REQUEST FOR PROPOSAL

RFP No. FY22-004
Lighting and Audio/Visual Controls Upgrade—LeGrand Center
1800 East Marion Street, Shelby, NC 28152

June 27, 2022

The LeGrand Center is the premier event venue in Shelby, NC. It specializes in everything from small business meetings held in conference rooms to weddings and social events in an expansive ballroom. It was constructed in 2010.

The lighting and audio/visual systems installed were the latest technology at the time, but now have become outdated. They are difficult to maintain and repair since replacement parts are obsolete. This makes getting parts impossible to procure.

Cleveland County will receive bids for the replacement and upgrading of the existing lighting and audio/visual systems.

A functional description of the lighting and audio/visual upgrade describes conceptually what the objectives of this project are.

The functional description also has the current system design schematic drawings as installed in 2010.

Vendors are asked to prepare a proposal that meets the intended objectives stated in the functional description. The proposed equipment must be compatible to the extent possible with the current equipment.

Vendors are invited and encouraged to schedule a tour of the LeGrand Center to see the installation and existing equipment.

If you have any project scope questions or want to schedule a site visit, please contact:

Carver Hopper
General Manager LeGrand Center
1800 East Marion, Shelby NC 28150
D: 704.669.4700
C: 704.964.2245
Email: Carver@thelegrandcenter.com

Jason Falls
Business Development Director
1800 East Marion, Shelby, NC 28150
D: 704.669.4151
C: 704.692.7998
Email: Jason.Falls@clevelandcountync.gov
ALL BIDS ARE DUE ON OR BEFORE July 21st, 2022—BY 3:00 PM.

Bids shall be submitted on the form provided below and including 3 copies of the proposal in a sealed envelope. Please email a PDF of the proposal to messieurs Carver Hopper at Carver@thelegrandcenter.com and Jason Falls at Jason.Falls@clevelandcountync.gov.

The sealed envelope shall be labeled with the project name and the bidder’s name.

Bids can be submitted by any one of the following methods:

Mail: Finance & Purchasing Department
      Attn: Tonya Brittain
      PO Box 1210,
      Shelby, NC 28151

Email: Tonya.Brittain@clevelandcountync.gov

Hand delivered: Cleveland County Administrative Building
                Finance & Purchasing Department
                Attn: Tonya Brittain
                311 E. Marion St
                Shelby, NC 28150

Cleveland County reserves the right to reject any or all bids if it is in the best interests of the County.
BID FORM
INVITATION TO BID

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1800 East Marion Street, Shelby, NC 28152

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To: Cleveland County Finance & Purchasing Department
PO Box 1210
ATTN: Tonya Brittain
311 E. Marion Street
Shelby, NC 28151

From: _________________________________ Date: _______________________
_________________________________
_________________________________
_________________________________
As the undersigned contractor, I have inspected the above referenced site and understand the extent and character of the work to be completed as described in the Invitation to Bid.

I propose to furnish all labor and equipment necessary to accomplish all work as described in the Request for Proposal.

- Material and Equipment Costs: $ ___________________
- Labor Costs: $ ___________________
- Total Project Costs: $ ___________________

I agree to the attached Terms & Conditions and will complete all work within 60 days of receipt of the Notice to Proceed.

___________________________________  Company Address Line 1
Signature

___________________________________  Company Address Line 2
Print Name

___________________________________  Work Phone
Contractor’s License Number

___________________________________  Cell Phone
Expiration Date

___________________________________  Email
Company Name
SERVICE CONTRACT AND INDEMNITY AGREEMENT

County of Cleveland, North Carolina (hereinafter “County”) agrees to secure the services of the company or individual (hereinafter “Contractor”) indicated in the signature section below to provide labor for a particular job or services of a limited special nature. The Contractor has been offered contract work by the County and the work will be performed at site(s) owned or operated by the County. Prior to signing contract and prior to commencing services, County and Contractor have provided a jointly completed “Worker Status Determination Report” and “Vendor Registration Form” for inspection by qualified staff in the County Finance & Purchasing Department. In consideration of the foregoing premises, the mutual promises contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

TERMS AND CONDITIONS

1. **Services**: The services to be performed by the Contractor shall be as described in documents attached hereto and incorporated herein by this reference. The work shall include all labor and materials which will be paid by the Contractor and necessary for completion of the work. Label attached documents sequentially beginning with Attachment 1. If more than two documents are attached, provide as Attachment 1 a list that identifies all documents attached and remaining documents shall be sequentially numbered.

2. **Payment**: The Contractor will be paid as outlined in attached documents.

3. **Warranty**: The Contractor shall and hereby does warranty all workmanship and materials for up to at least one year after completion of the project. Any materials, equipment, or workmanship discovered to be inferior or which fails to perform as reasonably expected shall be repaired or replaced by the Contractor, at the Contractor’s expense, within a reasonable time period of the Contractor being notified of such discovery.

4. **Independent Contractor**: The Contractor agrees that he/she is an “independent contractor” not under the control or supervision of the County and, therefore, not eligible for County employee benefits (such as health insurance and workers’ compensation insurance). The County’s health insurance policy and workers’ compensation insurance will not cover the Contractor in the event of sickness, illness, injury, or accident. The personnel policies of the County do not apply to the Contractor. The Contractor does not make this agreement under any duress.

5. **Taxes/Withholdings**: The Contractor is responsible for all federal and state employment taxes or other required withholdings. The County will not pay on the Contractor’s behalf any federal or state income tax, social security tax, or any other withholding tax or benefit.

6. **IRS Form 1099**: The Contractor will not be required to fill out an application for employment. The Contractor will not be provided a W-2 form, but the Contractor’s pay will be reported to the IRS. The County will provide an IRS Form 1099 at the end of the calendar year to each Contractor per IRS rules and regulations.

7. **Limited Need for Services**: As an “independent contractor”, the Contractor’s services may be needed for a limited time and the need may end at any time for any reason.

8. **Compliance with Applicable Laws**: The parties to this Contract agree that the laws of the State of North Carolina shall govern the validity, construction, interpretation, and effect of this contract. The Contractor shall perform the work as provided for by the contract in compliance with all applicable federal, state and local regulations and laws including, but not limited to, the OSHA standards set and enforced by the Department of Labor, minimum hour and wage regulations, equal opportunity employment laws, confidentiality, state incorporation laws, state rules concerning the collection and reporting of sales and use taxes, restriction against officers and employees of the County deriving personal benefit(s) from the Contractor, disclosure of lobbying activities, etc. This Contract and the work to be done as described herein is also subject to the provisions of all pertinent local government ordinances which are hereby made a part hereof with the same force and effect as if specifically set out herein.
9. **Insurance and Bonding:** Prior to commencing services and throughout the term of this agreement, the Contractor and all subcontractors shall maintain in force adequate applicable insurance coverage for property and general liability, malpractice, workers compensation, and vehicle liability. When the minimum required insurance is determined to be insufficient, the Contractor will maintain in force insurance reasonably appropriate to the work to be undertaken by the Contractor. When exempt from workers compensation or other insurance coverage, the Contractor shall provide documented proof of exemption. Further, the Contractor agrees to provide a Certificate of Liability to the County for all applicable insurance coverage.

10. **Indemnity:** To the fullest extent permitted by law, the Contractor agrees to and hereby does indemnify, defend, and hold harmless the County and County’s officers, agents, and employees from and against any and all losses, costs, damages, obligations, and expenses incurred by the County (including, without limitation, attorney’s fees) that arise in connection in any way, directly or indirectly, associated with the work to be performed by the Contractor or any of its agents, subcontractors, and employees (including, without limitation, any claim for personal injury, death, sickness, or disease, or payment arising from an employee of Contractor, any sub-Contractor or any other party), whether in any event such claim arises prior to completion of and payment for the contracted work or thereafter.

11. **Damage to County Property:** The Vendor shall be responsible for any damage to or loss of the County’s equipment or facilities arising out of an act or omission of the Vendor or its authorized user and deemed reasonable by either (1) both County and Contractor, (2) mediator, or (3) court/judge.

12. **Additional Terms:** The Contractor hereby also formally agrees to the entire set of general terms and conditions at [http://www.ccncgov.com/FinanceD/vendors.html](http://www.ccncgov.com/FinanceD/vendors.html), which aids the County in its efforts to comply with federal rules and regulations.

13. **Amendment of the Contract:** No modification or amendment of the terms hereof shall be effective unless written and signed by the authorized representatives of all parties entitled to receive a right or obligated to perform a duty under this Contract. On behalf of the County, both the Authorized County Department Representative and the County Finance Director must sign and a board chairperson may also be required to sign. A signed original is to be fastened to the original Contract with signed copies retained by all parties.

14. **Complete Agreement:** This Contract and all attachments constitute the complete agreement and understanding between the parties. All prior and coexisting agreements and understandings, whether oral or written, are to be without effect in the construction of any provision or term of this contract if they alter, vary, or contradict this Contract.

**SIGNATURE SECTION**

1. **Subject to Contractor Approval:** On behalf of the Contractor, please indicate consent to these terms and conditions by signing and completing the lines below.

   _______________________________________________________________________
   Printed Name of Company or Individual

   _______________________________________________________________________
   Authorized Representative: Signature / Printed Name / Date

2. **Subject to Board Approval:** On behalf of the Cleveland County Board of Commissioners, the Order to demolish this dwelling was approved on: ______________________________

   _______________________________________________________________________
   Clerk to the Board of Commissioners: Signature / Seal
Table of Contents

Section | Description | Page No.
---|---|---
1. | Overview | 2
2. | General | 3
3. | General Lighting | 3
4. | 1st Floor Lobby | 4
5. | 2nd Floor Lobby | 6
6. | Main Corridor | 7
7. | Conference Rooms (3) | 8
8. | Board Closing Room | 9
9. | Ballroom | 10
10. | Exhibit and Economic Development Corridors | 11
11. | Exclusions | 13
12. | Appendix—Cresnet As-Built Drawings | 14
1. Overview

The LeGrand Center was constructed in 2010. The lighting control system design was engineered by a company called SmartCore—which does not exist any longer. SmartCore designed the LeGrand Center lighting system using Crestron and their Binary Data software for programming the system. Program documentation exists, but in the V3C file extension.

The Crestron As-Built drawings are attached and the overall system schematics can be seen on these drawings available only as PDF documents:

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Generally, the existing systems are fairly complicated and require LeGrand Staff to set up rooms. Each room should be simple to operate and unnecessary system elements removed.

The current architecture makes the spaces very rigid. For example, without connecting a lectern the presentation systems don’t work. There is no wireless presentation capability. The rooms can not be used as ‘overflow’ rooms. Corporate clients can’t bring their own equipment; like a laptop to host a conference.

