

DAKTRONICS



Electronic Message Center Site Survey The Right Solution



A lot of thought and consideration goes into investing in a Daktronics display. To meet the high expectations of the project, the following resource will guide you through the process of matching the right display to any application and audience. These are critical decisions that can be made successfully by considering the steps that this brochure will explain.

STEP 1 SIGN PERMIT

WILL YOU BE ABLE TO GET A SIGN PERMIT?

Local sign codes generally dictate what types and sizes can be installed as well as the location of those signs. It is important to research this topic thoroughly to ensure that you can obtain a permit for the type and size of sign you desire. A copy of your city's sign code can be obtained from the responsible department. This is typically the planning or zoning department.

STEP 2 AUDIENCE AND TECHNOLOGY

It is important to match the display size and capability to the intended viewing audience. Achieving this will ensure maximum exposure and effectiveness of the chosen display technology. First, define the viewing audience when choosing an electronic message center.

WHO IS THE INTENDED AUDIENCE?

- Freeway Traffic (60-75 mph)
- Highway Traffic (45-60 mph)
- City Street Traffic (25-45 mph)
- Pedestrian Audience (foot traffic)
- A combination of pedestrian and city street traffic (foot and slow vehicle traffic)

HOW DO I CHOOSE THE RIGHT CHARACTER SIZE FOR THE LOCATION?

The character size and display size depend on traffic speed and optimal viewing distances. Ask yourself:

- Who is the primary audience?
- What are the minimum and maximum viewing distances?
- How high will the display be mounted?
- How far from the road will the display be located?
- How many lines of copy will the customer need?

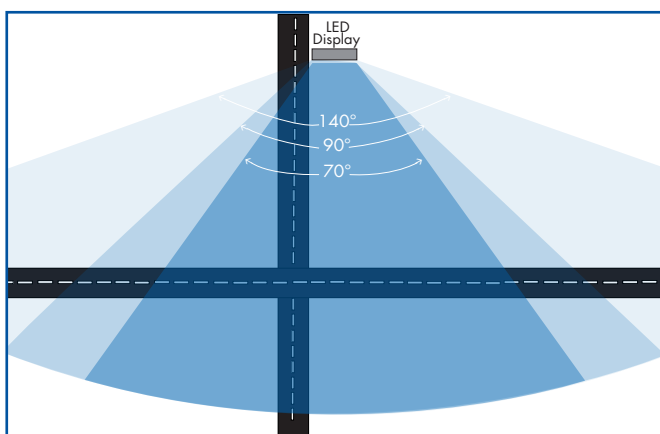
The chart below will help in choosing the appropriate character size based on traffic speed and viewing distance. The shaded areas represent acceptable exposure times.

Character Size		Max. Viewing Distance		Maximum Viewing Time (seconds)								
inches	mm	feet	meters	5 mph (8 km/h)	15 mph (24 km/h)	25 mph (40 km/h)	35 mph (56 km/h)	45 mph (72 km/h)	55 mph (89 km/h)	65 mph (105 km/h)	75 mph (121 km/h)	
2	51	100	30	13.7	4.6	2.7	1.9	1.5	1.2	1.1	0.9	
6	152	300	91	41.1	13.7	8.2	5.8	4.6	3.7	3.2	2.7	
9	229	450	137	61.6	20.5	12.3	8.8	6.8	5.6	4.7	4.1	
13	330	650	198	89.0	29.7	17.8	12.7	9.9	8.1	6.8	5.9	
18	457	900	274	123.3	41.1	24.6	17.5	13.7	11.2	9.5	8.2	
24	610	1200	366	164.4	54.8	32.8	23.4	17.2	14.9	12.6	10.9	
36	914	1800	549	246.6	82.2	49.2	65.1	27.3	22.3	18.9	16.4	
48	1219	2400	732	328.8	109.6	65.6	46.8	36.4	29.8	25.2	21.8	

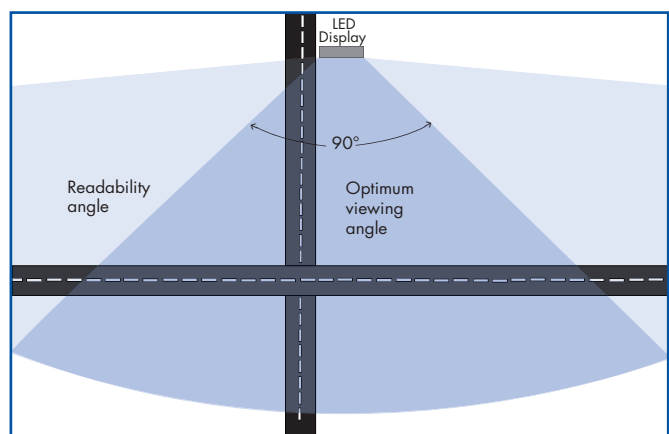
 Shaded areas represent an acceptable exposure time

WHICH DISPLAY WILL MEET THE VIEWING ANGLE NEEDS?

