PIXALUX®

SPECIFICATION GUIDE

PIXALUX®

V02-01

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1.0 Introduction

This document is a comprehensive guide to specifying the various features and components of the Pixalux® Structural Light Panel. Please read this guide thoroughly before placing an order as there are many features that are critical to specific applications.

If you require further information or have any special requirements, please contact us

Our Contact Info

Pixalux
25-39 Hydrive Close
Dandenong South VIC 3157
Phone: 03 8769 7200
Email: info@pixalux.com.au
Website: www.pixalux.com.au

Social Media

	https://www.instagram.com/pixaluxdesign
	https://www.linkedin.com/company/pixalux

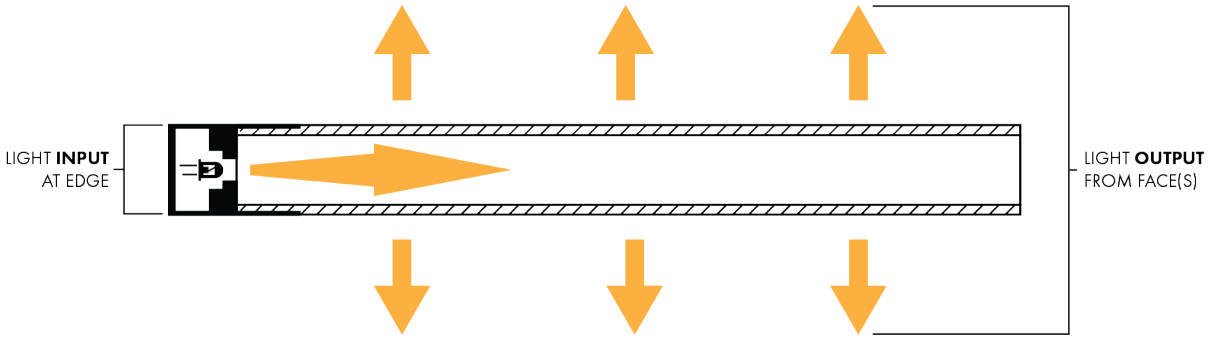
The Pixalux® Structural Light Panel was made by Pixalux® in Australia.

1.1 What is a Pixalux® Structural Light Panel?

The Pixalux® **Structural Light Panel** (SLP) defines an entirely new category of lighting product by providing the same type of smooth surface illumination typical of a lightbox but with a unique **structural** capability. This structural capability allows the SLP to be used in a range of unique applications where it's self-supporting, or where objects, graphics, or people interact directly with the illuminated surface, a feature known as Direct Contact Lighting (DCL).