The existing lighting systems are very difficult to maintain and operate. The Crestron model controllers are obsolete and are frequently going out. Repair and replacement parts are getting impossible to procure in kind. The lighting elements themselves are also obsolete and impossible to find expeditiously.

It is intended to reuse all existing electrical and control wiring. The new lighting and audio/visual elements will have new electrical and control wiring when needed.
2. General

This document shall describe the functionality and design of The LeGrand Center expectations and requirements for a facility-wide lighting upgrade and audio/visual upgrade.

LeGrand 2nd Floor Layout

3. General Lighting

The general lighting for the LeGrand Center in commons areas (upstairs and downstairs) and ballrooms should be controlled by computer access and wall panels (which have the ability to be “locked out”).

All individual offices will have wall switches to control the office lighting. All lighting (common areas and meetings spaces) are to be LED lighting.
The processor for Audio / Video and Lighting systems should be integrated and redundant, with UPS and power conditioning devices present to protect the system. Should the system have wireless control capability, security measures must be put into place to ensure proper security controls.

4. 1st Floor Lobby

This is an entry way for visitors and a point of emphasis to make an immediate impression. Video wall displays have been recommended on one side of the column in the center of this space at the bottom of the stairs.

The displays would be installed in portrait orientation. The content on the wall would be managed from administrators to welcome guests and provide up-to-date marketing information. Ceiling speakers would also be installed in this space for background music, enhanced ambiance, or to coincide with video content on the displays.

All sconces, pendants and up-lights will be converted to LED.

Location of Portrait Digital Signage on Column
Example of Column Digital Signage
5. 2nd Floor Lobby

This area serves a point of concentration for visitors as they enter the LeGrand Center. This is a place for visitors to get information and an opportunity to capture the visitor’s attention.

A video wall will be behind the reception desk for digital signage, in the place of (2) of the 4’ x 8’ panes of glass. This will allow administration the ability to change content and serve a variety of marketing initiatives.

Directional displays over the entrance doors (2 double doors would be considered if pricing included.

Cloud lighting will be replaced with LED fixtures to provide equivalent illumination. All sconces, pendants and uplights will be converted to LED.

Programmable LED light bars will be installed to allow for “color washing” of the lobby area.

2nd Floor Lobby Digital Display Locations
6. Main Corridor

This area can support large group and remains multifunctional. The design is intended to support a presentation from a speaker and digital signage. A 165” diagonal video wall is designed to be installed above the Corporate Hall entrance. The existing (3) flat panel displays will remain in their current locations. The same video source can be distributed all displays or have unique signage/content on each of the displays. A “smart” outdoor display will be located on the wall on the patio, 65+ inches.

A laptop connection will be provided for keynote presentations as well as digital signage media players for each of the displays that can be individually controlled. The existing line array speakers will be repurposed with (2) new digital wireless microphones added for voice amplification.

Cloud lighting will be replaced with LED fixtures to provide equivalent illumination. All sconces, pendants, can lights and up-lights will be converted to LED including on the patio.

**Main Corridor Digital Display Location**
7. Conference Rooms (3)

The focus of these rooms is to be used for small groups (less than 30 people) for presentation with the added ability for audio/video conferencing. The existing room technology will primarily be repurposed in functionality.

Projectors will be replaced with laser projection to improve image quality and reduce maintenance or new monitors will be installed to replace the projector/screen. User’s will be given the ability to wirelessly present to the projector/monitor.

The rooms will be simplified to support the following video sources: PC, (2) Laptop wall plates, Wireless, and Atrium overflow.

There will be (2) wall mounted, HD, pan/tilt/zoom cameras ceiling microphones will be added for web-based conferencing. One camera at the front of the room for a conferencing setting and one camera at the rear of the room for training scenarios.

Conference Pan, Tilt, Zoom Camera Locations
A USB Connection will be provided for a visitor to use the conferencing features with their desired conferencing platform (Zoom, Teams, WebEx, etc.).

The ceiling microphones will be provided to also support audio conferencing in the space. The existing AV rack, amplifier, Crestron switch, projection screen, speakers, and surge protection may be repurposed.

A new control system processor and touch panel will be installed. The control system will support network control. The lighting system and shade controls will be integrated into the AV system and touch panel.

Cloud lighting will be replaced with LED fixtures to provide equivalent illumination. All can lights will be converted to LED.

8. Board Closing Room

The focus of this room is to be used for small groups (less than 10 people), executive sessions, for presentation with the added ability for audio/video web-based conferencing.

The existing room technology may be repurposed in functionality. The (2) existing flat panels will be replaced with a single 98” UHD display. User’s will be given the ability to wirelessly present to the display.

The Board Closing Room (2) 60” Displays Replaced by (1) 98” UHD Display
The rooms will be simplified to support the following video sources: PC, (2) Laptop connections at table, and Wireless.

The existing Cisco wall mounted, HD, pan/tilt/zoom camera and table microphones may be repurposed for web-based conferencing. A USB connection will be provided for a visitor to use the conferencing features with their desired conferencing platform (Zoom, Teams, WebEx, etc.).

The microphones will be provided to also support audio conferencing in the space.

The existing A/V rack, amplifier, Crestron switch, table boxes, speakers, and surge protection may be repurposed.

A new control system processor and touch panel will be installed. The control system will support network control. The lighting system and shade controls will be integrated into the A/V system and touch panel.

Cloud lighting will be replaced with LED fixtures to provide equivalent illumination. All can lights will be converted to LED.

9. Ballroom

This space can support the largest groups within the facility and can be configured in various sizes depending upon the requirement.
The space can be configured in up to (7) independent rooms, or (1) single large room, or any combination in between. Laser projectors are recommended to replace the existing projectors—in order to enhance video resolution, brightness, contrast and to minimize maintenance. Manual overrides should be placed on lifts to ensure operation in emergencies.

Keypads will be designed to be placed in each of the rooms for simplified user control such as projector on/off, video mute, and volume control. Partition sensors will be installed in the ceiling to determine the state of the combined spaces for simplified user adoption.

Cloud light fixtures will be replaced with a modern fixture (approved by LeGrand management), installed lower than current lighting (18 total). All can lighting will be converted to LED lighting. Lighting will need to be configurable based on “Skywall” placement, dimmable and allow for separate control of each style of lighting in the room(s).

10. Exhibit and Economic Development Corridors

These (2) corridors outside of the Ballrooms will be provided with audio (split into 2 zones respective to each corridor.

The existing Valcom wall mounted speakers may be repurposed or new equipment will be installed for music and paging.

The existing scheduling panels will be replaced with a network-controlled panel that is centrally managed for all other displays within the building scheduling software or same programming software as other video boards at the LeGrand Center.

Exhibit Corridor
Cloud lighting will be replaced with LED fixtures to provide equivalent illumination. All sconces, pendants, and up-lights will be converted to LED.

**Schedule Monitor Example 1**

**Schedule Monitor Example 2**

**Schedule Monitor Example 3**
11. Exclusions

There will be no changes in the Early College High School Class rooms.

There will be no changes to the outside lighting.
12. Appendix—Cresnet As-Built Drawings as PDFs

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**DRAWINGS FOR RECORD**

**UPDATED TO "AS BUILT"**

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**LEGRANDE CENTER**  
**SHELBY NC**

**NOTE:**

SUBMITTALS GENERATED FROM PROJECT THE FOLLOWING PROJECT DRAWINGS

| QUOTATION #: 1002617 | REVISION #: 3 | DATE: 11/2/10 |

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<td>GLXP-HSW 24-H CHANNEL HIGH INRUSH RELAY MODULE</td>
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<td>TPMC-8L SYS 8&quot; WALL MOUNT TOUCH PANEL</td>
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<td>TPMC-8X SYS 8&quot; WIRELESS WIFI TOUCH PANEL</td>
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<td>TPS-4L SYS 3.5&quot; WALL MOUNT TOUCH PANEL</td>
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</table>

**CONTACT:**

**PROJECT ENGINEER:** ROB TOOKER  
**EMAIL ADDRESS:** RTOOKER@CRESTRON.COM  
**PHONE:** 1.800.237.2041 EXT. 10845
One copy of this submittal package must be stamped and approved by the responsible architect/engineer. It should then be forwarded to: Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
ATTN: Lighting Projects

Please clearly indicate whether this package is accepted as is, accepted with notations, or rejected.

An order for the dimming system described by this submittal package will be accepted after receipt of the stamped submittal and a valid PO matching the latest revision of the Crestron quotation. After receipt of these items, delivery will be scheduled within 4-6 weeks.

Any changes to this system will result in rescheduling, longer manufacturing time, and/or additional engineering charges.

On-site start up must be requested a minimum of two weeks in advance of the proposed date. Also, prior to on-site, a crestron “systems engineering system check out” form must be signed by the electrical contractor confirming completion of the electrical wiring according to the approved crestron submittal.

IMPORTANT: It is recommended that the PAC2 processor is supplied by a dedicated, backed up, clean power source with surge and spike protection (FBO).

Any orders cancelled after 3 days from Crestron’s acceptance of the order will result in cancellation charges of 10% order total.
The Load Schedule and the Panel Termination Schedule match. Any deviation from the schedule in the submittals will require as built load schedules when submitting this form.

The lighting cabinet(s) is/are installed and both high voltage and low voltage are connected.

All lighting fixtures are installed, wired, and checked for short circuits.

There is power run to the processor over Cresnet cable.

Any device shown on the overall riser in this submittal is installed and wired completely.

There are no fixtures or loads that are not terminated in the lighting panels. Every fixture expected to be controlled by Crestron can be turned on and off at the dimming or switching cabinet.

Programming details and information has been provided to Crestron Lighting Projects.

Crestron System Checkout Checklist

☐ The Load Schedule and the Panel Termination Schedule match. Any deviation from the schedule in the submittals will require as built load schedules when submitting this form.

☐ The lighting cabinet(s) is/are installed and both high voltage and low voltage are connected.

☐ All lighting fixtures are installed, wired, and checked for short circuits.

☐ There is power run to the processor over Cresnet cable.

☐ Any device shown on the overall riser in this submittal is installed and wired completely.

☐ There are no fixtures or loads that are not terminated in the lighting panels. Every fixture expected to be controlled by Crestron can be turned on and off at the dimming or switching cabinet.

☐ Programming details and information has been provided to Crestron Lighting Projects.

Name:

Company:

Phone / Email Address:

Date: / /

Project Completion Date: / /

Requested Start-Up Date: / /

Site Contact:

Mobile Phone:

Company:

Title:

Signature: __________________________

Please return this completed form along with the necessary programming information, if not provided previously, to lightingprojects@crestron.com or fax to 201.767.6011 THREE WEEKS prior to the date startup is being requested. Any missing or incomplete information not provided will only delay the startup of the job.

