

ArcSystem^{1.5}

ARC-D1 and ARC-D4 drivers



Datasheet



ARC-D1



ARC-D4 wall mount



ARC-D4 rack mount

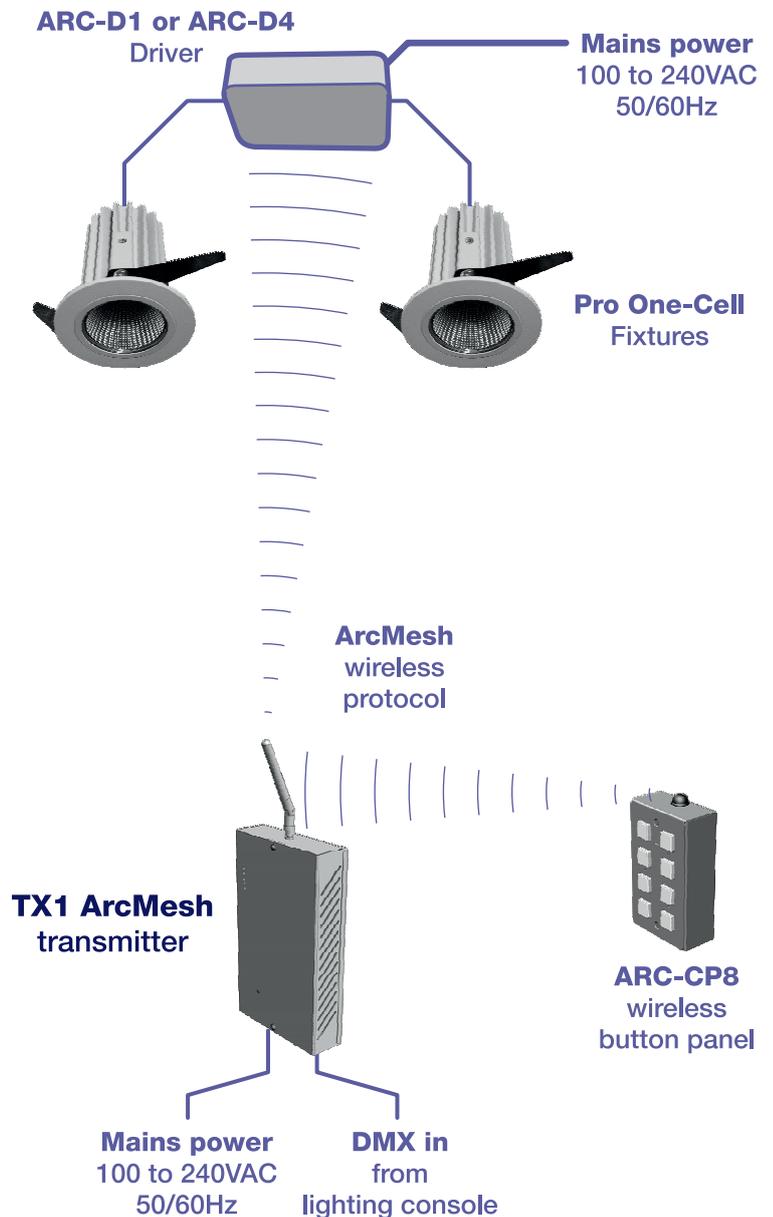
Introduction

ArcSystem is a comprehensive range of LED lighting fixtures and control options specifically designed for auditorium and arena spaces where quality of light, precise dimming control and ease of installation are primary factors. Wireless operation allows for rapid integration of the whole ArcSystem with existing auditorium lighting installations.

The ArcSystem range features numerous lighting fixtures, the larger of which have their own in-built wireless receivers and power drivers. For the smaller ArcSystem fixtures that don't, we provide the **ARC-D1** and **ARC-D4** drivers to perform the important task of converting wireless (or wired) control signals into smooth, step-less dimming. To deliver full flexibility, we offer a choice of models to suit the particular requirements of your installation (see pages 2 and 3).

The **TX1 ArcMesh transmitter** controls and coordinates the ArcSystem drivers and lighting fixtures in response to inputs from wireless auditorium button panels and/or an external DMX feed from a lighting console.

Initial setup and ongoing maintenance is performed using the **ARC-CT Commissioning Tool**. This wireless USB dongle plus accompanying software allows the system to be configured and fine tuned from any location within the installation space, using just a basic notebook computer.



