

MedLux® Ceiling GPI

LED graphic panel illuminator
MRI-Safe

INSTALLATION MANUAL



**TO AVOID DOING IRREPARABLE DAMAGE TO DRIVE CIRCUITRY
NEVER APPLY AC POWER DIRECTLY TO LED LIGHTBOXES!**



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Rev. March 2024

ELTD-001 Series GC4SF

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1.0 SAFETY

For the safe handling, installation and operation of the MedLux® GPI system, a thorough review and understanding of the material written in this manual must be completed before starting the installation process. Failure to properly install the MedLux® GPI system per this instruction will void your warranty. There are no serviceable components in the MedLux® GPI system. Attempting to repair or alter the MedLux® GPI system in any way will also void your warranty. Always install MedLux® GPI according to all local, state, and national codes.

NOTE: Additional supports and/or hangers for the drop ceiling grids and MedLux® GPI box(es) are recommended and necessary in earthquake zoned areas or when required by local/state safety codes.

Other Important Safety Requirements and Precautions:

- ✓ All MEDLUX® GPI System components are designed for indoor use and installation ONLY.
- ✓ Make sure that all necessary safety equipment is present, and all workers are familiar with the local safety codes.
- ✓ Observe proper precautions when working in an MRI suite. ***Always assume the magnet is active!***
- ✓ Installation requires a separate 120-VAC branch circuit (rated at 20 Amps) for the power supply assembly(ies).
- ✓ NEVER replace any fuse with anything other than the indicated type and rating! Failure to do so may violate the Class 2 circuit requirements.
- ✓ Class 2 power cables between the fuse box and GPI units are plenum rated but verify local ordinances before using in air handling spaces.

DANGER: POWER TO MEDLUX® SYSTEM MUST BE DISCONNECTED BEFORE ATTEMPTING TO WIRE OR SERVICE THIS PRODUCT AT ANY TIME.

2.0 APPROVALS

1. **UL/cUL:** The MedLux® GPI system is constructed as an Indoor Section Sign System per UL 48, ELECTRIC SIGN STANDARD (both US and Canadian Requirements).
2. **CE:** The MedLux® GPI system is compliant with all applicable European directives, but not listed.
3. **LOCAL AUTHORITY:** The subcontractor/installer should secure permits with the appropriate authorities.

3.0 INTRODUCTION

3.1 SCOPE

This manual provides the instructions for the installation of a MedLux® GPI system. All MedLux® GPI System components are designed for Indoor use ONLY. For assistance during the installation process or daily operation, please call **1-800-610-6053** between 8:00 am and 5:00 pm CST.

3.2 SYSTEM COMPONENTS

The following components are included in the MedLux® GPI system purchased:

- MedLux® Power Supply Assembly Box(es)
- MedLux® Class 2 Fuse Assembly Box(es)
- MedLux® GPI Light Box(es)
- Power Feed Cable(s)
- Installation Instructions

3.3 SYSTEM COMPONENTS NOT SUPPLIED

The following components are not supplied by Everbrite, LLC and must be made available by the customer to complete the installation process:

- Class 1 Conduit for incoming mains power wiring
- Class 1 Conduit and fittings for the wiring between the MedLux® Power Supply Box(es) and the EMI Facility Filter
- EMI Facility Filter, minimum ratings: 277VAC/120VDC, 20A.
- Graphics Panel(s) (If not purchased separately from Everbrite)
- Ceiling grid components
- Additional Grid Drop Ceiling Supports, Hangers, or other hardware as required by National and Local Building Codes

WARNING: ALL COMPONENTS SUPPLIED BY THE INSTALLER FOR USE INSIDE OF AN MRI ROOM FACILITY MUST BE NON-FERROUS

3.4 TOOLS AND MATERIALS

CAUTION - All tools must be approved for use in an MRI suite (Always assume the magnet is active!).

The following items are recommended for the installation of this product.

- Tape Measure and Ladder(s)
- Wire Strippers
- Channel Locks or Adjustable Wrench for EMI Filter Nut
- Screwdrivers appropriate for hardware
- ¼" x 1" sheet metal or lag screws for Mounting Power Supply Assembly – Qty (4)
- Drill with hole forming bit or saw appropriate for thru-wall EMI Facility Filter Installation
- Additional grid ceiling support wires as needed (must be non-ferrous)

3.5 GLOSSARY OF TERMS

<u>MedLux® Power Supply Assembly Box(es)</u>	A box with an electrical device designed to convert 120- Volt AC to 48 Volt regulated DC. Also referred to as the Power Supply. See Figure 1.
<u>EMI Filter</u>	A filter assembly designed to prevent EMI (Electromagnetic Interference) from getting inside the MRI room. The EMI Facility Filter is NOT supplied as part of the MedLux® GPI System Components and is not necessary for non-MRI applications. See Figure 3.
<u>MedLux® GPI Class 2 Fuse Assembly Box</u>	A wiring distribution assembly designed to provide Class 2 power limitation for the circuits feeding the GPI assemblies. See Figure 6.
<u>Graphic Panel(s)</u>	Panels containing graphics specified and supplied by the customer and used to comfort a patient during the MRI procedure. The panel(s) are to be installed above the ceiling grid, sandwiched between the grid and the GPI box(es). See Cover Sheet.
<u>Power Feed Cable</u>	Connecting cable between the fuse box and GPI Light Box(es). There could be one or more GPI Light Boxes depending on the system configuration.

