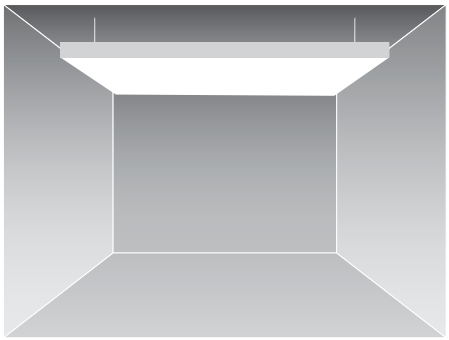
COOLEDGE™

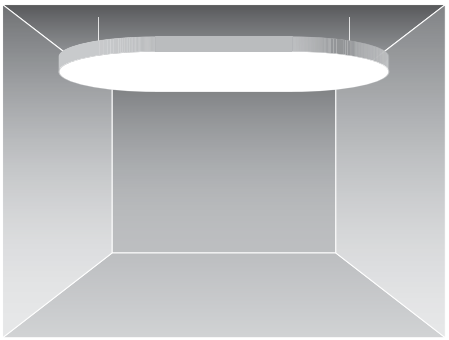
SkySpan

Suspended Mount: Design & Installation Overview

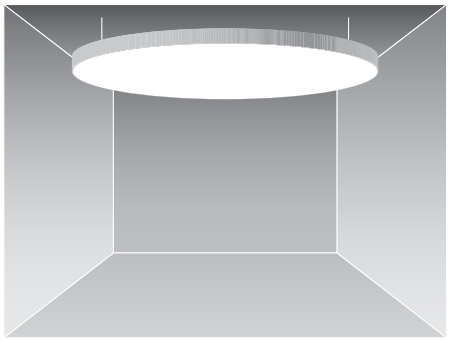
SYSTEM OVERVIEW



RECTANGLES



CURVED CORNERS



CIRCLES

DESCRIPTION

Cooledge SkySpan Suspended Mount systems deliver superior quality illumination on an unprecedented scale combined with exceptional sound absorption to reduce noise, creating luminous ceilings that bring the feeling of the calming outdoors to interior spaces.

Cooledge SkySpan products are integrated solutions that include the lighting system, mounting hardware, woven polyester fabric diffuser AND installation of the fabric diffusers and mechanical components by a Cooledge certified installer in collaboration with the general contractor.

