Universal Fibre Optics have worked with many world class lighting designers and specifiers on high profile projects for clients around the world.

Our range of innovative, functional and discrete fittings are market leaders in the display lighting field, and as shown in the images below, they have been used to illuminate a wide range of exhibits and artefacts in museums and galleries worldwide.

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Credits

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World Class Manufacturer
With over twenty-two years experience in the industry

Universal Fibre Optics is one of only a few manufacturers of glass fibre for lighting in the world.

We have the widest range of specialist fibre optic lighting solutions for lighting in museums, galleries and retail displays.

We can supply complete systems using glass or PMMA fibre and we manufacture our own class leading light sources and end fittings.

Being a complete manufacturer we can also make bespoke fabrications such as light tubes, rod and clamps and gantry systems all finished to blend seamlessly into their surroundings.

We understand how important it is to meet deadlines and keep a project within budget. We are quality focussed, using only the highest quality raw materials.
Fibre optic lighting systems are generally made up of the three main components described below.

Unlike most fibre optic lighting suppliers, we manufacture each if these components ourselves, so you can be sure of high quality western manufactured equipment. This also gives us the ability to make short-run and bespoke items to suit your specification exactly.

**The Light Source**
- The light source is the box which contains the lamp, filtration, and all the electrical components in the system.
- Light from the light source is fed into the fibre optic harness and transmitted to the end fitting. This allows the light source to be located remotely by using a longer harness.

**The Harness**
- The harness is the ‘fibre’ part of a fibre optic system. It is made up of many strands of optical fibre which are usually wrapped in a flexible black sheathing for protection.
- The harness is used to transport the light from the light source to the end fitting. One end of the harness has a common end where all the fibres are gathered and plugged into the light source. The other end is normally terminated with a number of metal ferrules onto which the end fittings are connected.
- The harness contains no heat or electricity, making it safe to route through wet and humid areas, as well as safe to touch.

**The End Fittings**
- The end fitting is where the light generated in the light source is output after travelling along the fibre optic harness.
- End fittings are available for many applications, however for display use, generally downlight fittings, or custom systems, such as light tubes, bars and wands are used. More information on fittings for display applications is available throughout this brochure.
- As with the harness, end fittings contain no heat or electricity making them safe to handle even when illuminated.
Benefits of Fibre Optic Lighting

Why you should consider fibre optics for your display lighting project

Fibre optic lighting has many benefits over older lighting technologies, especially in the field of cabinet and display lighting where precious artefacts need to be securely displayed and protected from heat and high UV light output.

► Security
Since the light source can be located remotely from the end fittings, the risk of theft from open display cases and cabinets is greatly reduced. Once the end fittings have been positioned they require no maintenance, so there is no need to open the cabinet again for lamp changes or other maintenance.

► Low Maintenance
In a fibre optic lighting system, one lamp can supply light to many end fittings, thus reducing costly and time consuming lamp changes.

► Low UV and No Heat Emission
Sensitive items such as paper and textiles can be easily damaged by heat and UV light from conventional lighting systems. Fibre optics feature very low UV and no heat emission from the fittings at the end of the fibre optic cables. This makes them ideal for use in areas where precious items could be easily damaged.

Universal Fibre Optics were recently contracted to provide fibre optic lighting to illuminate the motorcycle used by Steve McQueen in the movie The Great Escape, which is now on display in a Hollywood Casino in Pennsylvania. The images on this page show how much difference our lighting can make to your exhibits.
Misled by Fancy's meteor-ray, By passion driven; But yet the light that led astray, Was light from Heaven.

- Robert Burns
Light is the first of painters. There is no object so foul that intense light will not make it beautiful.

- Ralph Waldo Emerson
Light Tubes provide a versatile method to give a general wash of light and can be either easily hidden from view or finished to become an integral part of the display case design.

Available in three diameters, 32mm, 38mm and 52mm, they consist of an aluminium tube which holds end emitting fibres at close spacings to give an even light.

The points of light can be staggered if required to give light coverage to a wider area.

Light Tubes can be supplied as a straight tube with the fibre optic tails emerging from one end or as a u-shaped gantry which can be surface mounted (see page 10).

A range of mounting brackets are also available which allow for the horizontal or vertical mounting of tubes. When these are used, the tube is secured with a grub screw which allows for easy rotation and positioning.