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ARC-D1 and ARC-D4 drivers



Straight forward thinking

Range summary

ARC-D1 CC

Constant current dimming, suitable for driving Pro One-Cell fixtures.

- Enclosure: Plastic enclosure (see page 7 for dimensions)
- Power input: 100 to 240VAC (50/60Hz)
- Power output: 12-45VDC, 25W maximum



- Pro One-Cell Small **x1**
- or
- Pro One-Cell Large **x1**
- or
- Pro One-Cell MR16 **x2**

ARC-D4 CC

Constant current dimming, suitable for driving Pro One-Cell fixtures.

- Enclosure: Wall mount (see page 7 for dimensions)
- Power input: 100 to 240VAC (50/60Hz)
- Power output: 12-45VDC, 115W maximum

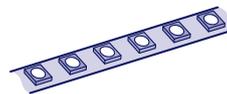


- Pro One-Cell Small **x4**
- or
- Pro One-Cell Large **x4**
- or
- Pro One-Cell MR16 **x8**

ARC-D4 CV 150W

Constant voltage dimming, suitable for driving ArcLamps or LED strip.

- Enclosure: Wall mount (see page 7 for dimensions)
- Power input: 100 to 240VAC (50/60Hz)
- Power output: 24VDC, 150W maximum

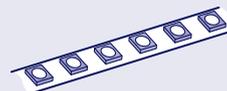


- ArcLamp **x25**
- or
- LED strip **up to 150W**

ARC-D4 CV 350W

Constant voltage dimming, suitable for driving ArcLamps or LED strip.

- Enclosure: 19" rack mount (see page 8 for dimensions)
- Power input: 100 to 240VAC (50/60Hz)
- Power output: 24VDC, 350W maximum

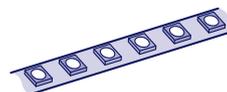


- ArcLamp **x60**
- or
- LED strip **up to 350W**

ARC-D4 CV 700W

Constant voltage dimming, suitable for driving ArcLamps or LED strip.

- Enclosure: 19" rack mount (see page 8 for dimensions)
- Power input: 100 to 240VAC (50/60Hz)
- Power output: 24VDC, 700W maximum



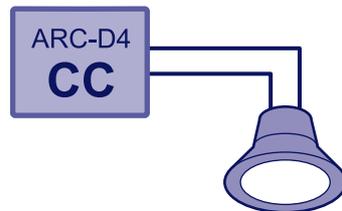
- ArcLamp **x120**
- or
- LED strip **up to 700W**

Constant current vs constant voltage

Ignoring the various enclosure differences (e.g. wall mount vs rack mount) for a moment, you will notice that the D4 driver is available in two types: *Constant Current (CC)* and *Constant Voltage (CV)*. For both types, their job is to vary the power supplied to the LED fixtures in order to smoothly dim them up and down. One type of driver achieves this by maintaining a constant current level while changing the voltage, the other driver achieves the same result, but does it the other way round.

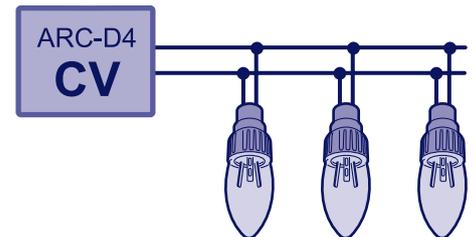
So why the difference?

Firstly, the most efficient way to power an LED fixture is to use a *constant current* driver; consequently the majority of our fixtures operate in this manner. Our Pro One-Cell fixtures all need a CC driver and our Pro Multi-Cell fixtures have the equivalent CC driver built directly into them.



However, there are situations where it is not possible to use CC drivers; most notably when you have multiple LED emitters connected in parallel to the same power source. For instance, this occurs when you have many of our ArcLamps installed on a common circuit.

The same is also true when LED strips are used, because they consist of many strings of LED emitters connected in



parallel. In these cases, if you tried to use a CC driver, its voltage alterations would produce uneven effects across the multiple emitters, causing imprecise dimming and possibly even permanent damage. In these situations an ARC-D4 CV (constant voltage) driver, with its variable current operation, proves to be an excellent solution.