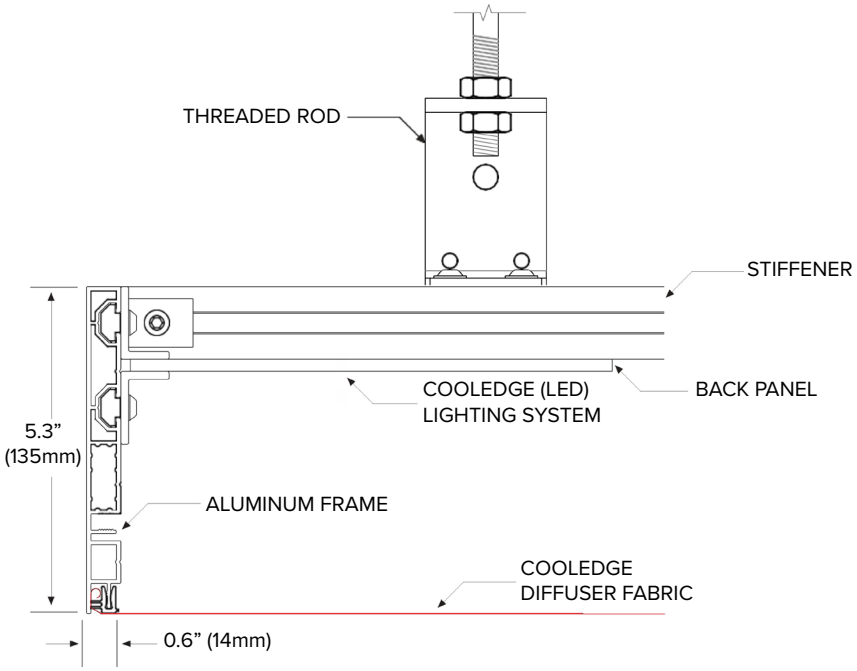
SPECIFICATION HIGHLIGHTS

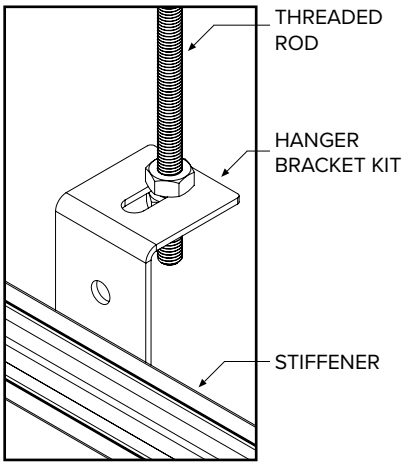
Mounting Type	**Suspended – Threaded Rod, Aircraft Cable**
Diffuser Materials	Woven Polyester Fabric Standard (other options available)
Maximum Seamless Dimensions	15.5ft (4.7m) x 161ft (49m) (WxL)
Light Output Options	7 Constant Flux Options (Build-To-Order available)
Color Temperature (CCT)	5 CCT Options plus Tunable White (3 tunable ranges available)
Color Rendering Index (CRI)	90+
Frame Height	5.3in (135mm)
Minimum Bend Radius	Minimum 15in (380mm)
Average Weight	10’ x 10’ = 1.2lb/sqft/(3m x 3m = 5.9 kg/m^2)

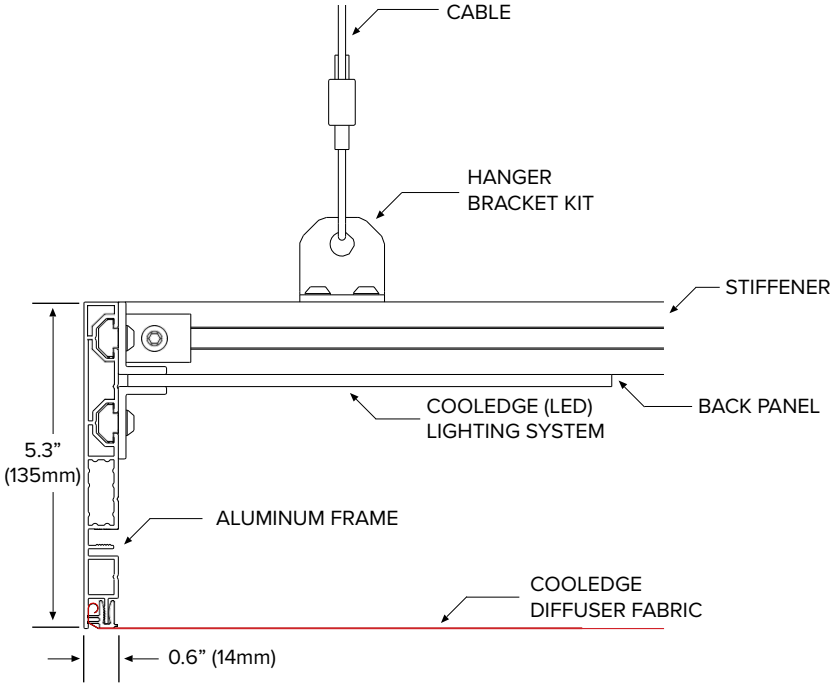
FEATURES

– **Immersive Illumination:** A large luminous surface delivers a surprising amount of illumination without visual discomfort
– **Curves & Rounds:** A bendable profile allows curved shapes, rounded corners and circles with radii down to 15” (380mm)
– **Adaptable:** Choice of tunable white, dim-to-warm, W+RGB or static color temperature
– **Code Friendly:** Fire-rated polyester fabric and a fully certified lighting system eliminate inspection challenges
– **Acoustic Performance:** Exceptional sound absorption eliminates the need for acoustic baffles or clouds in open plan spaces

MOUNTING DETAILS & INTERFACES WITH BUILDING STRUCTURE







Cooledge SkySpan includes the illumination source, aluminum frame profiles, diffuser fabric, and installation of all non-electrical components

For additional details, please refer to the Site Preparation Requirements section

GENERAL INSTALLATION OVERVIEW

RESPONSIBILITIES

- **General Contractor**: Installation of the mounting structure (Unistrut, ceiling anchors, etc.) for designated hanging hardware, specifically threaded rod (or in some cases, aircraft cable). Installation of the hanging hardware.
- **Electrical Contractor:** Installation of all high voltage mains wiring. Installation of COOLEDGE Lighting System including TILEs, T-Cables, Control Modules, Power Supplies and all associated low voltage wiring when required by project. Installation of threaded rod (or in some cases, aircraft cable) for mounting when not in scope for General Contractor.
- **COOLEDGE Installers:** Installation of COOLEDGE SkySpan Suspended Mount System (aluminum frame, backing material and fabric), as well as COOLEDGE Lighting System when not in scope for Electrical Contractor.

