

ETC Installation Guide

ArcSystem Pro One-Cell

Introduction

Congratulations on your purchase of ArcSystem products. ArcSystem is a family of overhead LED products designed for installations where dimming, light quality, and ease of installation are absolutely essential. With ArcSystem, you will experience perfectly smooth dimming from 100% down to absolute zero. ArcSystem luminaires come in a variety of form factors, beam angles, and color-temperature options, all with high-efficiency optics and an outstanding quality of light ideal for any application.

ArcSystem products with ArcMesh can be controlled using wired DMX or the wireless ArcMesh protocol. ArcSystem products without ArcMesh can be configured for RDM control. This manual provides step by step instruction on the installation of ArcSystem products as well as full system integration. For information on installing the ArcSystem TX1 Transmitter for use with ArcMesh installations, see the ArcSystem Installation Manual at etcconnect.com/ArcSystem. All ETC manuals are available for download free of charge at etcconnect.com.

Safety

ArcSystem products are intended for professional use only. **Read the entire manual before using this equipment.**

IMPORTANT SAFEGUARDS

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

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

- Do not use outdoors.
- Do not let power supply cords touch hot surfaces.
- Do not mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than intended use.

SAVE THESE INSTRUCTIONS



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System Overview

ArcSystem luminaires are available in 100–240 V standard models with IEC connectors, 100–125 V emergency models with NEMA 5-15 connectors, or 100–277 V hard-wired standard or emergency models. ArcSystem Pro One-Cell luminaires require an external driver.

ArcSystem Pro One-Cell

- external 100–277 V D1 Series or D4 Series driver required
- ideal for short/medium throw
- 25 W full load power consumption
- fixed version recessed/flush mount only
- adjustable version recessed/flush mount with two-axis tip and tilt
- yoke mount version with two-axis tip and tilt
- beam angle options: 18°, 30°, 50°

ArcSystem Pro One-Cell High Output

- external 100–277 V D1 HO driver required
- ideal for long throw
- 100 W full load power consumption
- fixed version recessed/flush mount only
- adjustable version recessed/flush mount with two-axis tip and tilt
- beam angle options: 18°, 30°, 50°

ArcSystem Pro One-Cell Small

- external 100–277 V D1 Series or D4 Series driver required
- ideal for short/medium throw
- 25 W full load power consumption
- adjustable version recessed/flush mount with single-axis tilt
- yoke mount version with single-axis tilt
- beam angle options: 19°, 24°, 37°, 60°

ArcSystem Pro One-Cell Micro

- external 100–277 V D2 driver required
- ideal for short/medium throw
- 20 W full load power consumption
- adjustable version recessed/flush mount with two-axis tip and tilt
- yoke mount version with two-axis tip and tilt
- beam angle options: 19°, 24°, 37°, 60°



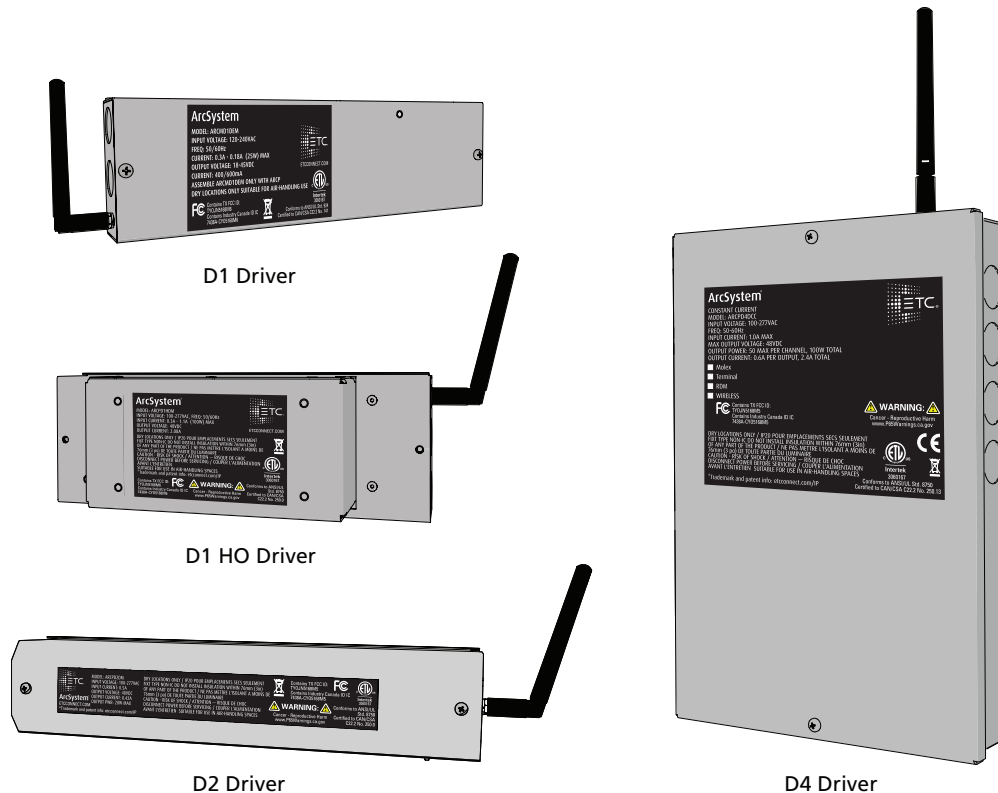
Note: *The ArcSystem Pro One-Cell Micro is not available in 5000 K or Fade to Warm variants. The ArcSystem Pro One-Cell High Output is not available in 3500 K, 4000 K, 5000 K, or Fade to Warm variants.*

ArcSystem Pro Multi-Cell luminaires are covered in the *ArcSystem Pro Multi-Cell Installation Guide* and *ArcSystem Installation Manual*. All ETC manuals are available for download free of charge at etcconnect.com.

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D1 Series, D2 Series, and D4 Series Drivers



Note: Antenna is not present on RDM models.

ArcSystem Pro One-Cell luminaires require an external driver. ArcSystem D1, D2, and D4 Series drivers use standard RJ45 connectors for DMX control.

- The D1 Driver provides up to 25 W to a single One-Cell or One-Cell Small luminaire.
- The D1 HO Driver provides up to 100 W to a single One-Cell High Output luminaire.
- The D2 Driver supports one or two One-Cell Micro luminaires and provides up to 10 W per output.
- The D4 Constant Current Driver with Molex connectors supports four One-Cell or One-Cell Small luminaires.
- The D4 Constant Current Driver with terminals provides 48 VDC and 400 mA or 600 mA per output channel, with a maximum total output of 2.4 A or 100 W.
- The D4 Constant Voltage Driver with terminals provides 24 VDC and up to 50 W per output channel, with a maximum total output of 2 A or 150 W.

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For more information on installation of standard or emergency system drivers, see [Preparing to Install the Driver on page 7](#) or [Emergency System One-Cell Installation on page 19](#).



Note: *ArcSystem Pro One-Cell Micro and ArcSystem Pro One-Cell standard luminaires are not interchangeable. One-Cell Micro luminaires require a D2 driver to function; One-Cell and One-Cell Small luminaires require a D1 driver or D4 driver to function.*



Note: *All ArcSystem wireless luminaires require a TX1 Transmitter and commissioning tool to set DMX addresses for both wired DMX and wireless installations. Contact your ETC Service Technician for more information.*

Emergency System Overview

ArcSystem drivers and luminaires can be purchased in UL924 listed variants. Each of the luminaires can be configured to be UL924 listed when wired into an existing emergency response system. See [Emergency System One-Cell Installation on page 19](#).

Install the ArcSystem D1, D2, or D4 Series driver in a location that is accessible by qualified personnel for testing of the emergency operation.



Note: *Luminaires must be hard-wired to emergency certified drivers to be considered for UL924 certification.*



Note: *The number of designated emergency lamps and their height is the responsibility of the specifier and installer in order to achieve the minimum FC levels of NFPA 101. Installation scenarios should be evaluated by the AHJ to confirm illuminance and performance requirements of ANSI/NFPA 101 and the IBC.*



Note: *ArcSystem Pro One-Cell Micro luminaires in emergency installations must be installed with a maximum mounting height of 23.2 ft (7.07 m).*



Note: *Installation must follow all national and local codes for electrical equipment.*



Note: *Normal and emergency wiring cannot be contained in the same conduit according to NEC 700.10(B).*

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Emergency drivers and luminaires require two branch circuit connections. These inputs have the following functions:

1. Normal branch circuit to sense failure of the normal supply. Connect to Sense Input connector.
2. Normal/Emergency branch circuit providing power to the luminaire in both conditions. Connect to Maintained Input connector.

Sense detects when power is lost and forces the luminaire to a full-on state, powered by the emergency supply through the Constant Power input. Control of the luminaire will not be available until the sense input has been restored.