Light Tubes can be custom painted in-house and are manufactured to order at the sizes specified.
Manufactured To Your Specifications

Fibre optic light bars

The UFO Light Bar systems use similar profiles to that of the Light Tubes, but have a flat front to allow the mounting of the UFO 34D mini trumpet fitting.

Light Bars are available in 27mm, 32mm, 38mm, 44mm and 52mm diameters, and as each system is made to order, the fittings, and optionally interspersed points of light, can be placed at regular or irregular intervals to suit what is being illuminated.

The UFO 34D fittings can act as spotlights while the small points can give fill-in light. The 34D fitting is detailed on page 15.

The UFO 34D fitting comes with a choice of two trumpet styles - type 'A' which has a 20° - 45° focus range and type 'B' which has a focus range of 55° - 60°.

Custom painted and anodised finishes are available for the Light Bars and black is the standard finish for the 34D fitting.
Light Wands are a compact version of the Light Tubes. Available in standard 20mm and mini 14mm diameter sizes, they come as standard in a black or silver anodised finish but can be painted to any custom colour.

The light wands use polymer fibres at close spacings to give a very even wash of light which is ideally suited to use in small display cases or to light pictures on information boards.

Available in lengths of up to 3 metres, depending on the size of fibre and the hole spacings used. This will be determined by the amount of light needed and how close to the wand the scallops of light are required to merge into an even wash.

Light wands are also available in a plug-in version.

These allow for the rigid mounting of an M8 ferrule in almost any position, normally through a mounting surface, such as a cabinet base.

The light wand is then screwed onto the ferrule and can be easily removed if required.
Surface Mounted Linear Lighting

Lighting gantries based on light tubes, bars or wands

In addition to standard Light Tubes, Bars and Wands, where the fibre exits straight from one end of the tube, all three products can also be supplied as part of a u-shaped gantry system.

This allows for surface mounting, with the fibre exiting from one of the gantry legs and through a hole in the mounting surface.

Gantries are made to order so the lengths of both the tube and the legs are very customisable. They can also be based on any of the available Tube, Bar or Wand profiles.

Our standard gantry systems allow the tubes to have a degree of rotation within the legs. This makes it easy to adjust the beam angle of the illumination.

We can also supply systems where the legs are fixed rigidly to the tube.

Our standard gantry system is available for the most popular sizes of light tubes, bars and wands.

A range of mounting feet are also available. Please contact us for details.

- Available for 27mm, 32mm & 38mm tubes or bars and 20mm wands.
- Leg lengths - max. 650mm but optional joining brackets are available if a longer length is required.
- Finish - can be painted to any custom RAL colour.

Museum of Cairo

Leeds City Museum
MetroLED Systems
Fully configurable led lighting fixtures

With a choice of fully positionable spotlights, two vertical light bar options, or a linear array of LED modules at close spacings providing a wash of light, this product offers all the flexibility you need for illuminating display cases.

Spotlights are fully tiltable and can be independently moved along the fixture and pointed exactly where you need them. There is also a choice of trumpets which offer either wide or narrow beam angles. Gantry systems also feature rotating corners so that the complete light bar can be rotated by 350°.

The system runs on dual circuit power, allowing for 2 independent dimming levels and has the option of using either 3000K or 4000K LED’s.

The MetroLED systems offer versatility combined with the efficiency and power of LED modules, ease of installation and very low maintenance requirements.