PRIOR TO COOLEDGE INSTALLATION

- To initiate the SkySpan Suspended Mount installation process, our project management team will reach out directly to a designated site contact to begin preparation for an efficient and successful installation. It is imperative that communication begins as soon as possible. There are several documents that we share to help ensure accurate communication with regard to site readiness, project scope and timeline.
- Prior to the installation of the SkySpan Suspended Mount System (the first installation being the frame), the General Contractor must install the mounting structure for the hanging hardware.
- Once the mounting structure is installed, the General Contractor (or in some cases, Electrical Contractor) must install the hanging hardware to it. The hanging hardware must consist of threaded rod (or in some cases, aircraft cable) and the associated fasteners, arranged to match dimensions on the signed submittal. This will facilitate COOLEDGE to attach the frame to the ceiling on the first installation date.
- The Electrical Contractor must pull low voltage wiring as shown in the provided lighting layout to the Suspended assembly (top entry is required). Wire gauge will be determined by the distance from the COOLEDGE Control Modules to the TILE (LED light sheet) rows within the Suspended assembly. Our TILE Lighting System will typically ship to the job site first and will be received and controlled by the Electrical Contractor. Once the material has been inventoried, COOLEDGE and the Electrical Contractor will review installation procedures and testing protocols specific to the installation. Coordination between our team and the Electrical Contractor is critical to success, so we ensure that all installation and testing procedures for the lighting system are clear and well understood by the electricians in the field.
- If there are any questions or concerns that arise during installation, the COOLEDGE Project Management Team is available to assist.

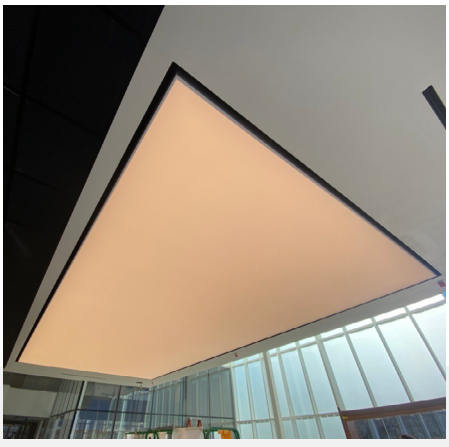
THREADED ROD

SUSPENDED MOUNT SKYSPAN INSTALLATION BY COOLEDGE

- The COOLEDGE SkySpan Suspended Mount System will typically ship to the job site following the Lighting System. The SkySpan Suspended Mount System ships on a large pallet in order to accommodate the diffuser fabric roll, which can be up to 16.5’ (5m) long, depending on the size of the fixture. Also included in this shipment are the aluminum frames, back panels and hardware. This material should be stored in a safe, dry location.
- The hanging hardware must be in place and installed according to the submittal drawings. Once the site is ready for the frame to be installed, COOLEDGE will schedule an Installation Team to construct the frame and back panels. At this point the Pre-Installation Questionnaire must be filled out. Please note the Installation Team will require the use of lifts, ladders or rolling scaffold to be provided by the site on every installation date.
- Installation dates should be scheduled at least 4 weeks in advance – in some circumstances, COOLEDGE can accommodate a minimum 2 weeks – with our Project Management Team. Once the frame and back panels are installed, the Electrical Contractor can begin to install and test the TILE Lighting System, and a tentative fabric installation date can be set.
- Once the TILE Lighting System has been installed and tested the Electrical Contractor will confirm the fabric installation date with COOLEDGE and prepare and submit the Site Readiness Form.
- On the fabric installation date, the COOLEDGE Install team will arrive on site and begin their work. After quickly reviewing the installation, the team will begin installing the fabric that completes the SkySpan Suspended Mount System.
- **Alternative Option:** As an alternative, COOLEDGE can provide installation services including frame, back panels, TILE Lighting System, and fabric. In this case, COOLEDGE will manage the complete installation schedule directly with the site. The Electrical Contractor will handle installation of power supplies and control modules.
- After a final review of the installation, the Installation Team will ask for a Sign Off from the Site Contact. After completion, COOLEDGE will pass along an Operations and Maintenance Manual.

