

Shooting Gallery

FEATURES

- Outputs include NTSC (AY-3-8607-1) or CCIR (AY-3-8607) compatible composite sync, color burst location and blanking
- Operation from a 3.579545MHz clock
- One or two player game
- Digital on-screen scoring
- Sound generation for flight, fall, hit and impact
- Designed for use with AY-3-8615
- Outputs and power requirements compatible with Gimini Economy "8600" Game Series to allow plug-in operation.

DESCRIPTION

The AY-3-8607/8607-1 game circuit has been designed to provide an active series of target games using a standard television receiver. The circuit is intended for use with a 525 (AY-3-8607-1) or 625 (AY-3-8607) line receiver.

OPERATION

The AY-3-8607/8607-1 utilizes an external photo cell mounted in a gun or rifle for recording hits. The logic requires the gun to input a shot pulse when the trigger is pulled and if the photocell in the gun records the hit (if on target) a pulse will be transmitted to the chip. (No pulse if off target).

Some of the two-player games require two guns.

With the two-player game where one player controls the target and the other shoots, the joystick in the console will be used for target control.

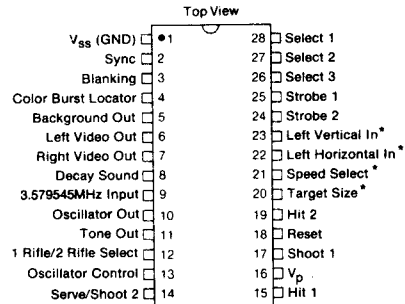
Skill select switches on the console are used for (1) target size large or small (2) target speed, fast or slow. In two-player/two-rifle games, the left joystick is used for additional handicapping/skill selection.

GAME SKILLS

All games will have difficulty selection in the following areas:

- A. Two speeds for the target — fast and slow.
- B. Two sizes for the target — large and small.
- C. Joystick-selected handicap.

PIN CONFIGURATION 28 LEAD DUAL IN LINE



*Pin functions are for one-player games.

For two-player games, the functions of pins 20 thru 23 are:

- 20—Player 1 Target Size
- 21—Player 1 Speed Select
- 22—Player 2 Target Size
- 23—Player 2 Speed Select

These selections are to be made on two pins which will make one selection (the easiest) when left open.

ON SCREEN SCORING

All scoring will be displayed on the screen momentarily after each flight or target sequence to show an update of the game in progress. Score is flashed at end of game.



CIRCUIT OPERATION

The AY-3-8607 utilizes an external photo cell mounted in a gun or rifle for hits made. The logic requires the gun to input a shot pulse when the trigger is pulled and if the photocell in the gun records the hit (if on target) a pulse will be transmitted into the chip (no pulse if off target).

Some of the two-player games require two guns.

With the two-player game where one player controls the target and the other shoots, the joystick in the console will be used for target control.

Skill select switches on the console are used for (1) target size, large or small (2) target speed, fast or slow. In two player two rifle games left joystick is used to give handicapped skill selections.

GAME SELECTIONS

Select	Strobe	1 Gun	2 Guns
1	1	Attack II	Attack IV
2	1	Target I	Target III
3	1	Target II	Target IV
1	2	Skeet I	Skeet III
2	2	Skeet II	Skeet IV
3	2	Attack I	Attack III

GAME DESCRIPTIONS

Skeet I

This game selection uses a playing area as shown in Figure 1. It is a single-player game in which the player tries to shoot a target on the screen with an external gun. The target moves from the foreground into the background and the player is allowed one shot to be taken per flight. The target can start from either the right or the left side of the screen at random. When either the hit count or the number of flights reaches 15 the game ends.

Skeet II

This game selection uses a playing area as shown in Figure 1. It is a two-player game in which one player tries to shoot the target and the other player controls the direction in which the target flies with the horizontal axis of the joystick, and also controls the start of flight with the left "serve" button. The target moves from the foreground into the background and the player with the gun is allowed one shot to be taken per flight. The game ends when either the hit count or the number of flights reaches 15.

