ETC Installation Guide

ArcSystem Pro D1 and D2 Series Drivers

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 Pro One-Cell luminaires, D1 and D2 Series Drivers, and full system integration. For more information on ArcMesh, the D1 Driver Quick Connect, or other ArcSystem Pro drivers and luminaires, see the manuals listed below. All ETC manuals are available for download free of charge at etcconnect.com.

- *ArcSystem Pro Installation Manual* for information on ArcSystem Pro One-Cell and Multi-Cell luminaires with wireless ArcMesh control using the ArcSystem Pro TX1 Transmitter
- *ArcSystem Pro D4 Drivers Installation Guide* for information on installing the D4 Series drivers and one-cell luminaires
- *ArcSystem Pro Multi-Cell RDM Installation Guide* for information on installing RDM multi-cell luminaires

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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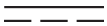
7490M2180 Rev B Released 2023-02

Label Symbols

ArcSystem luminaires and drivers are conveniently labeled with relevant symbols for your safety. Refer to the product label to see which symbols apply to your product.

	General warning	Avertissement général
	This product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.	Ce produit ne doit pas être jeté avec les déchets ménagers mais doit être déposé dans une collecte de déchets électroniques ou dans un point de collecte.
	The product input or output is suitable for direct current only.	L'entrée et la sortie de ce produit convient uniquement au courant continu.
	The product input or output is suitable for alternating current only.	L'entrée et la sortie de ce produit convient uniquement au courant alternatif.
	Safety extra low voltage device	Dispositif de sécurité à très basse tension
	Independent lighting control gear	Appareil de contrôle d'éclairage indépendant.
	Emergency lighting driver (non-battery powered) according to EN-61347-2-13.	Pilote d'éclairage d'urgence (pas alimenté par piles) conformément à la norme EN-61347-2-13.
t_a	Rated maximum ambient temperature	Température ambiante maximale recommandée
	The driver is thermally protected to the value located in the triangle in degrees Celsius.	Le pilote est protégé thermiquement à la valeur située dans le triangle en degrés Celsius.

System Overview

Models are available to meet your installation requirements. This guide covers the products listed below. For complete specifications, view the product datasheets at etcconnect.com/ArcSystem.

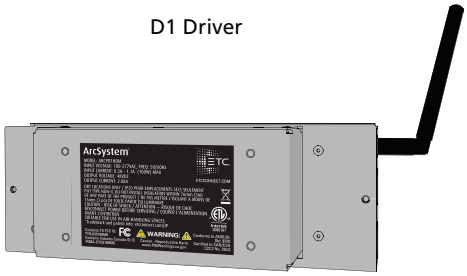
ArcSystem Pro One-Cell Luminaires

Model	Mounting Options	Driver	Power Input Options
Pro One-Cell or Pro One-Cell Small	• fixed version: recessed/flush mount (standard luminaire only) • adjustable version: recessed/flush mount with two-axis tip and tilt • yoke-mount version with single axis tilt (small luminaire only)	D1 Series driver	• 100–277 VAC, 50/60Hz hard-wired (non-emergency models) • Normal: 100–277 VAC, 50/60Hz, Maintained: 100–277 VAC, 50/60Hz, hard-wired (emergency models for all regions)
		D4 150 CC driver	• 100–240 VAC, 50/60Hz hard-wired (non-emergency models) • 277 VAC, 50/60 Hz hard-wired (non-emergency models, model ends in "-277") • Normal: 100–240 VAC, 50/60Hz, Maintained: 100–240 VAC, 50/60Hz, hard-wired (emergency models) • Normal: 277 VAC, 50/60Hz, Maintained: 277 VAC, 50/60Hz, hard-wired (emergency models, model ends in "-277")
		D4 350 CC or D4 700 CC driver	• 100–240 VAC, 50/60 Hz with IEC connector (non-emergency models) or hard-wired (emergency models)
Pro One-Cell Micro	• adjustable version: recessed/flush mount with two-axis tip and tilt • yoke-mount version with single axis tilt	D2 Series driver required	• 100–277 VAC, 50/60Hz hard-wired (non-emergency models) • Normal: 100–277 VAC, 50/60Hz*, Maintained: 100–277 VAC, 50/60Hz*, hard-wired (emergency models for all regions)
Pro One-Cell High Output		D1 HO Series driver required	• 100–277 VAC, 50/60Hz hard-wired (non-emergency models) • Normal: 100–277 VAC, 50/60Hz, Maintained: 100–277 VAC, 50/60Hz, hard-wired (emergency models for all regions)

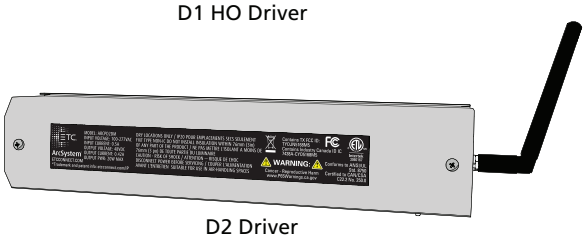
Note: *ArcSystem Pro One-Cell Micro and ArcSystem Pro One-Cell standard luminaires are not interchangeable. One-Cell Micro luminaires require a D2 Series driver to function; One-Cell and One-Cell Small luminaires require a D1 driver or D4 CC driver to function.*