Key features

- Multiple power and enclosure options to suit a wide variety of installations.
- All model variants available in standard and emergency versions.
- ARC-D1 and ARC-D4 drivers mesh seamlessly with all-in-one GDS fixtures, such as the Pro Four-Cell and Pro Eight-Cell.
- ARC-D1 and ARC-D4 drivers and their fixtures are straightforward to install in new and existing locations thanks to wireless operation.
- Choice of wired control inputs, where required.
- Choice of constant current or constant voltage models to suit different fixture arrangements.
- User control by wireless push button units and/or a DMX feed from any lighting console.
- Constant current models can be switched between 600mA (standard) or 400mA drive currents to support lower intensity fixtures.
- Encrypted wireless operation, not identifiable by Wi-Fi.
- 100 to 240VAC 50/60Hz autosensing mains operation.
- Inrush currents:

| | |
|------------|------------------------|
| D1 CC | 40A maximum at 230VAC |
| D4 CC | 120A maximum at 230VAC |
| D4 CV 150W | 120A maximum at 230VAC |
| D4 CV 350W | 40A maximum at 230VAC |
| D4 CV 700W | 80A maximum at 230VAC |

Connections

Power options

The various ARC-D1 and ARC-D4 (CC and CV) drivers are all available in standard and emergency versions:

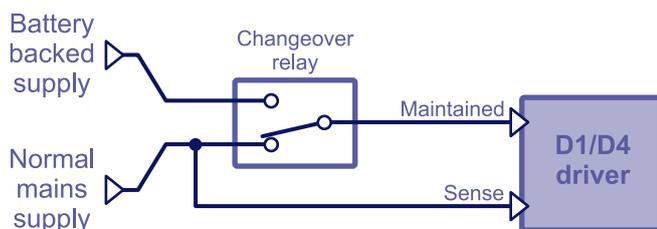
- **Standard** versions have a single mains power input. This is connected to the normal mains supply and in the event of a power failure, the fixture(s) will switch off.
- **Emergency** versions have two mains power inputs. One input is connected to a maintained supply (most often a central mains fed, battery backup installation with an inverter system) while the other input is connected to the normal mains supply as a sense line. Operational power is always taken from the maintained input.

Note: For full conformity, the maintained supply must be fed to the driver via fire rated cable. Similarly, the feed cable to each emergency fixture must also be via fire rated cable.

If at any time the sense input is lost (signalling an overall mains failure), the driver outputs will automatically go to a 100% on state, regardless of its wireless or wired control inputs. This will continue until the sense input is restored, whereupon normal operation will resume, as determined by the control inputs.

Note: On D4 CC units it is possible to select whether all or only some outputs should switch on in an emergency state. This allows for a reduced light output to conserve power from the backup supply.

If the venue's central battery system only provides power upon mains failure, a changeover relay will be required to switch the maintained input from a normal mains supply to the battery fed system:



Changeover relays such as the ACM1 from Cooper Controls are suitable for use with GDS D1/D4 drivers.

Cable options (for CC installations)

Each Pro One-Cell low voltage fixture is supplied with a 600mm (23") cable, terminated in a *Toby 5700-H04* four-way connector, which can be plugged directly into the ARC-D1 driver or fed via an adapter cable into the ARC-D4 unit. Where longer runs are required between fixture and driver unit, we offer optional extension cables:



Where two MR16 units need to be fed from a single driver cable, a Y-split cable will be required.

Description

- 1m extension cable
- 2m extension cable
- 3m extension cable
- 5m extension cable
- 10m extension cable
- MR16 Y-split cable

Part number

- ARCDAHBC1
- ARCDAHBC2
- ARCDAHBC3
- ARCDAHBC5
- ARCDAHBC10
- ARCP15AMYSA

Notes:

Individual cable runs for CC installations should not exceed 100m (328 feet).

Cabling for CV installations tend to consist of the venue's hardwired tails leading from parallel clusters of ArcLamps and/or LED strips. Cable types and lengths used in CV installations must be carefully calculated by the design engineer.

Output connections

The manner in which fixtures are connected varies according to the fixture type and the driver model:

- The ARC-D1 model has a single *Toby 5700-H04* four-way socket on its side panel to which an extension cable up to 10m (see right) in length can be connected.
- The ARC-D4 CC and CV wall-mount models both have internal two-way terminal connectors for each of their four channels. For the CC versions, four short adapter cables are supplied which can link with the *Toby 5700-H04* connectors used on the optional extension cables (see right) and then attach to the internal terminal connectors for each channel. The side panel of the ARC-D4 enclosure has four 20mm knockouts which can accommodate glands for sealed cable access.
- The ARC-D4 CV 350 and 700W 19" rack-mount models both have pluggable two-way terminal blocks on their rear panels for each of their four output channels. The necessary terminal plugs are supplied with each unit.

