FragTag Odin Users Manual

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FragTag Odin User Manual

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Table Of Contents

Copyright Notice 2
Table Of Contents 3
Introduction 5
Odin Features 6
- Scoring 6
- God Gun Functions 6
- Game Control 6
- Configure Players 6
- Configure Accessories 6
- Display 6
- Sound 6

Odin Board Layout 7
- Dimensions & Installation 7

Hardware Installation and Configuration 8
- IC1 – Central Processing Unit (CPU) 8
- R1 LCD Contrast Adjustment 9
- J1 – Power Connector 9
- J2 – Controls Connector 10
- J3 Output Connector 11
- J4 Sensor Connector 12
- J5 & J6 LCD Connectors 13
- J7 Piezo Buzzer Connector 14
- J8 Expansion Connector 15
- J9 Tagger Communications Port Connector 16
  - Tagger Communications Port 16
- J10 I2C Expansion Port Connector 17
- J11 PC Uplink Communications Port Connector 17
  - PC Serial Communications Port 17

Software Users Guide 19
- Booting Up 19
- Menu Navigation 19
- Communications Methods 23
  - Infrared Communications 23
  - Odin to Tagger Cable Communications 24
  - PC Link Cable Communications 26
- Game Control Menu 27
  - Set Game Time 27
  - Set Warm-up Time 28
  - Set Game Style 29

Set Health 30
Set Magazines 31
Advanced Options 32
Sim Options 42
Begin Game 45
Stop Game 47
Scoring Menu 48
Get Gun Scores 48
Send Scores 49
Player Rankings 50
Team Rankings 51
Erase Odin 52
Erase Gun 53
General Score System Usage 53
Referee Menu 54
Respawn FragTag 54
Respawn WOW 54
Add Health 55
Add Ammo 55
Kill Player 56
Gun Status 56
Upgrades 57
Modifiers 57
Administration Menu 58
Set Team 58
Set Player Number 59
Field Code 60
Charge iButton 62
Weapon Configuration 63
Utility Box Configuration 64
Test Signals 65

Introduction

Welcome to FragTag©, a highly advanced, dual format commercial ‘laser’ tag systems that follows open standards. The FragTag Odin system is a hardware and software package that allows powerful administration functions to assist and streamline the process of playing Laser Tag games.

It is designed to be used in conjunction with the FragTag mainboard, and other FragTag products.

Odin Features

Scoring

- Collect and display scores for up to 224 players
- Send scores to PC application for display and printing

God Gun Functions

- Respawn dead players
- Instantly kill players that are misbehaving
- Add Health/Ammo

Game Control

- Start and Stop unlimited or timed games
- Set configuration items

Configure Players

- Change player ID and Team
- Select Weapon

Configure Accessories

- Configure Utility Box

Display

- Supports a 20x4 character LCD (liquid crystal display) for all system feedback information (English only).
- LCD backlight for night time usage

Sound

- Piezo buzzer for audible confirmation of actions

Odin Board Layout

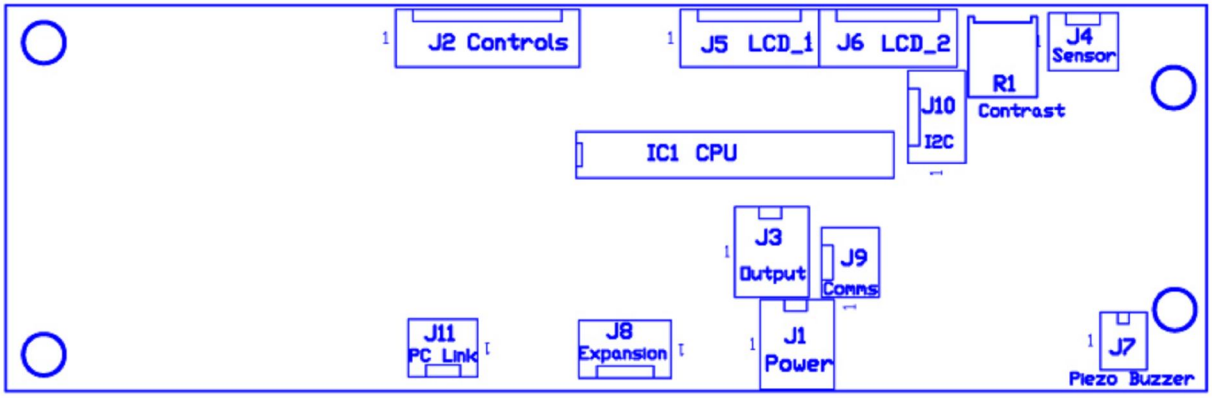


Figure 1. FragTag Odin v1.0 main component layout

Dimensions & Installation

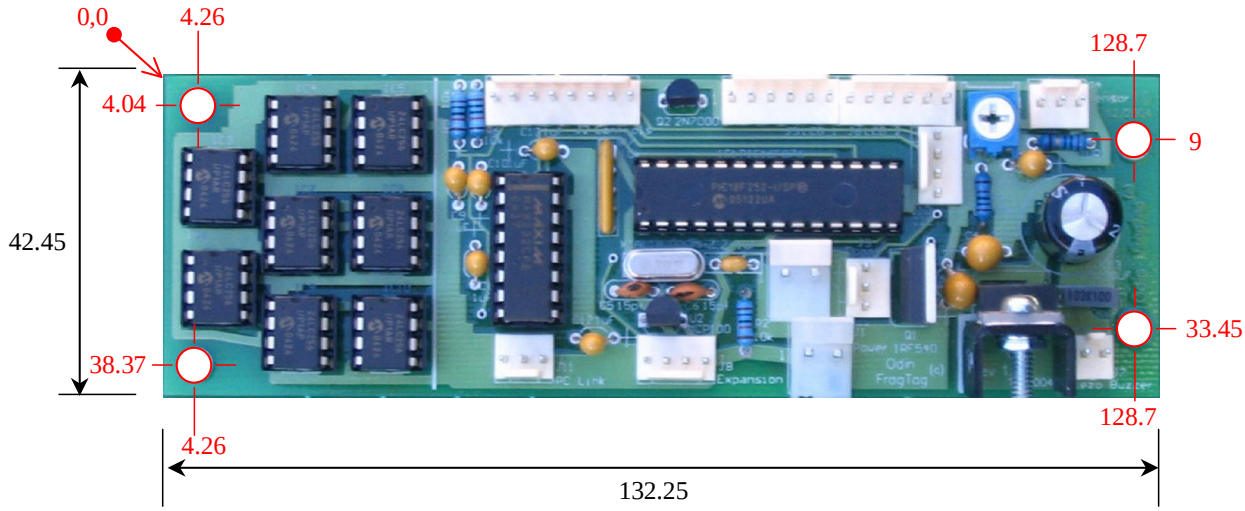


Figure 2. FragTag Odin v1.0 dimensions and mounting holes highlighted in red (all dimensions in mm).

The Odin board is provided with 4 (M4) mounting holes. Insulating washers (i.e. not electrically conductive) must be used on both surfaces of the mounting holes to prevent the Odin board from shorting to any conductive surface inside the Odin mounting box. Care must also be taken not to over tighten mounting screws to prevent damage to the Odin board. Failure to follow these instructions will void the limited warranty.

IC1 – Central Processing Unit (CPU)

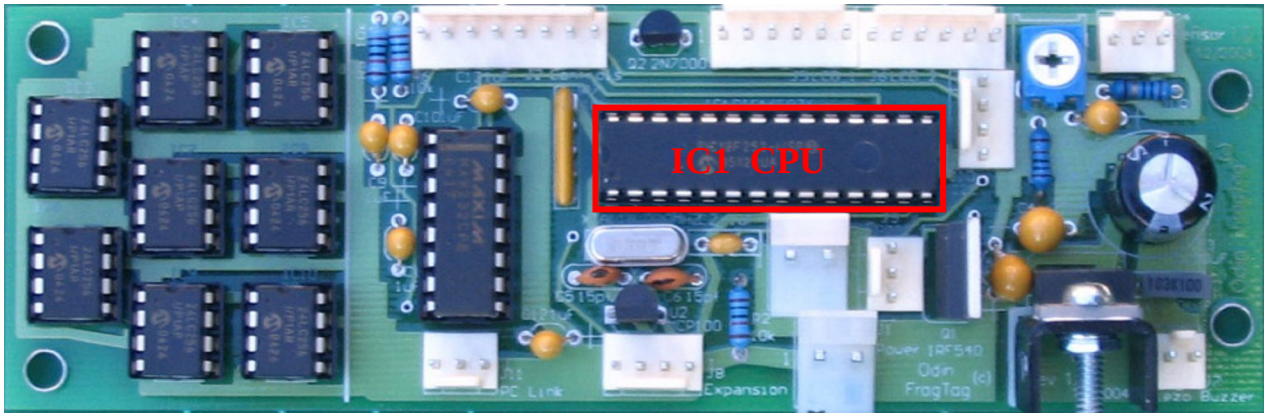


Figure 3. IC1 Central Processing Unit (CPU)

The FragTag Odin board operates with a pre-programmed microcontroller (see Figure 3). The Odin board uses a 28-pin narrow IC socket for easy CPU installation/removal. Care must be exercised when inserting and removing the CPU so as to prevent damaging the IC pins. It is recommended the operator is sufficiently 'earthed' to prevent static electricity from damaging the CPU. An 'IC extraction tool' is also recommended for removing and inserting the CPU (refer Figure 4). Bent or otherwise damaged CPU pins are not covered under the limited warranty.

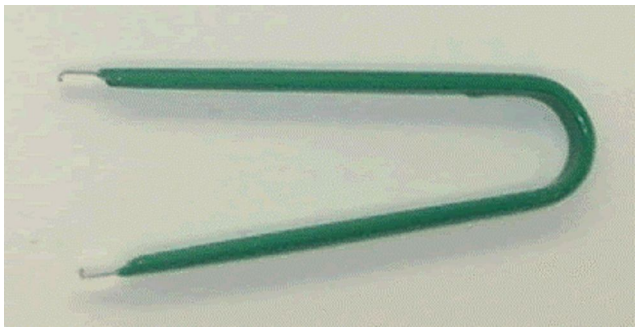


Figure 4. IC extraction tool.

R1 LCD Contrast Adjustment

The contrast of the LCD display may be set by adjusting this trimpot (see Figure 5). Generally this control will be set (if the Odin board was supplied with a LCD), otherwise the contrast will need to be adjusted to suit the particular LCD model being used.

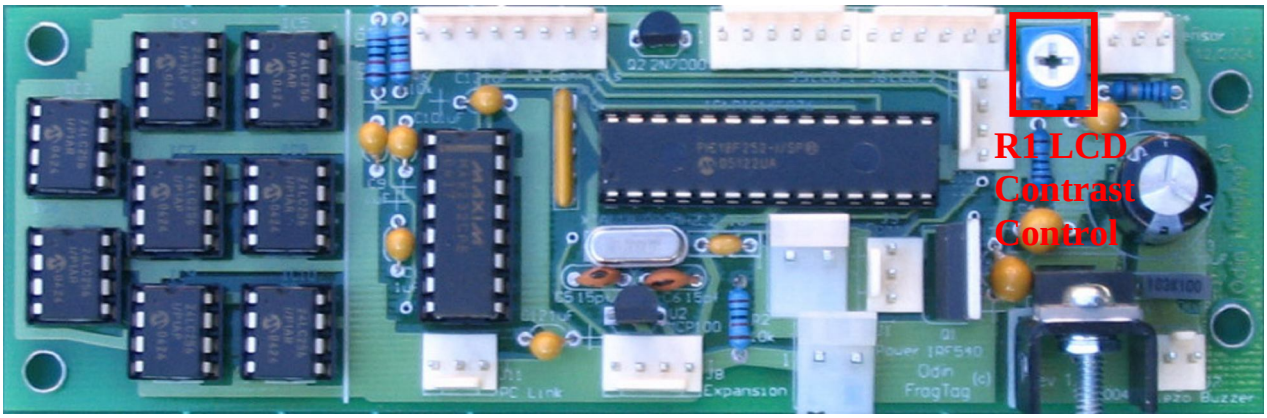


Figure 5. VR2 LCD Contrast Control

J1 – Power Connector

J1 (refer Figure 6) requires a 2-way standard .156" polarised and locking header socket. The Odin board requires a battery source of 7.2v and is connected here to J1. ***NOTE* Ensure correct polarity of your supply before connecting to the Odin board!! Damage resulting from incorrect polarity is not covered under the limited warranty.** From left to right the pins are:

1- GND

2- +7.2v

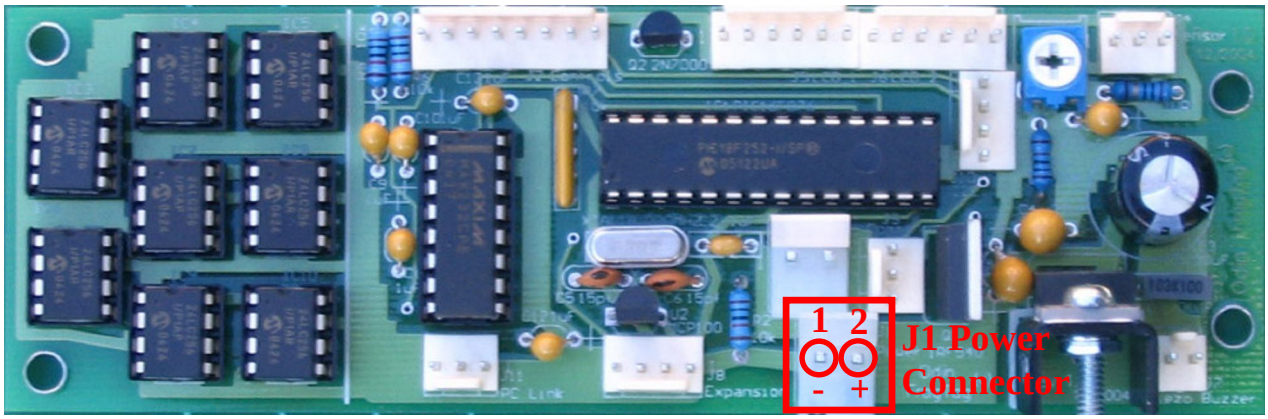


Figure 6. J1 - Power Connector

We recommend the use of a 7.2v rechargeable NiMh battery pack commonly used in radio-controlled cars (refer Figure 7). The exact specifications can vary but we suggest obtaining a battery pack with a supply of at least 2000MaH capacity (3000mAh preferred).

Figure 7. Suggested Battery supply. A typical RC model car 'racing pack'

It is suggested that a keyswitch be mounted in the Odin case to turn off the power supply to the Odin board and a switched DC jack port be installed for charging the batteries without having to remove them from the casing. We provide a schematic for your reference of the suggested power sub-circuit (Figure 8). A switched DC jack port used in this configuration isolates the Odin board from the charging supply providing an extra level of protection from mains supply in the event a fault occurs with the charger.

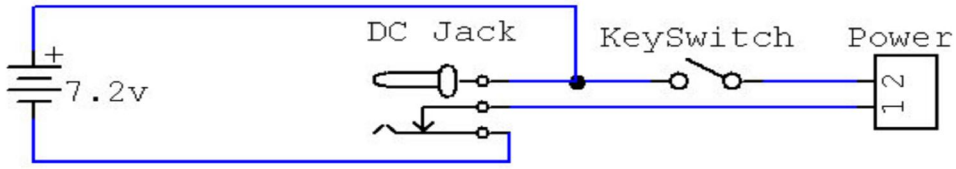


Figure 8. Suggested Power sub-circuit.