D1 Series, D2 Series, and D4 Series Drivers

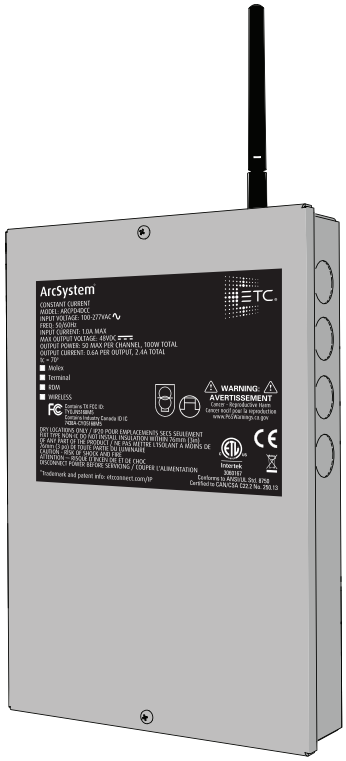
D1 Driver



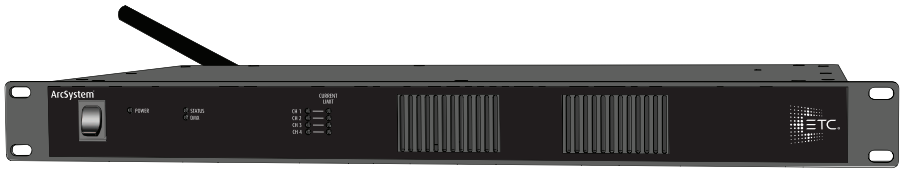
D1 HO Driver



D2 Driver



Wall-Mount D4 Driver 150
(also available in 350 and 700 models)



Rack-Mount D4 Driver 350
(also available in 700 model)

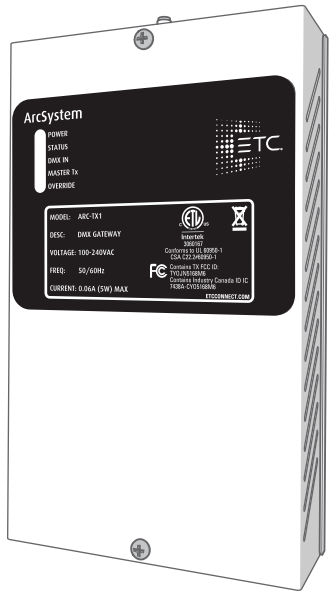
Note: *Antenna is not present on RDM models.*

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.

For more information on installation of standard or emergency D4 series drivers, see the *ArcSystem Pro D4 Series Installation Guide* at etcconnect.com/ArcSystem.

TX1 Transmitter



The TX1 Transmitter is the DMX wireless gateway for the ArcMesh protocol, featuring:

- Control of up to 100 devices across 64 DMX addresses
- 24 preset scene memory
- DMX wired output for control of third party equipment within scene store
- Two auxiliary inputs for closed contact connection to trigger a stored scene

Each transmitter can be set to one of 16 available network IDs allowing multiple transmitters to be used concurrently without "cross-talk." When two or more transmitters are set to the same network ID and radio channel, the transmitter with the highest MAC address acts as a master with the others assuming the role of backup.

For information on installing the ArcSystem TX1 Transmitter for use with ArcMesh installations, see the *ArcSystem Installation Manual* at etcconnect.com/ArcSystem.

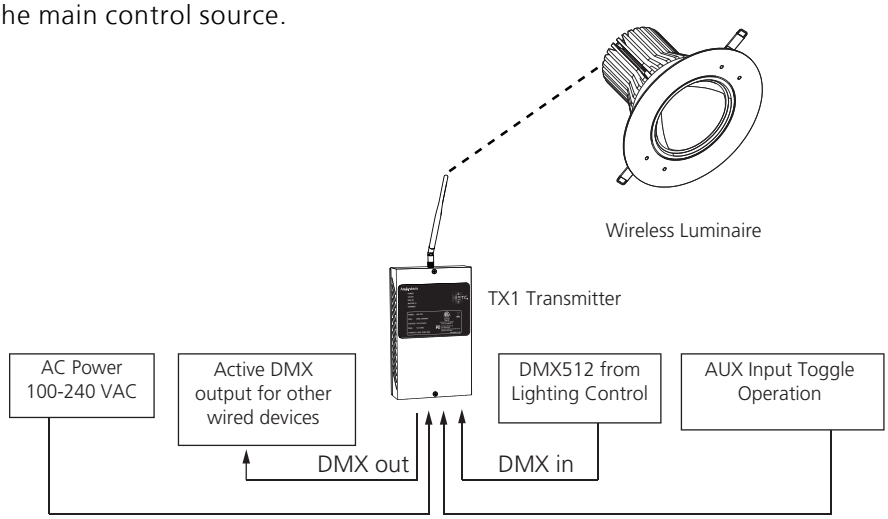
Note: *All ArcSystem wireless luminaires require a TX1 Transmitter and commissioning tool to set DMX addresses for both wired DMX and wireless installations. Contact your ETC Service Technician for more information.*

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

ArcMesh

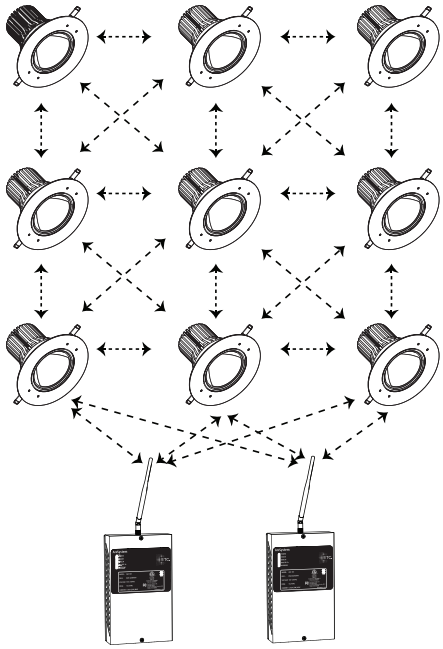
ArcSystem products can be controlled using wired DMX through RJ45 connections, or the wireless ArcMesh protocol. A wireless installation is an ideal solution for retrofit situations where installing additional cable is not practical.

