

Hi-Tech Tagger

Operation Manual

Firmware Version 2.62-02

(Rev J)

READ THIS !! This is an operation manual for the Hi-Tech Tagger operating system. Details of tagger construction or programming are not covered in this document. This unit does not use any kind of laser that could be harmful in any way. It uses an infrared led similar to a remote control with an added lens for longer distances.

OVERVIEW OF SYSTEM FEATURES

- 100 Players
- 4 Teams
- Fully editable gun and game configurations
- Full-Auto Switch
- New! Support for Medic Box and Ammo Box “pick-ups”.
Players can “pick up” additional Health and Clips on the field
- Adjustable “Barrel Overheat” function
- Automatic Respawn – Adjustable Time Delay
- Automatic Timed Games – Game Over after time limit expires
- Electronic “Flags” – Sensor LEDs flash to indicate “carry”; drop flags when killed
- Updated: “Zombie” game mode – dead players come back?. as zombies!
- Gun-to-gun wireless “Cloning” allows instant configuration of additional taggers
- Intelligent display backlight control
- Anti-cheating features
- Infrared (IR) LED fail monitor w/ alarm (RevG hardware only)
- Battery meter: 220 is a full charge, but it is recommended to charge at 160 or sooner to prolong battery life. (Lithium Ion batteries have no memory and may be charged at anytime.)
- Built-in Referee Gun functions (any tagger can be configured as the Ref Gun)
- Built-in ISD recorder function for uploading custom sound effects (RevH hardware only)
No need to purchase external sound chip programmer.

Built-In Referee Gun (Master Controller) Features:

- New Game, Admin Kill, Respawn, Pause
- Collect Scores, View Scores (individual & team), send scores to PC
- Test Sensors

Add-on Devices Supported:

- Micro MT Taggers (uMT) (uMT taggers support limited feature set / no scoring)
- Flag Station - up to 16 unique flags
- Medic Box – up to 16 medic boxes (pick-ups)
- Ammo Box – up to 16 ammo boxes (pick-ups)
- Respawn Station
- First Aid Kit (Medic)
- Ammo Can (Armor)
- Grenade (Instant Kill or Variable Damage)
- Claymore (Instant Kill or Variable Damage)
- Bazooka (Variable Damage)

- Stun Grenade (6-second stun/flash-bang)
- Bomb / Trip Mine (Instant Kill)
- Radiation Emitter (Area Denial; Variable Damage)

POWER ON

Some menus and functions are accessed by holding buttons on the tagger while turning the Key (power switch) ON. For two of the menus you must continue holding the button for about 3 seconds. These power on combinations ensure that certain functions are ONLY accessible to the game officials / referee.

Hold this button while turning

power on: (To access this menu continue holding (3 seconds) to access this menu)

<u>MODE</u> (Black)	Edit Gun Settings / Cloning	Change Player ID
<u>RELOAD</u> (Red)	Select Function (Normal / Ref Gun)	Edit Global Parameters
<u>MODE + RELOAD</u> + TRIGGER	Restore Factory Settings	

NORMAL POWER UP

Turn Key Switch (power switch) to the "ON" position.

Sensor LEDs flash briefly.

'Ready to Engage' sound plays.

Hold the MODE button for 1 second to turn the LCD backlight on/off.

START GAME:

Press and hold trigger for 1 second.

Countdown begins.

'Action' sound plays.

LCD displays the Main Firing Screen.

LCD Display - Main Firing Screen

Rounds	Clips
R030	C20
100	Eagle
Health	PlayerID

R###	Rounds Remaining	Upper Left
C##	Clips Remaining	Upper Right
100	Health Value	Lower Left
Eagle	Player ID	Lower Right

The Player ID portion of the screen will show the ID of the last player that hit you. After 5 seconds this reverts back to your own Player ID.

BASIC OPERATIONS

Firing

Press the TRIGGER to fire.

Change Display Screens

Press the MODE button to change screens. The display will automatically revert to the Main Firing Screen when firing or Reloading. The following information is available:

Reloading

Press the RELOAD button to simulate removing an empty (or partial) clip and replacing it with a full clip. The Reload Delay simulates the time required to perform a clip change. You can initiate a Reload at any time to ensure you have a full Clip. You will not be able to fire during the Reload Delay, but can still take hits from opponents. During reloading, the Total Ammo (rounds) remaining is displayed above the Reload progress bar on the LCD.