4.0 PRE-INSTALLATION

4.1 PRODUCT DELIVERY AND INSPECTION

Upon delivery, **immediately** uncrate the MedLux® GPI product. Inspect the product to ensure that nothing is damaged and that all components have been received. **Immediately** notify the Freight Company of any damaged components. Damaged product must not leave the loading dock until the shipper can verify claim. You will be held responsible for any damage not reported within fifteen (15) days of receipt of shipment.

4.2 SITE PREPARATION

Before beginning site work, notify the business or construction manager of the following:

- Scope of Work - include length of installation, any disruptions to electrical service, and what hours you will be working.
- Any safety requirements or conditions specific to the installation site.
- Mounting location of the MedLux® Power Supply Box(es), EMI Facility Filter (if necessary) and the MedLux® Class 2 Fuse Box. See the approved site documentation for approximate location(s).

Also ensure that:

- The installation surfaces for the Power Supply and Fuse or Distribution Boxes are flat, clean and free of any debris or obstacles.

4.3 VERIFICATION BEFORE INSTALLATION

1. Each MedLux® Power Supply Box is intended to power only the MedLux® GPI System Component(s) as indicated in these instructions.
2. A minimum clearance of 8" above the inside lip of the drop ceiling grid framework is required for installation above every MedLux® GPI Light Box. The product itself will rise up to 6-1/2" above the inside lip of the drop grid ceiling framework.
3. The size of the rigid graphic panel being installed requires a certain thickness to prevent excessive bowing and to prevent it from falling down. The installer should briefly set the panel in place to verify proper fit and flatness.
4. The ceiling grid must be capable of supporting the combined weight of the graphic panel and GPI boxes. The installer is responsible for verifying the load capability of the support grid.

4.4 ELECTRICAL REQUIREMENT

Using the site documentation, locate the power supply assembly location(s). Circuits must be wired in accordance with all local and state UL codes. Per the NEC, a Mains disconnect switch is required to be installed within sight of the power supply assembly(ies).



SWITCHING WALL OR CEILING GPIs FROM INSIDE THE SHIELD ROOM

To switch the MedLux® wall or ceiling GPI from a point inside the shield room, it is necessary to switch the AC input side of the AC/DC converter. For this, an extra 2-channel facility filter will be required.

SWITCHING WALL OR CEILING GPIs FROM OUTSIDE THE SHIELD ROOM

To switch the MedLux® wall or ceiling GPI from a point outside the shield room, we recommend switching the AC input side of the AC/DC converter. Do not switch from the DC side of the AC/DC converter.

5.0 INSTALLATION

5.1 THE GPI POWER SUPPLY



Figure 1: GPI Power Supply Module

The power supply converts incoming electrical power down to 48 volts DC. Mount the GPI Power Supply box(es) according to the approved system layout documentation. The power supply assembly is intended for **INDOOR USE ONLY**. All power supply mounting hardware is to be supplied by the customer or subcontractor. Mounting orientation must have mains connection coming into the box from the bottom. To install, proceed as follows:

Note: All Class 1 wiring should be done by a certified electrician.

1. Determine and mark location(s) for mounting the power supply per approved system layout documentation.

Note: One or more power supply modules may need to be mounted depending on the system configuration.

2. Mount the GPI Power Supply module using four ¼" x 1" sheet metal or lag screws as required.

WARNING: Verify that power is OFF from the facilities main electrical power source to eliminate possible electric shock and injury during installation.

