

## Custom LED Lighting Installation Instructions

**For technical support** at any time during the installation, please call us toll free at 866-759-3228. We want your installation to go as smoothly as possible. Thank you for choosing The Sky Factory.

- All LED light panels must be carried by hanger wire. There are no end caps. End caps create light banding in the image. Refer to local codes for hanger wire size.
- Install the LED light panels prior to installing perimeter, grid and The Sky Factory Elevators and SkyTiles.
- Install the hanger wire for the grid before installing the light panels. See Step 1, Point 8; Grid Plan GR1; and Step 3 of "Circular LED Luminous SkyCeiling Installation Instructions" or "LED Rectilinear SkyCeiling With Perimeter Angle Installation Instructions."
- Preferred height for LED light panels is 10" – 12" (25.4 - 30.5cm) above the bottom of the grid, 8" (20.3cm) minimum. See Grid Detail DE2.

### See Supporting Documents:

- Drawings GR1, BP1, EL1, EL2, EL3, EL4, DE2 and DE3-4 included with " Circular LED Luminous SkyCeiling Installation Instructions" or "Rectilinear LED Luminous SkyCeiling With Perimeter Angle Installation Instructions" ;
- "The Sky Factory 24 V DC Power System With Dimmer Option"; and,
- "Custom LED Lighting Electrical Drawing Packet" (which includes wiring diagrams EL000407, EL000651, EL000364, EL000409, EL000408, Fuse Chart, dimmer assembly EL000195, and a Wire Sizing Chart.

## Step 1: Installing the LED Light Panels

1. Each panel has multiple sets of holes to receive hanger wire. (In seismic installations, these holes will also receive the seismic cables from the elevators.)
2. Locate each light panel following drawings BP1 and EL1. The panels are labeled on the bottom. The label on the bottom is oriented to match drawing EL1.

### IMPORTANT:

**GR1, BP1 AND EL2 ARE REFLECTED CEILING PLANS.  
THE VIEW IS SHOWN LOOKING DOWN FROM ABOVE THE CEILING.**

**EL1 IS LOOKING UP AT THE CEILING FROM BELOW.**

3. All light panels are specifically arranged in **Branch Circuits**. Each branch circuit may be arranged in rows or clusters, depending on the installation. See EL1 and EL2.
4. The panels in each branch circuit are connected (wired) together with **Power Cables**. Each Power Cable goes to a specific sequence of light panels and is labeled accordingly. See EL2, EL3 and Step 2 for Power Cable details.
5. **Light panels must be hung so the electrical connectors on the panels line up with the Power Cables**, as shown in EL1, EL2 and EL3.
6. Light panels must be hung **10" – 12" (25.4cm - 30.5cm) above the bottom of the grid, 8" (20.3cm) minimum**, and must sit **in the same plane** to keep light leaks at a minimum. See BP1 and DE1.
7. **All light panels must be centered directly over their prospective grid openings** for proper lighting of the image. (All straight edges are 1/16" (1.6mm) less than center of corresponding grid; all curved edges are 3/4" (19mm) greater than the inside diameter of corresponding perimeter angle.)
8. **All grid hanger wire must be centered directly over their prospective runners (mains) so it does not force a panel off center.** The panels are designed to have a 1/8" (3.2mm) gap between them for the grid hanger wire to pass through.

## Step 2: Wiring the LED Light Panels

See drawings EL1, EL2, EL3 and EL4.

**IMPORTANT:**  
**The LED light fixtures are DC ONLY.**  
**AC voltage by-passing the power supplies**  
**and connected directly to the light fixtures**  
**will destroy the LED's.**

1. **Pre-fabricated Power Cables** are manufactured and provided specifically for each branch circuit. In some installations, a branch circuit requires a primary and secondary Power Cable.
2. The primary Power Cable has one connector for each light box in its branch plus a 2 Position Luminaire Disconnect.
3. If a secondary Power Cable is also required, the primary Power Cable will also have a connector to receive the secondary Power Cable.
4. Each Power Cable is labeled accordingly. For example, PC-1A = PC (Power Cable), 1 (Branch Circuit), and A (Primary). Where a secondary Power Cable is required, B will denote the secondary cable, as in PC-1B.
5. The **connectors are polarized and have mating halves** on the light boxes. When the mating halves are fully inserted and lock together, you will hear a distinctive “click”. To unplug them, depress the latching lever and pull apart.
6. Power Cables run on top of LED back pans. See EL2 for specific routes. **Do not run power cables under back pans unless ceiling height prohibits room for connectors on top.**

### **If power cables must be run under back pans:**

- The back pan connectors can be relocated on the bottom of the pan. However, they must be firmly attached so they don't hang down and break loose from the LED bars and/or obstruct the lighting.
- Power cables must be firmly secured to the back pans so they don't hang down.
- Power cables must not be routed over and obstruct any of the LED strips.

