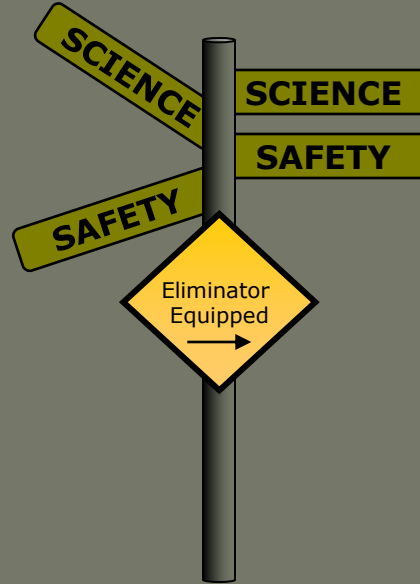




COLLISION CONTROL COMMUNICATIONS, Inc.

Eliminator™



Where Science & Safety Intersect

Distributed *exclusively* in Indiana by

MGI Traffic

317-835-9212



Two technologies, one platform: same price

– *Preemption*

- Occurs up to a maximum distance of one mile (distance is programmable)
- Traffic signals recognize the emergency vehicle and turn green in its direction of travel

– *Collision Avoidance*

- Warns equipped Emergency Vehicles of an impending collision
- Audible alarm & Flashing LED light
- Other preemption systems do not have this feature



Existing preemption technologies

- Optical
- Acoustic
- GPS
- Radio



Optical

- Preempts traffic signals:
 - Using an infra-red optical “emitter” or strobe
 - Under ideal conditions (line of sight)



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Optical - Advantages

- Cost effective



Drawbacks - Optical

- Preempts traffic signals:
 - Works only under ideal conditions (line of sight)
 - Requires four receivers at a typical intersection (greater installation cost)
 - Reliability is susceptible to visual obstructions
 - Can be “blinded” by direct sunlight
 - Maintenance requirements are large (realignment due to winds, cleaning due to dust)
 - Locks up traffic signals unless disengaged
 - Susceptible to pirating



Acoustic

- Use EV siren as the “emitter”
- Siren must attain decibel level of 1,200 db.
- Requires four directional microphones for typical intersections



Directional Microphone
showing two (2) approaches



Advantages of acoustic preemption

- Use EV siren as the “emitter”
- Makes this the most cost effective preemption solution (emitter is already “built in”)



Drawbacks - Acoustic

- Siren must attain decibel level of 1,200 dB.
- Requires four directional microphones for typical intersections (installation is 4 times more time consuming)
- Reliability is susceptible to:
 - reflected waves
 - ambient noise
 - Loud (1200dB) car/truck horns



Directional Microphone
showing two (2)
approaches



GPS

- System creates preemption “zones” (rectangles) at each approach to the intersection.
- When the system determines that an EV has entered the preemption “zone” prior to each intersection, it preempts the traffic signal.



Advantages - GPS

- Overcomes the reliability problems of acoustic and optical preemption systems.



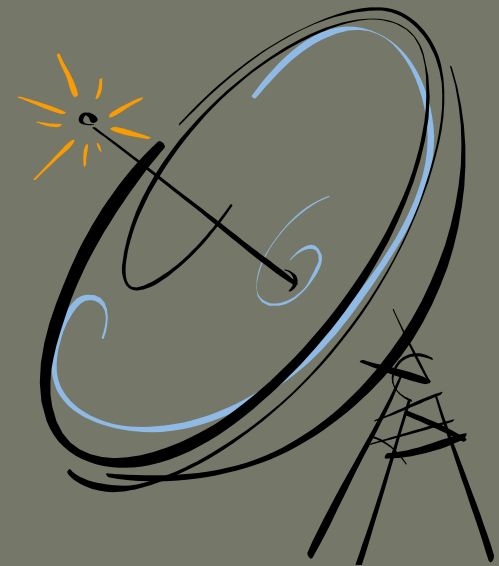
Drawbacks - GPS

- The GPS technology platform has it's own inherent limitations:
 - System requires huge “learning curve” – each vehicle and intersection must be “taught”. Process can take several weeks to several months to fine tune.
 - Requires separate “traffic management software” package.
 - Requires satellite triangulation – reliability is compromised unless immediate satellite triangulation is constantly maintained. “Dish TV” or “Tom-tom” users are probably already aware that system is “blind” when triangulation is lost. Reacquisition time is considerable exiting firehouse.