5.2 EMI FILTER

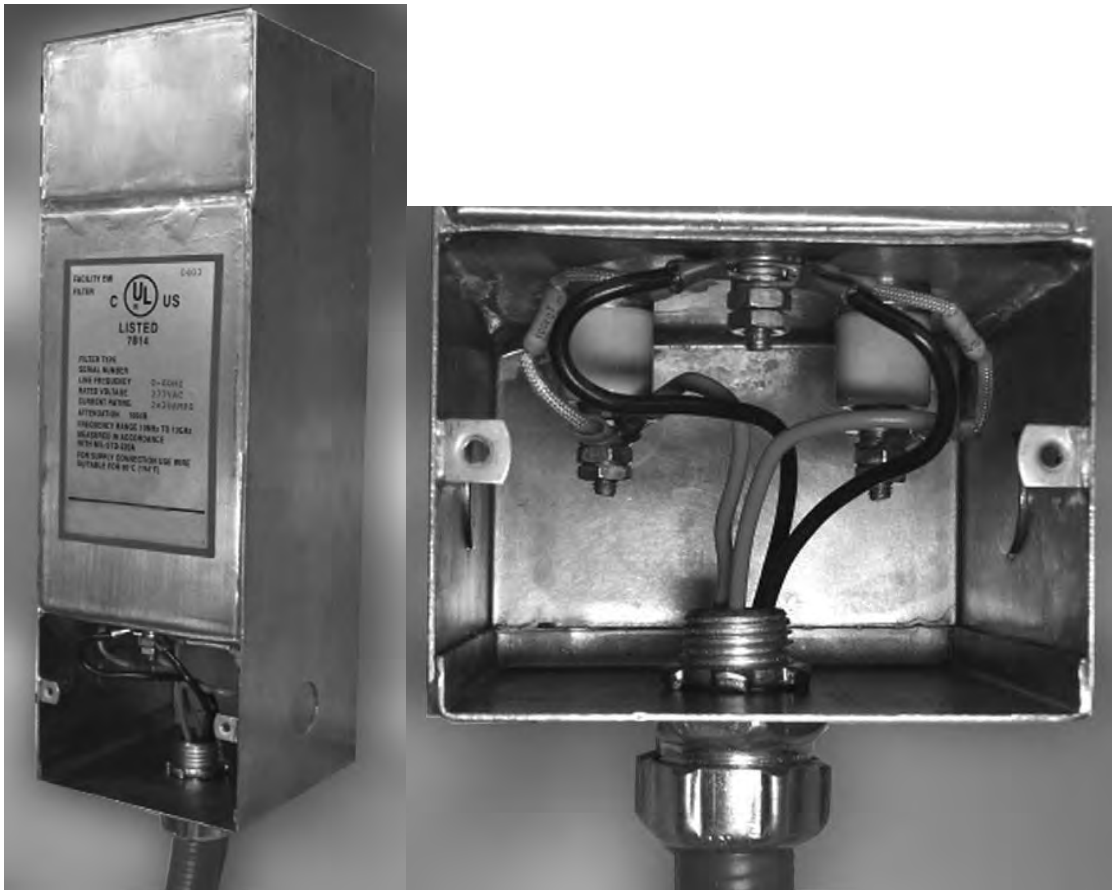


Figure 2: EMI Filter

Figure 3: EMI Filter Wiring Layout

The EMI Filter and mounting hardware can be supplied by the customer or specified subcontractor. The EMI Filter functionally eliminates electromagnetic interference from entering the room. Mount the EMI Facility Filter according to approved system layout documentation. The power wiring coming from the MedLux® Power Supply is considered Class 1 wiring even though it is low voltage DC. The interconnecting Class 1 wiring (conduit) is customer supplied and must meet local electrical code specifications. Refer to installation wiring diagram for ampacity requirements of the Power Box.

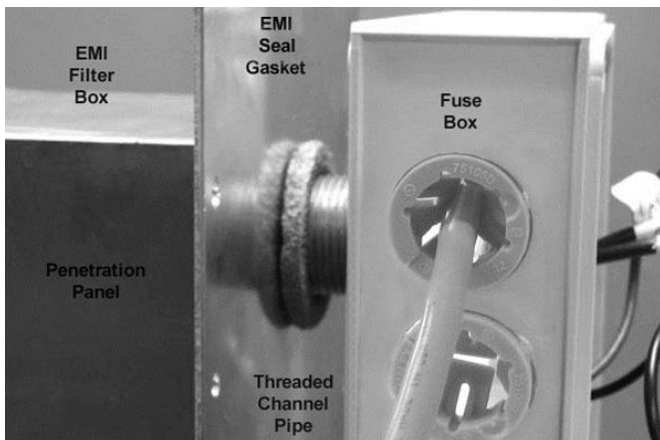


Figure 4: Channel Pipe from EMI Filter

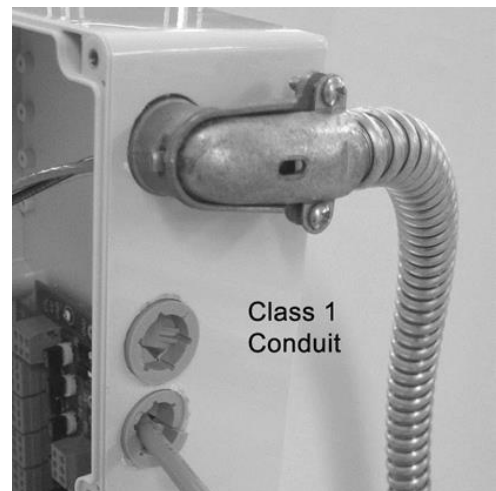


Figure 5: Class 1 Wiring

The threaded pipe at the rear of the filter module is guided through a pre-drilled hole in the access panel leading into the MRI room from the equipment control room. Later, it will be secured with a lock nut inside the Fuse box module. Be sure to install an EMI sealing gasket, supplied with the filter, between the access panel and fuse box as shown in Figure 4. For non-MRI installations, the filter box is not required. For these non-filtered applications, the Class 1 wiring must be run directly from the power supply to the fuse box through conduit or other locally approved Class 1 wiring method. See Figure 5.

