

TechMemo #11-0001

PRIORITY:	Normal				
DATE:	March 15, 2011				
TITLE:	Revised Ventilation Instructions				
ECO REFERENCE:	N/A				
PRODUCT(S) AFFECTED:	Excite / EzView / StreetSmart				
SUMMARY:	Adaptive LED displays are designed to cool by natural convection rather than by mechanical means. This TechMemo clarifies Adaptive's recommendations for mounting displays with respect to proper air circulation.				

Introduction

Adaptive's Excite, EzView and StreetSmart displays require obstruction-free space for adequate air ventilation between solid mounting surfaces and the top, bottom, and sides of the sign. This is required for all wall, monument, and pole mounted signs.

Always take into consideration other neighboring heat sources such as backlit signs, lighting sources, etc. and supplement ventilation outlets as needed. Note: Shading the back of the sign will enhance thermal performance.

Ventilation Basics

How does the sign cool itself?

Since these LED displays are completely enclosed and, in most situations, require no forced air ventilation, they rely on natural convection to cool their internal electronic components. The top and back surfaces of the display act as heat sinks to cool the inside case temperatures. Internal fans mix the air inside the case, bringing it all to a more uniform temperature.

Excite, EzView, and StreetSmart displays are enclosed to keep out contaminants and prevent corrosion and dirt buildup, which adversely affects the sign's performance and interferes with its ability to cool itself.

What is natural convection?

Natural convection is a type of heat transportation. In natural convection, air surrounding a heat source receives heat, becomes less dense, and rises. The surrounding cooler air then moves to replace it. This cooler air is then heated and rises, and the process continues, forming a convection current.

How does Adaptive define "obstruction-free space" and why is so important?

Because proper air circulation is key to the optimal performance and longevity of your Adaptive LED display, we recommend that there be a certain amount of open area on all sides of your display. "Bricking in" or otherwise enclosing the case may cause overheating and other failures that will not be covered by your warranty. If louvers or air duct covers are used, the "obstruction free space" of the louver/air duct cover must be calculated to ensure that it meets the Adaptive requirement.

For every installation, provide adequate ventilation or the sign warranty may be void:

- DO NOT mount air ducts (vents) directly to the LED display or its substructure.
- DO NOT modify the display case or its substructure for ventilation purposes. The superstructure design MUST incorporate adequate ventilation.
- Provide a minimum clearance of one inch above and below the display, and six inches behind the display.
- For EMCs under seven feet in height, provide 3.5 square inches of obstruction-free ventilation space for every square foot of your display face. For EMCs over seven feet high, provide seven square inches of ventilation space,
- Ventilation air ducts MUST be evenly spaced across the top and bottom of the display to help maintain consistent air flow around it.
- Adaptive recommends that displays installed in a monument structure incorporate outdoor-rated
 fans to draw in cool air through the lower air ducts. The sign will cool more efficiently when fans
 are used to draw in cool air rather than force out hot air.