BACK PANEL INSTALLATION
(COOLEDGE)

TILE INSTALLATION
(EC or COOLEDGE)



FABRIC INSTALLATION AND
COMMISSIONING (COOLEDGE)

TYPICAL INSTALLATION SCHEDULE

Typical project lead times are 8-12 weeks from receipt of deposit and approved submittal package. The table below is a general timeline of events assuming a fixed installation date.

Upon Receipt of Deposit and Signed Submittal	Cooledge will reach out to the Site Contact to review all job related documents.
Minimum 8 Weeks from Fabric Installation	Cooledge and Site Contact confirm frame installation date, and determine tentative date for fabric installation. General Contractor installs mounting structure for threaded rod (or in some cases, aircraft cable).
Minimum 4 Weeks from Fabric Installation	General Contractor (or in some cases, Electrical Contractor) attaches hanging hardware (threaded rod, or in some cases aircraft cable) to mounting structure. Site Contact to complete Pre-Install Questionnaire.
Minimum 3 Weeks from Fabric Installation	Cooledge installs frame and back panels. Cooledge PM and Site Contact review TILE and Control Module Installation Procedures.
2 Weeks from Fabric Installation	Lighting Installation substantially complete. Testing of Lighting System to begin.
1 Week from Fabric Installation	Testing of Lighting System complete. Site Contact to complete Site Readiness Form and submit photographs of area(s).
Day of Fabric Installation	Cooledge will arrive on site and begin fabric installation. Fabric penetrations (sprinklers, etc.) must be installed prior to this date.
Cooledge Project Management will be in regular contact with the site from receipt of Signed Submittal and Deposit until installation and commissioning is complete.	

WHAT IS INCLUDED IN THE COOLEDGE PRICE?

Each project is unique and has its own specific requirements. For this reason, Cooledge will prepare a quotation on an individual basis and incorporating the particular details of the project.

Distributor Net Prices include the following:

- LED lighting system materials (LED lights, power supplies, control modules, internal wiring)
- Suspended mount mechanical materials (Fabric diffuser, aluminum frame profiles, back panels, accessories)
- Installation of the mechanical materials and final commissioning conducted during regular business hours with non-union labor.

Excluded:

- Electrical installation as required by local laws
- Alterations (if required) to the building structure
- Additional expenses incurred as a result of limited access, remote locations, local labor requirements, adjustments to frame size(s) due to field conditions, or other unusual circumstances.

WARRANTY* & POST INSTALLATION SERVICE

Details of the Cooledge Terms & Conditions are found on our website at https://www.cooledgelighting.com/resources/terms-conditions.

The following warranty applies to Cooledge SkySpan Suspended Mount systems.

- Lighting System Materials: 5 years
- Mechanical Materials: 5 years
- Mechanical Installation & Labor: 2 years

**Contact Cooledge for Extended Warranty Options*

SITE PREPARATION REQUIREMENTS

Prior to the arrival of COOLEDGE installation teams to complete installation of the Suspended Mount system including frame, back panels, and diffuser fabric, the following requirements for the site must be complete to avoid delays and extra expenses that may occur if the site is not in a suitable condition for their work.

GENERAL

- Unless indicated on the COOLEDGE Quote, the site shall provide lift, ladders, or rolling scaffold of suitable height for the use of COOLEDGE Installation Team.
- The area must be free of dust/debris that could damage or stain the diffuser fabric and work in the area that could potentially cause damage to the fabric should be substantially complete. COOLEDGE is not responsible for damage to the fabric once it is installed.
- The area immediately underneath the fixture location must be free from obstructions (when possible).
- The site is responsible for receiving and transporting all materials to the installation area.