5.3 CLASS 2 DISTRIBUTION PANEL / Class 2 FUSE BOX



Figure 6: Distribution Panel / Fuse Box

The Distribution Panel or Fuse Box routes electrical power to the GPI module(s) configured into the overall system. It provides circuit protection in the event of an overload and convenient power distribution to the GPI Light Boxes. To install, proceed as follows:

1. Hand push cable locking connectors into knock out holes until tab clicks or locks into place on inside of the Fuse Box wall.

Note: The Fuse Box is secured to the EMI Filter for MRI configured systems ONLY. For non-MRI use, secure Fuse Box to wall using four mounting holes located in the corners of the module.



Figure 7: Mounting Sequence, Inside Rear of Fuse Box

2. Mount Fuse Box to the facility filter channel pipe within the MRI room. The sequence of items used to secure the Fuse Box to the filter, is as follows:
 - a. Install the EMI Gasket as seen in Figure 4.
 - b. Slide Fuse Box over threaded channel pipe and press against EMI gasket.
 - c. Screw on and tighten the first lock nut to threaded channel pipe extending through the back of Fuse Box.
 - d. Slide the ground loop over the threaded channel pipe.
 - e. Screw on and tighten against the ground loop the second lock nut.
3. Connect the wires coming into the Fuse Box from the EMI Filter. Determine which of the two black wires is the +48VDC from the Power Box by checking continuity between it and the filter input connection. Hook up the red wire in the Fuse Box from terminal block TB0 **+V** to the correct +48VDC black wire coming from the EMI Filter with a wire nut. Hook up the black wire in the Fuse Box from terminal block TB0 **GND** to the other -48VDC (GND) black wire coming from the EMI Filter with a wire nut. If you have a dimming control, there will be two wires entering the Fuse Box from the Signal Filter DIM a & DIM B. Insert the DIM A control wire into TB0 **CTL**. Wire nut the DIM B control wire together with the black wire connected to TB0 **GND** and the -48VDC (GND) wire from the EMI Filter.

5.4 Graphics Panel

The graphic panel(s) is installed by the customer. See cover of this manual for an example of a typical panel installed. The GPI box(es) is designed to rest atop the graphic panel(s). In some cases, grid elements must be removed to accommodate the panel being installed. If this is necessary, do so at this time. Note that the graphic panel is intended to be placed directly onto the grid structure with the GPI boxes placed on the panel.

CAUTION: Contact with any of the internal components of the GPI Light Box can damage or drastically reduce the light output of the product if touched or bumped.

5.5 GPI Light Box(es)

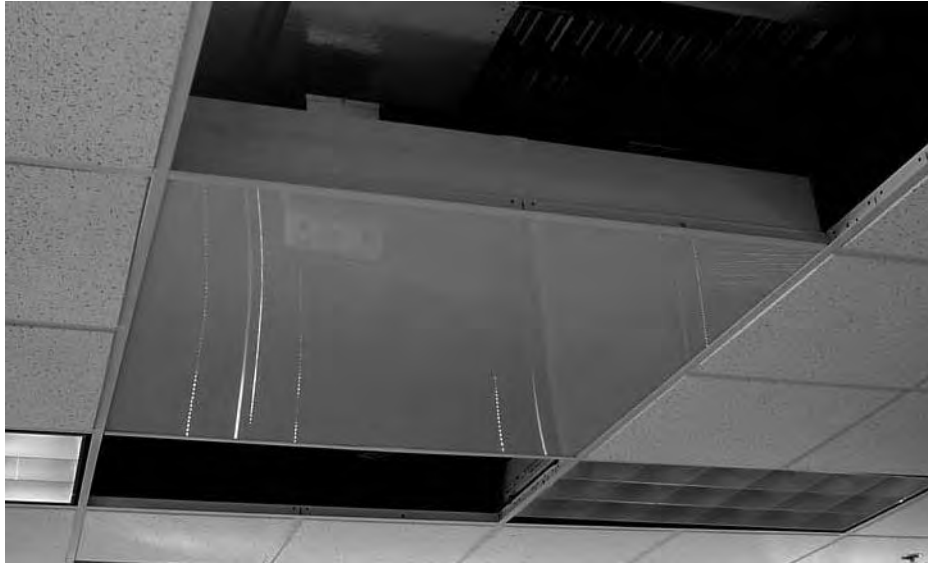


Figure 8: GPI Light Box

The GPI Light Box illuminates the graphics panel image and can be configured individually or in a number of combinations and sizes. To install a GPI Light Box, proceed as follows:

Note: Pre-connection of the power cables before installing in the ceiling may be necessary depending on size and configuration of the boxes. Refer to the wiring diagram for suggested interconnection schemes.

CAUTION: It may be necessary to install extra support hangers, depending on the added weight of the GPI Light Boxes. Verify with local or state code regulations.



Figure 9: GPI Light & Grid Supports

1. Remove or move ceiling grid interlock for ease of installation.

2. Lift and tilt the GPI Light Box into place on the ceiling support rail. For larger boxes, two people may be required.
3. Slide the graphic panel in place between the grid and the edge(s) of the GPI box(es). See figure 8.
 - Note: In some cases, it may be easier to 'drop' the graphic panel in place first, then install the GPIs.
4. Replace the grid interlock as seen in figure 9 above.
5. Repeat steps one through three above for installation of all GPI Light Boxes.

