's designed to store your favorite or most used presets. Clicking the heart icon  next to a preset name automatically adds it to that tab. When you click on the heart, it turns blue to indicate that it is the selected preset.

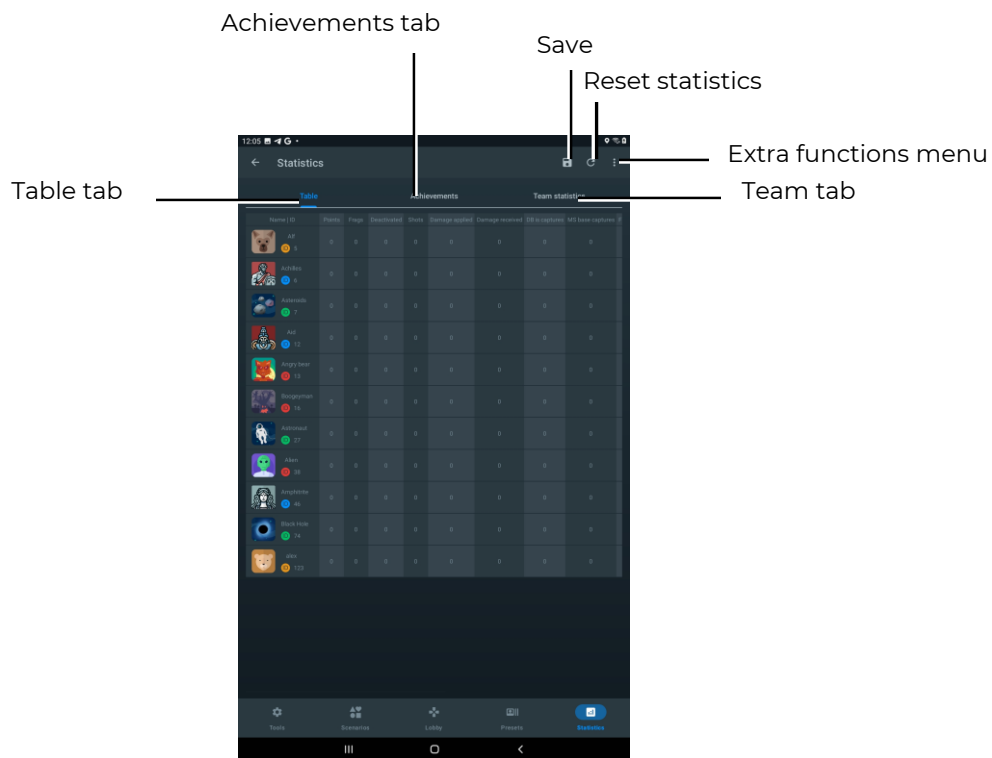
You can add both standard presets and ones you've created yourself to Favorites.


To remove a preset from Favorites, click the heart icon  again.


### 11.3.5 Statistics tab


The Statistics window contains the Table, Achievements and Team tabs. These tabs are opened by clicking on their names. When you click on it, the selected tab is highlighted in blue.

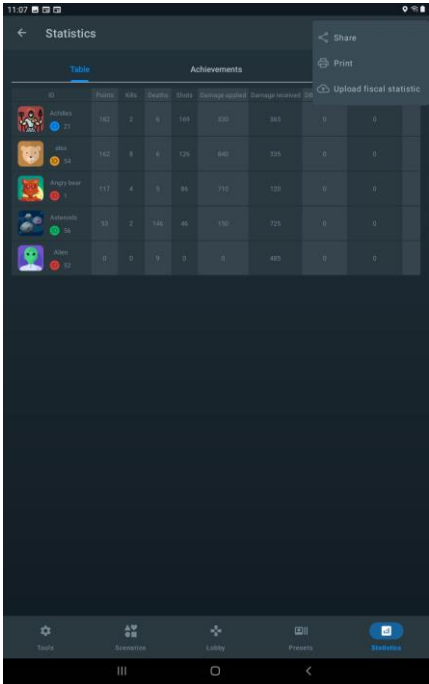
You can view the overall game statistics of all players and team statistics both during the game and after its completion.



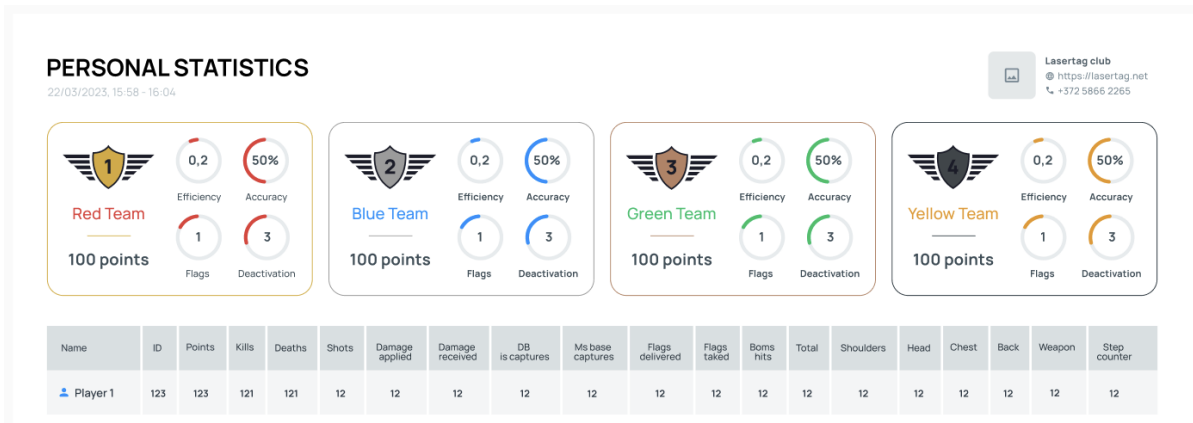
To save the stats to your mobile device, click on the button . The stats are saved to a PDF file.

To reset (clear) all the statistics that were recorded during the game, press the button .

To share/print/send the final stats for all players, click on the button  and select the desired action from the menu that opens.



The printed statistics on the form will look as follows:



On the personal and team statistics forms, in addition to information about ratings, achievements, and other metrics, the club information will be displayed in the upper right corner, provided it was previously entered in the "Options" section of the settings menu.

If the club information is not displayed, follow the steps outlined in section 11.3.1.4 of this instruction.

For detailed manuals on working with the fiscal statistics server, please contact the company's technical support service <https://lasertag.net/support/>.



### 11.3.5.1 Table

The TABLE tab in real time and at the end of the game shows for each kit participating in the game, the number of frags, shots fired, captures of Domination Boxes, points scored, damage done and received. The table also displays the number of captured, lost and fetched flags, bomb shots and differential damage.

