ACCLAIM
LIGHTING

# Flex II Exterior (SC and RGB)

Contents

Introduction

Welcome

Welcome to the Flex II Exterior range from Acclaim Lighting. These high output LED tapes are designed and built with ingress protection to IP68 to survive the elements. A range of mounting channels (see opposite page) and accessories are available to suit numerous installation situations.

Flex II Exterior tape is available either with RGB composite emitters or a choice of single color emitters with Correlated Color Temperature (CCT) options ranging from 2400K to 4000K.

All Flex II tapes require a 12VDC supply and dimming is supported using various dimming options - see page 6.
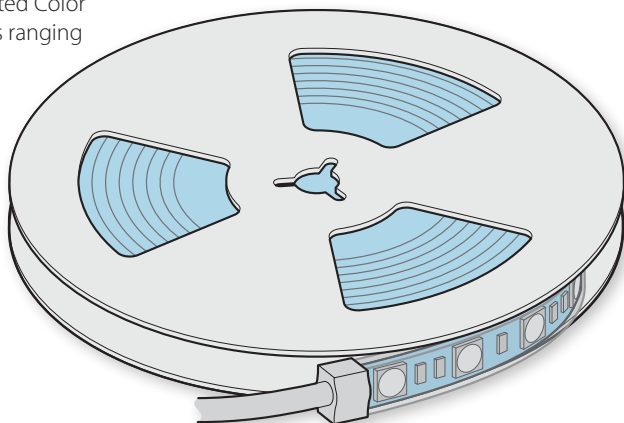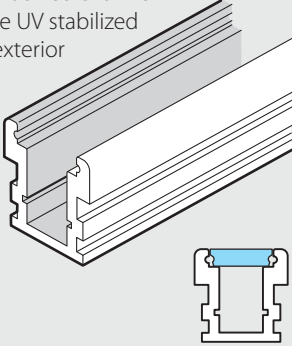
Safety

• Ensure the power input is supplied from a correctly fused, earthed and environmentally protected location.

Channel types

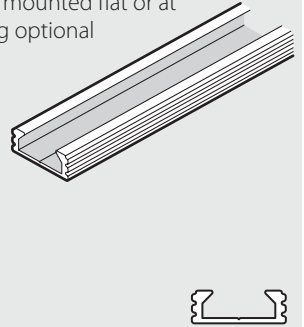### Flex exterior line channel [FLX EXL]

A walk over anodized channel with a sealable UV stabilized opal lens for exterior in-ground installations.

Page 12

Flex channel low profile [FLX444]

A very low profile channel (without lens) which can be mounted flat or at an angle using optional fixing kits.

Page 14

Flex channel tall profile [FLX888]

A tall sided channel to limit light spill, with a choice of clear, frosted or opal lenses plus flat or angled mounting options.
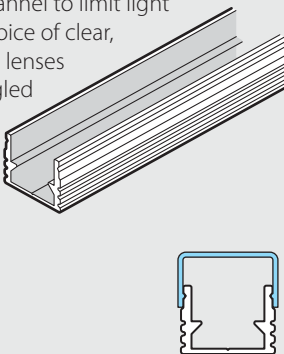
Page 14

Flex channel recessed [FLX777]

A flanged deep channel with a choice of UV coated lenses to provide a neat finish when recessed within a surface (not rated for walk-over installations).

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Installation

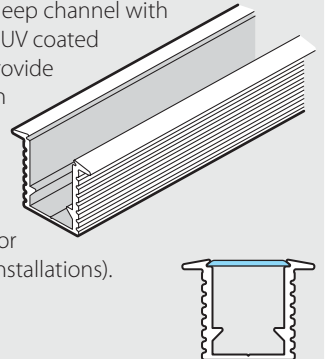Flex II exterior tapes are fully sealed within a flexible UV stabilized silicon tube. Mounting to surfaces is usually achieved either by using the ten silicone clips (plus screws) provided or any of the optional aluminum channels or optional adhesive tapes, such as the VHB™ range from 3M™. The recommended aluminum channels all produce an interference fit when the Flex II exterior tape is fitted into them. We recommend you use Dow Corning® 799 (or equivalent) silicone to seal the channels against moisture ingress and also ensure all Flex II connections, within the channels, are fully encapsulated.

When mounting on the sides or undersides of surfaces

We recommend that you add small dots of silicone sealant along both sides of the Flex tape (to overlap the tape edge and mounting surface) using Dow Corning 700 or equivalent. This will provide additional stability and help to prevent any separation of the tape from the mounting surface over time. The silicone dots are best applied once the tape is fixed in place; then the whole installation should not be disturbed until it the sealant has fully cured.

Cleaning the mounting surface (for adhesive tape)

Most substrates are best prepared by cleaning with a 50:50 mixture of isopropyl alcohol (IPA) and water* prior to applying the tape. Exceptions to this general procedure that may require additional surface preparation include:

Heavy oils

A degreaser or solvent-based cleaner* (such as 3M™ Prep Solvent 70, 3M™ Citrus Base Cleaner, mineral spirits, naphtha or similar, subject to suitability for the surface material) may be required to remove heavy oil or grease from a surface and should be followed by cleaning with IPA/water*.

Other contamination or oxidation

Abrading a surface, followed by cleaning with IPA/water*, can remove heavy dirt or oxidation (e.g. galvanized steel) and can increase surface area to improve adhesion. Abrasion often also helps adhesion to paints and plastics. Very small scratches in the surface, generated with circular motion rather than straight-line motion, are most desirable.

* *Note: These cleaner solutions contain greater than 250 g/l of volatile organic compounds (VOC). Please consult your local Air Quality Regulations to be sure the cleaner is compliant. When using solvents, be sure to follow the manufacturer's precautions and directions for use when handling such materials.*

Cutting and connecting the tape

Flex II tapes are supplied with ready made connections at one end. The RGB model has a 47"/1200mm encapsulated cable (with bare tails plus an IP68 rated connector mid-way) while the single color variants are all supplied has a 13"/330mm encapsulated cable (with bare tails plus an IP68 rated connector mid-way).
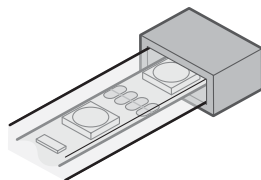

Two silicone end caps are provided with each Flex II spool to protect cut ends

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To cut the tape

Flex II tapes are marked with a cut line every two inches (50mm) - every three LED emitters.

IMPORTANT: Do not cut the tape at any location other than the cut line. Ensure the cut is made cleanly thru the silicone outer and along the line.