? You can perform a Reload at any time. Reloading a partial clip will not result in any loss of ammo. The tagger automatically manages your ammo, so any partial clips are recombined into full clips.

? If you are hit during a reload, the LCD will revert to the main firing display, but you must still wait until the reload cycle is complete before firing.

Full-Auto Switch (optional)

OFF = Semi-Auto or Burst (depending on setting of the Fire Select parameter)

ON = Full-Auto

Battery Status 220=Full, 160=minimum charge recommended (Lithium Ion batteries have no memory so charging after each use is recommended.)

Elapsed Time Elapsed time since start of game. For timed games, it is useful to check this occasionally.

Lives Remaining "Respawns" (if enabled)

Team ID Your Team

Flags Captured *This will only be visible after at least one Flag has been captured.*

LCD Backlight

Hold the MODE button for 1 second to toggle LCD backlight on/off.

Backlight automatically turns off during Firing.

Restore Default Settings (Factory Reset)

Turn the Key (power switch) OFF.

Hold the RELOAD, MODE and TRIGGER buttons while turning the key ON.

Note: *PlayerID will reset to 00 Eagle.*

Set Player ID (Tagger ID)

Turn the key OFF.

Hold the MODE button while turning the key ON.

Continue holding the MODE button (~3 seconds) until "Player ID" is displayed.

Use the RELOAD and MODE buttons to scroll through available Player IDs.

Use the TRIGGER to "save" the currently selected ID and exit.

NOTE: *Every gun must be set to a unique Player ID.*

GAME OVER MENUS

These screens are only accessible when you are "Tagged Out" (Dead), or after receiving an End Game command from Referee Gun. Use the RELOAD button to scroll through stats.

GAME OVER

Game Time T+ mins:secs This shows how long you lasted in the game.

Hits By Number of times you were “hit” by each player. Use RELOAD button to scroll through Player IDs. Only players that hit you will be displayed.

Last Hit Player that “tagged you out”.

Tag Outs Number of times you were killed (tagged out). Usually this is 1 or 0 unless Respawns were allowed in the game.

Flags Number of Flags you captured.

Rounds Fired Number of Rounds you fired.

EDIT PARAMETERS

Turn the key OFF.

Hold the MODE button while turning the key ON.

The LCD displays “Edit Settings”

Press the TRIGGER to enter the editing mode.

Use the RELOAD and MODE buttons to adjust parameter values up/down.

Use the TRIGGER to “select” a value and advance to next parameter.

Team ID Red, Blue, Yellow, Green

Assigning Players to teams enables Team Scoring and use of the Friendly Fire feature.

Friendly Fire On / Off

When Friendly Fire is ON, players can receive hits from both their opponents (different Team ID) and their teammates (same Team ID). When Friendly Fire is OFF, players can only be hit by opponents (Different Team ID). Friendly Fire should be turned ON during “free-for-all” games (no teams).

Sounds Mil-Sim / Sci-Fi / Silenced

This parameter affects the Firing and Reload sounds. There is no sound at the end of reload cycle when “Silenced” is selected.

Muzzle Flash On / Off

Life 1 to 999

Starting Health value. The default setting is “100” to indicate 100% Health.

Armor 0 to 200, Off

Every Hit decreases your Armor value by “1”. If you start with “5” armor points, then after 5 hits, your Armor is depleted (“0”). Armor reduces the value of all hits by ½ (regardless of Damage value). Armor does not protect you from “instant kill” devices.

Clip Size 1 to 250, UNL

Rounds per Clip. This is the number of rounds that can be fired before Reloading. Can also be set to UNL (unlimited rounds). In this case, players will not need to use the Reload button.

Clips 2 to 200, UNL. This is the total number of clips carried. Can also be set to UNL (unlimited clips).

Reload Delay 1 to 30 Seconds

Simulates the time required to reload. After pressing the RELOAD button, the LCD display will show a progress bar. During this delay, the player cannot fire but can still be hit.

