

This document outlines materials and methods used to clean all Daktronics LED matrix displays. Due to occasional document updates, please check www.daktronics.com before proceeding.

Outdoor Cleaning Method

Note: Do not use this method on indoor displays.

Using only deionized (DI) water without a cleaner is not recommended, as it does not remove oils and provides inadequate results.

Cleaning Supplies

- Five-gallon [20-liter] bucket
- Car wash concentrate (not a wash and wax):
 - Armor All® car wash concentrate (1:128 soap-to-water ratio)
 - Crystal Simple Green® car wash concentrate (1:30 soap-to-water ratio)
 - Rain-X® high-foaming car wash concentrate (1:128 soap-to-water ratio)
- Cold, relatively soft water (potable, municipal tap water)
- Soft, automotive-washing bristle brush: 4-8' [1-2 m] telescoping handle and a 10"-wide [25 cm] soft-to-medium-head brush with 4" [10 cm] light-to-medium rigidity bristles
 - Detailer's Choice® tri-level flow-through brush with 6' [2 m] handle (Walmart® item #4B360)
 - Ettore® Extend-a-Flo flow-thru wash brush with 6' [2 m] handle (Do-It Best Center item #59072)
 - TOUGH GUY® aluminum flow-through brush with 70" [2 m] handle (Grainger item #491R25)
 - Soft-bristle scrub brush with 42-72" [1-2 m] handle (McMaster-Carr item #6140T41)

If more detailed cleaning is required, a TOUGH GUY® scrub brush with 8" handle (Grainger item #1DU76) can be used.

Note: Do not use car wash and wax concentrates (wax leaves residue on LEDs), deck brushes (bristles damage LEDs and louvers, spotting-agent rinses (chemicals leave residue on LEDs), or power washers (high pressure damages LEDs and louvers).

Cleaning Process

1. Turn off power to the display.
2. Mix the car wash concentrate and cold water in the five-gallon [20-liter] bucket at the manufacturer's recommended concentration for general cleaning.
3. Dip the brush in the soapy water.

4. Use horizontal brush strokes to loosen and remove dirt and grime on the display, washing from top-to-bottom in vertical columns. Refer to **Figure 1**. Use light pressure to avoid damaging the LEDs. Clean an area that is safely within reach from a lift or stage, and then move on to the next section of modules. Wash in small sections that can be rinsed before the soapy water dries.

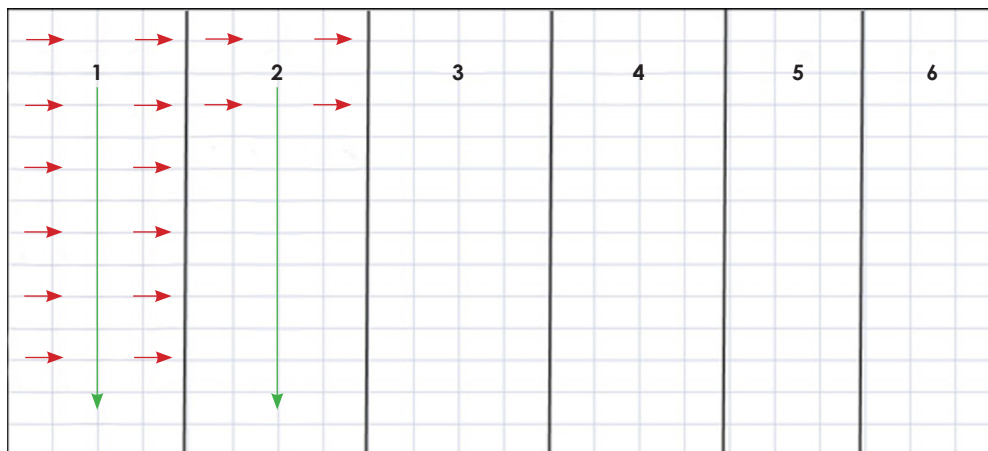


Figure 1: Wash Display Top-to-Bottom

Note: Take care not to catch the cloth on the LEDs or plastic louvers, as this may damage them.

5. Rinse the display face with a generous amount of low pressure cold water *before the soapy water dries*. Soap may dry on the display faster or slower depending on weather conditions.

Note: It is important to flush all excess soap residue off the display face with low water pressure.

6. Allow the display to air dry completely before reviewing the cleanliness.
7. Dispose any leftover soapy water in an environmentally safe manner.

Indoor Cleaning Method

Dry Indoor Method

Cleaning Supplies

Note: Do not use chemicals or solvents.

- Automotive dusting brush or other dusting-type cloth/mop without border (cut off if present) or loops: lint-free with a very short or non-existent pile similar to velour, microsuede, or velvet
 - California Car Duster® dust mop (not recommended for 4 mm pitch displays or smaller)
 - MoozikPro polishing cloth (Amazon® item #10766752 - preferred cloth)
 - Microfiber polishing wipe (McMaster-Carr item #7716T3)
 - Microfiber suede polishing cloth (Zoro® item #G7118419)

Cleaning Process

1. Wipe the display face horizontally with the duster, using light pressure to prevent LED damage. Horizontal strokes follow the path of the LEDs and are best for removing dirt. It may take several passes to remove all dust and grime.
2. Shake out or replace the duster as needed to maintain effectiveness.