It’s child’s play.
Configure As You Want


### General Technical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main supply voltage</td>
<td>100-240VAC, 50-60Hz</td>
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<tr>
<td>PSU output</td>
<td>5VDC</td>
</tr>
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<td>Min. ambient temp.</td>
<td>-10°C</td>
</tr>
<tr>
<td>Max. ambient temp.</td>
<td>45°C</td>
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<tr>
<td>Power connection</td>
<td>2.1 x 5.5 x 12 mm</td>
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<tr>
<td>LED type/model</td>
<td>White light</td>
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<tr>
<td>LED linear CRI</td>
<td>85 (typical)</td>
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<tr>
<td>LED linear colour temp</td>
<td>300K and 4000K</td>
</tr>
<tr>
<td>LED linear efficiency</td>
<td>112 Lumen / W</td>
</tr>
<tr>
<td>LED linear current</td>
<td>10mA</td>
</tr>
<tr>
<td>LED spot CRI</td>
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<td>LED spot colour temp</td>
<td>3000K and 4000K</td>
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<tr>
<td>LED spot efficiency</td>
<td>66 Lumen / W</td>
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<tr>
<td>LED spot current</td>
<td>100mA</td>
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<tr>
<td>LED life</td>
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### LED Specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Variant</th>
<th>Nominal Power</th>
<th>Working Current</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Spotlight</td>
<td>3000K</td>
<td>0.5W</td>
<td>100mA</td>
<td>Available in spot and flood fitting</td>
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<tr>
<td>Spotlight</td>
<td>4000K</td>
<td>0.5W</td>
<td>100mA</td>
<td>Available in spot and flood fitting</td>
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<td>Linear array 45mm</td>
<td>3000K</td>
<td>0.4W</td>
<td>80mA</td>
<td></td>
</tr>
<tr>
<td>Linear array 45mm</td>
<td>4000K</td>
<td>0.4W</td>
<td>80mA</td>
<td></td>
</tr>
<tr>
<td>Linear array 95mm</td>
<td>3000K</td>
<td>0.8W</td>
<td>160mA</td>
<td></td>
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<tr>
<td>Linear array 95mm</td>
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<td>0.8W</td>
<td>160mA</td>
<td></td>
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<td>Linear array 245mm</td>
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<td>2.3W</td>
<td>460mA</td>
<td></td>
</tr>
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<td>Linear array 245mm</td>
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<td>2.3W</td>
<td>460mA</td>
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<td>MetroLED driver</td>
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<td>Variable</td>
<td>Overload indication and shutdown</td>
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### Component Description

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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<td>1</td>
<td>350° rotating corners</td>
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<tr>
<td>2</td>
<td>Infill strip</td>
</tr>
<tr>
<td>3</td>
<td>Linear LED module (45mm, 95mm and 245mm lengths) and 3000K or 4000K colour temperatures</td>
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<tr>
<td>4</td>
<td>Narrow angle spot, 3000K or 4000K</td>
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<tr>
<td>5</td>
<td>Wide angle spot, 3000K or 4000K</td>
</tr>
<tr>
<td>6</td>
<td>Mounting foot and retaining nut</td>
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<td>7</td>
<td>Corner mounting foot</td>
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<tr>
<td>8</td>
<td>Round mounting foot</td>
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<tr>
<td>9</td>
<td>MetroLED Gooseneck</td>
</tr>
<tr>
<td>10</td>
<td>MetroLED Elbow</td>
</tr>
</tbody>
</table>
Cabinet mounting extrusions allow the use of conventional recessed downlight type fittings where it is only possible to surface mount.

The extrusion forms a conduit which conceals the fibre tails until they can be exited from the end. We normally supply the harness pre-fitted to the extrusion or we can supply the extrusion on its own.

As detailed, there are five sizes of extrusion available, from the largest CX1, to the smallest CX5.

The CX5 extrusion is unique in that it does not allow for downlights to be fitted to it - instead it allows for the mounting of fibre optic tails which shine out through small holes in the surface.

We are also able to supply gantry systems manufactured from our extrusions.

This can provide a different aesthetic to our standard light bar gantries, depending on the subject to be illuminated. The Harley-Davidson Museum in Milwaukee, featured overleaf, shows a CX4 gantry system used to great effect.
A range of discreet, focusable downlight fittings which are specially designed for use with either our light bar or cabinet extrusion systems.

The tiny 34DA and 34DB fittings are primarily for use in all sizes of light bar system, but can also be successfully employed in our CX4 extrusion.

The larger 14DB fitting, which is secured through the extrusion surface with a threaded ring, is suitable for use in the CX1, CX2 and CX3 extrusions.

All fittings can be powdercoated to any RAL colour to suit your specific application.
In the end, people will not be judged by the darkness they lived in, but by the light they rejected.

- Anthony Liccione
Design is defined by light and shade, and appropriate lighting is enormously important.

- Albert Hadley
Adjustable downlight fittings

Although this range of products are called downlight fittings, they can also be used to illuminate upwards or from the side with great effect.