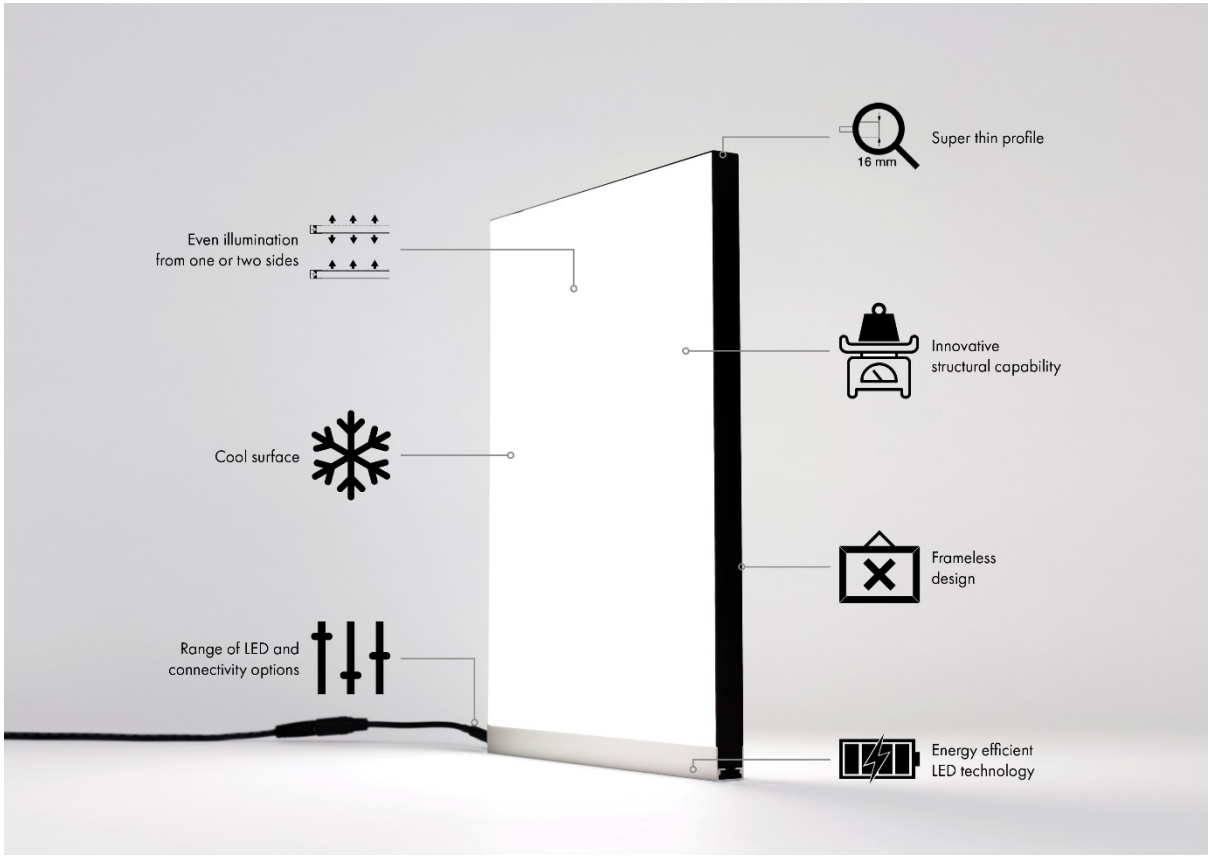
1.2 How Does a Pixalux® Structural Light Panel Work?

The Pixalux® SLP is an LED edge lit illuminated acrylic panel. It differs from other etched or printed light guide products because the diffusers are bonded directly to the panel to create a solid sheet. The rigid nature of the SLP surface means consistently smooth surface illumination that is unaffected by any surface disturbances. SLP technology also allows for illumination on both sides of the panel and for the unique Direct Contact Lighting (DCL) feature where objects, graphics, or people to interact directly with the illuminated surfaces.



Above: Section view showing how light travels through the panel from the panel edge.