Prior to submitting the Electrical Contractor shall acknowledge that the following conditions have been met:

1. All system installation, connections, and wiring have been completed per the checklist below.

2. A qualified and authorized person shall be present on the scheduled start-up date to verify/correct and system installation/wiring if necessary, and to provide final sign-off and acceptance of the Crestron Check Out Acceptance Form.

3. Failure to have wiring completed according to Crestron documentation as provided such that a subsequent site visit is required will result in additional onsite and expenses charges of at $1500.00 a day.

Start-Up Request Form

Three weeks Notice Required

Please return this completed form along with the necessary programming information, if not provided previously, to lightingprojects@crestron.com or fax to 201.767.6011 THREE WEEKS prior to the date startup is being requested. Any missing or incomplete information not provided will only delay the startup of the job.

Prior to submitting the Electrical Contractor shall acknowledge that the following conditions have been met:

1. All system installation, connections, and wiring have been completed per the checklist below.

2. A qualified and authorized person shall be present on the scheduled start-up date to verify/correct and system installation/wiring if necessary, and to provide final sign-off and acceptance of the Crestron Check Out Acceptance Form.

3. Failure to have wiring completed according to Crestron documentation as provided such that a subsequent site visit is required will result in additional onsite and expenses charges of at $1500.00 a day.

Crestron System Checkout Checklist

☐ The Load Schedule and the Panel Termination Schedule match. Any deviation from the schedule in the submittals will require as built load schedules when submitting this form.

☐ The lighting cabinet(s) is/are installed and both high voltage and low voltage are connected.

☐ All lighting fixtures are installed, wired, and checked for short circuits.

☐ There is power run to the processor over Cresnet cable.

☐ Any device shown on the overall riser in this submittal is installed and wired completely.

☐ There are no fixtures or loads that are not terminated in the lighting panels. Every fixture expected to be controlled by Crestron can be turned on and off at the dimming or switching cabinet.

☐ Programming details and information has been provided to Crestron Lighting Projects.
**Bill of Materials**

**Project:** LEGRANDE CENTER  
**Creator:** BJ  
**Date:** 8/10/2012

### Panel ID: CPP-2

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<th>DESCRIPTION</th>
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<tr>
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<td>CAIN-4X1</td>
<td>Crestron Automation Enclosure</td>
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<tr>
<td>1</td>
<td>CASH-4X1</td>
<td>Covers Extension Kit</td>
</tr>
<tr>
<td>1</td>
<td>PCA2</td>
<td>Professional Automation Processor with Power Supply</td>
</tr>
<tr>
<td>1</td>
<td>CNE1-1</td>
<td>Single Port Ethernet Card</td>
</tr>
<tr>
<td>1</td>
<td>CML-UPK1</td>
<td>Universal Mounting Plate</td>
</tr>
<tr>
<td>1</td>
<td>LTL-5VS-5</td>
<td>6 STUPIF Integration Device</td>
</tr>
<tr>
<td>1</td>
<td>GLA-UCRS-MOUNT</td>
<td>URS Mount</td>
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<tr>
<td>1</td>
<td>4P901S153</td>
<td>4 Port Network Switch with Uplink</td>
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<tr>
<td>1</td>
<td>CLX-PWS75</td>
<td>75 Watt Power Supply</td>
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<td>G.3PM</td>
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### Panel ID: DALL-1 & DALL-2

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<td>0</td>
<td>DBAPS</td>
<td>Professional Automation Computer</td>
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<tr>
<td>0</td>
<td>LUM-608W</td>
<td>Luminaire 608W 208200, 2 lamps</td>
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<tr>
<td>2</td>
<td>DIN PW550</td>
<td>50 Watt Power Supply</td>
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<td>2</td>
<td>DIN BLOCK</td>
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<td>20A Overload</td>
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<td>3</td>
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<td>GLP-PGL58</td>
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### Misc.

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<td>Back Box for TRAC-4L</td>
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<td>GL-OL</td>
<td>Interior Open Loop Photocell</td>
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<td>GDC-DP-3000</td>
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<td>R5-4L</td>
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### Interfaces

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<td>CML-6W</td>
<td>6 Zone Lighting Controller</td>
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<td>FLS-4L</td>
<td>2x5.35&quot; Wall Mount Touch Panel</td>
<td>White</td>
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**Notes:**

Please ensure all colors shown on this bill of materials are correct prior to releasing the order for shipment. If there are any corrections please make sure to notify lightingprojects@crestron.com.
**NOTES:**

"CRESNET" CABLE:
1. TWISTED PAIR 22AWG (SHIELDED OR NON-SHIELDED) (CRESNET-NP-TL OR CRESNET-P-TL)
2. 2C, 2W + GND 20A (MAX)
3. 20 GAUGE WIRE
4. 500 PARALLEL WIRE PAIRS

CABLE:
1. TWISTED PAIR 18AWG (1) SHIELD (SHIELDED OR NON-SHIELDED)
2. CAT5E ETHERNET CABLE
3. 2C, 2W + GND 20A (MAX)
4. 2W + GND 20A (MAX)

MAXIMUM CABLE LENGTH EQUATION:

Where:
- \( L \) = Maximum Length of run in feet from power source
- \( P \) = Cresnet Power usage of entire run in Watts
- \( R \) = 1.6 Ohms for Cresnet High Power Certified wire
- \( R \) = 6 Ohms for Cresnet Certified wire

\[ L \leq \frac{40,000}{R \times P} \]

ALL CABLES ARE TYPE "1" CRESNET UNLESS OTHERWISE NOTED.

***ALL PHYSICAL DEVICE LOCATIONS TO BE COORDINATED WITH ARCHITECT.***

LENGTH OF CRESNET WIRING RUNS ARE LIMITED TO # OF DEVICES AND CRESNET POWER DRAW. DAISY CHAIN AND OR STAR TOPOLOGIES ARE PERMITTED TO SUIT INSTALLATION NEEDS. EACH HOME RUN NOT TO EXCEED 20 CRESNET DEVICES. USE THE CALCULATOR SHOWN TO DETERMINE MAXIMUM WIRE RUN LENGTH. POWER SUPPLIES CAN BE ADDED TO INCREASE LENGTH OF HOME RUNS.
NOTES:

- "CRESNET" CABLE:
  - (1) Twisted Pair 20AWG (Shielded by C.E.)
  - Non-PLENUM - CRESNET-NP-TL
  - PLENUM - CRESNET-P-TL
- RS-232 CABLE:
  - (1) Twisted Pair 22AWG (1) Shield (BY E.C.)
  - DB-9 Connector (BY E.C.)

CABLES:

- Cat 5E Ethernet
- Suitable Gauge Wire to meet Load Requirements

MAXIMUM CABLE LENGTH EQUATION:

\[ L < \frac{40,000}{R \times P} \]

Where:
- \( L \) = Maximum Length of run in feet from power source
- \( R \) = Ohms for CRESNET Certified wire or 1.6 Ohms for CRESNET High Power Certified wire
- \( P \) = CRESNET Power usage of entire run

Example: A single run with (4) CNX-B6 Keypads, (4) GLS-SIM, (4) GLS-ODT-C-2000 (Sensor) has a total CRESNET Power usage of \( P = 20 \) Watts. Using standard CRESNET cable \( R = 6 \) the maximum wire length would be 333 feet. Using High Power CRESNET \( R = 1.6 \) the maximum wire length would be 1250 feet.

ALL CABLES ARE TYPE "C" CRESNET UNLESS OTHERWISE NOTED.

---

***ALL PHYSICAL DEVICE LOCATIONS TO BE COORDINATED WITH ARCHITECT.***

LENGTH OF CRESNET WIRING RUNS ARE LIMITED TO \( X \) OP DEVICES AND CRESNET POWER DRAW.

DAISY CHAIN AND OR STAR TOPOLOGIES ARE PERMITTED TO SUIT INSTALLATION NEEDS.

EACH HOME RUN NOT TO EXCEED \( 20 \) CRESNET DEVICES. USE THE CALCULATOR SHOWN TO DETERMINE MAXIMUM WIRE RUN LENGTH.

POWER SUPPLIES CAN BE ADDED TO INCREASE LENGTH OF HOME RUNS.
1. THIS UNIT REQUIRES A DEDICATED 120VAC 50/60Hz POWER FEED.
2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.
3. GROUND SHIELD AT CONTROL SYSTEM END ONLY.
4. GENUINE CRESNET CONTROL CABLE IS RECOMMENDED FOR CONNECTION OF CRESTON COMMERCIAL LIGHTING SYSTEMS.
5. KEEP ALL CLASS 1 POWER WIRING SEPARATED FROM ALL CLASS 2 CONTROL WIRING WITHIN THE CABINET.
**NOTES KEY**

1. Mounting keyholes in back panel of CAEN enclosure for surface mounting of assembly.
2. Knockouts for cabinet wiring.
3. Terminal blocks for modules #CLT-XXXXX (see cabinet module schedule).
4. Dimmer modules #CLX-XXXXXX (see cabinet module schedule).
5. #CAEN-CK-4X1 cover kit for CAEN enclosure (ordered separately). Kit adds 1.5” to depth of cabinet.
6. #CAEN-4X1 automation enclosure, 4-module.
7. Knockouts for cabinet wiring. Run all control wiring into the processor assembly via this barriered section.
8. #CENET-1 single port Ethernet card installed in PAC2 2-BUS card slot.
9. Integrated CRESNET Hub/Repeater Connections on PAC2 Processor providing (32) headers distributed across (8) segments.
10. PAC2 lighting control processor.
11. #CLX-PWS75 75 watt CRESNET power supply module. 4 CRESNET power ports are provided to supply power to CRESNET devices or a processor.
12. #CLT-PWS75 Terminal block mounted on left side for #CLX-PWS75 power supply.
13. #CEN-SW-POE-5 5 port network switch.

**GENERAL NOTES**

1. This unit requires a dedicated 120VAC 50/60Hz power feed.
2. Do not power up system until all wiring is verified. Care should be taken to ensure data (Y, Z) and power (24, G) connections are not crossed.
3. Ground shield at control system end only.
4. Genuine CRESNET control cable is recommended for connection of CRESTON commercial lighting systems.
5. Keep all Class 1 power wiring separated from all Class 2 control wiring within the cabinet.
HINGED DOORS FOR ACCESS TO BRANCH CIRCUIT BREAKERS. INTEGRAL LOOP FOR LOCKING OF ACCESS DOOR (LOCK FURNISHED BY OTHERS).

