



# The **SmartSensor** electronic tag board.

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

## Features and User Guide for Mk.1 SmartSensor

- Worlds of Wonder\* compatible sensor with 360° hit acceptance and sensitivity similar to a Starcap.
- Hits counter easily adjustable between 1 and 99 hits at power-on (without having to shoot it!).
- The hit setting is remembered across power-down-reset(s), so only needs adjusting at the beginning of each game to match armour worn. The hits can be changed during the 6-second power-up cycle.
- An excellent choice for a NPC sensor due to the high hit settings and adjustable hit cycle time.
- 3 switches (Up, Down and Select) provide a simple menu-style user interface.
- 4th 'Option' switch is currently programmed to adjust display brightness.
- 16 built-in configurations, plus a custom slot, easily loaded at power-on-reset time.
- Accepts custom configuration via RS232 interface, automatically stored in custom slot for quick access.
- Config 0 is a functional 6 hit WoW\* Starsensor 'clone' with 1 second hit cycle time.
- The specially designed analog front-end guarantees WoW\* compatibility\*\* and comparable sensitivity.
- Other configs allow for ablative armour (standard armour is retained across resets), regenerative shields and variable hit acceptance rate (cycle time). Shields regenerate at one hit every 32 seconds of inactivity (not in a firefight!) and are separately counted from armour and body hits. Some of these options may only be allowed in some games at the organiser's discretion.
- The circuit drives multiple piezo sounders to high volume; you can also use a crystal earpiece, if required.
- Easily distinguished 'ready', 'hit' and 'dead/stunned/not feeling very well\*\*\*' sounds.
- 'Heartbeat Blip' **not** supported (sorry, I refuse to implement this feature as it drives me mad).
- Plug & socket on head unit allows helmet to be removed if required.
- High quality circuit boards, top grade components and construction.

The physically separate double-digit LED display may be mounted wherever desired. It performs an auto-power-down after 32 seconds to preserve battery power. In normal mode it will light again when you are hit, so that you can see the number of hits remaining.

During 'game-on' time the 'Up' key can be used to illuminate the display at any time, the 'Down' key turns off the display but lets the hit light flash, the 'Select' key activates Lights-Out mode.

The hit LED flashes once per second in normal mode, until one hit is left, when it lights solid.

'Lights-out' mode extinguishes all lights, but the hit led flashes briefly when sensor is hit and comes on solid when there is only one hit left (medics warning).

When down to zero hits, the display lights up and flashes and the siren sounds. Pressing any key stops the siren and generates a random number between 0 and 7 on the display, which can be used as the basis of a 'hit location' or 'wound severity' within your medical system.

A 'Lockout' *input* allows the sensor to be temporarily disabled by an external signal (i.e. SmartGun firing). The 'Lockout' *output*, active when on zero hits, can be used to prevent (SmartGun) firing, or drive external low-voltage devices (pyros, etc., at your own risk) via a relay, etc. This output is capable of sinking 200mA.

A 'flat battery' light illuminates when the battery reaches 6 volts and resets the sensor. It will not allow the sensor to start with a battery voltage below 7.2 volts. Can be powered from a PP3 or 6 AA nicads.

Low battery consumption, average 10mA, designed to run all day on a freshly charged nicad PP3. Go a whole weekend of game time on an alkaline PP3.

The Mk.1 SmartSensor is available as uncased, pre-assembled, circuit boards for £40 (US\$75 inc. postage)

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## Key Switch function changes with mode

	Power-on-reset	Config	Game-On	Dead
<b>Up</b>	Increase armour hits	Increase config number	Illuminates display and terminates Lights-Off mode	Stops siren sound and selects random number
<b>Select</b>	Selects Config mode	Selects configuration and returns to Power-on-Reset mode.	Selects Lights-Off mode	Stops siren sound and selects random number
<b>Down</b>	Decrease armour hits	Decrease config number	Immediately turns off display digits, but flashing led still functions.	Stops siren sound and selects random number

Config Number	Config Name	Body Hits	Armour Hits	Regenerative Shields	Ablative Armour	Cycle Time
<b>0</b>	WoW Starsensor	1	5	0	No	1 sec
<b>1</b>	Chief of Admin	1	5	0	Yes	1 sec
<b>2</b>	Technician	2	4	0	Yes	1 sec
<b>3</b>	Officer	3	3	0	Yes	1 sec
<b>4</b>	Marine	4	2	0	Yes	1 sec
<b>5</b>	Medic	2	2	2	No	1 sec
<b>6</b>	Sergeant	2	2	2	Yes	1 sec
<b>7</b>	Rogue Trooper	5	5	5	Yes	0.75 s
<b>8</b>	Super Trooper	3	6	6	Yes	0.75 s
<b>9</b>	Starship Trooper	4	10	2	Yes	0.75 s
<b>A</b>	Princess Leia	4	6	6	No	1 sec
<b>B</b>	Han Solo	8	4	8	Yes	0.75 s
<b>C</b>	Chewbacca	10	2	10	Yes	0.75 s
<b>D</b>	Luke Skywalker	6	6	20	Yes	0.75 s
<b>E</b>	Terminator	20	79	0	Yes	1 sec
<b>F</b>	Well 'ard	30	59	10	Yes	0.25 s
<b>c</b>	Custom Slot	?	?	?	?	?

\* = 'Worlds of Wonder' describes the Laser Tag™ system available 10 years ago that is in common use in Sci-Fi LARP games in the UK. This product is not compatible with the wrist mounted system called the same thing which is available now.

\*\* = Compatibility is guaranteed with all original WoW<sup>\*</sup> kit but not necessarily with all kit that is made by other manufacturers and that happens to work with WoW kit. Specifically, the Mk.1 SmartSensor will not take hits from "Infra Red Rays Terminator Guns" as supplied by John Blau.

\*\*\* = Insert your own personal interpretation of "you have been hit too many times" here.

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