5.6 Interconnection Wiring & Installation



Figure 10: Top View GPI Light

1. If the Power Interlock Connections were not pre-connected between the GPI load cable(s)(Blue) or the source cable(yellow) before installing into ceiling, do so now. See wire diagram for connection sequence depending on system configuration.
2. Run the source cable over the ceiling grid and route as desired to the Distribution/Fuse Box



Figure 11: Fuse Box Wiring



Figure 12: Install Source Cable Wire

3. Strip end of cable as needed and run into the Fuse Box as seen in figure 11. Choose the nearest terminal block that is adjacent to an installed fuse.
4. The BLACK wire is connected to the COM (GND) terminal; the RED wire is connected to the +V terminal and the WHITE wire is connected to the CTL terminal.
5. To install wire into the terminal block, take a small flat head screwdriver and push back the tab. See figure 12.
6. Insert the end of wire and release the tab. Ensure that all loose wire strands are captured by the terminal block.
7. Continue in a similar fashion until all the source cables are connected.
8. Turn on source power and test installation. The power supply(ies) have a 'slow-start' feature to minimize power surges at initial power-up, so a slight delay of 1 to 3 seconds may occur at turn-on.

5.6 Dimmer Wiring & Installation – Signal Filter input wires must be soldered in place!

Referring to the system diagrams in Appendix A, the monochrome dimmer is normally located in the Control Room. It is powered by a 16VAC 10VA "doorbell" transformer located in the Equipment Room. The dimming control signal is wired into the Fuse Box through the Signal Filter as indicated in the previous section 5.3.3. From there, the dimming control becomes the white wire in the power cables feeding the GPI troffers.

If the monochrome dimmer is located inside the MRI Shield Room, then it is directly connected into the Fuse Box. In this configuration, the dimmer is powered by the Fuse Box and returns its DIM A and DIM B control signals directly into it.

A final configuration is when the customer wishes to use a commercially available 0-10V dimmer control located in the Control Room. This requires the use of our XLIM Interface Module powered by a 16VAC 10VA "doorbell" transformer located in the Equipment Room. The XLIM must be located in the Equipment Room, and its DIM A and DIM B control signals are wired through the Signal Filter and into the Fuse Box.

6.0 SITE CLEAN-UP

Ensure that all packaging materials, screws, tools, etc. are disposed of properly.