Wireless antennas

The ARC-D1 and ARC-D4 wall mount enclosures all include an in-built wireless antenna.

The ARC-D4 rack-mount models feature an SMA connector on their rear panels to allow an external antenna to be attached. A compact antenna measuring just 25mm (1") with a gain of 0.22dB is supplied with the unit. However, this could be replaced with a remotely sited antenna if the ARC-D4 itself is located externally to the area where the TX1 ArcMesh transmitter operates.

Control

The ARC-D1 and ARC-D4 drivers can be used with either wired or wireless control, as best suits your venue.

- **Wired** installations require a DMX connection from the control source to be fed to the input socket of the first driver. A connection is then taken from the output socket of that driver to the input socket of the next driver, and so on.

The use of an optional* TX1 ArcMesh transmitter provides the great advantage that multiple control sources, including wireless control panels (as well as the lighting console) can be combined and arbitrated to determine the required lighting states.

- **Wireless** control mandates the use of a TX1 ArcMesh transmitter to provide the source wireless control signal. The TX1 ArcMesh transmitter uses an industry standard communication protocol (IEEE802.15.4) and is designed to reliably operate over short to medium distances. The beauty of the ArcSystem is that the transmitter does not need to reach every driver or fixture; the ARC-D1 and ARC-D4 drivers (as well as all Pro multi-Cell fixtures) are capable of re-transmitting the data they receive in order to greatly extend the range over which they can operate as a whole. We call this **ArcMesh** and it provides great flexibility to the system.

**Note: The TX1 transmitter is optional for the operation of a wired installation, however, a TX1 or USB TX1 unit will need to be used for the initial configuration.*

Whether using wired or wireless control, the initial setup (and ongoing maintenance) must be performed using the **ARC-CT Commissioning Tool**. This wireless USB dongle plus accompanying software allows the system to be configured and fine tuned from any location within the installation space, using just a basic notebook computer.

Order codes

ARC-D1 CC 25W

Constant current dimming, 25W maximum output, suitable for driving a single Pro One-Cell fixture**, plastic enclosure.

standard model: ARCP15MD1CC-25
emergency model: ARCP15MD1CC-25E

ARC-D4 CC 115W

Constant current dimming, 115W maximum output, suitable for driving multiple Pro One-Cell fixtures, metal wall mount enclosure.

standard model: ARCP15MD4CC-115
emergency model: ARCP15MD4CC-115E

ARC-D4 CV 150W

Constant voltage dimming, 150W maximum output, suitable for driving multiple ArcLamp and/or LED strip fixtures, metal wall mount enclosure.

standard model: ARCP15MD4CV-150
emergency model: ARCP15MD4CV-150E

ARC-D4 CV 350W

Constant voltage dimming, 350W maximum output, suitable for driving multiple ArcLamp and/or LED strip fixtures, standard 19" rack mount enclosure.

standard model: ARCP15MD4CV-350
emergency model: ARCP15MD4CV-350E

ARC-D4 CV 700W

Constant voltage dimming, 700W maximum output, suitable for driving multiple ArcLamp and/or LED strip fixtures, standard 19" rack mount enclosure.

standard model: ARCP15MD4CV-700
emergency model: ARCP15MD4CV-700E

**** Note:** The ARC-D1 CC model can drive two Pro One-Cell MR16 fixtures with the use of a splitter cable.

To specify state (ARC-D1 CC 25W):

A high performance constant current LED driver having 100% to absolute zero dimming, controllable from local DMX or via the ArcMesh wireless protocol. It is designed to drive either one GDS Pro One-Cell Small/Large fixture or two GDS Pro One-Cell MR16 fixtures. The unit delivers drive voltage in the range 12 to 45VDC and delivers a total power output of up to 25W. The driver is designed for wall fixing and is housed within a sturdy plastic enclosure. The driver is silent in operation.

To specify state (ARC-D4 CC 115W):

A high performance constant current LED driver having 100% to absolute zero dimming, controllable from local DMX or via the ArcMesh wireless protocol. It is designed to drive GDS Pro One-Cell fixtures: either four Small/Large models or eight of the MR16 variants. The unit delivers drive voltages in the range 12 to 45VDC and delivers a total power output of up to 115W. The driver is designed for wall fixing with all connections enclosed and accessible by conduit knockouts; the sturdy case is constructed from powder coated mild steel. The driver benefits from convection cooling and is silent in operation.