The stats table will be empty if no players have been added to the game. If players have been added, the table will display the players sorted by the player's kit ID.

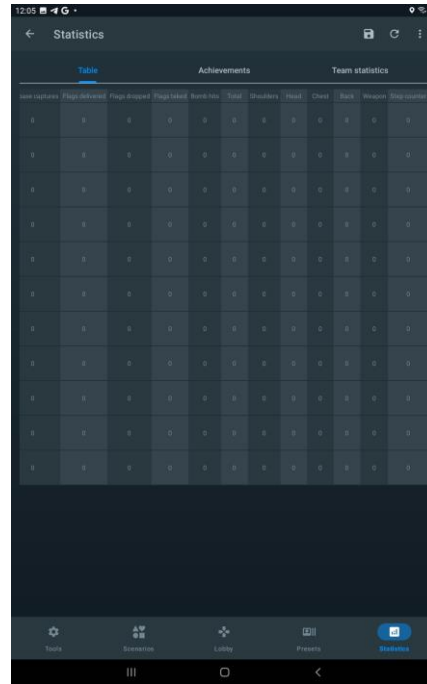
When the first actions are taken by the players, the table will automatically redistribute the players who have results in the game and move them up the table. Advancement is based on the number of points scored.

At the end of the game, the table will generate the final stats of the players' actions, displaying the success of each player from the two teams from top to bottom. The players who have scored the most points will be at the top of the table, and the players who have performed the least number of successful actions will be at the bottom of the table.

At the end of the game, the table will also show the winning team. Each player in the table will be highlighted in the color of their team (blue, red, yellow, green).

To see the full stats, swipe from left to right.






### 11.3.5.2 Achievements

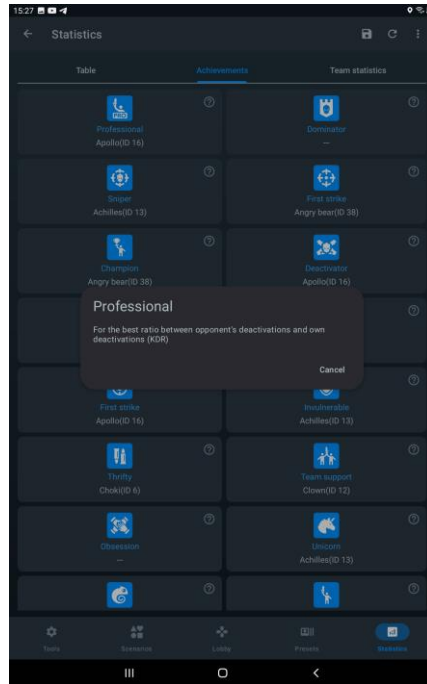
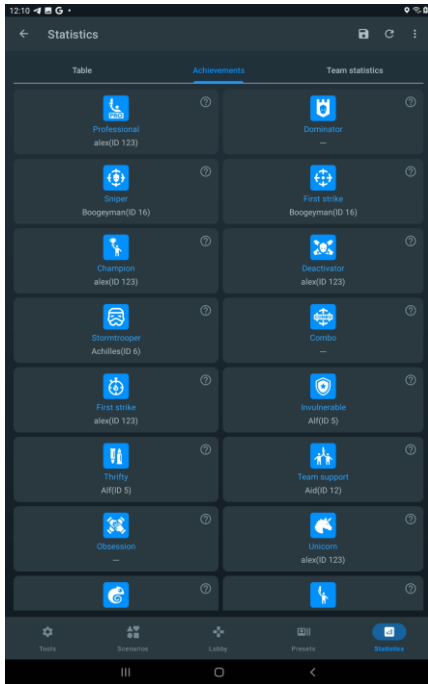
The achievements tab displays the current comic nominations depending on game indicators - accuracy, number of hits, number of points scored, etc.

Achievement statistics will only be available after the end of the game round and will show achievements for players from two teams (or more than two, depending on the scenario settings). Multiple players can be ranked in one of the suggested categories for best achievements.

The tab will show:

- names of achievements;
- brief description of the achievement;
- player's name.

When you click on the icon in the form of a question mark , located in the top right corner of the nomination tile, a window with the description of the nomination opens.



### 11.3.5.2.1 List of achievements of the nomination assigned to players



**Professional.** This title is awarded to the player with the highest KDR (Kill-Death Ratio), which is a numerical parameter equal to the number of eliminations performed by the selected player divided by the number of eliminations by opponents. In case of a tie, the winner is determined based on the maximum number of game points.



**Champion.** This accolade is bestowed upon the player who has accumulated the highest number of points during the game. Different criteria for awarding game points apply in each scenario.



**Dominator.** This title is granted to the player with the highest number of captured bases, specifically: capturing Control Points, Multistations set to "Base" mode. The statistics will consider how many times a player successfully captures an opponent's base (inflicting damage to it with shots to render it inoperative). If a player inflicts the most damage to a base, they are awarded this achievement.



**Deactivator.** The achievement is awarded to the player who has achieved the maximum number of opponent eliminations. In case of a tie, the winner is determined based on the maximum number of game points.



**Sniper.** The achievement is awarded to the player who inflicts damage to opponents with the highest precision, calculated as accurate shots made divided by all shots taken. In case of a tie, the winner is determined based on the maximum number of game points.



**Stormtrooper.** The achievement is awarded to the player for successfully thwarting enemy attacks that come too close to allied bases. The statistics will track hits and eliminations of enemies attempting to capture the base. In case of a tie, the winner is determined based on the maximum number of game points.



**Combo.** The achievement is awarded to the player who, throughout the game scenario until their deactivation, manages to execute a combo of in-game actions. These actions include hits, eliminations, and capturing the opponent's base (achievement for scenarios involving base capture). The number of attempts during the scenario is not limited. The calculation is based on the most successful attempt by a single player. In case of a tie, the winner is determined based on the maximum number of game points.



**First strike.** The achievement is earned by the player who achieves the highest number of eliminations within the first minute of the game scenario starting. In case of a tie, the winner is determined based on the maximum number of game points, with the condition that the number of points cannot be zero.



**Invulnerable.** The achievement is awarded to the player who receives the least amount of damage during the round of the game.



**Thrifty.** This title is awarded to the player who has made the fewest number of shots in the game. The number of shots must be greater than 0. In case of a tie, the winner is determined based on the maximum number of game points.