Single color tape cut line

RGB tape cut line
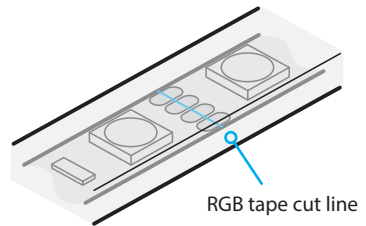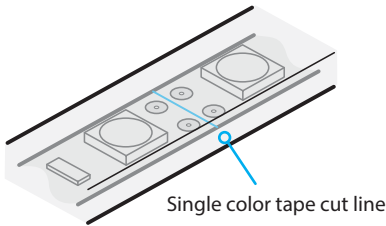
To connect the tape

Once cuts are made to a Flex II tape, then connections need to be made to the new sections. Either side of each cut line are bare copper contact pads where you can make connections by soldering feed wires.

1 After the tape has been cut, with great care use a sharp knife to cut away the silicone outer from around the contact pads. Remove small amounts of silicone at a time and take care not to cut into the tape.

2 Using a suitable soldering iron, solder your feed/link cables to the contact pads.
   Note: When soldering, minimize the time spent heating the tape to avoid damage to the nearby components.

Contact pads (Flex II SC)

Single color Flex II tapes have just two connections. At each cut line the contacts are marked **+12V** and **–**.

+12VDC
0V

+12VDC
Green
Red
Blue

+12VDC
0V

+12VDC
Green
Red
Blue
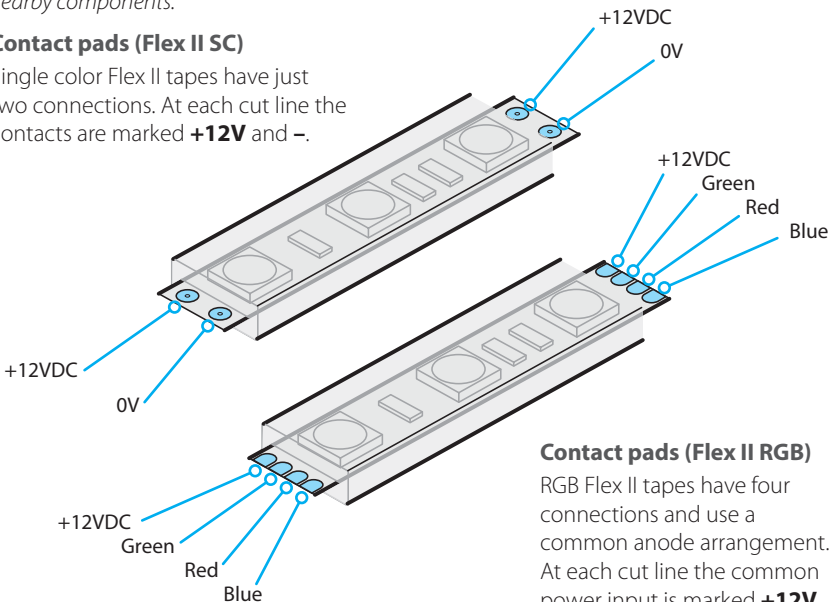
Contact pads (Flex II RGB)

RGB Flex II tapes have four connections and use a common anode arrangement. At each cut line the common power input is marked **+12V**.

3 Use Dow Corning® 799 (or equivalent) silicone sealant to form a complete seal around the exposed tape, connections and cables so that water ingress is prevented. The silicone seal is best achieved once the Flex II is fixed in place, however, it can also be done prior to installation. Allow the sealant to fully set before disturbing the tape.

Powering and dimming Flex II tapes

Flex II tapes are run at 12VDC and consume power as follows:

	per foot	per meter	per 16.4' (5m) spool
• Single color:	3W	10W	50W
• RGB :	4.4W	14.4W	72W

Note: The maximum overall tape length per run is 16.4' (5 meters). This is limited by the current capacity of the power buses within each tape.

Connection cables

The connection cables (not supplied) used to link Flex II tapes to the power/driver unit should follow these guidelines (based on a load of 4.2A for 16.4'/5 meters of Flex II tape):
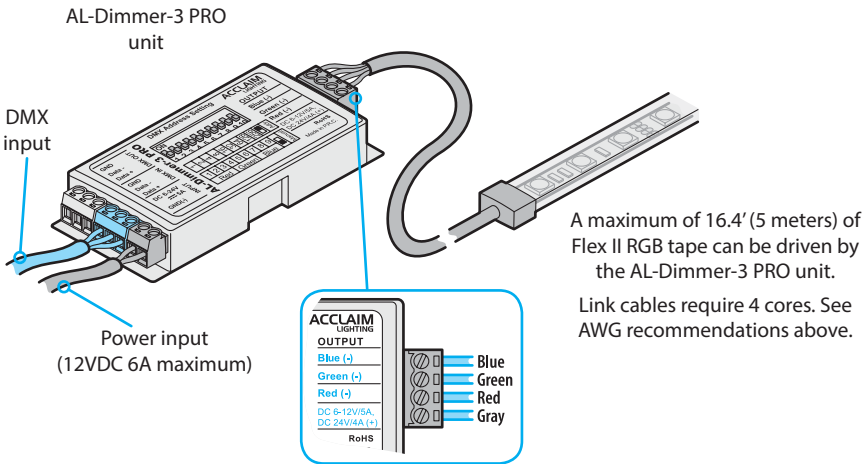
- Up to 20 feet (6m)   18 AWG (0.823mm^2)
- Up to 50 feet (15m)   14 AWG (2.081mm^2)
- Up to 90 feet (27m)   12 AWG (3.309mm^2)

In all cases, ensure the voltage drop at the fixture end of the link cable is no greater than 9% (1.08V) of the original 12VDC supply.

Flex II RGB power supplies and dimmers

AL-Dimmer-3 PRO

This compact unit measures just 3.5" x 1.6" x 0.8" and provides dimming control for Flex II RGB tapes from a DMX input. The AL-Dimmer-3 PRO unit requires a 12VDC power supply (such as the Acclaim Lighting APS-60-12 or APS-120-12) and can drive a single 16.4' (5 meter) spool.

AL-Dimmer-3 PRO unit

DMX input

Power input (12VDC 6A maximum)

A maximum of 16.4' (5 meters) of Flex II RGB tape can be driven by the AL-Dimmer-3 PRO unit.

Link cables require 4 cores. See AWG recommendations above.