Each system requires a minimum of one TX1 Transmitter. The TX1 is used as a transmitter of wireless data to luminaires or other devices within a system. The following diagram illustrates a basic hybrid ArcSystem installation with a wireless luminaire, TX1 Transmitter, and a wired DMX console for the main control source.



ArcMesh Specifications

- Use up to 100 devices per TX1 transmitter.
- Patch up to 64 ArcMesh channels to 512 DMX channels.
- Use up to 16 TX1 transmitters per system.



There are no system range limitations for transmitting data between luminaires because each luminaire has the ability to act as a repeater (see Re-Broadcast Mode below). ArcSystem is self-regulating and continues to reconfigure the communication "mesh" to establish the most successful path of communication transmission.

Re-Broadcast Mode

By default all ArcSystem luminaires are shipped with re-broadcast mode turned off to reduce the amount of wireless activity. In areas of poor wireless reception, re-broadcast mode may be enabled on a luminaire-by-luminaire basis to improve the overall signal level of the system.

For more information about ArcMesh and re-broadcast mode, download the *ArcSystem Wireless Information Guide* from etcconnect.com.

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 luminaire and 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.*
- *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 NFPA101. Installation scenarios should be evaluated by the AHJ to confirm illuminance and performance requirements of ANSI/NFPA 101 and the IBC.*
- *ArcSystem Pro One-Cell Micro luminaires in emergency installations must be installed with a maximum mounting height of 23.2 ft (7.07 m).*
- *Installation must follow all national and local codes for electrical equipment.*
- *Normal and emergency wiring cannot be contained in the same conduit according to NEC 700.10(B).*

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.

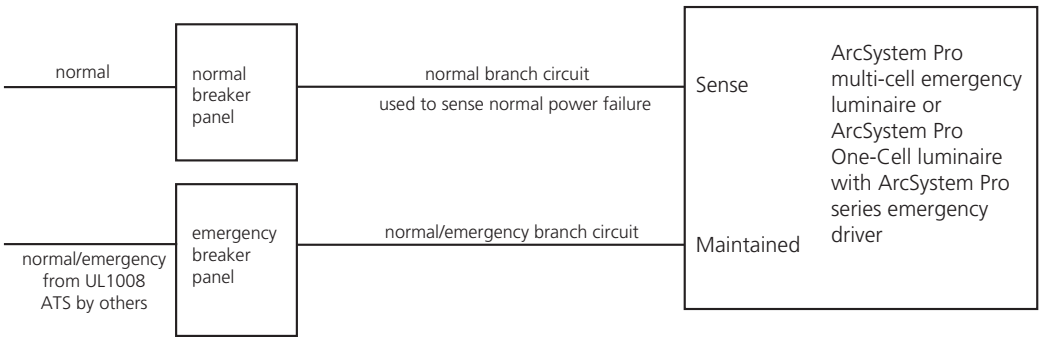
AVERTISSEMENT : Ne pas inverser les alimentations à 120 V et 277 V entre les alimentations de détection et de secours.

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.

Typical Installation

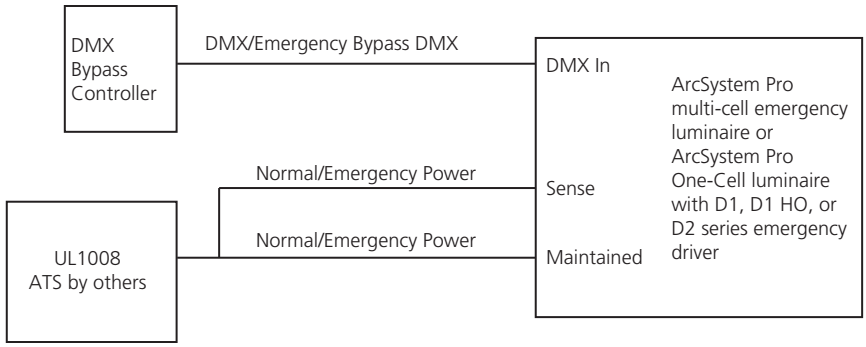
The typical installation shown below is suitable for all ArcSystem Pro emergency drivers and ArcSystem Pro multi-cell emergency luminaires.



Installation with DMX Bypass Controller

ArcSystem Pro D1, D1 HO, and D2 Series emergency drivers and ArcSystem multi-cell emergency luminaires that are installed in a system with a DMX bypass controller can have their Maintained and Sense inputs fed from an emergency lighting transfer switch (UL1008 ATS).

Note: *The installation shown below is not approved for ArcSystem Pro D4 Series Drivers or ArcSystem ArcLamp Drivers.*



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: RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE! 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.

