

# *LaserChaser*

## Operation Manual

Revised 01/99

### *RTS System*

# Table of Contents

HAND HELD PROGRAMMER.....	2
RTS SYSTEM.....	3
<b>PROGRAMMING CODES</b> .....	3
<b><i>OUT OF GAME CODES</i></b> .....	3
<b><i>IN GAME CODES</i></b> .....	11
<b>CONFIGURING AND USING THE GRENADE</b> .....	12
<b>HINTS ON PROGRAMMING THE PHASER</b> .....	13
<b>FACTORY SET UP</b> .....	13
LASER CHASER PHASER.....	14
VEST.....	15
GUN CABLE.....	15
LASER INFORMATION AND WARNING.....	16
FCC NOTICE TO USER.....	17

## **Hand Held Programmer**

The Hand Held Programmer is used to program gun parameters. It transmits infrared signals to the gun being programmed. The programmer has a 2 digit counter display in the sending window showing the current programming code. The operator can increase or decrease each digit by pressing the + and the - button (0-9 and A-F). Once the desired code is set, pressing the white button on the face of the programmer will send out the code.

When programming a gun, be sure to hold the programmer as close to the gun as possible. This will help prevent any other guns from picking up the code.

Hold the send button for about 1 second each time when transmitting a code. The red LED above the send button will light indicating that a code is being transmitted. All codes used by Laser Chaser laser tag systems can be simulated by the hand held programmer except gun numbers. A standard 9V battery, located in a compartment in the rear of the unit supplies power.

# **RTS System**

## **Programming Codes**

There are two different set of codes. One is called 'out of game' codes and the other set is called 'in game codes'. Out of game codes are the codes that can be applied to the guns in standby mode. After turning the gun on, a small red LED is lit on the display indicating that the gun is powered up and in standby mode. Gun programming (lives, shots, time, etc.) takes place in the stand by mode before entering a B1, game start code.

In game codes can be used after a gun is started up (B1) to play a scoring game plan. Scoring game plans are team and solo games. At the end of team or solo game, players will receive a personalized score card. Codes that guns can receive during the game include starting codes, mine codes, recharge codes, etc.

The following codes are to be used with the Hand Held Programmer for configuration of game play.

## **OUT OF GAME CODES**

This is the largest group of codes that includes the following sub groups of codes:

- 1) game parameter programming codes
- 2) game plans
- 3) diagnostics codes

These codes can only be applied before and after a game, not during. Please note that some codes are used both in game and out of game and represent DIFFERENT FUNCTIONS.

## **Game Parameters**

### **B0: Toggle Game Plan Quick Start (on/off)**

The B0 code is used to turn on the quick start option. With the quick start option on, when the operator changes a game plan the new game will start immediately. For example with the quick start on, to start the Tug Of War game the operator only has to apply 65 to the gun to recall the game plan and to start the game. Without the B0 on, the operator would have to apply 65 to switch over to Tug Of War game from another game plan and then B1 to start the Tug Of War game. The B0 code will start all game plans except the regular game plan programmed into the gun by the operator. This means that with the B0 on, sending out the 60 code will not start the regular game plan.

**B1: Start Game**

This code will start the game. The gun will emit a series of tones and say "System Go". The guns can be programmed to be delayed in activation for 30 seconds after receiving the game start code.

**B2: Toggle Solo/Team Mode**

In Solo mode, all LEDs on vests and guns will turn on yellow and every player is out for themselves to collect as many points as possible.  
Team mode means that the LED's will be Red or Green. See "Game Plan Descriptions" for more information.

**B3: Set Time Delay (Count Down)**

Players tend to start shooting at each other as soon as their equipment becomes functional. To prevent a big shoot out at the arena entrance, it is practical to use a time delayed start up. This means that the guns will not immediately become active when receiving the game start (B1) code. The length of the time delay start can be programmed by applying the B3 code to the gun. Use the rear trigger to set the length of the time delay between 0 and 30 seconds. Press the front trigger to exit the routine.

**B4: Toggle Startup (on/off)**

Determines if current gun programming parameters are displayed when the gun is powered on.

**B5: In-Time**

After applying this code, the operator can set the length of time the player will be in invisible or invincible mode (range 10-60 seconds). Pressing the rear trigger will advance the counter and pressing the front trigger will complete the programming process.