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OUTPUT
Blue (-)
Green (-)
Red (-)
DC 6-12V/5A,
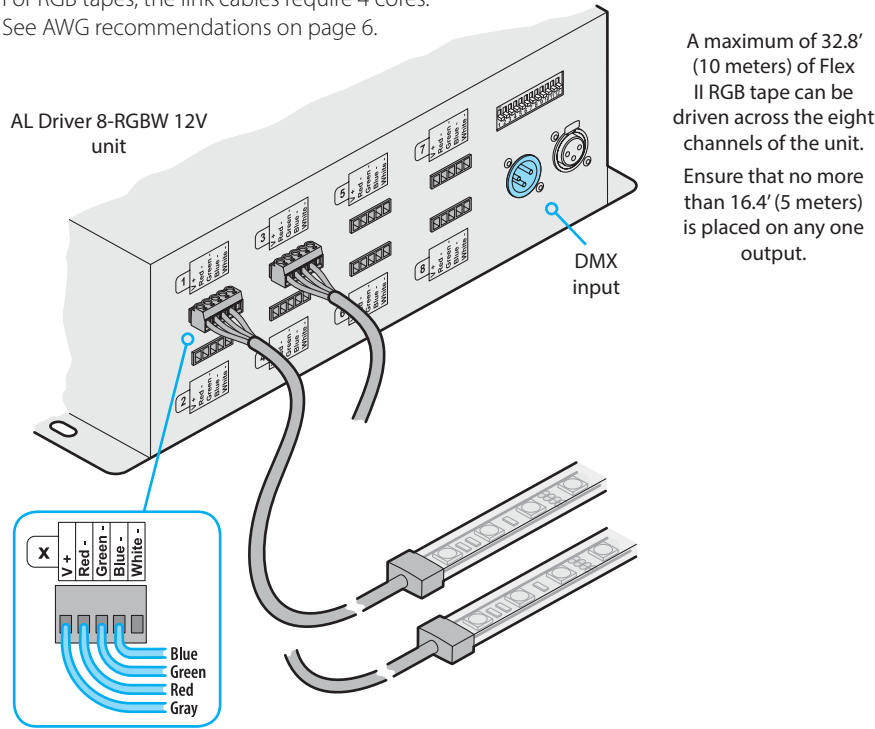DC 24V/4A (+)
RoHS

Blue
Green
Red
Gray

AL Driver 8-RGBW 12V

This combined power supply and driver provides dimming control for multiple Flex II RGB (or single color - see page 10) tapes from a DMX input.

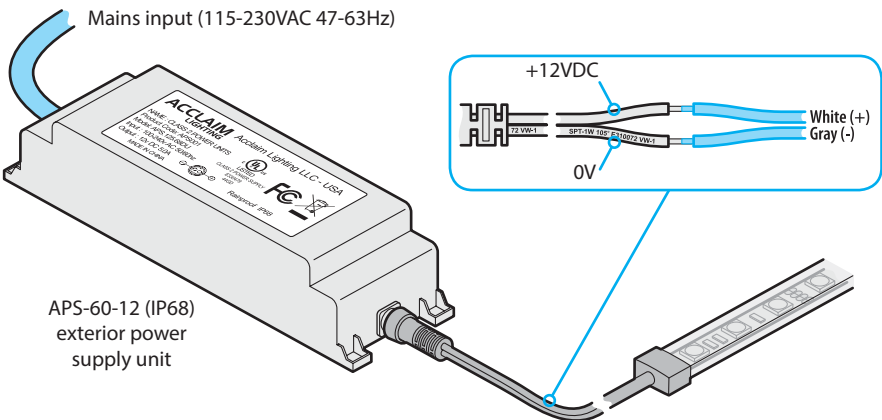For RGB tapes, the link cables require 4 cores.
See AWG recommendations on page 6.

AL Driver 8-RGBW 12V unit

A maximum of 32.8' (10 meters) of Flex II RGB tape can be driven across the eight channels of the unit.

Ensure that no more than 16.4' (5 meters) is placed on any one output.

DMX input

X | V + | Red - | Green - | Blue - | White -

Blue
Green
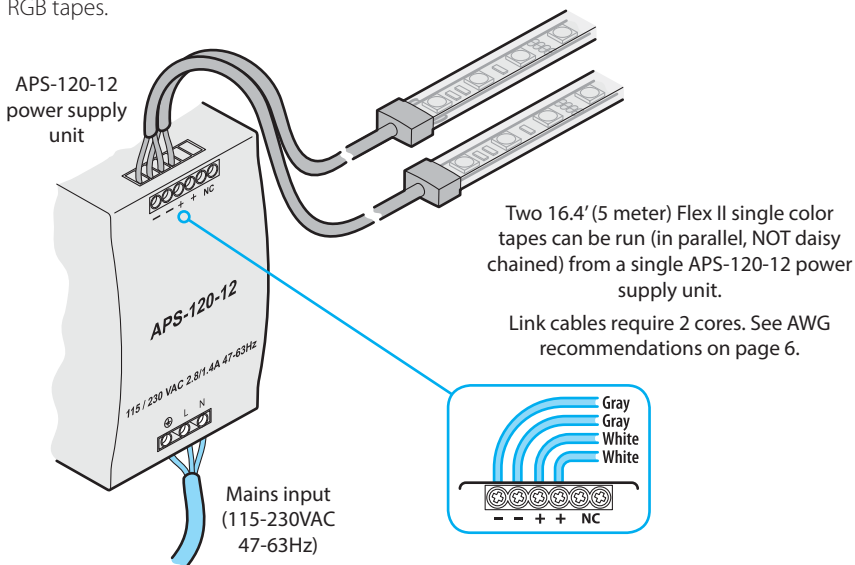Red
Gray

Flex II SC power supplies and dimmers

APS-60-12

This compact 60W power supply is rated to IP68 for exterior use and can power a single Flex II SC spool. It could also be used in conjunction with an AL-Dimmer-1 PRO or AL-Dimmer-3 PRO to provide power for dimming operations for a single color or multi-color RGB tape.
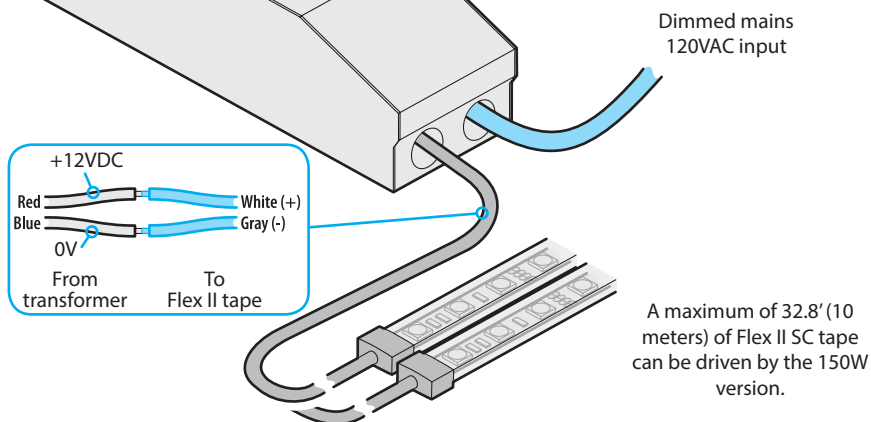
Mains input (115-230VAC 47-63Hz)

+12VDC

White (+)
Gray (-)

0V

APS-60-12 (IP68) exterior power supply unit

APS-120-12

This DIN-rail 120W power supply can power two 16.4′ (5 meter) Flex II SC spools. It could also be used in conjunction with one or more AL-Dimmer-1 PRO or AL-Dimmer-3 PRO units to provide power for dimming operations for single color or RGB tapes.

