



Power Efficiency for Sustainable Classrooms

DC2DC Architecture

The Power of DC for Your Lighting

Acuity Brands' DC2DC architecture provides for distributed DC power to a LED lighting system, enhancing its efficiency by eliminating the need and cost to convert AC to DC power at the luminaire, and facilitating the installation and commissioning of lighting controls. Intrinsically more efficient by design, our DC-powered lighting architecture also delivers savings at design and installation, facilitates maintenance, and empowers lighting design focused on sustainable and well-being applications.



To help foster the adoption of the use of DC power in building design, the US Green Building Council introduced a LEED® credit for Direct Current Power Systems¹ as well as consideration for DC-powered systems under its LEED Zero certification.



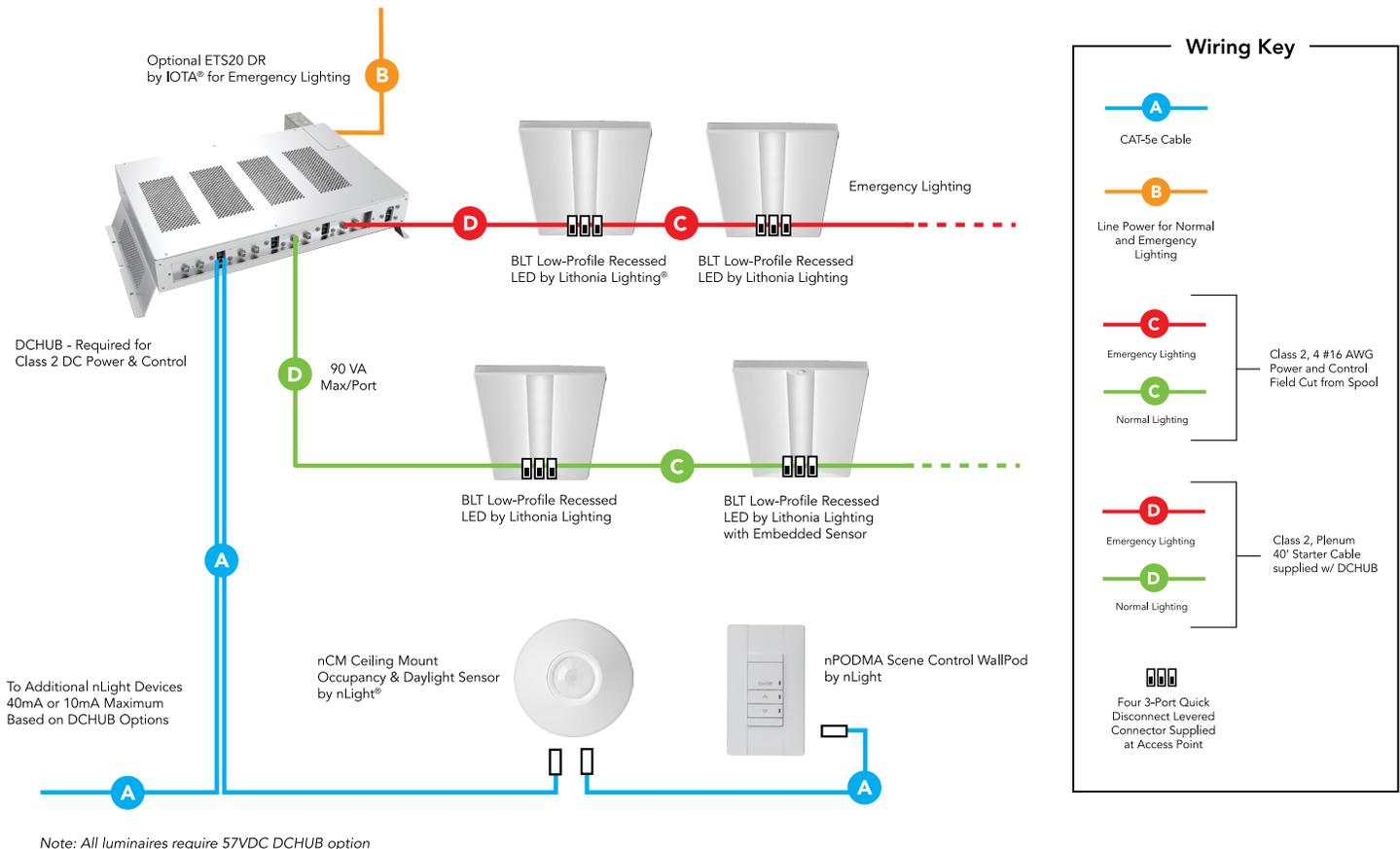
Converting AC to DC power results in efficiency losses of up to 10%², and every power conversion represents not only additional material costs, but a potential failure point for the connected devices and systems.