**B6: Set Grenade Parameters**

This code allows you to configure the grenade. Hold down the rear trigger to increment the countdown time before the grenade goes off (range 0-5 seconds). Player will hear the message 'WARNING!' before it fires. Hold down the front trigger to increment the cost of firing a grenade (range 20-200 shots).

**B7: Toggle Recharge Level (full/half)**

Sets the amount of recharge a player can receive from a **Intelligent Target** during a game. A full recharge will return a player to the initial level of lives/shots at the start of a game. A half recharge will only allow a player to reach 50% of the initial lives/shots.

This code can be used to handicap experienced players.

**B8: Skill Level (easy/hard)**

There are two skill levels: Easy and Hard. If a player is hit during "easy" mode, the gun will be deactivated for approximately 5 seconds. During this time, the player cannot be hit again. In "hard" mode, if a player is hit they can be hit again while their gun is deactivated. This code can be used to handicap experienced players.

**B9: Toggle Mobile (score on/score off)**

Allows guns to be used without scoring software and computer system. Each gun generates a score based on hits received and time elapsed. The score is displayed sequentially along with shots, lives, and time remaining. At the end of the game, the score can be displayed by pulling both triggers. The score will be retained until a new game is started or the gun is turned off.

**BA: Toggle Burst Fire (burst on/ burst off)**

Allows the gun to be used in a burst fire mode. If both triggers are pulled and held, the gun will emit a burst of 5 shots. The player must release both triggers to fire another shot or another burst sequence.

This code can be used to handicap experienced players.

**BB: Display Gun Configuration (Show Set Up)**

Upon applying this code, the gun will display the current programming parameters

**BC: Hit All/Not All**

The operator can use the BC code to allow players to hit their own team mates ('Hit all') or to only hit members of the opposing team ('Not all'). The message 'Hit all' or 'Not all' will appear on the gun display depending on the current program setting.

**BE: Single/Dual Laser Operation**

When a gun is programmed for the green team, the gun will fire a green laser if available. You must set this for 1 or 2 laser operation.

**70: Retaliation Shot (On/Off)**

With this feature toggled on, a player who is hit will be able to fire one retaliatory shot while they are disabled.

**7F: Load Factory Set up**

When applying this code, the gun will load up a factory set of commonly used programming values. Please see the game plan section for these values. The operator will be prompted to press the front trigger for 'Yes' or the rear trigger for 'No.' If the setting is accepted the display will show 'Done' and a fanfare will sound.

**80-8F: Game Time**

Program the game time with the following codes.

Code	Length of Game in Minutes	Code	Length of Game in Minutes
80	3	88	12
81	4	89	15
82	5	8A	20
83	6	8B	25
84	7	8C	30
85	8	8D	45
86	9	8E	60
87	10	8F	Unlimited

**90-9F: Number of Shots**

Program the number of shots players start the game with.

Code	Number of Shots	Code	Number of Shots
90	10	98	160
91	20	99	180
92	40	9A	200
93	60	9B	220
94	80	9C	250
95	100	9D	300
96	120	9E	500
97	140	9F	Unlimited

**A0-AF: Number of Lives**

Program the number of lives a player has with these codes:

Code	Lives	Code	Lives
A0	1	A8	20
A1	2	A9	25
A2	4	AA	30
A3	6	AB	35
A4	8	AC	40
A5	10	AD	45
A6	12	AE	50
A7	15	AF	Unlimited

**00-1F: Gun Numbers for Red Team**

Configure gun numbers for the Red Team with the following codes. Apply the code to either of the gun sensors. Do not apply code to any of the vest sensors since they will not pick up the code. This is done to prevent inadvertently reprogramming other guns.

Code	Gun Number	Code	Gun Number
00	1	10	17
01	2	11	18
02	3	12	19
03	4	13	20
04	5	14	21
05	6	15	22
06	7	16	23
07	8	17	24
08	9	18	25
09	10	19	26
0A	11	1A	27
0B	12	1B	28
0C	13	1C	29
0D	14	1D	30
0E	15	1E	31
0F	16	1F	32

**20-3F: Gun Numbers for Green Team**

Configure the gun numbers for the Green team with the following codes. Apply the code to either of the gun sensors. Do not apply code to any of the vest sensors since they will not pick up the code. This is done to prevent inadvertently reprogramming other guns.