Radio

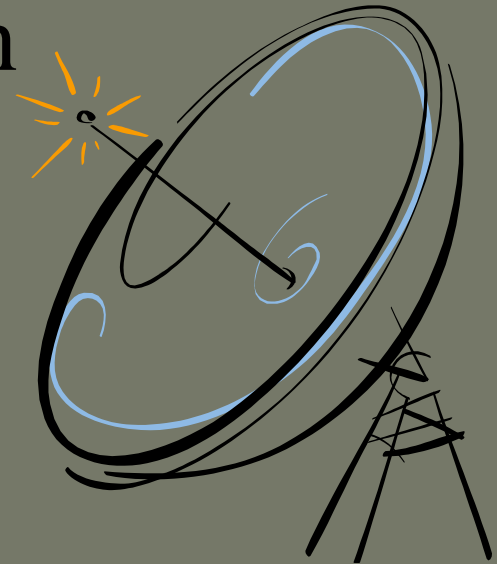
- Uses a built in compass to determine it's direction of travel.
- Relays that information to the traffic signal to initiate preemption.





Drawbacks - Radio

- Radio Interference: Anything else operating on the same frequency can compromise communication with the traffic signal.

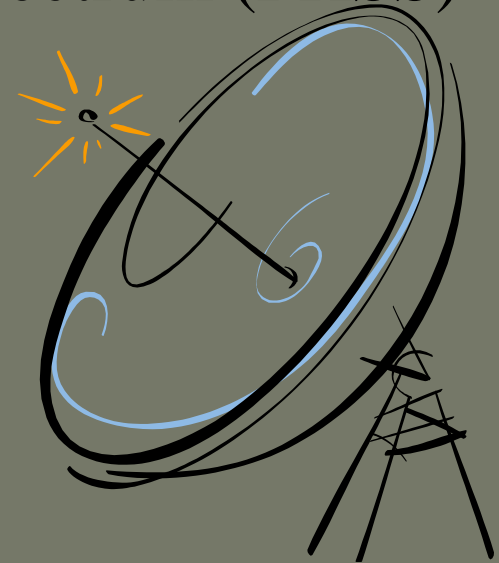




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- Until now
- Uses Frequency Hopping Spread Spectrum (FHSS) radio transmissions. Refined in the '80's for NASA launches.
- Intelligently hops around any radio interference present.

