

Radar Speed Displays – Choosing the Right Equipment

By John Dixon

Over the last several years, radar speed displays have become the technology of choice for a growing number of safety professionals looking to slow traffic. In a 2006 national survey of police officers, traffic engineers and corporate safety officials, radar speed displays were identified as the single most effective traffic calming solution around schools, playgrounds and neighborhood streets. More than speedbumps, stop signs, or even police with radar guns – radar speed displays were ranked as the preferred means of slowing speeders and keeping average driving speeds down over the long haul.

The reason for this surge in the displays' adoption has been attributed to a number of factors – from a growing base of statistical findings that prove their effectiveness, to advancements in the technology itself. Whatever the reason, the fact remains: radar speed displays have moved from an initial trial period to full-bore mainstream acceptance among safety professionals across the country.

There may be, however, vast differences between one radar speed display model and another. As the features, designs and technologies of these displays evolve, so does the disparity between various styles and brands. A review of these differences and a look at specific issues for consideration will help ensure that the right equipment is used to do the job.

MUTCD compliance

Radar speed displays are being used in a variety of environments from school zones to warehouses and loading docks. If you are looking to install a traffic control device on a public street or highway, chances are the equipment you use must be MUTCD (Manual on Uniform Traffic Control Devices) compliant. The Federal Highway Administration's MUTCD sets the standards for size, shape, dimensions, content and color of these displays for use on all Federal roadways, and most states and municipalities have adopted the MUTCD standard as their own.

With the increased popularity of radar speed displays, the number of manufacturers and distributors has also grown.

Some of the resulting products out on the market today strictly adhere to MUTCD guidelines while others do not. If you are bound by these standards you'll want to check with the manufacturer to make sure that the model you choose specifies strict compliance.

Alerts!



There are a variety of ways that today's radar speed displays can be designed to communicate messages and alert speeding drivers. The "YOUR SPEED" message often remains static while the driver's actual speed is displayed when his or her car approaches. Some signs can be set to flash the actual speed number when the driver exceeds a predetermined limit. Others display a "SLOW DOWN" message at a pre-set threshold. Still others allow accessory lights to be added above the sign that flash when a driver is going too fast. The flashing lights serve as an added alert to the driver and may also help create a self-enforcing environment.

"We installed amber LED lights that flash in conjunction with the display when approaching cars exceed the limit," said Dean Gilbert, Public Works Inspector, City of Mount Vernon, Washington. "This addition has proven to be particularly effective. Apparently drivers do not want to be seen by others as law breakers."

Scheduling

In many applications, the ability to pre-schedule changes to the signs' functions can be a huge time and cost saver. Signs that automatically change their posted speed limit can take the guess work out of legal driving speeds in school zones, along carpool lanes and other locations where the limit changes depending upon the time of day.

In Longview, Washington, city planners were able to significantly reduce daily rush-hour congestion by timing the traffic lights along the city's main thoroughfares leading into and out of town. To accommodate the change in commuter traffic volume, the lights are timed differently in the morning than in the afternoon. Display signs were posted to alert drivers as to the proper speed they need to travel in order to hit all the green lights.

"By synchronizing the lights, we've been able to both increase safety and reduce driver frustration," said John Bean, traffic engineer for the city of Longview. "The key is ensuring that drivers understand that the lights are timed and what speed to travel in order to take advantage of the arrangement. That's where the electronic speed signs come in."

The scheduling capabilities of various electronic signs differ depending upon the manufacturer and model. Some may not have any -- or limited -- scheduling capabilities.

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ing capabilities while others may allow multiple scheduled changes depending upon the time of day or day of the week. Features may allow scheduled speed limit changes, scheduled use of accessories such as flashers, scheduling speed limit thresholds (the speed that needs to be exceeded before the display switches to a Slow Down message or turns Off the speed display), or scheduled message changes.

Specific application and regional requirements should be reviewed before determining the best choice for many of these scheduled features. Some states such as California, for instance, require that all state-regulated speed signs be designed with non-changeable messaging.



Beyond Speed

Some radar speed displays also allow users to collect data regarding traffic flow: the total number of cars using the street, average speeds at any given time of day, number of speeding cars and other related information. This feature can be instrumental in providing the raw data needed to prove that an existing speeding problem exists, and as a means of proving the overall effective of the display.

As valuable as advanced scheduling and data collection capabilities may be, engineers are finding that they often remain unused if they are difficult to set, monitor or access. To address this reality, some manufacturers have begun to incorporate wireless connectivity options in their signs. Wireless options range from simple hand-held devices that

provide close-range connectivity to full cellular remote-office capabilities.

Typical hand-held devices allow police officers, engineers and others to download collected data or change sign features from the ease and comfort of their car. This has proven to be a significant improvement over less sophisticated models that require the manual manipulation of the sign itself. Instead of having to open up and access the sign's interior control panel in order to collect data or set features, the wireless devices allow simple drive-up connectivity, download and scheduling.

More recently, signs with remote office accessibility have been introduced onto the market. This allows city safety experts to use an office PC to monitor and control any number of signs from a single remote office location. The built-in cellular technology can be used to synchronize multiple signs to ensure uniform operations through a city or county.

"We wanted to take the guess work out of school speed zones," said Pooja Singh, Engineering Technician for the city of Santa Clarita, "so we synchronized a number radar speed signs to simultaneously change their display to reflect slower speed limits during school hours. The advanced sync capabilities of the signs guarantee that all of the city's designated signs reflect the same speed limit at the same time during the day."



In the example above, the signs all have built-in atomic clock synchronization to assure that the signs are always exactly in sync with each other.

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Power Options



Being electronic, radar speed displays require a power source and the various options fall into one of three basic categories: A/C power, battery power or solar energy. The right choice typically comes down to two concerns: cost and flexibility.