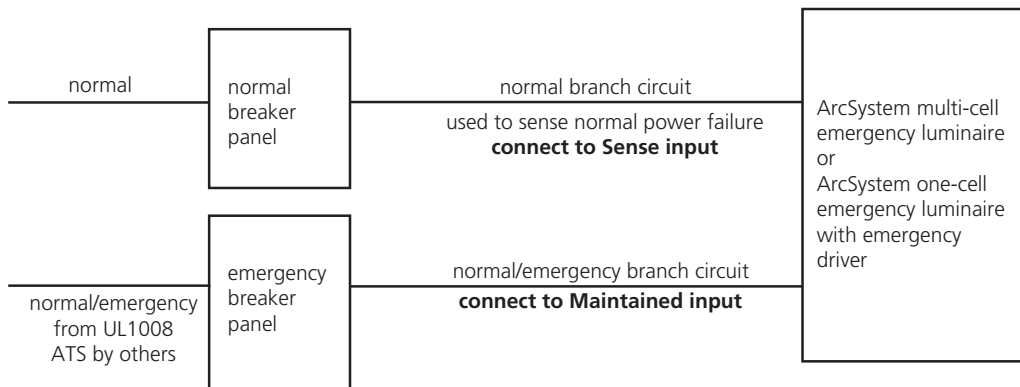
WARNING: Do not mix 120 V and 277 V between the sense and emergency feeds.

AVERTISSEMENT : Ne pas inverser les alimentations à 120 V et 277 V entre les alimentations de détection et de secours.



WARNING: Sense (normal) and Maintained (normal/emergency) feeds must have the same phase. The diagram below shows the recommended installation.

AVERTISSEMENT : Les alimentations de détection (normale) et d'entretien (normal/secours) doivent être sur la même phase. Le schéma ci-dessous présente l'installation recommandée.



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Before You Begin Installation

Review the following sections before beginning your ArcSystem installation. ArcSystem products should only be installed by a qualified installer or electrician.

Power Disconnect Device

Before installation, make sure you have a readily accessible input power disconnect device installed ahead of your ArcSystem products.



WARNING: RISK OF DEATH BY ELECTRIC SHOCK! Failure to disconnect all power to the system before installation, maintenance, cleaning, or any other system modification could result in serious injury or death.

AVERTISSEMENT : RISQUE DE MORT PAR DÉCHARGE ÉLECTRIQUE! Négliger de débrancher toutes les sources d'alimentation du système avant l'installation, l'entretien, le nettoyage ou toute autre modification du système peut causer des blessures graves ou la mort.

De-energize main feed to ArcSystem and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.



WARNING: Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.

Site Survey for Wireless Installations

ArcSystem transmitters and luminaires operate in the unlicensed 2.4 GHz band using the IEEE 802.15.4 standard. This band is shared with other technologies such as Wi-Fi, Bluetooth, low power sensor networks, wireless AV transmitters and some radio microphones.

Before commissioning a system, a wireless site survey is essential.

Gathering information on how your wireless lighting system will overlap with all other Wi-Fi traffic in the area will help determine setup of transmitters and which luminaires should be re-broadcasting, not just receiving wireless data.

Installation Requirements

- Indoor installation only: 0–40°C (32–104°F), 5–95% non-condensing humidity.
 - Dry locations only.
 - Installation location must support the weight of the luminaire, driver, and applicable mounting hardware.
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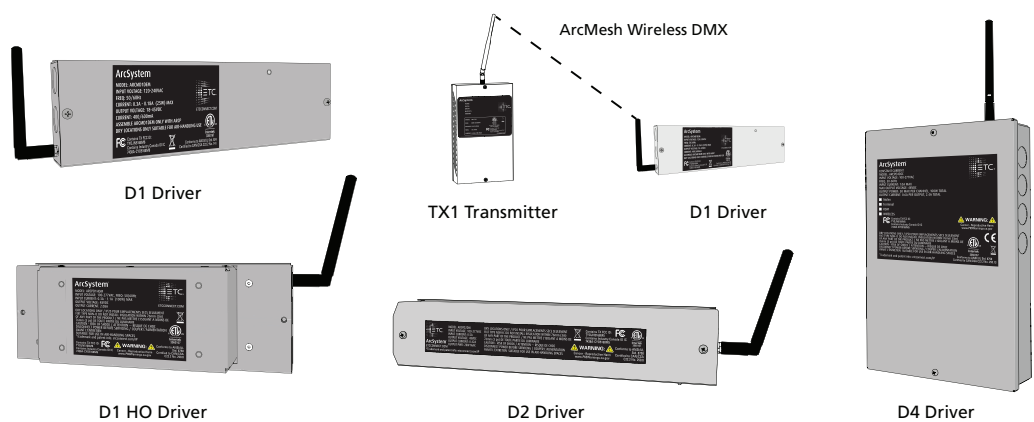


CAUTION: ArcSystem luminaires and drivers are not suitable for use in spaces with restricted air flow. Enclosing the luminaires or drivers temporarily or permanently may cause damage to the luminaires or drivers.

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Preparing to Install the Driver



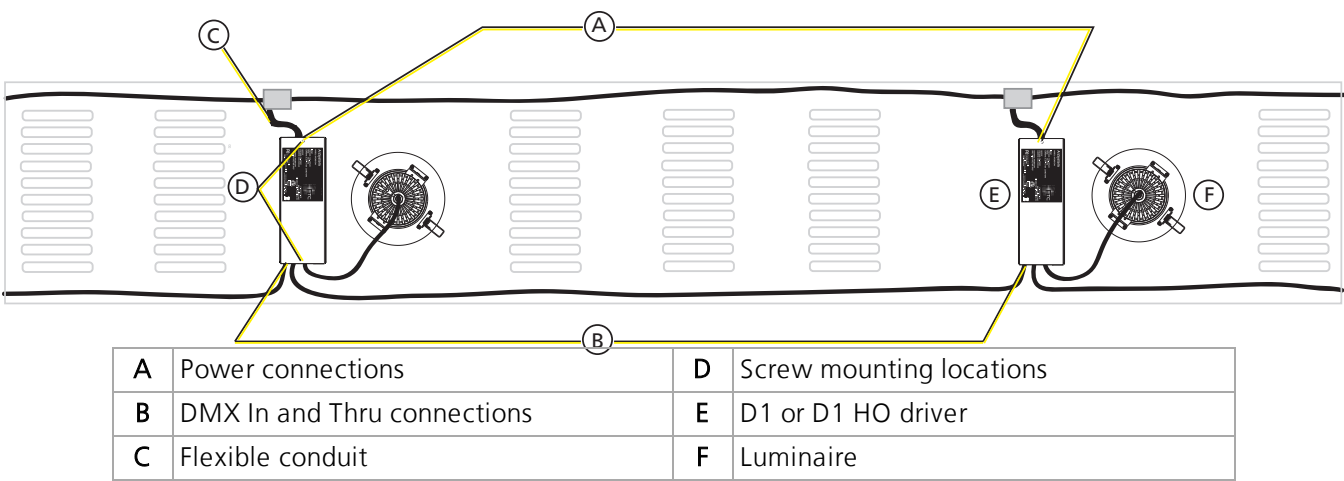
Note: *Antenna is not present on RDM models.*

The D1, D2, and D4 Series drivers are compact, convection-cooled LED drivers with RJ45 connections for local DMX. Each driver has an IN and THRU option, using two separate connectors. The D1 and D1 HO drivers can control a single luminaire each. The D2 driver can control two ArcSystem Pro One-Cell Micro luminaires. The D4 driver can control up to four ArcSystem Pro One-Cell or Pro One-Cell Small luminaires. Up to 32 drivers can be installed on one hard-wired line of DMX.

The following illustration shows an example of a linear ceiling installation with one luminaire for each D1 Series driver. The cable between an ArcSystem Pro One-Cell Series luminaire and its driver is approximately 1 m (40 in) long.



Note: *If you want to daisy chain power wiring, it must be connected through a junction box as shown below. Follow all applicable local and national electrical codes.*



A	Power connections	D	Screw mounting locations
B	DMX In and Thru connections	E	D1 or D1 HO driver
C	Flexible conduit	F	Luminaire

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Installation Spacing - High Output Luminaires

ArcSystem Pro One-Cell High Output luminaires must be installed with the spacings listed below.

Install with minimum spacings between

- Center-to-center of adjacent luminaires: 609.6 mm (24 in)
- Top of luminaire to overhead building member: 76.2 mm (3 in)
- Luminaire center to side building member: 304.8 mm (12 in)

Supplies

The following supplies are required, but not provided:

- ½ in flexible conduit and conduit fittings, as needed
- Romex or nonmetallic screw-clamp style conduit connectors for outputs
- Phillips screwdriver
- Four #10 screws and other mounting hardware as needed



Note: *Mounting hardware and installation location must support the weight of the driver, conduit hardware, and all cable required for installation.*

Electrical and Wiring Specifications

Install the driver on a power distribution system with reliably identified earthed neutral (ground) and install a maximum 20 A circuit breaker on the line conductor. The D1, D2, and D4 Series drivers accept 100–277 VAC, 50/60 Hz. ETC recommends installing all wiring in grounded metal conduit.