Fire Select Semi-Auto, Burst, Full-Auto

Burst Rounds 2, 3, 4, 5, 6

Sets the number of rounds fired in each "Burst" (only if Burst is selected Firing Mode)

Cyclic Rate 250 to 800 Rounds per Minute

Sets the Rate of Fire for the Burst and Full-Auto firing modes.

Be cautious using high Cyclic rates with high Range values, as you can damage the IR LED!

Damage Points 1, 2, 4, 5, 7, 10, 15, 17, 20, 25, 30, 35, 40, 50, 75, 100

Sets how many Health Points will be deducted from the opposing player when they are hit.

With this "Variable Damage" feature, it is possible can configure different taggers in a game to inflict different amounts of Damage. This allows you to simulate different weapon types or calibers, so that "larger" weapons (e.g. a Sniper Rifle) can do more damage a "smaller" weapon (e.g. an SMG).

Hit Delay 0 to 20 Seconds

Sets the delay after being hit by an opponent. During the Hit Delay, the player cannot fire or receive further hits.

Overheat Limit 10 to 100, Off

The Overheat parameter is used to simulate weapon malfunction due to overheating the barrel by excessive sustained firing. If Overheat is enabled, the "barrel" becomes hotter with every round fired. This adds realism by limiting players' ability to lay down continuous suppressive fire, especially when using Full Auto at high rates of fire.

? The barrel "temperature" will increase with every round fired. If the temperature reaches the limit, then it will overheat and jam. Player must allow the barrel to cool off before firing again. After jamming, the LCD will show the barrel temperature.

? The barrel will automatically cool off when the player is not firing. The barrel cools off at a rate of "3" per second. So it will take around 33 seconds for a jammed (overheated) gun to completely cool. The player does not have to wait until the barrel is completely cooled off before firing, but the less time they wait – the quicker it will overheat again.

Max Respawns 1 to 20, Off

Sets the maximum number of Automatic Respawns. Setting this to "Off" will disable Automatic Respawns. The number of remaining respawns is displayed on the Gun Displays as "Lives".

Zombie Mode On / Off

This parameter is not available if "Respawns = Off".

If Zombie Mode is ON then all players assigned to the Red Team are the “Zombies”. When a player on any other team is killed they will respawn as a Zombie. See the section on Zombie Mode for more details.

Auto Respawn Delay 10 to 180 Seconds

This parameter is not available if “Respawns = Off”.

Sets the delay time for Auto-Respawns.

Start Delay 0 to 240 Seconds

Death Delay 0 to 120 Seconds

This provides a delay after a player is Tagged Out. During this delay the Sensor Hit LEDs remain ON and the LCD displays "Get Medic" along with a countdown timer. A medic can "revive" the player by adding health points or the player can revive themselves by reaching a medic station (medic box) before the timer expires. If the player does not receive help in time - they are OUT.

Game Time Limit 0 to 120 Minutes (0 = no time limit)

GLOBAL PARAMETERS

IR Power Indoor / Outdoor

This sets the maximum power (and range) of the Infrared Emitter. Indoor environments should use Indoor mode to limit reflections and “bounce shots” from walls and objects.

Range Min to Max

When using Outdoor mode, the ideal range setting is “60%”. Higher settings (along with higher cyclic rates) may overdrive the Infrared Emitter and eventually degrade its performance due to overheating. Note that the effects of the Range parameter are much more profound when using the Indoor mode.

This requires some experimentation to determine the ideal settings for your environment.

Game Box RoR Yes, No

Yes = Game Boxes can be re-used if the Player was respawned.

No = Game Boxes are one-time-use per player.

Game Box Stay Yes, No

Yes = Game Boxes allow unlimited use.

No = Game Boxes are one-time-use per player.

Full Ammo RoR Yes, No

Full Ammo ‘Reset on Respawn’. When this parameter is set to “Yes”, the player will receive their full initial ammo loadout during any respawn.

If set to “No”, the player will continue with the same Ammo they had when they were killed (tagged out). This can be useful to prevent players from ‘self-sacrificing’ (allowing themselves to be killed) in order to gain more Ammo.