Your DC2DC Solution for Classrooms

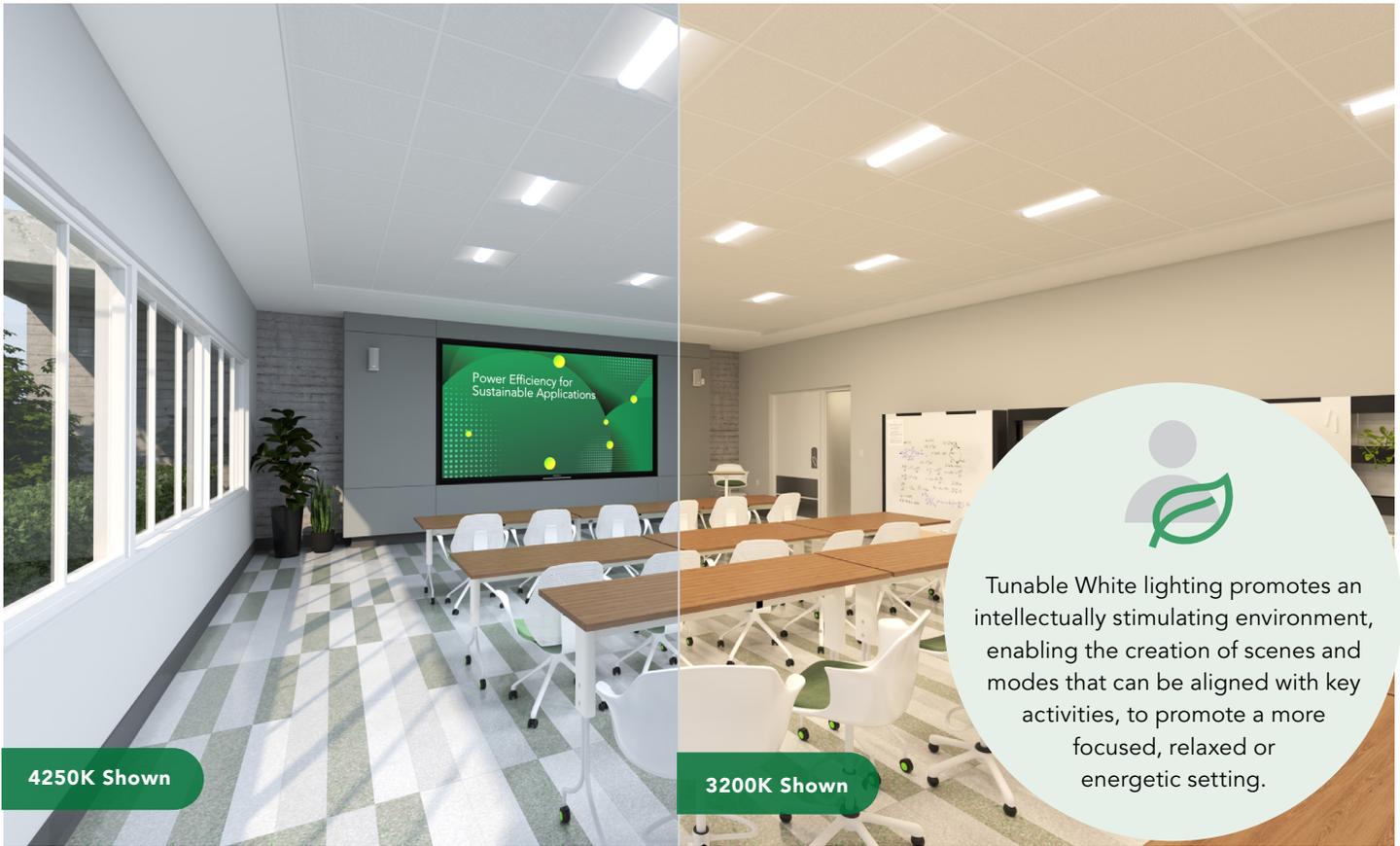
The DC2DC Architecture provides distributed low-voltage DC power and digital controls for a range of LED luminaires. The DC2DC architecture is particularly suited for design of spaces, such as classrooms, that consider both energy efficiency and increased occupant comfort and well-being, and that are typically designed with multiple lighting zones.