WARNING: Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.

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Wire and Terminal Specifications

Terminal/Connector	Conduit Entry	Wire Range/Specifications	Strip Length	Torque Rating
D1 power input line/neutral/ground	½ in conduit	Up to 6 mm ² (10 AWG) solid or stranded	7 mm (1/4 in)	0.8 Nm (7 in-lb)
D1 HO and D2 power input line/neutral	½ in conduit	0.5–10 mm ² (22–6 AWG)	7 mm (1/4 in)	0.5 Nm (4.4 in-lb)
D4 maintained power input line/neutral				
D4 emergency drivers sense power input line/neutral/ground	½ in conduit	0.2–2.5 mm ² (24–14 AWG)	6.5 mm (1/4 in)	0.5–0.6 Nm (4.4–5.3 in-lb)
Power Input ground	½ in conduit	2.5–10 mm ² (6–14 AWG)	10 mm (3/8 in)	4.0 Nm (35 in-lb)
DMX In/Thru RJ45 Connectors	½ in conduit	Cat5e (or better) minimum 0.2 mm ² (24 AWG) conductors terminated to T568B standard	N/A	N/A
Outputs for all D1, D2, and D4 Series Drivers with Molex connectors	½ in conduit	Follow Class 2 wiring methods.		
Outputs for D4 drivers with terminals	½ in conduit	0.2–2.5 mm ² (26–14 AWG) using the provided two-terminal connectors. Follow Class 1 wiring methods.	6 mm (1/4 in)	0.4–0.5 Nm (3.5–4.4 in-lb)



Note: Maximum supported wire length between One-Cell luminaires and D1 Series and D2 Series drivers is 15 m (49 ft).

Maximum supported wire length between any load and a D4 Series driver is 10 m (33 ft).

Mounting the Driver

Depending on your installation, you might want to surface-mount the driver. Any ArcSystem standalone driver can be surface-mounted to any surface capable of supporting its weight using the four holes located on the back side of the enclosure. Contact ETC for custom mounting bracket options.

1. Remove the two screws on the cover of the driver and set them aside.
2. Remove the driver cover. The cover is tethered to the backbox. Be careful when handling.



Note: If you are installing a D1 High Output driver, the power supply is inside the cover and has wiring that runs to the driver board in the back panel of the driver. Be careful when handling. It may help to nest the back panel of the driver inside the cover as shown in [Wiring the Driver and Luminaire on page 12](#).

3. Using four #10 screws, mount the back panel to the mounting surface.
4. Attach flexible conduit to the driver. There are four conduit knockouts available.
5. Install Romex or nonmetallic screw-clamp conduit connectors to output knockouts, as needed.

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Note: *Make sure that the flexible electrical supply can extend through the ceiling opening so that the driver and luminaire can be inspected and serviced when needed.*



Note: *Use suitable conduit where required by national and local codes.*



Note: *Drivers may require additional means of securement. Installation must follow all national and local codes for electrical equipment.*

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Preparing the Ceiling for Recessed Luminaires

This section is specific to the recessed/flush mounted variant of luminaires. For Pro One-Cell yoke-mounted luminaires, proceed to [Wiring the Driver and Luminaire on page 12](#).

Cut a hole in the ceiling or ceiling tile to accommodate the luminaire's retaining clip anchors. Cut the hole larger than the minimum hole diameter listed below and smaller than the luminaire's outer bezel. The images below provide an example of the bezels on the Pro One-Cell luminaires.

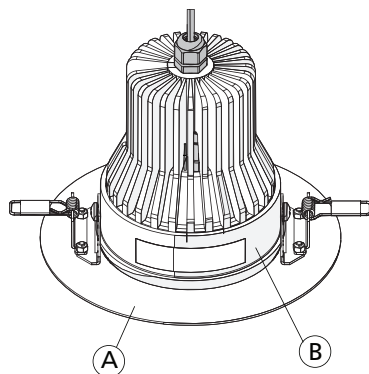
Luminaire	Minimum Hole Diameter
Pro One-Cell	16.5 cm (6-1/2 in)
Pro One-Cell High Output	17.0 cm (6-11/16 in)
Pro One-Cell Small	9.5 cm (3-3/4 in)
Pro One-Cell Micro	7.6 cm (3 in)



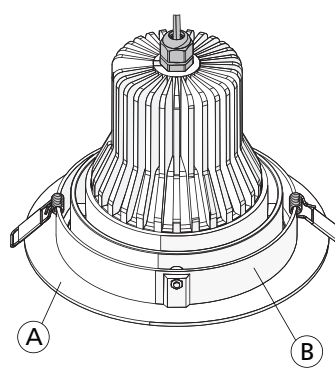
Note: If you are installing the luminaire into an ArcSystem Recessed Ceiling Adapter, refer to the ArcSystem Recessed Ceiling Adapter Installation Guide for the minimum diameter hole to cut in the ceiling to clear the flange on the bottom of the bracket.



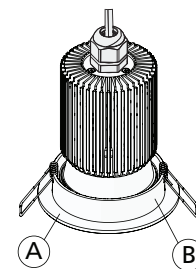
Note: Maximum ceiling thickness for safe use of the luminaire retaining clips is 1.9 cm (3/4 in).



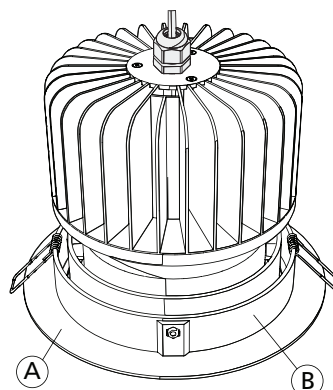
Pro One-Cell
fixed model



Pro One-Cell
adjustable model

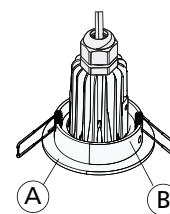


Pro One-Cell Small
adjustable model



Pro One-Cell High Output
adjustable model

A	Outer bezel
B	Inner bezel



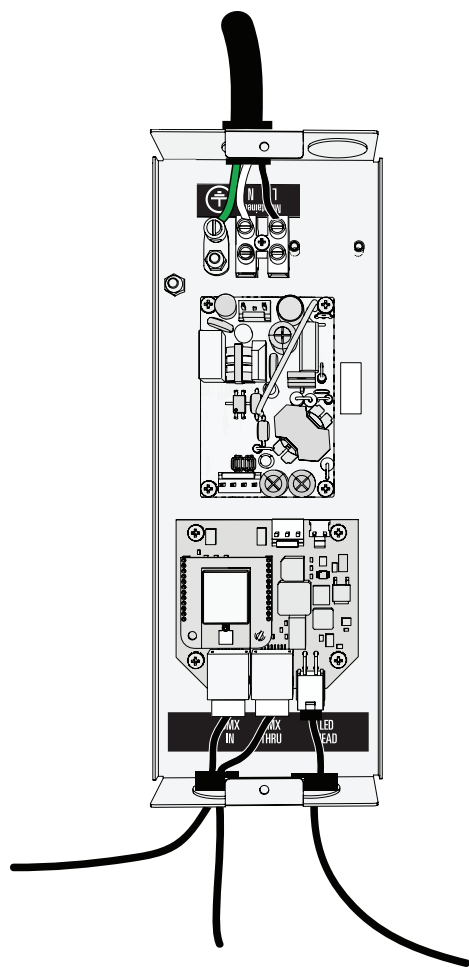
Pro One-Cell Micro
adjustable model

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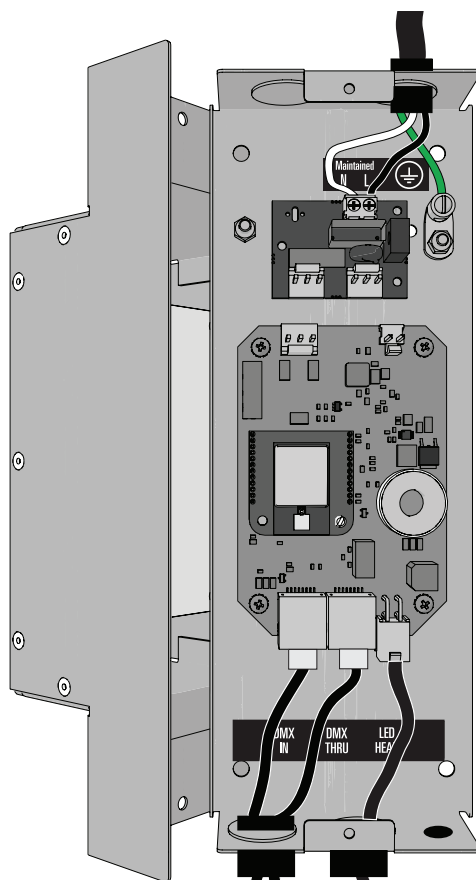
Pro One-Cell