Code	Gun Number	Code	Gun Number
20	1	30	17
21	2	31	18
22	3	32	19
23	4	33	20
24	5	34	21
25	6	35	22
26	7	36	23
27	8	37	24
28	9	38	25
29	10	39	26
2A	11	3A	27
2B	12	3B	28
2C	13	3C	29
2D	14	3D	30
2E	15	3E	31
2F	16	3F	32



## **Game Plans**

There are two different kinds of game plans: scoring (regular) and non scoring. There are ten pre-programmed game plans in the gun memory. These can be started by pressing just one code. Pre-programmed game plans help the operator to efficiently cater to varying needs of his clientele.

### ***SCORING GAME PLANS***

#### **60: Scoring (Regular) Game Plans**

This code sets the gun into a regular, scoring game plan. It is essential to enter this code before switching to regular or solo games from non scoring game plans (Dracula, Highlander, etc.). Only entering B2 for example will not set the gun into solo mode. The B2 code will be recognized but the gun will stay in the non scoring game plan it was before entering the B2 code.

#### **B2 (toggle on): Team Game Plan**

There is a red team and a green team. The aim is to shoot as many opponents as possible and to score points by shooting their base target as many times as possible. There are an almost infinite number of team game plans possible. We included the three most basic ones into our gun memory. This enables the operator to tailor games to the immediate need of his customers.

#### **B2 (toggle off): Solo Game Plan**

All guns/vests will have flashing yellow LEDs indicating a solo game. Everybody is out to collect as many points for themselves as possible.

#### **67: Unlimited**

Players have unlimited shots and lives. Ideal for very young children. This game plan can be further varied by choosing the other game parameters than shots and lives. Shots and lives will not decrement below 10 shots and 3 lives. Guns will respond to all mine and home base hits by losing 1 life.

#### **68: 80 Shots / 10 Lives**

Players start with 80 shots and 10 lives. Ideal for players with some game experience. This game plan can be further varied by choosing the other game parameters.

#### **69: 40 Shots / 05 Lives**

Players start with 40 shots and 5 lives. This game is for experienced players that the operator wants to challenge. Players will have to try to conserve lives and shots. This game plan can be further varied by choosing the other game parameters.

## ***NON SCORING GAME PLANS***

Players do not get a score card at the end of these games. They are either time limited games (Tug Of War) or eliminator type of games (Dracula, Highlander).

### **61: Dracula Player**

This will be the starting Dracula player. Please see code 62 for further explanation of game plan.

### **62: Dracula Game Plan**

Game starts with one player having a red gun (configured by 61), the rest of the players have green guns (configured by 62). When the red gun (Dracula) hits a green gun, that player becomes a vampire and falls out of the game. Green players may delay Dracula by tagging him or her, but the final outcome is inevitable. (See code 66)

### **66: Dracula 3**

Green player in a Dracula game with three lives instead of one.

### **63: Highlander 1**

This is a solo elimination game. Each player has one life, the surviving player is the Highlander. Ideal when fast turn around is desired.

### **64: Highlander 3**

Same as Highlander 1, but a player is eliminated after three hits.

### **65: Tug of War**

Team game starting with an equal number of red vs. green players. A red player, when hit by a green player will become a green player, and vice-versa. The game is time dependent (pre-programmed), unless the skill of one team far outweighs the other. The winning team is the one with the most players of the particular color at the end of the game.

Lights will stay on for 1 minute after end of game to count number of players on each team.

## **Diagnostic Codes**

### **75: Display Test**

Lights up each display segment one by one, then does a test digit by digit.

### **77: Sound Test**

Performs a test of all sound routines

### **78: LED Test**

Performs a test of all LEDs in all colors. Upon applying the 78 code the display will show 'test LEDs.' Pressing and releasing the rear trigger will light the red LEDs. Pressing and releasing the rear trigger the second time will light the green LEDs. The yellow LED color is generated by lighting red and green simultaneously. Therefore problems with the yellow color will surface while testing the red and green colors. Press and hold the front trigger before releasing the rear trigger in order to exit this test routine.