Ventilation Requirements Chart: Excite

Row Column Chiches Chiches California Califor	VENTILATION REQUIREMENTS FOR EXCITE SIGNS UP TO 7' IN HEIGHT Use 3.5 square inches of ventilation for every 1 square foot of the display face. 7 square inches is equivalent to a 3" air duct.											
12	Rows	Columns					Required	Ventilation*	Outlet Ventilation* (Sq. Inches)			
32	Excite 16N	MM displa	ays									
128 20.2 88.7 1.630.1 11.32 39.62 19.81 19.81 19.82 32 144 20.2 90.8 1.84.2 12.74 44.58 22.2 22.2 32 160 20.2 100.8 2.036.2 14.14 49.49 24.75 24.75 24.75 24.75 24.76 24.75 24.75 24.75 24.75 24.75 24.81 11.9 22.40.2 15.56 54.45 27.2 27.7 24.88 96 90.3 60.5 1.833.2 12.73 44.56 22.28 22.2 28.88 22.2 48 112 30.3 80.7 2.445.2 16.98 59.43 29.72 29.7 29.84 24.75 24.81 24.81 24.81 28.81 30.3 80.7 2.445.2 16.98 59.43 29.72 29.7 29.84 24.81	32	96	20.2	60.5	1,222.1	8.49	29.70	14.85	14.85			
32 144 20.2 90.8 1,834.2 12,74 44,58 22.29 22.2 32 176 20.2 110.9 2,240.2 15,56 54,45 27.22 27.3 48 96 90.3 80.5 1,833.2 12.73 44,56 22.22 22.2 48 112 30.3 70.6 2,139.2 144,86 51,99 26.00 26.0 48 160 30.3 80.7 2,446.2 16,98 59,43 29,72 29.7 48 114 30.3 90.8 2,751.2 19,11 66,87 33,44 33,44 33,44 33,44 33,44 33,44 33,44 33,47 24,442 16,97 39,41 29,70 29,7 29,7 48 112 40.4 70.6 2,852.2 19,81 60,33 34,66 40,64 40.6 50.5 2,444.2 16,97 39,41 29,70 29,81 49,94 49,49 49,49	32	112	20.2	70.6	1,426.1	9.90	34.66	17.33	17.33			
190 202 1008 20362 114.14 49.49 24.75 24.75 32.176 202 1109 22.402 15.56 54.45 27.2 27.2 48 96 30.3 60.5 1.833.2 12.73 44.56 22.28 22.2 48 112 30.3 70.6 2.139.2 14.86 51.99 26.00 26.0 48 128 30.3 80.7 2.445.2 16.98 59.43 22.72 22.74 48 15.0 30.3 70.6 2.139.2 14.86 51.99 26.00 26.0 48 128 30.3 80.7 2.445.2 16.98 59.43 22.72 22.74 48 176 30.3 100.8 3.054.2 21.21 74.24 37.12 37.1 48 176 30.3 100.8 3.054.2 21.21 74.24 37.12 37.1 48 176 30.3 100.8 3.054.2 21.21 74.24 37.12 37.1 48 176 30.3 100.8 3.054.2 21.21 74.24 37.12 37.1 48 176 40.4 60.5 2.444.2 16.97 59.41 22.70 22.0 40.4 40.4 60.5 2.444.2 16.97 59.41 22.70 22.0 40.4 40.4 60.5 2.442.2 16.97 59.41 22.70 22.0 40.4 40.4 40.4 80.7 3.280.3 22.84 79.24 39.62 39.62 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.99 49.9 40.4 40.4 40.4 40.4 40.8 40.72.3 28.28 89.99 49.									19.81			
176									22.29			
48									24.75			
48 112 30.3 70.6 2.139.2 14.86 51.99 26.00 26.0 48 128 30.3 90.8 2.751.2 16.98 59.43 29.72 29.72 48 144 30.3 100.8 3.054.2 21.21 74.24 37.12 37.1 48 176 30.3 110.9 3.380.3 23.34 81.67 40.84 40.8 40.84 40.8 40.84 40.8 40.9 40.8 40.8 40.9 40.8 40.8 40.9 40.8 40.8 40.9 40.8 40.8 40.9 40.8 40.8 40.8 40.8 40.8 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>27.22</td>									27.22			
48 128 30.3 80.7 2.445.2 16.98 59.43 29.72 29.7 48 144 30.3 100.8 3.054.2 21.21 74.24 37.12 37.1 48 176 30.3 110.9 3.380.3 23.34 81.67 40.84 40.8 64 96 40.4 60.5 2.444.2 16.97 59.41 29.70 22.7 64 112 40.4 70.6 2.652.2 19.81 69.33 34.68 34.68 64 112.8 40.4 80.7 3.260.3 22.64 79.24 39.62 38.6 64 160 40.4 100.8 40.72.3 28.28 89.88 49.49 49.4 64 176 40.4 110.9 4.480.4 31.11 108.90 54.45 54.4 2xotto 20MM displays 16 80 13 63.4 824.2 5.72 20.03 10.02 10.12 13.12 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>												
48 144 30.3 90.8 2,751.2 19.11 66.87 33.44 33.4 48 160 30.3 110.9 3,364.2 21.21 74.24 37.12												
48 160 30.3 100.8 3,054.2 21.21 74.24 37.12 37.1 48 176 30.3 110.9 3,360.3 23.44 40.67 40.84 40.84 40.86 64 96 40.4 80.5 2,444.2 16.97 59.41 29.70 29.7 64 112 40.4 70.6 2,652.2 19.81 69.33 34.66 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6 34.6 44.5 57.2 20.03 10.02 10.02 10.02 10.02 10.03 10.02 10.03 10.02 10.03 10.02 10.03 10.02 10.03 10.02 10.03 10.02 10.03												
48 176 30.3 110.9 3,390.3 23.34 81.67 40.84 40.8 64 96 40.4 60.5 2,444.2 16.97 59.41 29.70 29.7 64 112 40.4 70.6 2,852.2 19.81 69.33 34.66 34.66 64 128 40.4 80.7 3,260.3 22.64 79.24 39.62 39.6 64 160 40.4 100.8 4,072.3 28.28 98.98 49.49 49.4 64 176 40.4 110.9 4,480.4 31.11 108.90 54.45 56.44 56.64 11.1	-			-								