Daktronics offers displays with various viewing angles to meet the needs of different viewing situations. Some applications require a wide viewing angle, others a focused viewing angle. The diagrams below demonstrate the expected coverage for the various viewing angles.



Optimum viewing angle is determined by the horizontal and vertical points at which the measured light intensity is at least 50 percent of that measured directly in front of the display.



Readability angle or viewing area will exceed the optimum viewing angle depending on site-specific circumstances and ambient light conditions.

STEP 3 SITE OBSTRUCTIONS

ARE THERE ANY OBSTRUCTIONS AT THE SITE?

When conducting a site overview, note any obstacles in the area, such as trees, buildings, power poles, traffic, other competitive signage, etc. Consider “flagging the site” and taking photos for a closer look at the details. Keep in mind that raising or lowering the display in order to accommodate unobstructed viewing may change the viewing distance.

STEP 4 THE DISPLAY AND EXPECTED PERFORMANCE

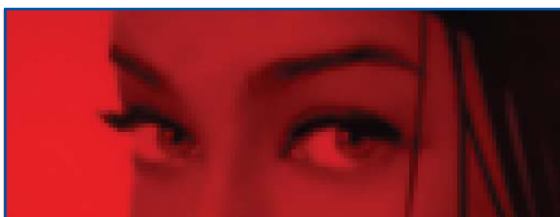
WHAT TYPE OF CONTENT WILL BE ON THE DISPLAY?

It is important to make sure that the chosen display is large enough to accommodate the specific advertising needs. Understanding the advertising needs is also an important factor in determining the right product for a specific application. Ask questions like:

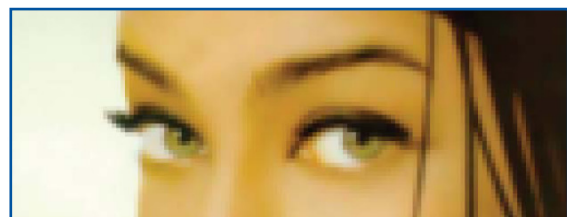
- Will the display show graphics as well as text?
- Will the display need to show video images?
- How many lines of copy will need to be displayed at one time?
- What type of messages will be communicated to the intended audience? (time and temperature, product prices, etc.)

IS A FULL-COLOR OR MONOCHROME DISPLAY PREFERRED?

Expectations, personal preferences, and the type of desired content will determine the answer to this question. If the content is largely made up of text and does not contain logos or graphics, a monochrome display should be considered. Galaxy® monochrome displays are offered in red or amber and can feature multiple shades of either color. With this capability, a monochrome Galaxy display can show images with depth using shading capability. Full-color displays offer much more flexibility regarding graphics and are arguably more eye-catching.



Monochrome shades of red



RGB full color

WHAT DISPLAY RESOLUTION IS MOST APPROPRIATE FOR THE LOCATION?

Resolution is defined as the number of pixels contained in the physical area of an electronic display. The greater the number of pixels per square foot the greater the amount of detail displayed.

Matching resolution to a specific application is a process that deserves a great deal of attention. Items to consider include:

- Viewing distance
- Viewing audience
- Display size
- Desired content
- Traffic speed

The right resolution should satisfy all of the above. The following graphics and chart are intended to help explain this process and give guidelines for choosing the correct pixel pitch.