The energy cost of operating a radar speed display is relatively low; about the same as running a night-light. A much more significant cost factor is related to the sign's installation and maintenance.

In many cases, gaining access to A/C power may require the installer to run wire beneath existing streets, sidewalks, or property, in which case, construction costs may be prohibitive. If the sign is to be mounted near an A/C power source, it may be easy to tap into that power, and typically the utility company allows you to pay a flat rate for the sign's energy consumption. In some cases though, the utility requires that meters be installed in order to measure the amount of energy being used, and the installation cost together with monthly minimum billing can add considerably to the overall operating cost of the unit.

To address applications where A/C power is cost-prohibitive, some models offer battery-powered functionality. While these types of signs may cost less to install, they typically require ongoing maintenance. Batteries require constant recharging – typically every 2 weeks

– and as a result, overall battery life is usually short so replacement costs must be factored in.

The viability of a battery-powered sign is also dependent upon the specific application. While they may be the best bet for temporary installations or portable units that are constantly being moved from place to place, they may be less than optimal for permanently mounted signs – particularly signs that are connected to flashers or other accessories that draw larger amounts of energy.

Given the potential drawbacks of A/C and battery-powered signs, a growing number of users are opting for solar-powered units. Thanks to reductions in the power consumption of many units, fewer panels are required to operate the displays and so the price of solar powered signs has dropped dramatically over the last decade. In fact, solar powered signs are now used in many places that aren't typically considered solar-power friendly.

“Even here in Alaska, where we receive long periods of sunshine and darkness depending on the season, our solar panel signs combined with battery back up power are used year round,” said Michael Cobbold, Safety Manager & Sustainability Coordinator, Denali National Park, Alaska. “Our calculations show that the technology we needed to employ solar power is still more cost effective than it would be if we actually ran a hard-wired connection to A/C power.”

Design Considerations

There is a variety of other design variations from model to model that should be considered when choosing the right radar speed display. The type of lights and accessories used in the signs' design can make a big difference in the amount of energy required to operate the sign. The moving parts required in flip-style electro-mechanical displays are more susceptible to wear and damage than LED signs and may also require more electricity to operate. Even the size of the display's messaging can differ from model to model. Fifteen inch lettering is often preferred over twelve-inch versions due to their increased visibility.

High contrast enhancement technologies and advanced glare management techniques can also improve the visibility of the sign while reducing the amount of power required to make the electronic lettering clear to drivers. Some signs employ these features while others do not. The type of lighting used and the way that the LEDs are set into the face of the sign also have an impact on its overall effectiveness. For instance, some signs are made to focus light only where it is needed, preventing the sign from distracting non-targeted drivers.

The design of these units should also be checked for overall quality. Installed in high-impact environments, radar speed displays can be subjected to a variety of harsh conditions from severe weather extremes to vandalism. Some manufacturers have incorporated various design enhancements to address these conditions. The quality of a signs' overall design is often reflected in the robustness of its warranty and the manufacturer's customer service guarantee.

The following is a brief overview of products offered by four major manufacturers of radar speed displays:

Radarsign LLC

Radarsign is headquartered just outside of Atlanta, Georgia. According to company materials, Radarsign makes three basic models: AC powered, rechargeable battery powered and solar powered units. The company touts its products' rugged, vandal-resistant features including Bashplate™ design, constructed to withstand severe abuse.

The Radarsign TC-500 contains a mini-SD card that stores records on passing traffic. This data may include weekly statistics on the number of vehicles detected, average vehicle speed, peak vehicle speed, and other potentially valuable information.

3M

In 2000, 3M purchased American Electronic Sign, a company that first began manufacturing electronic signs used for advertising. Over time, the company has leveraged this purchase to become a major player in, among other areas, the variable speed control (VSC) display

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industry.

The company touts its signs as taking advantage of three illumination sources to maximize its readability under various conditions: reflected ambient light for day use, reflected light from approaching headlights after dark and LED illumination for energy efficient lighting.

The 3M 24-inch X 30-inch driver feedback sign offers a violator alert option (flashing LEDs or “SLOW NOW”) and a programmable maximum display speed to discourage drivers from racing against the sign display. The sign also comes with configuration software and speed data collection software that allows users to manage multiple signs remotely.

Information Display Company (IDC)

According to an IDC spokesperson, the company’s SpeedCheck™ brand radar speed signs are used in more U.S. cities than any other brand. The signs incorporate a variety of patented technologies designed to increase display visibility (UltraClear™), maximize safe use (SafetyMask™) and thwart vandalism. The units permit the added use of accessories such as flashing lights and come in AC, battery-powered or solar-powered configurations.

SpeedCheck was one of the first brands to offer data collection and remote programmability features. In 2007, IDC introduced the SpeedCheck PC, a PC based system that allows users to control and monitor multiple radar speed signs from a single central office location. SpeedCheck PC works with any SpeedCheck-brand radar speed sign and offers remote management of all of the sign’s functionality, including Off/On, speed limit settings, violation alert settings, scheduling (daily, weekly, monthly) and traffic data collection.

RU2 Systems Inc.

Located in Apache Junction, Arizona, RU2 Systems manufactures both radar speed displays and trailers. The company’s Fast-500 unit is mounted on a dolly and may be easily wheeled into a classroom or office for safekeeping and recharging. Company materials say that the unit’s compact design (4’9” tall from bottom of carrier to top of sign) is a safety feature that ensures small children passing by the sign are not hidden from view of oncoming drivers.

The Fast-500 display offers features to enhance viewing and deter distraction. The 12” tall display numbers are positioned behind Lexan® shielding with a smoked, non-glare finish. Display filtering helps prevent inadvertent reading by those not being targeted by the sign.



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