64 96 40.4 60.5 2.444.2 16.97 59.41 29.70 29.7 64 112 40.4 70.6 2.852.2 19.81 69.33 34.66 34.6 64 128 40.4 80.7 3.280.3 22.64 79.24 39.62 39.6 64 144 40.4 90.8 3.663.3 25.47 89.16 44.58 44.5 64 160 40.4 100.8 4.072.3 28.28 89.98 89.98 49.9 49.4 64 176 40.4 110.9 4.480.4 31.11 108.90 54.45 54.4 Excite 20MM displays 16 80 13 63.4 824.2 5.72 20.03 10.02 10.0 16 96 13 76.0 988.0 6.86 24.01 12.01 12.01 12.0 16 112 13 88.6 1,151.8 8.00 28.00 14.00 14.0 16 128 13 101.2 1,151.5 9.14 31.98 15.99 15.9 16 16 16 0 13 126.4 1,643.2 11.41 39.94 19.97 19.9 16 16 176 13 139.0 1,807.0 11.27 35.96 17.98 17.8 16 176 13 139.0 1,1607.0 12.55 43.92 21.96 21.9 32 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 29.3 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 113.8 2,213.3 20.23 70.81 35.40 35.4 32 176 25.6 139.0 3,558.4 24.71 86.49 39.4 39.4 48 80 38.2 63.4 2,421.9 16.82 58.87 29.43 29.4 48 96 38.2 138.8 4.347.2 30.19 16.53 59.2 13.8 31.4 31.4 39.9 48.2 44.2 44.2 39.4 48.2 49.4 49.2 44.3 39.9 15.9 48.2 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.3 49.4 49.4									40.84			
64 112 40.4 70.6 2,852.2 19.81 69.33 34.66 34.6 64 128 40.4 80.7 3,260.3 22.64 79.24 39.62 39.6 64 160 40.4 100.8 3,683.3 25.47 89.16 44.58 64 160 40.4 100.8 4,072.3 28.28 99.88 49.49 49.4 65 176 40.4 110.9 4,480.4 31.11 108.99 54.45 54.4 Excite 20MM displays 16 80 13 63.4 824.2 5.72 20.03 10.02 10.0 16 96 13 76.0 988.0 6.86 24.01 12.01 12.01 16 128 13 86.6 1,151.8 8.00 28.00 14.40.0 14.0 16 16 112 13 86.6 1,151.8 8.00 28.00 14.40.0 14.0 16 16 16 176 13 113.8 1,479.4 10.27 35.96 17.98 17.9 16 16 176 13 13.90 1,807.0 12.55 43.92 21.96 21.9 16 176 13 13.90 1,807.0 12.55 43.92 21.96 21.9 12 2 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 23.6 23 2 112 25.6 86.6 2,268.2 15.75 55.13 27.75 27.56 27.5 23 2 144 25.6 113.8 2,913.3 20.23 70.81 35.40 33.4 25 176 25.6 13.9 0,355.84 24.71 86.49 43.24 43.2 48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 86.6 3,384.5 22.47 78.65 39.30 39.3 32 176 25.6 13.9 0,355.84 24.71 86.49 43.24 43.2 48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 86.6 3,384.5 22.47 78.65 39.30 39.3 32 176 25.6 13.9 0,355.84 24.71 86.49 43.24 43.2 48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 86.6 3,384.5 22.47 78.65 39.30 39.3 32 176 25.6 13.9 0,355.84 24.71 86.49 43.24 43.2 48 96 38.2 13.9 0,355.84 24.71 86.49 43.24 43.2 48 96 38.2 13.9 0,355.84 24.71 86.49 43.24 43.2 48 96 38.2 13.9 0,355.84 24.71 86.49 43.24 43.2 48 106 38.2 13.9 0,355.8 22.47 78.65 59.9 6 45.8 35.2 48 112 38.2 86.6 3,384.5 23.50 82.26 41.13 41.1 31 13 8.9 13.8 3.2 13.9 15.59 12.00 42.25 33.3 30.1 17.30 56.8 59.9 56.1 15.8 30.2 13.9 15.9 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.3 15.5 15.5	-								29.70			
64 128 40.4 80.7 3.260.3 22.64 79.24 39.62 39.6 64 144 40.4 90.8 3.688.3 25.47 89.16 44.58 44.5 64 160 40.4 110.9 4.80.4 31.11 108.90 54.45 54.4 5cvite 20MM displays 16 80 13 63.4 824.2 5.72 20.03 10.02 10.0 16 80 13 76.0 988.0 6.86 24.01 12.01 12.0 16 112 13 88.6 1,151.8 8.00 28.00 14.00 14.0 16 128 13 101.2 1,131.6 9.14 31.98 15.99 15.9 16 164 13 13.8 1,479.4 10.27 35.96 17.98 17.9 16 176 13 139.0 1,807.0 12.55 43.92 21.96 21.9 22.9 20.9 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>34.66</td></td<>									34.66			
64 144 40.4 90.8 3,668.3 25.47 89.16 44.58 44.4 64 160 40.4 100.8 4,072.3 28.28 98.98 49.49 49.4 64 176 40.4 110.9 4,480.4 31.11 108.90 54.45 54.4 8xoite 20MM displays 16 80 13 63.4 824.2 5.72 20.03 10.02 10.0 16 16 96 13 76.0 988.0 6.86 24.01 12.01 12.0 16 112 13 88.6 1,151.8 8.00 28.00 14.00 14.0 16 16 128 13 101.2 1,315.6 9.14 31.98 15.99 15.8 16 16 16 144 13 113.8 1,479.4 10.27 35.96 17.98 17.9 16 16 176 13 13.9 12.6 1,643.2 11.41 39.94 19.97 19.9 16.6 176 13 139.0 1,807.0 12.55 43.92 21.96 21.9 16 176 13 139.0 1,807.0 12.55 43.92 21.96 21.9 12.2 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 101.2 2.590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2.213.3 20.23 70.81 35.40 33.4 32 176 25.6 139.0 2.56 33.4 1,233.3 20.23 70.81 35.40 33.4 48 96 38.2 76.0 2.903.2 20.16 70.56 39.32 39.3 32 176 25.6 139.0 3,558.4 24.71 86.49 43.2 44.3 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 32.4 44 38.2 18.8 33.2 2.4 44 38.2 18.8 33.2 2.4 44 38.2 18.8 33.2 2.4 44 38.2 18.8 33.2 2.4 44 38.2 18.8 33.2 2.4 44 38.2 18.8 33.2 2.4 44 38.2 18.8 33.3 30.9 3.558.4 24.71 86.49 43.2 44.2 44.2 48.8 18.8 18.8 38.2 18.8 33.8 33.8 2.4 76.0 2.56 12.6 4 3.38 5.5 8.8 32.2 44.1 38.2 88.6 3.384.5 2.350.8 22.4 78.65 39.9 6 45.8 35.4 32.4 44 38.2 18.8 8.8 3.384.5 2.350.8 22.6 41.13 41.1 34.1 38.2 88.6 3.384.5 2.350.8 22.6 41.13 41.1 34.1 34.1 34.1 34.1 34.1 34.									39.62			
Excite 20MM displays									44.58			
16	64	160	40.4	100.8	4,072.3	28.28	98.98	49.49	49.49			
16				110.9	4,480.4	31.11	108.90	54.45	54.45			
16	Excite 20I	MM displa	ays									