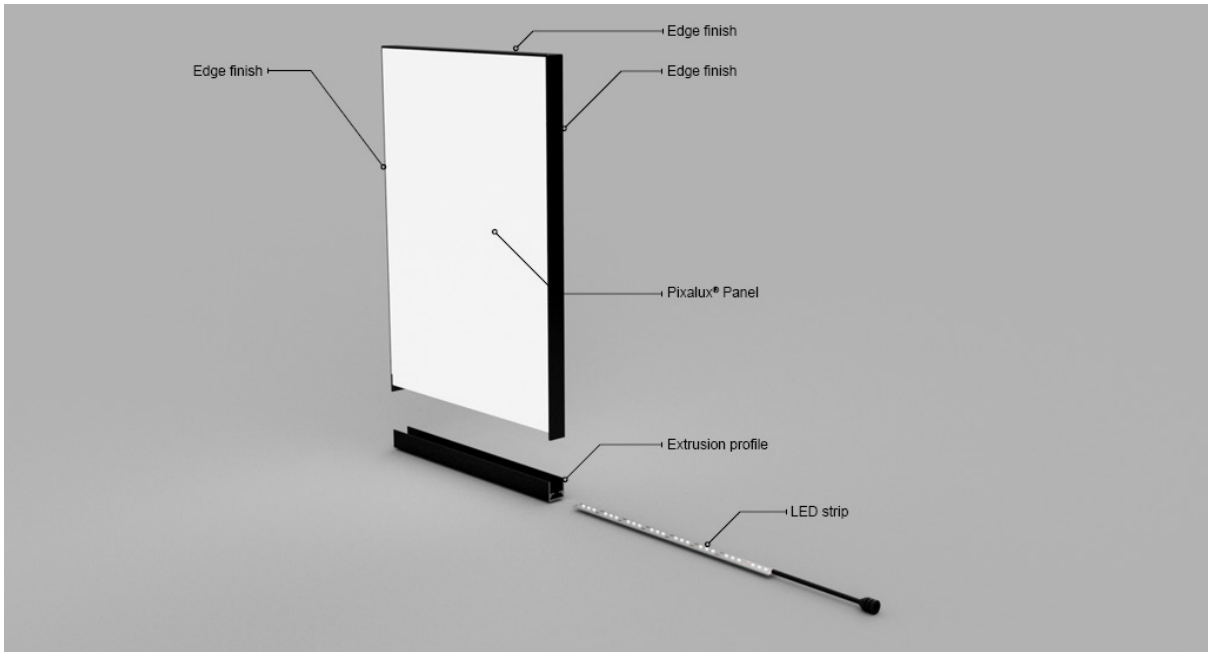
1.3 Product Features



1.4 Sub-Components

Each Pixalux® SLP is comprised of 3 separate components;

1. The Pixalux® Structural Light Panel
2. Aluminium Extrusion Profile(s)
3. LED strip(s)



Component(s)	Description	Features To Specify
Pixalux® SLP	The main panel consists of 3 layers of acrylic laminated together to create the light guide. Non-input edges have an edge ABS tape.	1. Illumination type 2. Size 3. Edge finish
Extrusion Profile	Is flush fitted to the light input edge(s) and sometimes other sides by special request. This houses the LED strip and allows different mounting options.	1. Extrusion profile type 2. Profile finish 3. Cable exit location
LED strip	The LED strip is mounted to a 12mm x 1.6mm aluminium heatsink and can be removed if required.	1. LED type

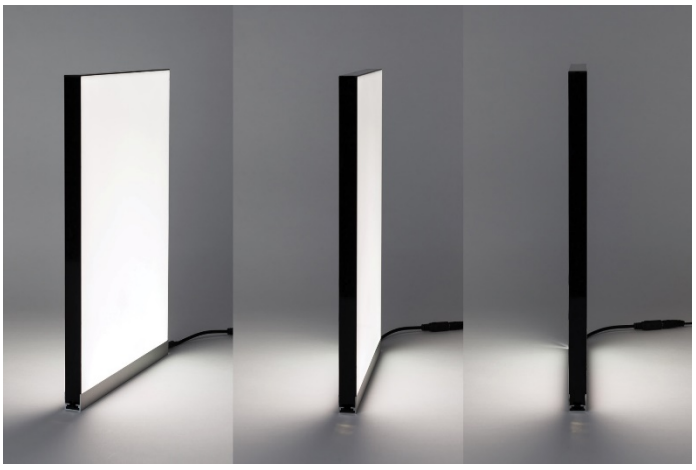
1.5 Mechanical Specifications

Specification	Description
Density	1180 kg/m^3
Weight	18.9 kg/m^2
Tensile Strength	70 MPa
Flexural Strength	116 MPa
Plastic Grade	7 (recyclable)
Operating Temperature Range	-10°C to 50°C
Typical Panel Loading	13 kg/m

2.0 Specifying Pixalux® Structural Light Panel Features

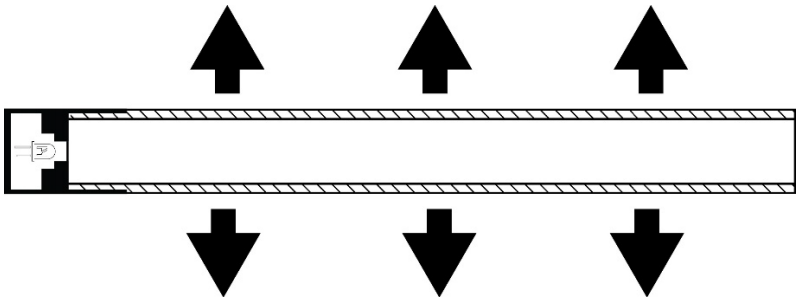
2.1 Illumination Type

Pixalux® Structural Light Panels can illuminate from one or two sides (faces) depending on the application requirements.