Wet Indoor Method

Module masks can accumulate grime and grease during installation, which can greatly reduce image quality. To ensure premium performance, follow the steps in this section.

Cleaning Supplies

- 99% isopropyl rubbing alcohol
- Soft, smooth cloth without a border (cut off if present) or loops: lint-free with a very short or non-existent pile similar to velour, microsuede, or velvet
 - MoozikPro polishing cloth (Amazon® item #10766752 - preferred cloth)
 - Microfiber suede cloth (Microfiber Wholesale item #MSC1414)
 - Microfiber suede polishing cloth (Zoro® item #G7118419)

Cleaning Process

1. Turn off power to the display.
2. Pour isopropyl rubbing alcohol into a squirt bottle and squirt the microfiber cloth twice to moisten it. Refer to **Figure 2**.

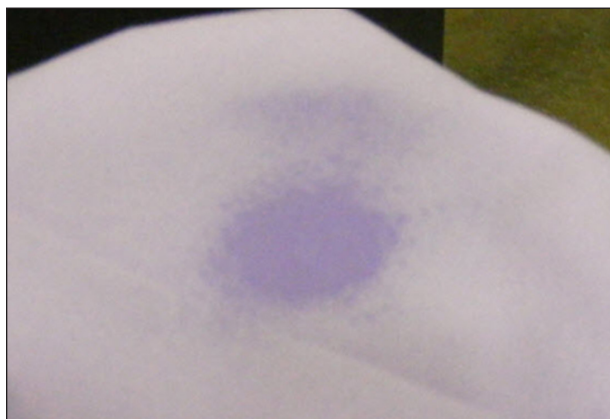


Figure 2: Moisten Cloth

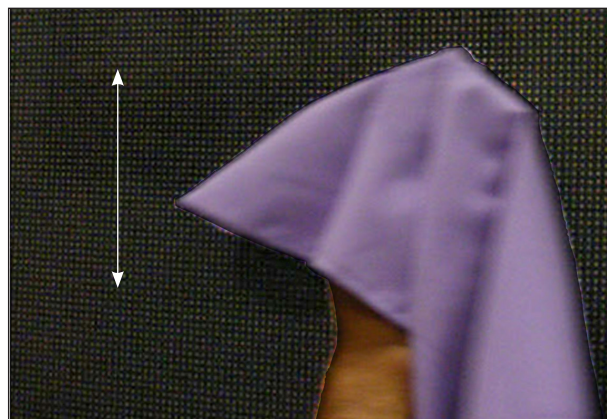


Figure 3: Wipe Module Up-and-Down

3. Apply light, even pressure with two or three fingers and steadily wipe the module in an up-and-down motion, covering about 1" of width with each wipe. Refer to **Figure 3**.

4. Repeat **Step 2** and **Step 3** in a left-to-right motion. Refer to **Figure 4**.

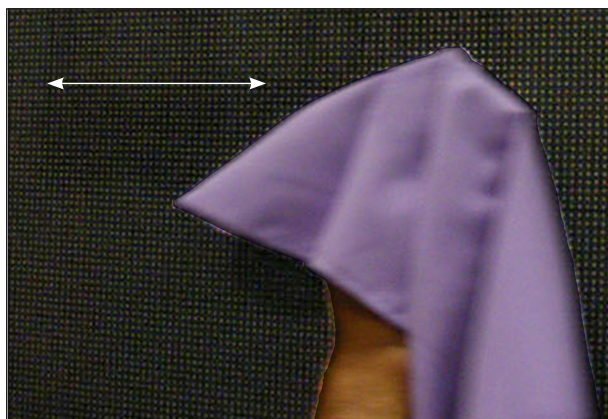


Figure 4: Wipe Module Left and Right

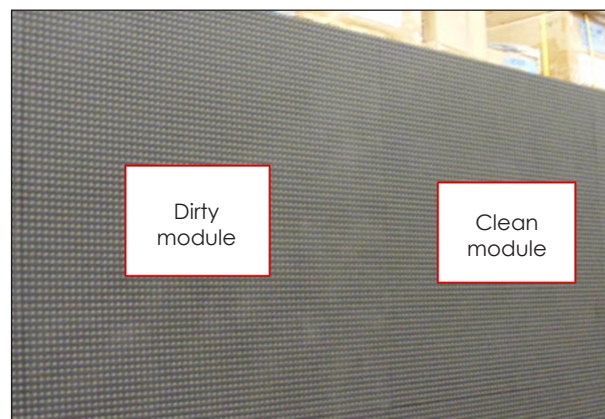


Figure 5: Examine Display

Note: Never wipe diagonally and be careful not to snag or catch the cloth on the corners of the LEDs.