16			13			5.72	20.03	10.02	10.02			
16 128 13 101.2 1,315.6 9.14 31.98 15.99 15.9 16 144 13 113.8 1,479.4 10.27 35.96 17.98 17.9 16 160 13 126.4 1,643.2 11.41 39.94 19.97 19.9 16 176 13 139.0 1,807.0 12.55 43.92 21.96 21.9 32 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 23.6 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27									12.01			
16 144 13 113.8 1,479.4 10.27 35.96 17.98 17.9 16 160 13 126.4 1,643.2 11.41 39.94 19.97 19.9 32 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 23.6 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2,913.3 20.23 70.81 35.40 35.4 32 160 25.6 126.4 3,235.8 22.47 78.65 39.92 39.3 32 176 25.6 139.0 3,558.4 24.71 86.49 43.24 43.2 48 80 38.					.,				14.00			
16 160 13 126.4 1,643.2 11.41 39.94 19.97 19.9 16 176 13 139.0 1,807.0 12.55 49.92 21.96 21.9 32 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 23.6 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2,913.3 20.23 70.81 35.40 35.4 32 176 25.6 126.4 3,235.8 22.47 78.65 39.32 39.3 32 176 25.6 139.0 3,558.4 24.71 36.49 43.24 43.2 48 80 38.									15.99			
16 176 13 139.0 1,807.0 12.55 43.92 21.96 21.9 32 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 23.6 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2,913.3 20.23 70.81 35.4 34.4 32 160 25.6 126.4 3,235.8 22.47 78.65 39.32 39.3 32 176 25.6 139.0 3,558.4 24.71 86.49 43.24 43.2 48 80 38.2 63.4 2,421.9 16.82 58.87 29.43 29.4 48 112 38.									17.98			
32 80 25.6 63.4 1,623.0 11.27 39.45 19.72 19.7 32 96 25.6 76.0 1,945.6 15.51 47.29 23.64 23.6 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2,913.3 20.23 70.81 35.40 35.4 32 160 25.6 126.4 3,235.8 22.47 78.65 39.32 39.3 32 176 25.6 126.4 3,235.8 22.47 78.65 39.32 39.3 32 176 25.6 139.0 3,558.4 24.71 88.49 43.24 43.2 48 80 38.2 63.4 2,421.9 16.82 58.87 29.43 49.4 48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 88.6 3,384.5 23.50 82.26 41.13 41.1 48 128 38.2 101.2 3,865.8 26.85 93.96 46.98 449.9 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 56.8 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 EXCITE 23MM displays 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 12.03 42.12 21.06 21.0 16 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 1,948.9 13.53 57.87 28.94 28.9 32 128 29.4 176 30.8 1,948.9 13.53 57.87 28.94 28.9 32 128 29.4 176 30.8 1,948.9 13.53 57.87 28.94 28.9 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 32.12 32.12 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 36.4 36.4 36.9 31.4 35.3 31.2 32.1 32.1 32.1 32.1 32.1 32.1 32												
32 96 25.6 76.0 1,945.6 13.51 47.29 23.64 23.6 32 112 25.6 88.6 2,268.2 15.75 55.13 27.56 27.5 32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2,913.3 20.23 70.81 35.40 35.4 32 160 25.6 126.4 3,235.8 22.47 78.65 39.32 39.3 32 176 25.6 139.0 3,558.4 24.71 86.49 43.24 43.2 48 80 38.2 63.4 2,421.9 16.82 58.87 29.43 29.4 48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 88.6 3,884.5 23.50 82.26 41.13 41.1 48 128 38.2 101.2 3,865.8 26.85 93.96 46.98 46.9 48 144 38.2 113.8 4,347.2 30.19 105.66 52.83 52.8 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 56.6 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 Excite 23MM displays 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 16 176 14.9 15.8 2,381.0 16.53 57.87 28.94 28.9 32 196 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.73 46.73 48 112 43.9 110.9 2,995.9 20.80 72.82 36.41 36.4 36.4 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 57.90 48 112 43.9 110.9 2,995.9 20.80 72.82 36.41 36.4 36.4 32 112 29.4 116.3 3,419.2 23.74 33.11 41.55 41.5 32 112 29.4 116.3 3,419.2 23.74 33.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.73 46.73 48 112 43.9 110.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 3,419.2 23.74 33.11 41.55 51.9 57.10 57.1 48 96 43.9 116.3 3,419.2 23.74 33.11 57.6 29.4 159.8 46.66 46.63 46.63 46.64 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 193.07 108.73					-,							
32												
32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.4 32 144 25.6 113.8 2,913.3 20.23 70.81 35.40 35.4 32 160 25.6 126.4 3,235.8 22.47 78.65 39.32 39.3 32 176 25.6 139.0 3,558.4 24.71 86.49 43.24 43.2 48 80 38.2 63.4 2,421.9 16.82 58.87 29.43 29.4 48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 88.6 3,384.5 23.50 82.26 41.13 41.1 48 144 38.2 113.8 4,347.2 30.19 105.66 52.83 52.8 48 144 38.2 139.0 5,309.8 36.87 129.06 64.53 48 176 38.2												