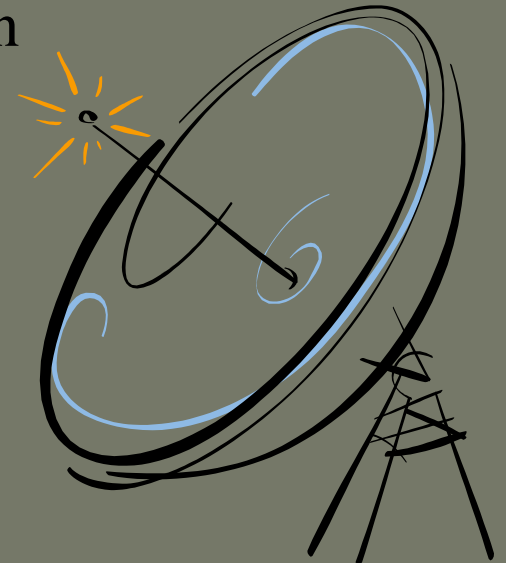




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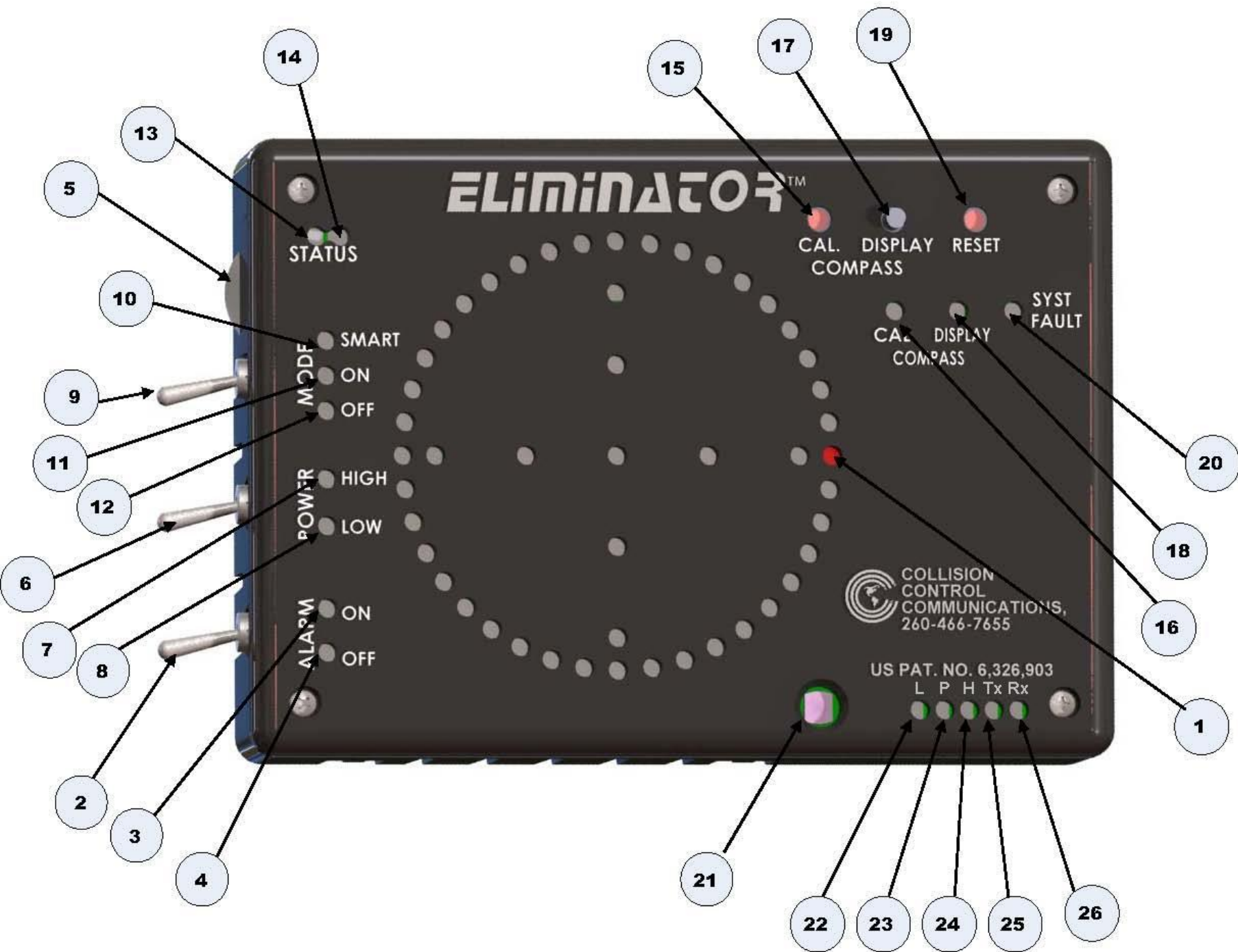
- Does not require constant satellite triangulation as do GPS systems
- Only one omni-directional antenna needed per intersection
- Variable power lets operator adjust between high and low settings “on the fly”
- Overcomes all limitations of:
 - Optical systems
 - Acoustical systems
 - GPS systems





*Eliminator*TM

- Preempts traffic signals:
 - Under adverse weather conditions
 - Reliably in heavy fog/snow/rain/dust
 - Through obstructions: buildings, buses, semis, foliage, bridges
 - Around curves in roadway
- Does not require realignment after heavy winds
- Provides 360° protection against collision with other emergency vehicles; even at unsignalized intersections
- Supports software encryption to thwart “pirating”
- Cannot be “blinded” by direct sunlight





Collision Avoidance

- Gives advanced warning (both audible and visual) of impending collisions before they occur
- Can calculate and display multiple impending collisions simultaneously
- Shows the direction of the impending collision with an accuracy of $\pm 4 \frac{1}{2}$ degrees
- “Tells” you audibly from what direction the collision will impend
- Resolves conflicts at signalized intersections
- Indicates potential collisions even at unsignalized intersections



Collision Avoidance

- Why is collision avoidance important?
- Nearly half (40%) of all firefighter fatalities occur enroute to the scene.
- Even when Opticom was in use in St. Louis, the following collision injured 7 firefighters.