SDCS CIO SmartDClighting Controller & I/O
Installation Guide

- To reduce the risk of death, personal injury or property damage from fire, electric shock, falling parts, cuts/abrasions, and other hazards please read all warnings and instructions included with and on the fixture box and all fixture labels.
- Before installing, servicing, or performing routine maintenance upon this equipment, follow these general precautions.
- Installation and maintenance should be performed by qualified person(s) familiar with the products' construction & operation & any hazards involved. Regular maintenance programs recommended.
- **DO NOT INSTALL DAMAGED PRODUCT!** This product has been properly packed so that no parts should have been damaged during transit. Inspect to confirm. Any part damaged or broken during or after assembly should be replaced.

READ AND FOLLOW ALL SAFETY INSTRUCTIONS! SAVE THESE INSTRUCTIONS

AND DELIVER TO OWNER AFTER INSTALLATION

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

a) READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
b) Do not use outdoors.
c) Do not mount near gas or electric heaters.
d) The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
e) Do not use this equipment for other than intended use.
f) NOT SUITABLE FOR USE IN DAMP OR WET LOCATIONS

SAVE THESE INSTRUCTIONS

MESURES DE SÉCURITÉ IMPORTANTES

Lors de l'utilisation d'équipements électriques, des précautions de sécurité de base doivent toujours être respectées, y compris les suivantes :

a) LISEZ ET SUIVEZ TOUTES LES INSTRUCTIONS DE SÉCURITÉ.
b) Ne pas utiliser à l'extérieur.

c) Ne pas installer à proximité de chauffages à gaz ou électriques.
d) L'utilisation d'équipements accessoires non recommandés par le fabricant peut entraîner une situation dangereuse.
e) N'utilisez pas cet équipement à d'autres fins que celle prévue.

CONSERVEZ CES INSTRUCTIONS

NOT SUITABLE FOR USE IN DAMP OR WET LOCATIONS;
· DO NOT INSTALL OUTPUT CONDUCTORS LONGER THAN _____ m;
· DO NOT CONNECT TWO OR MORE POWER SUPPLIES IN PARALLEL;
· installation and servicing should be performed by qualified personnel;
· How to determine the number of luminaires and the lamp wattage to be used with the power unit.
· specific instructions for maximum ambient [45°C], mounting, wiring, minimum wire size, grounding, and servicing if applicable.

· NON ADAPTÉ POUR UNE UTILISATION DANS DES ENDROITS HUMIDES OU MOUILLÉS ;
· NE PAS INSTALLER DE CONDUCTEURS DE SORTIE D'UNE LONGUEUR SUPÉRIEURE À _____ m ;
· NE PAS CONNECTER DEUX OU PLUSIEURS ALIMENTATIONS ÉLECTRIQUES EN PARALLÈLE ;
· L'installation et l'entretien doivent être effectués par du personnel qualifié ;
· Comment déterminer le nombre de luminaires et la puissance des lampes à utiliser avec l'unité d'alimentation ;
· Instructions spécifiques concernant la température ambiante maximale [45°C], le montage, le câblage, la section minimale des fils, la mise à la terre et l'entretien, le cas échéant.

ADDITIONAL SAFETY PRECAUTIONS

a) Installation must follow all national and local codes for electrical equipment.
b) Do not lift or move the SDCS CIO using the input or output wires to avoid product damage.
c) Do not expose SDCS CIO to corrosive gas or liquids.

d) Ensure the SDCS CIO is used with the proper low voltage electrical loads as referenced in the specification sheet available from the SmartDCLighting website.
e) Ceiling-mount considerations - The minimum hole diameter to insert a SDCS CIO through an installed ceiling is 101.6 mm (4 in) with input and output cables disconnected.

ETL listed to UL 924 standard

When combined with the QuadDCDrive® multi-channel driver, the SDCS CIO is ETL listed to UL 924 standard for use as an emergency input/output control device. Combine with an emergency power source, such as a generator, lighting inverter, or UPS and an external emergency control device that monitors power to send a signal to the SmartDCLighting system to provide a fully code compliant emergency lighting system. See wiring diagrams on pages 6 and 7..