**Team Support.** The achievement is awarded to the player who has provided assistance in deactivating the opponent on three occasions. This means that the nominee's ally failed to deactivate the opponent (only managing to injure them), while the player who receives this accolade successfully deactivated the opponent entirely.



**Sapper.** This achievement is granted to the player who successfully defuses the highest number of bombs (for scenarios utilizing the SUPERNOVA Bomb device). In case of a tie, the winner is determined based on the maximum number of game points.



**Friendly fire man.** The achievement is awarded to the player who inflicts the most damage on their teammates (this achievement will be in scenarios where friendly fire is enabled). In case of a tie, the winner is determined based on the maximum number of game points.



**Miner.** This achievement is awarded to the player who successfully defuses the highest number of bombs (in scenarios utilizing the SUPERNOVA Bomb device). In case of a tie, the winner is determined based on the maximum number of game points.



**First Shot.** The achievement is awarded to the player who first hits an opponent. The statistics record the first in-game action in the round, which can also include deactivating an opponent with the first shot.



**Break through.** The achievement is awarded to the player who, at the beginning of the game scenario, manages to deactivate 3 opponents within the first minute of the game without being personally deactivated (killed). In case of a tie, the winner is determined based on the maximum number of game points.



**Leader.** This achievement is assigned to one individual within a team. The achievement is granted by the instructor who conducts the game. While observing the game, the instructor can identify a player who serves as the leader or captain for their team. This achievement is at the discretion of the instructor.



**Last hero.** The achievement is awarded to the player who remains the last survivor from their team at the end of the round. The number of players on the team must be greater than 1. In case of a tie, the winner is determined based on the maximum number of game points.



**Unicorn.** The achievement is awarded to the player who was not deactivated throughout the game scenario. In case of a tie, the winner is determined based on the maximum number of game points.



**Phoenix.** This achievement is awarded to the player who respawned at the base the most number of times. In case of a tie, the winner is determined based on the maximum number of game points.



**Modest.** The achievement is awarded to the player who, after the end of the game scenario, was unable to make any opponent deactivations. In case of a tie, the winner is determined based on the maximum number of game points, ensuring that the number of points cannot be 0.



**Obsession.** The achievement is awarded to the player who deactivates the same opponent 10 times within a single round of the game. In case of a tie, the winner is determined based on the maximum number of game points.



**CAMPER** - a player who enjoys staying in one place for a long time. The achievement is awarded based on step count calculation if the "Health for Steps" option is enabled, for the minimum number of steps taken.



**Intruder.** This title is awarded to the player who consistently violated the safety rules during the game. The player made abrupt and hazardous movements with their blaster. In case of a tie, the winner is determined based on the maximum number of game points.



**Laser Hero.** This nomination is automatically given to every player who has not been assigned any other nomination. Essentially, it is recognition for participating in the game when other achievements are absent.



**Birthday person.** This achievement is awarded to one person on the game field – the birthday celebrant. The achievement is granted by the instructor who conducts the game. The achievement can be assigned to multiple players.

### 11.3.5.3 Team

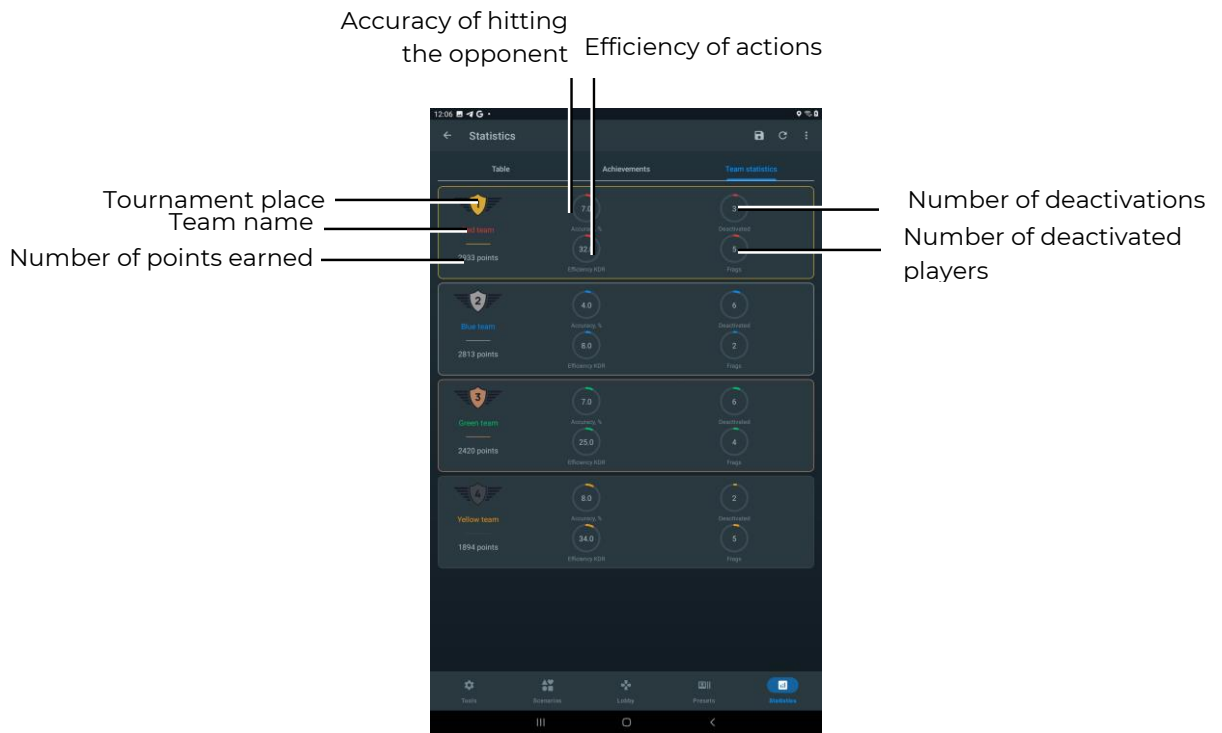
The Team tab displays team stats.

At the end of the match, statistics analyses each team's performance, then summarizes the data and provides the team stats.

At the end of the game, the teams take places:

- 1st place - gold medal;
- 2nd place - silver medal;
- 3rd place - bronze medal;

- 4th place - iron medal.



## 12 Streaming stats on an external screen using the Lasertag Tv-Out app

Broadcasting operational and post-game statistics on a TV screen or a projector installed in a non-game area (waiting area, administrator's room, etc.) allows:

- during a game round, control individual statistics of players, mode and status of additional devices;
- by observing the operational changes in statistics, to involve in the gameplay the players waiting for their turn, as well as their fans;
- each player, immediately after the game, evaluate his own achievements and the achievements of the team;
- as one of the advertising elements - to attract new visitors.