Wiring the Driver and Luminaire

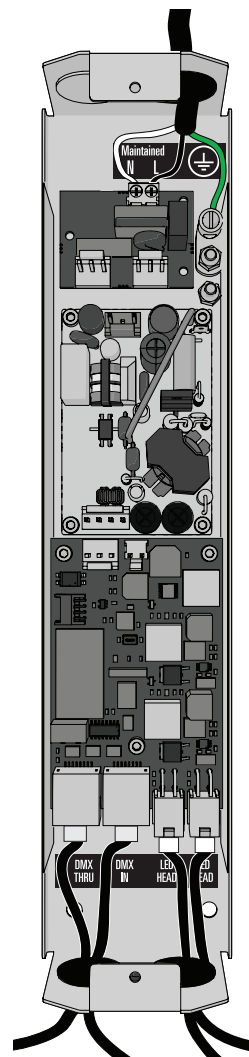
Wiring of the driver consists of wiring power and data (DMX) to the driver for your luminaire and then running power out to the luminaire from the driver. If you are installing emergency system drivers, see [Emergency System One-Cell Installation on page 19](#).



D1 Driver



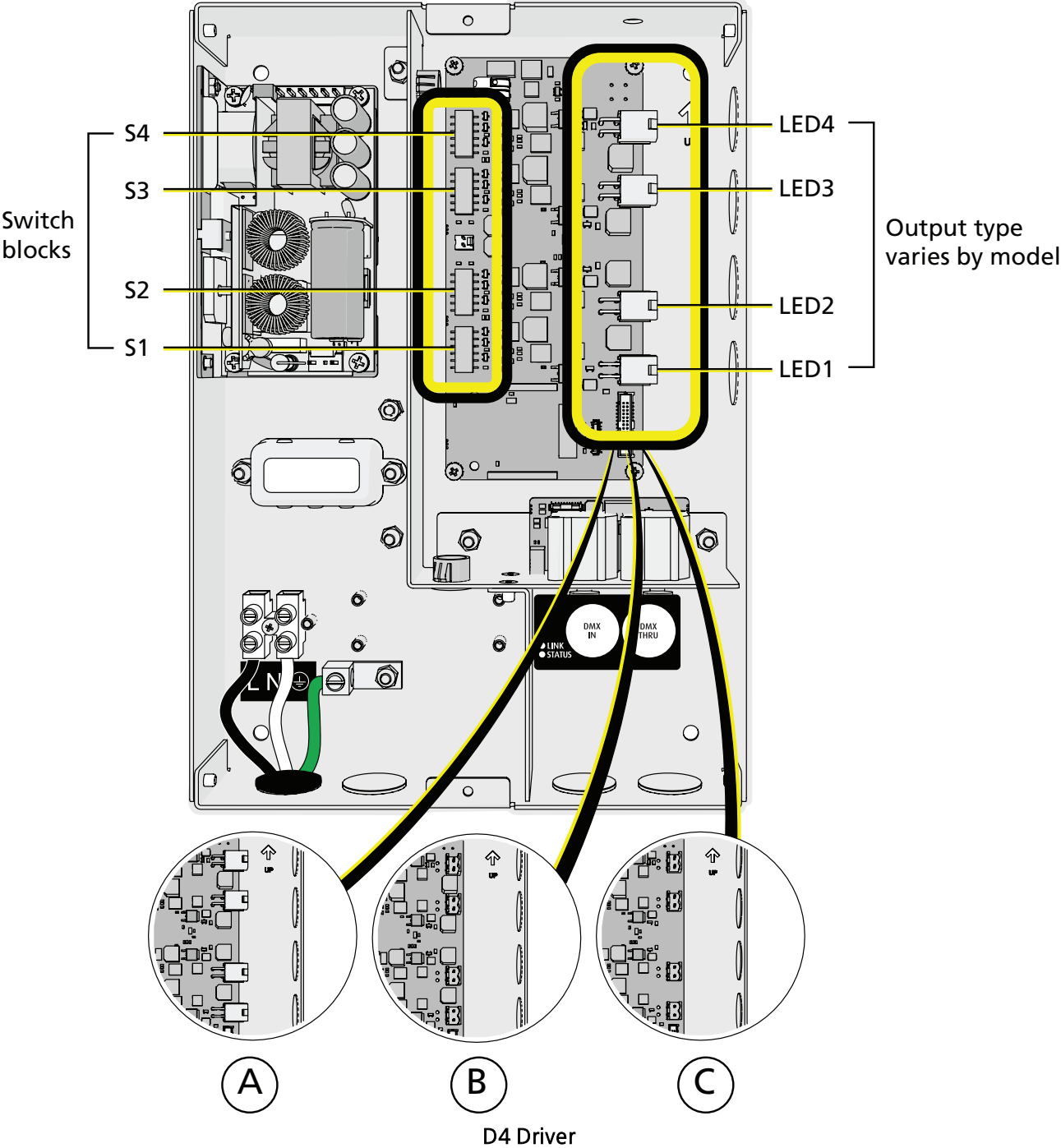
D1 HO Driver



D2 Driver

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A	Constant Current with Molex connectors
B	Constant Current with terminal outputs
C	Constant Voltage with terminal outputs

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Power

Internal wire colors vary by model.

Factory Wire Colors

Model	Color	Type
North America and Europe	green/yellow	ground/earth
North America	black	line/hot
North America	white	neutral
Europe	brown	live
Europe	blue	neutral

Perform the following steps to wire power to the driver.



WARNING: Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.

1. Make sure power is off at the main circuit breaker.
2. See [Wire and Terminal Specifications on page 9](#) for specification of wire, strip length, and terminal torque ratings. Prepare the wires accordingly.
3. Loosen the three screw terminals for NEUTRAL (N), GROUND (⊕), and LINE (L) connections.
4. Insert the ground wire (typically green) into the GROUND (⊕) terminal and tighten the screw.
5. Insert the neutral wire (typically white) into the NEUTRAL (N) terminal and tighten the screw.
6. Insert the line wire (typically black) into the LINE (L) terminal and tighten the screw.
7. Tug gently on the wires to ensure they are secure.

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Luminaire Connection to Driver

ArcSystem Pro One-Cell luminaires connect to a driver using Molex receptacles labeled "LED Head" for D1 and D2 Series Drivers and "LED" followed by output channel number for D4 Series drivers. All D1 Series and D2 Series drivers and some models of D4 Series drivers have Molex receptacles for ArcSystem Pro One-Cell luminaire connections. Models of D4 Series drivers with two-pin terminal outputs can be used to provide power and data to other fixtures.

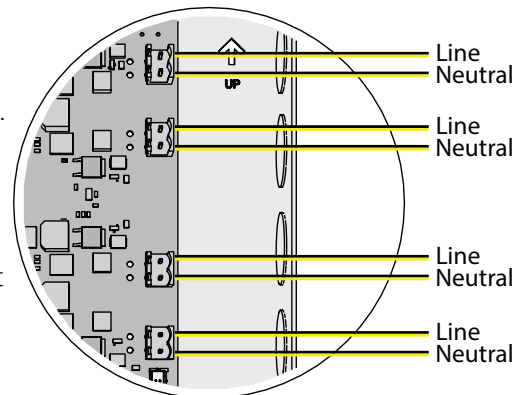


Note: *Maximum supported wire length between One-Cell luminaires and D1 Series and D2 Series drivers is 15 m (49 ft).*

Maximum supported wire length between any load and a D4 Series driver is 10 m (33 ft).

1. Install the ceiling with the prepared mounting hole for the luminaire.
2. Run the luminaire cable through the previously installed screw-clamp conduit connector at one of the driver knockouts.
3. Connect the luminaire cable to the driver output.
 - **D1 Series, D2 Series, and D4 Series Drivers with Molex receptacles:** connect the four-pin luminaire cable(s) to the Molex receptacle(s) inside the driver. See [Wiring the Driver and Luminaire on page 12](#). Support the luminaire(s). Do not let luminaires hang by their cables.
 - **D4 Drivers with terminal outputs:** wire loads (luminaires) to a provided two-pin connector and insert the connector into a two-pin terminal inside the driver. See the illustration at right.
 - Constant Current (CC) drivers: verify that each output channel's current output is configured correctly. See [D4 Series Driver Current Configuration on page 17](#).

