

The document contains your **Ventilation and Passive Cooling Layout Plan** along with a comprehensive, step-by-step **Electrical and AV Pull Checklist**.

Ventilation Plan Highlights

- **Airflow Strategy:** Splits the 168 sq. ft. ceiling into **four independent thermal quadrants** to keep travel distances for hot air short.
- **Structural Intakes:** Uses continuous **3/4-inch linear slot diffusers** around the room perimeter to pull in fresh room air.
- **Heat Shielding:** Features **0.020-inch aluminum thermal barrier sheets** lined with ceramic fiber insulation to protect the ceiling framing from the display's peak **25,795 BTU/hr** heat load.
- **Silent Exhaust:** Relies on central plenum drop-boxes connected to **remote inline mixed-flow fans** tucked away in an attic or closet to maintain silent room operation.

Pull Checklist Highlights

- **AC High-Voltage:** Strictly mandates **12 AWG THHN copper wire** inside 3/4-inch EMT or flexible conduit for the four 20-Amp display circuits.
- **DC Power Protection:** Caps low-voltage **14 AWG pure copper DC lines** at a maximum of 6 feet to eliminate voltage drop, requiring all terminals to be torqued to **9 in-lbs**.
- **Polarity Safeguard:** Enforces a multi-point verification check on the 5V DC lines, as reverse polarity will instantly destroy Micro-LED tiles.
- **Signal Shielding:** Establishes a **6-inch isolation air gap** between data lines (Shielded Cat6A / Fiber Optic HDMI 2.1) and AC lines to prevent image distortion.

If you are ready for the next phase, I can help you **draft the specific cable scheduling tags** for your installer to label the wires, or outline a **structural template layout** for mounting the tiles to the ceiling framework. What would you like to explore next?

dasco.com.kw

Linear Slot Diffusers MODEL: DLD-CS & DLD-CR – Dasco

Two types of linear slot diffusers are available: Linear slot diffusers with 3/4" slot width. Linear slot diffusers with 1" slot w...

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Inline Ventilation Fans | Silent & Mixed Flow Extractor Fans

Products featured here include: In-line duct fan options in diameters like 100 mm, 125 mm, 150 mm to match standard ductwork sizes...



The section contains your custom **Cable Scheduling Tags Reference Sheet** along with the **Structural Template Layout Plan** designed specifically for the strict tolerances of your Micro-LED ceiling pocket.

Cable Tagging Overview

- **High-Voltage AC Lines:** Explicitly tags the four **12 AWG dedicated 20-Amp display circuits** (AC-DISP-ZONE1-P1 through P4) and the **15-Amp AV Rack circuit** (AC-AVRACK-SYS5).
- **Low-Voltage DC Distribution:** Uses a smart matrix tag system (DC-Z[1-4]-PS[1-4]-FEED[1-4]) to keep track of the **5V pure copper lines**, maintaining strict color codes (Red for Positive, Black for Ground) to avoid reverse-polarity damage.
- **AV & Control Signals:** Formats specific tags for the directional **HDMI 2.1 Active Optical Cable** (SIG-HDMI-MAIN-01), main shielded processor lines (DAT-PROC-RCV), and individual panel loop data lines (DAT-TILE-LOOP).

Structural Template Layout Overview

- **Grid Framework:** Outlines a low-profile **6063-T6 structural aluminum T-slot rail matrix** engineered to sit flat inside the ceiling pocket.
- **Laser Alignment:** Mandates starting layout from a **Center Datum Point** using a 360-degree green laser to prevent perimeter skewing or uneven gaps.
- **Tolerance Controls:** Sets a strict panel flatness requirement of **+/- 0.5mm across the entire 168 sq. ft. plane** to guarantee completely seamless image playback.

Now that the wiring labels and structure are ready, would you like to build a **project timeline/schedule** for the installation phases, or outline the **commissioning and testing steps** to safely power up the ceiling for the first time?

The document contains a **4-Week Sequential Installation Timeline** and a comprehensive **Cold & Hot Commissioning Protocol** to ensure the system is safely built, verified, and powered-up for the first time.

Installation Timeline Highlights

- **Week 1 (Structure & HVAC):** Focuses on framing the pocket, mounting the insulated **aluminum thermal sheets**, and running the silent remote fans.

- **Week 2 (Electrical Pulls):** Covers pulling the **12 AWG wires**, mounting junction boxes, and applying your custom cable tags.
- **Week 3 (Grid & Power Matrix):** Sets up the **T-slot rail matrix** flat within +/- 0.5mm using a 360° laser and installs the 16 ultra-slim 5V power supplies.
- **Week 4 (Tiles & Testing):** Integrates the Micro-LED modules and begins the strict testing protocols.