The SW4 along with the SDCS CIO and the QuadDCDrive® multi-channel driver may also be used as an emergency input/output control device that is ETL listed to UL 924 standard.

Important: Emergency power source equipment must be UL 924 listed and adequately sized to provide minimum 90-minute runtime based on lighting load.

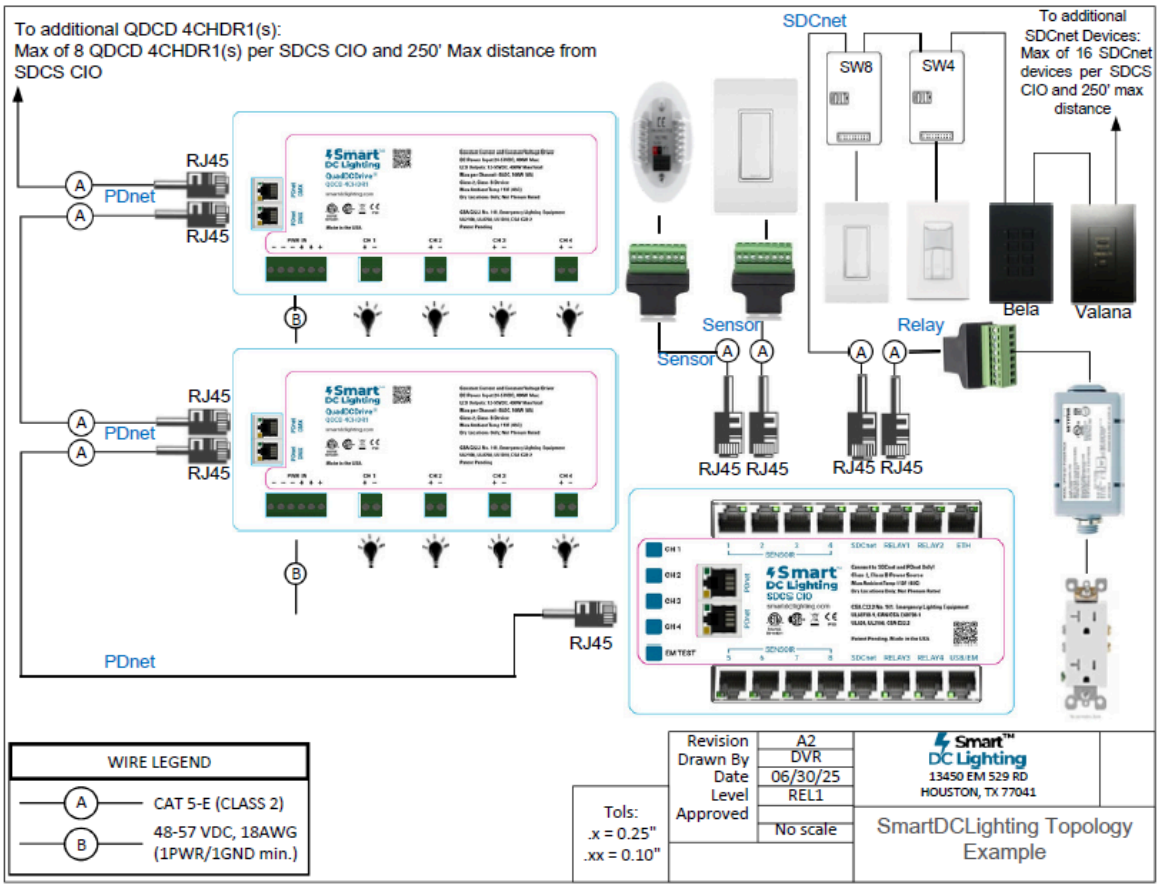
SDCS CIO offers a variety of installation & mounting options. The device is Class 2 low voltage and is intended to live in an enclosure or freely in air (non-plenum locations).