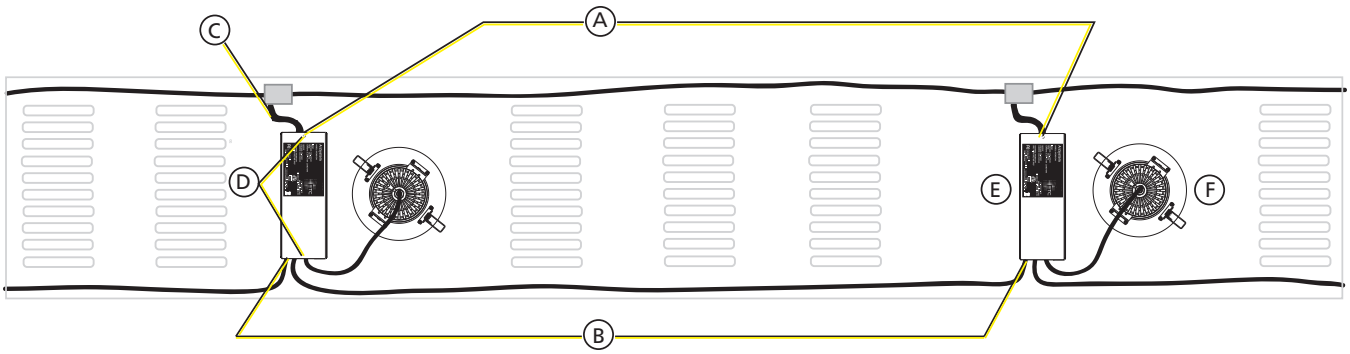
CAUTION: ***ArcSystem luminaires and drivers are not suitable for use in spaces with restricted air flow. Enclosing the luminaires or drivers temporarily or permanently may cause damage to the luminaires or drivers.***

Prepare to Install the D1 or D2 Series Driver

The D1 and D2 Series drivers are compact, convection-cooled LED drivers with RJ45 connections for local DMX and wireless capability for the ArcMesh protocol. Each driver has a DMX 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. 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. Extension cables are available for One-Cell, One-Cell Small, and One-Cell Micro luminaires. See *Extension Cables on the next page*.

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
*ETC recommends installing all wiring for D1, D1 HO, and D2 Series drivers in grounded metal conduit. D1 Quick Connect Drivers (available in CE regions only) do not have conduit entry knockouts and can be installed without conduit.			

Supplies

The following supplies are required, but not provided:

- 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.*

Extension Cables

Extension cables can be used between an ArcSystem Pro D1 Series, D2 Series, or D4 CC driver and a compatible ArcSystem Pro One-Cell, One-Cell Small, or One-Cell Micro luminaire. Extension cables are not compatible with ArcSystem Pro One-Cell High Output luminaires.

Part Number	Description
ARCDAHBC1	1 m (3 ft 3 in) extension cable
ARCDAHBC2	2 m (6 ft 7 in) extension cable
ARCDAHBC3	3 m (9 ft 10 in) extension cable
ARCDAHBC5	5 m (16 ft 5 in) extension cable
ARCDAHBC10	10 m (32 ft 10 in) extension cable

Note: *Maximum supported wire length between One-Cell luminaires and D1 Series, D2 Series, and D4 CC drivers is 15 m (49 ft, 3 in). Maximum supported wire length between a One-Cell High Output luminaire and a D1 HO Series driver is 1 m (3 ft, 3 in).*

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 and D2 Series drivers accept 100–277 VAC, 50/60 Hz.

WARNING: RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

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

Wire and Terminal Specifications

Terminal/Connector	Conduit Entry	Wire Range/Specifications	Strip Length	Torque Rating
D1 Driver Quick Connect power inputs	-	Use attached power cables.	-	-
D1 power inputs (all D1 drivers except D1 Driver Quick Connect) 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 inputs 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)
D1 HO and D2 power Inputs 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 equivalent) minimum 0.2 mm^2 (24 AWG) conductors terminated to T568B standard	N/A	N/A
D1 and D2 Series Drivers with Molex connectors	½ in conduit*	Follow Class 2 wiring methods.		

*ETC recommends installing all wiring for D1, D1 HO, and D2 Series drivers in grounded metal conduit. D1 Quick Connect Drivers (available in CE regions only) do not have conduit entry knockouts and can be installed without conduit.

Surface-Mount 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.

Use the Through-Holes

Any ArcSystem driver can be surface-mounted using the four holes located on the back side of the enclosure. D1 Quick Connect Drivers have a mounting strap that allows surface-mounting without removing the driver cover (see *D1 Driver Quick Connect Mounting Strap below*). 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* *Wire the Driver on page 15*.

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.

Note: *If applicable, 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.*

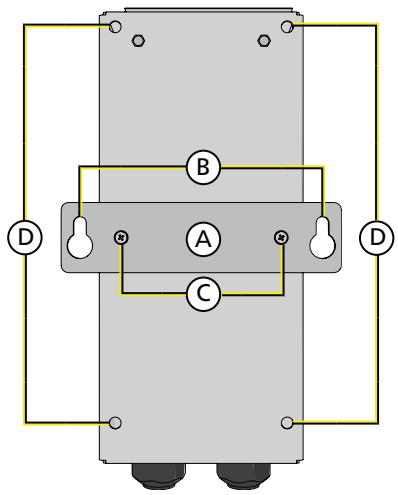
Note: *Use suitable conduit where required by national and local codes.*

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

D1 Driver Quick Connect Mounting Strap

The mounting strap (A in the illustration to the right) has two keyholes (B) and is secured to the driver by two screws (C). If you are installing the driver to a vertical surface, the narrow end of the keyholes should point toward the ceiling. Attach the mounting strap to the driver using the two provided Phillips screws. Attach the driver to the mounting surface using the mounting strap and two #10 screws.