These fittings can be used individually to give a spot light or in multiples to wash an area or item with light. Ideal for use within showcases, they are focusable and some types are also directional.

All standard downlight fittings are secured using a spring clip to hold the fitting in place within the mounting surface.

The range of hermetic fittings UFO27H, 28H, 29H nd 30H are threaded hermetic fittings which are mounted through a cutout and are secured by a retaining nut on the back.

UFO 9d downlight

Small articulated downlight fitting for M8x1mm ferrules. Available with either wide or narrow angle trumpets.

- Cutout size: 31mm
- Focus angle: 20° - 30° or 30° - 40°
- Material: Aluminium
- Standard colours: polished aluminium, black, white, silver
- Ferrule size: M8
- Min. fibre size: 2mm
- Max. fibre size: 6mm

UFO 10d downlight

Articulated downlight fitting for M10x1mm or 8mm smooth ferrules.

- Cutout size: 40mm
- Focus angle: 25° - 45°
- Material: Aluminium, stainless steel or polycarbonate
- Standard colours: polished aluminium, black, white, silver, polished stainless steel
- Ferrule size: M10 or 8mm smooth
- Min. fibre size: 2mm
- Max. fibre size: 8mm
Classic Lighting Effects

Suitable for installation in ceilings, cabinets - in fact almost anywhere

**UFO 10da downlight**
Articulated downlight fitting for M10x1mm or 8mm smooth ferrules.
- **Cutout size:** 40mm
- **Focus angle:** 40° - 75°
- **Material:** Aluminium (stainless steel to special order)
- **Standard colours:** polished aluminium, black, white, silver
- **Ferrule size:** M10 or 8mm smooth
- **Min. fibre size:** 2mm
- **Max. fibre size:** 8mm

**UFO 11d downlight**
Recessed articulated downlight fitting for M10x1mm or 8mm smooth ferrules.
- **Cutout size:** 40mm
- **Focus angle:** 30° - 50°
- **Material:** Aluminium, stainless steel or polycarbonate
- **Standard colours:** polished aluminium, black, white, silver, ivory
- **Ferrule size:** M10 or 8mm smooth
- **Min. fibre size:** 2mm
- **Max. fibre size:** 8mm

**UFO 11da downlight**
Recessed articulated downlight fitting with smoother flange for M10x1mm or 8mm smooth ferrules.
- **Cutout size:** 40mm
- **Focus angle:** 30° - 50°
- **Material:** Aluminium, stainless steel or polycarbonate
- **Standard colours:** polished aluminium, black, white, silver, polished stainless steel
- **Ferrule size:** M10 or 8mm smooth
- **Min. fibre size:** 2mm
- **Max. fibre size:** 8mm

**UFO 20d downlight**
Very small articulated downlight fitting with front mounted trumpet for M7x1mm ferrules.
- **Cutout size:** 30mm
- **Focus angle:** 15° - 30°
- **Material:** Aluminium
- **Standard colours:** polished aluminium, black, white, silver
- **Ferrule size:** M7
- **Min. fibre size:** 2mm
- **Max. fibre size:** 4.5mm
**Directional & Focusable Fittings**

Fixed position downlights

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**UFO 13d downlight**

- Recessed, fixed lens downlight fitting for M10x1mm or 8mm smooth ferrules.
- **Cutout size**: 40mm
- **Focus angle**: 20° - 45°
- **Material**: Aluminium, stainless steel or polycarbonate
- **Standard colours**: polished aluminium, black, white, silver, ivory
- **Ferrule size**: M10 or 8mm smooth
- **Min. fibre size**: 2mm
- **Max. fibre size**: 8mm

**UFO 13da downlight**

- Recessed, fixed lens downlight fitting for M10x1mm or 8mm smooth ferrules.
- **Cutout size**: 40mm
- **Focus angle**: 20° - 45°
- **Material**: Aluminium, stainless steel
- **Standard colours**: polished aluminium, black, white, silver, polished stainless steel
- **Ferrule size**: M10 or 8mm smooth
- **Min. fibre size**: 2mm
- **Max. fibre size**: 8mm

**UFO 21d downlight**

- Recessed, fixed lens downlight fitting for M10x1mm or 8mm smooth ferrules.
- **Cutout size**: 26mm
- **Focus angle**: 30° - 60°
- **Material**: Aluminium
- **Standard colours**: polished aluminium, black, white, silver
- **Ferrule size**: M10 or 8mm smooth
- **Min. fibre size**: 2mm
- **Max. fibre size**: 8mm
UFO 27h hermetic fitting
Adjustable trumpet fitting which allows an airtight seal to be maintained within a display case when using fibre optics.