2.1.1 Double Sided Illumination

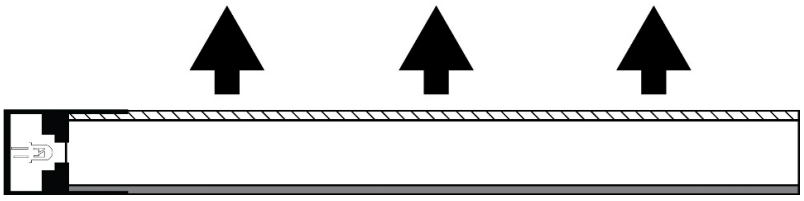
Both sides (faces) of the panel will emit light.



Above: Section view of a Double Sided panel

2.1.2 Single Sided Illumination

Only *one* side (face) of the panel will emit light. The second side is an opaque white acrylic that acts as a reflector. Single sided panels can be up to 50% brighter than an equivalent double sided illuminated panel.

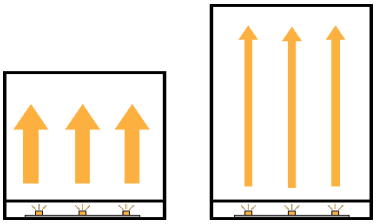


Above: Section view of a Single Sided panel

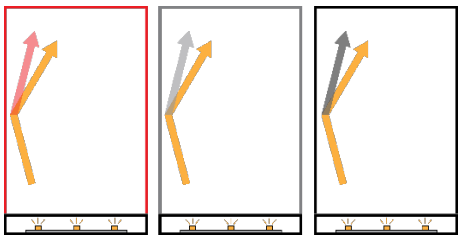
2.2 Illumination Effects

There are several product features that have an effect on panel illumination that should be carefully considered when specifying the Pixalux® Structural Light Panel. If you are uncertain about any of these effects, please contact the team for further information or to organise a sample.

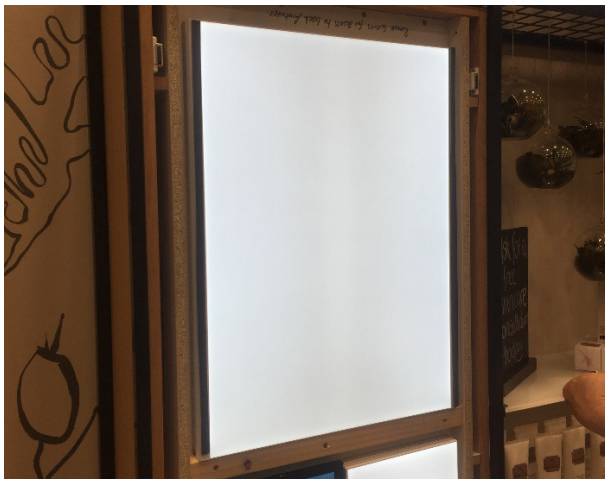
1. **Light distribution** – Brightness can vary across the surface of the panel due to various illumination effects.
2. **Variation between panel sizes** – The amount of light input into a panel is the same for different sized panels that have the same type and quantity of LED. This means smaller panels will be brighter than larger ones with the same type of LEDs. This can result in a visual contrast when different sized panels are placed within the same field of view. For example, if different sized panels are placed directly next to each other, this effect will be noticeable. This brightness variation can be tuned via the use of dimmers and alternate LED specification if uniformity is critical



3. **Colour variation** – There are various illumination effects that occur during light transmission including refraction, reflection, and diffusion which can affect the perceived appearance of a panel. This may appear as a colour change or reduction in intensity.
4. **Edge finishes** – The light inside the panel is reflected internally off the edge finish. Different coloured edge finishes will produce a slightly different coloured reflection. This effect should be considered when two panels with different edge finishes are used adjacent to each other as the effect can be noticeable by contrast.