### **7A-7C: Sound Routine Adjustments**

If a particular sound seems to be out of adjustment, for example it cuts short, the sound timing can be adjusted with the Sound Trim codes. The sounds are broken into 4 groups and these four groups can be accessed independently.

When, for example, the 7A code is entered, the top display line of the gun will show ISD1. On the bottom display line will be a number from 0-4. This number indicates the sound trim setting, and can be adjusted by pulling the front trigger. Once the desired setting is reached, pulling the rear trigger will enter in the number and perform a sound test. Repeat the trim routine until the desired setting is reached.

7A: Trim Sound Routine ISD1

7B: Trim Sound Routine ISD2

7C: Trim Sound Routine ISD3

### **76: Sensor/Laser/Infrared Check**

Apply this code and the laser will flash automatically. Pull the front trigger and the IR emitter will activate enabling you to check it with a IR sensor card. You can also verify that the IR sensors on the vest and gun are working properly. Aim the hand held programmer at a sensor and press the send button. The display on the gun will show what code was received and a 2 digit code indicating which sensor picked up the code as shown below:

**01:** left gun sensor

**02:** right gun sensor

**04:** body sensor

**08:** shoulder sensor

Press both triggers and release to exit the routine.

## **IN GAME CODES**

### **Marshall Codes**

These codes can be applied by the game marshal to modify game parameters during a running game.

#### **CO: Recharge**

The Marshall can recharge players by emitting the CO code from the hand held programmer.

#### **50: Add 2 minutes**

This code adds 2 minutes to the game in progress.

#### **51: Add 5 Minutes**

This code adds 5 minutes to the game in progress.

#### **52: Add 10 minutes**

This code adds 10 minutes to the game in progress.

#### **56: Penalty Box**

Operators can use this code to penalize unruly players. When hit, guns will deactivate and the player will have to go into the penalty box to become activated again. The player will have to remain in the penalty area until the penalty time on the gun has counted down to zero. If the player leaves the penalty box before his penalty timer reached zero, the gun will stay deactivated. The faster players get to the penalty box, the less time they will spend deactivated and the faster they will be able to get back into the game.

#### **B7: Penalty Box Release**

The Marshall can use this code to release players from the penalty box before the player's time expires.

#### **5B: Game Over**

Sets the remaining time to zero, forcing the gun into the game over routine. This code differs from BE such that the scores will still be retained. It is intended to be used on guns that still have time remaining after the game has finished.

#### **BE: Penalize Game Over**

Eliminates a player from the game by reducing shots, lives and time to zero. When the gun receives this code, it will say "game over" and follow the game over routine setting all scores to zero. Player will not get a scorecard. (Can be used to penalize unruly players.)

## **Configuring and Using the Grenade**

### **Firing the Grenade**

The trigger located on the top of the gun is used in conjunction with the rear and front triggers to fire a grenade. When a player fires a grenade, the gun will emit an audible 'WARNING!' and the IR emitter on the top of the gun will flood an area with IR, hitting all players around. The player has the option of firing a fatal grenade (all lives are removed from player who was hit), or a non-fatal grenade (removes one live from the player that was hit).

### **Configuration**

You can configure the grenade settings with the code B6. There are two parameters to be set.

**Grenade fire countdown:** When a player fires a grenade, a countdown can be programmed before the grenade actually goes off. During this countdown, the gun will announce 'WARNING' alerting all players in the area that a grenade is about to go off. Hold down the rear trigger to increment the countdown time from 0-5 seconds. Once the desired time has been reached, pull the top grenade trigger to lock in the setting.

**Grenade fire cost:** When a grenade is fired, it will cost the player a certain number of shots. The number of shots it will cost a player can be programmed with the front trigger. Use the front trigger to increment the cost of firing a grenade from 20-200 shots. Once the desired shots cost has been reached, pull the top grenade trigger to lock in the number.

### **Fatal Grenade**

To fire a fatal grenade, the player must hold down the rear gun trigger and the top grenade trigger. The gun will emit the message 'WARNING!' and a series of beeps at one-second intervals. The countdown set in B6 will begin. At the end of the countdown, the gun will play three notes and the grenade will fire at the cost of shots set in B6. After firing there is a 20 second delay before it can be fired again.