J2 – Controls Connector

J2 (refer Figure 9) requires a 8-way standard .100" polarised and locking header socket. J2 is the connection for all the control switches. The Odin board requires 4 switches. All switches for these controls need to be momentary action, normally open switches (e.g. common momentary action pushbutton switches). The pinouts from left to right of J2 are:

1- Down function select
2- Down function select
3- Up function select
4- Up function select
5- Back or escape state
6- Back or escape state
7- Enter
8- Enter

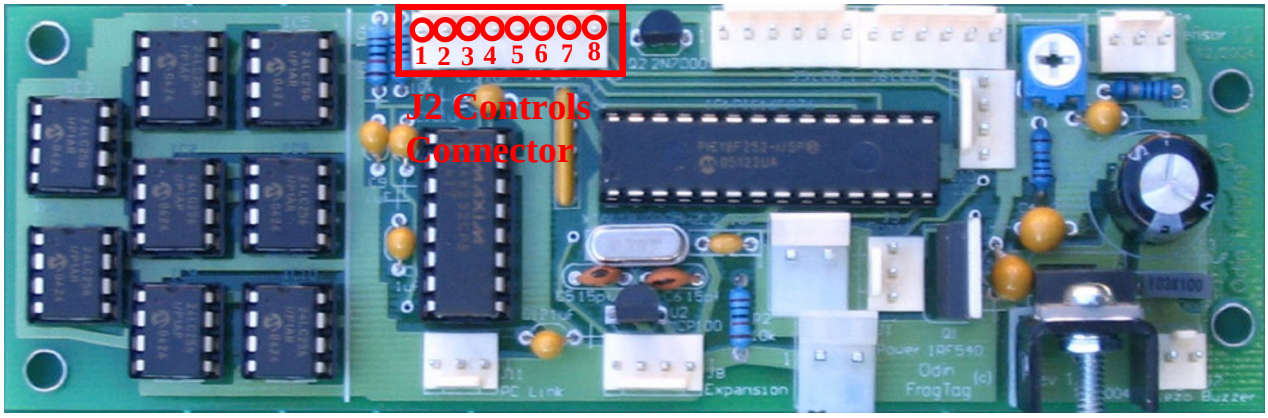


Figure 9. J2 Controls Connector

J3 Output Connector

J3 (refer Figure 10) requires a 2-way standard .156" polarised and locking header socket. J3 is the connection for the LED output. * **NOTE * LED requires a load resistor to be connected in series with the respective LED**. Load resistors are not installed on the mainboard. The pinouts from left to right of J3 are:

1- Primary Fire Output LED +ve

2- Primary Fire Output LED –ve

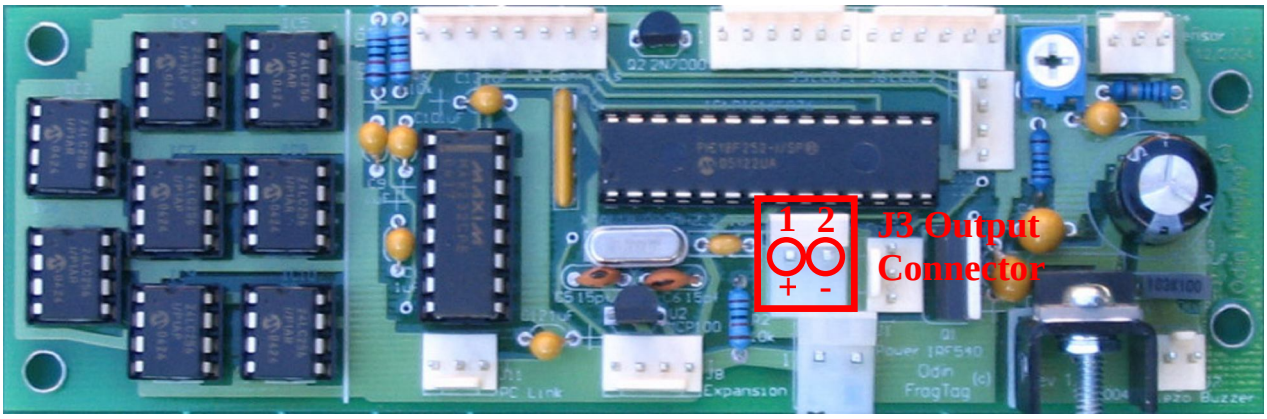


Figure 10. J3 Output Connector

The suggested IR LED to be used with the Odin board is the TSAL6100. **An external resistor (47 ohm) must be used to limit the current through the LED to prevent overdriving and damaging it**. We suggest the value of the load resistor to be 47 ohm; this provides an appropriate range for the IR output of about 5 meters. Figure 11 shows the wiring for a typical LED output circuit.

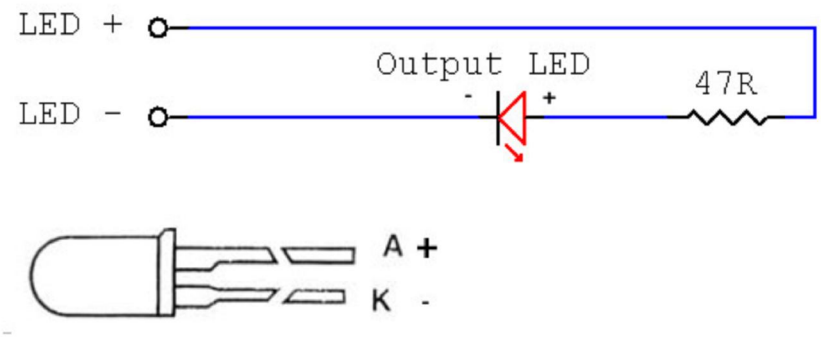


Figure 11. LED Wiring

J4 Sensor Connector

J4 (refer Figure 12) is **currently not required or supported** by the Odin board. But the information is provided for future reference if it does become a required feature. J4 requires a 3-way standard .100" polarised and locking header socket. J4 is the connection point for an IR sensor. The board can support up to approximately 24 TSOP sensing devices (connected in parallel). The pinouts for J4 from left to right are:

1- Data

2- +5v (Vdd)

3- Ground (Vss)

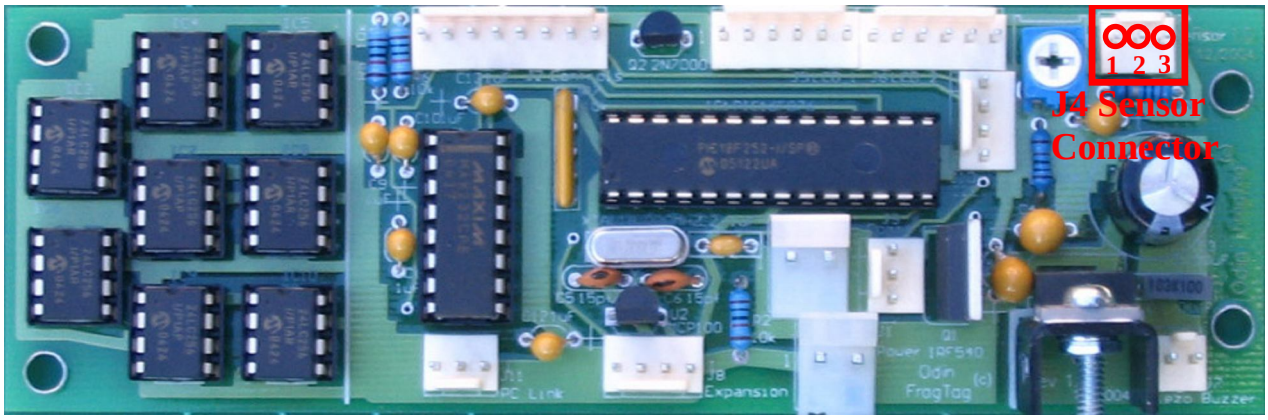


Figure 12. J4 Sensor Connector

J5 & J6 LCD Connectors

J5 and J6 (see Figure 13) each require a 6-way standard .100" polarised and locking header socket. The Odin board requires a 20x4 character LCD for displaying system messages. The LCD needs to be connected to the Odin board at J5 and J6. Most LCD displays follow a 16-pin convention. As the Odin board uses the 4-bit data transmission protocol for communicating with the LCD display, only 12 of the 16 pins are required. J5 and J6 are numbered from left to right as follows:

J5

1- Backlight GND
2- Backlight +5v
3- Data Bit 7
4- Data Bit 6
5- Data Bit 5
6- Data Bit 4

J6

1- Enable Signal
2- Read/Write
3- Register Select
4- Contrast Adjust
5- Vcc (+5v)
6- GND

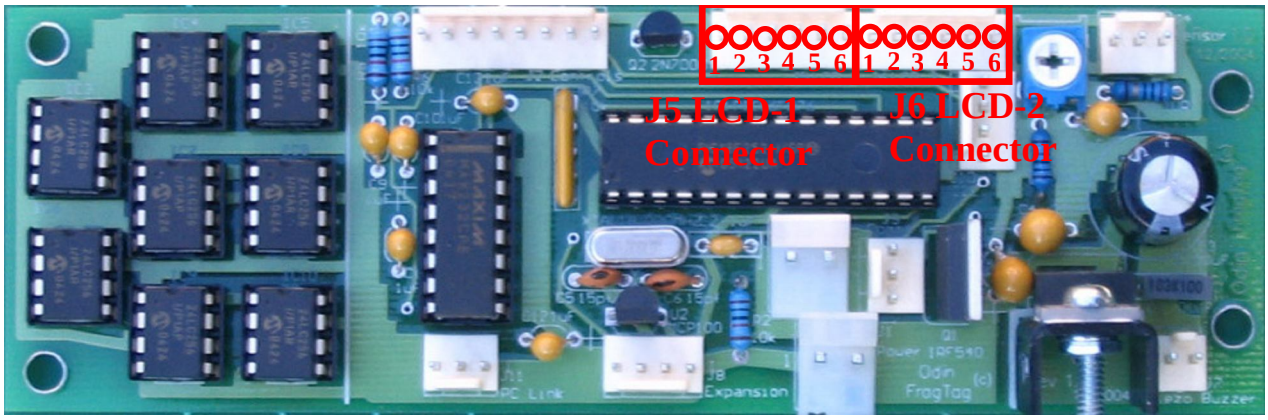


Figure 13. J5 & J6 LCD Connectors

Provided below is a table of the LCD pinouts and corresponding Odin board connections for reference. Please note Each LCD module may not necessarily follow this convention and the documentation for your particular model should be consulted first.

Table 1. Common LCD pinouts & Corresponding Odin board Connections

LCD Pin*	Odin board Pin	Function	LCD Pin*	Odin board Pin	Function
1	J6-6	GND	9	Not Connected	
2	J6-5	VCC(+5V)	10	Not Connected	
3	J6-4	Contrast ADJ	11	J5-6	Data Bit 4
4	J6-3	Register Select	12	J5-5	Data Bit 5
5	J6-2	Read/Write	13	J5-4	Data Bit 6
6	J6-1	Enable Signal	14	J5-3	Data Bit 7
7	Not Connected		15	J5-2	Backlight +5v
8	Not Connected		16	J5-1	Backlight GND

* LCD pinouts listed are what is most common on a 20x4 LCD display; however check pinouts on your LCD to verify this first.

J7 Piezo Buzzer Connector

J7 requires a 2-way standard .100” polarised and locking header socket. J7 is the connection point for a piezo buzzer (see Figure 14). A 5v piezo buzzer is required (as pictured in Figure 15). The pinouts for J7 from left to right are:

1- +ve

2- -ve

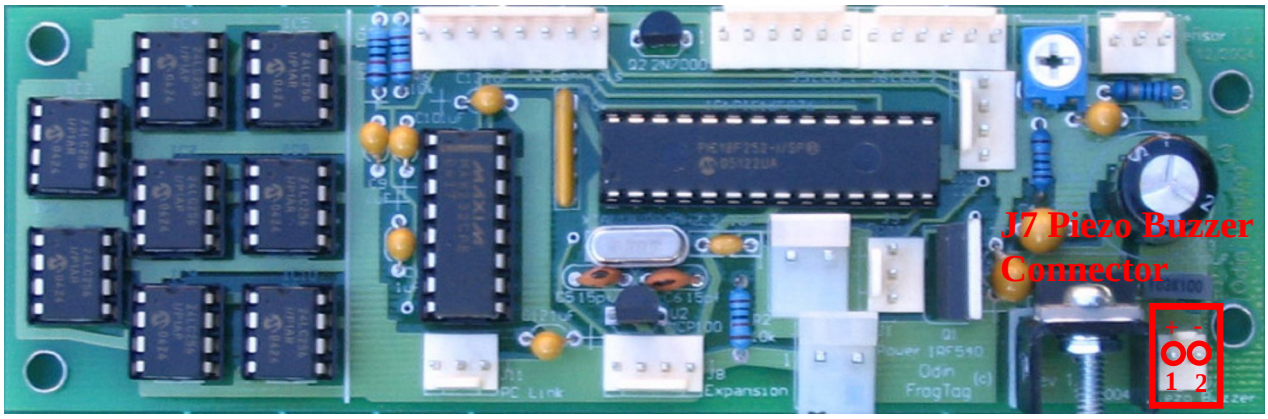


Figure 14. J7 Piezo Buzzer Connector

Figure 15. Typical Piezo Buzzer

J8 Expansion Connector

J8 (see Figure 16) is used only for the iButton (Accessory button) system. It requires a 4-way standard .100" polarised and locking header socket. The pinouts for J8 from right to left are as follows:

1- GND

2- +5v

3- Dallas iButton input – refer below (optional)

4- Not supported

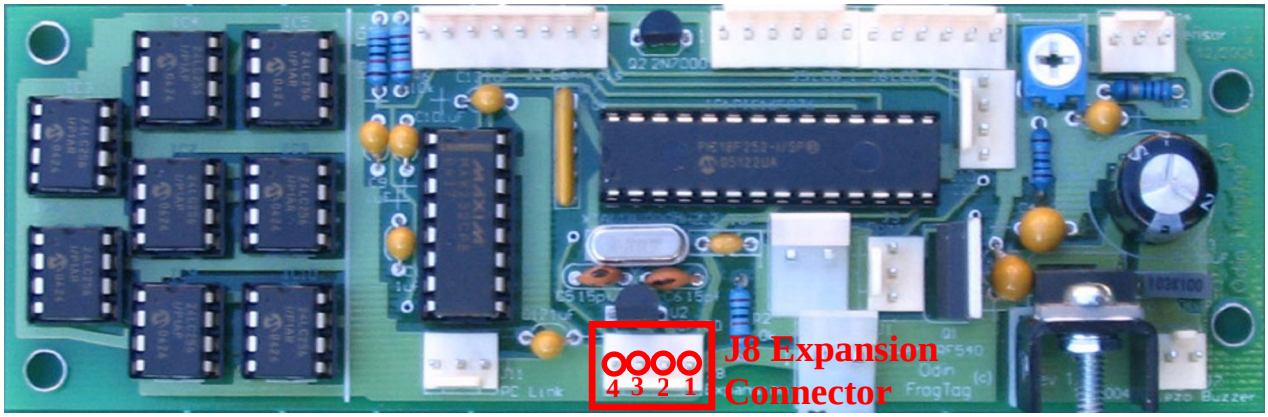
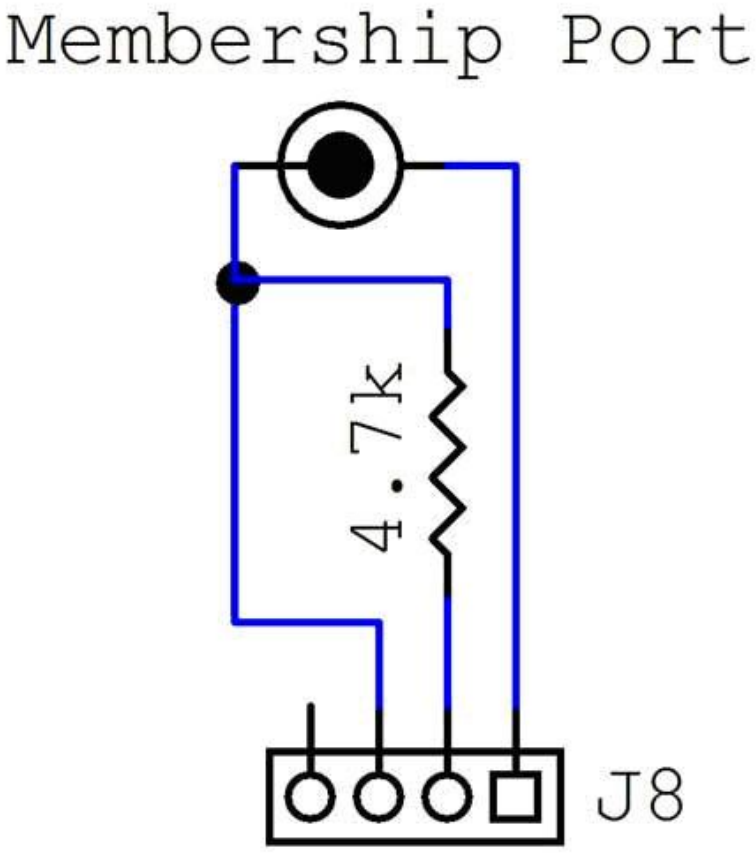


Figure 16. J8 Expansion Connector

The required wiring for the membership port is shown here. The 4.7k ohm resistor must be mounted externally to the board, in the wiring loom.