32				-					31.48			
32									35.40			
32									39.32			
48 96 38.2 76.0 2,903.2 20.16 70.56 35.28 35.2 48 112 38.2 88.6 3,384.5 23.50 82.26 41.13 41.1 48 128 38.2 101.2 3,865.8 26.85 93.96 46.98 46.98 48 144 38.2 113.8 4,347.2 30.19 105.66 52.83 52.8 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 58.6 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 5xcite 23MM displays 5309.8 36.87 129.06 64.53 64.5 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 128 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>43.24</td></t<>									43.24			
48 112 38.2 88.6 3,384.5 23.50 82.26 41.13 41.1 48 128 38.2 101.2 3,865.8 26.85 93.96 46.98 46.9 48 144 38.2 113.8 4,347.2 30.19 105.66 52.83 52.8 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 58.6 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 Excite 23MM displays	48	80	38.2	63.4	2,421.9	16.82	58.87	29.43	29.43			
48 128 38.2 101.2 3,865.8 26.85 93.96 46.98 46.98 48 144 38.2 113.8 4,347.2 30.19 105.66 52.83 52.8 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 58.6 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 EXCITE 23 MIM displays 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 176 14.9 145.3 2,165.0 15.03 52.62 26.31 26.31	48	96	38.2	76.0	2,903.2	20.16	70.56	35.28	35.28			
48 144 38.2 113.8 4,347.2 30.19 105.66 52.83 52.8 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 58.6 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 Excite 23MM displays 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>41.13</td>									41.13			
48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 58.68 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.5 Excite 23MM displays 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>46.98</td>									46.98			
48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.53 Excite 23MM displays 16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4									52.83			
Excite 23MM displays 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4									58.68			
16 96 14.9 87.4 1,302.3 9.04 31.65 15.83 15.8 16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 <t< td=""><td></td><td></td><td></td><td>139.0</td><td>5,309.8</td><td>36.87</td><td>129.06</td><td>64.53</td><td>64.53</td></t<>				139.0	5,309.8	36.87	129.06	64.53	64.53			
16 112 14.9 101.9 1,518.3 10.54 36.90 18.45 18.4 16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160		<u>_</u>		07.4	1.000.0	0.04	04.05	45.00	45.00			
16 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.0 16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176									15.83			
16 144 14.9 130.8 1,948.9 13.53 47.37 23.68 23.6 16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96												
16 160 14.9 145.3 2,165.0 15.03 52.62 26.31 26.3 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112									23.68			
16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.9 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128									26.31			
32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.2 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144									28.94			
32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.4 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160									31.23			
32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.5 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5									36.41			
32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.7 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.52		128							41.55			
32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.9 32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5									46.73			
32 176 29.4 159.8 4,698.1 32.63 114.19 57.10 57.1 48 96 43.9 87.4 3,836.9 26.64 93.26 46.63 46.6 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5									51.91			
48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.3 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5	32	176	29.4	159.8	4,698.1	32.63	114.19		57.10			
48 128 43.9 116.3 5,105.6 35.46 124.09 62.05 62.0 48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5			43.9	87.4	3,836.9	26.64		46.63	46.63			
48 144 43.9 130.8 5,742.1 39.88 139.57 69.78 69.7 48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5									54.36			
48 160 43.9 145.3 6,378.7 44.30 155.04 77.52 77.5									62.05			
									69.78			
48 176 43.9 159.8 7,015.2 48.72 170.51 85.25 85.2									77.52 85.25			