Skeet III

This game selection uses a playing area as shown in Figure 1. It is a two-player game in which both players use guns to shoot at the target. The target moves from the foreground into the background from random sides. Each player is allowed one shot per flight. The first player to hit the target gets the score. The game ends when either player reaches a score of 15.

Skeet IV

This game selection uses a playing area as shown in Figure 1. It is a two-player game in which both players use guns to shoot at the target. The target moves from the foreground into the background from random sides. Each player alternately shoots at the target starting with the left player first. If the player whose turn it is to shoot, hits the target during the initial part of the flight, he retains his turn to shoot next, thereby preventing his opponent from playing in turn. This rewards fast accurate shooting. The first player to score 15 points wins, and the game ends.

Attack I

This game selection uses a playing area as shown in Figure 2. It is a single-player game in which the player tries to shoot the target on the screen with an external gun. The target moves from the background toward the foreground. The target can start and change course in flight at random. Only one shot is allowed per flight of the target. The game ends when either the hit count or the number of flights reaches 15.

Attack II

This game selection uses a playing area as shown in Figure 2. It is a two-player game in which one player tries to shoot the target and the other player controls the direction in which the target flies with the joystick. The target moves from the background into the foreground and the player with the gun is allowed one shot to be taken per flight. The game ends when either the hit count or the number of flights reaches 15.

Attack III

This game selection uses a playing area as shown in Figure 2. It is a two-player game in which both players use guns to shoot at the target. The target moves from the background into the foreground with random trajectories. Each player is allowed one shot per flight. The first player to hit the target gets the score. The game ends when the first player reaches a score of 15.

Attack IV

This game selection uses a playing area as shown in Figure 2. It is a two-player game in which both players use guns to shoot at the target. The target moves from the background into the foreground with random trajectories. Each player alternately shoots at the target starting with the left player first. If the player whose turn it is to shoot hits the target during the initial part of the flight, he retains his turn to shoot next, thereby preventing his opponent from playing in turn. This rewards fast accurate shooting. The first player to score 15 points wins, and the game ends.

Destruct I

This game selection uses a playing area as shown in Figure 3. It is a single-player game in which the player tries to shoot the targets as they are flashed on the screen with an external gun. The targets flash sequentially on the screen and disappear as each is hit. The game ends when either the hit count or the number of sequences reaches 15.

Destruct II

This game selection uses a playing area as shown in Figure 3. It is a single-player game in which the player tries to shoot the targets as they are flashed on the screen. The targets flash randomly on the screen and disappear as each is hit. The game ends when either the hit count or the number of sequences reaches 15.

Destruct III

This game selection uses a playing area as shown in Figure 3. It is a two-player game in which both players use guns to shoot at the target. The targets flash sequentially on the screen and the first player to hit the target scores. If both players hit the same target simultaneously, both players will get a score. The game ends when all targets disappear.

Destruct IV

This game selection uses a playing area as shown in Figure 3. It is a two-player game in which both players use guns to shoot at the target. The targets flash randomly on the screen and the first player to hit the target scores. If both players hit the same target simultaneously, both players will get a score. The game ends when all targets disappear.