For this purpose, the company has developed the Lasertag Tv-Out program included in the delivery set.

The program is installed on any device (smartphone, tablet, PC, Android TV, set-top box) with the installed Android operating system version no lower than 10.0.

Before selecting an Android set-top box, you need to check the availability of Google Play services for the chosen model. The list of models with supported services is available at the [following link: https://storage.googleapis.com/play\\_public/supported\\_devices.html](https://storage.googleapis.com/play_public/supported_devices.html) The list is updated regularly. For convenience, you can use the QR code:



Note: If the device is not on this list, issues with installing the application on the set-top box may occur!

### 12.1 Installing the Lasertag Tv-Out app

Installing the Lasertag Tv-Out app:

1. Connect the Android box to a Wi-Fi network with Internet access.
2. Download the installation file of the program "Lasertag Tv-Out" to the device  
<https://lasertag.net/support/>  
or in the Play Market application  
<https://play.google.com/store/apps/details?id=com.lasertag.tvout>
- 2.1 Launch the app store by clicking on the Play Market icon.
- 2.2 In the Play Market search field, enter the name of the app - Lasertag Tv-Out.
3. Press the Lasertag Tv-Out application icon.
4. After opening the menu with information about the application, press the "Install" button.
5. Launch the "LTO" application, then launch the "Lasertag Tv-Out" application. Both devices running the applications must be connected to the same access point with one of the following names: (LASERTAG, LASERTAG-NET, MGO, Test mode, OTK (in Latin letters), TechSupport).



If the connection is successful, Lasertag Tv-Out will be displayed on the screen:

- selected teams and players;
- the required scenario;
- game round parameters;

- extra devices.

## 12.2 Lasertag Tv-Out settings in the Lasertag Operator software

After installing and opening the Lasertag Tv-Out app in parallel with the LTO app, go to the Tools tab in the LTO app and open the Tv-Out Settings option. If the connection is successful, the startup screen will appear on the monitor and the LTO app will display the correct connection settings in the Tv-Out Settings parameter.

The functions that can be configured in the Tv-Out Settings menu are described in 11.3.1.7.


## 12.3 Lasertag Tv-Out app operation

To start the Lasertag Tv-Out app, click the application icon on the screen. The app will then start automatically. When the app starts, you will be greeted with the app loading screen. The duration of the download depends on the speed and stability of the Wi-Fi signal connection.



Download screen

After successfully connecting to the LTO and Lasertag Tv-Out apps via Wi-Fi, you will be taken to the pre-game screen.

If the image in the Lasertag Tv-Out app does not fill the entire width of the screen, you need to hide the navigation bar. To do this, press the button with the two down arrows  in the bottom left corner of the screen. This can be done with a computer mouse connected to the set-top box or from the Android set-top box's remote control.

## 12.4 Pre-game screen

When the kits are connected to the server, the screen displays the images of the players' tiles and the color of their team (teams are displayed depending on their allocations through the LTO app).

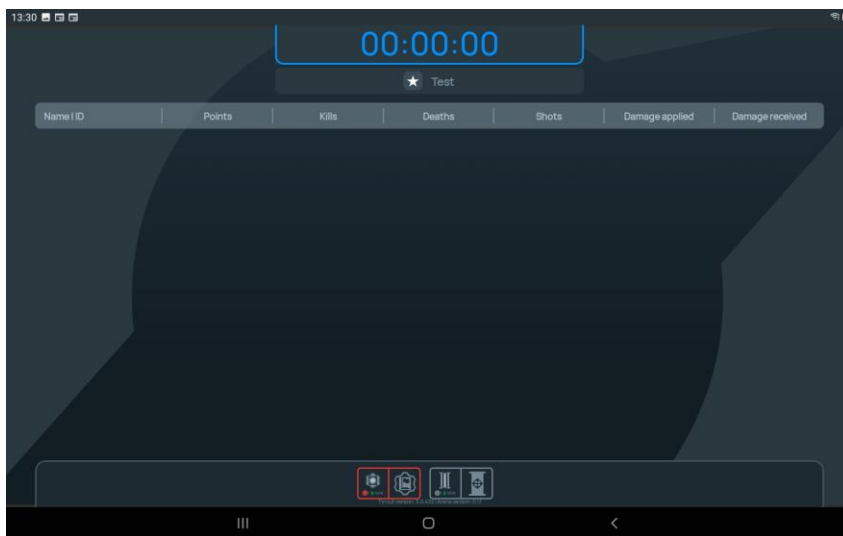
If you select a scenario with blue and red teams, the screen will display the colors of those teams, and the same applies to yellow and green teams. However, if there are a large number of participants, the teacher can divide the players into four teams, in which case all four teams will be displayed on the screen.

The Lasertag Tv-Out screen can only display 7 players from two teams or 3 players from the four teams and 10 additional devices. However, if the number of players and additional devices exceeds this limit, the software will automatically split the display into pages. The procedure for setting up the screen display is described in section 2.

A general view of the pre-game screens is shown in the figures below.



**Display in the form of tiles**



**Pre-game screen. Display in the form of a table**

The screen will remain blank until:

- players and additional devices are added;
- a game scenario is selected;
- the time of the game scenario is selected.

The central Game Logs tab will remain empty until the scenario is started and the first game events occur.