^{*}Ventilation is defined as obstruction free space

Ventilation Requirements Chart: EzView

VENTILATION REQUIREMENTS FOR EZVIEW SIGNS UP TO 7' IN HEIGHT Use 3.5 square inches of ventilation for every 1 square foot of the display face. 7 square inches is equivalent to a 3" air duct. **Total Ventilation* Case Height** Case Width Case Case Outlet Inlet Rows Columns (Inches) (Inches) (Sq. Inches) (Sq. Feet) Required Ventilation* Ventilation* (Sq. Inches) (Sq. Inches) (Sq. Inches) EzView 20MM displays 16 80 13 63.4 824.2 5.72 20.03 10.02 10.02 16 96 13 76.0 988.0 6.86 24.01 12.01 12.01 16 112 13 88.6 1,151.8 8.00 28.00 14.00 14.00 16 128 13 101.2 1,315.6 9.14 31.98 15.99 15.99 16 144 13 113.8 1,479.4 10.27 35.96 17.98 17.98 16 160 13 126.4 1,643.2 11.41 39.94 19.97 19.97 176 13 139.0 1,807.0 12.55 43.92 21.96 21.96 16 11.27 32 80 25.6 63.4 1,623.0 39.45 19.72 19.72 25.6 32 47.29 96 76.0 1,945.6 13.51 23.64 23.64 15.75 27.56 32 112 25.6 88.6 2,268.2 55.13 27.56 32 128 25.6 101.2 2,590.7 17.99 62.97 31.48 31.48 32 144 25.6 113.8 2,913.3 20.23 70.81 35.40 35.40 32 160 25.6 126.4 3,235.8 22.47 78.65 39.32 39.32 32 176 25.6 139.0 3,558.4 24.71 86.49 43.24 43.24 48 80 38.2 63.4 2,421.9 16.82 58.87 29.43 29.43 96 38.2 48 76.0 2.903.2 20.16 70.56 35.28 35.28 88.6 3,384.5 48 112 38.2 23.50 82.26 41.13 41.13 48 128 38.2 26.85 101.2 3,865.8 93.96 46.98 46.98 48 38.2 52.83 52.83 144 113.8 4,347.2 30.19 105.66 48 160 38.2 126.4 4,828.5 33.53 117.36 58.68 58.68 48 176 38.2 139.0 5,309.8 36.87 129.06 64.53 64.53 **EzView** 23MM displays 9.04 16 96 14.9 87.4 1,302.3 31.65 15.83 15.83 112 101.9 1,518.3 10.54 36.90 18.45 18.45 16 14.9 128 14.9 116.3 1,732.9 12.03 42.12 21.06 21.06 16 144 13.53 47.37 23.68 16 14.9 130.8 1,948.9 23.68 26.31 160 14.9 145.3 15.03 52.62 16 2,165.0 26.31 16 176 14.9 159.8 2,381.0 16.53 57.87 28.94 28.94 32 96 29.4 87.4 2,569.6 17.84 62.45 31.23 31.23 32 112 29.4 101.9 2,995.9 20.80 72.82 36.41 36.41 32 128 29.4 116.3 3,419.2 23.74 83.11 41.55 41.55 32 144 29.4 130.8 3,845.5 26.71 93.47 46.73 46.73 32 160 29.4 145.3 4,271.8 29.67 103.83 51.91 51.91 57.10 32.63 32 176 29.4 159.8 4.698.1 114.19 57.10 48 96 93.26 46.63 43.9 87.4 3,836.9 26.64 46.63 48 112 43.9 101.9 4,473.4 31.07 108.73 54.36 54.36 62.05 48 128 43.9 116.3 5,105.6 35.46 124.09 62.05