Components include:

- DCHUB, distributing DC power and control to up to 1080 VA of DC-powered LED luminaires including support for emergency lighting
- 57 VDC powered LED luminaires, with Static CCT or Tunable White options
- nLight® Wired networked lighting control, with nLight control devices and/or sensors embedded within luminaires
- Standard Class 2 power and control cables, 16 AWG



Unique Value for Classrooms



- **Energizes lighting design for student and teacher well-being.** The DC2DC architecture’s control cabling and DC powered LED drivers provide native support for Tunable White applications, enabling the creation of scenes and modes that can be aligned with key activities during the day.
- **Empowers flexible lighting control design.** Luminaires can be individually controlled or grouped in zones, with up to 16 independent control channels for luminaires with Static CCT or up to 8 channels for luminaires with Tunable White. In addition, installation time can be further reduced by leveraging embedded occupancy and daylight sensors within luminaires.
- **Enables “flex space” configuration.** Classroom space can be reconfigured and lighting control zones customized, without the need and cost of rewiring.
- **Reduces materials and installation hours.** The DC2DC architecture utilizes Class 2 low voltage DC wiring, eliminating the need for power packs, junction boxes and conduit to luminaires, providing reductions of both materials and related installation hours, and contributing to a reduction in construction carbon footprint (requirements may vary according to local code).
- **Integrates for a unified building approach.** The DC2DC architecture can be used within a hybrid implementation of DC and AC powered lighting systems within one building. It is part of a unified platform through nLight networked controls, enabling building-wide control and lighting strategies.
- **Facilitates maintenance.** The DCHUB is a single point of AC to DC power conversion and luminaire control interface, reducing points of maintenance.

Get Started - Design Your DC2DC Classroom Solution

Select Luminaires (DC Powered, 57 VDC), Lumen Output and Static CCT or Tunable White Options

Note: Refer to luminaire spec sheets for exact wattages based on options - up to 30W, 3 per DCHUB port/ up to 45W, 2 per DCHUB port/ up to 90W, 1 per DCHUB port



BLT

- 40L 3/port
- 60L 2/port
- TUWH 48L 2/port



ENVEX

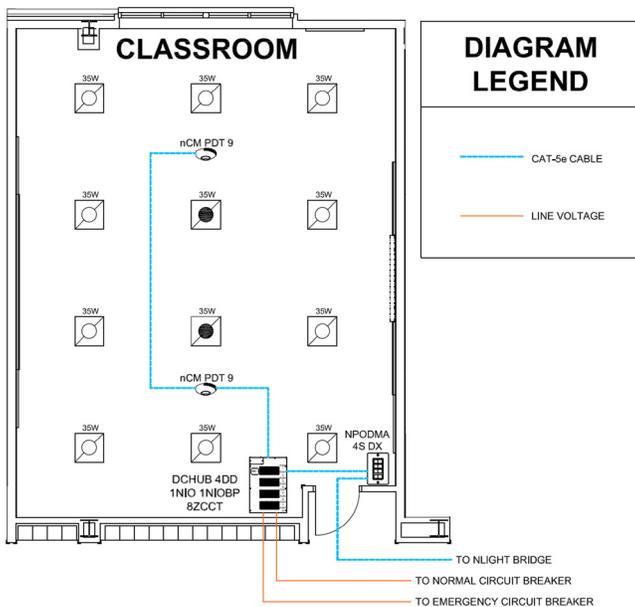
- 30L 3/port
- 48L 2/port
- TUWH 40L 2/port