J9 Tagger Communications Port Connector

J9 (see Figure 17) requires a 3-way standard .100" polarised and locking header socket. J9 is the connection point for the Tagger communications port (i.e. Tagger score and data uploading). The pinouts for J9 from bottom to top are as follows:

1 - Ground

2 – Tagger Comms Clock

3 - Tagger Comms Data

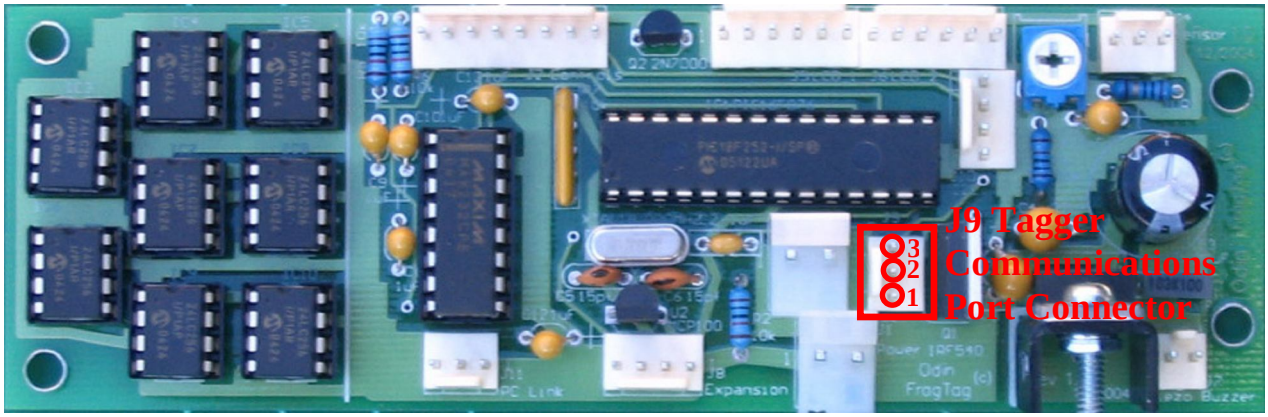


Figure 17. J9 Tagger Communications Port Connector

Tagger Communications Port

We suggest using a 3.5mm stereo audio socket as the Tagger communications port (see Figure 18) and using 3.5mm stereo plug to 3.5mm stereo plug lead to connect to taggers for data upload.

Figure 18. Typical 3.5mm stereo audio socket

This socket will need to be connected to pins 1, 2 and 3 of J9 as shown in Figure 19.

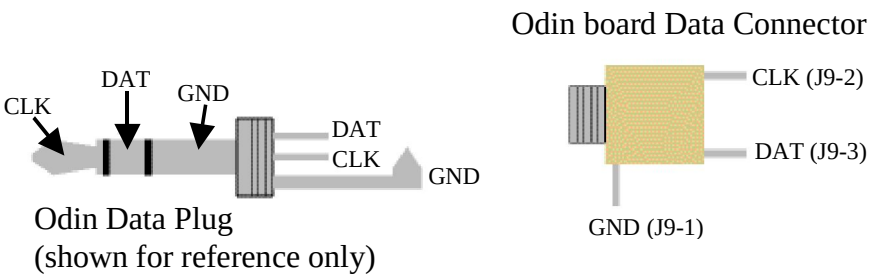


Figure 19. Odin Data Connector Pinouts

J10 I2C Expansion Port Connector

J10 (see Figure 20) is **currently not required or supported** by the Odin board. But the information is provided for future reference if it does become a required feature. J10 requires a 4-way standard .100" polarised and locking header socket. The pinouts for J9 from bottom to top are as follows:

1 - Ground

2 - +5v

3 - SDA

4 - SCL

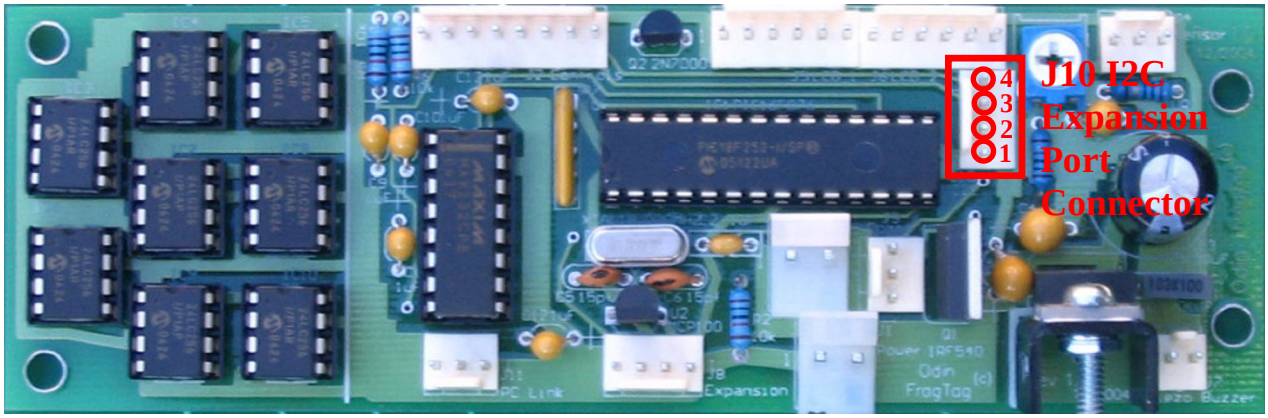


Figure 20. J10 I2C Expansion Port Connector

J11 PC Uplink Communications Port Connector

J11 (see Figure) requires a 3-way standard .100" polarised and locking header socket. J11 is the connection point for a serial communications port for score and data uploads to a PC using the FragScore PC software application. The pinouts for J11 from right to left are as follows:

1 - Ground

2 - Transmit (Tx)

3 - Receive (Rx)

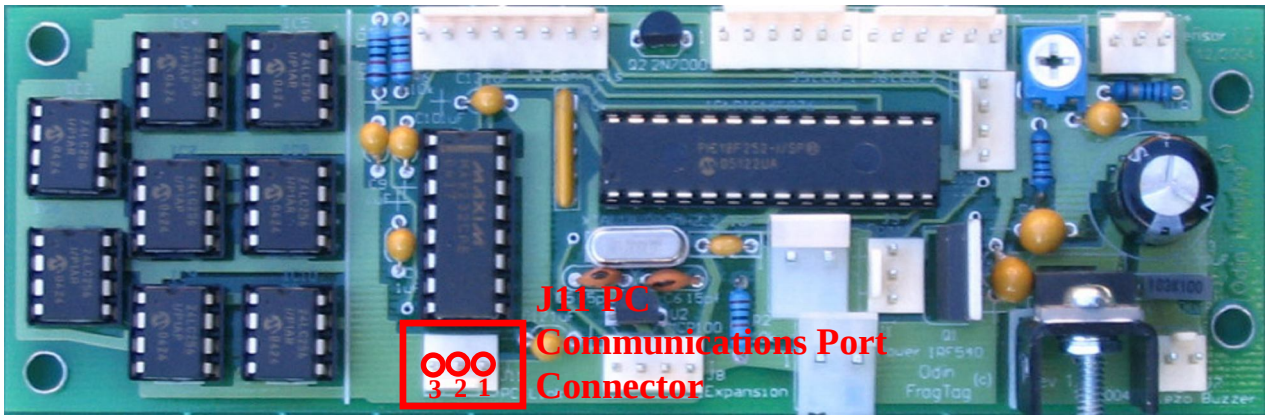


Figure 21. J8 Expansion Connector

PC Serial Communications Port

We suggest using a 9-pin female solder D-socket as the PC serial uplink communications port (see Figure 22) and using a D9 Male to D9 Female cable to connect to the Odin to a PC serial port for data upload. Figure 23 shows the necessary connections for the serial port D-socket for compatibility with a PC serial port.

Figure 22. Typical 9-pin female D-connector

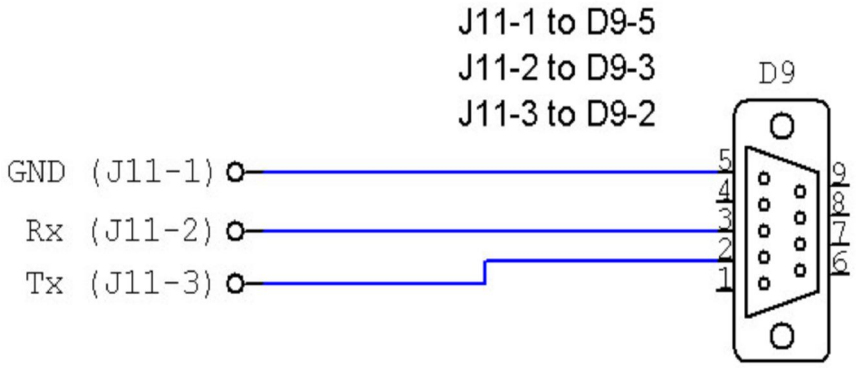


Figure 23. PC Serial Port Schematic

Note Some modern PC's and Laptops are no longer equipped with serial ports. If you wish to use the Odin uplink function with one of these PC's please use a USB to serial adaptor.

Booting Up

When power is first applied to the system, the LCD display will show the software version. After 1 second you will be presented with the main menu screen as follows:

Menu Navigation

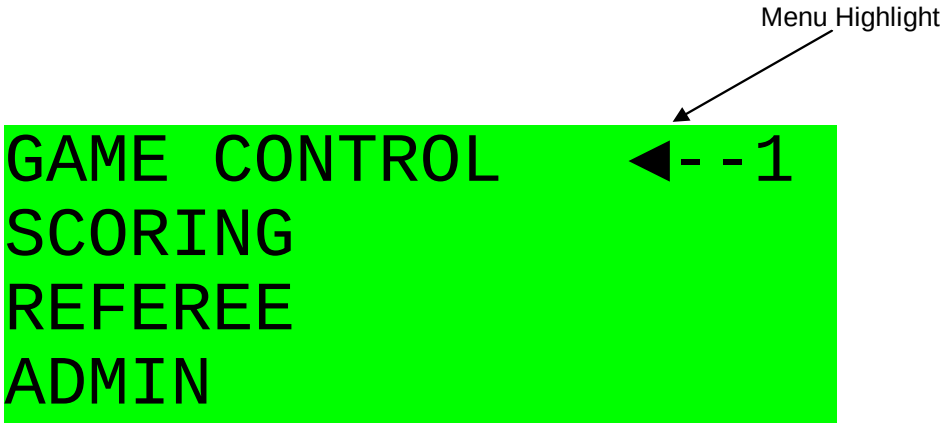
The functions of Odin are organised into a menu system, which should be familiar to users of mobile phones and other similar computer devices.

To navigate through the menus are use functions, you use 4 buttons; UP, DOWN, ENTER, and BACK.

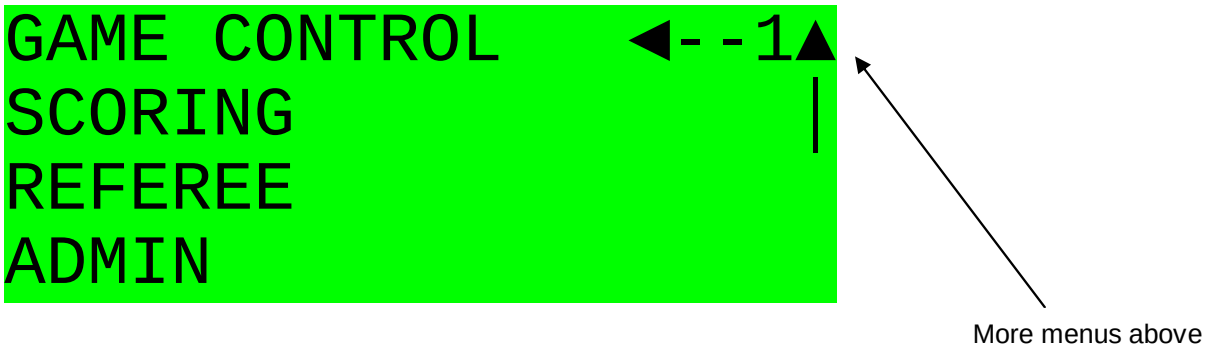
The operation of these buttons is described in the following table:

Button	Description
UP	When in a menu, this button will move the Menu highlight (refer below) up in the menu list. When adjusting a value, this button will increment the value.
DOWN	When in a menu, this button will move the Menu highlight down in the menu list. When adjusting a value, this button will decrement the value.
ENTER	When in a menu, this button will move into the currently selected menu item. When adjusting a value, this button will accept the current value.
BACK	When in a menu, this button will move out of the currently selected menu item and into the previous menu. When adjusting a value, this button cancels the adjustment.

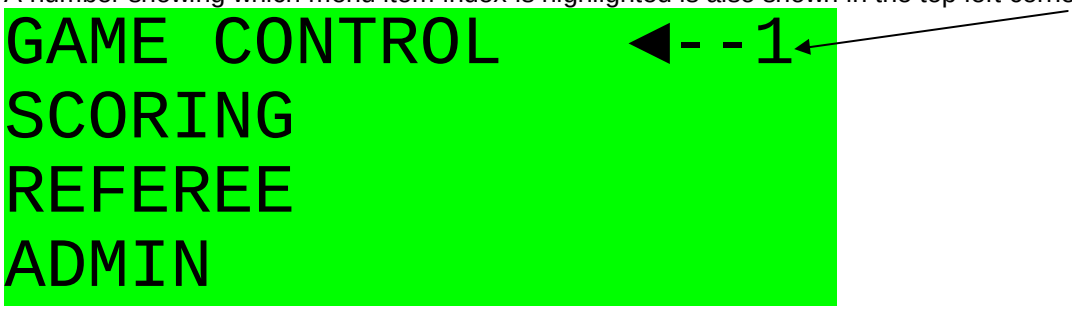
The “menu highlight” referred to above is the arrow at the end of the line. This arrow shows you which menu is currently highlighted and serves as a reference for navigation.