Cutout size: 38mm
Focus angle: 20° - 50°
Material: Aluminium
Standard colours: polished aluminium, black, white, chrome
Ferrule size: M10 or 8mm smooth
Min. fibre size: 2mm
Max. fibre size: 8mm

UFO 28h hermetic fitting
Adjustable trumpet fitting which allows an airtight seal to be maintained within a display case when using fibre optics.

Cutout size: 38mm
Focus angle: 40° - 65°
Material: Aluminium
Standard colours: polished aluminium, black, white, chrome
Ferrule size: M10 or 8mm smooth
Min. fibre size: 2mm
Max. fibre size: 8mm

UFO 29h hermetic fitting
Allows an airtight seal to be maintained within a display case when using fibre optics. Available with wide or narrow beam lenses.

Cutout size: 27mm
Focus angle: 25° - 65° or 70° - 120°
Material: Aluminium
Standard colours: polished aluminium, black, white, chrome
Ferrule size: M8
Min. fibre size: 2mm
Max. fibre size: 6mm

UFO 30h hermetic fitting
Smooth recessed fitting which allows an airtight seal to be maintained within a display case when using fibre optics.

Cutout size: 38mm
Focus angle: 30° - 50°
Material: Aluminium
Standard colours: polished aluminium, black, white, chrome
Ferrule size: M10 or 8mm smooth
Min. fibre size: 2mm
Max. fibre size: 8mm
Crooks and Rod & Clamp Systems

Surface mounted lighting

Lighting Crooks are an optional termination to a fibre tail which holds the fibre at an angle from vertical and is very useful for lighting static arrangements of items.

Available in two sizes, the crooks are fitted through a slot or hole cut into the mounting surface.

The Crook comes fitted to fibre tails as part of a harness and is not an interchangeable fitting.

A fitted lens is optionally available on the larger crook.

Mini crooks have four configuration options - see the image and table, right, for details.

Mounting feet (part no. ABR06R) are also available.

The Rod and Clamp assembly allows fibres and lenses to be mounted to a shelf or to the sides or bottom of a cabinet.

Rods are made to a customer’s specified length and come as standard in black, although they and the clamps can be painted to a specified RAL colour if required.

The rods are typically mounted using a foot on the top or underside of the mounting surface.

A number of lenses can be supported on one rod - depending on the length of rod used. The fibre tails run separately to each lens.
Fibre optic lighting is the leader in the field for providing spotlighting within display cases, and is highly focusable.

The fittings featured on this page, also allow the light to be angled and shaped so that it shines exactly as a project requires.
You're telling the story, creating the sets, doing the lighting, the designing, and establishing the pace.

- Bill Sienkiewicz
Darkness has the ability to cover up; light has the ability to uncover! Darkness is the enemy of truth; light is the friend of truth!

- Mehmet Murat Ildan
Fibre Harnesses
Moving light from source to destination

The harness is the core of a fibre optic lighting system and is responsible for transmitting the light from the light source to the end fitting.

Universal Fibre Optics make these harnesses in-house and to the highest quality, terminating and polishing the ends for maximum light transmission and longevity.

Two basic types of fibre are available - glass and PMMA.

For use in display cases and for conservation applications glass fibre is the preferred choice due to an increased evenness of light output between discrete points. This is achieved by mixing the fibres together in a more random way.

Glass harness specifications

Glass fibre harnesses are made from tails which contain many fine glass fibres sheathed in a low smoke material.

The ends are finished with crimp terminations for small diameters and with brass or stainless steel ferrules for larger diameters. Glass end emitting fibre is the preferred option for lengths of up to about 10 metres.