Kill LED 1 second to 240 seconds. Sets the timeout for the Sensor “Hit” LEDs. The LEDs will automatically turn off after this delay to conserve battery power.

CLONING: The Cloning feature enables the operator to quickly “copy” game settings from one tagger to another. All data is transmitted over the infrared link so no cables are required. The cloning function is also used to assign Team IDs and to synchronize the Global parameters on each tagger.

? Cloning can be performed by ANY tagger without need for a dedicated referee device.

? After a successful clone, the receiving tagger will indicate “Clone OK” and play the power up sound.

Cloning Operation – Use any tagger as the “Host”.

1. Turn Host Tagger OFF.
2. Turn Host Tagger ON while holding MODE button.
3. Press Trigger to access “Edit Preset1”.
4. Edit Game and Weapon settings as required.
5. Press Trigger at “Save Settings”.
6. Host Tagger will display “Clone Team A”.
7. Aim Host tagger at sensor of receiving tagger.
8. Press trigger to initiate Cloning.
9. Receiving tagger will display “Clone OK” and play Power-up sound.
10. Repeat steps 7. to 9. if “Error” occurs.
11. Repeat cloning for remaining Team A (Alpha) taggers.
12. Use BLACK button to select “Clone Team B”.
13. Repeat steps 7. to 9.
14. Use MODE button to select “Exit Config”.
15. Press Trigger to return Host Tagger to normal operation.

All Taggers should now display “Ready” and the assigned team (Red, Blue, Yellow, Green). This allows game officials to verify correct team assignments prior to game start.

The Team ID of the Host Tagger is set in the Edit Menu.

SCORE DOWNLOAD

Collect Player Scores on Referee Gun – The Ref Gun is used to collect and compile score data from each tagger. This is done via infrared so no cables are required, and can easily be done in the field.

1. Use the Ref Gun “End Game” command to end any players that were not Tagged Out.
2. Clear all previous score data in the Ref Gun: In the Service Controls menu, select “Clear Scores”. Press Trigger.
3. Prepare Ref Gun to collect Score data: In the Post Game Controls menu, select “Collect Scores”.
NOTE: Pulling the trigger while in the “Collect Scores” mode will send the “End Game” command. This avoids switching between menus while collecting scores.
4. Players can now download scores to the Ref Gun.
 - a. Tagger must be in the Game Over menus.
 - b. Point barrel at Ref Gun sensor (close range).
 - c. Pull and hold the TRIGGER.
 - d. Press the MODE button momentarily to start score transmit - indicated by “beep”.
 - e. Keep barrel in place (aimed at Ref Gun sensor) until second “beep”.
 - f. Watch Ref Gun LCD for confirmation notices or errors. “Good Scores” is displayed at end of successful transfer.
 - g. If any errors, repeat steps a. through e.
 - h. Score data transfer takes about 3 seconds.
 - i. Repeat this process for each player.

If any player attempts to download scores twice, the Ref Gun will recognize this and indicate “Data

Exists". This prevents corruption of the previously collected data.

Transfer Player Scores to PC – Data is transferred from the Ref Gun to the PC as ASCII characters using RS232 serial data format (8N1). Data is formatted into rows and columns using tab and line feed characters.

1. Connect Ref Gun serial port to PC serial port (or USB port depending on cable used).
2. On PC, open scoring software or terminal program and enable "Capture to Text" if required.
3. On Ref Gun initiate transfer of compiled score data to PC: In the Post Game Controls menu, select "Print Scores". Press Trigger.

Example Score Data for 3 Players:

#	Name	Team	Hit You	Hit Enemy	Hit Friend	Flags Scored	Rounds Fired	Rounds Scored	Tagged YouOut	Number Respwn	Game Time
007	Blaze	Delta	10	11	0	0	25	045%	1	0	1:25
025	Rambo	Bravo	7	11	0	0	63	018%	0	0	1:58
026	Snake	Alpha	10	5	0	0	15	034%	1	0	1:04