The menu system also has indicators to tell you if there are more menu items than can be shown on the screen at once. If you see the indicators, you can continue pushing either the UP or DOWN buttons and advance to these items.



A number showing which menu item index is highlighted is also shown in the top left corner



The menu index will show 1 when the first menu item is selected, 2 when the second item is selected, etc.

Menu Structure Overview

Main Menu Item	Sub Menu Items	Description
GAME CONTROL	Set Game Time	Set the duration of the game
	Set Warmup Time	Sets the duration of the “warm up” time prior to the game start
	Set Game Style	Set Arcade or Realistic configuration
	Set Player Health	Sets the player health between 10 and 250, in steps of 10
	Set Magazines	Set the number of ammo clips that the player’s get, from 1 to 99.
	Advanced Options	Set Advanced options like Friendly Fire, Indoor/Outdoor mode etc
	Simulation Options	Set Simulation Options
	Erase Odin	Clears the controller memory (as per Scoring Menu)
	Begin Game	Start a Game
	Stop Game	Stop a game (players can no longer shoot or bet hit when the game is over)
SCORING	Get Gun Scores	Gets the player scores from a gun
	PC Uplink	Sends all the player scoring data to FragScore PC application
	Score Validation	Validate score data
	Player Rankings	Calculates and displays the player score rankings from highest to lowest
	Team Ranking	Displays Team scores
	Erase Odin	Clears the controller memory
	Erase Gun	Clears the gun memory (also happens automatically when a new game is started)
	Memory Test	Test Memory Chips
REFEREE	Respawn FragTag	Puts player to full health and ammo, for the FragTag protocol. Works on all players, alive or dead.
	Respawn FragTag Dead	Respawn only Dead players
	Respawn WOW	Puts player to full health and ammo, for the Wow protcol
	Add Health	Adds Health to the player
	Add Ammo	Puts player to full ammo
	Kill Player	Instant player kill (guns shows different text in this case for cheat prevention)
	Gun Status	Makes gun display general status information
	Upgrades	Add Upgrades to Players, like Armour
	Modifiers	Modify configuration items
ADMIN	Set Red Team	Change the player to Red team
	Set Blue Team	Change the player to Blue team
	Set Yellow Team	Change the player to Yellow team
	Set Player Number	Set the number of the player
	Set Field Code	Set the Field Code
	Charge iButton	Recharge an iButton accessory, like a Field Bandage or Magazine
	Weapon Config	Set the weapon parameters for the gun

	Box Config	Configure Utility Box accessory
	Test Signals	Generate signals for testing purposes

Communications Methods

Odin uses different methods to communicate with the guns and with a PC, depending on which functions are used.

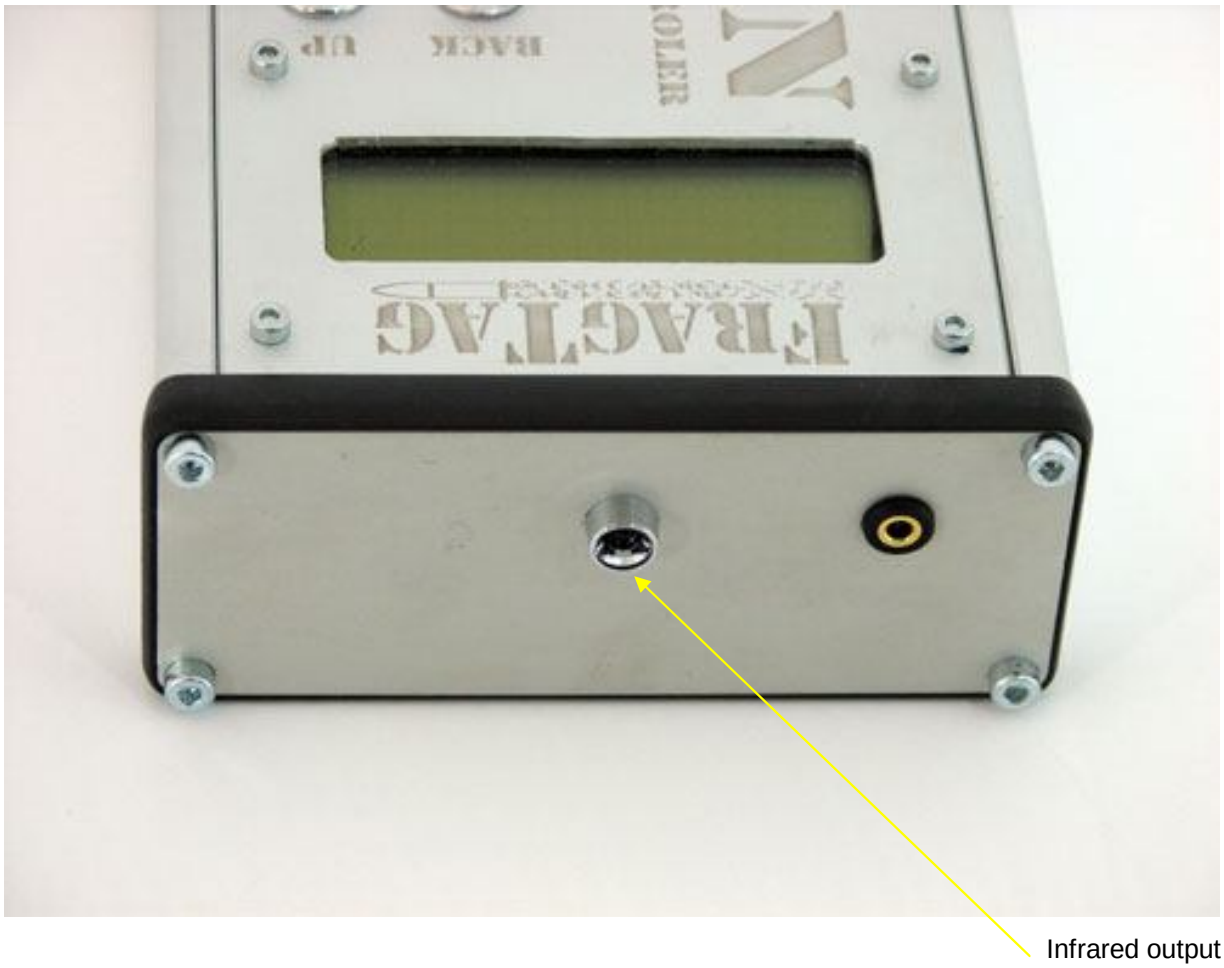
The descriptions of each menu will detail which method of communication is used.

Infrared Communications

Most of the communications with the gun is done via Infrared signals, similar to what the guns use when shooting each other. This method is used for cases where Odin needs to give a short command to the gun, and a response from the gun is not required.

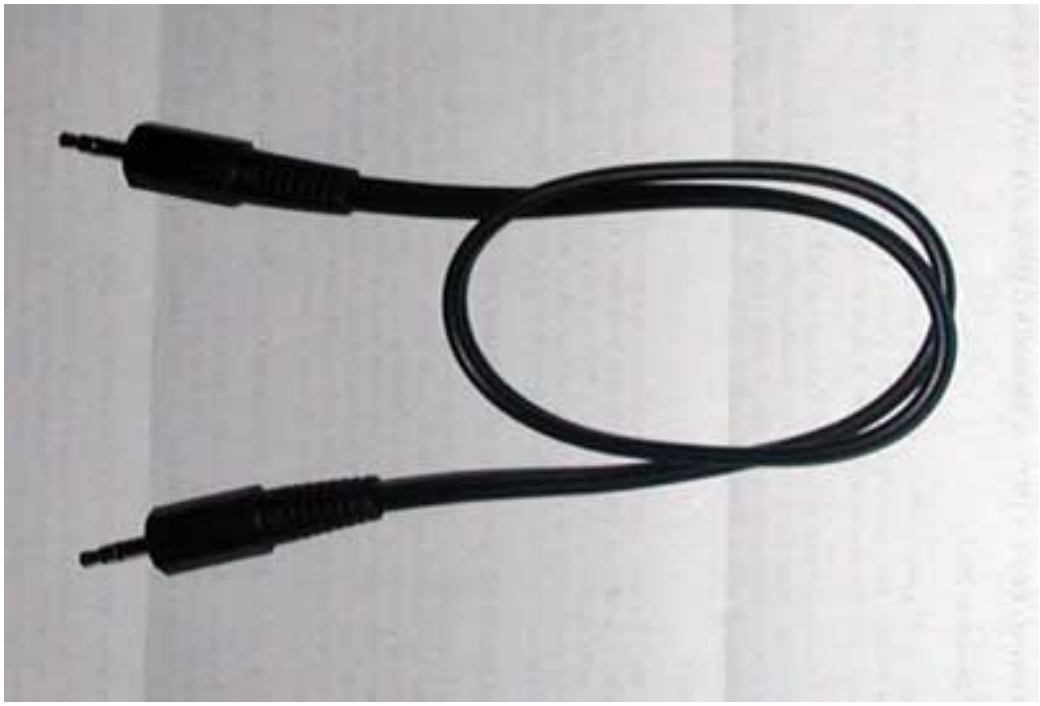
To operate functions that use this method, it is necessary to stand close to the player (within approximately 1 metre) and point the end of Odin towards the player's sensor (head) and then press the button.

If the gun does not respond with a sound or if the function does not appear to work, move closer to the player and try again.



Odin to Tagger Cable Communications

For high-speed communications involving lots of data from the tagger (eg scoring) it is necessary to use the Odin link cable. This cable connects from the jack on Odin, to a jack on the tagger (exact position depends on the tagger design.)



Uplink cable

To use a function that uses this method, firstly connect the cable to both Odin and the gun, and then activate the function. The cable can be connected with power on to any device, and also removed with the power still on.

PC Link Cable Communications

For connecting Odin to a PC it is necessary to use the PC link cable. This cable connects from the socket on Odin, to a serial port on your PC.

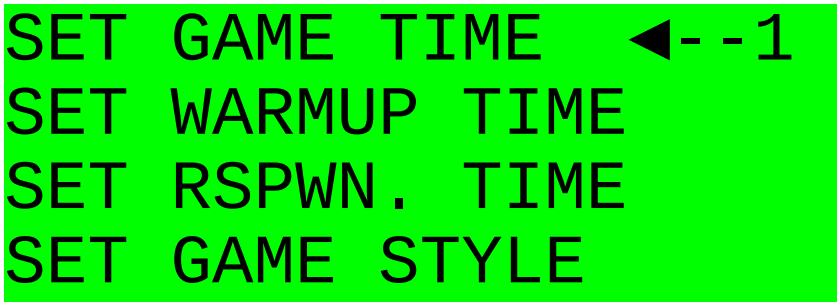
Serial cable

To use a function that uses this method, firstly connect the cable to both Odin and the PC, and then activate the function. The cable can be connected with power on to any device, and also removed with the power still on.

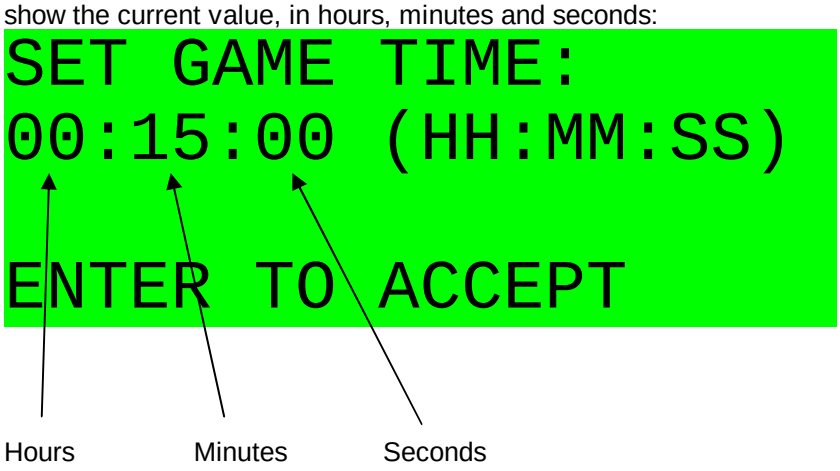
Game Control Menu

The Game Control menu contains functions for starting and stopping games, including configuration of the players.

Set Game Time



Use this item to set the duration of the game. To set the duration, firstly press the ENTER button. The display will show the current value, in hours, minutes and seconds:

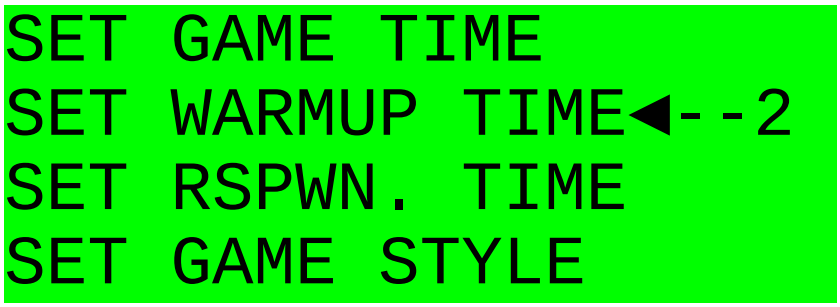


Use the Up or DOWN buttons to adjust the value. When you have the desired value, press the ENTER button.

Note that this menu only sets the duration, it is not sent to the gun at this point in time so it is not necessary to point Odin at the player.

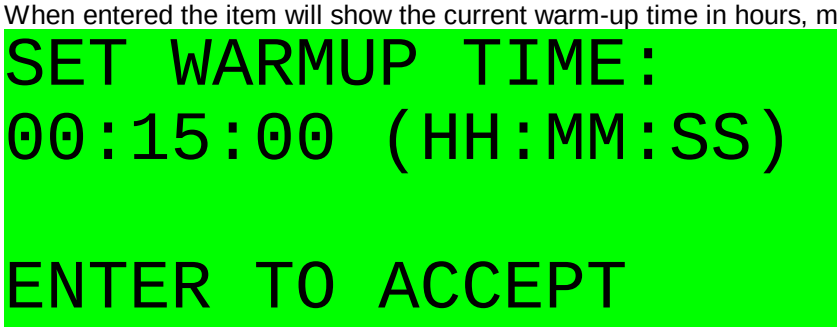
Set the value to 0 to play an unlimited time game. In this case, the game duration will display as “unlimited.”

Set Warm-up Time



Use this item to set the duration of the warm-up time. The warm-up time is the delay before a new game starts, which gives players time to move into position before the guns become active.

When entered the item will show the current warm-up time in hours, minutes and seconds:

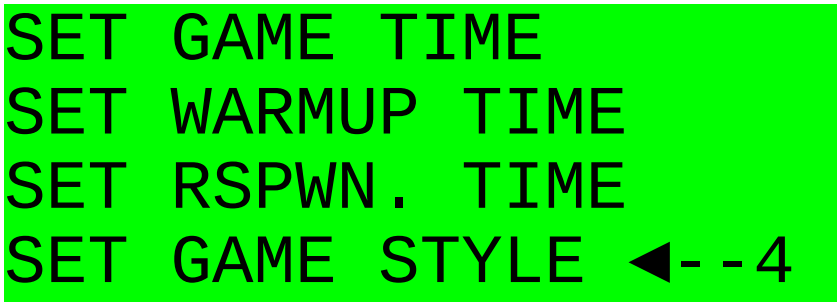


Use the Up/Down buttons to adjust the value. Each press will change the value in steps of 15 seconds, from a minimum of 15 seconds to a maximum of 990 seconds (just over 16 minutes.)