It is also possible to mount the D1 Driver Quick Connect using the four through-holes in the back panel (D in the illustration to the right) as described in *Use the Through-Holes above*



A	mounting strap (back view)	C	Phillips screws (M3 x 4 mm, provided)
B	keyholes	D	through-holes

Preparing the Ceiling for Recessed Luminaires

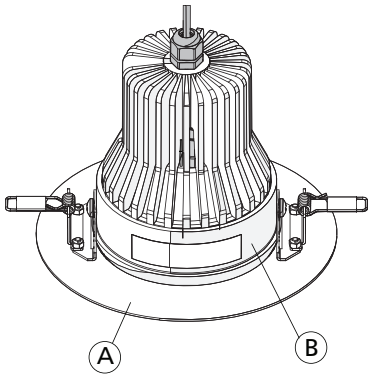
This section is specific to recessed (flush-mount) luminaires. For yoke-mounted luminaires, see *Installing One-Cell Yoke-Mounted Luminaires on page 18*.

The luminaire retaining clips accommodate 3–24 mm (1/8–15/16 in) ceiling thickness. 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 to the right and smaller than the luminaire's outer bezel.

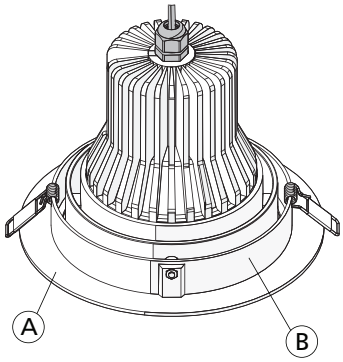
Luminaire	Minimum Hole Diameter
Pro One-Cell	16.5 cm (6-1/2 in)
Pro One-Cell High Output	17.0 cm (6-11/16 in)
Pro One-Cell Small	9.5 cm (3-3/4 in)
Pro One-Cell Micro	7.6 cm (3 in)

Note: *Maximum ceiling thickness for safe use of the luminaire retaining clips is 24 mm (15/16 in).*

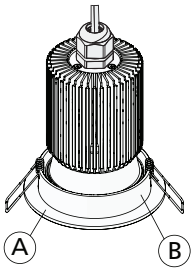
The images below provide an example of the bezels on the Pro One-Cell luminaires.



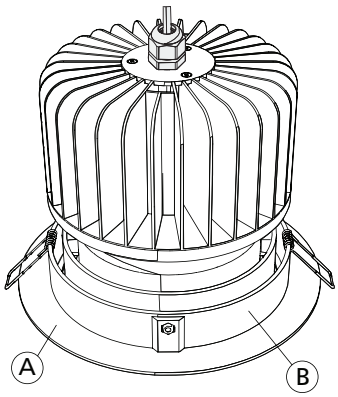
Pro One-Cell fixed model



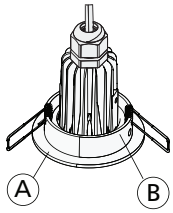
Pro One-Cell adjustable model



Pro One-Cell Small adjustable model



Pro One-Cell High Output adjustable model



Pro One-Cell Micro adjustable model

A	Outer bezel
B	Inner bezel

Installation Spacing - High Output Luminaires

If you are installing ArcSystem Pro One-Cell High Output luminaires, plan the luminaire and driver locations around the required spacing listed below.

Install with minimum spacings between

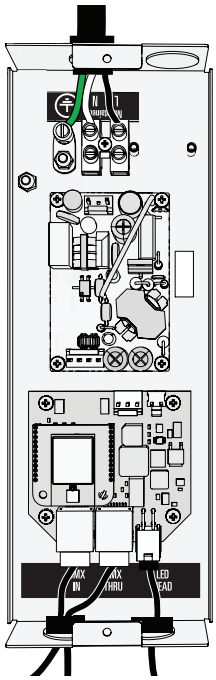
a. Center-to-center of adjacent luminaires: 609.6 mm (24 in);
b. Top of luminaire to overhead building member: 76.2 mm (3 in);
c. Luminaire center to side building member: 304.8 mm (12 in);

Assurer les dégagements minimaux suivants

a. Entre l'entraxe des luminaires adjacents 609.6 mm (24 po)
b. Entre le dessus du luminaire et l'élément de charpente se trouvant au-dessus 76.2 m (3 po)
c. Entre le centre du luminaire et un élément de charpente 304.8 mm (12 po)

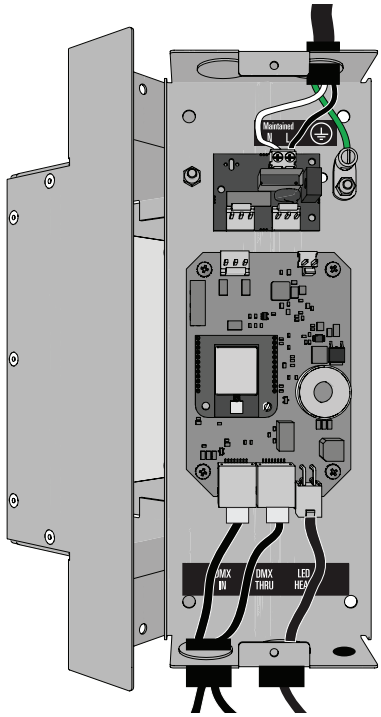
Wire the Driver

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*.