BREAKER BAY COVER PLATE - FASTENED WITH SCREWS. COVERS BREAKER PANEL.

MODULE BAY COVER PLATE - FASTENED WITH SCREWS. COVERS SWITCHING MODULES AVAILABLE WITH HINGED DOOR ON SOME MODELS.

KNOCKOUT TO LOW VOLTAGE WIRING CHANNEL. 3/4" FOR USE WITH 3/4" CONDUIT.

KNOCKOUTS FOR HIGH VOLTAGE WIRING. 1/2" AND 3/4" FOR USE WITH CORRESPONDING CONDUIT SIZE. (25) KNOCKOUTS ON THE TOP PLATE AND (25) KNOCKOUTS ON THE BOTTOM PLATE.

MOUNTING HOLES FOR SURFACE MOUNTING OF CABINET. 5/16" KEY SLOT HOLES ON THE TOP WITH 7/16" ROUND HOLES ON THE BOTTOM.

GROUNDING BAR FOR LOAD SIDE GROUNDS. TYPICAL OF (4) BARS.

INTEGRATED SQUARE D (42) CIRCUIT BREAKER PANEL WITH APPROPRIATE BRANCH BREAKERS, LOAD CIRCUIT NEUTRAL BUS, AND MAIN LUG INPUT FOR POWER FEED. 250A BUS RATING.

CLIPS FOR SECURING WIRE TIES.

SQUARE D QO CIRCUIT BREAKERS. AVAILABLE WITH THE FOLLOWING AIC RATINGS:

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<tr>
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<th>DESCRIPTION</th>
<th>AIC RATING</th>
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<td>20AMP 18K AIC RATING</td>
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<tr>
<td>CSTB-277-20A-35K</td>
<td>20AMP 35K AIC RATING</td>
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<tr>
<td>CSTB-277-20A-65K</td>
<td>20AMP 65K AIC RATING</td>
<td></td>
</tr>
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ALL BREAKERS FACTORY INSTALLED AND WIRED.

MODULE BAY FOR MOUNTING OF SWITCHING MODULES. ALL MODULES ARE FACTORY INSTALLED AND WIRED TO CIRCUIT BREAKERS.

KNOCKOUTS BLOCK - CRESNET NETWORK DISTRIBUTION BLOCK. (2) CRESNET NETWORK PORTS. (3) MODULE OVERRIDE CONTACT CLOSURES.

LOW VOLTAGE WIRING CHANNEL FOR ALL CLASS 2 LOW VOLTAGE WIRING.

HINGED DOORS FOR ACCESS TO SWITCHING MODULES FRONT PANEL. INTEGRAL LOOP FOR LOCKING OF ACCESS DOOR (LOCK FURNISHED BY OTHERS).

LIGHTING CONTROL CABINET

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<th>TYPE</th>
<th>MATERIAL</th>
<th>DESCRIPTION</th>
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<td>GLEP-MLO-277-42</td>
<td>2PH 4 WIRE, MLO</td>
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CSTC-3 CIRCUIT BREAKER SCHEDULE

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<th>VOLT.</th>
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<td>277VAC</td>
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</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 8th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 7th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 6th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 5th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 4th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 3rd Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 2nd Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 1st Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 11th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 10th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 9th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 8th Floor Café Light</td>
<td>506-LFP2R020</td>
<td>1 2 café light</td>
<td>Unit: Min/Max</td>
</tr>
<tr>
<td>Load Floor, Conference Center 15020 - 7th Floor Café Light</td>
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<td>506-LFP2R020</td>
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<td>1 2 café light</td>
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</tr>
</tbody>
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**NOTES:**

1. **LOAD SCHEDULE IS TO BE VERIFIED BY THE ELECTRICAL CONTRACTOR UPON COMPLETION OF INSTALLATION.**

2. **AS BUILT REDLINE MARKUPS OF THE LOAD SCHEDULE MUST BE PROVIDED TO CRESTREON BEFORE SYSTEM PROGRAMMING CAN BE COMPLETED.**

3. **CIRCUIT DESIGNATIONS ARE GENERATED BY CRESTREON BASED ON ZONING NEEDS UNLESS OTHERWISE DIRECTED BY THE CONTRACT ENGINEERING DRAWINGS. ALL CIRCUIT NUMBERS AND DESIGNATIONS SHOULD BE VERIFIED AGAINST THE APPROPRIATE PROJECT CONTRACT DRAWINGS AT TIME OF INSTALL.**
GLEX-FT-8 LIGHTING PANEL

1. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

2. GROUND SHIELD AT CONTROL SYSTEM END ONLY.

3. GENUINE CRESNET CONTROL CABLE IS RECOMMENDED FOR CONNECTION OF CRESTRON COMMERCIAL LIGHTING SYSTEMS.

4. KEEP ALL CLASS 1 POWER WIRING SEPERATED FROM ALL CLASS 2 CONTROL WIRING WITHIN THE CABINET.

NOTES KEY

1. MOUNTING KEYHOLES IN BACK PANEL OF GLEX-FT-8 ENCLOSURE FOR SURFACE MOUNTING OF ASSEMBLY.

2. KNOCKOUTS FOR CABINET WIRING

3. GLEX-FT-8 AUTOMATION ENCLOSURE

4. #DIN-AP2 2 SERIES CRESTRON AUTOMATION PROCESSOR.

5. #DIN-DALI-2 DALI COMMUNICATION BUS SUPPLY. 2 INDIVIDUAL LOOPS. 64 DALI ADDRESSES MAX PER LOOP.

6. #DIN-PWSS0 50 WATT CRESNET POWER SUPPLY. CURRENT DRAW: 0.5A DRAW AT 120VAC.

7. #DIN-HUB DINRAIL CRESNET DISTRIBUTION BLOCK
NOTES:

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NOTES KEY

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2. KNOCKOUTS FOR CABINET WIRING

3. #GLEX-FT-8 AUTOMATION ENCLOSURE

4. DIMENSIONS: 12" H x 14" W x 4 3/8" D

5. NOT USED

6. #DIN-DALI-2 DALI COMMUNICATION BUS SUPPLY. 2 INDIVIDUAL LOOPS. 64 DALI ADDRESSES MAX PER LOOP.

7. #DIN-PWS50 50 WATT CRESNET POWER SUPPLY. CURRENT DRAW: 0.5A DRAW AT 120VAC.

8. #DIN-HUB DINRAIL CRESNET DISTRIBUTION BLOCK

GENERAL NOTES

1. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

2. GROUND SHIELD AT CONTROL SYSTEM END ONLY.

3. GENUINE CRESNET CONTROL CABLE IS RECOMMENDED FOR CONNECTION OF CRESTRON COMMERCIAL LIGHTING SYSTEMS.

4. KEEP ALL CLASS 1 POWER WIRING SEPERATED FROM ALL CLASS 2 CONTROL WIRING WITHIN THE CABINET.

CRESNET CONTROL WIRING

TO LAST CONTROL STATION, PROCESSOR, OR CRESNET DEVICE:
(SEE CONTROL RISER)

TO NEXT CONTROL STATION, PROCESSOR, OR CRESNET DEVICE:
(SEE CONTROL RISER)

NOTES KEY

1. MOUNTING KEYHOLES IN BACK PANEL OF GLEX-FT-8 ENCLOSURE FOR SURFACE MOUNTING OF ASSEMBLY.

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CRESNET CONTROL WIRING

TO LAST CONTROL STATION, PROCESSOR, OR CRESNET DEVICE:
(SEE CONTROL RISER)

TO NEXT CONTROL STATION, PROCESSOR, OR CRESNET DEVICE:
(SEE CONTROL RISER)
<table>
<thead>
<tr>
<th>Area</th>
<th>Room Name</th>
<th>Room #</th>
<th>Zone</th>
<th>Fixture Type</th>
<th>Dell Address Count</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell Loop Totals</td>
<td>Bus 002-1</td>
<td>&gt;&gt;&gt;</td>
<td>54</td>
<td></td>
<td>64</td>
<td>NOT TO EXCEED 54 BALLASTS PER LOOP</td>
</tr>
<tr>
<td>Area</td>
<td>Room Name</td>
<td>Room #</td>
<td>Zone</td>
<td>Fixture Type</td>
<td>Dell Address Count</td>
<td>Notes:</td>
</tr>
<tr>
<td>Dell Loop Totals</td>
<td>Bus 002-2</td>
<td>&gt;&gt;&gt;</td>
<td>54</td>
<td></td>
<td>64</td>
<td>NOT TO EXCEED 54 BALLASTS PER LOOP</td>
</tr>
</tbody>
</table>

NOTES:

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2.) AS BUILT REDLINE MARKUPS OF THE LOAD SCHEDULE MUST BE PROVIDED TO CRESTRON BEFORE SYSTEM PROGRAMMING CAN BE COMPLETED.

3.) CIRCUIT DESIGNATIONS ARE GENERATED BY CRESTRON BASED ON ZONING NEEDS UNLESS OTHERWISE DIRECTED BY THE CONTRACT ENGINEERING DRAWINGS. ALL CIRCUIT NUMBERS AND DESIGNATIONS SHOULD BE VERIFIED AGAINST THE APPROPRIATE PROJECT CONTRACT DRAWINGS AT TIME OF INSTALL.
### System: Typical for Conf Rooms 319,320,321

<table>
<thead>
<tr>
<th>Zone</th>
<th>Feed Ctrl</th>
<th>Location / Room #</th>
<th>Output #</th>
<th>Voltage</th>
<th>Picture Type</th>
<th>Load Type</th>
<th>Qty</th>
<th>Total Watts</th>
<th>Receiver Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CONFERENCE ROOM</td>
<td>2</td>
<td>120/127</td>
<td>120V</td>
<td>50</td>
<td>50</td>
<td>GLS-HW-DRPU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CONFERENCE ROOM</td>
<td>2</td>
<td>120/127</td>
<td>120V</td>
<td>50</td>
<td>50</td>
<td>GLS-HW-DRPU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>CONFERENCE ROOM</td>
<td>4</td>
<td>120/127</td>
<td>120V</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>CONFERENCE ROOM</td>
<td>4</td>
<td>120/127</td>
<td>120V</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total System Load: 150

---

### TYPICAL OF 3 CONFERENCE ROOMS: 319,320,321

- All physical device locations to be coordinated with Architect.