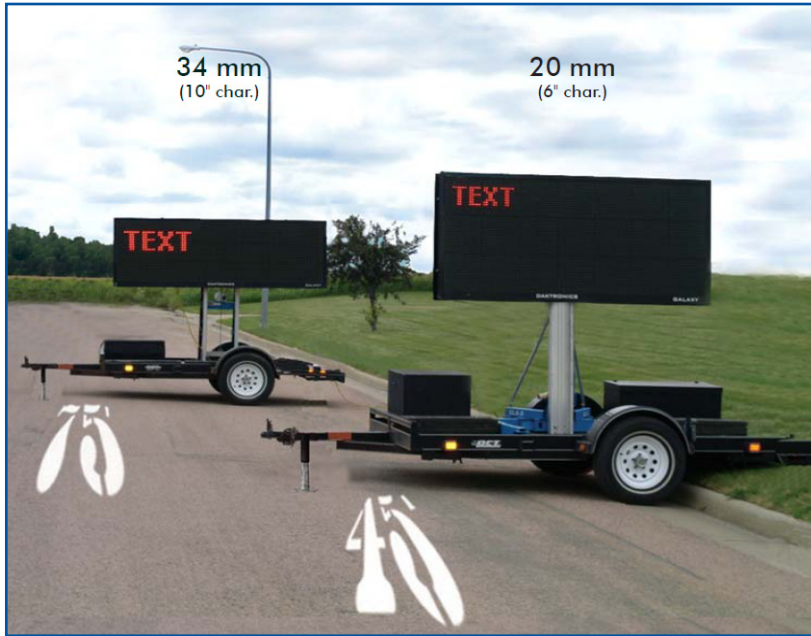


Galaxy® Message Center Resolution Recommendation Chart				
Speed	Pixel Pitch			
	16 mm (0.65")	20 mm (0.78")	34 mm (1.33")	46 mm (1.8")
5 mph (8 km/h)				
15 mph (24 km/h)				
25 mph (40 km/h)				
35 mph (56 km/h)				
45 mph (72 km/h)				
55 mph (89 km/h)				
65 mph (105 km/h)				

Text only recommendation
 Text and graphics recommendation

RESOLUTION

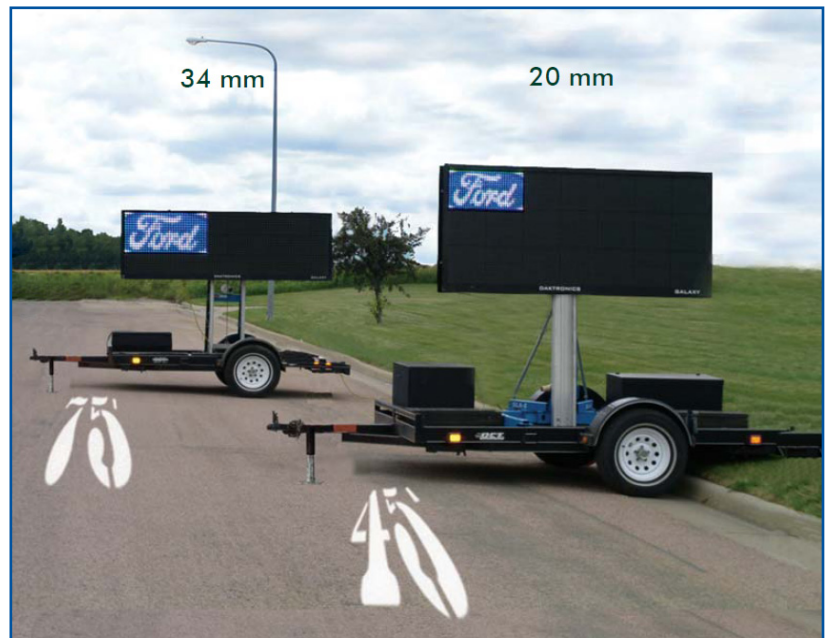
HOW DO VIEWING DISTANCE AND LINE SPACING AFFECT IMAGE CLARITY?



These photos show displays with various pixel pitches at corresponding viewing distances. A pixel is the smallest element of the electronic display system that can be individually controlled. Line spacing is the distance between pixel centers on a display. Line spacing determines clarity, intensity, and reliability at certain distances.

*20 mm at 45' and 34 mm at 75' monochrome displays

These displays are positioned at their optimal viewing distances. Note how the clarity of each image is similar at each distance. If these displays were both viewed at a distance of 45 feet, the 20 mm display would still look good, but the 34 mm display would look grainy.



*20 mm at 45' and 34 mm at 75' RGB displays
*16 pixel-high image.

STEP 5 STRUCTURE AND ACCESS

IF RETROFITTING AN EXISTING STRUCTURE, WILL THE EXISTING STRUCTURE SUPPORT THE NEW DISPLAY?

