



The **Smart Gun** electronic tag board.

Designed by, built by, and obtainable from: Dave Bodger.

v1.6 - 'LC' release.

Overview of features:

- 1..99 round ammo counter.
- 1..14 magazine clips or unlimited
- 1..9 round burst fire selectable, or full auto.
- 9 clips of 1 round, "Grenade Launcher" function - separately counted.
- Display auto-power-down after 30 seconds to conserve battery power. Instant "OFF" switch option for night-time stealth use.
- Display auto-illuminates when any switch pressed (except OFF).
- 8 levels of Display brightness available (direct sunlight viewable).
- Separate plug-in Sound board. Can be upgraded without replacing main controller board.
- Configurable and re-programmable - Future Proof.
- RS232 interface for comprehensive custom configuration setting via laptop PC or personal organiser.
- Built-in, pre-defined, configuration options, (Pistol, Machine Pistol, Pulse Rifle, HMG; up to 16 different possible) for ease of set up, plus a custom slot that remembers your last RS232 custom configuration.
- Non-volatile EEPROM memory allows configuration settings to be remembered across power down/ups.
- Can accept a lockout signal from a suitably modified sensor, to stop gun firing when the sensor is 'dead'.
- Fires "Worlds of Wonder Laser Tag" compatible pulses. (SmartGun coded pulse version under development in conjunction with SmartSensor - will be WoW tag compatible).
- Separate display attaches to main board via 10 way ribbon cable for maximum mounting flexibility. Main board can function without display if required (in a pistol, for example).
- No-solder construction speeds assembly. All connections by plug-in or screw-down connectors.
- Laser Challenge compatibility mode, selectable via power-on configuration.

Switches:

- | | |
|--|-------------------------------------|
| • Trigger. | Required |
| • Magazine change. | Required |
| • Fire Selector Up. | Optional |
| • Fire Selector Down. | Optional |
| • Brightness Up. | Optional |
| • Brightness Down. | Optional |
| • Display Off. | Optional |
| • Load and/or Eject Grenade. | Optional |
| • Safety | Optional |
| • Silencer (disables sound and muzzle flash) | Optional custom configuration only. |
| • Show Clips and Fire Selector settings | Optional |

Red L.E.D. Display:

0.56" high, double digit, 7 segment display with decimal point indicators provides the following information:-

- | | |
|--------------------------------------|----------------|
| • Number of Magazine Clips remaining | C x |
| • Ammo remaining in Clip | x x |
| • Burst-Fire Selector setting | F x |
| • Configuration Option setting | c x |
| • Safety On | . (solid) |
| • Heartbeat 'blip' | . (flashing) |
| • Silencer on | . (solid) |
| • Lockout from sensor | . . (solid) |
| • Reload in progress | . . (flashing) |



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When Cx is displayed and gun will not fire, magazine switch must be pressed. Flashing decimal points (C.x.) indicate the reload cycle is in progress. When reload is complete, the number of clips remaining, the current fire selector setting, and the number of rounds remaining in the magazine are displayed. Fire selector settings are 1..9 and 0 indicates full-auto. Fire selector default value is loaded by configuration option. May be changed in use if at least one fire selector switch is fitted. When operated, if fitted, the brightness switches turn the display brightness up and down. A separate switch gives an indication of the number of clips left and the current fire selector setting. The display defaults to minimum brightness after power-on and will auto power down after 30 seconds of inactivity. Any switch pressed, except OFF, will light the display according to the prevalent brightness setting. The Safety switch disables all other switches, except display off, until it is pressed again. The heartbeat 'blip' once every 2 seconds shows you the gun is still powered on when the display is blanked.

Technical Specification:

The main board is based around the PIC16C84 microcontroller with a quartz crystal oscillator for accuracy. The standard sound board uses a UM3561 sound generator and a TDA7052 amplifier which must be connected to an 8 ohm loudspeaker. Optionally a sound board for the UM3562 chip is available (without a chip fitted) which can be supplied, in place of the UM3561 board if requested, for the same price. The UM3562 chip was available from Maplin Electronics as part of their "Three Gun Sound Kit" but supplies are now exhausted and the chip has been declared 'obsolete'. However, some people may already have this better sounding chip in an old gun which they can recycle. Emitters, switches, batteries, loudspeaker, lens unit, gun body, wires, etc. are not included and must be provided by the user (I also sell lens units).

Sizes overall including connectors:

Main board: 2.9" wide by 1.7" high by 0.8" deep. Display: 1.5" wide by 2.1" high by 0.5" deep.
Sound board: 1.8" wide by 1.3" high by 0.6" deep.

Battery Voltage:

Designed for 7.2V (NiCad race pack) up to 9V (PP3 or 'C' cells). Special versions can be supplied for operation on 6V or 12V if required, contact Dave Bodger.

Current consumption:

Main Board

- 4mA with display blanked.
- 8mA with display set to brightness level 1.
- 14mA on setting 2.
- 20mA on setting 3.
- 26mA on setting 4.
- 32mA on setting 5.
- 38mA on setting 6.
- 44mA on setting 7.
- 51mA on setting 8.

Sound Board

5mA quiescent / 1 amp peak when firing.

Muzzle Flash:

120mA (approx. peak pulse).

Emitter current:

2A (approx. peak pulse on 9v supply), dependant on type of emitter fitted.

Price:

Package consisting of main CPU board, connecting cable, display board, sound board and documentation is £45 inclusive.

Custom configurations are possible by prior arrangement with Dave Bodger. The controller software is under continuous development to provide improved facilities. Software upgrades to latest level will cost £1 (within U.K.) to cover postage, packing, etc. This requires return of the microcontroller chip (at owners risk).

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