Press Enter to accept the value.

Note that this menu only sets the value, it is not sent to the gun at this point in time so it is not necessary to point Odin at the player.

Set Game Style



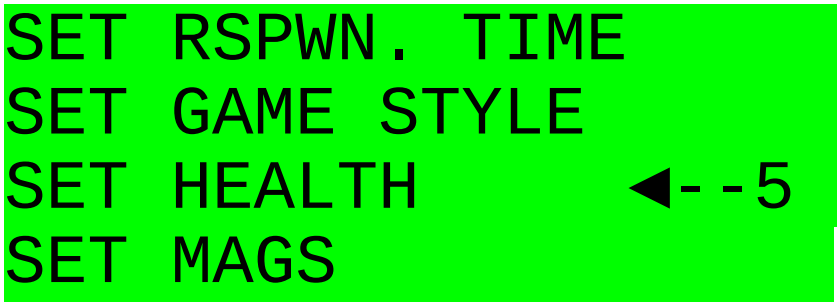
Use this item to set the style of the game, (refer to Mainboard Users Guide for details about styles.)

To set the style, firstly press the ENTER button. The display will show the current style:

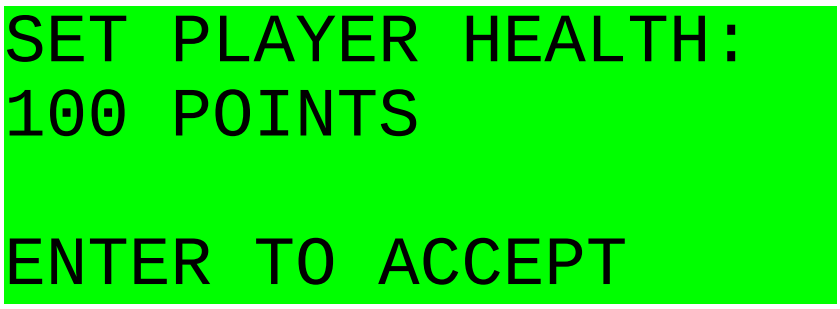
Use the Up or DOWN buttons to adjust the style. When you have the desired style, press the ENTER button.

Note that this menu only sets the style, it is not sent to the gun at this point in time so it is not necessary to point Odin at the player.

Set Health



This item sets the desired initial Health for the players. Entering the menu will display the current value:

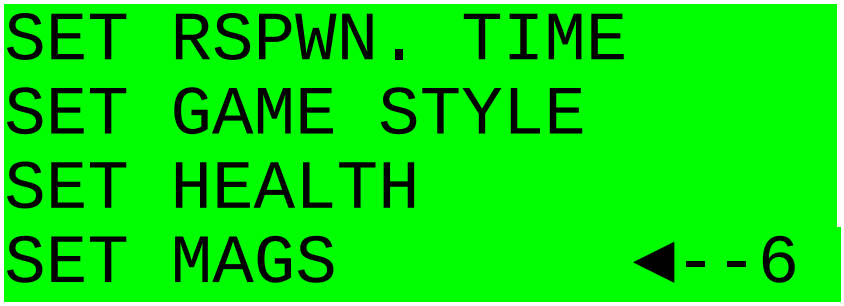


Use the Up/Down buttons to set the value, from 10 to 250 in steps of 10. When finished press the Enter button.

100 points is the default and recommended value.

Note that this menu only sets the value, it is not sent to the gun at this point in time so it is not necessary to point Odin at the player.

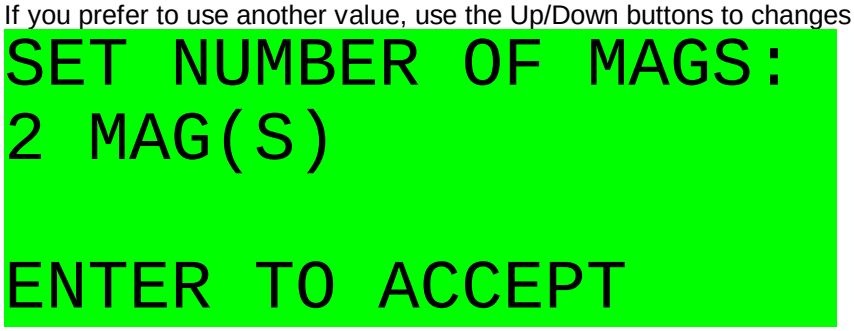
Set Magazines



This item sets the number of Ammo Mags that the players will get. When first entered it will display the current value:

The normal option is “GUN DEFAULT.“ When selected the guns will use the values that are set from the Gun’s Weapon Library. These values are balanced to make the different styles of guns fair.

If you prefer to use another value, use the Up/Down buttons to changes this value from 1 to 99:



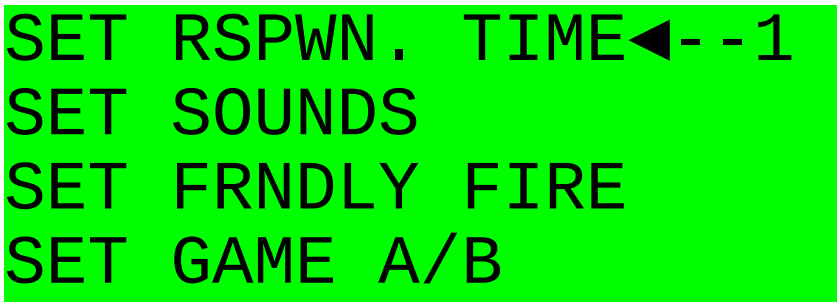
Press the Enter button to accept the value.

Note that this menu only sets the value, it is not sent to the gun at this point in time so it is not necessary to point Odin at the player.

Advanced Options

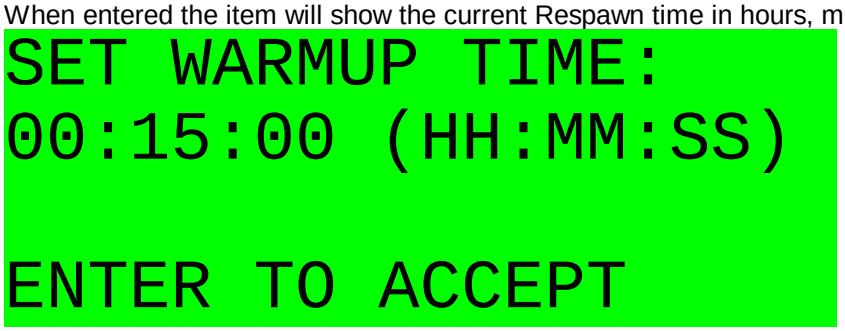
This item is a sub menu that contains a number of Advanced game options. Select this item to enter the menu, to adjust the Advanced options.

Advanced Options - Set Respawn Time



Use this item to set the duration of the Respawn time. The Respawn time is the delay before a player can begin firing and taking hits, after being Respawned.

When entered the item will show the current Respawn time in hours, minutes and seconds:

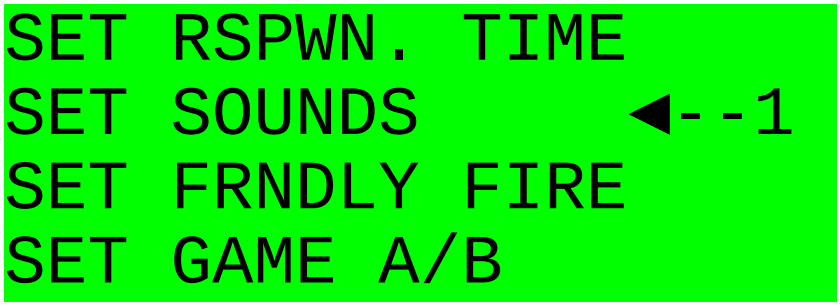


Use the Up/Down buttons to adjust the value. Each press will change the value in steps of 1 second, from a minimum of 0 seconds to a maximum of just over 2 minutes.

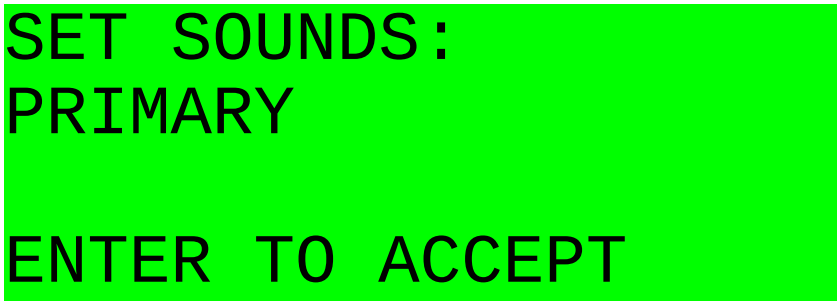
Press Enter to accept the value.

Note that this menu only sets the value, it is not sent to the gun at this point in time so it is not necessary to point Odin at the player.

Advanced Options - Set Sounds



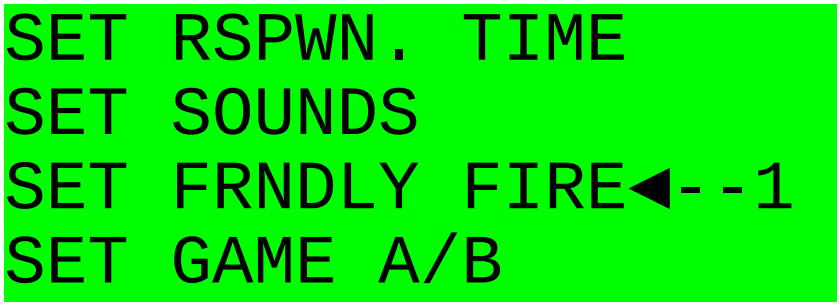
This item sets the Sound set to use. You can select from the Primary sound set, or Secondary sound set. Refer to the Mainboard Users Manual for more details about the sound set.



Press the Up or Down buttons to change the selection.

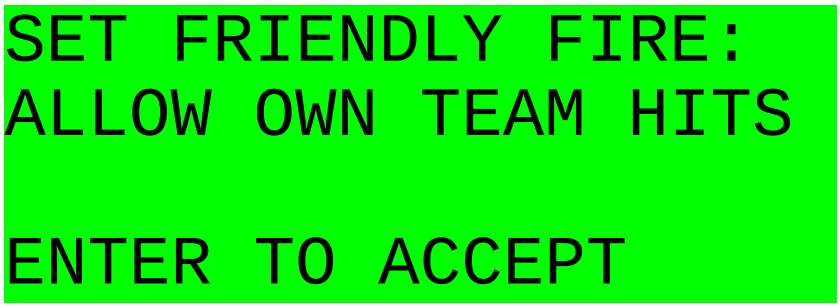
Press the Enter button to accept the selection.

Advanced Options - Set Friendly Fire



This item controls Friendly Fire, ie whether the player can hit there own team or not. When Friendly Fire is turned off, player's cannot shoot there own team mates (if they attempt too, the "near miss" sound will be heard.)

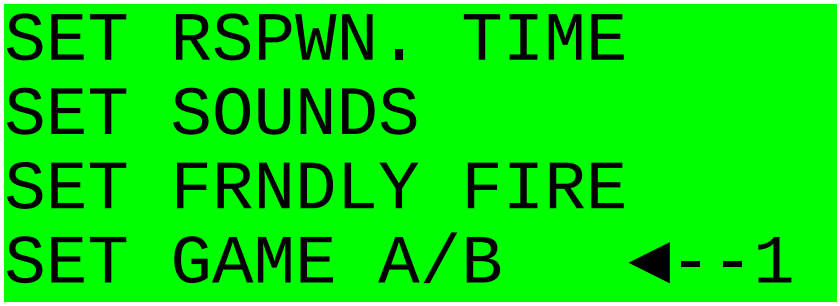
If Friendly Fire is set to on, players can hit there own team mates,



Press the Up or Down buttons to change the selection.

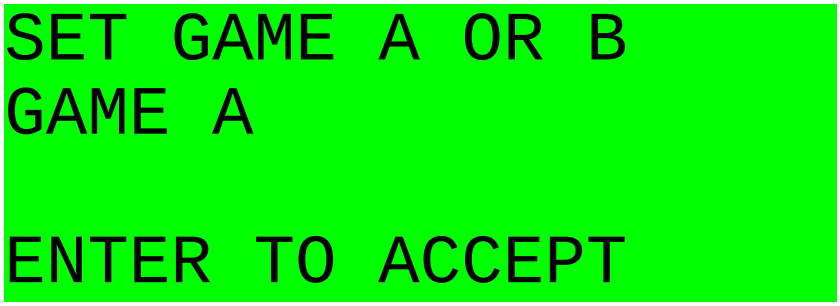
Press the Enter button to accept the selection.

Advanced Options - Set Game A/B



This item sets one of two games, Game A or Game B. Guns configured for Game A can not give or take hits to guns set to Game B, and vice versa. This option is suitable for running multiple games in close proximity with no interference.

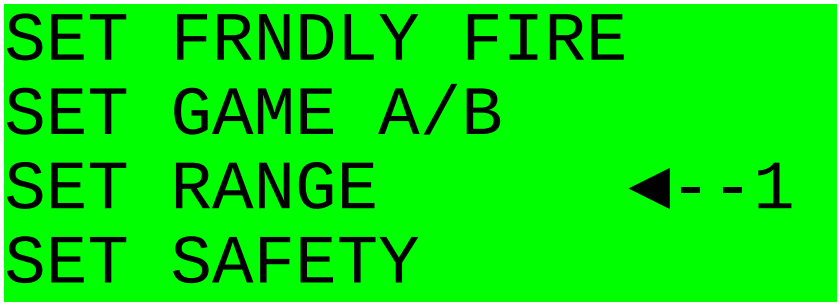
Any fire on to the other Game will produce a near miss indication.



Press the Up or Down buttons to change the selection.

Press the Enter button to accept the selection.

Advanced Options - Set Range

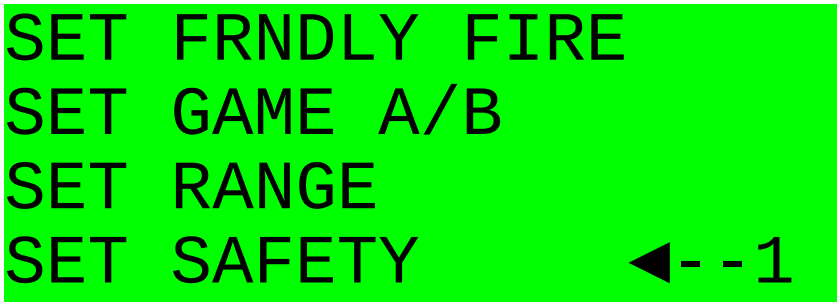


This item sets the range of the gun to Indoor or Outdoor modes. Outdoor mode is full power with long range, and Indoor mode is lowered power to reduce bounce from walls. Indoor mode should not be used outdoors.

Press the Up or Down buttons to change the selection.

Press the Enter button to accept the selection.

Advanced Options - Set Safety



This item enables or disables the use of the “safety” fire mode on the gun. Safety fire mode prevents the gun from being fired. It is not recommended to use Safety fire modes for casual play or for younger players.

Press the Up or Down buttons to change the selection.