Individual Scores:
 Blaze +00055
 Rambo +00055
 Snake +00025

Team Scores:
 Alpha +00050
 Bravo +00110
 Charley +00000
 Delta +00110

- #- Player's ID number
- Name- Player's handle
- Team - Player's Team
- Hits - Number of times Player was hit
- Score - Number of times Player hit an opponent or teammate
- FF Hits - Number of times Player hit a teammate
- Flags- Number of flags collected by Player
- Rnds - Number of rounds fired by Player
- Accur- Percentage of shots landed by Player (accuracy)
- TagOut- Number of times Player was tagged out
- Respwn- Number of times Player was respawned
- Time- Elapsed time at end of game

PLAYER ID / CALL SIGN: Each tagger must be set to a unique Player ID to allow correct operation of the scoring features. You can permanently assign an ID to each gun, or allow players to select their Call Sign prior to the game. It may be helpful to label each tagger with the Call Sign.

? When you are tagged by another player, the Call Sign of the player that tagged you will appear in your LCD display for a few seconds.

? The Player ID is not affected by Cloning or Mode Reset. Performing a Factory Reset will reset the Player ID to "00 Eagle". Individual Call Signs cannot be edited as they are permanently set in the firmware.

PLAYER ID HANDLE

- 00 Eagle
- 01 Joker
- 02 Raven
- 03 Sarge

PLAYER ID HANDLE

- 25 Rambo
- 26 Snake
- 27 Alien
- 28 Sting

PLAYER ID HANDLE

- 50 Crush
- 51 Xenon
- 52 Force
- 53 Blitz

04 Angel
05 Cosmo

29 Zeena
30 Buggy

54 Nomad
55 Zeuss

PLAYER ID HANDLE

PLAYER ID HANDLE

PLAYER ID HANDLE

06 Gecko
07 Blaze
08 Chaos
09 Fury
10 Flash
11 Elvis
12 Homer
13 Storm
14 Habit
15 Rebel
16 Ronin
17 Lucky
18 Radar
19 Blade
20 Ninja
21 Magic
22 Gonzo
23 Cobra
24 Pappy

31 Viper
32 Jewel
33 Genie
34 Logan
35 Razor
36 Slick
37 Venom
38 Rocky
39 Saber
40 Dusty
41 Romeo
42 Orbit
43 Vixen
44 Tank
45 Rogue
46 Sheik
47 Gizmo
48 Ringo
49 Rerun

56 loner
57 Shrek
58 Spawn
59 Venus
60 Brain
61 Dozer
62Goose
63 Kronk
64 Neo
65 Roman
66 Spike
67 Gunny
68 Ozone
69 Apex
70 Siren
71 Pinky
72 EICid
73 Trace
74 Radio

PLAYER ID HANDLE

PLAYER ID HANDLE

PLAYER ID HANDLE

75 Bones
76 Dixie
77 Saint
78 Toxic
79 Hound
80 Epoch
81 Lumpy
82 Rhino
83 Talon

84 Titan
85 Waldo
86 Cylon
87 Vader
88 Saber
89 Tatoo
90 Curly
91 Ace
92 Yoda

93 Chewy
94 Gator
95 Spidy
96 Scout
97 Ghost
98 Panda
99 Hulk

MODE RESET: The Mode Reset initializes all gun/game parameters and most Global parameters to their factory values. The Player ID setting is NOT affected.

To initiate a Mode Reset:

1. Turn Power OFF
2. Press and Hold the RELOAD and MODE buttons while turning power ON.
3. LCD will indicate "Mode Reset" and Firmware Version.
4. Release buttons.
5. After Reset the tagger will boot up in Preset 1 with default game settings.

FACTORY RESET: The Factory Reset initializes ALL memory locations. This is usually only required when

the tagger is first initialized at the manufacturer, or after a firmware update (chip replacement). It should not be required during normal operation.

To initiate a Factory Reset:

1. Turn Power OFF
2. Press and Hold RELOAD, MODE and TRIGGER while turning power ON.
3. LCD will indicate "Factory Reset".
4. Release buttons.
5. After Reset the tagger will boot up in Sport Mode with default game settings.

NOTE: After performing a Factory Reset, you will need to set the Player ID and adjust Global Parameters as required.

CLARIFICATIONS

Respawn vs. New Game: Do not "Respawn" players to start a new game. When a player is respawned, they are brought back to life to continue the *same* game. The game timer and scores are not reset by a Respawn. The New Game command will reset the game timer and scores and initialize the player for a new game.