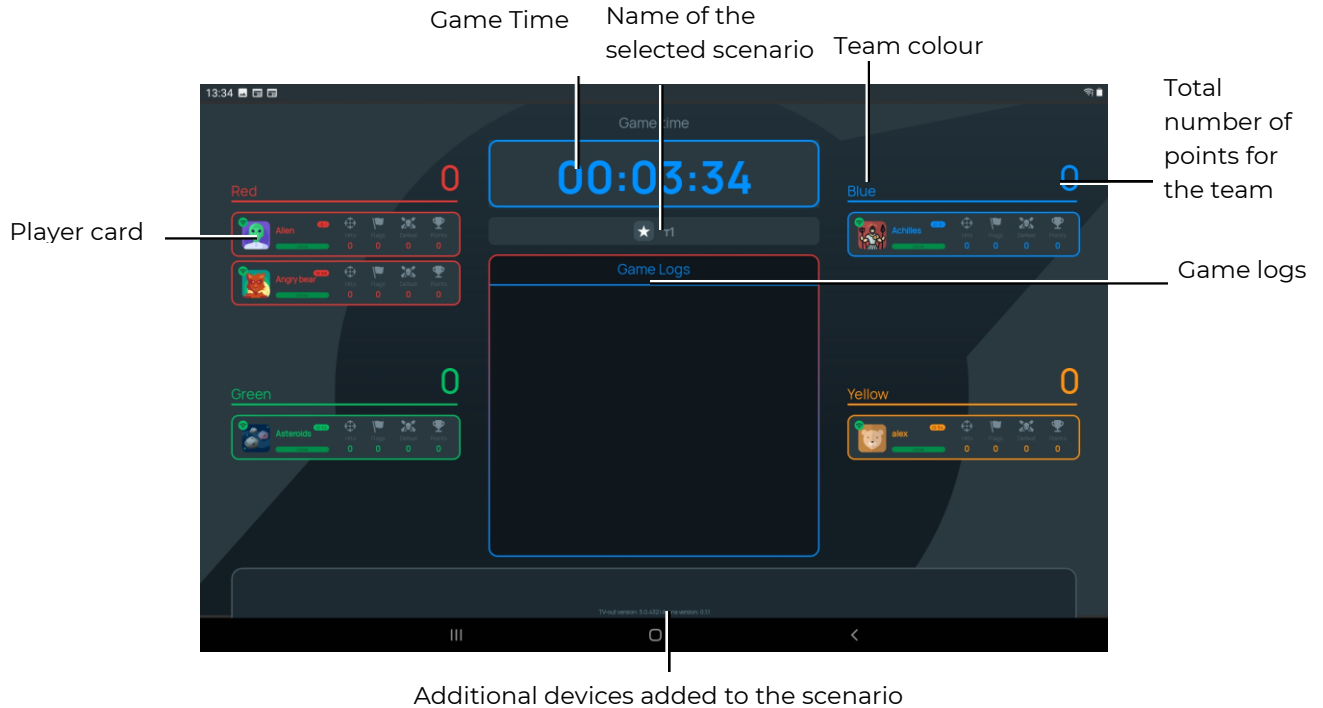


## 12.5 Pre-start screen

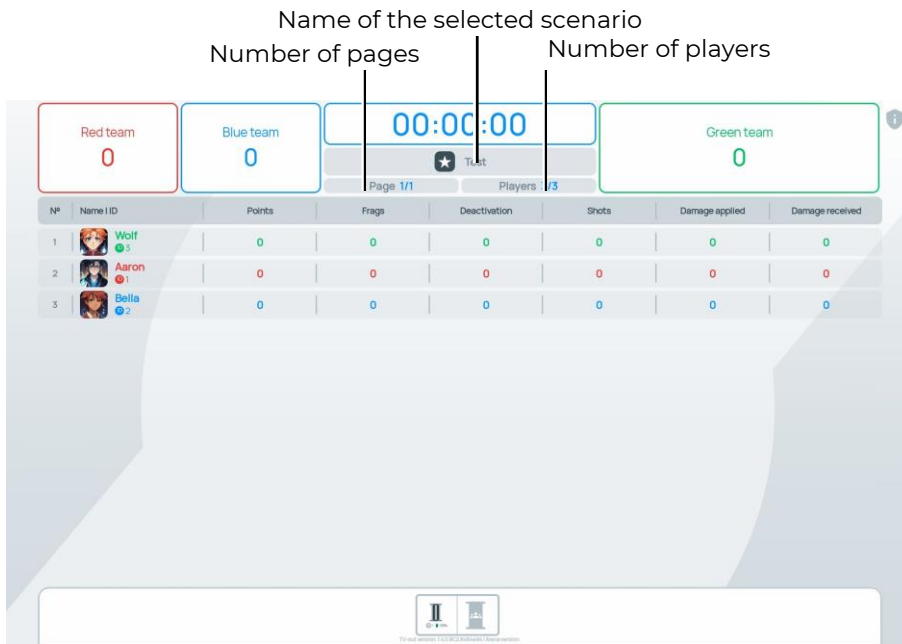
Once teams and additional devices have been added in the LTO app, the game round time (as well as the time before the game starts) has been set and the scenario has been selected, all these parameters are automatically displayed on the Lasertag Tv-Out screen.

Each tile in the set shows the performance of each player in real time. If additional devices are used in the scenario, their tiles will also appear on the screen.

For screens with two, three, and four teams, the parameters are the same.



**Pre-start screen for four teams. Display in the form of tiles**

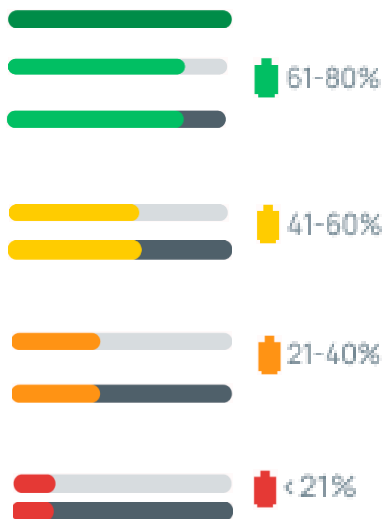


**Pre-start screen for three teams. Display in the form of a table**

A team's total score can be up to six digits. If players exceed this limit, the points will be displayed as a number + a letter, for example 18.6 mil.

The player's card shows:

- player's name;
- battery level;

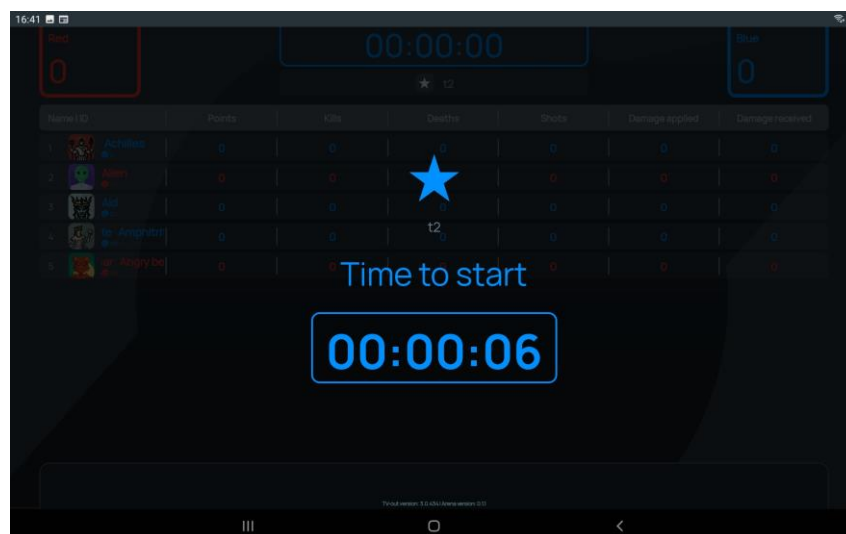


- Wi-Fi strength:
  - green – stable signal;
  - orange – medium signal;
  - red – unstable signal;

- grey 📶 – no signal.
- personal performance of the player:
  - 🏆 – hitting an opponent with a shot;
  - 🚩 – deactivation of the opponent;
  - 🧠 – deactivation of the player with this card;
  - 🏆 – points earned by the player during the game;
  - ID 125 – player's ID.
- extra devices that are added to the scenario:
  - device ID;
  - battery level;
  - the mode in which the device operates and its capture rate.

