The **SmartGun** electronic tag parts.

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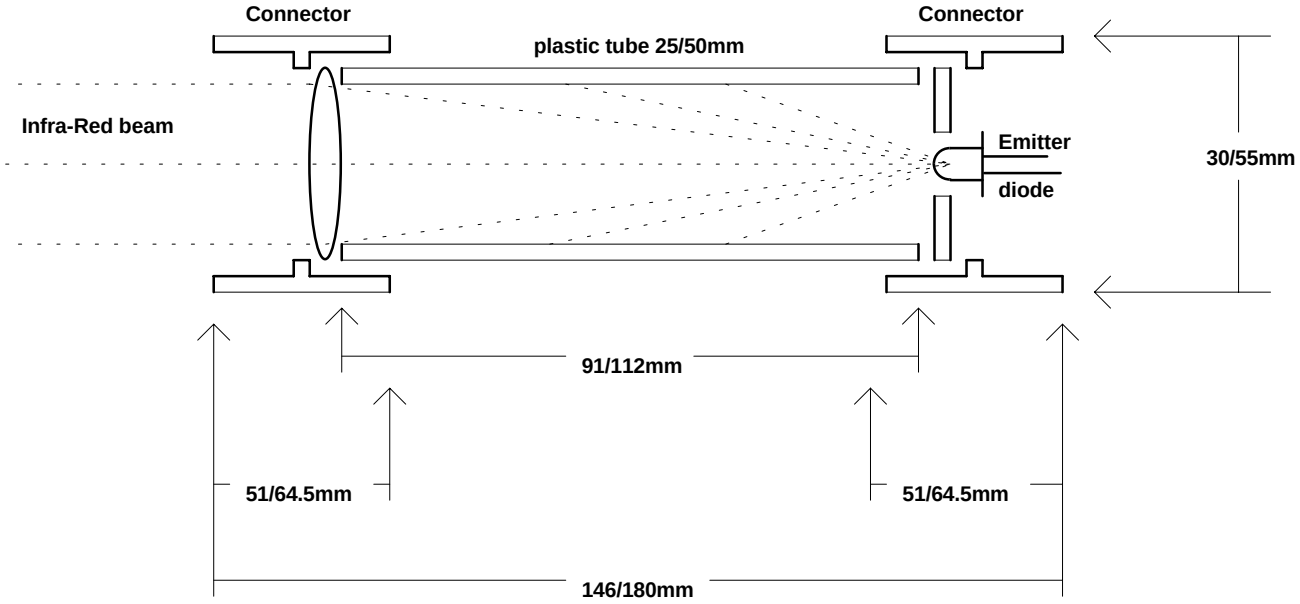
SmartGun Lens Units



Two different sizes of SmartGun Lens Units are available, but general construction of both is the same as can be seen in the above diagram. In the measurements, the first size number is for the smaller unit. The lens unit is supplied complete ready-assembled with lens and emitter fitted.

The Siemens SFH484-2 IR emitter diode is fitted to the aluminium disc by a LED chrome bezel. The emitter is held in to the chrome bezel by a black rubber grommet which is provided with the bezel. If you find you are getting poor range, check the emitter is being held securely in to the hole in the bezel by the grommet and has not worked it's way loose over time.

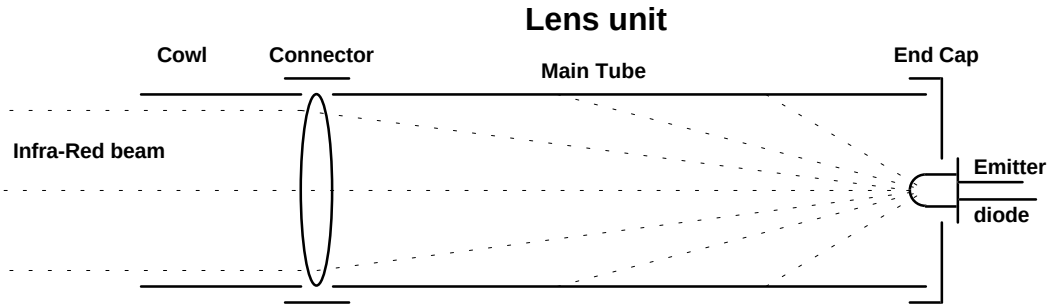
The smaller unit has it's two end tubes glued in place. The glue used is UHU which should never completely set hard, so you can disassemble the unit if necessary for repair or cleaning.

The parts are a very close fit anyway, so it should be a long time before the lens needs cleaning inside. I do not recommend the lens in the small unit is removed from its plastic connector, as it is a very tight fit and can be damaged by removal. Do any cleaning necessary with it in situ after removing the main tube. The parts of the larger unit are a very tight fit and do not normally require glue to hold them together.

The unit can be painted to match your gun, or not as you prefer, and affixed with screws or clamps. If possible drill any screw fixings through the ends of the plastic connectors and not into the main body. This will prevent swarf inside and help stop ingress of moisture. Because of the type of plastic, you will find that cellulose car spray paint adheres best. Protect the lens from any overspray.

If you connect the wires to the emitter the wrong way around, it will not work. This will not damage the emitter. Simply swap the wires around until it works.

Lenses and emitters (theory)



On its own an emitter diode produces a beam of infra-red light which spreads out by anything from 10 to 60 degrees or more as it moves away from the source. This is normally only enough for a range of about 20 to 30 meters.

To improve the range you need to concentrate the beam before it becomes too dispersed. This is commonly done with a convex (magnifying) lens, as shown in the diagram above, in conjunction with some 25 or 50mm diameter plastic pipe and fittings.

The difficult part is finding the correct distance between the emitter and the lens such that the maximum amount of IR light is captured and made to travel forwards in a concentrated parallel beam. This varies dependant on the lens, the emitter and the type of fixture. Even small changes in these components can make a big difference to the effective range of the lens assembly, and to the 'spread' of the beam.

In the SmartGun lens units all this hard work has been done for you. The units are designed for usable range with moderate spread and are splash-proof but not submersible.

Technical Specifications of SmartGun Lens Units

Effective Range of units :-	25mm unit = 100 meters,	50mm unit = 150 meters.
Weight :-	25mm unit = 58 grams,	50mm unit = 152 grams.
Maximum pulsed drive current (short bursts) :-	2 amps @ forward voltage drop of 4 volts.	
Maximum continuous power dissipation :-	200mW.	

If necessary, replacement parts are available; use of alternative parts will change range :-

- The Siemens SFH484-2 emitter diode is available from "Bodger's Bits" or Farnell Electronics, Order Code 212-672.
- The LED chrome bezel is available from Maplin Electronics, Order Code FM38R.
- The lenses are available from Maplin Electronics: 25mm order code GU96E, 50mm order code ZF02C.