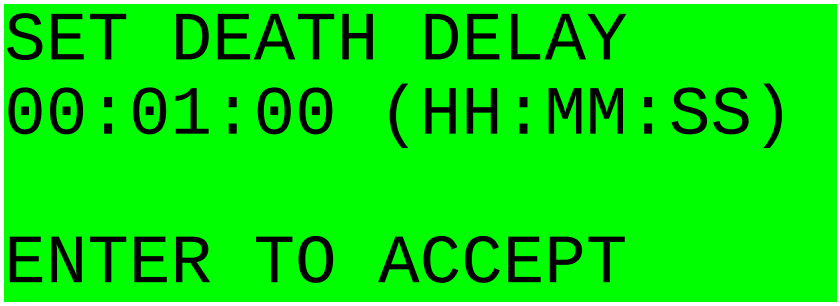
Press the Enter button to accept the selection.

Advanced Options - Set Death Timer

This item enables or disables the use of the “Death Timer.” The Death Timer provides a count down timer when a player dies. This can allow for a variety of game rules, such as requiring Players to remain stationary for a time delay, waiting for a Respawn.

This setting is in minutes. A value of 0 gives no delay.

When set to above 0, the Hit Led will remain on for the Death Timer time.



Press the Up or Down buttons to change the selection.

Press the Enter button to accept the selection.

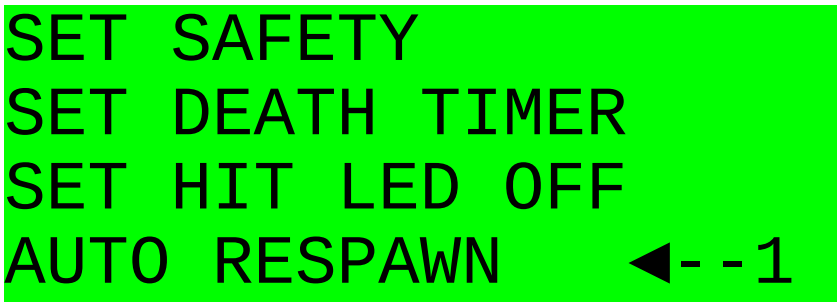
Advanced Options - Set Hit Led Off

This item can disable the use of the Hit Leds on the gun. When enabled, if a Player is hit, the Hit Leds will not flash. Operation during other times (Death, Respawn) is unchanged.

Press the Up or Down buttons to change the selection.

Press the Enter button to accept the selection.

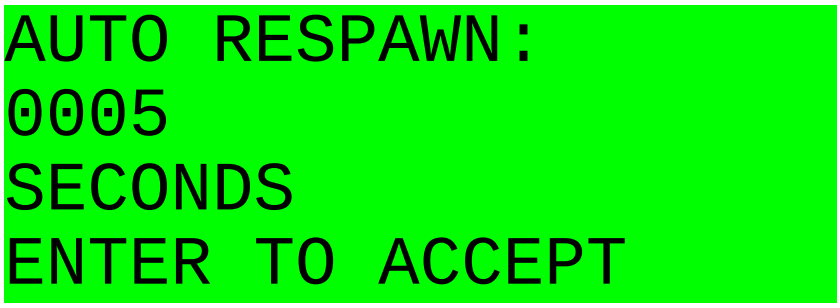
Advanced Options – Auto Respawn



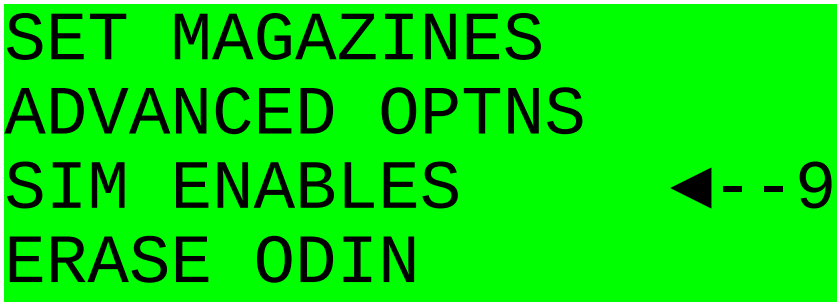
The Automatic Respawn feature allows the Gun to automatically respawn itself when dead, after a configurable time delay. The value is shown in seconds, and can be changed in 5 second increments.

Press Up or Down buttons to change the setting.

Press the Enter button to accept the selection.

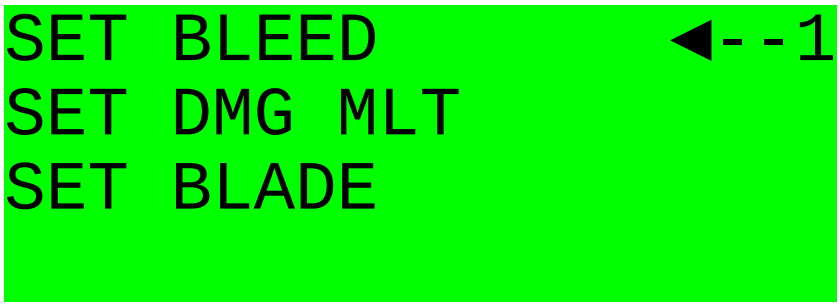


Sim Options



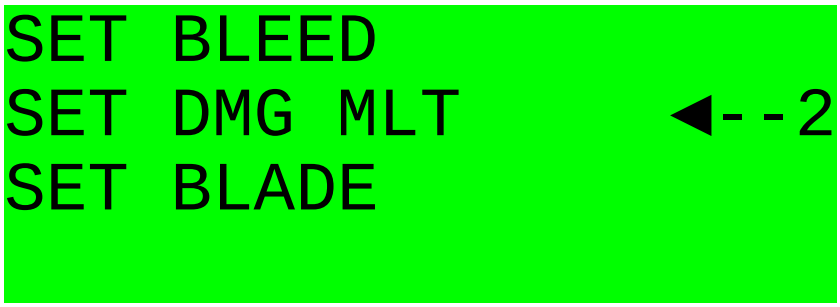
The Simulation Enables control which features are active in Simulation Mode. Note that if Simulation Mode is not active, these settings will not be active.

Sim Options – Bleed Effect



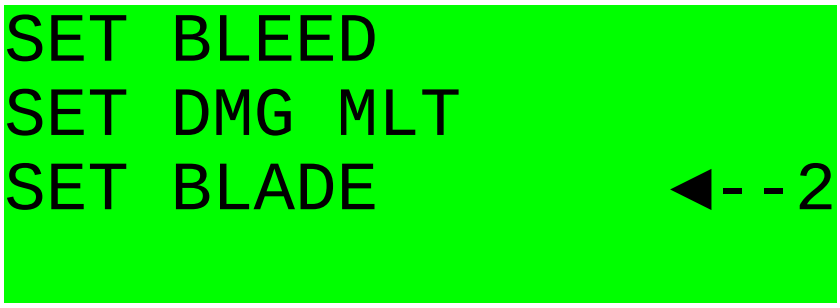
The Bleed Effect can be enabled or disabled from this menu. Refer to the Mainboard manual for details of the Simulation modes.

Sim Options – Damage Multiplier



The Damage Multipler can be enabled or disabled from this menu. Refer to the Mainboard manual for details of the Simulation modes.

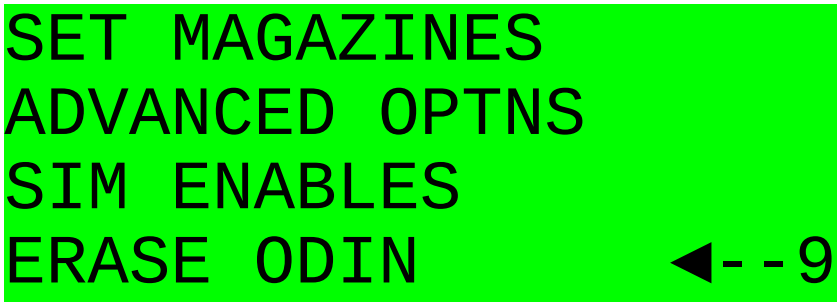
Sim Options – Blade Enable



The Blade Enable option controls whether simulated Blade/Knife weapons can be used. Refer to the Mainboard manual for details of the Simulation modes.

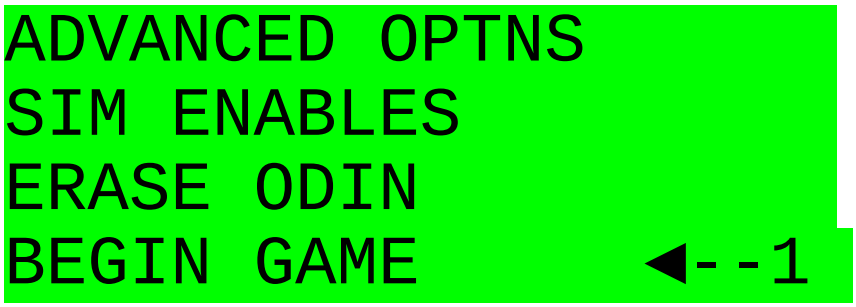
When set to Disabled, simulated Blade weapons will not have any effect on the Gun.

Erase Odin



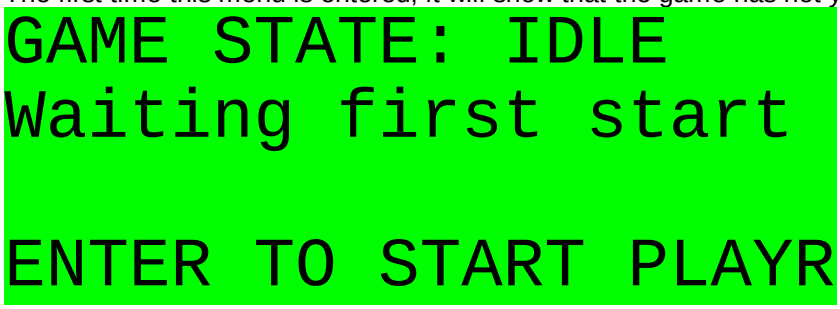
This item is a shortcut to the same menu item in the Scoring menu. It can be used to clear Odin's scoring memory. Refer to the Scoring section for details.

Begin Game



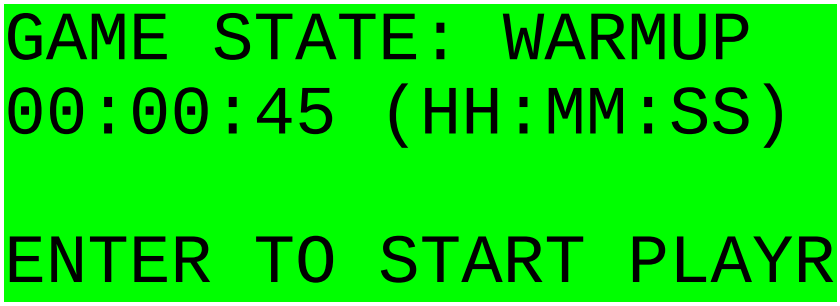
This item will send the above configurations to the gun and tell it to begin the game.

The first time this menu is entered, it will show that the game has not yet started:



Point the end of Odin towards a player (or players) and press the button. The gun will respond with a sound effect, and a count down will begin.

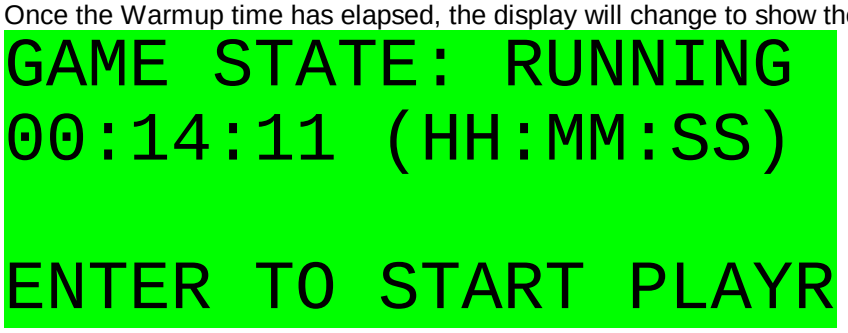
The Game will then commence, and the Odin display will change to show the Warmup time.



At this time, the display will show the Warmup time counting down, in hours:minutes:seconds.

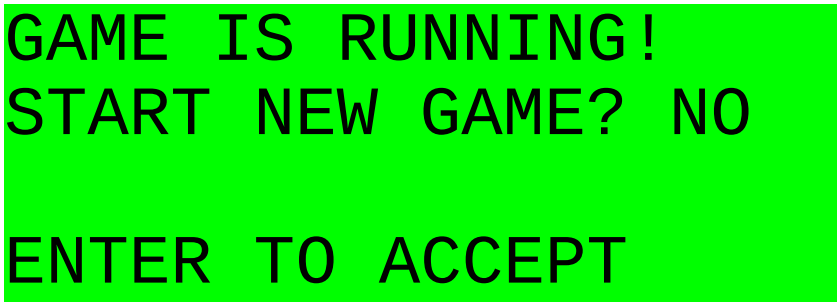
Press the Enter button at any time to start additional players.

Once the Warmup time has elapsed, the display will change to show the game duration (if set):



If you exit this menu (using the Back button) you will return to the Game Control menu.

If you re-enter the Begin Game menu while a game is in progress, you will be shown a Warning screen:

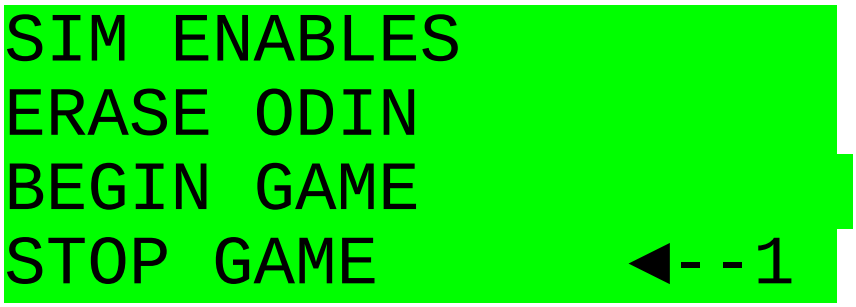


Use the Up and Down button to select Yes or No to this question.

- Selecting No will continue on with the current game, and allow more players to join.
- Selecting Yes will cancel the current game and start a new one.

Press the enter button to accept the selection.

Stop Game



Use this menu to stop a game. As per the Begin Game menu, it is necessary to point Odin towards a player or players, then press the button. The gun will respond with a sound effect, and then it will show “GAME OVER.”

This menu can be used to stop a timed game or an unlimited game at any time after the game has commenced.

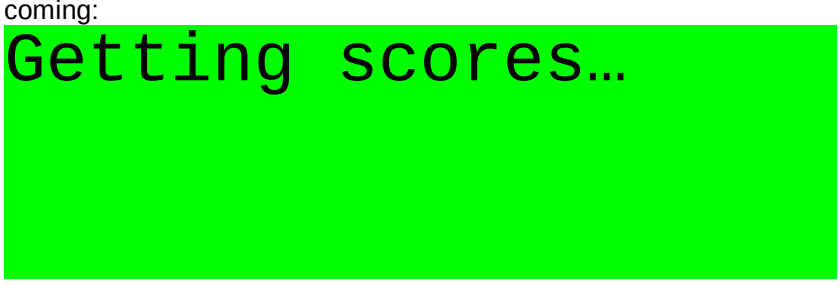
Scoring Menu

The Scoring menu contains all function needed to manage player scores.