Two-pin terminal wiring

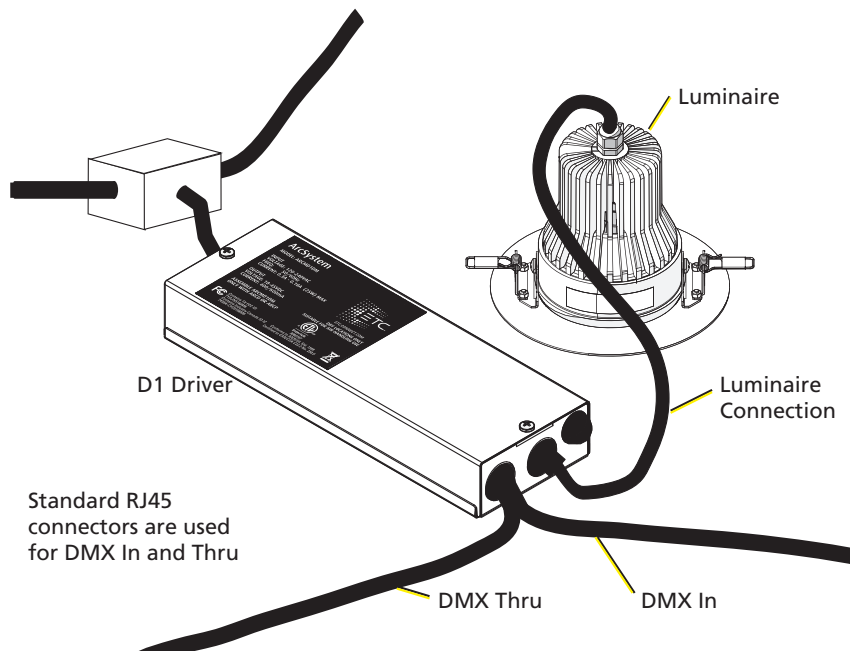


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DMX In and DMX Thru

The following image shows a hard-wired DMX topology for the D1 Series driver.



Note: Use suitable conduit where required by national and local codes.

DMX In and DMX Thru cables terminate to RJ45 connectors. DMX is installed in a daisy chain topology and includes one pair of wires (Data + and Data -) plus an ISO ground (common). ETC recommends Cat5e (or better) minimum 24 AWG conductors terminated to T568B standard. Up to 32 D1, D2, or D4 series drivers can be connected per DMX run.

RJ45 Pinout Information

Pin	Description
1	Data +
2	Data -
7&8	ISO ground (common)

DMX Connection to Driver

1. Run your DMX lines through the other previously installed screw-clamp conduit connector and terminate the RJ45 connectors to the DMX In and DMX Thru terminals accordingly.
2. Reinstall the driver cover using the two previously removed screws.



Note: ArcSystem multi-cell luminaires and standalone drivers are not self-terminating. You must terminate the last multi-cell luminaire or standalone driver in line with a 120Ω resistor.

To purchase an RJ45 terminator, please contact your ETC customer service representative and request part number N4086.

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D4 Series Driver Current Configuration

See [D4 Series Emergency Driver Current Configuration on page 22](#) for information on configuring the driver current in D4 emergency drivers.



Note: *Do not change the switch settings on a D4 Constant Voltage (CV) model driver.*

D4 Series Constant Current (CC) drivers can be configured for 400 mA or 600 mA output using the four switch blocks shown in the illustration of the [D4 Driver on page 13](#).

Outputs

Each of the four switch blocks controls one output.

- Switch block S1 controls LED1.
- Switch block S2 controls LED2.
- Switch block S3 controls LED3.
- Switch block S4 controls LED4.

Switch Functions

Each switch block has six switches.



Note: *Do not change the switch 1 settings on a D4 Constant Voltage (CV) model driver.*

- Switch 1 sets the current output threshold.
ON = 400 mA, OFF = 600 mA.
- Switches 2 through 5 control the DMX channel assigned to the output.
- Switch 6 enables emergency functionality.

Switches 2 through 5 are factory set to allow each output to be controlled by an individual DMX address. ETC recommends leaving the DMX channel switches (positions 2 through 5) at their factory settings and using the ArcSystem Configuration Software or RDM settings to control the behavior of each output.



Note: *ArcSystem D4 Drivers are factory configured for 600 mA output for compatibility with ArcSystem Pro One-Cell and One-Cell Small luminaires. If you power a One-Cell or One-Cell Small luminaire from a D4 output channel that is configured for 400 mA, the output of the luminaire may be dim.*



Note: *If you set an output on a non-emergency driver to emergency operation, the output will remain at full (or their configured emergency behavior) because there is no normal/sense input to the driver.*

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Installing One-Cell Recessed Luminaires

The installation procedure is similar for all recessed one-cell luminaires (fixed and adjustable). For Pro One-Cell yoke-mounted luminaires, continue on to [Installing One-Cell Yoke-Mounted Luminaires below](#).



WARNING: ArcSystem Pro One-Cell, One-Cell Small, and One-Cell High Output fixtures and D1 and D1 High Output drivers are NON-IC rated and therefore NOT suitable for installation in direct contact with combustible materials or thermal insulation.

DO NOT INSTALL INSULATION WITHIN 76 mm (3 in) OF ANY PART OF THE FIXTURE OR DRIVER.

AVERTISSEMENT : Les lampes One-Cell, One-Cell Small, One-Cell High Output, et les drivers D1 and D1 High Output ArcSystem sont classés NON-IC, ils ne conviennent donc PAS pour une installation en contact direct avec des matières combustibles ou une isolation thermique.

NE PAS INSTALLER D'ISOLATION À MOINS DE 76 mm (3 po) DE TOUTE PARTIE DE LA LAMPE OU DU DRIVER (DISPOSITIF ÉLECTRONIQUE DE PUISSANCE).



WARNING: Adjustable ArcSystem Pro One-Cell fixtures and adjustable ArcSystem Pro One-Cell Small fixtures are suitable for Non-Fire Rated installations ONLY.

AVERTISSEMENT : Les lampes Pro One-Cell ArcSystem réglables et Pro One-Cell Small ArcSystem réglables sont parfaites UNIQUEMENT pour les installations sans indice de résistance au feu.

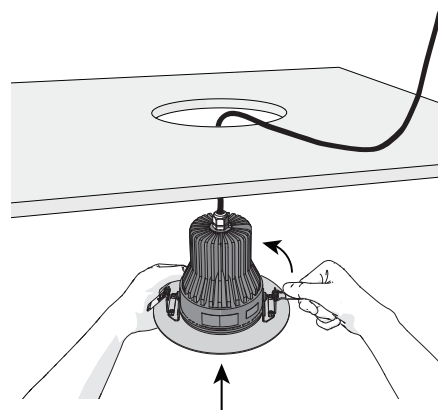


Note: Make sure that the flexible electrical supply can extend through the ceiling opening so that the driver and luminaire can be inspected and serviced when needed.



Note: ArcSystem Pro One-Cell Micro luminaires and D2 drivers are Type IC - inherently protected and suitable for installation in contact with insulation.

1. Fold both retaining clips towards the luminaire body.
2. Place the luminaire through hole.
3. Release the clips, securing the luminaire in place.
4. When applicable, rotate the luminaire so it is roughly focused to its final resting position. This will assist in final focus procedures.



Installing One-Cell Yoke-Mounted Luminaires

1. Attach a C-clamp or other mounting hardware (not provided) to the yoke of the luminaire.
2. Attach the luminaire to a pipe or other approved mounting device.