43.9

43.9

43.9

130.8

145.3

159.8

144

160

176

48

48

48

TechMemo #11-0001 March 15, 2011

5,742.1

6,378.7

7,015.2

39.88

44.30

48.72

139.57

155.04

170.51

69.78

77.52

85.25

69.78

77.52

85.25

^{*}Ventilation is defined as obstruction free space

Ventilation Requirements Chart: StreetSmart

VENTILATION REQUIREMENTS FOR STREETSMART SIGNS UP TO 7' IN HEIGHT

Use 3.5 square inches of ventilation for every 1 square foot of the display face. 7 square inches is equivalent to a 3" air duct. **Case Height Case Width** Case Case **Total Ventilation*** Inlet Outlet Ventilation* Rows Columns Required Ventilation* (Inches) (Inches) (Sq. Inches) (Sq. Feet) (Sq. Inches) (Sq. Inches) (Sq. Inches) StreetSmart 17MM displays 16 96 11.5 66.6 765.9 5.32 18.62 9.31 9.31 88.6 16 128 11.5 7.08 12.38 12.38 1,018.9 24.76 16 160 8.84 30.94 15.47 11.5 110.7 1,273.1 15.47 10.60 18.55 16 192 11.5 132.7 1,526.1 37.09 18.55 32 96 22.5 66.6 1,498.5 10.41 36.42 18.21 18.21 32 128 22.5 88.6 1,993.5 13.84 48.45 24.23 24.23 32 160 110.7 2,490.8 17.30 60.54 30.27 30.27 192 22.5 72.57 32 132.7 2,985.8 20.73 36.29 36.29 48 96 33.5 66.6 2,231.1 15.49 54.23 27.11 27.11 112 33.5 88.6 36.07 36.07 48 2,968.1 20.61 72.14 48 128 45.07 45.07 33.5 110.7 3,708.5 25.75 90.14 108.05 54.02 48 144 33.5 132.7 4,445.5 30.87 54.02 StreetSmart 35MM displays 5.32 8 48 11.5 66.6 765.9 18.62 9.31 9.31 64 11.5 88.6 1,018.9 7.08 24.76 12.38 12.38 8 96 132.7 10.60 37.09 18.55 11.5 1,526.1 18.55 12.36 112 115 154.8 1,780.2 43.27 21.63 21.63 16 48 22.5 66.6 36.42 18.21 1,498.5 10.41 18.21 16 22.5 88.6 1,993.5 13.84 48.45 24.23 24.23 132.7 2,985.8 20.73 72.57 112 22.5 154.8 84.66 42.33 42.33 16 3,483.0 24.19 24 48 33.5 66.6 15.49 27.11 27.11 2.231.1 54.23 24 64 33.5 88.6 2,968.1 20.61 72.14 36.07 36.07 24 96 33.5 132.7 30.87 108.05 54.02 54.02 4,445.5 36.01 126.04 63.02 24 112 33.5 154.8 5,185.8 63.02 32 48 44.5 66.6 2,963.7 20.58 72.03 36.02 36.02 32 64 44.5 88.6 3,942.7 27.38 95.83 47.91 47.91

5,905.2

6,888.6

41.01

47.84

143.53

167.43

71.76

83.72

71.76

83.72

44.5

44.5

132.7

154.8

96

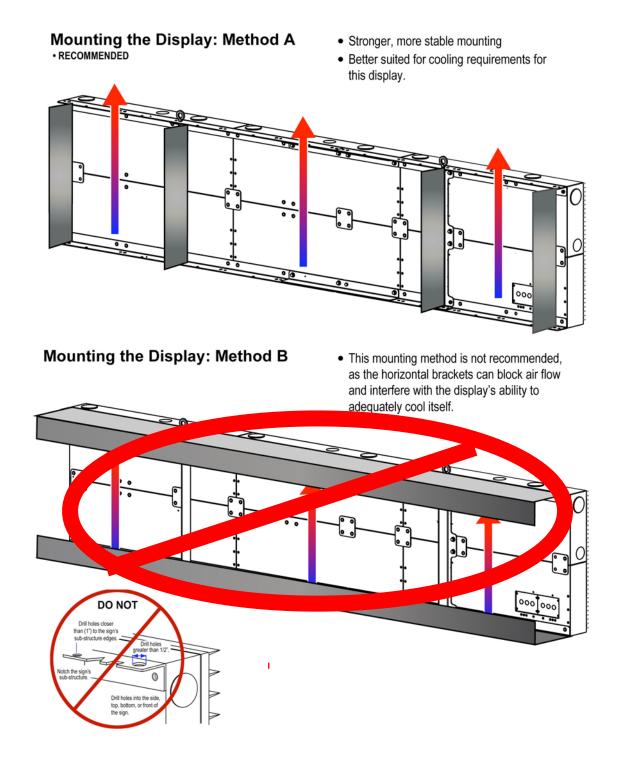
112

32

32

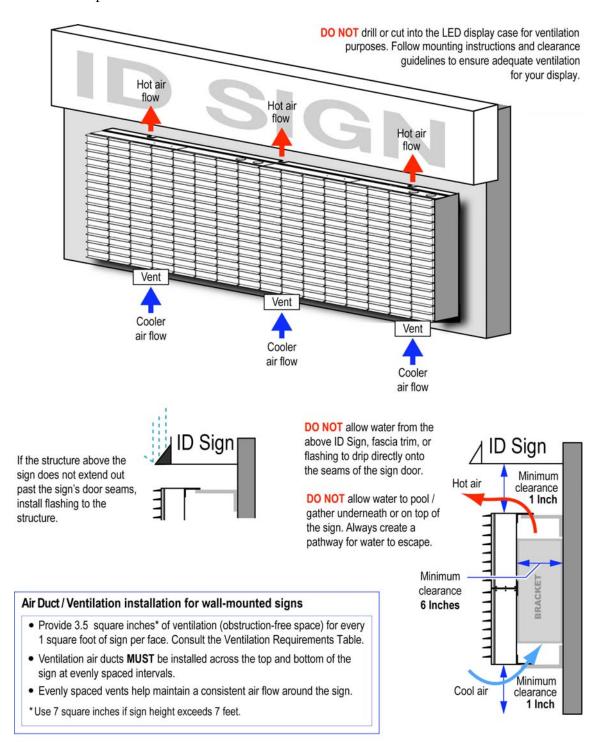
^{*}Ventilation is defined as obstruction free space