7. **Power is connected to the yellow Luminaire Disconnect with Push-In style connections using either solid or stranded 12 – 16 AWG wire.**
  - a. **Red Wire is DC positive (+) and connects to position number “1” in the Luminaire Disconnect. Note: the connector color for position No. 1 is Black.**
  - b. **Black Wire is DC negative (-) and connects to position number “2” in the Luminaire Disconnect. Note: the connector color for position No. 2 is White.**

### **Step 3: Wiring the LED Light Panels to the Power System**

See drawings EL000407 and EL000651. For MRI applications where an RF filter is required, also see "Step 5: Wiring the Power System in MRI Applications"

1. Power Cable(s) are connected directly to the Power System with wire provided by others.
2. **Each Power System has up to four Branch Circuits.**
  - a. **In Non-Dimmable Systems, each branch is 270 Watts Maximum.** See "The Sky Factory 24 V DC Power System With Dimmer Option" and wiring diagram EL000407 included.
  - b. **In Dimmable Systems, each branch is 250 Watts Maximum.** See "The Sky Factory 24 V DC Power System With Dimmer Option" and wiring diagram EL000364 included.
3. **Wire from Power Cable to Power System branch circuit is polarized, "+" to "+" and "-" to "-".** Voltage drop will occur over long distances. See the attached Wire Sizing Chart for appropriate lengths and gauges.
4. Branch circuit terminal block on Power System accepts wire sizes #10 - #22 AWG.

## Step 4: Wiring the Power System

See drawings EL000407, EL000651, EL000364, EL000195, Fuse Chart and Wire Sizing Chart.

1. Power System enclosure must have a minimum of 12" (30.5cm) clearance for adequate air flow for proper cooling and the screens must be inspected regularly for dust accumulation.
2. **Connect AC line voltage to appropriate terminals on Power System – "L" (Line), "N" (Neutral) and "G" (Ground).** AC terminal block on Power System accepts wire sizes #8 - #18 AWG.
3. **For non-dimmable systems, AC line voltage must have an On/Off switch. For dimmable systems, On/Off switch is optional.**
4. **External fuse in AC line is required.** When using multiple Power Systems, **each Power System must have a dedicated, fused AC circuit:**

**AC LINE FUSE MUST BE LESS THAN OR EQUAL TO INTERNAL POWER SYSTEM FUSE.  
SEE FUSE CHART FOR SIZING.**

### 5. For Dimming Systems Only:

- a. Connect dimmer to primary Power System with 16 – 22 AWG low voltage wire. (See drawing EL000195 for dimmer assembly details.)
  - i. Dimmer **BRT**(Bright) to Power System **BRIGHT**
  - ii. Dimmer **COM**(Common) to Power System **WIPER**
  - iii. Dimmer **DIM**(Dimmer) to Power System **DIM**
  - iv. See drawing EL000651 for Power System details.
  - v. See "c." below for multiple Power Systems.
- b. Install the switch/dimmer control in a standard wall box. Wiring and box for the switch/dimmer control provided by others.
- c. **When operating multiple Power Systems with one dimmer:**
  - i. Run **three wires** from dimmer to primary Power System as in "a." above.
  - ii. Run **two wires** from primary Power System to additional Power Systems: **DIM to DIM** and **WIPER to WIPER**.
  - iii. See EL000364.

## Step 5: Wiring the Power System in MRI Applications

See drawings EL000408 and EL000409 for details.

**IN MRI APPLICATIONS, AN RF FILTER IS REQUIRED  
AND WILL BE SUPPLIED BY OTHERS.**

1. Power System must be located outside of shielded room in MRI applications.
2. To use one filter per Power System:
  - a. Inside the RF filter and on the Input side:
    - i. Connect **all positive**, or "+", legs of the branch circuits from the Power System to **one leg** of the RF filter.
    - ii. Connect **all negative**, or "-", legs of the branch circuits from the Power System to **the other leg** of the RF filter.
  - b. Inside the RF filter and on the Output side:
    - i. Connect **the positive**, or "+", leg of each branch circuit from the SkyCeiling to a 10 amp in-line fuse and then connect them to the leg of the RF filter which corresponds to the **positive input**.
    - ii. Connect **the negative**, or "-", leg of each branch circuit from the SkyCeiling to a 10 amp in-line fuse and then connect them to the leg of the RF filter which corresponds to the **negative input**.

## Step 6: Checking the Polarity

**CHECK** the polarity and **MAKE SURE** that the **Red wire from the light panels is connected to the "+" terminals** of the power system and the **Black wire from the light panels is connected to the "-" terminals** of the power system. If the system is wired backwards, it will not light up.