5. Examine the display and touch up areas as needed. Refer to **Figure 5**.

Spray Paint Removal

If a display has been spray painted, inadvertently or as an act of vandalism, there are two options for removing spray paint: a soft cloth with isopropyl alcohol (IPA) or a soft cloth with ethanol.

Note: Use the IPA method first. Do not wipe the surface hard or use strong chemical materials that can cause damage to the LEDs.

1. Use IPA and a soft cloth to gently wipe the painted surface and then gently wipe the surface again.
2. Use a clean cloth dipped in pure water to gently wipe the surface.

Metal Dust Removal

If ferrous particles are stuck to magnet locations on the face of the module, follow the steps in this section.

1. Wrap a handheld magnet in a towel.
2. Hold the magnet in a towel and slowly and gently pass the magnet over the affected surfaces, picking up metal shavings and dust from the module.

Note: Keep the magnet from touching the module face to prevent damage to the LEDs or module mask.

3. Hold the towel over a waste receptacle and remove the magnet from the towel. Shake out the towel to discard particles. Refer to **Figure 6**.



Figure 6: Magnetic Dust

Cleaning Cured Gel from SMT LEDs

During the gel potting process that waterproofs modules, gel can overflow onto the LED surface. This can cause visual problems with the modules. Cured gel on the surface of an LED appears as a rubbery, slightly off-color film, as shown in **Figure 7**.

Note: Refer to **DD2641273** for cleaning through-hole LEDs with cured gel.

Cleaning Supplies

A soft, rough rubber block known as an adhesive eraser or sandpaper cleaner is required to remove this gel, see **Figure 8**. Many different sizes are available online and from local stores. The following are acceptable examples of this type of rubber block:

1. Amazon.com: Crafters Toolkit Glue & Residue Eraser #CT218
2. McMaster.com: Hand-Held Sanding Abrasive Cleaner #4836A32
3. Zoro.com: Xyron Adhesive Eraser, 2"x2" #G6513777

Note: Excess contact with the painted surface of the module can remove paint from the blades, causing visual contrast issues. To avoid damaging the blades, trim or chamfer the block with a scissors as necessary to fit between the louver blades.

Cleaning Process

1. Modify the rubber block as necessary to prevent contact with the louver blades.
2. Drag the rubber block across the top of a horizontal row of LEDs in long smooth strokes, as shown in **Figure 9**. Take care not to rip the LEDs off the module.
3. Repeat until the gel peels off the surface of the LEDs.
4. Once the gel is removed from the LEDs, clean the entire display as instructed in **Outdoor Cleaning Method (p.1)** to return the display to a uniform state.

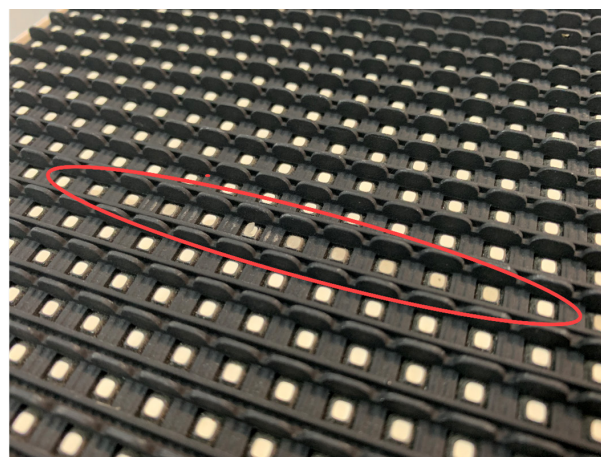


Figure 7: Cured gel on the LED surface.

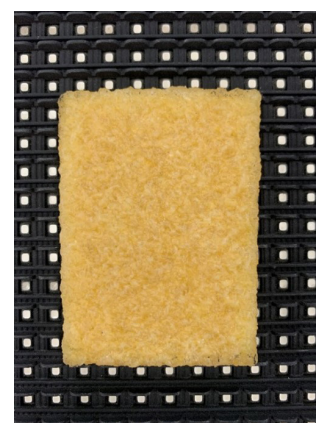


Figure 8: Adhesive eraser

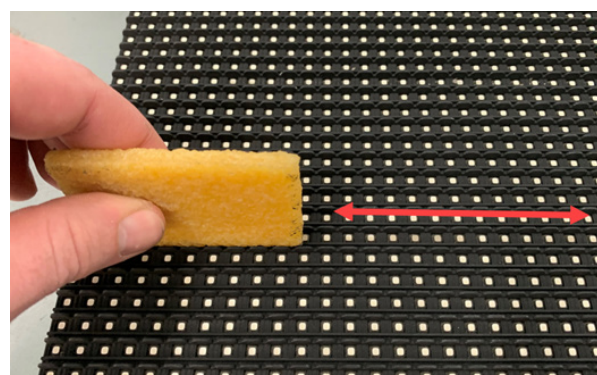


Figure 9: Modified adhesive eraser