---

### System: Board Closing Room 322

<table>
<thead>
<tr>
<th>Zone</th>
<th>Feed Ctrl</th>
<th>Location / Room #</th>
<th>Output #</th>
<th>Voltage</th>
<th>Picture Type</th>
<th>Load Type</th>
<th>Qty</th>
<th>Total Watts</th>
<th>Receiver Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BOARD CLOSING ROOM 322</td>
<td>1</td>
<td>120/127</td>
<td>120V</td>
<td>50</td>
<td>50</td>
<td>GLS-HW-DRPU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>BOARD CLOSING ROOM 322</td>
<td>2</td>
<td>120/127</td>
<td>120V</td>
<td>50</td>
<td>50</td>
<td>GLS-HW-DRPU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>BOARD CLOSING ROOM 322</td>
<td>5</td>
<td>120/127</td>
<td>120V</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>BOARD CLOSING ROOM 322</td>
<td>5</td>
<td>120/127</td>
<td>120V</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total System Load: 150

---

### Wire Notes:

- **"CRESNET" Cable:** (1) pair #18AWG, (1) twisted pair 22AWG w/ shield (by E.C.)
- **Non-Plenum PN:** CRESNET-NP-TL
- **Plenum PN:** CRESNET-P-TL

- **RS-232 Cable:** (1) twisted pair 22AWG (1) shield w/ DB-9 connector (by E.C.)
- **Cable:** (1) twisted pair 18AWG, (1) shield (by E.C.)
- **Wire:** Suitable gauge wire to meet load requirements.

---

1. Load Schedule is to be verified by the electrical contractor upon completion of installation.
2. As-built three-line markup of the load schedule must be provided to Crestron before system programming can be completed.
3. Circuit designations are generated by Crestron based on zoning needs unless otherwise directed by the contract engineering drawings. All circuit numbers and designations should be verified against the appropriate project contract drawings at time of install.
LIGHTING CONTROL CABINET

<table>
<thead>
<tr>
<th>PANEL ID</th>
<th>TYPE</th>
<th>AIC RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSTB-277-20A-18K</td>
<td>20AMP 18K</td>
<td></td>
</tr>
<tr>
<td>CSTB-277-20A-35K</td>
<td>20AMP 35K</td>
<td></td>
</tr>
<tr>
<td>CSTB-277-20A-65K</td>
<td>20AMP 65K</td>
<td></td>
</tr>
</tbody>
</table>

ALL BREAKERS FACTORY INSTALLED AND WIRED.

MODULE BAY FOR MOUNTING OF SWITCHING MODULES. ALL MODULES ARE FACTORY INSTALLED AND WIRED TO CIRCUIT BREAKERS.

CRESNET BLOCK - CRESNET NETWORK DISTRIBUTION BLOCK. 22 CRESNET NETWORK PORTS. (3) MODULE OVERRIDE CONTACT CLOSURES.

LOW VOLTAGE WIRING CHANNEL FOR ALL CLASS 2 LOW VOLTAGE WIRING.

HINGED DOORS FOR ACCESS TO SWITCHING MODULES. INTEGRAL LOOP FOR LOCKING OF ACCESS DOOR (LOCK FURNISHED BY OTHERS).
**NOTES:**

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**Load Schedule w/Panel Termination**

**Date:** 8/12/2012  **Revision:** 0.0

**Cabinet Voltage:** 277VAC

<table>
<thead>
<tr>
<th>Area</th>
<th>Bin No</th>
<th>Zone Name</th>
<th>Zone ID</th>
<th>[0-9]</th>
<th>[0-9]</th>
<th>Load Type</th>
<th>Bin</th>
<th>Total Watts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>LCP-1</td>
<td>10.1</td>
<td>1</td>
<td>1</td>
<td>Fluor. Fl.</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>LCP-1</td>
<td>10.1</td>
<td>2</td>
<td>2</td>
<td>Fluor. Fl.</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

---

**Title:** LCP-1 LOAD SCHEDULE

**Drawn by:** BJ

**LeGrand Center**

**Location:** Shelby, NC

**Team Lighting**

**Technical Innovations**

**X07496**

**15 Volvo Drive**

**Rockleigh, NJ 07647**

**Tel:** 888-273-7876

**Fax:** 201-767-6011

**www.crestron.com**
TYPICAL OF 20 CLASSROOMS

System
Project Name: LEGRAND CENTER
Controller: SLX

<table>
<thead>
<tr>
<th>Zone</th>
<th>Load Obj</th>
<th>Location / Room #</th>
<th>Output #</th>
<th>Voltage</th>
<th>Picture Type</th>
<th>Load Type</th>
<th>Dim. Picture Notes</th>
<th>Qty</th>
<th>Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LOAD</td>
<td></td>
<td>1</td>
<td>120V</td>
<td>0-10V FLUORESCENT</td>
<td>V</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>LOAD</td>
<td></td>
<td>2</td>
<td>120V</td>
<td>0-10V FLUORESCENT</td>
<td>V</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>LOAD</td>
<td></td>
<td>3</td>
<td>120V</td>
<td>0-10V FLUORESCENT</td>
<td>V</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>LOAD</td>
<td></td>
<td>4</td>
<td>120V</td>
<td>0-10V FLUORESCENT</td>
<td>V</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Total System Load: 150

WIRE NOTES:

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---

TYPICAL FOR LABS 187 AND 191

System
Project Name: LEGRAND CENTER
Controller: SLX

<table>
<thead>
<tr>
<th>Zone</th>
<th>Load Obj</th>
<th>Location / Room #</th>
<th>Output #</th>
<th>Voltage</th>
<th>Picture Type</th>
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<td>0</td>
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<tr>
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<td>LOAD</td>
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3. Pleum PN: CRESNET-P-TL
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6. Wire: Suitable gauge wire to meet load requirements.

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**All physical device locations to be coordinated with architect.**
GLPAC-DIMFLV8 DIMMING MODULE

1. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

2. MODULE SHIPS FROM FACTORY INSTALLED JUMPERS ON EACH CIRCUIT. JUMPERS MUST BE REMOVED AT COMMISSIONING.

3. MASTER CRESNET NETWORK CONNECTOR FOR COMMUNICATION TO BUILDING PROCESSOR.

4. LOCAL CRESNET NETWORK CONNECTOR FOR COMMUNICATION LOCAL DEVICES.

5. EMERGENCY OVERRIDE INPUT FOR UL 924 COMPLIANCE

6. SIGNAL RELAYS TO HVAC SYSTEMS.

7. CONTACT CLOSURES.

8. OCCUPANCY SENSOR INPUTS. 24V LOW VOLTAGE POWER PROVIDED.

9. PHOTO SENSOR INPUTS. 24V LOW VOLTAGE POWER PROVIDED.

10. ETHERNET CONNECTION FOR SYSTEM CONFIGURATION.

11. 0-10V OUTPUT FOR DIMMING OF FIXTURES. USE CLASS 1 OR CLASS 2 WIRE. 0-10V OUTPUTS MUST CORRESPOND TO LINE OUTPUTS. MINIMUM GAUGE WIRE IS 18AWG.

12. GENERAL NOTES

   1. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

   2. MODULE SHIPS FROM FACTORY INSTALLED JUMPERS ON EACH CIRCUIT. JUMPERS MUST BE REMOVED AT COMMISSIONING.

CIRCUIT BREAKER (20A MAX) - BREAKER IS FURNISHED BY ELECTRICAL CONTRACTOR.

NEUTRAL BUS BAR - BUS BAR IS INTEGRAL TO CIRCUIT BREAKER PANEL BOARD.

(2) LINE AND (1) LOAD TERMINAL FOR EACH OF (8) CIRCUITS. (SCREWS TO BE TORQUED TO 8 IN-LB)

MASTER CRESNET NETWORK CONNECTOR FOR COMMUNICATION TO BUILDING PROCESSOR.

LOCAL CRESNET NETWORK CONNECTOR FOR COMMUNICATION LOCAL DEVICES.

SIGNAL RELAYS TO HVAC SYSTEMS.

CONTACT CLOSURES.

(4) OCCUPANCY SENSOR INPUTS. 24V LOW VOLTAGE POWER PROVIDED.

(4) PHOTO SENSOR INPUTS. 24V LOW VOLTAGE POWER PROVIDED.

ETHERNET CONNECTION FOR SYSTEM CONFIGURATION.

0-10V OUTPUT FOR DIMMING OF FIXTURES. USE CLASS 1 OR CLASS 2 WIRE. 0-10V OUTPUTS MUST CORRESPOND TO LINE OUTPUTS. MINIMUM GAUGE WIRE IS 18AWG.

TO LAST CONTROL STATION, PROCESSOR, OR CRESNET DEVICE. (SEE CONTROL RISER)

TO NEXT CONTROL STATION, PROCESSOR, OR CRESNET DEVICE. (SEE CONTROL RISER)
NOTES:

1.) LOAD SCHEDULE IS TO BE VERIFIED BY THE ELECTRICAL CONTRACTOR UPON COMPLETION OF INSTALLATION.

2.) AS BUILT REDLINE MARKUPS OF THE LOAD SCHEDULE MUST BE PROVIDED TO CRESTRON BEFORE SYSTEM PROGRAMMING CAN BE COMPLETED.

3.) CIRCUIT DESIGNATIONS ARE GENERATED BY CRESTRON BASED ON ZONING NEEDS UNLESS OTHERWISE DIRECTED BY THE CONTRACT ENGINEERING DRAWINGS. ALL CIRCUIT NUMBERS AND DESIGNATIONS SHOULD BE VERIFIED AGAINST THE APPROPRIATE PROJECT CONTRACT DRAWINGS AT TIME OF INSTALL.

<table>
<thead>
<tr>
<th>Area / Room</th>
<th>Room #</th>
<th>Description</th>
<th>Zone</th>
<th>Circuit #</th>
<th>GLPAC Type</th>
<th>GLPAC ID</th>
<th>Output #</th>
<th>Module</th>
<th>Load Type</th>
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<td>1-10V DIMM</td>
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<td>1-10V DIMM</td>
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<td>1-10V DIMM</td>
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</table>
1. Do not power up system until all wiring is verified. Care should be taken to ensure data (Y, Z) and power (24, G) connections are not crossed.
2. Ground shield at control system end only.
3. Strip only the minimum amount of jacketing from the wires, and insulate exposed conductors/drain wires with heat shrink tubing.
4. Genuine Cresnet control cable is recommended for connection of Crestron commercial lighting systems.
5. Model CNTBLOCK network distribution/terminal blocks are recommended for testing purposes and convenience of wiring.
6. When daisy chaining network units, always twist the ends of the incoming wire and the outgoing wire that share a pin on the network connector. If necessary use a pigtail when landing more than two conductors on a small connector.