APS-120-12 power supply unit

APS-120-12

115 / 230 VAC 2.8/1.4A 47-63Hz

L   N

Mains input (115-230VAC 47-63Hz)

Two 16.4′ (5 meter) Flex II single color tapes can be run (in parallel, NOT daisy chained) from a single APS-120-12 power supply unit.

Link cables require 2 cores. See AWG recommendations on page 6.

Gray
Gray
White
White

− − + + NC

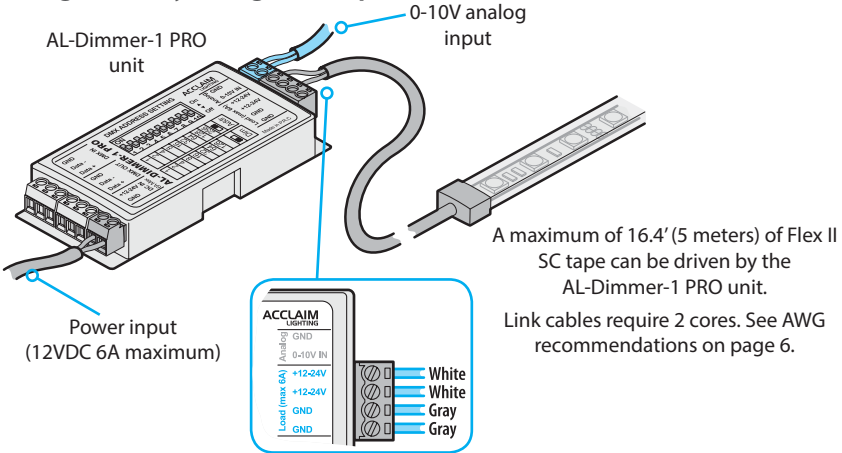## M-Series 12V dimmable transformer

This magnetic transformer is designed to allow Flex II tapes to be integrated into an existing dimmed-circuit lighting installation. This transformer is connected alongside (or in place of) the incumbent lighting fixture and converts the 120VAC dimmed supply to the 12VDC required by the Flex II tapes. Various power capacities are available: 60W, 100W, 150W and 300W.

Dimmed mains 120VAC input

+12VDC
Red
Blue
0V
From transformer

White (+)
Gray (-)
To Flex II tape

A maximum of 32.8′ (10 meters) of Flex II SC tape can be driven by the 150W version.

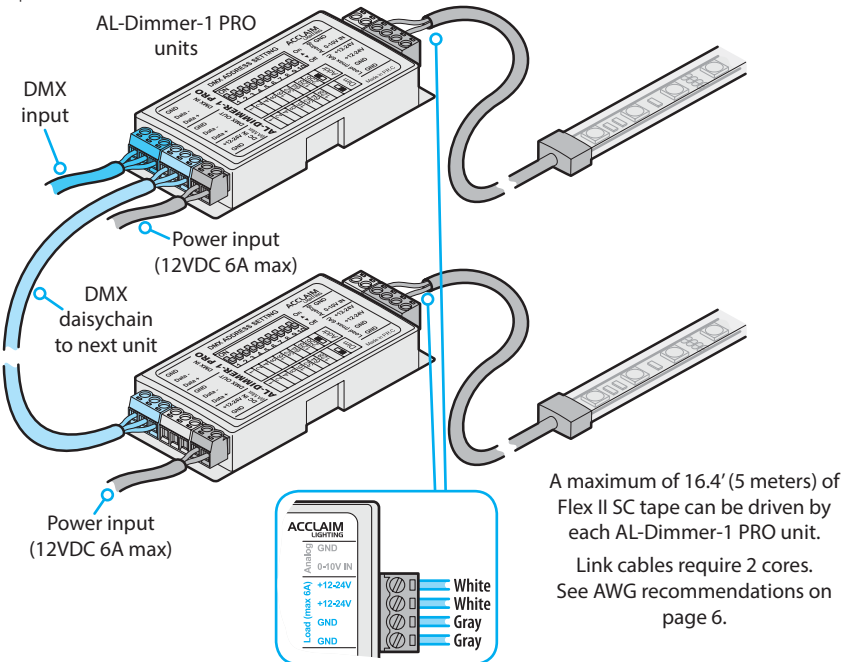www.acclaimlighting.com   ACCLAIM LIGHTING

AL-Dimmer-1 PRO

This compact unit measures just 3.5″ x 1.6″ x 0.8″ and provides dimming control for Flex II single color tapes from either analog 0-10V **or** digital DMX control inputs. The AL-Dimmer-1 PRO unit requires a 12VDC power supply (such as the Acclaim Lighting APS-60-12 or APS-120-12) and can drive a single 16.4′ (5 meter) spool.

### Dimming control by analog 0-10V input

AL-Dimmer-1 PRO unit

0-10V analog input

A maximum of 16.4′ (5 meters) of Flex II SC tape can be driven by the AL-Dimmer-1 PRO unit.

Link cables require 2 cores. See AWG recommendations on page 6.

Power input (12VDC 6A maximum)

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White
White
Gray
Gray

Dimming control (and control daisy chaining) by DMX

Up to 32 AL-Dimmer-1 PRO can be daisy chained on a single unbuffered DMX line. The final unit in the daisy chain must be terminated by a 120Ω resistor across the Data + and – output terminals.

AL-Dimmer-1 PRO units

DMX input

Power input (12VDC 6A max)

DMX daisychain to next unit

Power input (12VDC 6A max)

A maximum of 16.4′ (5 meters) of Flex II SC tape can be driven by each AL-Dimmer-1 PRO unit.

Link cables require 2 cores. See AWG recommendations on page 6.