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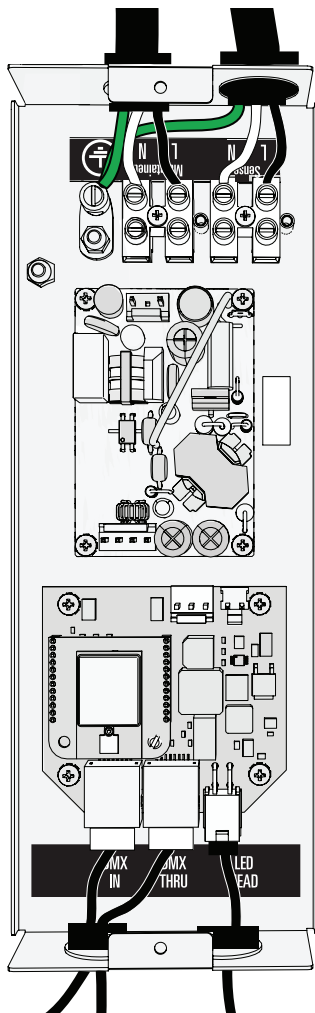
Pro One-Cell

Emergency System One-Cell Installation

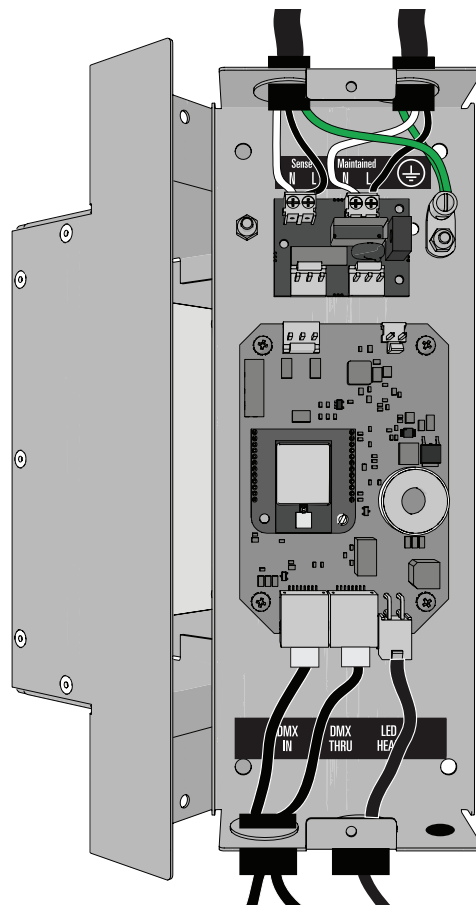
With the exception of power input terminations, ArcSystem emergency system installation requirements are the same as those of the standard ArcSystem. Complete the installation as follows, referencing the following sections for any additional installation details before wiring the power:

- [Preparing to Install the Driver on page 7](#)
- [Mounting the Driver on page 9](#)
- [Preparing the Ceiling for Recessed Luminaires on page 11](#)

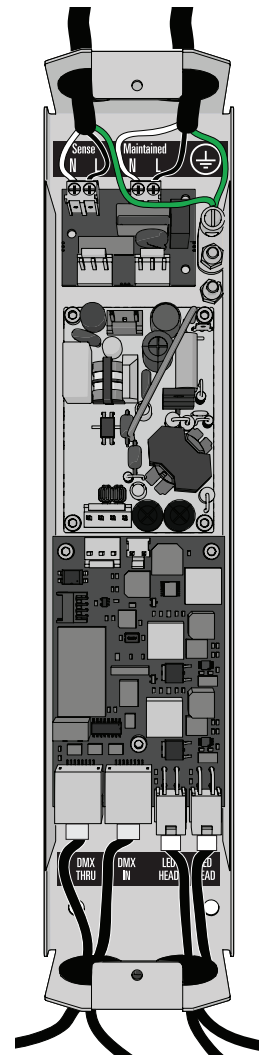
Wiring D1 Series, D2 Series, and D4 Series Emergency Drivers



D1 Emergency Driver



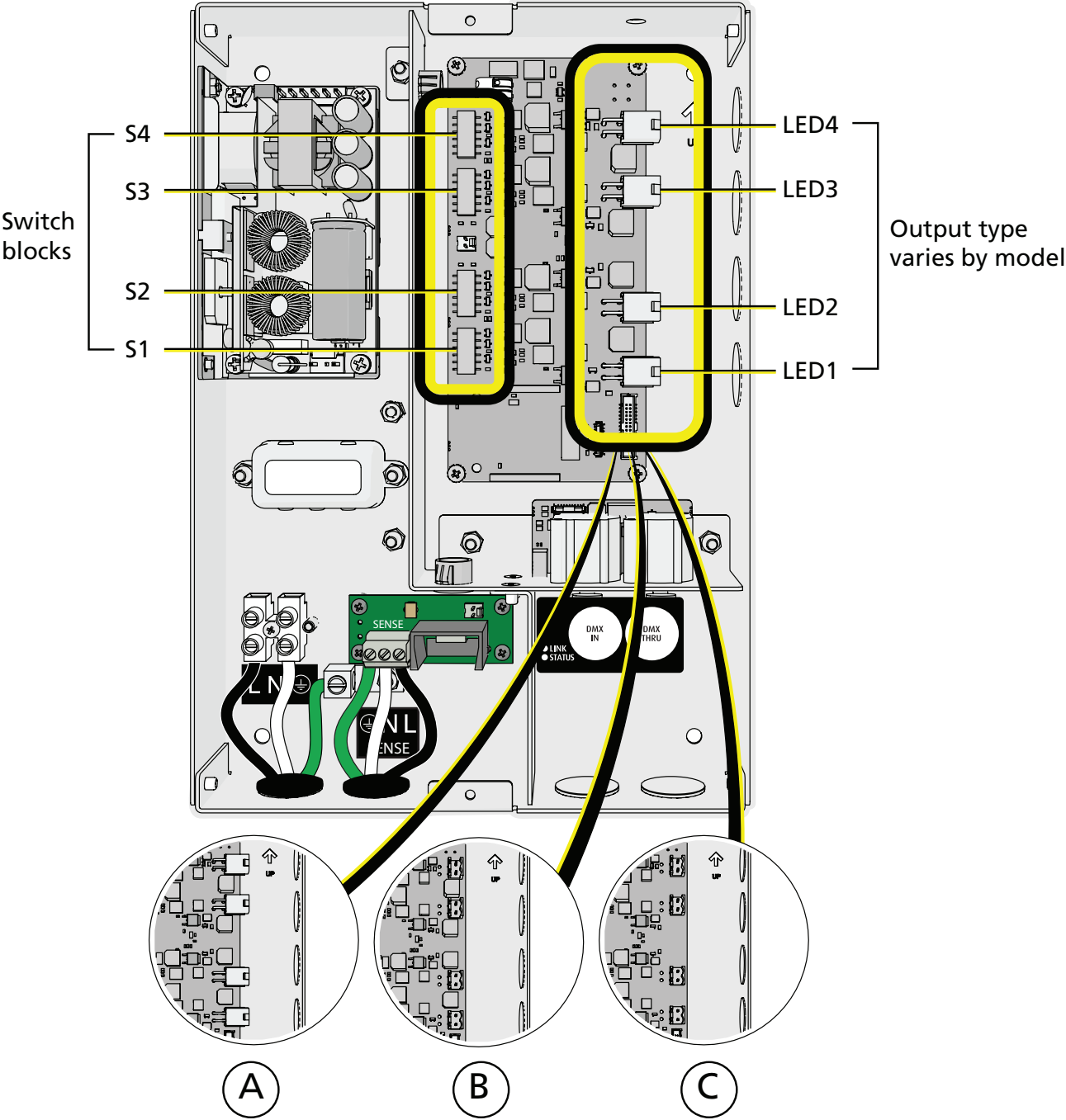
D1 HO Emergency Driver



D2 Emergency Driver

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D4 Emergency Driver

A	Constant Current with Molex connectors
B	Constant Current with terminal outputs
C	Constant Voltage with terminal outputs

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Note: If you are installing a D1 High Output driver, the power supply is inside the cover and has wiring that runs to the driver board in the back panel of the driver. Be careful when handling. It may help to nest the back panel of the driver inside the cover as shown in [D1 HO Driver on page 12](#).



Note: Normal and emergency wiring cannot be contained in the same conduit according to NEC 700.10(B).



Note: Use suitable conduit where required by local or national code.

Connect Sense Input

Connect the mains sense input to a normal branch circuit. See [Factory Wire Colors on page 14](#).

1. Make sure power is off at the main circuit breaker.
2. Loosen the three screw terminals for NEUTRAL (N), GROUND (⊕), and LINE (L) connections.
3. Insert the ground wire (typically green) into the GROUND (⊕) terminal and tighten the screw.
4. Insert the neutral wire (typically white) into the NEUTRAL (N) terminal and tighten the screw.
5. Connect the line wire (typically black) into the LINE (L) terminal and tighten the screw.
6. Tug gently on the wires to ensure they are secure.

Connect Maintained Input



Note: The maintained input in a D4 Series driver is the input labeled "L N ⊕". The D4 sense input is labeled "⊕ N L Sense". D1 Series and D2 Series drivers have inputs labeled with "Sense" and "Maintained".

Connect maintained input to a normal/emergency branch circuit with upstream UL 1008 automatic transfer switch. See [Factory Wire Colors on page 14](#).

1. Loosen the three screw terminals for NEUTRAL (N), GROUND (⊕), and LINE (L) connections.
2. Insert the ground wire (typically green) into the GROUND (⊕) terminal and tighten the screw.
3. Insert the neutral wire (typically white) into the NEUTRAL (N) terminal and tighten the screw.
4. Connect the line wire (typically black) into the LINE (L) terminal and tighten the screw.
5. Tug gently on the wires to ensure they are secure.

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D4 Series Emergency Driver Current Configuration

See [D4 Series Driver Current Configuration on page 17](#) for information on configuring the driver current in D4 non-emergency drivers.