CRESNET CONTROL WIRING

TO LAST CONTROL STATION, PROCESSOR, OR CRESNET DEVICE (SEE CONTROL RISER)

TO NEXT CONTROL STATION, PROCESSOR, OR CRESNET DEVICE (SEE CONTROL RISER)

WIRING NOTES:

C2N-CBD-TS KEYPAD

IMPORTANT:

SEE INSTALLATION AND OPERATION MANUAL FOR KEYPAD ASSEMBLY INSTRUCTIONS AND BUTTON CONFIGURATION INSTRUCTIONS.

MANUAL - DOC:6603A

NOTES KEY:

1. C2N-CBD-TS CAMEO SERIES CONTROL STATION WITH LED INDICATORS.
2. Single gang electrical box with necessary accessories, 2.5" deep minimum (not by Crestron).
3. 0.1" pan head screw (typ of 2) per station, provided with control station by Crestron.
5. Cresnet connection port for control via 2-series control system.
6. Grounding wire for keypad to electrical enclosure.
7. Not shown: to be used with any Decora style faceplate furnished by others.
8. LED indicators - indicate selected scene.
9. 3-pin 3.9mm detachable terminal block, comprises of (2) dry contact closure inputs. Photosensor for control of auto-dimming function, can be configured to report ambient light level to control system.
10. Wiring notes:

CAUTION: POSSIBLE EQUIPMENT DAMAGE IF MISWIRED

1. Do not power up system until all wiring is verified. Care should be taken to ensure data (Y, Z) and power (24, G) connections are not crossed.
2. Ground shield at control system end only.
3. Strip only the minimum amount of jacketing from the wires, and insulate exposed conductors/drain wires with heat shrink tubing.
4. Genuine Cresnet control cable is recommended for connection of Crestron commercial lighting systems.
5. Model CNTBLOCK network distribution/terminal blocks are recommended for testing purposes and convenience of wiring.
6. When daisy chaining network units, always twist the ends of the incoming wire and the outgoing wire that share a pin on the network connector. If necessary use a pigtail when landing more than two conductors on a small connector.
<table>
<thead>
<tr>
<th>BUTTON ID</th>
<th>ENGRAVING</th>
<th>ZONES CONTROLLED</th>
<th>PROGRAMMING DESCRIPTION</th>
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<tr>
<td>5</td>
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</tr>
</tbody>
</table>

*BUTTONS BIGGER THAN 1 SPACE CAN HAVE 2 LINES OF TEXT AND EACH LINE CAN HAVE A MAXIMUM OF 7 CHARACTERS. (SEPARATE LINES WITH /)

NOTES:

STATION ID: 
LOCATION: 
COLOR: 
TEXTURE OR SMOOTH: 

6 BUTTON CONFIGURATION

3 BUTTON CONFIGURATION

2 BUTTON CONFIGURATION

CUSTOM CONFIGURATION

SHADE IN BUTTONS FOR CUSTOM CONFIGURATION. BUTTONS COME IN 1, 2, AND 3 SPACE SIZES. MINIMUM IS 2 AND MAXIMUM IS 6 BUTTONS.

C2N-CBD-TS KEYPAD
NOTE:
MAXIMUM LOAD PER CHANNEL NOT TO EXCEED 680W (6.6A @ 120VAC)
MINIMUM LOAD PER CHANNEL NOT TO BE BELOW 15W (0.125A @ 120VAC)
MAXIMUM LOAD PER UNIT NOT TO EXCEED 1920W (16A @ 120VAC)
MAXIMUM CHANNEL AND UNIT LOADS CAN BE INCREASED BY USING
POWER BOOSTERS/EXPANSION MODULES (PURCHASED SEPARATELY).

THIS UNIT IS FOR 2-WIRE 120VAC FORWARD-PHASE DIMMING CIRCUITS.
FOR OTHER LOAD TYPES AND/OR VOLTAGES SUITABLE POWER
BOOSTERS MUST BE USED.

AVAILABLE TYPES:
CLS-EXP-DIM - 2-WIRE FORWARD PHASE DIMMING
CLS-EXP-DIMFG - 3-WIRE DIMMING
CLS-EXP-DIMFLV - SWITCHED LOADS, 4-WIRE 0-10V DIMMING
CLS-EXP-DIMR - 2 WIRE FORWARD OR REVERSE PHASE DIMMING
ALL BOOSTERS RATED AT 120/230/277 VOLTS 16A MAX.

NOTES KEY
1. DISPLAY COVER - DISPLAY INCLUDES LIGHTING LEVEL
   BAR GRAPH, TWO DIGIT DISPLAY, MINI PHONE JACK, AND
   SETUP/CONFIGURATION CONTROL BUTTONS.
2. LABEL STRIP - CUSTOMIZABLE LABEL FOR SIX SCENES.
3. UP/DOWN PUSHBUTTON - "ROCKER" SWITCH IS
   PROGRAMMABLE FOR MASTER LIGHTS CONTROL,
   MASTER SHADE CONTROL, OR AS A "SHIFT" BUTTON TO
   ALLOW FOR A SECOND SET OF FUNCTIONS FOR THE SIX
   FUNCTION BUTTONS.
4. ON & OFF BUTTONS - RECALLS FOR THE "ON" AND "OFF"
   SCENES.
5. FUNCTION BUTTONS AND LEDs - USED TO SELECT OR
   RECALL SCENES IN STANDARD MODE. IN LIGHTS MODE
   THEY ARE USED TO MAKE TEMPORARY ADJUSTMENTS
   TO THE SIX LIGHTING LOADS. CAN BE PROGRAMMED
   FOR OTHER FUNCTIONS.
6. IR DETECTOR - RESPONDS TO COMMANDS FROM
   OPTIONAL IR REMOTE CONTROL.
7. LOADS 1 THRU 6 - TERMINALS TO CONNECT THE CLS-C6
   DIMMER CHANNEL OUTPUTS TO THE LIGHTING LOADS.
   MAXIMUM WATTAGE PER LOAD NOT TO EXCEED 800W
   HOT, NEUTRAL, GROUND - TERMINALS TO CONNECT
   THE UNIT TO 120V AC POWER SOURCE.
8. LOCAL DEVICES - 4-PIN TERMINAL BLOCK TO CONNECT
   THE CLS-C6, USING CRESTRON WIRING, TO LOCAL
   DEVICES.
9. CONTROL SYSTEM - 4-PIN TERMINAL BLOCK TO CONNECT
   THE CLS-C6, USING CRESTRON WIRING, TO A 2-SERIES
   CONTROL SYSTEM NETWORK.
10. GENERAL NOTES
    1. THIS UNIT REQUIRES A 120VAC 50/60HZ POWER FEED.
    2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS
       VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA
       (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT
       CROSSED.
    3. GROUND SHIELD AT CONTROL SYSTEM END ONLY.
    4. GENUINE CRESTRON CONTROL CABLE IS
       RECOMMENDED FOR CONNECTION OF CRESTRON
       COMMERCIAL LIGHTING SYSTEMS.
    5. REFER TO THE FOLLOWING MANUALS FOR FURTHER
       INFORMATION.
       OPERATIONS GUIDE - DOC.6347B
       INSTALLATION GUIDE - DOC.6413A
       USER GUIDE - DOC.6395

PART #: CLS-C6
DESCRIPTION: ILUX INTEGRATED LIGHTING CONTROLLER
REV.: 001
DATE: 2/14/2012
NOTES:

PART #: CLS-C6
DRAWING: 1 OF 1
**NOTES KEY**

1. FLUORESCENT OFF THRESHOLD. (1) RECESSED SCREWDRIVER ADJUSTABLE TRIM POT, ADJUSTS MINIMUM BRIGHTNESS LEVEL. COVERED BY REMOVABLE CAP.

2. LOAD STATE INDICATOR. (1) RED LED BEHIND FRONT PANEL, ILLUMINATES WHEN LOAD OUTPUT IS ON.

3. POWER INDICATOR. (1) GREEN LED BEHIND FRONT PANEL, INDICATES POWER IS APPLIED TO THE HOT TERMINAL.

4. CTRL (1) CAPTIVE SCREW TERMINAL, FOR CONTROL INPUT FROM CLS-SERIES, CLW-SERIES* DIMMERS, CLX-DIM (ALL VERSIONS), OR OTHER CRESTRON DIMMERS.

5. NEUT (INPUT) (1) CAPTIVE SCREW TERMINAL, FOR NEUTRAL CONNECTION FOR CONTROL INPUT.

6. DIM OUT (1) CAPTIVE SCREW TERMINAL FOR DIMMED OUTPUT TO THE LOAD.

7. SW OUT (1) CAPTIVE SCREW TERMINAL FOR SWITCHED OUTPUT TO THE LOAD.

8. HOT (1) CAPTIVE SCREW TERMINAL, FOR LINE POWER INPUT.

9. NEUT (OUTPUT) (1) CAPTIVE SCREW TERMINAL, NEUTRAL CONNECTION FOR LINE POWER INPUT AND LOAD.

10. GROUND. (1) CHASSIS GROUND BUS BAR

* CLW - SERIES DEVICE MUST HAVE A DEDICATED NEUTRAL

**GENERAL NOTES**

1. THIS UNIT REQUIRES A 120 OR 230VAC 50/60HZ CONTROL FEED AND A 120 OR 277VAC 50/60HZ POWER FEED.

2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y, Z) AND POWER (24, G) CONNECTIONS ARE NOT CROSSED.

3. REFER TO THE FOLLOWING MANUALS FOR FURTHER INFORMATION.

   OPERATIONS GUIDE - DOC.6678B

**NOTES**

**DESCRIPTION:**
CLS-EXP-DIMFDB 3-WIRE FLUORESCENT DIMMER EXPANSION MODULE

**DATE:** 2/6/12

**DRAWING:**
CLS-EXP-DIMFDB 3-WIRE FLUORESCENT DIMMER EXPANSION MODULE

**PART #:**
CLS-EXP-DIMFDB

**REVISION:**
001

**PART #:**
CLS-EXP-DIMFDB

**DRAWING:**
1 OF 3

**PART #:**
CLS-EXP-DIMFDB

**DESCRIPTION:**
CLS-EXP-DIMFDB 3-WIRE FLUORESCENT DIMMER EXPANSION MODULE

**DATE:** 2/6/12
CLS-EXP-DIMFDB WIRING DIAGRAM W/ AN ILUX

CLS-EXP-DIMFDB WITH SEPARATE FEEDS

CLS-EXP-DIMFDB WITH SHARED FEED

MULTIPLE CLS-EXP-DIMFDB MODULES

CLS-EXP-DIMFDB 3-WIRE FLUORESCENT DIMMER EXPANSION MODULE
CLS-EXP-DIMFDB WIRING WITH A CLX DIMMING MODULE

CLS-EXP-DIMFDB 3-WIRE FLUORESCENT DIMMER EXPANSION MODULE
LOAD STATE INDICATOR. (1) RED LED BEHIND FRONT PANEL, ILLUMINATES WHEN LOAD OUTPUT IS ON.