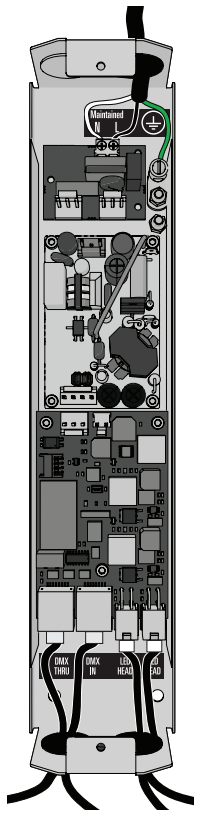


D1 Driver

D1 Driver Quick Connect



D1 HO Driver



D2 Driver

Power

Internal wire colors vary by model.

Perform the following steps to wire power to the driver.

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

WARNING: RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

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

D1 Quick Connect Drivers

1. Make sure power is off at the main circuit breaker.
2. Connect the AC input to the AC power source using the provided power input cord.

D1, D1 HO, and D2 Drivers

1. Make sure power is off at the main circuit breaker.
2. See *Electrical and Wiring Specifications on page 11* 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.

Luminaire Connection to Driver

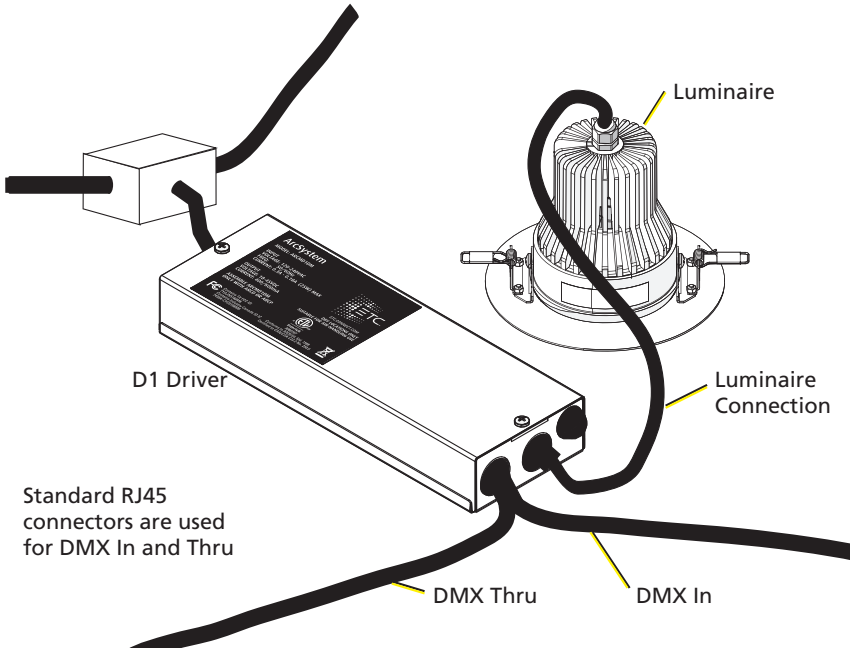
ArcSystem Pro One-Cell luminaires connect to a driver using Molex receptacles labeled "LED" or "LED Head". All D1 Series and D2 Series drivers have Molex receptacles for ArcSystem Pro One-Cell series luminaire connections.

Note: *Maximum supported wire length between One-Cell luminaires and D1 Series, D2 Series, and D4 CC drivers is 15 m (49 ft, 3 in). Maximum supported wire length between a One-Cell High Output luminaire and a D1 HO Series driver is 1 m (3 ft, 3 in).*

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, if applicable.
3. Connect the luminaire cable to the driver output.
   - connect the four-pin luminaire cables to the "LED" or "LED Head" receptacle on the driver. See *Wire the Driver on the previous page*.
   - Support the luminaires. Do not let luminaires hang by their cables.

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 equivalent) 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)

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.

DMX Connection to Driver

1. Run your DMX lines through the other previously installed screw-clamp conduit connector, if applicable, 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.

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 fixtures and 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 Pro One-Cell et les drivers ArcSystem sont classés NON-IC, ils ne conviennent donc PAS pour une installation en contact direct avec des matières combustibles ou une isolation thermique.

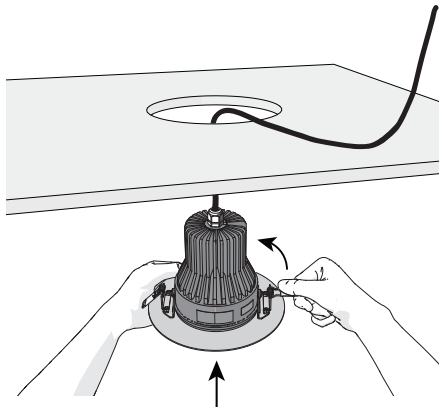
NE PAS INSTALLER D'ISOLATION À MOINS DE 76 mm (3 po) DE TOUTE PARTIE DE LA LAMPE OU DU DRIVER (DISPOSITIF ÉLECTRONIQUE DE PUISSANCE).