Electrical and Wiring Specifications:

Nominal input voltage range DC (via PDnet): 48VDC
Output voltage: 24VDC via SDCnet RJ45 ports, 250mA MAX (each output)
Output voltage to sensor ports: 24VDC
Standby Power: <1W

Operating Environment:
Operating temperature: 32° to 113°F (0° to 45°C)
Relative humidity (non-condensing): 0% to 95%
Not plenum rated

Typical Smart DC Lighting System Architecture



Mounting

1. Set the SDCS CIO on a flat surface.
2. Using a Phillips screwdriver, attach it to the mounting surface with two M5 (#10) screws, not included.

Connecting

- **SEN1 thru SEN8 PORTS:** These RJ45 ports are analog sensor inputs. Connect SmartDCLighting compatible third party sensors via cat5e and the SmartDCLighting **RJ45-8PIN** RJ45 Screw Terminal Adaptor Connector. Each contact is Form C. See wiring detail at the SmartDCLighting website for the RJ45-8PIN when used with a SEN input. All inputs must be commissioned and programmed through the windows compatible SDCnetConfig configuration and monitoring software that may be downloaded from the SmartDCLighting website.

- **SDCnet PORTS:** These RJ45 ports are for the SDCnet communications bus. SDCnet is a CAT 5e low voltage-based communication bus that works by establishing a digital communication network between connected devices to create a system with distributed intelligence. Connect a max of (16) SDCnet devices per SDCS CIO and (8) per SDCnet port. The max distance for devices connected to the SDCnet from the SDCS CIO is 250'.

- **RELAY1 thru RELAY4 PORTS:** These RJ45 ports are relay outputs. A relay output is used to provide a 24VDC supply / power, a DC return / common and a control output. Connect SmartDCLighting compatible relays via cat5e and the SmartDCLighting **RJ45-8PIN RJ45** Screw Terminal Adaptor Connector.

- **ETH PORT:** This 10/100 RJ45 port is for connecting to a local area network. The SDCS CIO is an IPV4 device. This port is used to allow remote access via the network or to network multiple SDCS CIOs together to create a larger system. Connect this port to an IP network using cat5e or better.

- **USB / EM PORT:** This RJ45 port may be used for dual purposes. The first is for programming. Using the SmartDCLighting **SDC-PROG** programming cable , a Windows PC may be connected directly to the SDCS CIO and the SmartDC Configuration software can be utilized. If the PC has the SDCnet programming

software, it may be used to directly program the SDCS CIO and any connected SCDnet devices. The second use for this port is to receive a UL 924 emergency dry contact signal from a 3rd party normal power circuit monitoring device such as a Functional Devices ESR2401B.

- **PDnet PORTS:** These RJ45 ports are used to connect to QuadDCDrives (QDCDs). A Max of (8) QuadDCs may be connected to (1) SDCS CIO and 250' Max distance from the SDCS CIO. The SDCS CIO communicates to the QDCDs to tell them what to do. It also receives its power from a QDCD.

Buttons

- **CH 1, CH2, CH3 and CH 4 Buttons:** When pressed, this triggers all QDCD channel loads associated with the button pushed to turn ON for approximately 1 minute, at which time the channels would automatically be turned off. These buttons are intended for the installer to be able to verify they have wired the loads correctly without needing a programming tool. If there are multiple QDCDs connected to a SDCS CIO, any load connected to the corresponding Channel will respond allowing the installer to test multiple QDCDs at once.

- **EM TEST Button:** Pressing this button for less than 10 seconds will illuminate all the indicator LEDs at the RJ45 connectors. Long pressing longer than 10 seconds will launch a test EM UL924 condition that will remain in effect for 3 minutes, at which time the EM test will expire.

Powering Up

When the SDCS CIO is connected to a QDCD via PDnet and the QDCD is receiving power, the QDCD will pass power to the SDCS CIO via the PDnet port.

