

## **SafeXing™ Radar Driver Feedback & Advanced Warning Sign**

Description. This work includes furnishing and installing a speed measurement and display and advanced warning crosswalk or hazard system with programming and data analyzing software features, solar panel assembly, battery housing assembly, and deep cycle solar rated battery.

Materials.

(A) General. The Driver Feedback Speed Sign is a dynamic numeric and alphanumeric sign that gives motorists passing through a speed zone, real time feedback as to the zone's speed limit and their vehicle's speed via radar speed detection, and current upcoming crosswalk or hazard conditions. The vehicle speed is to be detected via a radar module mounted within the sign enclosure.

- (1) Sign shall be SafeXing™ or approved equal;
- (2) Sign size shall be 12"(h) x 28.5"(w) x 5"(d);
- (3) Sign material shall be .09" aluminum;
- (4) Enclosure shall be made of .09" continuous formed aluminum. Entire surface of enclosure shall be powder painted gloss black; **white or safety yellow optional**
- (5) Display window shall be made of 3/8" shatter resistant polycarbonate;
- (6) Actuator box shall be 8.5"(w) x 13"(h) x 5.25"(d)
- (7) All Housing shall be provided with tamper proof fasteners;
- (8) All Housing shall be weather proof to NEMA 3R specifications or better;
- (9) Sign Housing shall be of non-sealed, ventilated type to prevent accumulation of moisture;

(B) Display.

- (1) Alphanumeric display shall consist of two rows and up to 5 letters per row and each character shall be 4"(w) x 6" (h);
- (2) Each alphanumeric character (of which there are 10 total) shall consist of 270 discrete LEDs which are individually aimed to provide even light distribution within the viewing area.

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- (3) Each display segment shall consist of 42 discrete LEDs which are individually aimed to provide even light distribution within the viewing area;
- (4) Light intensity of display shall be programmable to different times of day to provide optimum view ability under all ambient light conditions. Light intensity shall adjust automatically to provide optimum view ability under all ambient light conditions (optional);
- (5) The display shall be designed to avoid distracting the attention of motorists away from the road, by prevention of viewing from acute angles outside the motorist's normal forward field of view. Viewable area shall enclose an area up to a maximum included angle of 30 degrees from the roadside.
- (6) The display shall be capable of multi-mode operation;
- (7) The display pixels shall have a design life of 10 years.
- (8) The display shall have a two (2) year parts warranty.
- (9) The pixels shall have a Mean Time Before Failure (MTBF) of 100,000 hours.

(C) Actuator

- (1) Shall be constructed of UHMWPE chip-resistant, corrosion-proof, and weather-proof materials.
- (2) Shall be large ADA compatible with large bright yellow plunger for easy visibility (gray plunger also available).
- (3) Switch shall be a triple-seated magnetic reed with an operating life of more than 10,000,000 Cycles.
- (4) Shall have extended 900Mhz antenna for an actuation range of up to 1 mile radius.
- (5) Shall support multiple channels for communication with signs in both directions and for any other auxiliary device such as lighted road humps or flashing beacons.

(D) Solar Power

- (1) Solar powered sign shall be capable of fully autonomous operation 24 hours per day, 365 days per year;

- (2) Solar Panels (2) shall be 20 Watt, 12 VDC
  - (3) Batteries (3) shall be Valve-Regulated, Absorbed Glass Mat Technology 12 VDC and 12 Ah and shall be internally housed within the sign.
  - (4) Charging Control System shall be a solar industry standard item with temperature compensating charging voltage;
- (E) Feedback Display Triggering: The Feedback display shall have the ability to be triggered in 6 ways displaying up to 5 different programmable messages.
- (1) Vehicle exceeding programmable threshold speed
  - (2) Vehicle exceeding programmable max speed
  - (3) Vehicle exceeding programmable max two speed
  - (4) PED PPD is actuated
  - (5) Motion sensor (optional)
  - (6) RFID chip proximity (optional)
    - (i) Tiny microchip pre-installed in optional clothing or devices: backpacks, horse saddles (horse crossing), golf carts (cart crossing), etc.
- (F) Controller Functions
- (1) On board real time clock with built in daylight savings. This setting can be programmed via RS-232 hardwire, SD card, (optional) wireless modem, or (optional) wifi using a PC or Pocket PC.
  - (2) Clock shall have a battery backup with a three-year shelf-life capacity.
  - (3) Controller shall be made using Surface-Mount Technology (SMT) to minimize mfg. costs.
  - (4) Controller shall allow radar to operate independently from the display so that the radar can be turned "on" while the display is blank or "off".
  - (5) Controller shall gather the fastest and slowest speed of each vehicle traveling through the zone while the radar is on and date/time stamp them for analysis using sign programming software

- (6) Controller shall provide up to eight (8) auxiliary contact closures rated up to 3Amps to interface with external devices such as flashing beacons, photo-enforcement surveillance cameras, strobe lights, sirens, or Automatic Flagger Assistance Devices (AFADs)
- (7) Controller shall log low voltage and power outages.
- (8) Modes: at least ten (10) combinations of operating modes shall be available. (ref. chart below). For ease of selection, the following chart shall be available as a help window within the "Mode" screen showing sign photos of all available mode combinations.

Mode	Static Display	Dynamic Display	Flashing Display	Actuated Display
0	LIMIT	SPEED	BLANK	BLANK
1	LIMIT	SPEED	DOWN	BLANK
2	LIMIT	DOWN	DOWN	BLANK
3	BLANK	DOWN	DOWN	BLANK
4	BLANK	SPEED	DOWN	BLANK
5	BLANK	LIMIT	DOWN	BLANK
6	BLANK	SPEED	DOWN	BLANK
7	BLANK	SPEED	SPEED	BLANK
8	BLANK	SPEED	DOWN	BLANK
9	BLANK	LIMIT	DOWN	BLANK
10	BLANK	LIMIT	SPEED	BLANK
11	LIMIT 25	VEHICLE SPEED	SLOW DOWN	PED XING

(A) Sign programming software

- a. Software shall have the ability to program six (6) individual sets of on and off times for display, **radar and modem(optional)**.
- b. Software shall have the ability to automatically calculate 95<sup>th</sup>, 85<sup>th</sup>, 50<sup>th</sup> and 15<sup>th</sup> percentiles as well as 10MPH pace with # and % of vehicles in the pace.

(B) Manufacturer to provide the following:

- a. The manufacturer shall provide product information, material application, equipment operation, wiring diagram, and operation manual(s).