Respawn = Continue playing same game

New Game = Reset player for a New Game

Respawns and Timed Games: When using a timed game (Game Time > 0), the auto-respawn function will not work after the game time ends (Game Over) even if there are still respawns available. Also, players cannot be respawned by Referee or Respawn stations after game time ends.

Bolt-Action (or Pump-Action) Simulation: In some cases you may want to configure a tagger to simulate a single-shot weapon, where the player is required to reload after every shot. To do this, set the Firing Mode to "Semi-Auto", set the Clip Size to "1" and set the Clips to the number of single-shot rounds the player will carry. Set the Reload Delay to simulate the time required to work the "action". Now the player must hit the Reload button between every shot. This is useful for "Sniper" weapons with high damage values, as it limits the rate of fire and leaves the Sniper vulnerable while reloading.

100% Health: In many game scenarios, you may wish to set the starting Life value to "100" points

representing an overall starting “health” of 100%. This simulates the game design concept of popular PC/Console games and should be familiar to most players.

Auto Respawn: Auto Respawn (as the name implies) will automatically respawn a “tagged out” player after a programmable delay. The maximum number of respawns allowed is set by the “Respawns” parameter. The delay period is set by the “AutoResp” parameter in the Global Menu.

? This allows players to be respawned without Referee interaction, or needing to return to a “respawn point”.

? The LCD display will show a countdown until respawn. Game rules should dictate whether players are allowed/required to move while they are waiting to respawn.

? Scores are not cleared or reset by a respawn.

U.S. MILITARY PHONETIC ALPHABET

Alpha	Juliet	Sierra
Bravo	Kilo	Tango
Charlie	Lima	Uniform
Delta	Mike	Victor
Echo	November	Whiskey
Foxtrot	Oscar	X-ray
Golf	Papa	Yankee
Hotel	Quebec	Zulu
India	Romeo	

ZOMBIE MODE

Zombie Mode is designed to provide a very unique and fun (and creepy) game scenario.

First, if you have *never* seen one of the many zombie movies released over the past 60 years, go rent one and watch it (with the lights on of course). Then come back here to continue reading...

Okay, now that you grasp the basic rules of human / zombie interaction, we can continue.

Here’s how the game works: The players are divided into 2 teams. One team is the “Humans” and the other team is the “Zombies”. The Zombies, as their nature dictates, must try to kill the Humans. The Humans, in the interest of self-preservation, must try to kill the Zombies. So far this sounds like your standard “Team Elimination” scenario, right? Well, not so fast, movie fans. Here comes the creepy twist: When a Human is killed, after a short delay, they will come back to life..... as a ZOMBIE! (it’s okay to scream)

As you have probably figured out, this will create an ever-increasing problem for the Humans as the Zombies gain new recruits from the ranks of “dead Humans”. If the Humans don’t thin out that relentless horde of un-dead opponents, they may soon be outnumbered and overwhelmed.

Important note for Humans: One thing that the Humans will have on their side is that dead Zombies STAY dead. Dead Zombies do NOT come back to life. At least that’s the rule for

Zombie mode. Your movie may have been different, but in Zombie mode.... They're out!

What does a Zombie look like? In the movies, the Zombies are generally pretty easy to pick out. They walk funny, they tend to be quite unattractive and – if you are a Human – they are the ones chasing you. In Zombie mode we don't have time for scary make-up and learning the "zombie walk"... so we'll just make the Zombies' sensor(s) flash on and off. So you can clearly see them 'coming for you'. Zombies aren't good at hiding anyway.

What do Zombies eat? Zombies aren't hungry for brains. So they don't have to catch you like the ones in the movies. But Zombies ARE well-armed and a bit harder to kill than your average Human. And, since we can't make them *move* slower, we will settle for making them *shoot* slower. The Zombies will have to reload after every shot (bolt-action).

Dead Humans If you are a human and you get killed, don't worry. Just stay where you are and wait for the "transformation" (auto respawn). If you are a human and your teammate gets killed, worry. There's no question that he is coming back as a zombie and you need to get away... quickly.