1. Connect the RJ45 connector on the cat5e cable between at least one QDCD to the PDnet port on the SDCS CIO.
2. Apply power to the QDCD.
3. If any phenomenon occurs (such as tripping, power cycling, or irregular operation), disconnect the input power cable and the connection to the load before investigating the problem.
4. Upon powering up, the default mode of CH1 thru 4 of each QDCD is 24VDC constant voltage at 1 Amp.. This is done so that the installer can verify power is

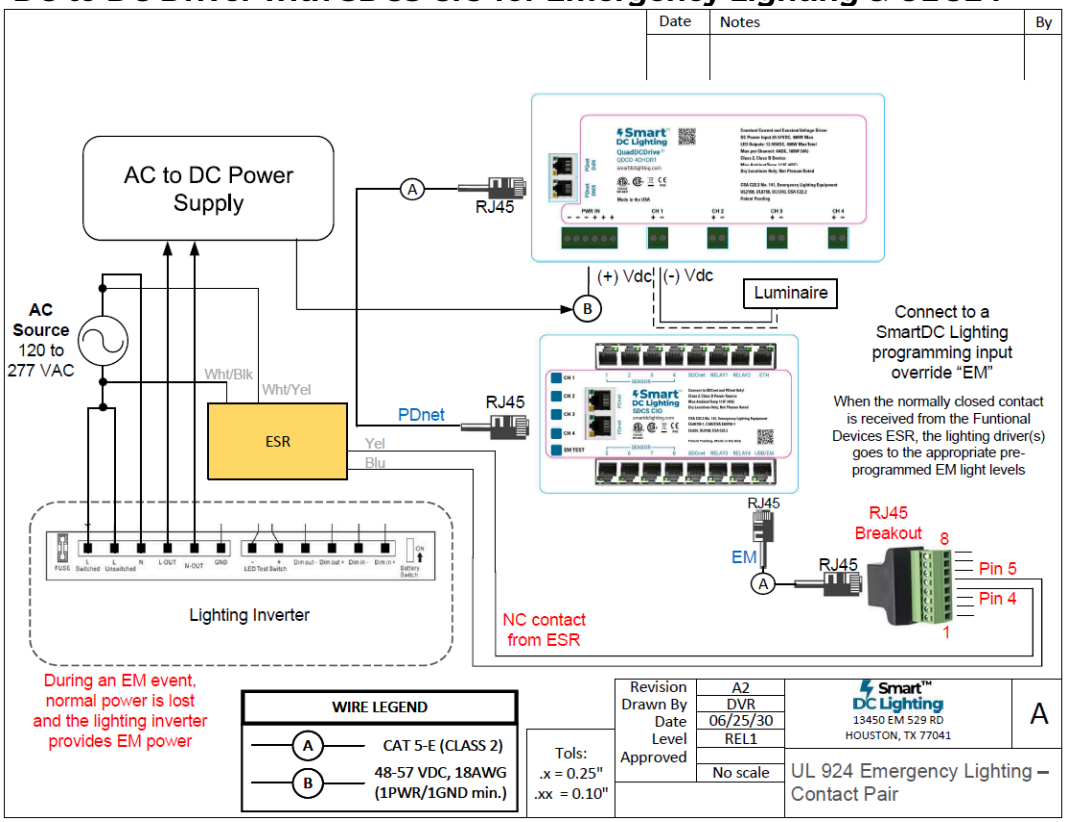
flowing properly to the loads without damaging the loads by providing them with too much current or voltage.

5. Default for all switch components is channel mapped to 1, 2 3 and 4 momentary on and off to allow for simple initial installation.