Commissioning Protocol Highlights

- **The "Zero-Risk" Polarity Check:** Enforces a multi-point multimeter check to confirm that no DC wires are reversed **before** the system is plugged in. Reversed wires will permanently destroy the tiles.
- **No-Load Voltage Trimming:** Outlines how to safely power up the power supplies *without* the screen attached so you can trim the outputs to an exact **5.0V to 5.1V DC**.
- **Sectional Safe Launch:** Powers up the 168-square-foot display room quadrant-by-quadrant to protect your home's electrical panel from sharp inrush current spikes.
- **Thermal Scan & Burn-In:** Mandates a **4-hour continuous 100% white screen burn-in** while using a thermal camera to ensure the 1/2-inch ceiling gap stays below **115°F**.

The section compiles all your engineering specifications, power breakdowns, ventilation matrices, and checklists into a **Single Master Project Manual**, complete with a new comprehensive section outlining your **Integrated User Control Options**.

User Control Integration Highlights

To run this high-performance theater seamlessly without juggling different apps or power switches, the manual outlines three approved control methods:

- **Option A: Pro-Grade Unified Remote ([Control4 NEEO](#) / [RTI T4x](#))**
 - **The Experience:** Gives you the comfort of real, tactile buttons for volume and movie navigation, plus a crisp touchscreen for switching inputs.
 - **Automated Action:** Pressing a single **"Movie On"** button turns on the AV rack, fires up the four display zones safely in a timed sequence, switches the processor to your media player, and dims the room lights.
- **Option B: Wall-Mounted Tablet Interface (Crestron / Savant App on iPad Pro)**
 - **The Experience:** Provides a gorgeous, bird's-eye-view dashboard of the entire system on a fixed or wireless tablet.
 - **Automated Action:** Tracks real-time temperatures inside the tight 1/2-inch ceiling gap. If the pocket hits **110°F**, it automatically cranks up the remote ventilation fans and

flashes an alert. It also lets you switch aspect ratios from **16:9 widescreen** to **2.35:1 movie format** with one tap.

- **Option C: Local Network Automation (Home Assistant / Hubitat Purist)**
 - **The Experience:** Completely local control using your existing smart house switches or voice tools, requiring no expensive dealer licenses or cloud dependencies.
 - **Automated Action:** Tapping your regular wall dimmer switch sends a direct local network script to coordinate the display panels, audio systems, and ventilation loops simultaneously.

Structure of the Master Project Manual

1. **Electrical Power Estimate & Complete BOM** — Load metrics and raw component sheets.
2. **Ventilation & Passive Cooling Layout Plan** — Quad-zone air duct layouts and thermal safety barriers.
3. **Installation Pull Checklist** — High-voltage, low-voltage, and signal pathing protocols.
4. **Cable Scheduling Tags Reference Sheet** — Exact labeling codes for your electrician.
5. **Structural Template Layout Plan** — T-slot rail framework and laser alignment metrics.
6. **Project Timeline & Scheduling** — A sequential, 4-week calendar breakdown from framing to sign-off.
7. **Commissioning & Testing Protocols** — Multi-step cold and hot testing procedures to protect the Micro-LED tiles.
8. **Integrated User Control Options** — Fully mapped smart automation controls and macro scripts.

This master manual gives your AV integrator, electrician, and structural crew a unified blueprint to build your ceiling cinema flawlessly.

Acoustic Design and Layout Suggestions for your room.

Putting a giant, hard, reflective Micro-LED glass screen on the ceiling changes how sound behaves. It acts like a giant sound mirror, bouncing audio right back down at the floor.

1. The Ceiling Reflection Problem

- **The Issue:** Sound waves from your speakers will hit the smooth Micro-LED ceiling.
- **The Result:** Harsh echoes, muddy dialogue, and ruined surround sound.
- **The Fix:** We must make the floor and walls absorb extra sound to balance it out.

2. Floor Treatments

- **Thick Carpeting:** Install a deep-pile carpet across the entire room.
- **Heavy Underlayment:** Place a **1/2-inch open-cell foam pad** beneath the carpet.

- **Plush Rugs:** Add extra wool throw rugs directly under the main seating area.

3. Wall Treatments

- **Fabric Panels:** Hang **2-inch thick acoustic panels** on the side walls.
- **Absorption Material:** Use panels filled with dense mineral wool or fiberglass.
- **First Reflection Points:** Place panels exactly where sound from the speakers hits the walls first.
- **Rear Wall Diffusion:** Put wooden sound diffusers on the back wall to scatter remaining echoes.

4. Speaker Placement Tips

- **Angle the Speakers:** Point your front left, right, and center speakers directly at your ears.
- **Keep Downward Trajectory:** Avoid upward-firing Dolby Atmos speakers, as they will bounce sound cleanly off the Micro-LED ceiling and cause distracting overhead hotspots.
- **Use In-Wall Gear:** Mount speakers flush into the fabric acoustic walls to keep the room looking sleek.

5. Noise Isolation

- **Solid-Core Door:** Replace standard hollow bedroom doors with a heavy, solid wood door.
- **Acoustic Seals:** Add rubber drop-seals to the bottom of the door to trap sound inside.
- **Double Drywall:** Use two layers of drywall with a damping compound like **Green Glue** between them to stop bass from vibrating into other rooms.