### 12.5.1 Timer until the start of the game round

When the instructor clicks on the Start Game button in the LTO mobile app, an animated timer is displayed on the screen showing the time until the game starts, which will be accompanied by a voice countdown starting 10 seconds before the game starts.

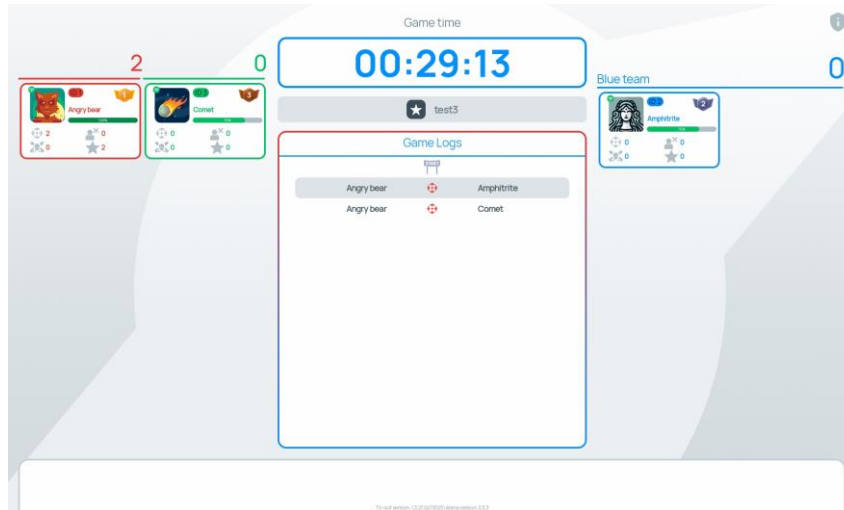


Timer until the start of the game round

### 12.5.2 Game screens

On game screens, animations may be present during the "page flipping" of player cards, additional devices, and player lists if the corresponding parameter is enabled in the Lasertag Tv-Out settings in the Lasertag Operator program (see section 11.3.1.7).

Game activities (logs, game events) should be viewed from top to bottom and from left to right. From the list of game events, only those enabled during the game event configuration (see section 11.3.3.5) will be displayed on the screen:

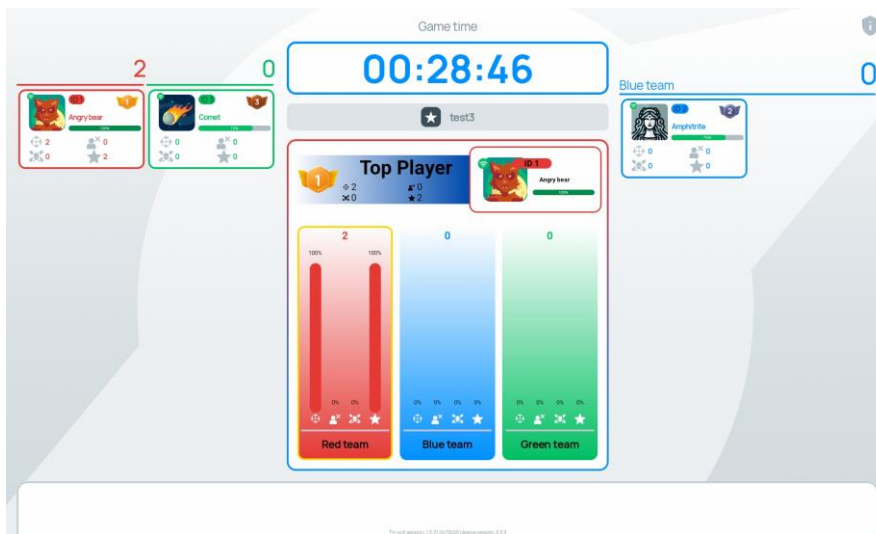


**Game screen for 3 teams. Display in the form of table – logs**

In the "Statistics" display mode, four main parameters are shown: the percentage of shots hitting an opponent, opponent deactivations, player deactivations, whose card it is, and points earned during the game.

Additionally, the most effective player at the current moment is displayed.

If all players are on the same team, the "Statistics" display mode shows the top 3 players.



**Game screen for three teams. Table display – statistics**

Red team		Blue team		00:28:03		Green team	
0		0		Test		0	
Page 1/1		Players 3/3					
N°	Name   ID	Points	Frags	Deactivation	Shots	Damage applied	Damage received
1	Wolf   3	0	0	0	0	0	0
2	Aaron   1	0	0	0	0	0	0
3	Bella   2	0	0	0	0	0	0

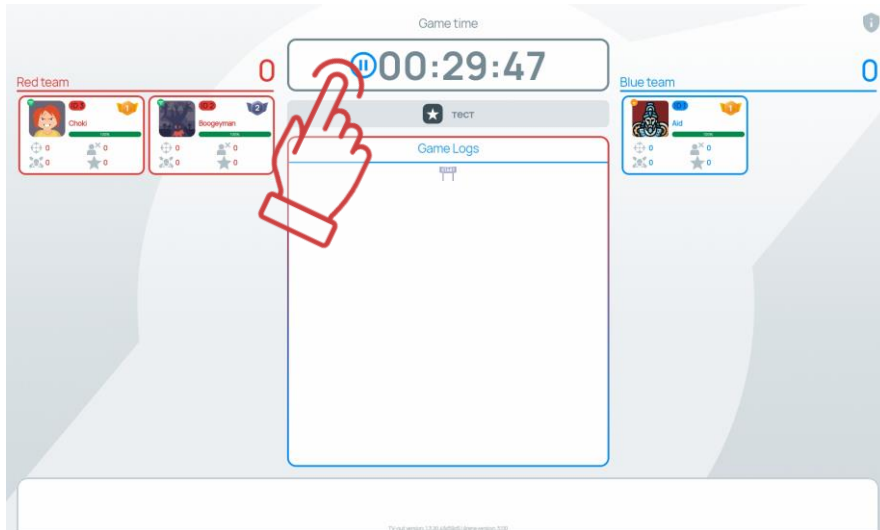
**Game screen for 3 teams. Display in the form of a list – full list**

When the results filter is enabled, only the selected results are displayed:

Red team		Blue team		00:27:41		Green team	
0		0		Test		0	
Page 1/1		Players 3/3					
N°	Name   ID	Points	Frags				
1	Wolf   3	0	0				
2	Aaron   1	0	0				
3	Bella   2	0	0				

**Game screen for three teams. List display – two selected parameters**

Starting with application version 1.3.20.45d59d5, the corresponding icon is displayed on the screen during a game pause.