"Standard Issue" Zombies. Zombies have certain fixed settings. Whether a player starts as a zombie or respawns from human to zombie, these "zombie settings" will be adopted automatically and cannot be changed. They will have 200 life points so they are harder to kill. They can only fire one shot at a time (bolt-action) with a damage setting of 10 points and a 1-second reload delay to simulate their limited aptitude for weapons.

Human Settings The settings for Humans are not limited, but we do have some suggestions. Humans should be set to 100 life points to simulate "normal life".

Team Assignments The RED team is the Zombies. The BLUE team is the Humans. Be careful in deciding how many players are assigned to each team. Remember that the Zombie team gains in size as human players are eliminated. You should balance the team sizes against how well-armed the humans are.

Zombie	Human
Team = Alpha	Team = Bravo
Health = 200	Health = 100
Clip Size = 1	Clip Size = ____
Clips = 200	Clips = ____
Damage = 10	Damage = ____
Reload Delay = 1 second	Reload Delay = ____
Hit Delay = .25 second	Hit Delay = .25 second
Fire Select = Semi	Fire Select = ____
Respawns = 1	Respawns = 1
Resp Delay = 60 seconds	Resp Delay = 60 seconds

BOLD items are "fixed" values for Zombies

Suggested Rules for Zombie Games

1. When Humans are killed, they may not move until they are respawned as a Zombie.
2. When a Zombie is killed, they must leave the field immediately.

MENU	PARAM	RANGE	Function	Cloned	Mode Reset Value	Factory Reset Value
Boot ₁	Mode	Normal,	Ref Gun Sets the active mode. The system will power up in the last mode with all game parameters intact.	No	Normal	Normal
Gun ID ₃	Player ID	0-99	Player ID and Handle. Each gun should be set to a different ID to allow scoring. The 5-character names (handles) assigned to each ID cannot be edited.	No	No Change	0
Global ₂	IR Power	Indoor/ Outdoor	Indoor= Lower IR power to limit reflected shots.	Yes	Outdoor	Outdoor
	Range	Min to Max	Adjusts IR modulation Power.	Yes	60%	60%
	Carrier	56 KHz	IR carrier frequency	No	56KHz	56KHz
	Medi Box	0-100 pts		Yes	50	50
	Ammo Box	0-20 clips		Yes	2	2
	Game Box Stay	Yes/No		Yes	No	No
	Game Box RoR	Yes/No		Yes	No	No
	Full Ammo RoR	Yes/No	Ammo Reset on Respawn	Yes	Yes	Yes
Volume Kill LED	0-5 1-240 sec	0=Loudest, 5=Quietest Timeout for sensor LEDs after player is tagged out. (Killed)	No	No change ₂ Yes	No change ₂ No change ₂ 40	

₁ Boot Menu = hold the RELOAD button while turning power ON.

₂ Global Menu = hold the RELOAD button while turning power ON and continue holding for ~3 seconds.

₃ Gun ID Menu = hold the MODE button while turning power ON and continue holding for ~3 seconds.

MENU	PARAM	RANGE	Function	Cloned	Mode Reset Value	& Factory Reset Value
Edit Settings	Team ID	Alpha, Bravo Delta & Charlie		-----		Red
	Frnd Fire	Yes, No	Yes= same team Hits are allowed.	Yes		Yes
	Sounds Silencer	MilSim, Sci-Fi, and reload sound.	Changes firing and reload sound.	Yes		Sci-Fi
	MuzFlash	On, Off	Enable/ Disable muzzle flash	Yes		On
	Life	1-999	Initial Health Value	Yes		100
	Armor	Off, 5-200		Yes		Off
	ClipSize	1-250, UNL	Rounds per clip	Yes		30
	Clips	2-200, UNL	# of clips	Yes		20