POWER INDICATOR. (1) GREEN LED BEHIND FRONT PANEL, INDICATES POWER IS APPLIED TO THE HOT TERMINAL.

CTRL. (1) CAPTIVE SCREW TERMINAL, FOR CONTROL INPUT FROM COMPATIBLE DIMMER OR SWITCH.

NEUT (INPUT). (1) CAPTIVE SCREW TERMINAL, FOR NEUTRAL CONNECTION FOR CONTROL INPUT.

SW OUT. (1) CAPTIVE SCREW TERMINAL, FOR SWITCHED OUTPUT TO THE LOAD.

HOT. (1) CAPTIVE SCREW TERMINAL, FOR LINE POWER INPUT.

NEUT (OUTPUT). (1) CAPTIVE SCREW TERMINAL, NEUTRAL CONNECTION FOR LINE POWER INPUT AND LOAD.

+ (1) CAPTIVE SCREW TERMINAL, "+" CONNECTION TO DIMMABLE BALLAST.

- (1) CAPTIVE SCREW TERMINAL, "-" CONNECTION TO DIMMABLE BALLAST.

GROUND. (1) CHASSIS GROUND BUS BAR.

1. THIS UNIT REQUIRES A 120 OR 230VAC 50/60HZ CONTROL FEED AND A 120 OR 277VAC 50/60HZ POWER FEED.

2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

3. REFER TO THE FOLLOWING MANUALS FOR FURTHER INFORMATION.
   OPERATIONS GUIDE - DOC.6680A
CLS-EXP-DIMFLV WIRING WITH AN ILUX

CLS-EXP-DIMFLV WIRING FOR 0-10V DIMMING

CLS-EXP-DIMFLV WIRING FOR 0-10V FLUORESCENT DIMMING

PART #: CLS-EXP-DIMFLV

DESCRIPTION: FLUORESCENT DIMMER EXPANSION MODULE

REVISION: 002

NOTES:

DATE: 4/2/12

CLS-EXP-DIMFLV FLUORESCENT DIMMER EXPANSION MODULE
CLS-EXP-DIMFLV FLUORESCENT DIMMER EXPANSION MODULE

FIXTURE IS 120 OR 230VAC:
CONTROL POWER MAY ALSO POWER
CLS-EXP-DIMFLV

FIXTURE IS 277VAC:
CONTROL POWER MAY NOT ALSO
POWER CLS-EXP-DIMFLV
CLS-EXP-DIMFLV REQUIRES CONTROL
FEED NOT TO EXCEED 230VAC

CLS-EXP-DIMFLV FLUORESCENT DIMMER EXPANSION MODULE
**BREAKER PANEL DETAIL WITH TWO PANEL BOARDS**  
(Applies to GLE-2X4 and GLE-3X4 with 60 Circuit Configurations)

**WIRING NOTES:**
1. Wiring for main lugs must be copper or aluminum conductors only. Rated at 75°C.
2. Tighten all screws to the proper torque specification in the module installation guide.
3. Tighten main lugs to the proper torque specification as shown in the table provided.

**WARNING:** Failure to properly tighten lugs may result in poor electrical connection and overheating of the terminals.

**NOTES KEY**
1. 4/0 stranded wire used to interconnect panel boards.

**WIRE GAUGE AND TORQUE VALUES**

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<thead>
<tr>
<th>TERMINAL</th>
<th>Buss Amps</th>
<th>Connector Max Wire Range</th>
<th>Torque</th>
<th>Connector Max Wire Range</th>
<th>Torque</th>
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<tr>
<td>Main Lugs &amp; Neutral Main Lugs</td>
<td>225 (120V) 250 (277V)</td>
<td>10-2/0 (CU) or 6-2/0 (AL)</td>
<td>15 LB-FT</td>
<td>#6-350 kcmil (CU or AL)</td>
<td>275-300 LB-IN</td>
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<td>400</td>
<td>6-300 kcmil (CU or AL)</td>
<td>21 LB-FT</td>
<td>1/0-750 kcmil (CU or AL)</td>
<td>275-300 LB-IN</td>
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<tr>
<td>Subfeed Lugs (60 Circuit Only)</td>
<td>225 (120V) 250 (277V)</td>
<td>(2) 4-1/0 (CU or AL)</td>
<td>15 LB-FT</td>
<td>(1) 10-750 kcmil (CU or AL)</td>
<td>275-300 LB-IN</td>
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<td>400</td>
<td>(2) 4-300 kcmil (CU or AL)</td>
<td>29 LB-FT</td>
<td>(2) 1/0-350 kcmil (CU or AL)</td>
<td>375-450 LB-IN</td>
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<td>Neutral Bars</td>
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<td>20 LB-IN</td>
<td>14-6 (CU or AL)</td>
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<td>6-4 (CU or AL)</td>
<td>25 LB-IN</td>
<td>14-2/0 (CU or AL)</td>
<td>40-50 LB-IN</td>
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*All panels are rated for 225/250A max unless specifically noted otherwise in the submittal documents. Contact Crestron if you have any questions.

**AMPACITY AND BEND RADIUS FOR NYLON STRANDED WIRE**

<table>
<thead>
<tr>
<th>AWG Size</th>
<th>Ampacity @ 90°C</th>
<th>Bend Radius</th>
<th>AWG Size</th>
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<td>170</td>
<td>3.65&quot;</td>
<td>500 MCM</td>
<td>430</td>
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WIRING NOTES:

1. DO NOT POWER UP SYSTEM UNTILL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

2. GROUND SHIELD AT CONTROL SYSTEM END ONLY.

3. STRIP ONLY THE MINIMUM AMOUNT OF JACKETING FROM THE WIRES, AND INSULATE AND EXPOSED CONDUCTORS/DRAIN WIRES WITH HEAT SHRINK TUBING.

4. GENUINE CRESNET CONTROL CABLE IS RECOMMENDED FOR CONNECTION OF CRESTRON COMMERCIAL LIGHTING SYSTEMS.

5. MODEL GLPD-BLOCK & GLPS-BLOCK NETWORK DISTRIBUTION/TERMINAL BLOCKS ARE RECOMMENDED FOR TESTING PURPOSES AND CONVENIENCE OF WIRING.

6. WHEN DAISY CHAINING NETWORK UNITS, ALWAYS TWIST THE ENDS OF THE INCOMING WIRE AND THE OUTGOING WIRE THAT SHARE A PIN ON THE NETWORK CONNECTOR. IF NECESSARY USE A PIGTAIL WHEN LANDING MORE THAN TWO CONDUCTORS ON A SMALL CONNECTOR.

7. ALL CONTROL WIRING IS PROVIDED BY OTHER UNLESS NOTED OTHERWISE.

CAUTION: POSSIBLE EQUIPMENT DAMAGE IF MISWIRED

1 CRESNET CONTROL CABLE ((1) PAIR 18AWG FOR 24VDC POWER, (1) TWISTED PAIR 22AWG WITH SHIELD FOR CONTROL DATA) (BY E.C.). PLENUM AND NON-PLENUM VERSIONS AVAILABLE.

2 CABLE ((1) TWISTED PAR 18AWG WITH SHIELD) (BY E.C.).

USED IN GLEP/GLPS PANELS

CRESNET CABLE TO BLOCK INSTALLED IN NEXT CABINET OR TO CONTROL PROCESSOR (CONTRACTOR TO FURNISH, INSTALL, & TERMINATE ALL CABLE)

USED IN GLE/GE PD PANELS

CRESNET CABLE TO BLOCK INSTALLED IN NEXT CABINET OR TO CONTROL PROCESSOR (CONTRACTOR TO FURNISH, INSTALL, & TERMINATE ALL CABLE)
CRESNET CONTROL WIRING

ADDRESSING

PROJECT RISERS SHOULD SHOW AN ADDRESS FOR EACH GLS-SIM SUCH AS "SIM-03" OR "SIM-AD". PLEASE SET THAT ADDRESS VIA THE TWO ROTARY DIP SWITCHES (NOTE 1 THIS SHEET). SYSTEMS WITH MULTIPLE PROCESSORS MAY SHOW DUPLICATE ADDRESSES.

ADDRESSES 00, 01, AND 02 HAVE PRESET FUNCTIONS FOR USE WITH STANDALONE ILLIX SYSTEMS. 03 IS THE FIRST VALID ADDRESS FOR SYSTEMS WITH A CENTRAL PROCESSOR.

NOTES KEY

1. (2) ROTARY DIP SWITCHES; USED FOR MANUALLY SETTING THE CRESNET ID; '00' SETTING ENABLES TOUCH-SETTABLE ID.
2. (1) 4-POSITION DIP SWITCH; SETS SENSOR TYPE AND OPERATING MODE. SEE CHART BELOW FOR SETTINGS.
3. (1) MINIATURE PUSHBUTTON, USED FOR TOUCH SETTABLE ID.
4. PW: (1) GREEN LED, ILLUMINATES WHEN DC POWER IS APPLIED TO THE NET PORT
   NET: (1) YELLOW LED, INDICATES COMMUNICATION WITH CONTROL PROCESSOR
5. CRESNET NETWORK CONNECTOR TO CONTROL PROCESSOR OR ADDITIONAL MODULES. FACTORY BUILT CABINETS WILL HAVE CRESNET CONNECTIONS WIRED IN FACTORY.
6. (1) 4-PIN 3.5MM DETACHABLE TERMINAL BLOCK; SENSOR INPUT COMPRISED OF 24VDC POWER OUTPUT AND (2) DIGITAL OR ANALOG INPUT PORTS;
   DIGITAL INPUT: RATED FOR 0-24 VOLTS DC, INPUT IMPEDANCE 20K OHMS, LOGIC THRESHOLD 1.25 VOLTS DC;
   ANALOG INPUT: RATED FOR 0-10 VOLTS DC, PROTECTED TO 24 VOLTS DC MAXIMUM, INPUT IMPEDANCE 20K OHMS;
   PROGRAMMABLE 5 VOLTS, 2K OHMS PULL-UP RESISTOR PER PIN; MAXIMUM POWER LOAD: 1 AMP @ 24 VOLTS DC.

DIP SWITCH SETTINGS

<table>
<thead>
<tr>
<th>SENSOR INPUT</th>
<th>DIP SWITCH</th>
<th>PARTITION SENSOR</th>
<th>OCCUPANCY SENSOR</th>
<th>PHOTOCELL</th>
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SWITCH SETTINGS ARE SHOWN FOR TYPICAL CRESTON-PROVIDED DEVICES. NON-CRESTON DEVICES MAY NOT USE THESE SETTINGS. ALTERNATE MODES ARE AVAILABLE; SEE GLS-SIM INSTALLATION & OPERATION GUIDE FOR FULL DETAILS.