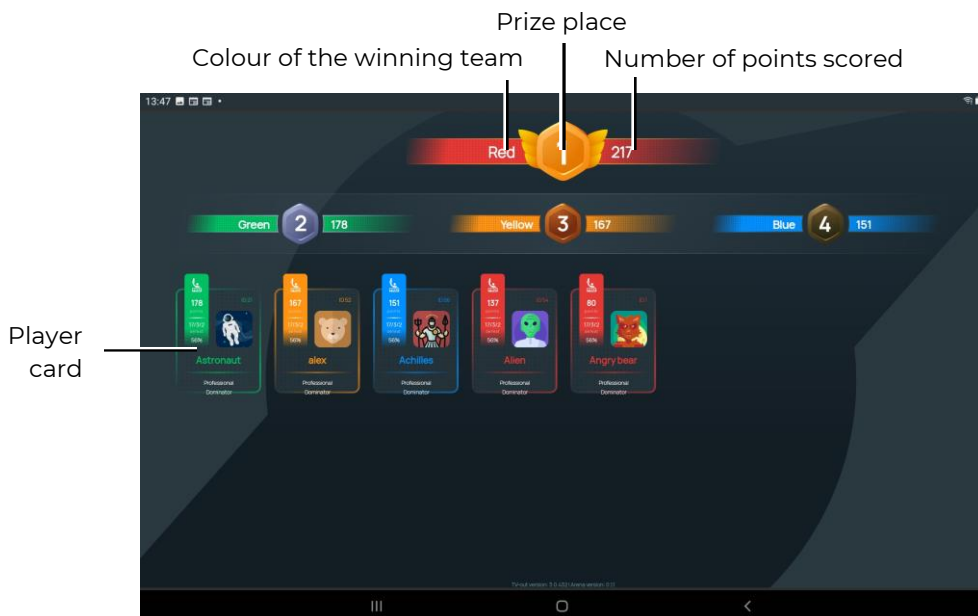


### 12.5.3 Statistics

When the game is over, the Lasertag Tv-Out screen automatically displays animated screens that show the game stats. These screens are automatically scrolled with adjustable interval (no manual scrolling is possible).

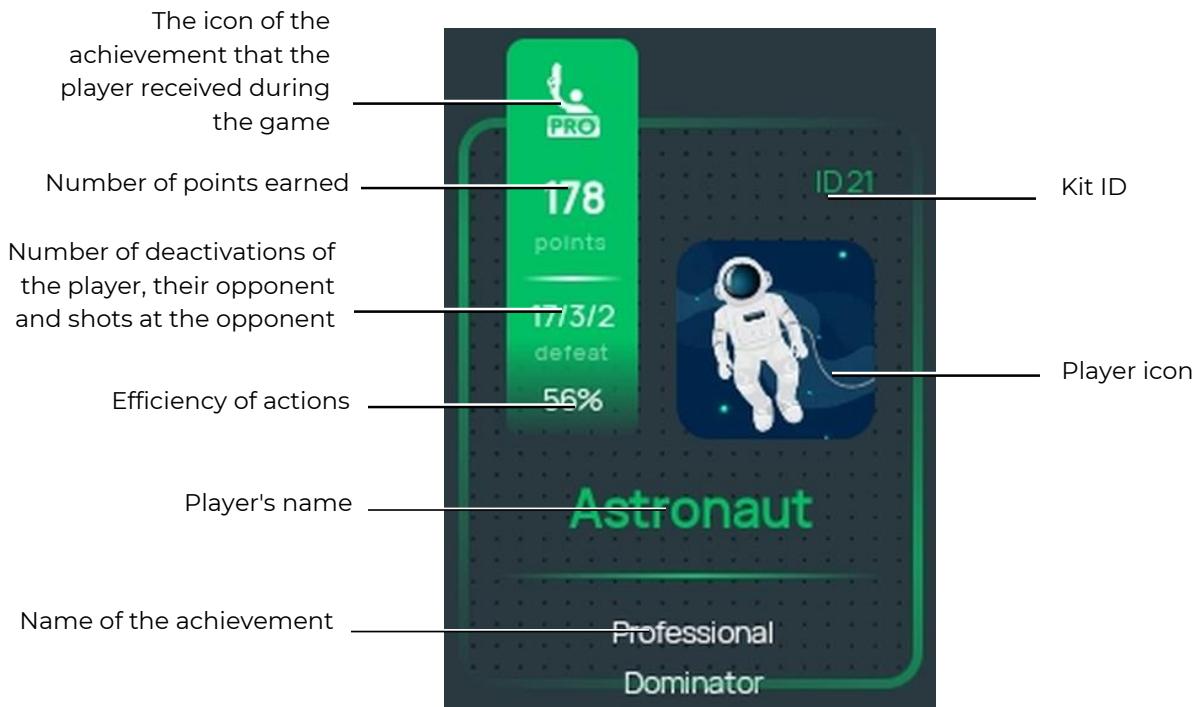
In case the number of players from two teams exceeds 16, the Lasertag Tv-Out screen will automatically flip player cards, the flipping time will depend on the "automatic player switching time" parameter set in the LTO settings under "TV OUT settings".

If there are more than 16 players from two teams, the app will automatically flip through the player cards on the Lasertag Tv-Out screen with animation and special sound.



**Personalized "Statistics" screen - display in the form of cards**

The player card on the Stats screen contains the following information:



If the "Table" display type is selected, the final screen will display the same parameters as in the list display mode during the game.

## 12.6 Installing the Lasertag Tv-Out app update

To install the Lasertag Tv-Out app update, you must:

1. Connect the Android box to a Wi-Fi network with Internet access.
2. Launch the app store by clicking on the Play Market icon.
3. In the Play Market search field, enter the name of the application - Lasertag Tv-Out.
4. Click Update
5. Wait for the update.
6. Download Lasertag Tv-Out app.
7. Open the LTO app and check the connection (Tools/TV OUT/Connection settings).