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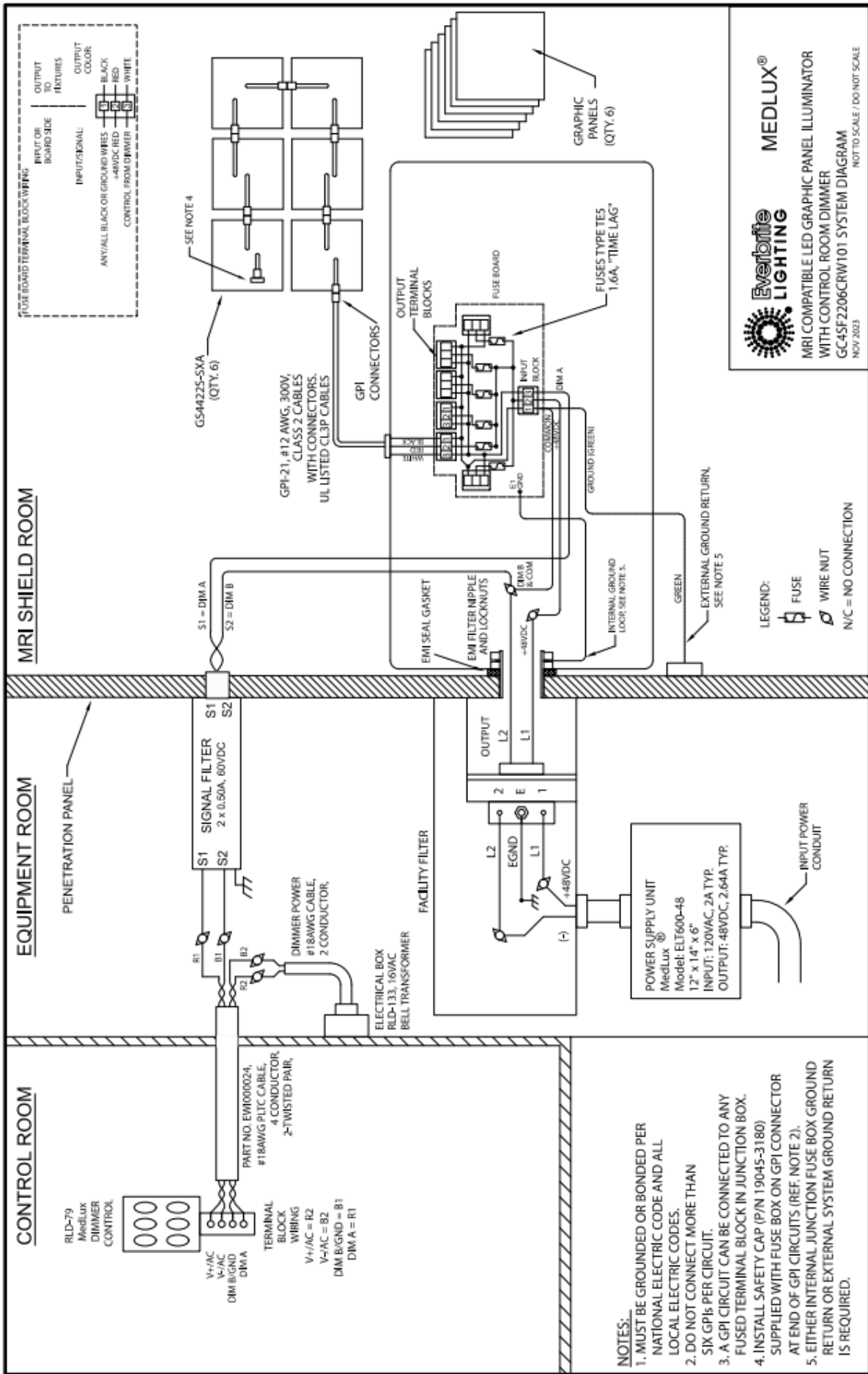
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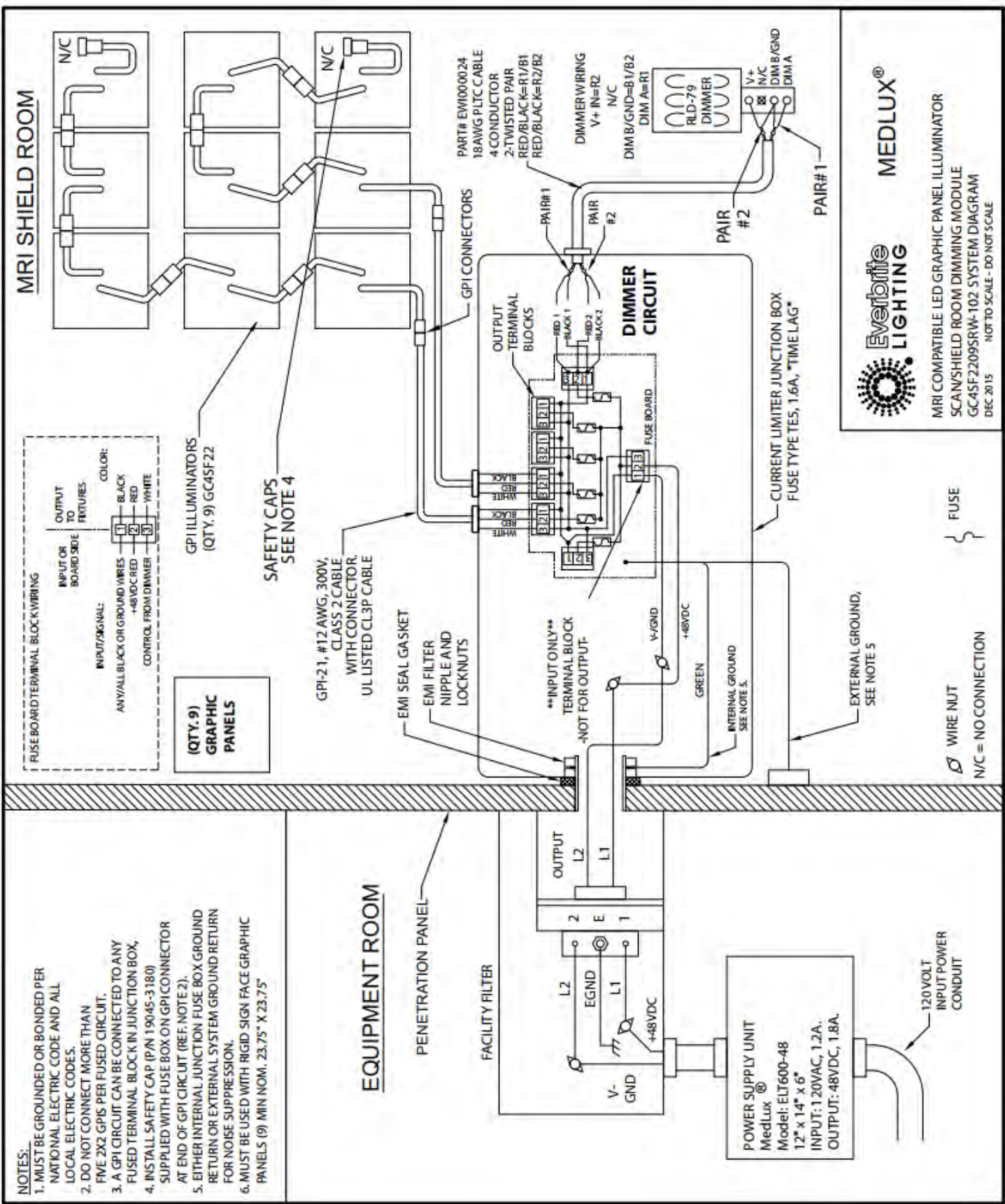
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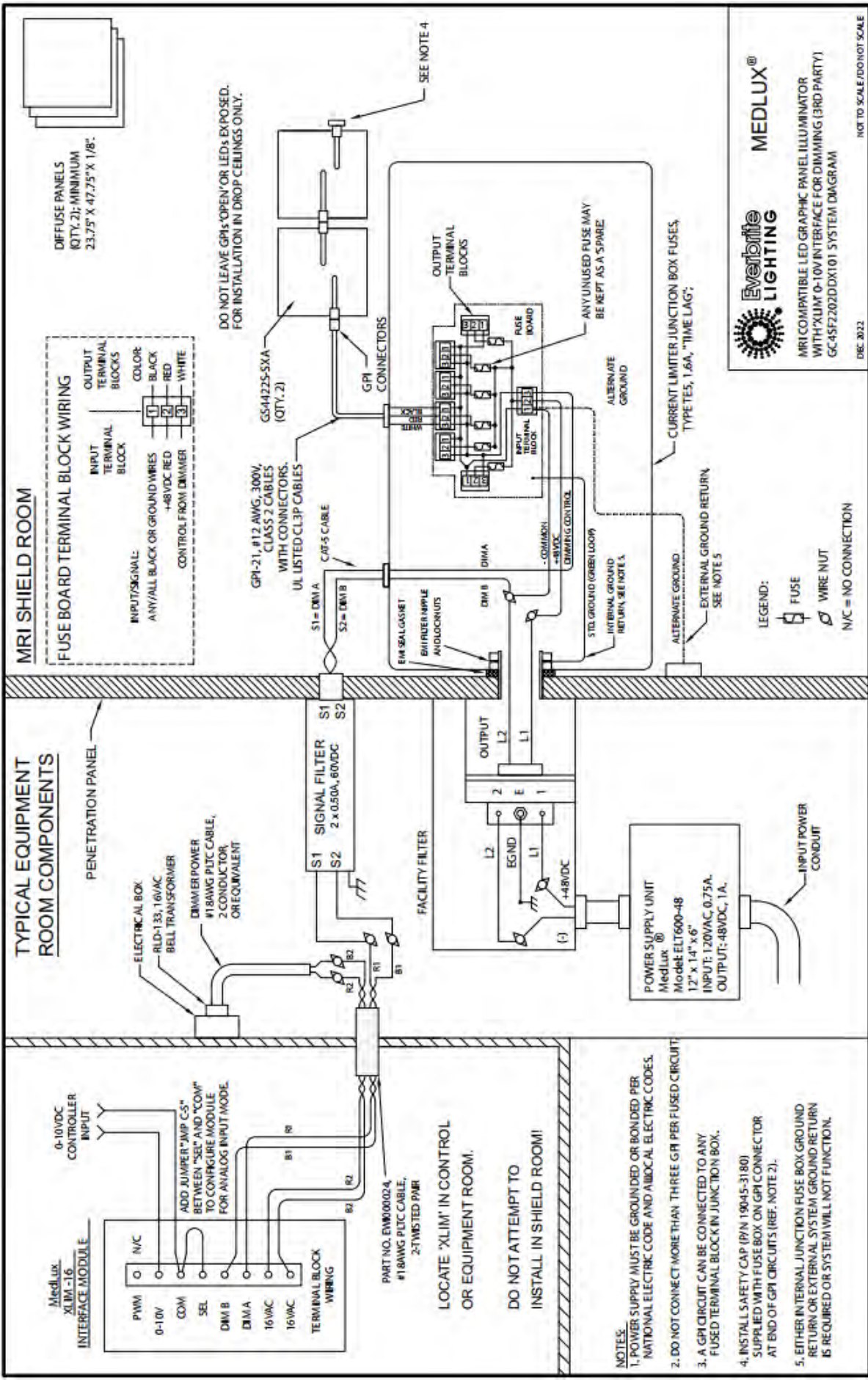
Appendix A