SUSPENDED SYSTEM

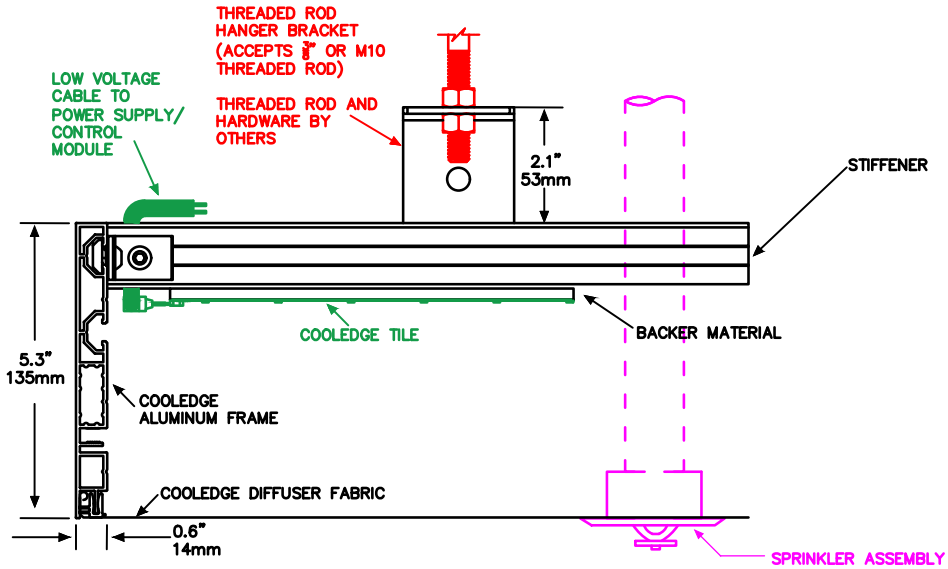
- Dimensions must match those on signed submittal.
- Hanging hardware must consist of threaded rod (or in some cases, aircraft cable) and associated fasteners.
- Mounting surface must be capable of supporting 4x fixture weight. Contact COOLEDGE for estimated fixture weight.
- Workspace must be clear of wiring and obstructions.
- COOLEDGE Power Supplies and Control Modules may be mounted atop the fixture with a kit, resulting in added weight. If mounting remotely, do not exceed the maximum remote distance. Consult the installation guides for further details.

LIGHTING SYSTEM

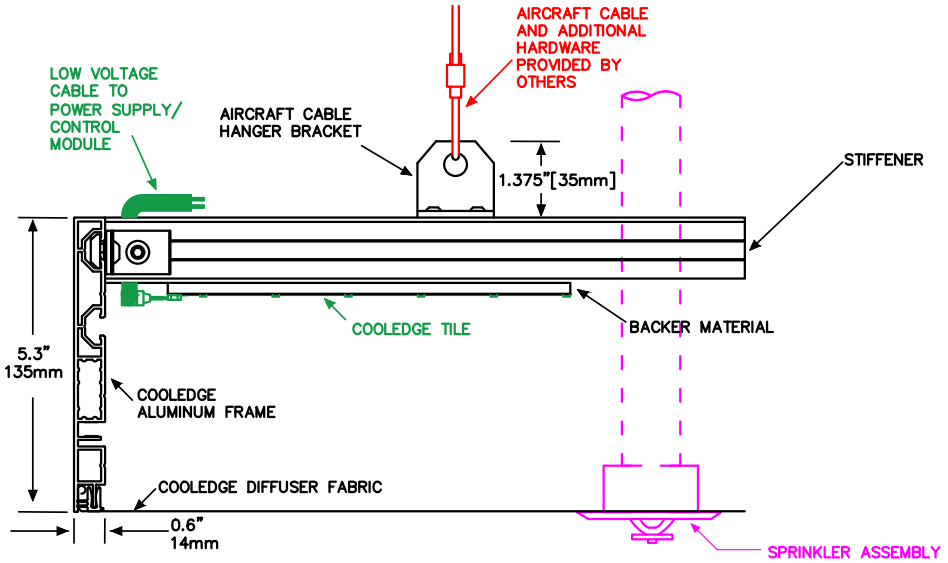
- Lighting system shall be fully operational prior to fabric installation.
- Electrical contractor shall follow the layout provided in the signed submittal or project specific installation document. Any deviation from the layout resulting in dark spots, shadows, or electrical failure is the responsibility of the electrical contractor. If you have any questions related to this, please contact your COOLEDGE Project Manager.