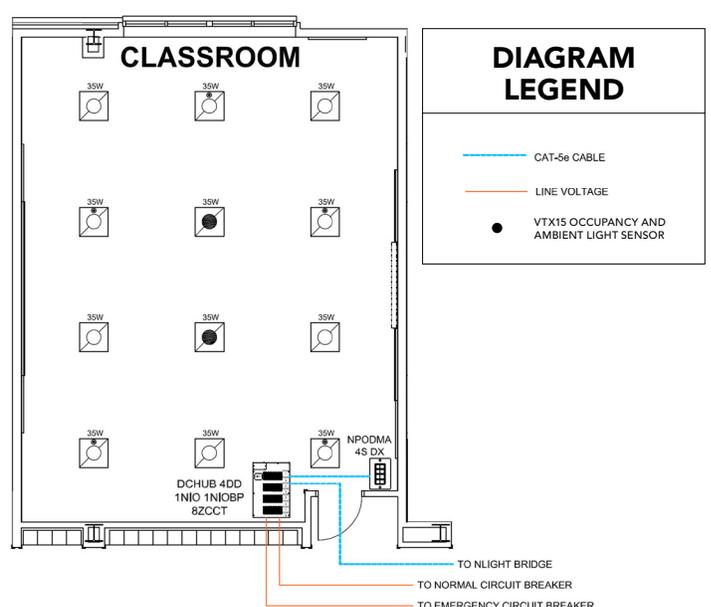
WHSPR

- 33L 3/port
- 48L 2/port
- TUWH 40L 2/port

Select Sensors and Controls



nLight Sensors and Controls



Sensors Embedded within Luminaires and nLight Controls

Up to 5 sensors communicate over Class 2, DCHUB wiring

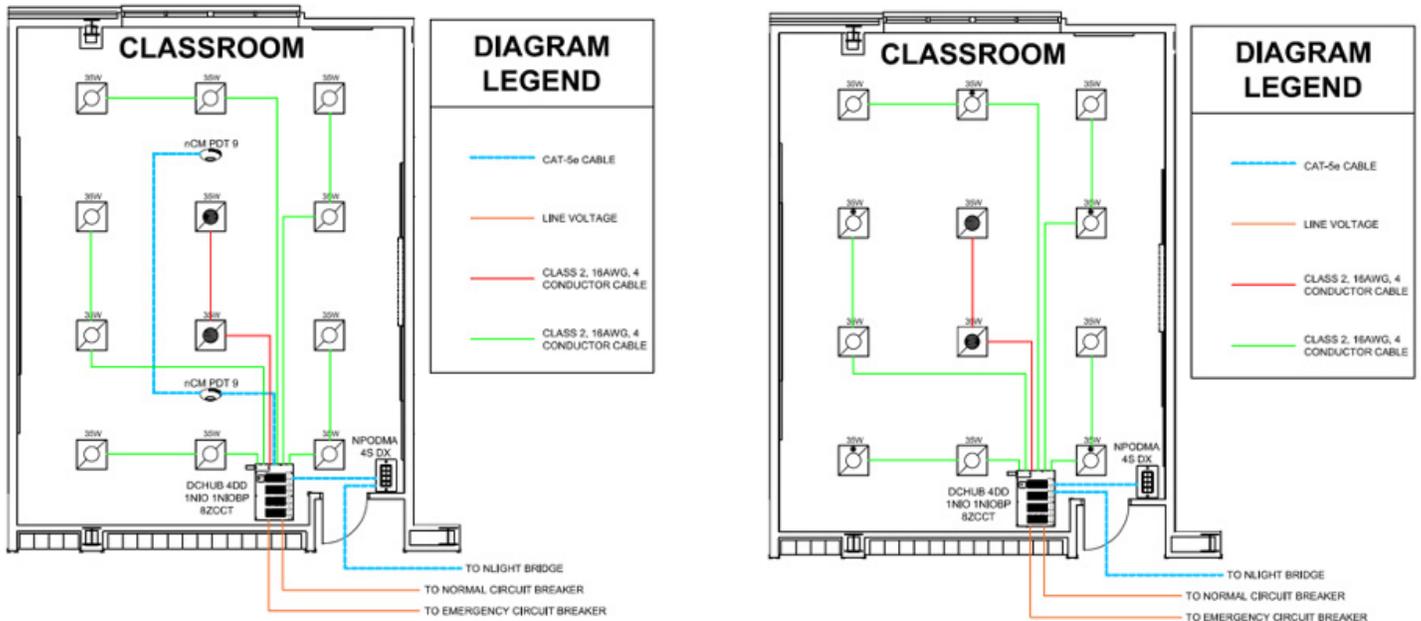
□ Detail Your DCHUB to Luminaire Wiring

Determine number of DCHUB ports - use 90W maximum per port for 208, 240 or 277 VAC input.

In example below, 31W - 45W luminaires are shown with two allowed per port.

For 30W or less fixtures, three per port are allowed.

For 120 VAC input DCHUB limit is 80W maximum per port - higher voltage input recommended.



Example - Classroom Bill of Materials

Application – Tunable White 2BLT4, 208/240 or 277 power feed, with emergency lighting from a generator or central inverter

With Individual nLight Controls

- (12) 2BLT4 TUWH RHYR 48L ADP 57VDC DCHUB
- (1) DCHUB 4DD 1NIO 1NIOBP 8ZCCT GRD PLN
- (320) Feet Class 2 cable provided with DCHUB
- (1) ETS20 DR
- (2) NCM PDT 10 RJB ADCX
- (1) NPODMA 4S DX CCT EDUTW

With Embedded Sensors

- (7) 2BLT4 TUWH RHYR 48L ADP 57VDC DCHUB
- (5) 2BLT4 TUWH RHYR 48L ADP 57VDC DCHUB VPIR15ADC
- (1) DCHUB 4DD 1NIO 1NIOBP 8ZCCT GRD PLN
- (320) Feet Class 2 cable provided with DCHUB
- (1) ETS20 DR
- (1) NPODMA 4S DX CCT EDUTW



LEARN MORE ABOUT THE DC2DC ARCHITECTURE

www.AcuityBrands.com/DC2DC

¹ New LEED pilot credit encourages energy savings with DC power systems | U.S. Green Building Council (usgbc.org)

² Pacific Northwest National Laboratory. Arnold, Gabe & Pennell, Grace. 2020. DC Lighting and Building Microgrids, Opportunities and Recommendations. [DC_Lighting_and_Microgrids_White_Paper_09-09-2020.pdf](#) (pnnl.gov)