Get Gun Scores

This menu item will download the scores from a player's gun. To use it, it is first necessary to plug in the Odin link cable to the socket on the side of Odin, and also to the socket on the side of the gun, as detailed in the Communication Methods section.

When the cable is plugged in, press the ENTER button. The display will change to indicate that the scores are coming:



When completed Odin will return to the scoring menu. A short beep will be heard to indicate that it is complete.

If an error occurs, an error message will be displayed and 2 beeps will be heard. In this case, check the connections and ensure that the gun is switched on, then try again. Repeated errors may indicate that a failure has occurred.

Send Scores

This menu item is used to transfer the scoring data to a computer. Before using this menu, plug in the PC link cable to the socket on the side of Odin, and into your PC, as detailed in the Communications Methods section.

When the cable is plugged in, press the button. Odin will display “Start Now”. Now press the “Get Score Data” button on FragScore.

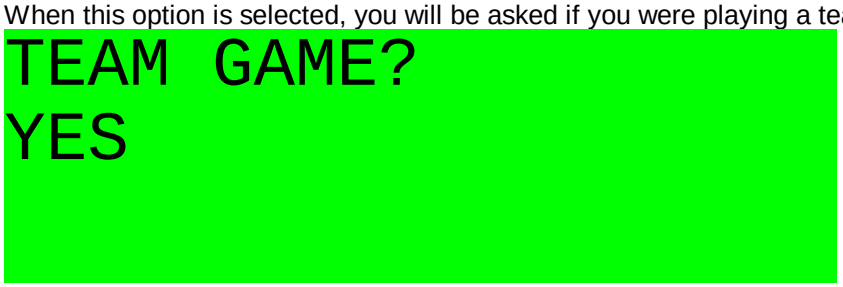
FragScore will show the progress of the upload, and if it transfers successfully a short beep will be heard and Odin will return to the scoring menu.

If an error occurs, an error message will be displayed and 2 beeps will be heard. In this case, check the connections and ensure that the correct Communications port has been selected in FragScore, then try again. Repeated errors may indicate that a failure has occurred.

Player Rankings

This menu item will calculate and display the scores for all players. It is intended for use in the field, when a PC is unavailable or undesired.

When this option is selected, you will be asked if you were playing a team game or not:

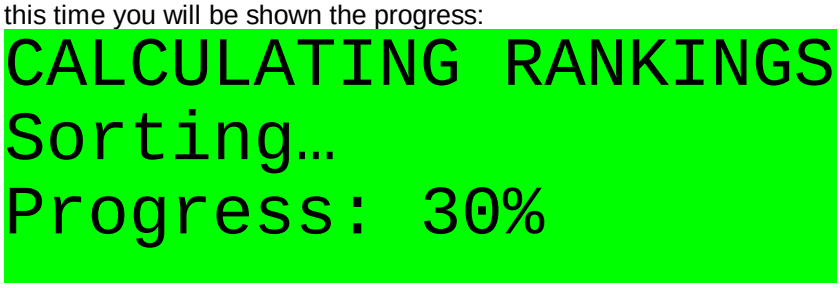


A team game refers to having all players from a team colour (Red, Blue or Yellow) working together. If you select Yes to this option, any hits against your own team members will count as a negative score (i.e. you will be penalised for hitting your own team.)

If you select No for this option, scores are calculated as the players being rewarded with score points for every hit, regardless of the team.

Use the Up/Down buttons to choose yes or No and then press Enter.

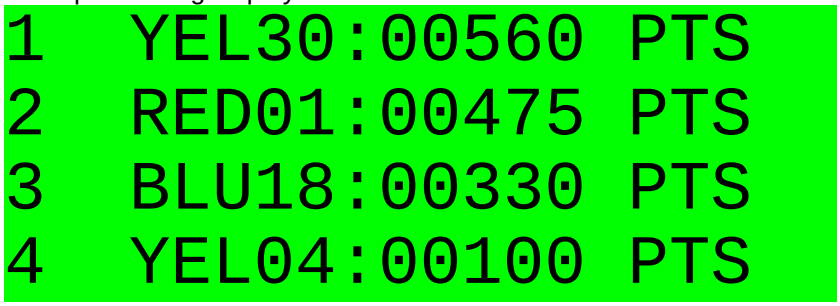
Due to the comprehensive amount of data stored it can take up to 10 seconds to calculate and show the scores. In this time you will be shown the progress:



When the calculation is complete, use the UP/DOWN buttons to move up or down in the list and view all of the player scores.

Press the BACK button to return to the scoring menu.

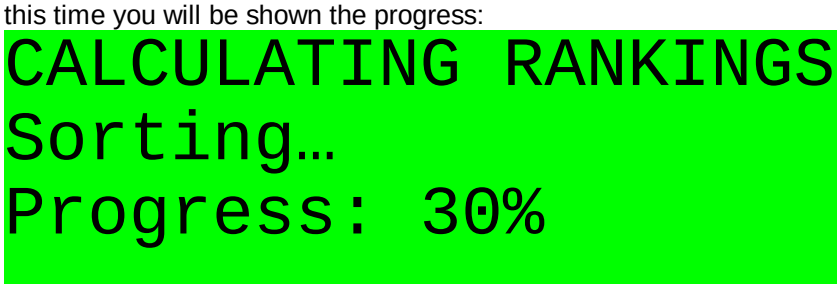
Example ranking display:



Team Rankings

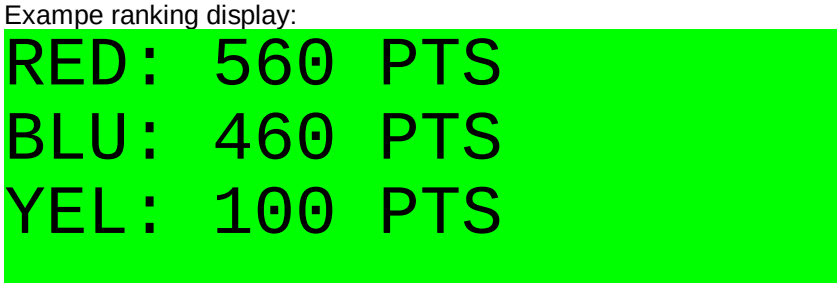
This menu item will calculate and display the scores for all teams. It is intended for use in the field, when a PC is unavailable or undesired, and individual scoring is not required.

Due to the comprehensive amount of data stored it can take up to 10 seconds to calculate and show the scores. In this time you will be shown the progress:



Press the BACK button to return to the scoring menu.

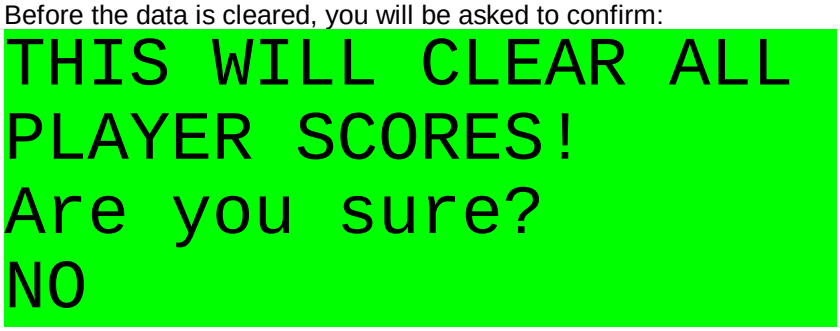
Exampe ranking display:



Erase Odin

This menu item will erase all of the scoring data inside Odin itself. Odin has memory that is retained even if the power is switched off, so it is necessary to clear the data any time that yo wish to start a new game. It is possible to get players scores without clearing Odin first, and in this case the new scores are simply added to the existing scores.

Before the data is cleared, you will be asked to confirm:



Use the Up/Down buttons to select Yes or No and then press Enter.

Erase Gun

This item will erase the scores of a gun. It is necessary to insert the gun cable as detailed in the Get Gun Scores menu before using this item.

In general it should not be necessary to use this item, as the gun scores are automatically cleared whenever a new game is started (refer to Game Control section.)

General Score System Usage

Odin and the Guns will store there scoring data in a way that protects it in case of power off. This ensures that data is protected and not accidently lost. However, as a result, it is vitally important to clear this data when appropriate, to prevent old data from prior games and new data from being merged together.

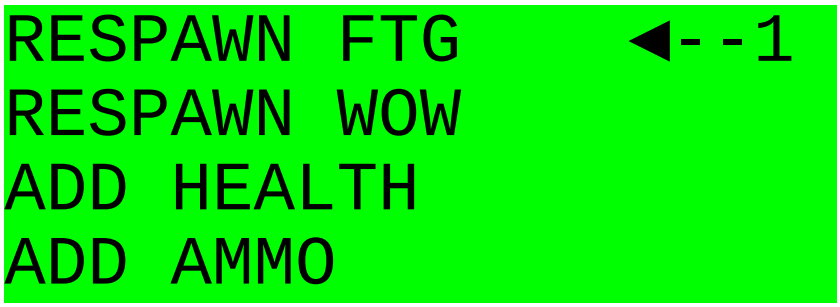
In order to obtain accurate results from the Scoring system, it is vital to follow these steps/rules:

- Before starting a game, all guns must have there score data cleared. This can be achived by either:
    - Giving all guns a “Game Start” signal as detailed in the Game Control section above (recommended), or
    - Connecting the Score upload cable and entering the Clear Gun menu in Odin
- At the same time, Odin must also have its existing data cleared using the Erase Odin menu detailed above.
- **Failure to clear existing data will result in the new data and the old data being merged together and inaccurate results.**
- If it becomes necessary to change a player’s gun due to low battery or similar, before changing over, upload the scores from the gun into Odin. Issue the new gun, and then give it a Game Start signal (if needed) to clear any of its existing data

Referee Menu

The Referee menu contains functions for performing referee actions on players.

Respawn FragTag

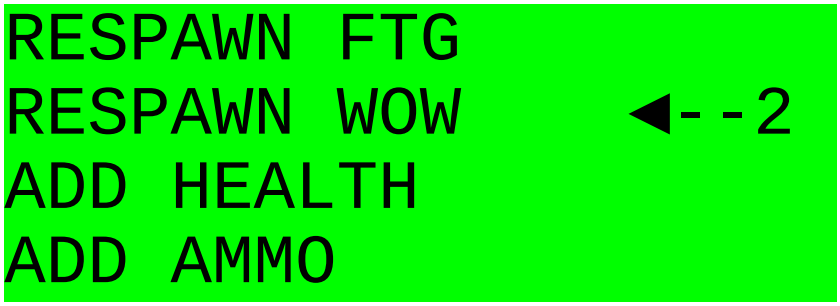


This item will set a player back to full health and full ammo, for when the gun is set to FragTag protocol (refer to the Mainboard Users Manual for details of protocols.) To use it, point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again.

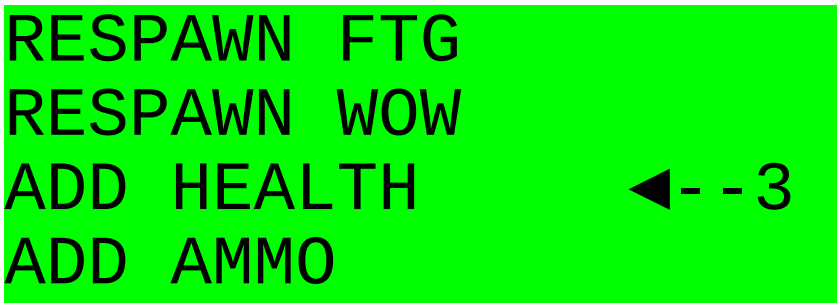
This item is suitable for respawning players when they die in the field.

Respawn WOW



This item is similar to the Respawn FragTag menu above, but for use when the gun is set to "wow" (Worlds of Wonder) protocol. This protocol is commonly used in older technology competitor systems.

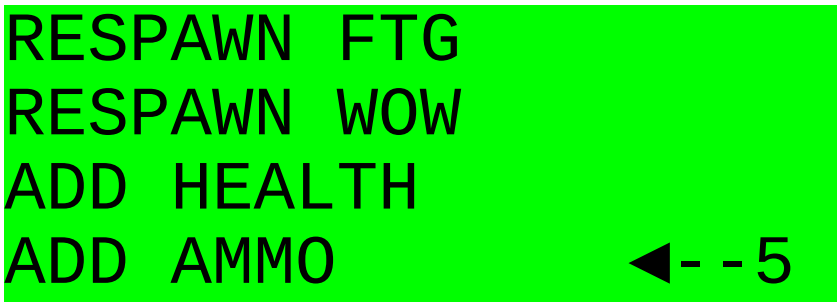
Add Health



This item will set a player back to full health. To use it, point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again. Note that if the player is already at full health, no sound will be heard from the gun.

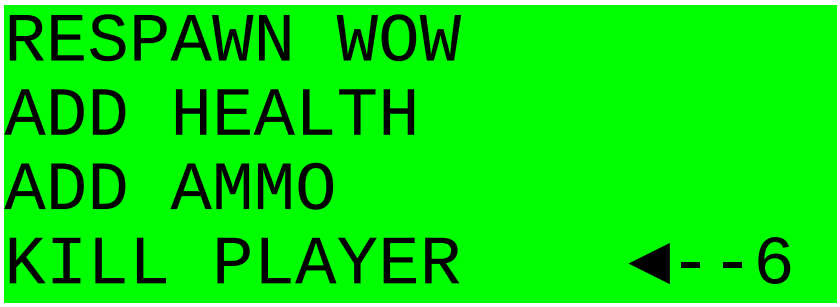
Add Ammo



This item will set a player back to full ammo. To use it, point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again.

Kill Player

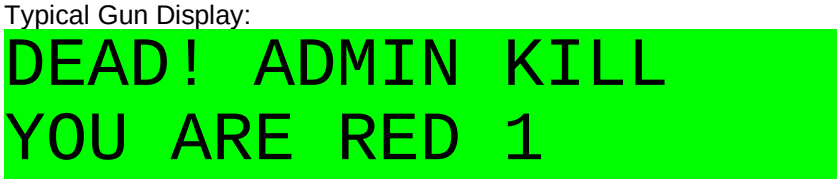


This item will set a instantly kill a player. To use it, point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again.

This is intended for a referee to punish a player that is misbehaving. The gun will display a special message "ADMIN KILL" for cheat prevention/detection purposes.

Typical Gun Display:



Use the Respawn Player menu if you need to bring them back to life again.

Gun Status

This item will make the gun show a status screen, with summary information (weapon configuration, run time etc.)

Refer to the Mainboard User Manual for full details of the Gun Status display.

This menu can also be used to test if the sensor is working correctly, without having any affect on the player scores.

Upgrades

This item will enter a sub menu that allows the setting of various Upgrades for players. To activate an upgrade, select the relevant Upgrade Item with the Up/Down buttons, and then press the Enter button, while pointing Odin towards a Gun.
Press the Back button to return to the previous menu.

Modifiers

This item will enter a sub menu that allows the modification of various configuration items. To modify a parameter, select the item with the Up/Down buttons, and then press the Enter button to begin adjustment. Press Up/Down to change the value, and press Enter to transmit it to a Gun.

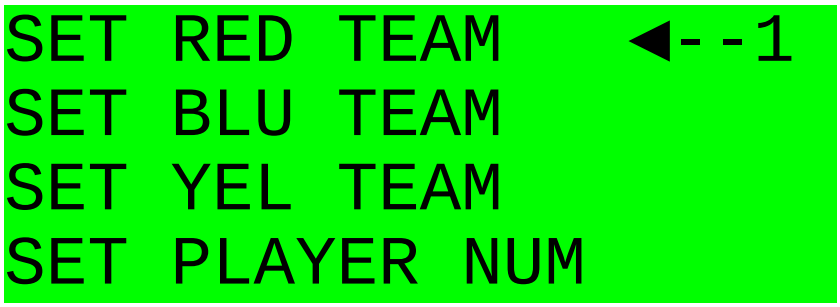
Refer to the Game Control menu for details of the modifiable items.