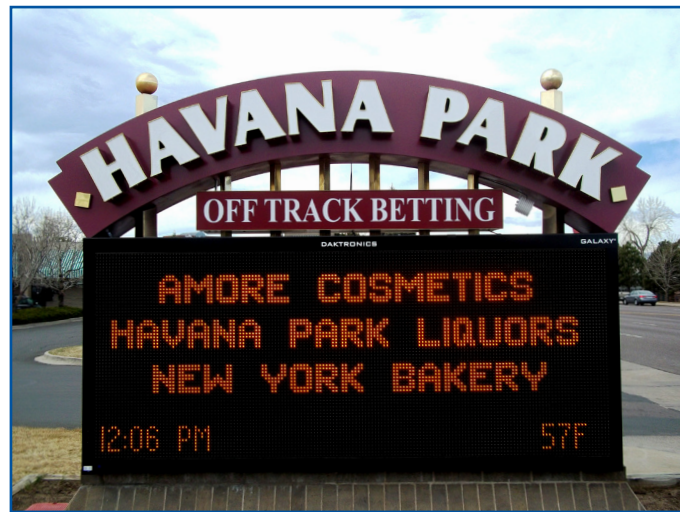
- Make sure the structure is sound enough to support the additional weight and wind load of the display.
- Decide how the display will be attached. Take note of the pole size and/or distance between poles.
- Note access to the site by mapping roads and landscaping that may determine the type of equipment needed (cranes, trucks).
- Mount the display at a height that effectively communicates to the intended audience.



Before

IS THERE ACCESS TO THE DISPLAY AND DISPLAY COMPONENTS TO PERFORM SERVICE?

Take the necessary steps to ensure that the display system and other components can be serviced as conveniently as possible.



After

STEP 6 COMMUNICATION METHODS

ETHERNET COMMUNICATION

Daktronics recommends Ethernet communication and networking for all electronic message centers. Local area Ethernet technology has evolved networks by providing reliable and timely information access.

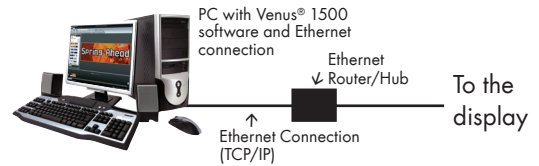
Daktronics provides wire, fiber, and radio communication options to route Daktronics proprietary protocols over Ethernet connections from customer PCs to their displays.

Site Survey Guide

CHOOSE YOUR ETHERNET CONNECTION

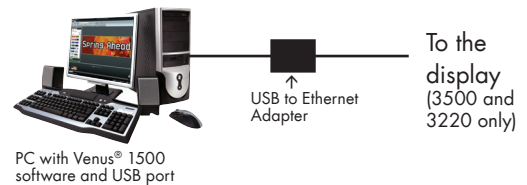
ETHERNET NETWORK

- Connect the computer and display via Ethernet through an open port, router, or other connection device.
- Installation requires networking knowledge of IP, subnet, etc.
- Dynamic Host Configuration Protocol (DHCP) or static IP setup



USB TO ETHERNET COMMUNICATION ADAPTER

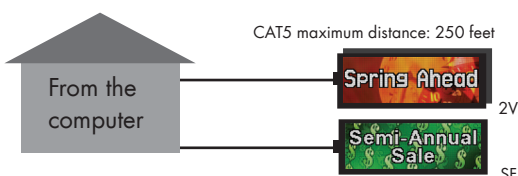
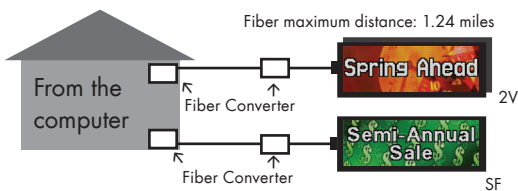
- Connect to the display through USB port on the computer (no network setup required).
- Single computer connected to the display
- Static IP address only



CHOOSE YOUR SIGN COMMUNICATION

ETHERNET FIBER OPTIC

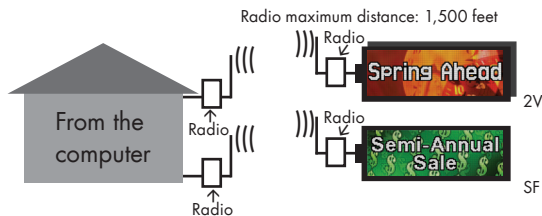
- **Fiber optic is the most reliable communication option offered.**
- Electrically isolated fiber optics prevent damage due to electromagnetic interference from lightning or electrical storms.
- Distance from the Ethernet network/adapter to the display must be less than 6,547 ft (2,000 m).
- This option requires fiber optic signal convertors.