Note: *Do not change the switch settings on a D4 Constant Voltage (CV) model driver.*

D4 Series Constant Current (CC) drivers can be configured for 400 mA or 600 mA output using the four switch blocks shown in the illustration of the [D4 Emergency Driver on page 20](#).

Outputs

Each of the four switch blocks controls one output.

- Switch block S1 controls LED1.
- Switch block S2 controls LED2.
- Switch block S3 controls LED3.
- Switch block S4 controls LED4.

Switch Functions

Each switch block has six switches.



Note: *Do not change the switch 1 settings on a D4 Constant Voltage (CV) model driver.*

- Switch 1 sets the current output threshold.
ON = 400 mA, OFF = 600 mA.
- Switches 2 through 5 control the DMX channel assigned to the output.
- Switch 6 enables emergency functionality.

Switches 2 through 5 are factory set to allow each output to be controlled by an individual DMX address. ETC recommends leaving the DMX channel switches (positions 2 through 5) at their factory settings and using the ArcSystem Configuration Software or RDM settings to control the behavior of each output.

Complete Installation

Now that you have completed wiring the power to your emergency system driver, standard installation procedures can be completed. Refer to the following sections once power wiring is completed:

- [Luminaire Connection to Driver on page 15](#)
- [DMX In and DMX Thru on page 16](#)
- [Installing One-Cell Recessed Luminaires on page 18](#)
- [Installing One-Cell Yoke-Mounted Luminaires on page 18](#)

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Power Up and Control

Final Installation

ArcSystem D1, D1 HO, D2, and D4 drivers and ArcSystem multi-cell luminaires are supplied with a 5 dB antenna providing 90 degree omni-directional coverage. Install this antenna to the antenna receptacle.



Note: *Incorrect installation of recessed luminaires may cause output to turn on and off periodically due to built-in protection against overheating. Leave the lamp on for several hours to check for overheating caused by improper installation. The driver can overheat even if the lamp is off.*

Power Up Procedure

1. Check that luminaire power switch is on, if applicable.
2. Check the DMX control source to ensure proper installation and termination per the manufacturer's instructions.
3. Apply power at the main circuit breaker.

After the power up procedure, the luminaire will light.



Note: *All ArcSystem luminaires are factory set to provide 100% output level. This allows an electrical contractor to check that all products are properly installed and wired. During system commissioning, the certified ETC technician will remove this setting and configure DMX addresses for normal use. During normal use after commissioning is complete, ArcSystem luminaires will light if the DMX Control level is greater than 0.*

DMX System Control

ArcSystem with ArcMesh can be installed and controlled over the wireless ArcMesh protocol, hard wired DMX, or a hybrid of the two, making it a great solution for both new construction and retrofit situations.

ArcSystem RDM Systems can be controlled over wired DMX from a lighting console or ETC Concert software. Concert is available for free download at etcconnect.com/Concert.

- ArcSystem is compliant with DMX 512-A (ANSI E1.11-2008 (R2013)).
- DMX loss behavior is hold last look.

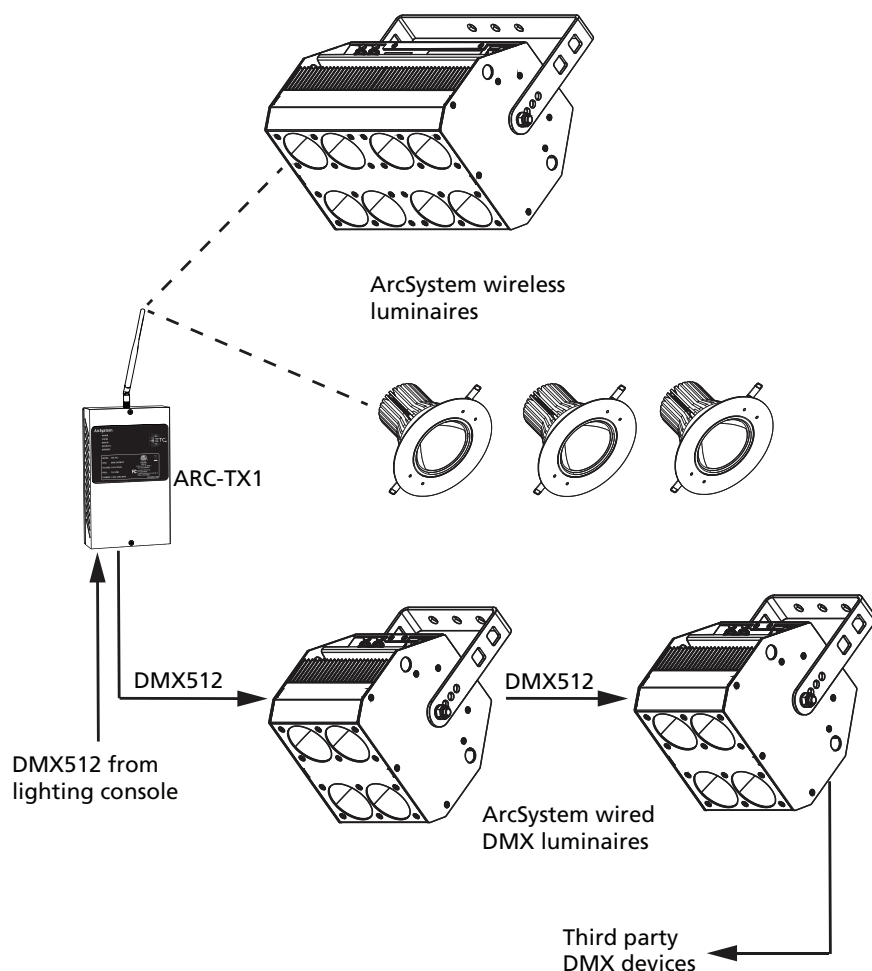
Each luminaire can be addressed to any one of the 512 DMX addresses up to the maximum device limit of 32 devices on each DMX line. Wireless DMX control requires a TX1 Transmitter and luminaires with the wireless ArcMesh transceiver. For wireless DMX installation, there are up to 64 control channels available. See the *ArcSystem Installation Manual*, available from etcconnect.com.

Channels can be grouped and programmed into presets per the needs of your space. Groups and presets can be recalled through a lighting console or other devices.

Both wired and wireless products can be used within a single system. The following graphic shows an example of how a system with wired luminaires, wireless luminaires, and a transmitter may be installed.

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Note: By default the TX1 DMX output is disabled. If you require DMX output from the TX1, you must use the ArcSystem commissioning tool software to add DMX fixtures.

RDM Values

Manufacturer ID: 0x6574 (Electronic Theatre Controls)

Model IDs

Product Type	Description	Model ID
ArcSystem Pro One-Cell or ArcSystem Pro One-Cell Small	D1 Driver	0x1201
	D1 Emergency Driver	0x1301
ArcSystem Pro One-Cell High Output	D1 High Output Driver	0x1202
	D1 High Output Emergency Driver	0x1302
ArcSystem Pro One-Cell Micro	D2 Driver	0x1203
	D2 Emergency Driver	0x1303
ArcSystem D4 Drivers	D4 Constant Current Driver	0x1204
	D4 Constant Voltage Driver	0x1205
	D4 Constant Current Emergency Driver	0x1304
	D4 Constant Voltage Emergency Driver	0x1305

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Parameter	RDM PID	Value	Notes
DMX Start Address	0x00F0	Range = 001 to 512	Default is 001. The upper limit for the D4 Series drivers is 508.
DMX Personality	0x00E0	1 or 2	Default is 2. This parameter sets the number of DMX channels available on a D4 Series driver. <ul style="list-style-type: none"> Set to 1 sets DMX personality to multi-channel. Set to 2 sets DMX personality to single-channel.
Identify Device	0x1000	0 for stop identify, 1 for start identify	Set to 1 causes output(s) and LEDs of the unit to blink in a one second on, one second off pattern.
Minimum Level	0x0341	0 to 255	Default is 99%. The luminaire will not accept a Minimum Level that is higher than the Maximum Level.
Maximum Level	0x0342	0 to 255	Default is 100%. The luminaire will not accept a Maximum Level that is lower than the Minimum Level.
Curve	0x0343	1, 2, or 3	<ul style="list-style-type: none"> Set to 1 is the Default Tungsten Curve (aka D04A) Set to 2 is Linear Set to 3 is Square Law
Curve Description	0x0344		Get returns an ASCII text string.
Output Response Time	0x0345	<ul style="list-style-type: none"> 0x01 1000 ms/100 steps 0x02 900 ms/90 steps 0x03 800 ms/80 steps 0x04 700 ms/70 steps 0x05 600 ms/60 steps 0x06 500 ms/50 steps 0x07 400 ms/40 steps 0x08 300 ms/30 steps 0x09 250 ms/25 steps 0x0A 200 ms/20 steps 0x0B 100 ms/10 steps 0x0C 50 ms/5 steps 0x0D 0 ms/0 steps 	Default is 500ms/50 steps. This parameter controls dimming up in level.
Output Response Time Down	0x8030		Default is 500 ms/50 steps. This parameter controls dimming down in level. Set 0x00 to set the Output Response Time Down to the same setting as Output Response Time.
Output Response Time Description	0x0346		Get returns an ASCII text string.
Modulation Frequency	0x0347	32-bit unsigned integer representation of the frequency in Hz <ul style="list-style-type: none"> 300 for 300 Hz 600 for 600 Hz 1200 for 1.2 kHz 19200 for 19.2 kHz 	Default is 300 Hz.
Modulation Frequency Description	0x0348		Get returns an ASCII text string.
Restore Factory Defaults	0x0090		Set resets the luminaire configuration to default settings.
Software Version Label	0x00C0		Get returns the current software version as an ASCII text string.
Bootloader Version Label	0x00C2		Get returns the current bootloader version as an ASCII text string.