CONSUMER

**ELECTRICAL CHARACTERISTICS****Maximum Ratings***

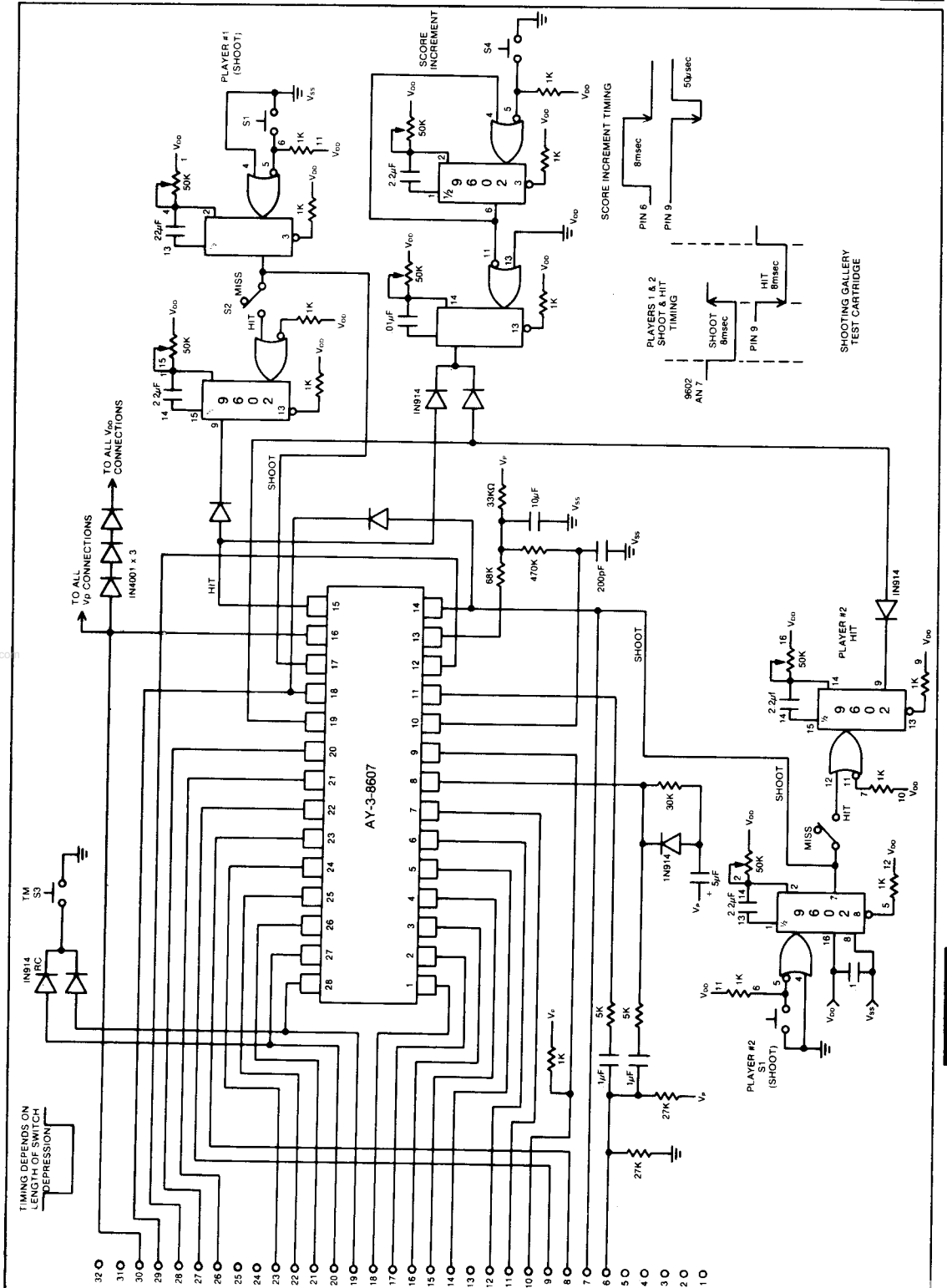
Voltage on any pin with respect to V_n pin	-0.3 to +12.0V
Storage temperature	-20° C to +70° C
Ambient operating temp. range	0° C to 40° C

*Exceeding these ratings could cause permanent damage. Functional operation of this device at these conditions is not implied—operating ranges are specified below.