Recommended Mounting Brackets



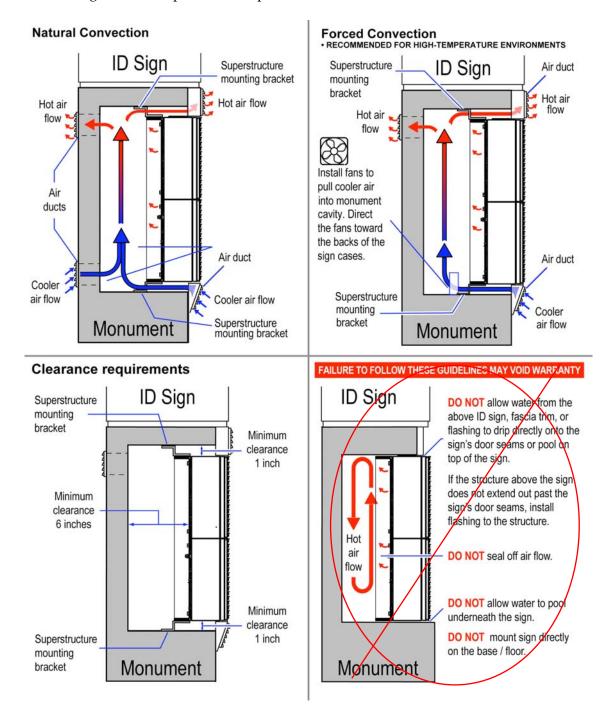
Wall Mounting

Displays require obstruction-free space for adequate air ventilation between solid mounting surfaces and the top and bottom surfaces.

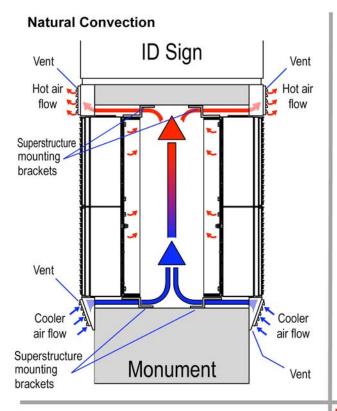


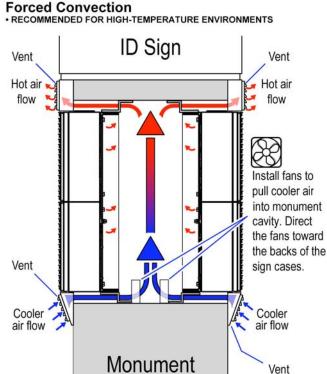
Monument Installation / Single-Sided Enclosure

If there is an obstruction on the outside of the display (as in a monument-style installation), care must be taken to assure that it is able to cool. Air ducts must be used in the monument to allow air to flow behind the sign and to help hot air escape.

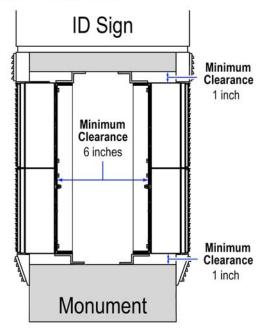


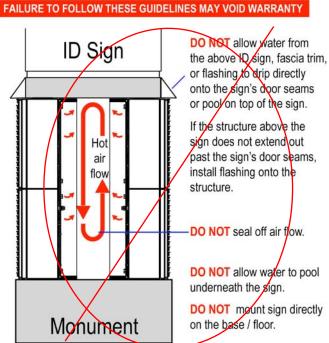
Monument Installation / Double-Sided Enclosure

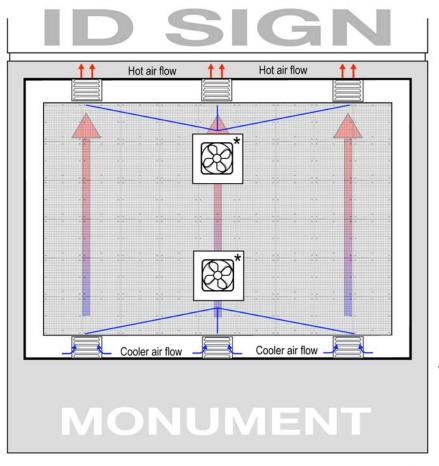




Clearance requirements







Air Duct / Ventilation installation for monument (enclosed) signs

- Provide 3.5 square inches* of ventilation (obstruction-free space) for every 1 square foot of sign per face. Consult the Ventilation Requirements Table.
- Ventilation air ducts MUST be installed across the top and bottom of the sign at evenly spaced intervals.
- Evenly spaced vents help maintain a consistent air flow around the sign.
- *Use 7 square inches if sign height exceeds 7 feet.

Provisions for adequate air circulation and ventilation, especially the ability of hot air to rise and escape from the unit, must be incorporated into the design of the sign structure.

DO NOT drill or cut into the LED display case for ventilation purposes.

DO NOT rely on side vents to cool the unit. Top and bottom vents must be included for adequate air circulation.

* Installations in high-temperature climates may require the addition of fans to pull cooler air into the monument cavity and distribute this cooler air evenly across the back surface of the LED display cases.

Pole-Mounted Installation