ETHERNET CAT5

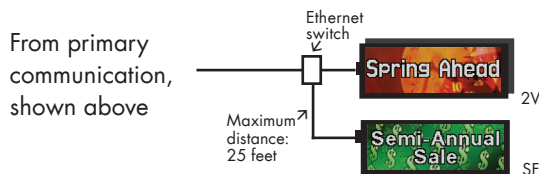
- Use when fiber Ethernet cannot be pulled and the distance from the Ethernet network/adapter to the display is less than 250 ft (76.2 m).
- This option requires direct CAT5 wire.

ETHERNET BRIDGE RADIO



- Use this option when fiber Ethernet cannot be pulled and the distance from the Ethernet network/adaptor to the display is less than 1,500 ft (450 m).
- This option requires outdoor installation for direct line of sight between server radio at the building and client radio at the display.
- This option is not recommended where significant RF interference exists (RF interference could be caused by: cellular towers, radio/TV stations, wireless headsets, etc.).

Note: Wireless communication devices may be affected by site specific conditions. Daktronics does not guarantee that wireless communication is suitable for every location.



ETHERNET SWITCH

- Use when multiple displays are on a single Ethernet connection from the above options.
- Displays must be within 25 ft.
- This requires each display to have different IP addresses.
- This option does not work with USB to Ethernet Adapter.

STEP 7 POWER SUPPLY

HOW WILL THE DISPLAY RECEIVE POWER?

- Determine if there is power available.
- Be sure the power will not be on a time management system.
- Decide how the display will be grounded.
- Inquire about needing a separate power service for the display.
- Determine if there are power reliability issues: "Dirty power," brownouts, spikes, or drops.
- Address "dirty power" issues with surge suppression equipment and/or UPS options.
- Most Daktronics displays can accommodate 120/240 single phase and 120/208 three-phase power. Consult a Daktronics representative.

STEP 8 INSTALLATION COSTS

WHAT COSTS MAY BE INCLUDED IN AN INSTALLATION? (NOT INCLUSIVE)

- Permit costs
 - Crane or lift equipment
 - Removal of existing signage
 - Modification of attachmentpoints (Adding mounting brackets)
 - Relocation of sign structure
 - Cost of communication installation
 - Troubleshooting time
 - Time of day and day of week the install needs to take place (traffic lane closures, access to site.)
 - Trenching for power and signal
 - Driving a ground rod
 - Electrical installation costs
 - Site cleanup
 - New landscaping or repair of driveway and/or parking lot
-

SITE SURVEY BENEFITS & ADVANTAGES

PERFORMING A THOROUGH SITE SURVEY IS CRITICAL TO A SUCCESSFUL SALE.

- Lends credibility to a proposal
- Prevents surprise costs and problems before and during installation
- Helps determine communication and power needs
- Identifies any obstacles such as trees, buildings, power poles, etc.
- Determines the most effective product for the customer and location
- Determines any special installation needs
- Yields success

STEP 1 SIGN PERMIT

Can a sign permit be obtained? Yes No

STEP 2 AUDIENCE AND TECHNOLOGY

Recommended matrix size: _____

Intended audience: _____

Do I need a wide viewing angle? Yes No

STEP 3 SITE OBSTRUCTION

Noteworthy obstructions: _____

STEP 4 THE DISPLAY AND EXPECTATIONS

Color or monochrome display? Color Monochrome

Preferred Content

Text only Text and graphics Video Other _____

What display resolution is most appropriate for my needs?

16 mm 20 mm 34 mm 46mm

STEP 5 STRUCTURE AND ACCESS

Obstacles to service? Yes No If yes, details: _____

Existing structure or new structure? _____

STEP 6 COMMUNICATION METHODS

Which type of Ethernet connection do I need?

Ethernet Network USB to Ethernet Adapter

Which type of connection to the sign should I choose?

Fiber Optic CAT5 Bridge Radio

STEP 7 POWER SUPPLY

Is there power available? Yes No

If not, how will you get power to the site? _____

STEP 8 INSTALLATION COSTS

List foreseen costs that will be included in the installation: _____

Recommended Product: _____

www.daktronics.com/galaxy