Updating the Luminaire Software

ETC recommends using UpdaterAtor software to manage software updates. For more information on UpdaterAtor, download the *UpdaterAtor Software Quick Guide* for free from etcconnect.com.

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Maintenance



WARNING: RISK OF DEATH BY ELECTRIC SHOCK! Failure to disconnect all power to the system before installation, maintenance, cleaning, or any other system modification could result in serious injury or death.

AVERTISSEMENT : RISQUE DE MORT PAR DÉCHARGE ÉLECTRIQUE! Négliger de débrancher toutes les sources d'alimentation du système avant l'installation, l'entretien, le nettoyage ou toute autre modification du système peut causer des blessures graves ou la mort.

De-energize main feed to ArcSystem and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.



WARNING: Disconnect the fixture from power and DMX and allow it to cool before performing any cleaning and maintenance.

AVERTISSEMENT : Débrancher la lampe de son alimentation et du DMX et la laisser refroidir avant d'effectuer un nettoyage ou un entretien.



WARNING: Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.



CAUTION: *Check for excessive dust or debris in the heat-dissipating fins around the entire luminaire enclosure. Clean using compressed air or a soft cloth. Keeping the components of the enclosure clean facilitates efficient cooling and extends LED longevity.*

NEVER spray liquids into the luminaire.

NEVER spray compressed air into a luminaire that is powered-up.



Note: *The light source(s) contained within ArcSystem luminaires shall only be replaced by the manufacturer or his service agent or a similar qualified person.*

A can of compressed air or oil-free air from an air compressor set at a low setting can be used to blow through the vent holes and remove dust or other debris. Dust buildup can cause overheating and premature shutdown.

All components can be cleaned using compressed, oil-free air as described above or a clean micro-fiber cloth. The use of any liquid cleaning solution is not recommended.

Inspect all mounting hardware for wear and, if necessary, clean using compressed, oil-free air or a soft, lint-free cloth.

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Emergency Operation and Test

It is important to test ArcSystem emergency systems regularly because they are life safety devices. **NOT SELF-TESTING PER ANSI/NFPA 101** - This equipment is not self-testing in conformance with the Life Safety Code, ANSI/NFPA 101. ANSI/NFPA 101 Life Safety Code requires testing of life safety devices every 30 days.

To test the emergency functionality of this device, disconnect the sense circuit.



WARNING: RISK OF DEATH BY ELECTRIC SHOCK! Failure to disconnect all power to the system before installation, maintenance, cleaning, or any other system modification could result in serious injury or death.

AVERTISSEMENT : RISQUE DE MORT PAR DÉCHARGE ÉLECTRIQUE! Négliger de débrancher toutes les sources d'alimentation du système avant l'installation, l'entretien, le nettoyage ou toute autre modification du système peut causer des blessures graves ou la mort.

De-energize main feed to ArcSystem and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.



CAUTION: *This equipment is provided with more than one supply source. To reduce the risk of electric shock, disconnect both normal and emergency sources within this unit before servicing any equipment connected to this unit.*

ATTENTION : *Cet équipement possède plus d'une source d'alimentation. Pour réduire les risques de décharge électrique, débrancher les sources d'alimentation normale et de secours dans l'unité avant de faire l'entretien d'un équipement branché à cette unité.*

Test the ArcSystem emergency system as described:

1. Turn off power at the normal circuit breaker.
2. Test the system per ANSI/NFPA 101 Life Safety Code.

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Compliance

ArcSystem One-Cell Luminaires		
Model	Description	Compliance
ARCP1	ArcSystem Pro One-Cell	cULus <ul style="list-style-type: none"> Conforms to UL 2108 Conforms to UL 924 Conforms to UL 2043 plenum rating (ARCP1, ARCP1S, and ARCP1H, recessed variants only) Certified to CSA C22.2 No. 250.0 Certified to CSA C22.2 No. 141 EU CE certified FCC compliant
ARCP1S	ArcSystem Pro One-Cell Small	
ARCP1H	ArcSystem Pro One-Cell High Output	
ARCP1M	ArcSystem Pro One-Cell Micro	

ArcSystem D1 Series, D2 Series, and D4 Series Standard Drivers		
Model	Description	Compliance
ARCPD1DM*	ArcSystem D1 Driver	cULus <ul style="list-style-type: none"> Conforms to UL 8750 Certified to CSA C22.2 No. 250.13 EU CE Certified FCC compliant
ARCPD1DRDMM	ArcSystem D1 RDM Driver	
ARCPD1HDM*	ArcSystem D1 High Output Driver	
ARCPD1HDRDMM	ArcSystem D1 High Output RDM Driver	
ARCPD2DM*	ArcSystem D2 Driver	
ARCPD2DRDMM	ArcSystem D2 RDM Driver	
ARCPD4DCCMM*	ArcSystem D4 Constant Current Driver with Molex Connectors	
ARCPD4DCCMRDMM	ArcSystem D4 Constant Current RDM Driver with Molex Connectors	
ARCPD4DCCTMM*	ArcSystem D4 Constant Current Driver with Two-Pin Terminals	
ARCPD4DCCTRDMM	ArcSystem D4 Constant Current RDM Driver with Two-Pin Terminals	
ARCPD4DCVTM*	ArcSystem D4 Constant Voltage Driver with Two-Pin Terminals	
ARCPD4DCVTRDMM	ArcSystem D4 Constant Voltage RDM Driver with Two-Pin Terminals	

*wireless-capable

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ArcSystem D1, D1HO, D2, and D4 Emergency Drivers		
Model	Description	Compliance
ARCPED1DM*	ArcSystem D1 Emergency Driver	cULus <ul style="list-style-type: none"> • Conforms to UL 8750 • Conforms to UL 924 • Certified to CSA C22.2 No. 250.13 • Certified to CSA C22.2 No. 141 EU CE certified FCC compliant
ARCPED1DRDMM	ArcSystem D1 RDM Emergency Driver	
ARCPED1HDM*	ArcSystem D1 High Output Emergency Driver	
ARCPED1HDRDMM	ArcSystem D1 High Output RDM Emergency Driver	
ARCPED2DM*	ArcSystem D2 Emergency Driver	
ARCPED2DRDMM	ArcSystem D2 RDM Emergency Driver	
ARCPED4DCCMM*	ArcSystem D4 Constant Current Emergency Driver with Molex Connectors	
ARCPED4DCCMRDMM	ArcSystem D4 Constant Current RDM Emergency Driver with Molex Connectors	
ARCPED4DCCTM*	ArcSystem D4 Constant Current Emergency Driver with Two-Pin Terminals	
ARCPED4DCCTRDMM	ArcSystem D4 Constant Current RDM Emergency Driver with Two-Pin Terminals	
ARCPED4DCVTM*	ArcSystem D4 Constant Voltage Emergency Driver with Two-Pin Terminals	
ARCPED4DCVTRDMM	ArcSystem D4 Constant Voltage Emergency Driver with Two-Pin Terminals	

*wireless-capable

FCC Compliance

Wireless-capable ArcSystem products comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received; including interference that may cause undesired operation.

ArcSystem wireless products contain FCC ID for US: TYOJN5168M5 and Industry Canada (IC) ID: IC 7438A CYO5168M5.

EU Declaration of Conformity

Wireless-capable ArcSystem products comply with the essential requirements of the RED Directive of the European Union (2014/53/UE).

Wireless-capable ArcSystem products also comply with the following standards:

ETSI EN 301 489-17 V2.1.1 (2009), ETSI EN 301 489-1 V2.2.0 (2011), Draft ETSI EN 301 489-17 V3.2.0 (2017), Draft EN 301 489-1 V3.2.0 (2017), ETSI EN 300 328 V1.8.1 (2012), ETSI EN 300 328 V1.9.1 (2015), ETSI EN 300 328 V2.1.1 (2016)