Standard Conditions (unless otherwise stated) $V_{dd} = 7.5$ to 9.0 Volts $V_{ss} = 0$ VoltsAll characteristics specified at 25° C and $V_{dd} = 7.5$ volts

Characteristics	Min	Max	Units	Conditions
Clock Input	—	—	—	Crystal controlled @ 3.579545MHz with 45% to 55% positive duty cycle.
	0	0.5	Volts	Logic "0" level
	$V_{dd}-2$	V_{dd}	Volts	Logic "1" level
	—	100	μA	Leakage, $V_{in} = V_{dd}$
Outputs				
Pins 2, 3, 4, 5, 6, 7	—	1.0	Volts	Logic "0" level $I_{out} = -2mA$
	—	100 μA	μA	Off volt = $V_{dd} = 7.5$ Volts
Output Pin #8	—	1.0	Volts	$I_{out} = -0.5mA$
	$V_{dd}-2$	—	Volts	$I_{out} = +0.5mA$
Output Pins 11, 13	—	1.0	Volts	$I_{out} = -0.2mA$
	$V_{dd}-2$	—	Volts	$I_{out} = +0.2mA$
Output Pin #22, 23	—	1.0	Volts	$I_{out} = -0.5mA$
	—	35	μA	Volt = $V_{dd} = 7.5$ Volts
Inputs				
Pin #26, 27, 28	150	375	K	$V_{dd} = 7.5$ Volts
Pin #12, 14, 17, 18, 20	75	150	K	$V_{dd} = 7.5$ Volts
Power supply current	—	65	mA	$V_{dd} = 7.5$ Volts
I_{dd}				

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CONSUMER

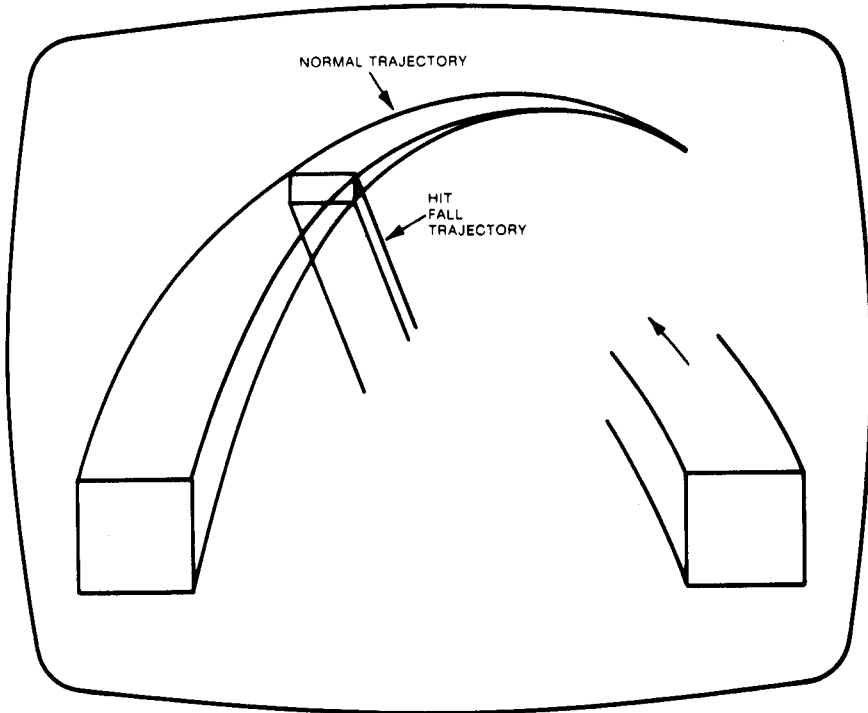


Fig. 1

NOTE: Target can start from either right or left foreground depending on random game control or 2nd player joystick control when applicable.