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.*

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

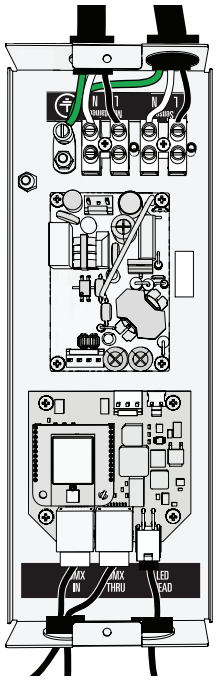
1. Attach a C-clamp or other mounting hardware (not provided) to the yoke of the luminaire.
2. Attach the luminaire to a pipe or other approved mounting device.

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 appropriate steps for your installation, referencing the following sections for any additional installation details before wiring the power:

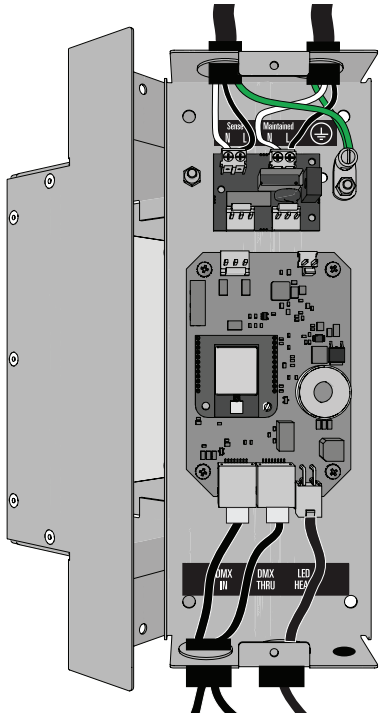
- *Prepare to Install the D1 or D2 Series Driver on page 9*
- *Surface-Mount the Driver on page 12*
- *Preparing the Ceiling for Recessed Luminaires on page 13*
- *Wire the Driver on page 15*

Wiring D1 and D2 Series Emergency Drivers

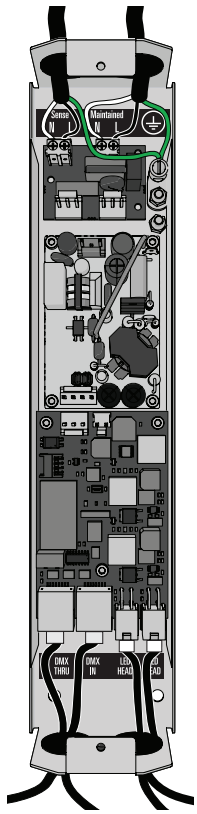


D1 Emergency Driver

D1 Emergency Driver Quick Connect



D1 HO Emergency Driver



D2 Emergency Driver

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 15.*

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.*

D1 Quick Connect Emergency Drivers

D1 Quick Connect Emergency Drivers have hard-wired power input cables with bare ends for direct connection to your maintained/emergency and normal sense power supplies. The cables are labeled near the strain reliefs for "Maintained" and "Sense".

1. Make sure power is off at the main circuit breaker.
2. Connect the "Sense" input to a normal branch circuit.
3. Connect the "Maintained" input to a normal/emergency branch circuit.

D1, D1 HO, and D2 Drivers

Connect Sense Input

Connect the mains sense input to a normal branch circuit. For D1 Emergency Drivers, see *Power on page 15* for factory wire colors.

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

Connect maintained input to a normal/emergency branch circuit with upstream UL 1008 automatic transfer switch. For D1 Emergency Drivers, see *Power on page 15* for factory wire colors.

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.

Complete Installation

Refer to the following sections after wiring power to the emergency driverf:

- *Luminaire Connection to Driver on page 16*
- *DMX In and DMX Thru on page 17*
- *Installing One-Cell Recessed Luminaires on page 18*
- *Installing One-Cell Yoke-Mounted Luminaires on page 18*

Final Installation and Operation

Wireless ArcSystem D1, D1 HO, D2, and D4 drivers and wireless 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: *When commissioning a system installation, check all ArcSystem Drivers and multi-cell luminaires to ensure that the latest firmware is present. If the firmware is not up to date, upgrade it following the instructions at Updating the Luminaire Firmware below.*

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.*

Updating the Luminaire Firmware

When commissioning a system installation, check all ArcSystem drivers and multi-cell luminaires to ensure that the latest firmware is present. If the firmware is not up to date, upgrade it following the instructions below for your luminaire type.

Wireless ArcMesh Luminaires

Upgrade luminaire firmware using the ArcSystem Configuration Software. The fixture firmware file and ArcSystem Configuration Software are available for free at etcconnect.com.

RDM Luminaires

Upgrade luminaire firmware using ETC Concert and ETC UpdaterAtor software before commissioning is completed. For more information on UpdaterAtor, download the *UpdaterAtor Software Quick Guide* for free at etcconnect.com.

Commissioning a Wireless ArcSystem

Initial programming of a wireless ArcSystem requires a USB commissioning tool (ARCMCT), and existing hardware such as a laptop or desk top computer that is connected to ArcSystem. This programming will be carried out by an ETC certified technician at the time of system commissioning and training.

The following is a list of procedures included in the configuration process:

- patching groups of luminaires to specific DMX channels
- assigning minimum and maximum dimming levels per group
- assigning power fail/recovery options per group

Note: *To ensure a smoother transition from an emergency state to a standard run state, ETC recommends setting DMX Loss behavior as "Go to Full" on ArcSystem TX1 Transmitters. In the ArcSystem Configuration Software, this setting is at Edit Wireless Gateway>DMX and is called Fade on loss of DMX.*

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.