### **Non-Fatal Grenade**

A non-fatal grenade is fired with the front trigger and the top grenade trigger. The shots cost is  $\frac{1}{4}$  of what is set in B6. After firing there is a 20 second delay before it can be fired again.

The grenade is only available in the following game plans; team, solo, 80/10, 40/05, and open.

## **Hints on Programming the Phaser**

The above description is a logical organization of codes. For practical purposes consider using the following sequence for programming of game parameters:

1. gun color and number (00-1F, 20-3F)
2. regular game plan (60)
3. team or solo game (B2)
4. game time (80-8F)
5. number of lives (A0-AF)
6. number of shots (90-9F)
7. delayed game start time (B3)
8. hard or easy game (B8)
9. full or half recharge (B7)
10. single or rapid fire (BA)
11. retaliatory shot on/off (70)
12. mobile scoring on/off (B9)
13. game plan quick start on/off (B0)
14. display set up on/off (B4)
15. invincible/invisible time (B5)
16. hit all/not all (BC)
17. grenade configuration (B6)

Please remember, 8, 9, 10, and 11 can be used to handicap experienced players when mixing them with inexperienced players.

## **Factory Set Up**

Applying the 7F code will load the following parameters into the gun.

team game  
5 minute game  
20 lives  
200 shots  
0 second start delay  
easy game  
full recharge  
rapid fire on  
retaliation shot on  
mobile scoring off  
game plan quick start off  
'show program set up' off  
10 second invincible/invisible period  
hit not all  
grenade 2 second countdown, 100 shot cost  
single laser operation

## **Laser Chaser Phaser**

Mounted on the back of the gun is an LED display. This display is active during configuration and game play. It displays information such as programming parameters and game play information like number of lives, and shots remaining.

On the sides of the gun are a row of LEDs. The LEDs denote the color of the team that a player belongs to. Colors are Red, Green and Orange. One hit sensor is located on each side of the gun.

The barrel of the gun houses two light sources. Laser light is emitted from the aperture in the center of the barrel. Infrared light is emitted from the top aperture. The infrared beam is the beam that transmits the necessary information between guns, between the gun and intelligent targets, and between the gun and the down loader.

The Laser Chaser phaser is a two handed gun. Each grip has a trigger, and both must be depressed for the gun to fire a shot. The purpose of the two handed configuration is to force players to keep both hands on the gun for safety reasons. Depending on configuration, the gun may fire single shots or a burst of five shots.

On the top side of the gun is a speaker. It is responsible for the sound effects and audio warnings that are heard during game play

On the rear of the gun is an eyelet, for the attachment of an optional shoulder strap.

## **Vest**

The vest is made from an exceptionally strong, lightweight material and can be cleaned with a mild detergent solution

Mounted on the front and back of the vest are the sensor housings. The housings contain hit sensors and LED indicators.

Hit sensors are mounted on the shoulders also.

On the bottom front of the vest is a pouch holding the battery and fuse. This location makes the replacement of either extremely easy.

## **Gun Cable**

The gun cable connects the vest to the gun. This cable carries power to the gun, and facilitates communication between the vest and gun.



## **Laser Information and Warning**

- The laser diode used in Laser Chaser Laser Tag equipment is a CLASS II LASER PRODUCT, 0.9mW, 80ms
- During game play preparation, players should be instructed not to aim the guns at other players faces. Direct exposure to laser light should be avoided.
- **DO NOT STARE INTO LASER BEAM**

### **CAUTION**

Use of controls and adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

### **Laser Warning Labels**

A Protective Housing Label is located on the inside of the gun, on the barrel. This label reminds any person performing service or repair that the barrel of the gun houses the laser diode. Removal of the laser diode from the barrel could expose that person to unsafe laser light

A Laser Warning / Aperture Label is affixed to the outside of the gun, near the end of the barrel where the laser light emitted. This label serves to inform a player of the presence of laser light. Also, warning that person not to stare into the laser beam.

An Equipment Identification Label is affixed to the data down loader. This label serves to inform any person performing repairs, the serial number of the unit, date and location of manufacturing.

## **FCC Notice to User**

Changes or modifications not expressly approved by Laser Chaser, LLC could void the user's authority to operate the equipment.

*FCC ID: NIPRTS*

### **Class A Digital Device Notification**

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.