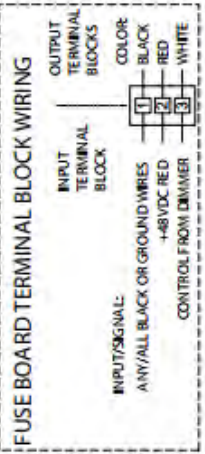


- NOTES:**
1. MUST BE GROUNDED OR BONDED PER NATIONAL ELECTRIC CODE AND ALL LOCAL ELECTRIC CODES.
 2. DO NOT CONNECT MORE THAN FIVE 2X2 GPIS PER FUSED CIRCUIT.
 3. A GPI CIRCUIT CAN BE CONNECTED TO ANY FUSED TERMINAL BLOCK IN JUNCTION BOX.
 4. INSTALL SAFETY CAP (P/N 19045-3180) SUPPLIED WITH FUSE BOX ON GPI CONNECTOR AT END OF GPI CIRCUIT (REF. NOTE 2).
 5. EITHER INTERNAL JUNCTION FUSE BOX GROUND RETURN OR EXTERNAL SYSTEM GROUND RETURN FOR NOISE SUPPRESSION.
 6. MUST BE USED WITH RIGID SIGN FACE GRAPHIC PANELS (9) MIN NOM. 23.75" X 23.75"