ADDITIONAL DETAILS

The drawings below show two (2) suspended mount configurations with recommendations for supplying the appropriate structural support and additional details for projects where sprinkler and/or other penetrations are required.



THREADED ROD



AIRCRAFT CABLE

RESPONSIBILITIES:

GENERAL CONTRACTOR (RED)

- INSTALLATION OF MOUNTING STRUCTURE FOR HANGING HARDWARE (UNISTRUT, CEILING ANCHORS). INSTALLATION OF HANGING HARDWARE (THREADED ROD, OR IN SOME CASES AIRCRAFT CABLE).

ELECTRICAL CONTRACTOR (GREEN)

- INSTALLATION OF HANGING HARDWARE IF NOT IN SCOPE FOR GENERAL CONTRACTOR. INSTALLATION OF TILES, T-CABLES, CONTROL MODULES, POWER SUPPLIES, AND ASSOCIATED HARDWARE AND CABLING.

COOLEDGE INSTALLER (BLACK)

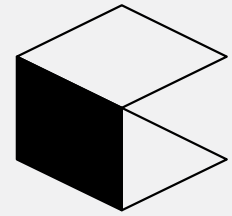
- INSTALLATION OF ALUMINUM PROFILES, FABRIC, AND BACK PANELS.

OTHER TRADES (MAGENTA)

- INSTALLATION OF SPRINKLER (OR OTHER ITEMS PENETRATING FABRIC).

PROVIDED BY COOLEDGE:

- ALUMINUM FRAME PROFILES, FABRIC, BACK PANELS AND ASSOCIATED HARDWARE FOR INSTALLATION BY COOLEDGE TEAM.
- COOLEDGE TILES, POWER SUPPLIES, CONTROL MODULES, T-CABLES, AND STARTER CABLE (ANY ADDITIONAL CABLING OR HARDWARE REQUIRED TO BE PROVIDED/INSTALLED BY ELEC. CONTRACTOR).
- DETAILED INSTALLATION DOCUMENTS.



COOLEDGE™

Appendix A

SkySpan

CSI 3-Part Specification

PRODUCT SPECIFICATIONS: COOLEDGE SKYSPAN

PART 1: GENERAL

1.1 SCOPE

A. Supply and installation of a luminous fabric ceiling or luminous fabric ceiling fixture.

1.2 REFERENCES

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
B. EN 13501-1 - Fire Classification of Construction Products and Building Elements - Part 1: Classification Using Data from Reaction to Fire Tests
C. UL 2108 Standard for Low Voltage Lighting Systems
D. UL 1598 Luminaires
E. IEC/EN 60598-1 Part 1: Luminaires General Requirements and Tests

1.3 DEFINITIONS

A. Flush Mount: a luminous fabric ceiling that is mounted such that the emitting surface is contiguous and in the same plane as the ceiling surface materials. Ie. is mounted flush with the ceiling surface.
B. Surface Mount: a luminous fabric ceiling or fabric ceiling fixture that is mounted directly to the ceiling surface materials.
C. Suspended: a luminous fabric ceiling fixture that is suspended from and mounted to the ceiling surface materials via threaded rod (or in some cases, aircraft cable).

1.4 SUBMITTALS

A. Product Data: submit product manufacturer's specification (data) sheet(s).
B. Light Quality: submit product manufacturer's light quality data as per LM-79-08 to include at a minimum: color rendering index values for R1-R15, spectral power distribution graph, and values for Rf and Rg as defined in TM-30-15.
C. Shop Drawings: submit product manufacturer's shop drawings showing at a minimum the external dimensions of the luminous ceiling or luminous ceiling fixture.

1.5 QUALIFICATIONS

A. Manufacturer must be the supplier of all components of the luminous ceiling or luminous ceiling fixture including lighting, fabric diffuser, tensioning profiles, power supplies, and control modules.
B. Manufacturer must be able to provide IES format files to enable photometric and illuminance calculations.
C. Manufacturer must, upon request, be able to provide a list of installations where its luminous ceiling products have been installed.

1.6 REGULATORY REQUIREMENTS

A. Lighting system must be UL Listed (UL2108) and CE Compliant.
B. Frame and fabric assembly must be UL Listed (UL1598).
C. Luminous ceiling assembly or fixture must be rated a minimum of ASTM E84 Class A and EN13501-1: Class B – s1, d0.
D. Luminous ceiling assembly or fixture must be RoHS compliant.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Products must be stored in manufacturer's unopened packaging until ready for installation.