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White
White
Gray
Gray

AL Driver 8-RGBW 12V

This combined power supply and driver provides dimming control for multiple Flex II single color (or RGB - see page 7) tapes from a DMX input. For SC tapes, the link cables require 2 cores. See AWG recommendations on page 6.
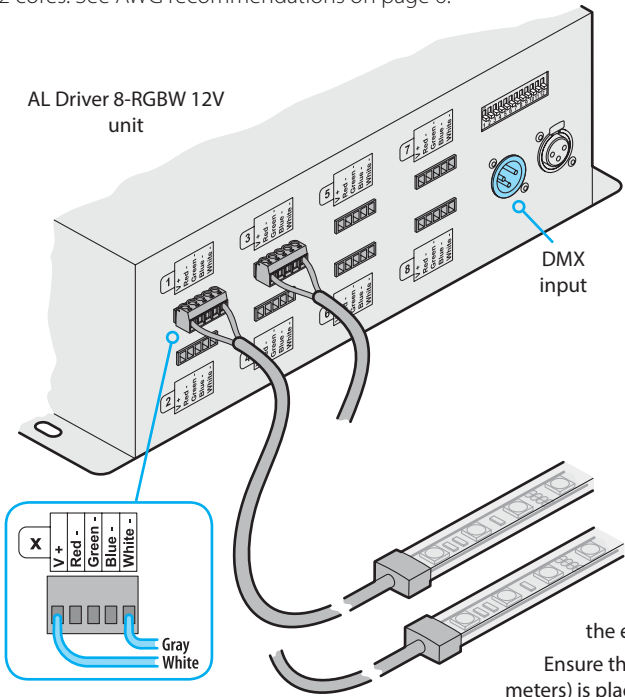
AL Driver 8-RGBW 12V unit

DMX input

X

V +
Red -
Green -
Blue -
White -

Gray
White

A maximum of 32.8' (10 meters) of Flex II SC tape can be driven across the eight channels of the unit.

Ensure that no more than 16.4' (5 meters) is placed on any one output.

Clip mounting

Each Flex II exterior tape spool is supplied complete with ten silicone mounting clips and twenty wood screws (M3 x 10mm) that can be used to directly fix the tape to appropriate surfaces.

Ensure that the supplied screws are suitable for the mounting surface, otherwise source alternative screws/bolts with diameters up to 0.12″ (3mm).

Tip: When mounting the tape, take care not to place the clips over the LED emitters as light output will be affected.
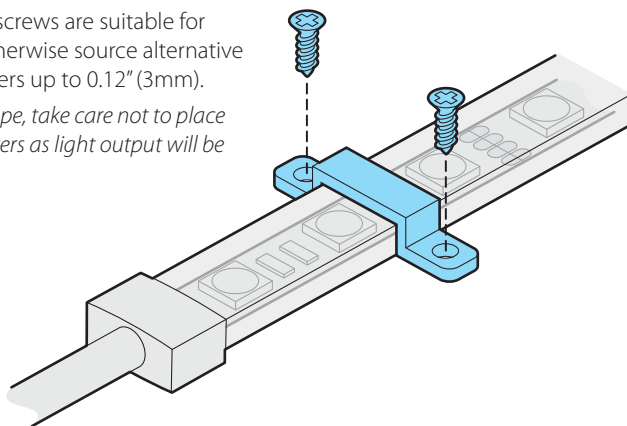
Exterior cable connections

To provide protection for exterior cable connections and distributions, waterproof couplers and splitters are available. When used correctly, both items offer ingress protection to IP68.

Options
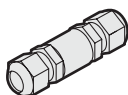
Waterproof coupler
[FLK WPC]
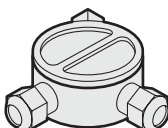
Waterproof splitter
[FLK WPS]

Internally the coupler and splitter units both contain two-way connector blocks. The glands suit cables with external diameters between 0.18 and 0.39″ (4.5 and 10mm).

Connector blocks support Ø 0.1″ (2.5mm) max conductors
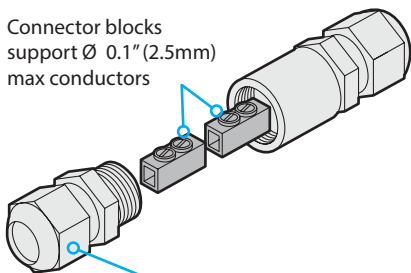
Connector block supports Ø 0.12″ (3mm) max conductors
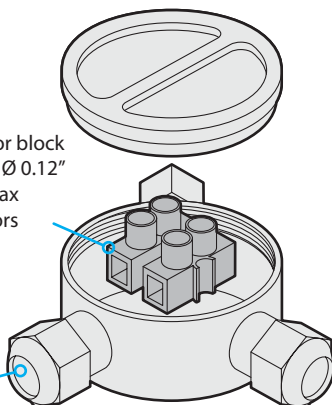
Glands best suit external cable diameters of 0.18 to 0.39″ (4.5 to 10mm)

Flex exterior line channel (FLK EXL)

This sturdy anodized aluminum channel allows the Flex II tape to be recessed into exterior surfaces and is rated for walk-over installations. Thanks to the increased thickness of its profile, the channel can withstand pressures of up to 2.9psi (20kN/m^2). To achieve effective IP67 water ingress protection it is necessary to use Dow Corning® 799 (or equivalent) silicone sealant to form complete seals between the channel and its UV coated lens - plus any cable access holes. For channel dimensions, see page 17.
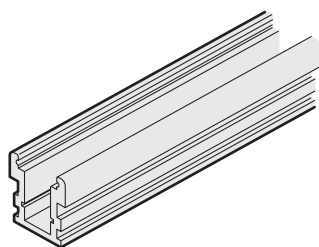
Flex exterior line channel
(3.28′ / 1m)
[FLK EXL]
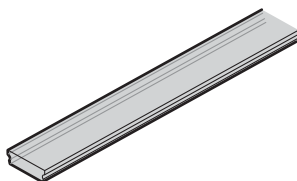
Exterior line opal lens
(3.28′ / 1m)
[FLK EXL OL]

End cap
[FLK EXL EC]

End cap with hole
[FLK EXL ECH]

Options

To fit the Flex II tape

Note: The molded Flex II connector fitted on each spool is too large to fit within the channel. In order to achieve a fully sealed installation, it will be necessary to remove the molded connection and solder new feed wires directly to the nearest cut line. See page 5.

1 If necessary, cut the channel to the required length. Ensure that any resulting burrs are removed.

2 Ensure the tape mounting surface within the channel is completely dry and clean.

3 Determine the length of tape required. Mark the positions at each end of the channel where the tape will be placed.

Note: Flex II tape can only be cut every 2″ (50mm) and this may mean that a precise length of Flex II tape cannot be achieved. Therefore it may be beneficial to center the tape within the channel to achieve an even distribution.
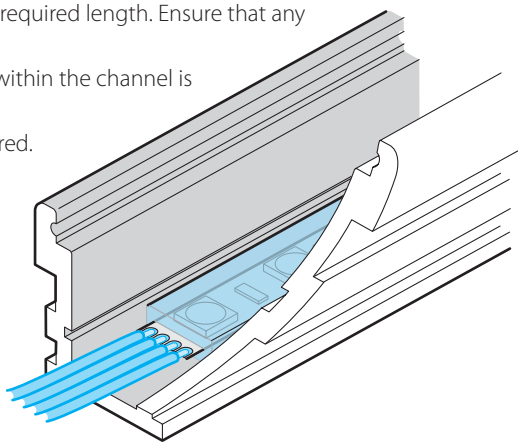
4 Cut the tape to the nearest marked cutpoint.