NOTE THAT IF NON-CRESTON DEVICES ARE BEING USED, CRESTON REQUIRES THE FOLLOWING INFORMATION PRIOR TO SHIPPING EQUIPMENT:

A COMPLETE ANNOTATED GROUND PLAN INDICATING EACH DEVICE, TO WHICH GLS-SIM IS TO CONNECT (REFERENCED BY THE DEVICE ID SHOWN ON PROJECT RISER DIAGRAMS), AND WHAT TYPE OF INPUT IS REQUIRED - CONTACT CLOSURE, 0-10V SENSING, OR CRESTON DIGITAL LOGIC. FAILURE TO PROVIDE THIS INFORMATION WILL RESULT IN ADDITIONAL CHARGES FOR ONSITE REPROGRAMMING OF THE DEVICE CONFIGURATIONS.

SENSOR WIRING DETAILS

GLS-LOL CONNECTIONS ARE VIA SCREW TERMINALS WITHIN DEVICE. GLS-ODT CONNECTIONS ARE VIA FLYING LEADS. SEE INSTRUCTION SHEETS PROVIDED IN SENSOR PACKAGE FOR FULL INFORMATION.

GLS-SIM WITH SENSOR WIRING

GLS-LOL WIRING DETAIL

GLS-OVT (ALL TYPES) WIRING DETAIL

*GRAY WIRE MAY BE CONNECTED INSTEAD OF BLUE WIRE IF USE OF INTERNAL PHOTORESISTOR IS DESIRED. PHOTORESISTOR IS NOT NORMALLY UTILIZED.
GLXP-HSW12 SWITCHING MODULE

1. THIS UNIT REQUIRES A 120/230/277VAC 50/60HZ SINGLE PHASE POWER FEED.

2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

3. OUTPUT STATUS LED AND OVERRIDE BUTTON FOR EACH CHANNEL / CIRCUIT

4. NET ID: (2) 7-SEGMENT GREEN LED DIGITS AND (2) MINIATURE PUSHBUTTONS FOR SETTING CRESNET ID.

5. PWR: (1) GREEN LED, ILLUMINATES WHEN DC POWER IS APPLIED TO THE NET PORT

6. NET: (1) YELLOW LED, INDICATES COMMUNICATION WITH CONTROL PROCESSOR

7. RESET: (1) RECESSED MINI PUSHBUTTON, RESETS INTERNAL PROCESSOR

8. EMERGENCY OVERRIDE INPUT FOR UL 924 COMPLIANCE

9. CRESNET NETWORK CONNECTOR TO CONTROL PROCESSOR OR ADDITIONAL MODULES. FACTORY BUILT CABINETS WILL HAVE CRESNET CONNECTIONS WIRED IN FACTORY.

NOTES KEY

1. CIRCUIT BREAKER (20A MAX) - BREAKER IS FACTORY INSTALLED AND WIRED IN MAIN-LUG PANELS.

2. NEUTRAL BUS BAR - BUS BAR IS INTEGRAL TO CIRCUIT BREAKER PANEL BOARD IN MAIN-LUG PANELS.

3. HIGH INRUSH SWITCHED LOADS

4. DETACHABLE TERMINAL BLOCK - (1) LINE AND (1) LOAD TERMINAL FOR EACH OF (8) CIRCUITS. CIRCUIT #1 HAS A NEUTRAL TERMINAL FOR BOARD NEUTRAL. (SCREWS TO BE TORQUED TO 8 IN-LB)

5. OUTPUT STATUS LED AND OVERRIDE BUTTON FOR EACH CHANNEL / CIRCUIT

6. NET ID: (2) 7-SEGMENT GREEN LED DIGITS AND (2) MINIATURE PUSHBUTTONS FOR SETTING CRESNET ID.

7. PWR: (1) GREEN LED, ILLUMINATES WHEN DC POWER IS APPLIED TO THE NET PORT

8. NET: (1) YELLOW LED, INDICATES COMMUNICATION WITH CONTROL PROCESSOR

9. RESET: (1) RECESSED MINI PUSHBUTTON, RESETS INTERNAL PROCESSOR

GENERAL NOTES

1. THIS UNIT REQUIRES A 120/230/277VAC 50/60HZ SINGLE PHASE POWER FEED.

2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

3. MODULE SHIPS FROM FACTORY INSTALLED JUMPERS ON EACH CIRCUIT. JUMPERS MUST BE REMOVED AT COMMISSIONING.

4. THIS PRODUCT IS LISTED TO APPLICABLE UL STANDARDS AND REQUIREMENTS BY UNDERWRITERS LABORATORIES INC. (E103692)

5. OUTPUTS UL508 LISTED FOR SWITCHING FULL 16A ELECTRONIC BALLAST LOAD @ 277VAC.

6. AVERAGE RELAY LIFE OF 1,000,000 CYCLES.

7. RELAYS ARE LATCHING TYPE RATED UP TO 50A.

8. OUTPUTS PROVIDE POSITIVE AIR-GAP WHEN LOADS ARE "OFF"
GLXP-HSW8 SWITCHING MODULE

1. THIS UNIT REQUIRES A 120/208/277VAC 50/60Hz SINGLE PHASE POWER FEED.
2. DO NOT POWER UP SYSTEM UNTIL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.
3. MODULE SHIPS FROM FACTORY INSTALLED JUMPERS ON EACH CIRCUIT. JUMPERS MUST BE REMOVED AT COMMISSIONING.
4. OUTPUTS UL508 LISTED FOR SWITCING FULL 16A ELECTRONIC BALLAST LOAD @ 277VAC.
5. AVERAGE RELAY LIFE OF 1,000,000 CYCLES.
6. RELAYS ARE LATCHING TYPE RATED UP TO 50A.
7. OUTPUTS PROVIDE POSITIVE AIR-GAP WHEN LOADS ARE "OFF"
NOTES KEY

1. HARD PUSH-BUTTONS AND TOUCHPAD - PROGRAMMABLE BUTTONS TO PROVIDE TACTILE CONTROL.
2. USB - (2) USB 2.0 TYPE A FEMALE JACK.
3. MICROPHONE - (2) BUILT IN MICROPHONES BEHIND THE BEZEL SUPPORT P BAILS INTERCOM, TELEPHONE, AND CONFERENCEING FUNCTIONALITY.
4. LIGHT SENSOR - PROGRAMMABLE PHOTO SENSOR FOR AUTOMATIC BACKLIGHT DIMMING
5. FINGERPRINT SCANNER - BIOMETRIC FINGERPRINT SCANNER FOR USER IDENTIFICATION AND LOGON.
6. 24 VDC - (1) 2-PIN 3.5 MM DETACHABLE TERMINAL BLOCK.
7. AUDIO OUT - (1) 5-PIN 3.5 MM DETACHABLE TERMINAL BLOCK: BALANCED/UNBALANCED STEREO LINE LEVEL AUDIO OUTPUT.

GENERAL NOTES

1. REFER TO THE FOLLOWING MANUALS FOR FURTHER INFORMATION.
   - OPERATIONS GUIDE - DOC: 8654A
2. DISPLAY SPECIFICATIONS
   - DISPLAY TYPE: TFT ACTIVE MATRIX COLOR LCD
   - SIZE: 8.4" DIAGONAL
   - ASPECT RATIO: 4:3 SVGA
   - RESOLUTION: 800 X 600 PIXELS
3. MEMORY SPECIFICATIONS
   - DDR RAM: 128 MB
   - FLASH/SD: EXPANDABLE VIA CF CARD SLOT
   - COMPACT FLASH: ACCEPTS UP TO 4GB SD + TYPE II
4. OPERATION SYSTEM: MICROSOFT WINDOWS XP EMBEDDED

TPMC-8L 8.4" TOUCHPANEL
HARD BUTTON, BACKLIT, TYPICAL OF (10). FUNCTION DEFINED BY PROGRAMMING.

3.6" ACTIVE MATRIX TOUCH SCREEN, 320 X 234 RESOLUTION. CONFIGURATION & FUNCTION DEFINED BY PROGRAMMING.

FACEPLATE WITH BUTTONS (ENGRAVED).

ETHERNET PORT.

WALLBOARD (1/2" DRYWALL SHOWN) BETWEEN CONTROL STATION AND BACKBOX (NOT BY CRESTRON).

#BB4L PRE-CONSTRUCTION BACKBOX (CRESTRON FURNISH, CONTRACTOR INSTALL).

CRESNET CONNECTION PORT FOR CONTROL VIA 2-SERIES CONTROL SYSTEM.

NOTES KEY

1. DO NOT POWER UP SYSTEM UNTILL ALL WIRING IS VERIFIED. CARE SHOULD BE TAKEN TO ENSURE DATA (Y,Z) AND POWER (24,G) CONNECTIONS ARE NOT CROSSED.

2. GROUND SHIELD AT CONTROL SYSTEM END ONLY.

3. STRIP ONLY THE MINIMUM AMOUNT OF JACKETING FROM THE WIRES, AND INSULATE AND EXPOSED CONDUCTORS/ DRAIN WIRES WITH HEAT SHRINK TUBING.

4. GENUINE CRESNET CONTROL CABLE IS RECOMMENDED FOR CONNECTION OF CRESTRON COMMERCIAL LIGHTING SYSTEMS.

5. MODEL CNTBLOCK NETWORK DISTRIBUTION/ TERMINAL BLOCKS ARE RECOMMENDED FOR TESTING PURPOSES AND CONVENIENCE OF WIRING.

6. WHEN DAISY CHAINING NETWORK UNITS, ALWAYS TWIST THE ENDS OF THE INCOMING WIRE AND THE OUTGOING WIRE THAT SHARE A PIN ON THE NETWORK CONNECTOR.

NOTES:

CONSULTANT TO PROVIDE ENGRAVING INFORMATION FOR BUTTONS.
### TPS-4L Engraving and Programming Detail Sheet

**TPS-4L With Engravable Buttons**

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<thead>
<tr>
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<th>Programming/Description</th>
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**Password Protection:** [Y/N]:

**Scheduler Functionality:** [Y/N]:

#### Notes:

**Station ID:**

**Location:**

**Color:**

**Blank Face Plate with No Engravable Buttons:** [Y/N]:

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**Password Protection:** [Y/N]:

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#### Notes:

**Station ID:**

**Location:**

**Color:**

**Blank Face Plate with No Engravable Buttons:** [Y/N]:

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**Part #:** TPS-4L

**ISYS 3.6" Wall Mount Touchpanel**