Reload	1-30 sec.	Reload delay time	Yes	2 Sec.
Fire Sel	FullAuto, SemiAuto, Burst	Firing mode	Yes	Burst
Burst	2-6 Rnds	Burst rounds	Yes	3
Cyclic	250-800 RPM	Rate of fire RPM (Rounds-per-minute)	Yes	500
Damage	1-100	Damage inflicted to opponent by each "hit"	Yes	1 pt
HitDelay	.00-20 Sec.		Yes	1 Sec.
Overheat	Off, 10-100	On=sustained firing will cause gun to "overheat"	Yes	50
Max Resp	Off, 1-20	Max number of auto- respawns. Off=disabled	Yes	0
Zombie	On,Off			
AutoResp	10-180 sec.	Auto-respawn delay time	Yes	30 Sec.
StartDly	0-240 sec.	Delayed game start	Yes	0
DeathDly	0-120 sec.	Death Delay time, 0=disabled	Yes	0
GameTime	0-120 min.	Time limit for game. 0=unlimited time.	Yes	0

Sixteen available Damage values [1, 2, 4, 5, 7, 10, 15, 17, 20, 25, 30, 35, 40, 50, 75, 100]

REFEREE GUN

Referee Controls:

End Game: Force player to "Game Over" - no change to scores.

New Game Now: Restart player – clear all scores/stats.

New Game Ready: Restart player – clear all scores/stats.

Admin Kill: Instantly "kill" player – add one "tagout" to scores.

Admin Respawn: Restart player – add one "respawn" to scores (continue current game).

Admin Pause: Pause player – no change to scores.

Start Game: Start a "paused" player – no change to scores.

Restart Clock: Set player's elapsed game timer to "000:00".

Restore Ammo: Set player to Full Ammo (initial ammo loadout).

Test Sensor: Test player's sensors (flash and audible).

Post Game Controls:

Collect Scores: Receive and compile scores from players via Infrared.

View Scores: View Individual and Team compiled scores.

Print Scores: Transmit compiled scores to PC terminal. RS-232 @9600 baud (8N1).

Service Controls:

Clear Scores: Clear all internal Score Data from Referee Controller.

Edit Sounds: Enter ISD Sound Programmer Mode (RevH only).

Print Test Data: Send "dummy" data to PC to test serial connection/terminal.

Data View: Display first 2 bytes of data received by sensors.

Sound Effects

ORDER	SOUND MAX LENGTH	ORDER	SOUND MAX LENGTH
1 Shot (Mil-Sim)	1500mS	16 ---	1000mS
2 Empty Chamber	1000mS	17 + Flag	2000mS
3 Start Reload (Clip Out)	1000mS	18 Flag Score (siren)	6000mS
4 End Reload (Mil-Sim)	1500mS	19 Clone Okay	2000mS
5 Near Miss	1500mS	20 Sensor Fail	1000mS
6 Hit - Damage	2000mS	21 Shot (Sci-Fi)	1000mS
7 Dead	3000mS	22 End Reload (Sci-Fi)	1000mS
8 Power Up	4000mS	23 Scores Okay	1000mS
9 Beep	1000mS	24 ---	1000mS
10 Buzz	1000mS	25 Shot (Silenced)	1000mS
11 + Medic	1000mS	26 Disarm Player	1000mS
12 + Ammo	1000mS	27 Low Battery	1500mS
13 ---	1500mS	28 ---	1500mS
14 Game Over	4000mS	29 ---	1000mS
15 Explosion	3000mS	30 Stunned	1000mS

NOTE: Make sure your sound effects fit the maximum length. If sounds are longer than the allotted space, they will be cut short during recording.

GLOSSARY

Admin	Administrator, Game Official, Referee
Clone	copy settings from one tagger to another using infrared link (wireless)
Cyclic	The 'cyclic' or 'cyclic rate' is the rate at which a weapon can fire successive rounds also referred to as 'Rate of Fire'; specified in Rounds-per-Minute
FET	Field Effect Transistor.
Friendly Fire	Hits received from players on your own team. With the MilesTag system you have the option to turn Friendly Fire on or off. When Friendly Fire is turned off, you will not be able to shoot your teammates.
Hit-Delay	After a player is hit, this is a delay time during which the player cannot shoot or be hit by opponents, the player is effectively 'locked out' during the Hit Delay.
IR	Infrared
LED	Light Emitting Diode
Mil-Sim	Military Simulation
Muzzle Flash	Visible flash of light emitted from a gun barrel during firing; simulated by bright LEDs