To specify state (ARC-D4 CV 150W):

A high performance constant voltage LED driver having 100% to absolute zero dimming, controllable from local DMX or via the ArcMesh wireless protocol. Designed to drive multiple ArcLamp and/or LED strip fixtures, this unit delivers a total power output of up to 150W. The driver is designed for wall fixing with all connections enclosed and accessible by conduit knockouts; the sturdy case is constructed from powder coated mild steel. The driver benefits from convection cooling and is silent in operation.

To specify state (ARC-D4 CV 350/700W):

High performance constant voltage LED drivers having 100% to absolute zero dimming, controllable from local DMX or via the ArcMesh wireless protocol. Designed to drive multiple ArcLamp and/or LED strip fixtures, these units deliver a total power output of up to 350 or 700W (model dependent). The drivers are designed for 19" rack mount, requiring only a 1U slot. All connections (DMX data in and out, as well as the outputs to the fixtures) are available at the rear panel.

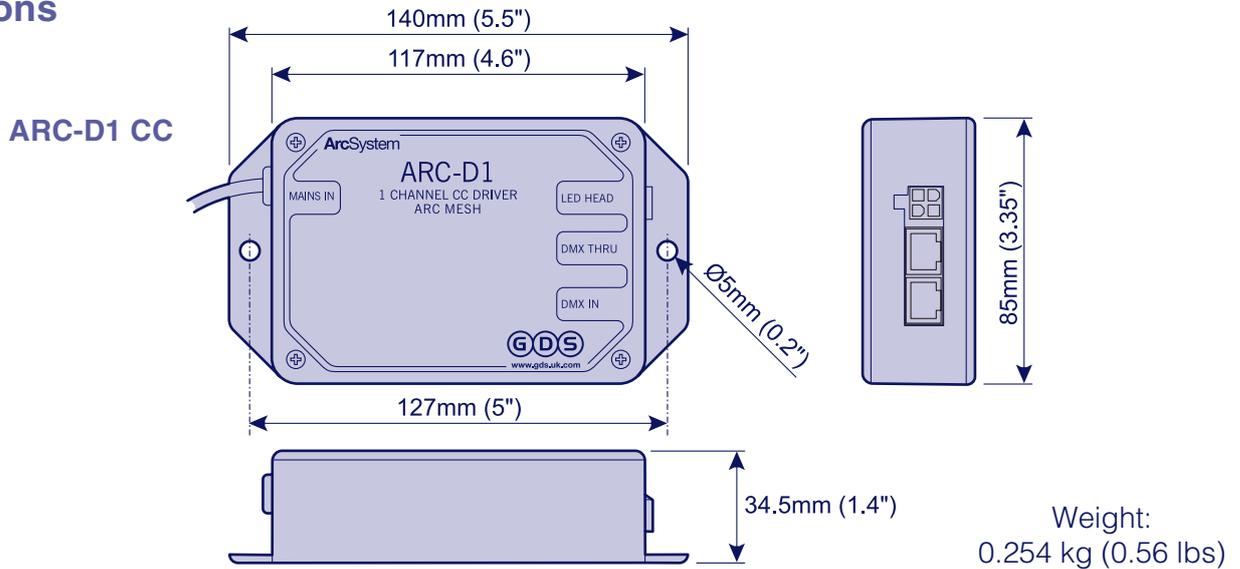
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ARC-D1 and ARC-D4 drivers