5 Carefully push the tape into the channel, starting at the marked position. The tape's size will cause an interference fit within the channel, keeping it in place without adhesive.

IMPORTANT: While pressing the Flex II tape into position, take care not to put excessive pressure on the components or connections.

6 Use Dow Corning® 799 (or equivalent) silicone sealant to fully encapsulate the power connections to protect against any moisture ingress.

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To recess in ground

1 Fit the Flex II tape to the channel (see page 12).

2 At the end where the connection will take place, fit an *End cap with hole*.

3 Feed the cables through the end cap and carefully solder to the contact pads, if necessary (see page 5).

4 At the other end of the channel, fit a standard *End cap*.

5 To ensure long term protection against water ingress, coat all internal end cap seams with a bead of sealant (Dow Corning® 799 or equivalent). Pay particular attention to the cable entry point.

6 Fit and seal the required lens (see below).

7 Place the sealed tape/channel assembly into the prepared ground recess.
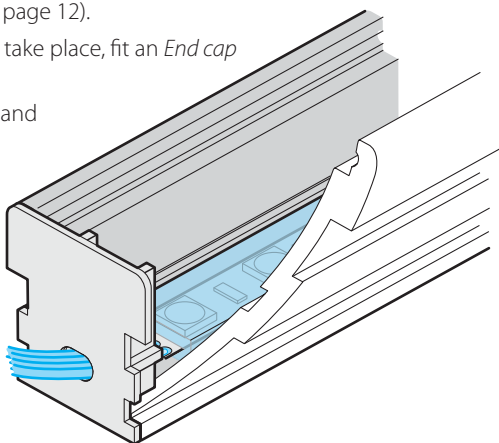
To fit the lens

1 Measure the exact length of lens required between the end caps at each end of the channel.

2 Carefully cut the lens to length. Ensure that any resulting burrs are removed.

3 Along each side of the channel (where the lens will sit) carefully run a thin bead of sealant (Dow Corning® 799 or equivalent). The bead should be large enough in diameter to ensure a good seal between the channel and the lens, but not so much that excess sealant runs into the channel and contaminates the lens inner face.

4 Determine the correct orientation of the lens - it has a wider outer face and a slightly narrower inner face.
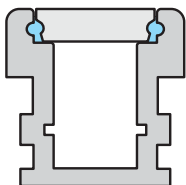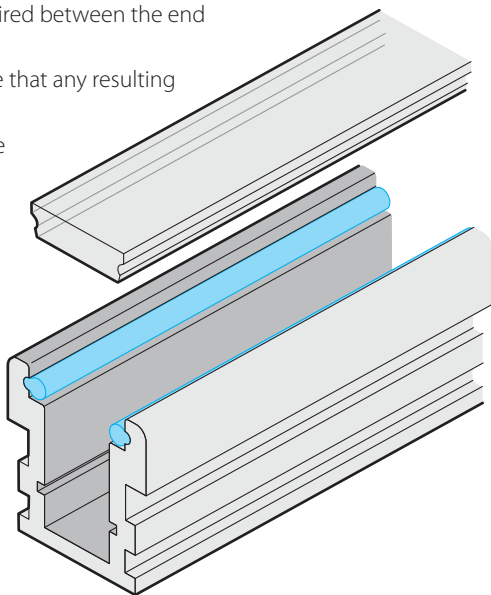
5 Carefully lower the lens onto the beads of sealant and ensure that it fully seats in place. Wipe away any excess sealant.

6 Apply further sealant between the lens and the end caps.

Flex channel - low profile/recessed/tall (FLX444/777/888)

There are three options within the Flex channel range to suit varying installation requirements: A low profile option with no lens; a recessed channel for concealment within surfaces and a tall profile channel that reduces light spill. The latter two channels have a choice of clear, frosted or opal lenses. For channel dimensions, see page 17.
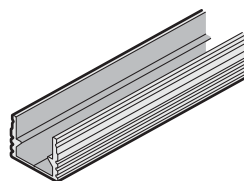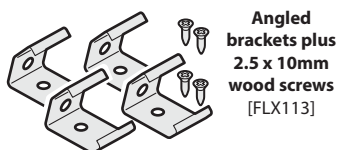
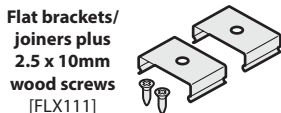**Options**
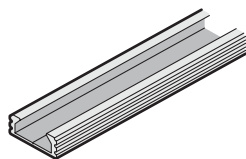
Flex channel low profile
(4' / 1.21m)
[FLX444]
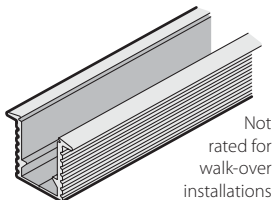
Flex channel recessed
(4' / 1.21m)
[FLX777]

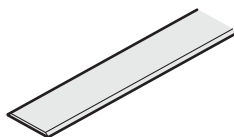Not rated for walk-over installations
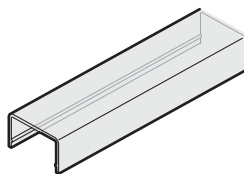
Flex channel tall profile
(4' / 1.21m)
[FLX888]

Angled brackets plus 2.5 x 10mm wood screws
[FLX113]

Flat brackets/ joiners plus 2.5 x 10mm wood screws
[FLX111]

Recessed lenses (4' / 1.21m)
[Clear: FLX727]
[Frosted: FLX715]
[Opal: FLX702]

Tall profile lenses (4' / 1.21m)
[Clear: FLX825]
[Frosted: FLX813]
[Opal: FLX801]

To fit the Flex II tape

1 If necessary, cut the channel to the required length. Remove any resulting burrs.

2 Ensure the tape mounting surface within the channel is completely dry and clean.

3 Determine the length of tape required. Mark the positions at each end of the channel where the tape will be placed.

   Note: The molded Flex II connector fitted on each spool is too large to fit within the channel.

   Note: Flex II tape can only be cut every 2" (50mm) and this may mean that a precise length of Flex II tape cannot be achieved. Therefore it may be beneficial to center the tape within the channel to achieve an even distribution (subject to the above note).

4 Cut the tape to the nearest marked cutpoint.

5 *Note: If you are attaching the channel directly to a surface, see 'To surface mount directly' on page 15 before inserting the tape.*
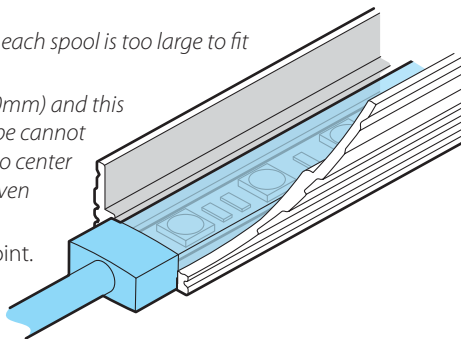
   Carefully push the tape into the channel, starting at the marked position. The tape's size will cause an interference fit within the channel, keeping it in place without adhesive.