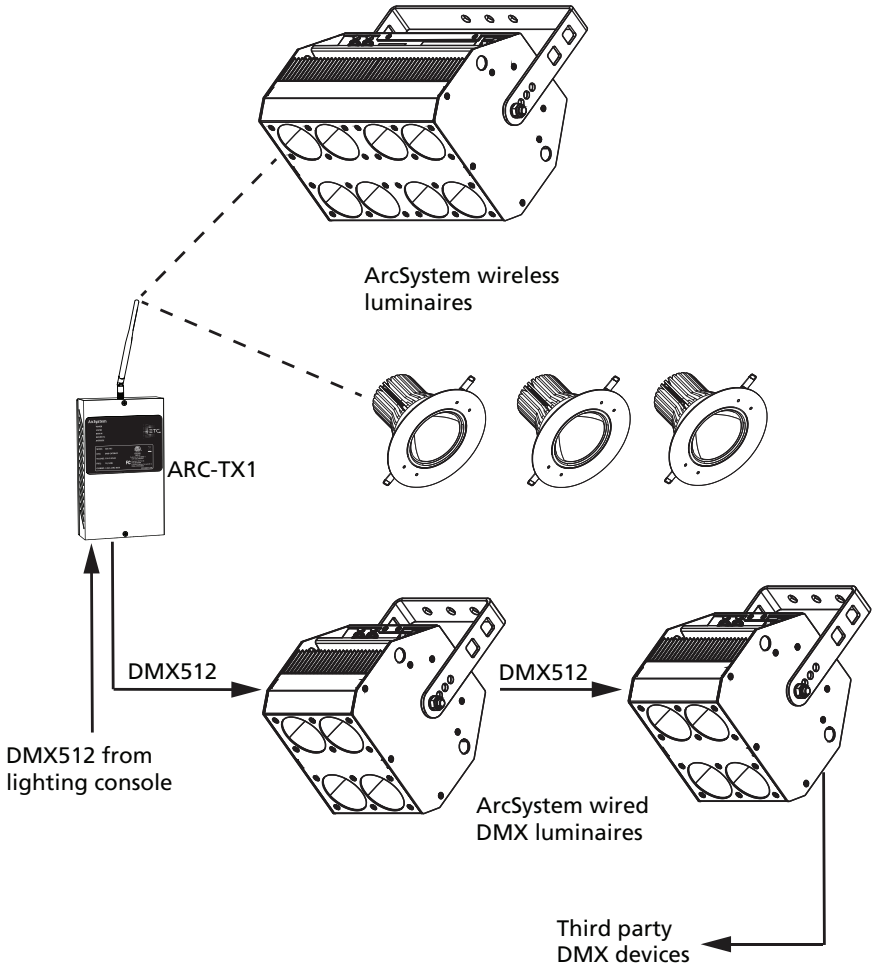
- ArcSystem is compliant with DMX 512-A (ANSI E1.11-2008 (R2013)).
- DMX loss behavior is hold last look.

For wired DMX installation, 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.

Programming groups and presets is done through the configuration tool at time of system commissioning. This programming will be done by an ETC certified technician. For more information see *Commissioning a Wireless ArcSystem above*.

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.



Note: *By default the TX1 DMX output is disabled. If you require DMX output from the TX1, you must use the ArcSystem comissioning 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, 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

Parameter	RDM PID	Value	Notes
DMX Start Address	0x00F0	Range = 001 to 512	Default is 001.
DMX Personality	0x00E0	1 or 2	Default is 2.This parameter doesn't affect D1 and D2 Series Drivers.
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	Minimum Level - Increasing: 0 to 255 Minimum Level - Decreasing: 0 to 255	Default is 99%. The luminaire will not accept a Minimum Level that is higher than the Maximum Level. **Minimum Level - Increasing and Minimum Level - Decreasing need to be set to the same value.**
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	• 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	• **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	• **1** for 300 Hz • **2** for 600 Hz • **3** for 1.2 kHz • **4** 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.

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: RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

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

WARNING: RISK OF ELECTRIC SHOCK! The light sources in this luminaire are not user-replaceable, and must be replaced only by a qualified technician. Contact ETC Customer Support for assistance.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE! Les sources lumineuses de ce projecteur ne sont pas remplaçables par l'utilisateur et doivent être remplacées seulement par un technicien qualifié. Contactez le service client ETC pour obtenir de l'assistance.

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.

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.

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.

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 has more than one power supply connection point. To reduce the risk of electric shock, disconnect both the branch circuit-breakers or fuses and emergency power supplies before servicing.*

ATTENTION : *Cet équipement possède plusieurs points de connexion d'alimentation. Pour réduire le risque d'électrocution, débranchez les disjoncteurs de dérivation ou les fusibles et les alimentations de secours avant de procéder à l'entretien.*

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.

Compliance

For current and complete compliance information, view the product datasheets at etcconnect.com/ArcSystem. For complete product documentation, including compliance documentation, visit etcconnect.com/products.

Note: *To comply with the requirements of CSA C22.2 No. 250.13, DMX/RDM networks must not have more than 32 device loads per daisy chain. This product is not self-terminating. You must terminate the last driver on the daisy chain with a 120Ω resistor. To purchase an RJ45 terminator, please contact your ETC customer service representative and request part number N4086.*