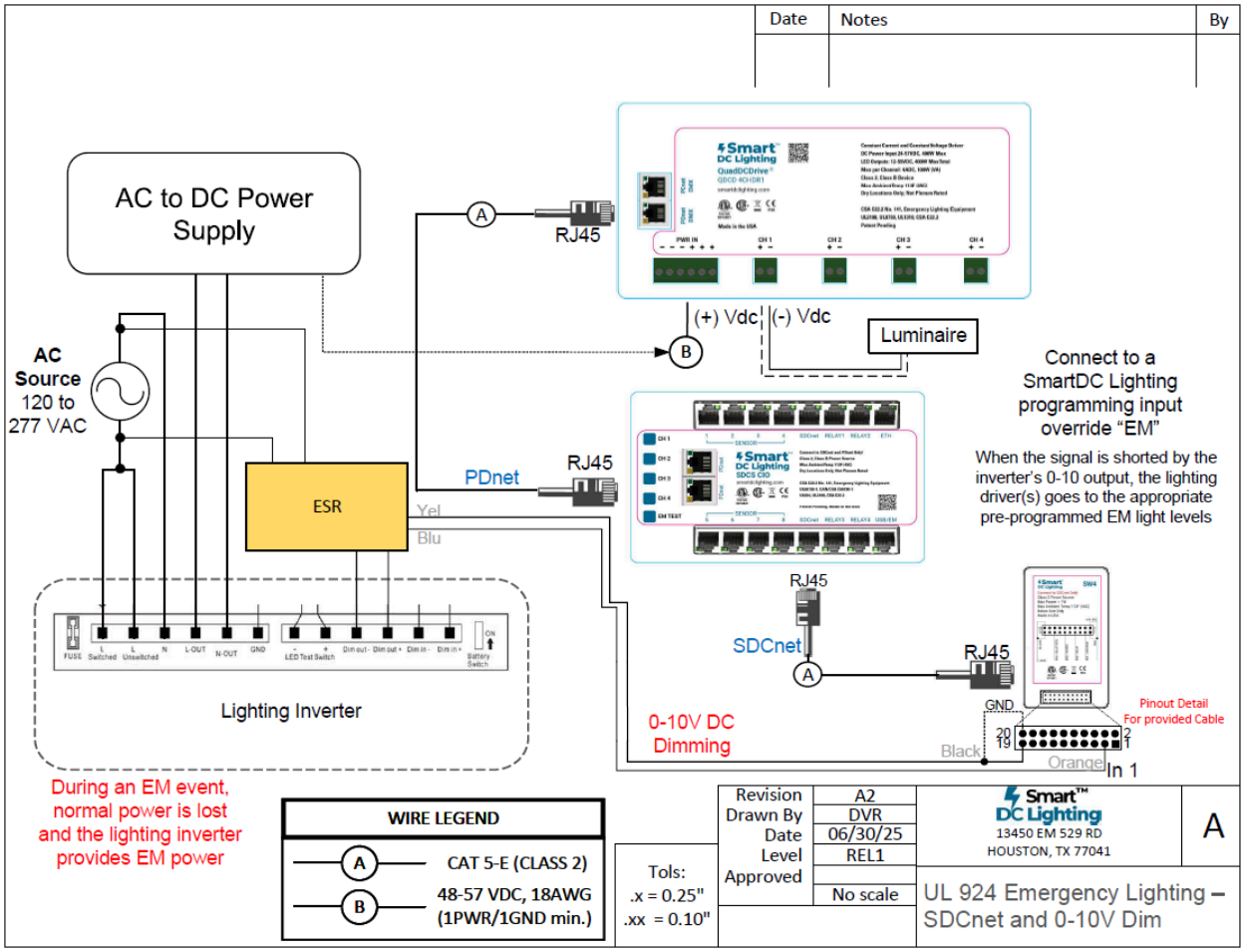
UL 924 applications

The SDCS CIO with or without the SW4 is capable of receiving a dry contact from a 3rd party power circuit monitoring device such as a Functional Devices ESR2401B. Upon sensing loss of power to its monitored circuit, the SDCS CIO will enter "Emergency Mode". During Emergency Mode, configured LED outputs or LED channels on a connected QuadDCDrive® will go to the user-defined Emergency Mode dimming level. Default 100% (adj). Any wall controllers, sensors or other input devices that are connected to the SDCS CIO, will be disabled while in Emergency Mode. Once the SDCS CIO senses the power returning, the device will return to normal operation. Any connected wall controls, sensors or other input devices will resume as normal. For wiring information, please see below:

QDCD DC to DC Driver with SDCS CIO for Emergency Lighting & UL 924



QDCD DC to DC Driver with SDCS CIO and SW4 for Emergency Lighting & UL 924



Additional SmartDC Technical Info may be found at www.smartdclighting.com

SDCS CIO [Specification Sheet]

[Wiring Diagrams]

WARRANTY 5-year limited warranty. Full warranty terms located at:
www.smartdclighting.com

Note: Specifications subject to change without notice.

Actual performance may differ as a result of the end-user environment and application.