   IMPORTANT: While pressing the Flex II tape into position, take care not to put excessive pressure on the components or connections.

6 If necessary, use Dow Corning® 799 (or equivalent) silicone sealant to fully encapsulate the power connections to protect against any moisture ingress.

To surface mount directly

1 Before fitting the Flex II tape, determine where the channel is to be mounted.

2 Drill the required number of holes in the base of the channel and countersink them. *Note: A small groove runs down the center of each channel base to provide a guide for your drill.*

3 Mount the channel and use countersunk screws to secure it. IMPORTANT: The screw heads must lie flush with the channel base.

4 Fit the Flex II tape to the channel (see page 14).

5 Carefully solder to the contact pads, if necessary (see page 5).

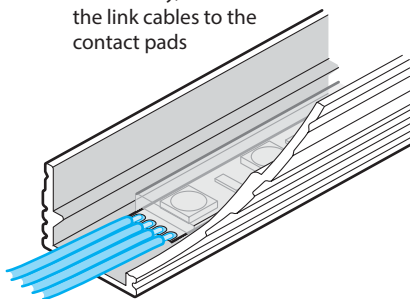Drill countersunk holes and use screws that will lie flush with the channel base
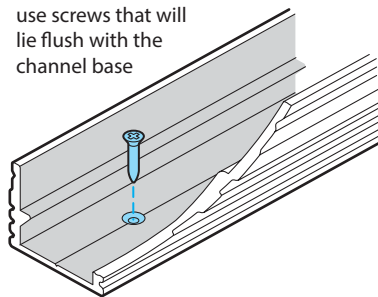
To surface mount using brackets

1 If necessary, carefully solder to the contact pads (see page 5).

2 Fit the Flex II tape to the channel (see page 14).

3 Attach two or more brackets (of the required type: *Flat brackets* or *Angled brackets*) to the mounting surface using either the supplied screws or others that are more appropriate to the surface type.

The angled bracket can be used in either of two orientations to provide an angle of either 30 or 45 degrees to the mounting surface (as shown below).
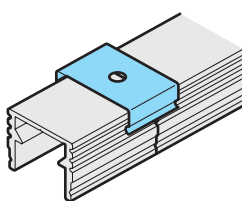
4 Clip the channel into the mounting brackets:

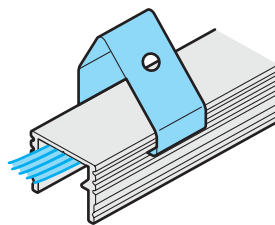If necessary, solder the link cables to the contact pads
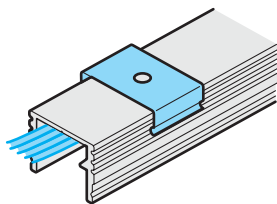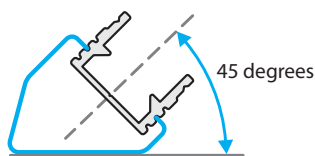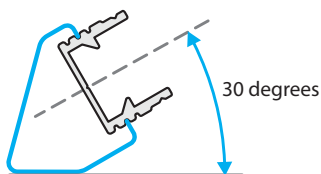
Attaching a flat bracket

Using a flat bracket to join two channels

Attaching an angled bracket

30 degrees

45 degrees

The angled bracket can be used in either of two orientations to provide angles of either 30 or 45 degrees to the mounting surface

To fit a lens

1. Measure the exact length of lens required between each end of the channel.

2. Carefully cut the lens to length. Ensure that any resulting burrs are removed.

3. Depending on the channel type:

   - **Tall profile**: Place one end of the lens over the channel so that it slots into the 'Lens recess' (see right). Then run your hand along the length of the lens to gently push the remainder into place.

   - **Recessed**: Insert one end of the UV coated lens into the 'Lens recess' within the channel (see right). Then slide the remaining lens into the recess.
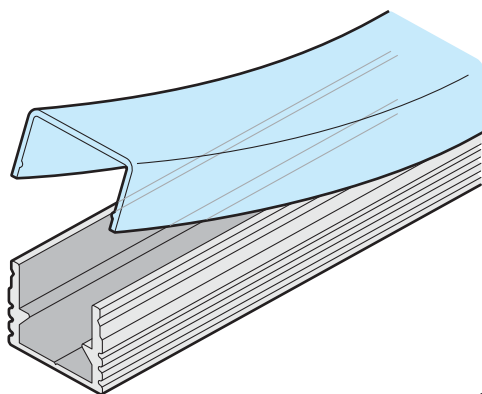   *Note: This channel type is not rated for walk-over installations.*

Lens recess
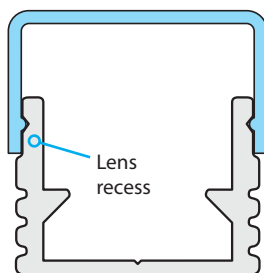
**Tall profile
[FLX888]**
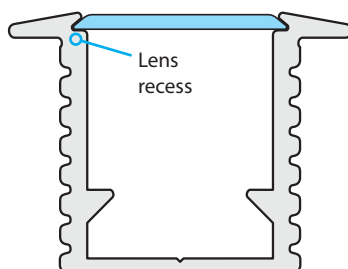
Lens recess

**Recessed
[FLX777]**

**Tall profile
[FLX888]**
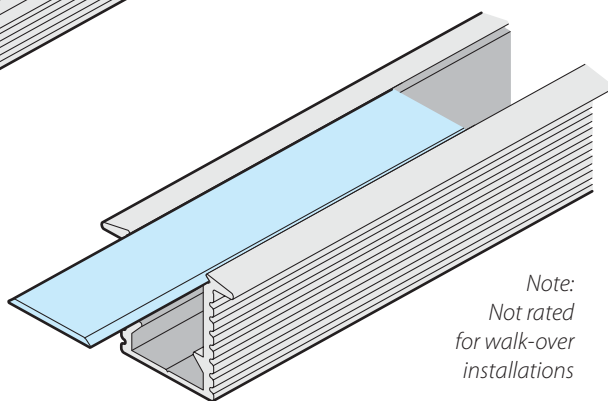
Note: Not rated for walk-over installations

**Recessed
[FLX777]**

Further information

Channel dimensions

The Flex external line channels and lenses are supplied in lengths of 3.28' (1m) whereas the FLX444, FLX777 and FLX888 (and their respective lenses) are all supplied in lengths of 4' (1.21mm).