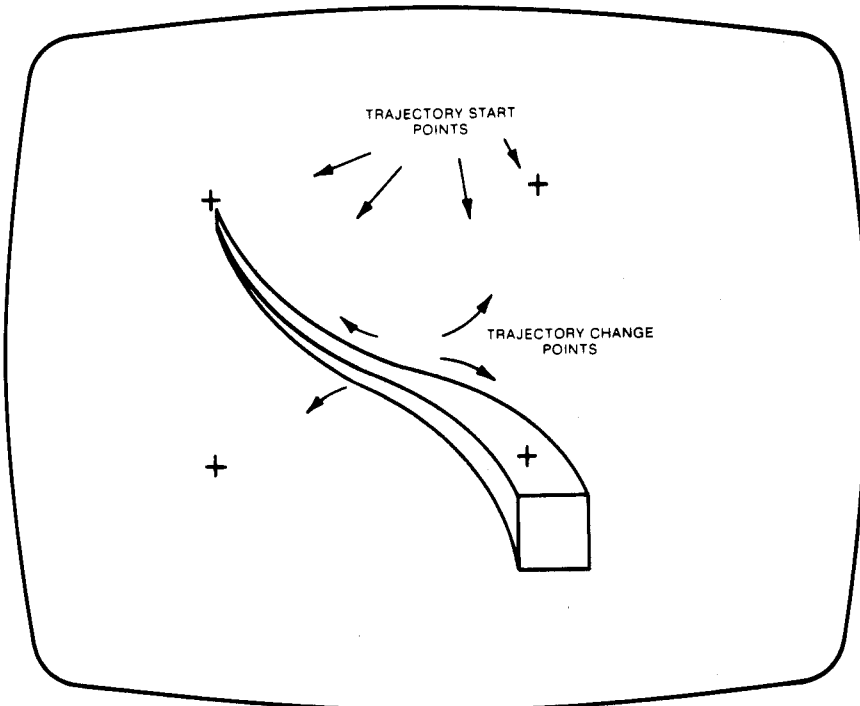


Fig. 2

NOTE: Target starting point and trajectory alters during flight either by chip control or 2nd player joystick control when applicable.

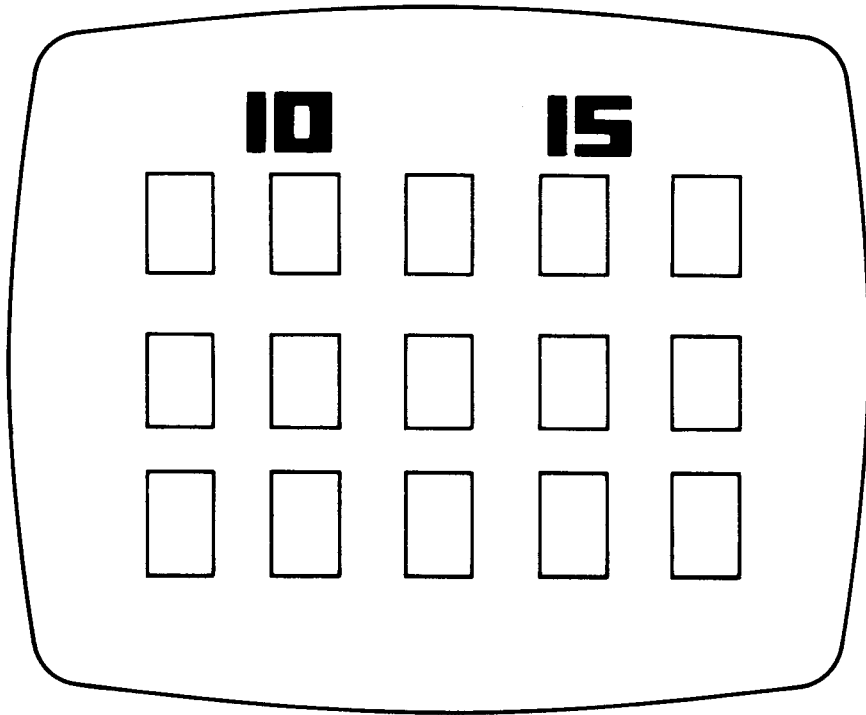


Fig. 3

NOTE: 1. Only one box is visible at any time.
2. Sequential target order starts from the left side to the right side of the screen starting from top to bottom.