Press the Back button to return to the Modifiers menu.
Press the Back button again to return to the previous menu.

Administration Menu

The Administration menu contains functions for configuring players and accessories.

Set Team



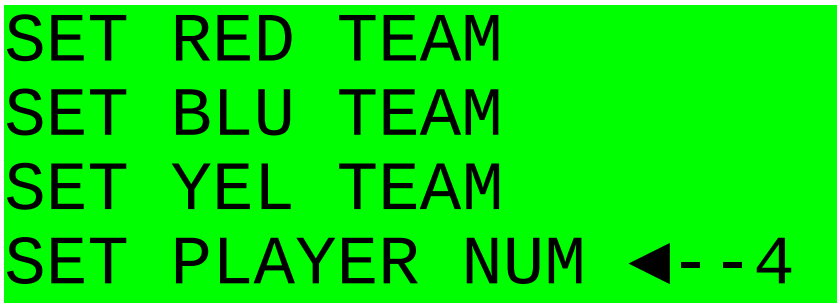
These menu items will set a player onto a team, either Red, Blue or Yellow.

To use then, point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

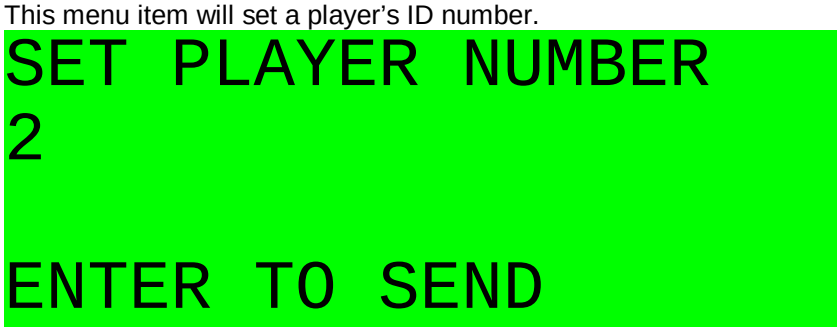
Note that the player must press and hold the Reload button in order to accept the signal.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again.

Set Player Number



This menu item will set a player's ID number.



Use the Up/Down buttons to select the required player number.

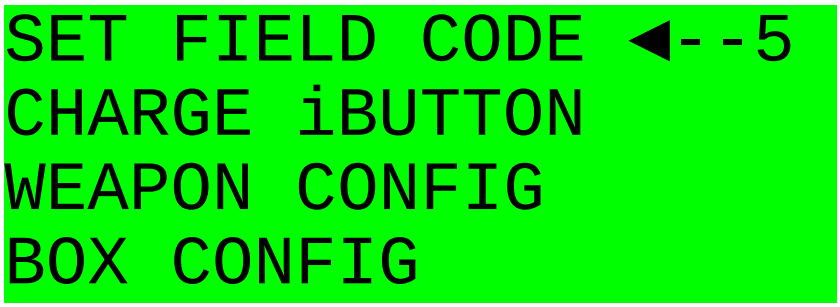
Point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

Note that the player must press and hold the Reload button in order to accept the signal.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again.

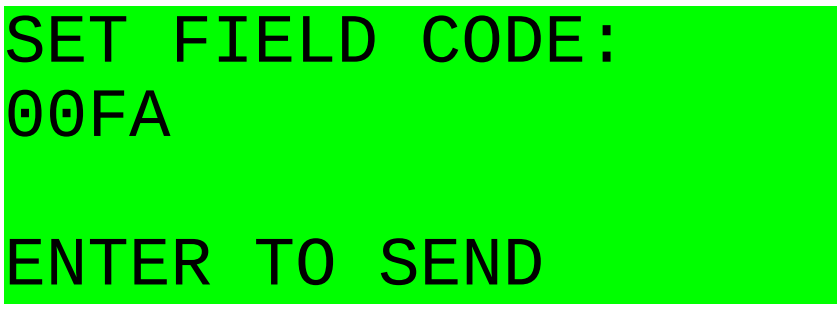
Press the back button to return to the Admin menu.

Field Code



The Field Code system allows a Field owner to control which Utilitiy Boxes can be used on a field. By default, the Field Code is set to “Universal Code” which allows the use of any FragTag Utility Box. Entering this Set Field Code menu allows the Field Code to be set to other values, which will then restrict the usage to Boxes and Guns that have a matching Field Code setting.

Entering this item shows a new screen:



Use the Up button to adjust the Field Code to a higher value.

Use the Down button to adjust the Field Code to a lower value.

Press the Enter button to transmit the value to a Gun.

Press the Back button to exit the screen (this also saves the current value into Odins memory, which is used for Odins own signals like Respawn, Ammo add and Health adding.

Field Code Usage

There are two basic options for Field Code usage:

Option 1: Use the Univeral Code:

- Enter the above menu and adjust the value to 0 (screen shows “Univeral Code”)
- Point Odin at each Gun in turn and press the Enter button. The Gun should make an audible warning and show the text “Field Code accepted”
- Point Odin at each Utility Box and press the Enter button.
- *Guns will accept signals from any FragTag Utility Box and any Odin.*

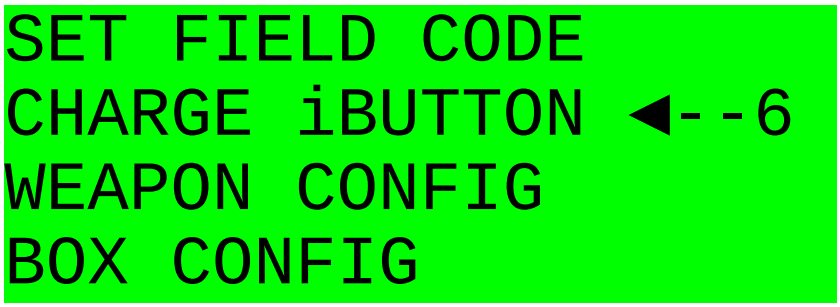
Option 2: Use the Field Specific Code:

- ❖ Enter the above menu and adjust the value to a value of your choice. There are just over 65,000 possible values
- ❖ Point Odin at each Gun in turn and press the Enter button. The Gun should make an audible warning and show the text “Field Code accepted”
- ❖ Point Odin at each the sensor on the front end of each Utility Box, and press the Enter button.
- ❖ *Guns will accept signals only from devices programmed with a matching Field Code value. Important: Guns will reject Respawn, Health and Ammo signals from any Utility Box or Odin device that does not have a matching Field Code.*

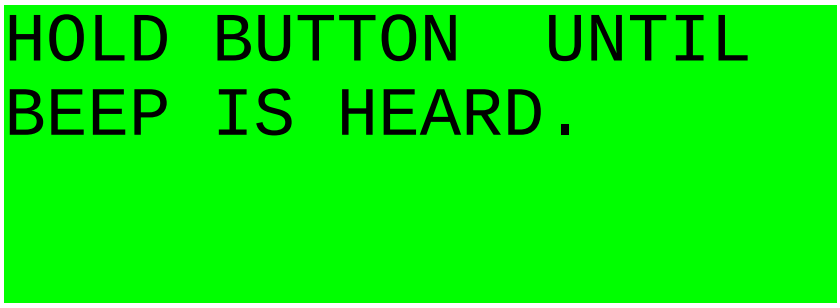
Important Notes:

- Guns, Odin and Utility Boxes will all remember the last Field Code setting indefinitely.
- Ensure that all devices used on the field are set correctly, to ensure that all devices can function correctly
- The default setting for a new device is to the Universal Code
- If you are using Multiple Odins, ensure they are all set to the same Field Code (enter the Menu, set the value, and then Exit.)
- If a Gun receives a signal from a device with a different Field Code, it will make an audible warning four times and show the text “Invalid Field Code”. The Gun will not accept this signal
- This system can be used to prevent players from bringing along there own Utility Boxes and using them without your knowledge, which could be considered as cheating. If you do wish them to use there own boxes, program the guns with the Universal Code or progam the Box with the individual code.

Charge iButton



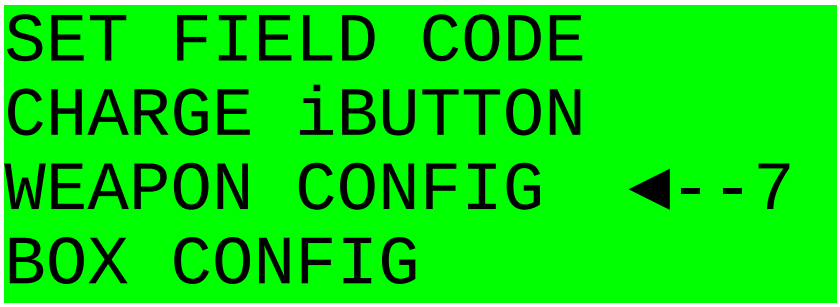
This menu item allows the charging of FragTag “iButton” accessories, such as the Field Bandage, and the Ammo Mag.



To charge an iButton, press and hold is against Odin’s Button port. A beep will be heard, and the button device will be recharged to its normal capacity.

Addition iButton devices can be charged simply by holding them against the port.

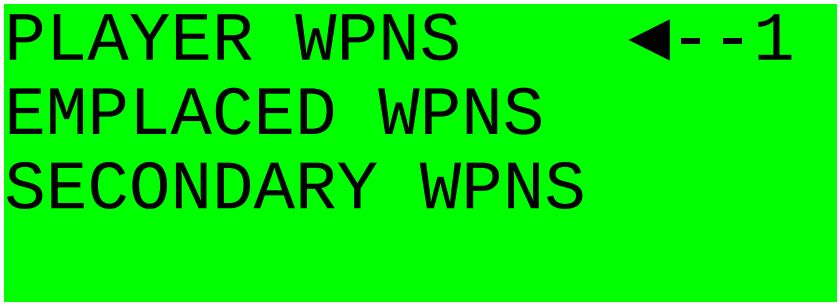
Weapon Configuration



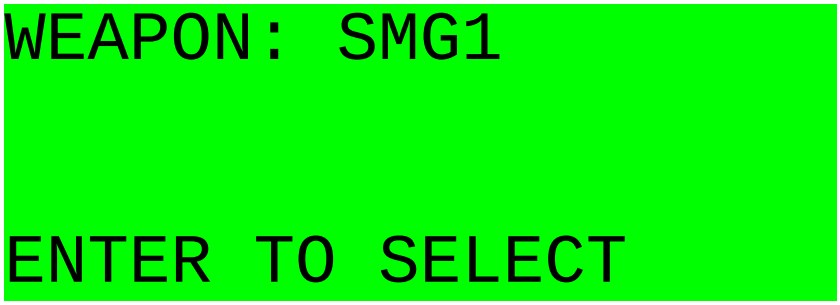
This menu item allows the setting of the Weapon type of a player's gun.

Weapons in the FragTag mainboard are divided into categories; Player Carried weapons, Emplaced weapons, and Secondary Weapons.

Player carried and Emplaced are in seperate firmware. Secondary weapons are available with either. Depending on what firmware is loaded into the gun, select the weapon type from the menu:



Selecting a Weapon type will then show a list of all of the available weapons:



Use the Up/Down buttons to select the desired weapon.

Point the end of Odin towards the player's sensor, and then press the button. A beep will be heard, and the player's gun will play a sound effect to confirm that the signal was received.

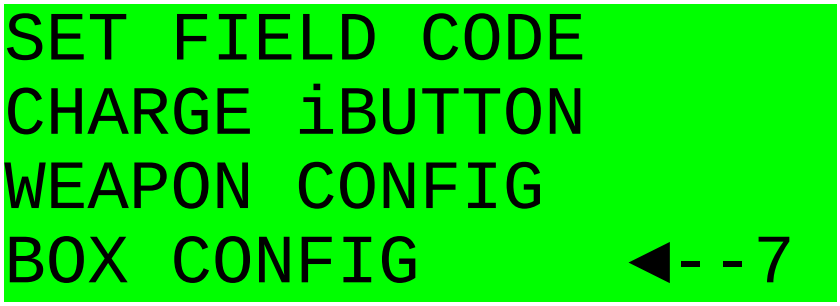
Note that the player must press and hold the Reload button in order to accept the signal.

This can only be done over a short range, typically 1 metre. If the gun does not respond with a sound effect, stand closer and try again.

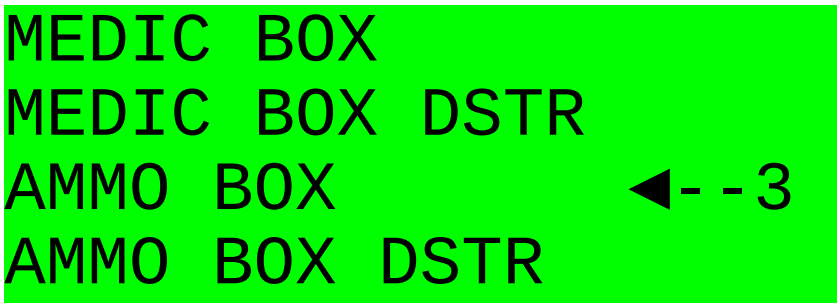
Press the back button to return to the Admin menu.

Note that attempting to select an Emplaced weapon from the Player carried firmware, or vice versa, will result in an error message and the setting will fail.

Utility Box Configuration



This menu item allows the FragTag Utility Box to be configured. Entering this menu will show a list of preset configurations:



Refer to the Utility Box User Manual for more details about the available modes.

Each configuration can be set as Non-destroyable (Utility Box can not be destroyed), or destroyable. Destroyable configuration presets have the term “DSTR” at the end of the description.

Where a time is mentioned (eg HEAL 30 SC) the Box will automatically emit a signal in that time. SC is the abbreviation for seconds, and MN for minutes.

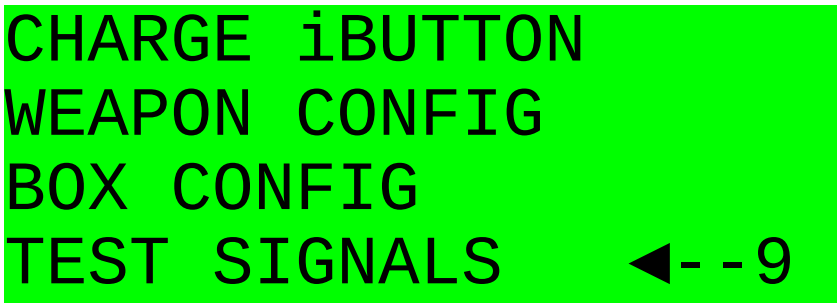
Use the Up/Down buttons to select the desired preset.

Point the end of Odin towards the Utility Box sensor, and then press the button. A beep will be heard, and the Utility Box will also beep to confirm that the signal was received.

This can only be done over a short range, typically 1 metre. If the Box does not respond with a sound effect, stand closer and try again.

Press the back button to return to the Admin menu.

Test Signals



This menu item allows the generation of testing signals. Entering this menu will display a list of test signals:

Select the desired signal using the Up/Down buttons. Point the end of Odin towards the Gun, and then press the button. A beep will be heard.

This can only be done over a short range, typically 1 metre. If the Box does not respond with a sound effect, stand closer and try again.

Press the back button to return to the Admin menu.