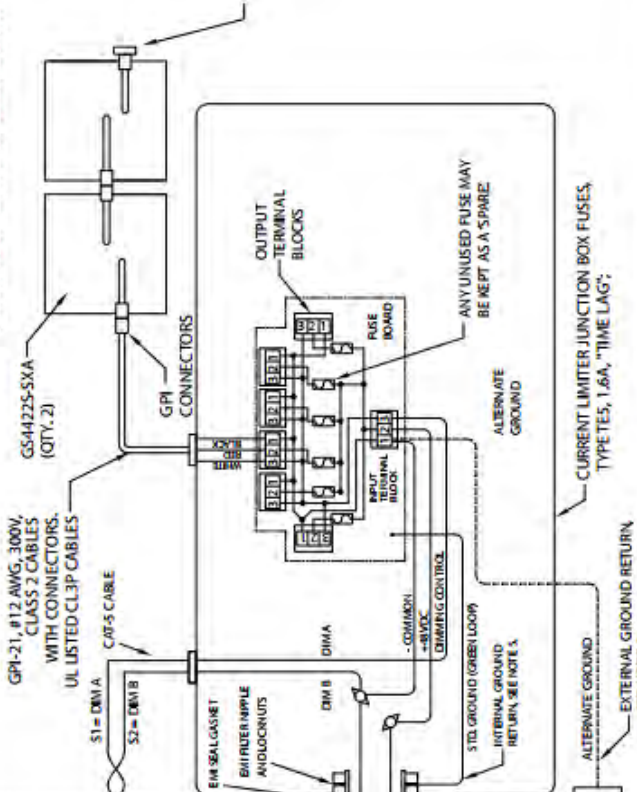
MEDI LUX®
Everbrite LIGHTING
 MRI COMPATIBLE LED GRAPHIC PANEL ILLUMINATOR
 SCAN/SHIELD ROOM DIMMING MODULE
 GC45F2209SRW-102 SYSTEM DIAGRAM
 DEC 2015 NOT TO SCALE - DO NOT SCALE



MRI SHIELD ROOM



DO NOT LEAVE GPI'S OPEN OR LEDS EXPOSED. FOR INSTALLATION IN DROP CEILING ONLY.



EveretMed
LIGHTING

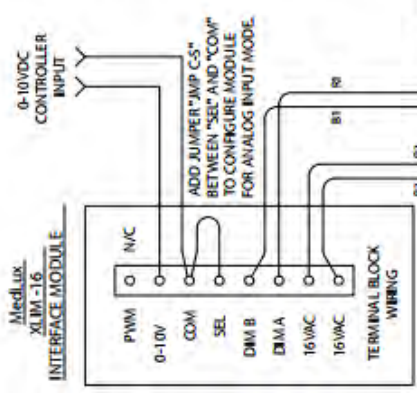
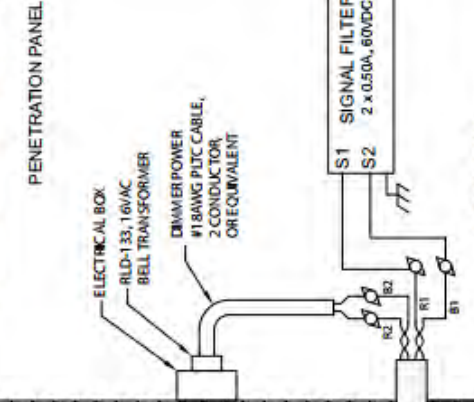
MEDLUX®

MRI COMPATIBLE LED GRAPHIC PANEL ILLUMINATOR WITH 'XLIM' 0-10V INTERFACE FOR DIMMING (3RD PARTY) GC45F2202DDX101 SYSTEM DIAGRAM

DATE: 08/22

NOT TO SCALE (DO NOT) SCALE

TYPICAL EQUIPMENT ROOM COMPONENTS



LOCATE 'XLIM' IN CONTROL OR EQUIPMENT ROOM.

DO NOT ATTEMPT TO INSTALL IN SHIELD ROOM!

- NOTES:**
1. POWER SUPPLY MUST BE GROUNDED OR BONDED PER NATIONAL ELECTRIC CODE AND ABOCAL ELECTRIC CODES.
 2. DO NOT CONNECT MORE THAN THREE GPI PER FUSED CIRCUIT.
 3. A GPI CIRCUIT CAN BE CONNECTED TO ANY FUSED TERMINAL BLOCK IN JUNCTION BOX.
 4. INSTALL SAFETY GAP (P/N 19045-3180) SUPPLIED WITH FUSE BOX ON GPI CONNECTOR AT END OF GPI CIRCUITS (REF. NOTE 2).
 5. EITHER INTERNAL JUNCTION FUSE BOX GROUND RETURN OR EXTERNAL SYSTEM GROUND RETURN IS REQUIRED OR SYSTEM WILL NOT FUNCTION.

- LEGEND:**
- FUSE
 - WIRE NUT
 - N/C = NO CONNECTION