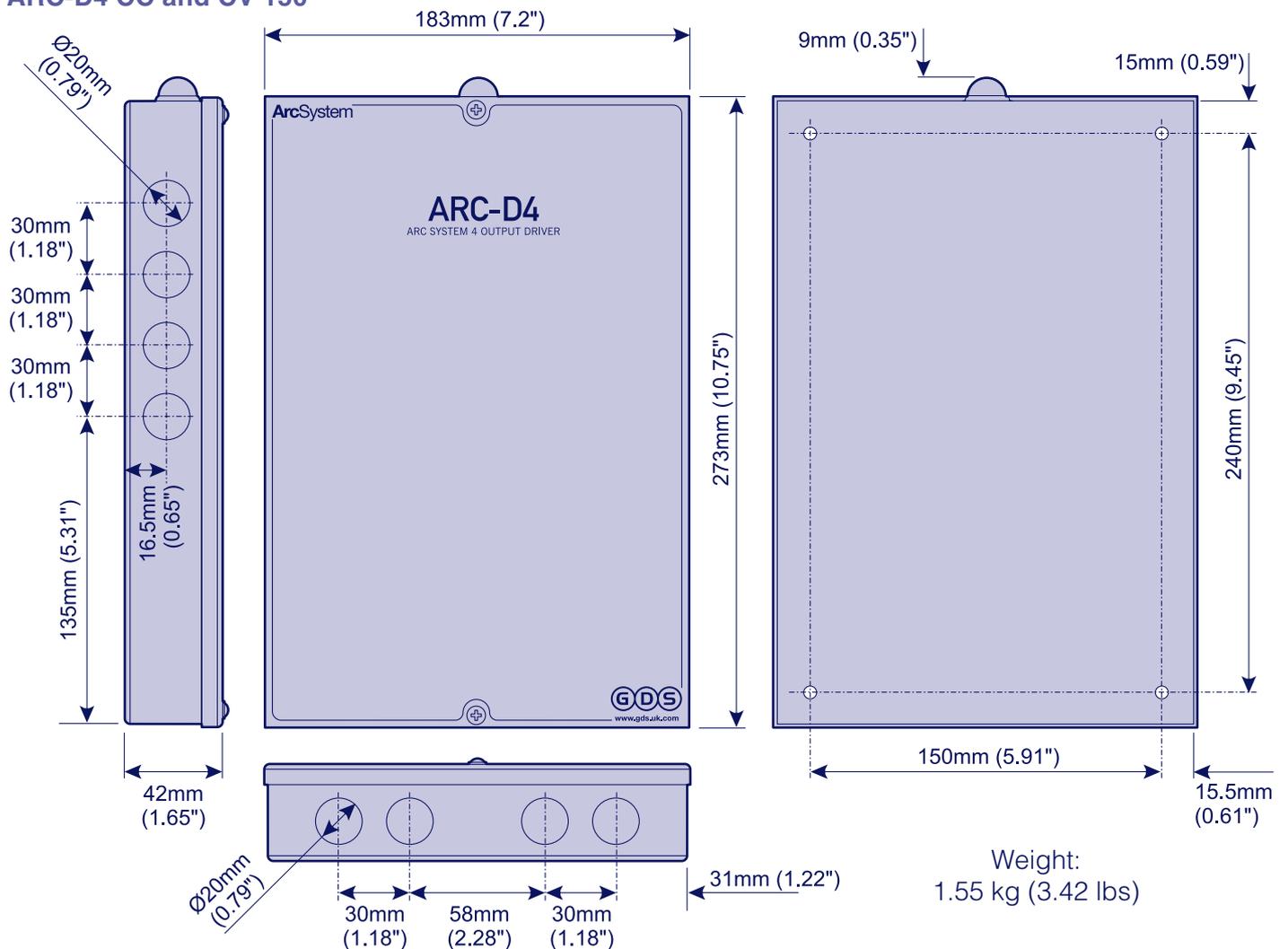


Straight forward thinking

Dimensions

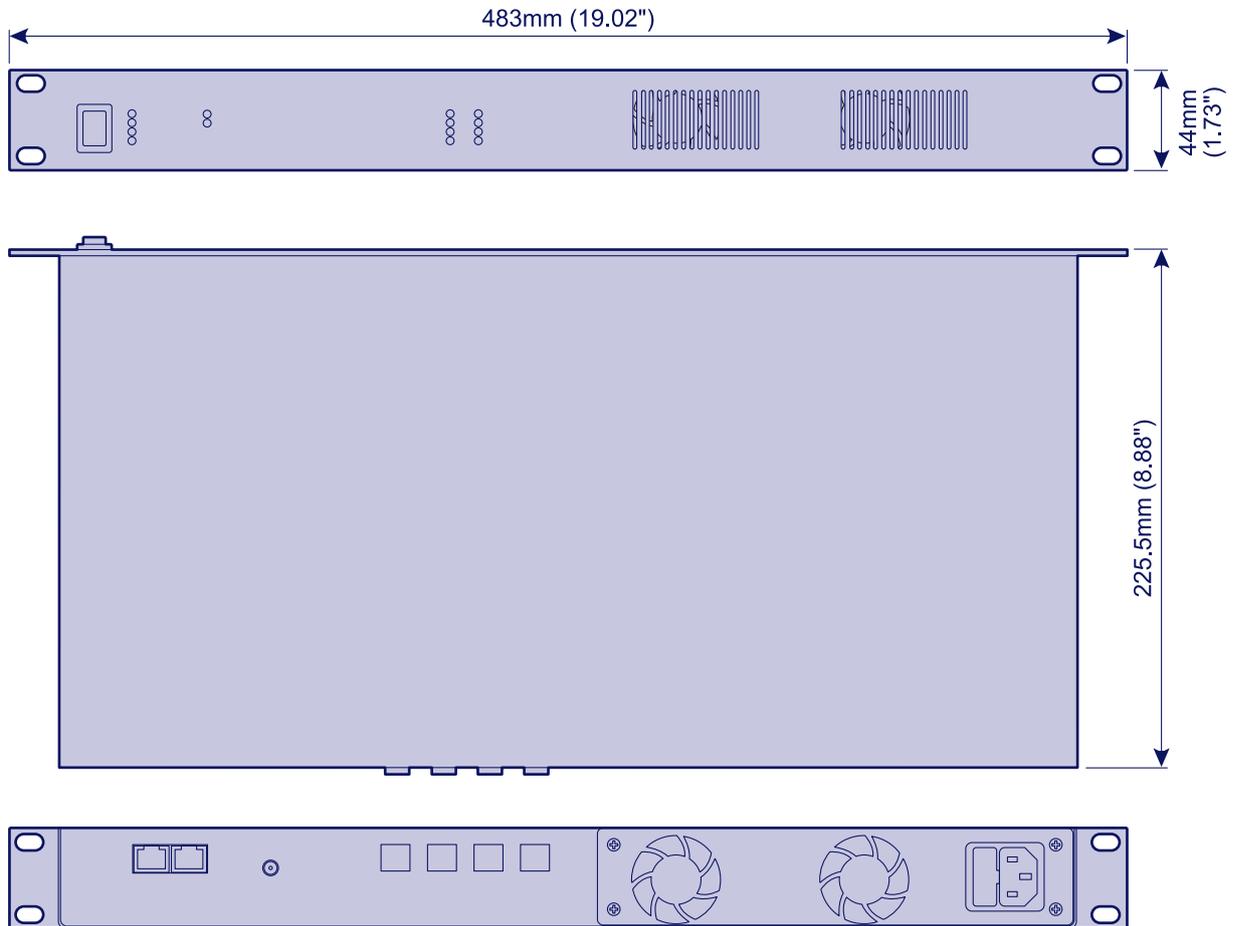


ARC-D4 CC and CV 150



Dimensions (continued)

ARC-D4 CV 350 and 700



Weight:

350W version - 3.7 kg (8.16 lbs)

700W version - 4.2 kg (9.26 lbs)

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ARC-D1 and ARC-D4 drivers



Straight forward thinking

Key items within the ArcSystem range

TX1 ArcMesh transmitter

A vital element in most ArcSystem installations. Controls and coordinates all other elements.



ARC-CP8 button panels

Provide direct recall for 8 of the 24 preset scenes contained within the TX1 ArcMesh transmitter.



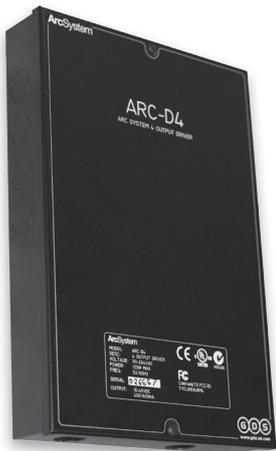
ArcMesh Control USB Commissioning Tool & software

A USB wireless interface tool plus PC application used to commission and maintain ArcSystem installations.



ARC-D1 and ARC-D4 drivers

Mains powered compact drivers in various sizes to dim Pro One-Cell fixtures or ArcLamps according to wireless (or wired) control. Emergency versions also available.



Pro One-Cell fixtures

A range of high output recessed, and yoke mount, single emitter fixtures. These require the use of a D1 or D4 CC driver.

ArcLamps

A range of direct replacement lamps for traditional fixtures. ArcLamps are designed to closely mimic the light output and dimming response of traditional 60W tungsten lamps. ArcLamps require the use of a D4 CV driver.



Pro Multi-Cell (Two to Eight) fixtures

Mains powered fixtures with 2, 4 or 8 emitters. All driver and wireless systems on board. Can also be hardwired to the control system where necessary. Emergency versions also available.



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