Flex external line channel

[FLK EXL]
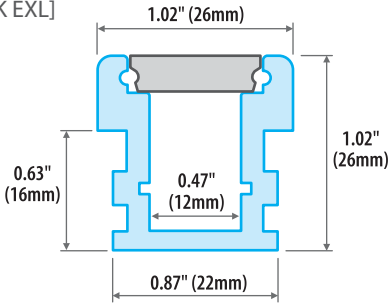
1.02" (26mm)

1.02" (26mm)

0.63" (16mm)

0.47" (12mm)

0.87" (22mm)

Flex channel low profile

[FLX444]

0.749" (19mm)

0.63" (16mm)

0.286" (7.3mm)

0.828" (21mm)

Flex channel tall profile

[FLX888]

0.87" (22mm)

0.765" (19.4mm)

0.47" (12mm)

0.551" (14mm)

0.63" (16mm)

0.394" (10mm)

0.828" (21mm)

Flex channel recessed

[FLX777]

1.142" (29mm)

0.87" (22mm)

0.61" (15.5mm)

0.79" (20mm)

0.788" (20mm)
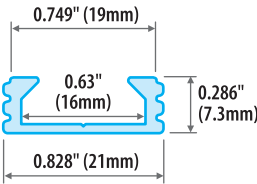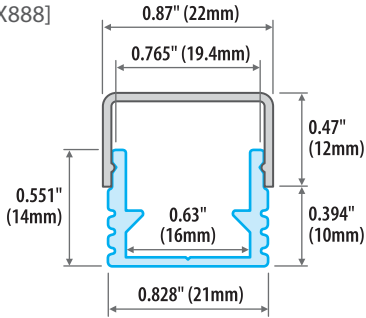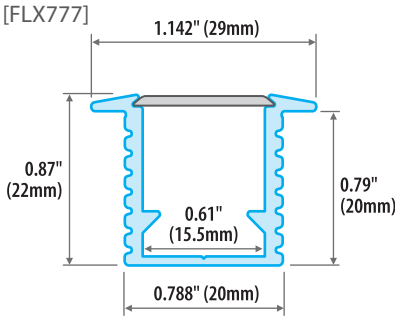
Flex II specifications

	Single color (SC)	**Multi-color (RGB)**
Beam angle	120°	120°
Color temperature	2400K, 2700K, 3000K or 4000K	n/a
Illuminance (lm/ft^2)	176 (@ 3000K)	85
Efficacy (lm/W)	42 (@ 3000K)	19.3
Color Rendering Index	67 (@ 3000K)	n/a
Lumen maintenance (L$_{70}$)	50,000 hours (25°C max)	50,000 hours (25°C max)
Operating voltage	12VDC	12VDC
Power consumption	3W per foot 10W per meter 50W per 16.4' (5m) spool	4.4W per foot 14.4W per meter 72W per 16.4' (5m) spool
Dimming control	Pulse width modulation	Pulse width modulation
Maximum overall length	16.4' (5m)	16.4' (5m)
Ingress protection	IP68	IP68
Dimensions (W x H x L)	0.5" x 0.18" x 16.4' 12.7 x 4.7 x 5000mm	0.5" x 0.18" x 16.4' 12.7 x 4.7 x 5000mm
Operating temperature	-40°F to 122°F -40°C to 50°C	-40°F to 122°F -40°C to 50°C
Housing	UV coated, flexible silicone jacket	UV coated, flexible silicone jacket
Certifications		

Limited product warranty

A. Acclaim Lighting™ hereby warrants, to the original purchaser, Acclaim Lighting™ finished products to be free of manufacturing defects in material and workmanship for a standard period of:

- Fixtures: 5 Years (1,825 days) from the date of purchase.
- Flex Products: 3 Years (1,095 days) from the date of purchase.
- Controllers: 2 Years (730 days) from the date of purchase.

It is the owner's responsibility to establish the date and place of purchase and warranty terms by acceptable evidence, at the time service is sought.

B. For warranty service, send the product only to the Acclaim factory. All shipping charges must be pre-paid. If the requested repairs or service (including parts replacement) are within the terms of this warranty, Acclaim Lighting™ will pay return shipping charges only to a designated point within the United States. If the entire instrument is sent, it must be shipped in its original package. No accessories should be shipped with the product. If any accessories are shipped with the product, Acclaim Lighting™ shall have no liability whatsoever for loss of or damage to any such accessories, nor for the safe return there of. Acclaim reserves the right to replace the item with same or similar product at its discretion.

C. This warranty is void if the serial number has been altered or removed; if the product is modified in any manner which Acclaim concludes, after inspection, affects the reliability of the product; if the product has been repaired or serviced by anyone other than the Acclaim Lighting™ factory unless prior written authorization was issued to purchaser by Acclaim Lighting™; if the product is damaged because not properly maintained as set forth in the instruction manual.

D. This is not a service contract, and this warranty does not include maintenance, cleaning or periodic check-up nor do we guarantee as part of this warranty any lumen performance during period. Parts not covered by this warranty include: fuses, external power supplies, third party items not manufactures by Acclaim lighting. During the period specified above, Acclaim Lighting™ will replace defective parts at its expense, and will absorb all expenses for warranty service and repair labor by reason of defects in material or workmanship. The sole responsibility of Acclaim Lighting™ under this warranty shall be limited to the repair of the product, or replacement thereof, including parts, at the sole discretion of Acclaim Lighting™. At no time will installation or re-installation or products labor or liability costs will be assumed by Acclaim Lighting. All products covered by this warranty were manufactured after January 1, 2012, and bear identifying serial number marks to that effect.

E. Acclaim Lighting™ reserves the right to make changes in design and/or improvements upon its products without any obligation to include these changes in any products theretofore manufactured No warranty, whether expressed or implied, is given or made with respect to any accessory supplied with products describe above. Except to the extent prohibited by applicable law, all implied warranties made by Acclaim Lighting™ in connection with this product, including warranties of merchantability or fitness, are limited in duration to the warranty period set forth above. And no warranties, whether expressed or implied, including warranties of merchantability or fitness, shall apply to this product after said period has expired.

F. Marine or extreme weather location applications using Acclaim lighting products are subject to a 2 year limited warranty and Acclaim must be notified prior to delivery of units for such applications so that preventative treatment can be made to the products to ensure proper performance and product life with a special marine code coating / sealing process at an additional cost.

G. The consumer's and or dealer's sole remedy shall be such repair or replacement as is expressly provide above; and under no circumstances shall Acclaim Lighting™ be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, this product. This warranty is the only written warranty applicable to Acclaim Lighting™ products and supersedes all prior warranties and written descriptions of warranty terms and conditions heretofore published.

www.acclaimlighting.com