<table>
<thead>
<tr>
<th>Size code</th>
<th>Active diameter</th>
<th>Outer diameter</th>
<th>Max. tails per light source</th>
<th>Minimum bend radius</th>
<th>Standard end termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1mm</td>
<td>2.3mm</td>
<td>400</td>
<td>7mm</td>
<td>crimp</td>
</tr>
<tr>
<td>1.5</td>
<td>1.5mm</td>
<td>2.7mm</td>
<td>270</td>
<td>10mm</td>
<td>crimp/tube</td>
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<tr>
<td>2</td>
<td>2mm</td>
<td>2.8mm</td>
<td>135</td>
<td>15mm</td>
<td>crimp/3mm/tube</td>
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<tr>
<td>8</td>
<td>3mm</td>
<td>4.9mm</td>
<td>68</td>
<td>18mm</td>
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<td>14</td>
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<td>20mm</td>
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<td>7.4mm</td>
<td>25</td>
<td>40mm</td>
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<td>90mm</td>
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PMMA harness specifications

Multi-stranded PMMA end emitting fibre is usually specified where long tail lengths of above 10 metres are required.

There is less colour shift over long distances than with glass. PMMA fibre is made up of much thicker fibres and is less flexible than glass, meaning it cannot be randomised to the same extent.

<table>
<thead>
<tr>
<th>No. of 0.75 mm strands</th>
<th>Active diameter</th>
<th>Outer diameter</th>
<th>Max. tails per light source</th>
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<th>Standard end termination</th>
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<td>8</td>
<td>2.4mm</td>
<td>4.5mm</td>
<td>115</td>
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<td>25mm</td>
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<td>7.1mm</td>
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</tr>
<tr>
<td>50</td>
<td>6mm</td>
<td>8.7mm</td>
<td>17</td>
<td>60mm</td>
<td>M8/M10 ferrule</td>
</tr>
<tr>
<td>67</td>
<td>7mm</td>
<td>10.5mm</td>
<td>12</td>
<td>80mm</td>
<td>M10 ferrule</td>
</tr>
<tr>
<td>75</td>
<td>7.5mm</td>
<td>10.5mm</td>
<td>11</td>
<td>90mm</td>
<td>M10 ferrule</td>
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<tr>
<td>88</td>
<td>8mm</td>
<td>10.5mm</td>
<td>10</td>
<td>100mm</td>
<td>M10 ferrule</td>
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</table>
These light sources use lamps based on the tungsten halogen cycle which gives a uniform light output until close to the time of lamp expiry. They are low voltage, low in UV output and typically last from 1500 to 4000 hours, depending on the lamp wattage.

Because the lamps are relatively cool running there is the option with lower Wattage versions of these light sources to be fanless, although this will impact on lamp life.

Optionally, halogen light sources can be mains dimmed, with 75W and 100W models requiring a separate power feed to the fan to avoid it stopping. Alternatively, a popular option is to supply an integral manual dimmer with a dimming control on the light source body.

The UFO range of tungsten halogen light sources are available with lamp wattages of 35W, 50W, 42W, 50W, 75W and 100W, so are highly suitable for a large variety of project types.
Our range of LED light sources use the latest technology to provide high output light combined with small unit size and very cool and quiet running.

LED modules typically have a lifespan of around 40,000 hours which reduces maintenance requirements to almost nil. Power consumption is also vastly reduced in comparison to older lamp technologies making them the most environmentally friendly and sustainable option for fibre illumination.

Our range of LED light sources also offers full DMX control as well as in-built dimming effects via a control on the light source body.

All our LED products utilise industry standard 30mm fibre ports so can be retro-fitted to replace existing older technology units.
We can supply a range of RGBW light sources which can be used to provide a static coloured wash of light, colour cycling or twinkling effects.

The tiny RGBW MicroLED 1000 offers a choice of seven colours, including white and can be set to output static light, or offers two colour cycle modes each in a choice of three speeds. The MicroLED 4000 is similar to the 1000 however offers full remote control and the ability to link several sources together in a master/slave arrangement.

The MicroLED 5000T offers addressable DMX controlled colour output and twinkling effects. This light source can be used standalone where light output can be controlled either by a DMX controller or by dip switches on the rear of the unit. Alternatively multiple units can be connected in series and controlled by a standard DMX controller.
Lighting is vital. Without that they've got nothing.

- Joe Grant
There is one fundamental fact about lighting. Where there is no light, there is no beauty.

- Billy Baldwin