1.8 WARRANTY

A. Electrical Components: limited warranty for parts and workmanship for a period of five (5) years from the shipment date.
B. Mechanical Components: limited warranty for parts and workmanship for a period of five (5) years from the shipment date.
C. Mechanical Component Installation: limited warranty for workmanship by professional installers trained in the installation techniques specific to specialty fabric ceiling installations for a period of two (2) years from the date of installation.

PART 2: PRODUCTS

2.1 MANUFACTURERS

A. Cooledge Lighting Inc.
110-13551 Commerce Parkway
Richmond, BC, Canada V6V 2L1
www.cooledgelighting.com
B. Substitutions
1. Not permitted

2.2 ELECTRICAL REQUIREMENTS

A. Input voltage to power supplies must be in the range 110-277 VAC.
B. Input frequency must be 50Hz or 60Hz.
C. Output voltage from the control modules to the lighting system must be <60 VDC.
D. Control modules must enable up to 4 drive channels of <90W each.

2.3 MATERIALS

A. LED lighting system is to be comprised of:

1. Flexible LED light panels made from a polymer substrate with tool-less snap connectors.

2. 2-conductor cables with “T” connections on 11.8” (300mm) spacing.

3. One or more control modules that enable control input signals for dimming and CCT tuning and provide up to four (4) channels of maximum 90W power per channel.

4. One or more power supplies that convert AC line voltage to <60V DC.

B. Aluminum frame profiles and sound absorbing back panels.

C. Fabric diffuser to be knitted or woven polyester or cotton.

2.4 PHOTOMETRIC PERFORMANCE

A. Luminous flux must be one of the following:

1. Flush Mount: 520, 345, 270, 175, 130, 85, or 60 lm/sqft (5580, 3710, 2900,1860, 1400, 930, 640 lm/m^2)

2. Surface Mount: 590, 395, 305, 200, 150, 100, or 65 lm/sqft (6390, 4260, 3280, 2130, 1620, 1065, or 700 lm/m^2)

3. Suspended: 590, 395, 305, 200, 150, 100, or 65 lm/sqft (6390, 4260, 3280, 2130, 1620, 1065, or 700 lm/m^2)

B. Luminous flux must not vary by more than ±10% across the emitting surface of the luminous ceiling or luminous ceiling fixture.

C. When illuminated, it must not be possible to see individual LEDs or bright spots when viewing the fabric diffuser from any angle.

D. Lumen maintenance must be a minimum of 75,000hr to 80% initial output (L80 = 75,000hr) based on IES TM-21 projection calculations.

E. For static CCT models minimum dimming level must be 0.10% of full light output.

F. For Tunable White models minimum dimming level must be 1.0% of full light output.

2.5 LIGHT QUALITY PERFORMANCE

A. Color rendering index (CRI) must be >90.

B. Nominal CCT must be one of the following: 2200K, 2700K, 3000K, 3500K, 4000K, 5700K, Tunable White 2700K-5700K or 2200-3500K, or Dim-to-Warm 3500K-2200K.

C. The R9 value must be >50.

D. Typical color uniformity must be 2 SDCM or less.

2.6 CONTROL PROTOCOLS

A. Control modules must accept at least one of the following control input protocols for dimming and/or CCT tuning: 0-10V, DALI, DMX, Casambi (wireless), or Athena (wireless).

PART 3: EXECUTION

3.1 INSTALLERS

A. Lighting system installation to be performed by (a) qualified installer(s) according to national and local codes and regulations.
B. Mechanical installation and system commissioning to be performed by professional installers approved by the manufacturer and trained in the techniques specific to installation of the products.

3.2 SITE PREPARATION

A. Ceiling Access: the area around and beneath the luminous ceiling or luminous ceiling fixtures must be clear and allow access to suitable lift equipment and all other equipment required for installation.
B. Hours of Operation: work shall take place between the hours of 0:900-17:00 (9am-5pm) on Monday to Friday. Requirements for installation to take place outside of these hours must be communicated to the manufacturer a minimum of 4 weeks prior to the work taking place.

3.3 COMMISSIONING

A. Upon completion of work, a document affirming completion of the project, signed by the owner, owner's representative or the general contractor must be submitted to the manufacturer.

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