## 13 Safety procedures

The components of the laser tag equipment supplied by the company are complex devices that require careful and accurate handling.

Do not allow moisture to get into the devices. If nevertheless it happened - quickly turn off the equipment and dry it for 4-5 hours at room temperature.

Protect plastic equipment enclosures (blaster, vest sensors) from excessive mechanical load. If the equipment was stored in a room with minus temperature, keep it warm for at least 2 hours before turning it on and use it in heated rooms. This measure is necessary to avoid damage to the electronic components due to condensation.

Equipment for the indoor laser tag has a built-in battery, so you should follow the safety rules when working with lithium-ion batteries.

The lithium-ion batteries used in our equipment have a number of advantages over traditional batteries. They are light in weight, have a long service life and a large specific capacity per unit mass and volume. Storage and operation batteries do not pollute the environment; they comply with all international environmental standards.

However, lithium-ion batteries also have disadvantages. One of the main ones is sensitivity to overcharges and overdischarges. Recharge is usually accompanied by increased heating and bloating of the battery case and, as a result, its irreversible failure. The deep discharge of the device leads to the same result. To prevent negative consequences, each battery supplied by our company is equipped with an internal circuit protection against overcharging and deep discharge, as well as against exceeding the permissible temperature (above +90 °C).

However, the safe handling of Li-ion batteries should be paid serious attention.

Do not use the battery at high temperatures (for example, in direct sunlight, near a heat source or open flame) - overheating increases the gas pressure inside the battery, and this can lead to an explosion or at least shorten its service life. When the battery cools below 0 °C, the power decreases to 40-50%. Maximum allowable temperatures at which lithium-ion batteries can be used: from -40 °C to +50 °C.

Do not use the battery under static electricity conditions - protection devices may fail and problems may arise in the safe use of the battery.

Do not squeeze, throw, or expose the battery to mechanical stress.

Do not short-circuit the positive and negative terminals of the battery with metal objects or wires.

When connecting multiple lithium batteries, use batteries from the same manufacturer - of the same rating, in the same technical condition.

Do not use the battery without an electronic protection circuit.

Do not reverse the polarity of the battery terminals.

Do not connect the battery to devices that are not designed to be powered by it.

Do not use bloated batteries - they must be replaced.

Do not disassemble the battery or puncture it with sharp objects - it may become depressurized and leak, overheat and catch fire.

Do not immerse the battery in water, do not throw it in a fire - it may explode!

Do not solder the battery directly to the plane.



Do not bring the battery to a minimum charge. Frequent recharging is preferable - this does not harm the battery.

### **Charging a battery**

Use a ventilated and fire-safe room to charge the batteries. If the batteries could ignite, they can't cause a fire in the entire room.

Burning lithium-ion batteries cannot be extinguished with water (hydrogen is formed) and carbon dioxide fire extinguishers (lithium reacts with carbon dioxide). You can use dry sand, salt, baking soda, as well as cover the burning battery with a dense heat-resistant cloth. Therefore, we recommend storing sand near the battery charging point.

Do not charge non-rechargeable lithium batteries! An attempt to charge these devices can cause an explosion and ignition, which spread toxic substances.

**! If the battery is damaged, do not recharge it!**

Use only chargers that are designed for this type of battery and which were equipped with the delivery.

**! Do not use the power supply of the router to charge the batteries of laser tag equipment!**

The temperature mode of the charge of lithium-ion batteries affects their capacity, which decreases when charging in the cold or in the heat. The charge can be carried out at an ambient temperature ranging from +4 °C to + 40 °C, but the optimum charging temperature is +24 °C.

Before using the charger, check the correctness and quality of the connection of all wires. If any wires of the charger are damaged, they must be replaced before using the device.

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

When charging equipment with a built-in battery, the electrical safety rules must be observed.

It is not recommended to keep the battery charger in a power outlet if it is not being used for its intended purpose at this time.

When unplugging the device from the mains, unplug it from the power outlet by holding the plug, not the power cord.

**! Do not leave equipment unattended while charging!**

If a specific odor, heat, smoke is released when charging the battery, or the case is deformed, immediately disconnect the charger from the network, and the battery from the charging device.

The charging cycle for fully discharged blaster-vest batteries is 5-6 hours. Full charge is achieved after the voltage reaches its maximum value, and the charge current decreases to 0.1 ... 0.07 A depending on the battery model.

If the cell swells when charging, then never puncture the element, especially when it is still hot. It should be placed in salt water and wait until the element cools down. After cooling, carefully pierce the outer shell, and then place the cell in salt water again. After that, the battery must be utilized.

In the event of an emergency, lithium cells may be damaged by short circuits inside. Moreover, the element itself may seem whole. In any case, it is better to remove the battery and watch it carefully for 20 minutes.

In case of depressurization of the battery and electrolyte contact with hand skin or eyes, immediately rinse the affected area with running water for 15 minutes and consult a doctor. Otherwise, it may cause a chemical burn, partial or complete loss of eyesight.

### **Storage and disposal of batteries**

Lithium-ion batteries are not subject to long-term storage and are designed for active continuous operation. From the moment of manufacturing, their service life is 2-3 years, regardless of the intensity of operation.

If there is a need to store unused batteries for more than 1 month, they must be charged up to about 50%. Long storage in a discharged condition can lead to battery failure.

Store at +5 °C... +20 °C (preferably +5 °C) in a place protected from direct sunlight.

Do not store the battery in rooms with high temperature or in rooms with high humidity.

Do not store the battery with metallic objects such as paper clips, pins, etc.

Battery protection circuits have a low internal consumption, but nevertheless sufficient so that the battery voltage can decrease to 2.5 V in a few months. Therefore, if the battery is not used in cycling mode, it must be recharged periodically (about once every 6 months).

If during storage of the battery you notice that it is very hot, hissing gas escapes, the appearance of caustic white smoke, then immediately move it to a place safe for people. If electrolyte spills from the battery, do not allow it to come into contact with skin, ventilate the room, and dispose of the battery.

The lithium contained in Li-ion batteries melts and boils at a relatively low temperature. When water enters, a reaction occurs with the release of hydrogen. Accordingly, such a battery is potentially explosive during prolonged uncontrolled storage and can cause environmental damage.

In order to avoid undesirable consequences, the used elements must be collected and delivered to specialized recycling centers. Meanwhile, they are ought to be packed in such a way as to avoid electrical contact with the container or other battery. Pack leaking elements in such a way as to locate the leak. Use protective equipment: gloves, eye protectors, appropriate work clothing, a respirator, and sealed plastic bags.

 **Do not dispose of lithium-ion batteries in trash cans!**