5. **Double edge lit panels** (>400mm deep) – Panels with LEDs on two long edges can have a noticeable variation in colour through the centre of the panel. We recommend that panels greater than 600mm deep are used exclusively for backlit graphics, as exhibited by the panel in the image below.



2.2.1 Determining the Illuminated Area

When specifying a Pixalux® panel, the dimensions given are **overall**. This includes the aluminium channel and edge finishes. The table below details how much should be subtracted from the overall size to obtain the illuminated area based on the edge finish selected.

Edge feature	Non-illuminated area
U channel	16mm
F channel	16mm
H channel	32mm
T channel	16 mm
Ω channel	16 mm
Panel stand	16mm
Edge tapes (ABS & glowing)	2mm
No edge finish	0mm

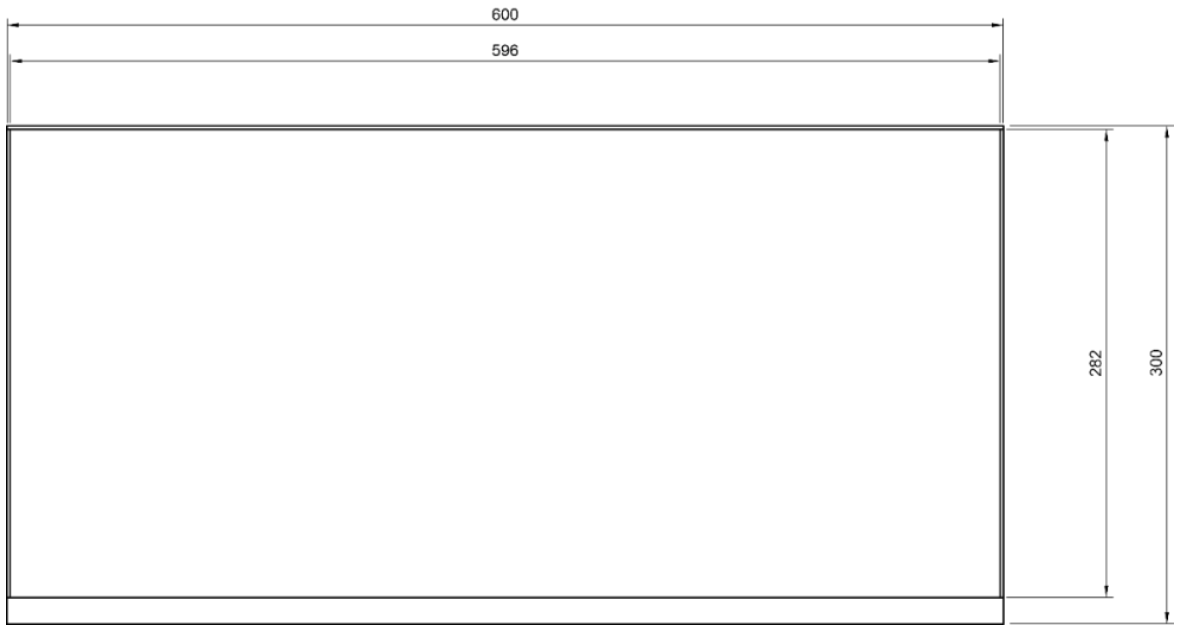
To determine the illuminated area, simply subtract the dimension of the specified features from the corresponding overall dimension.

Example calculation

Based on a panel with the following specifications:

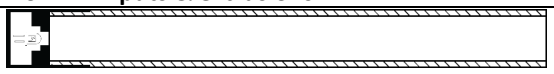
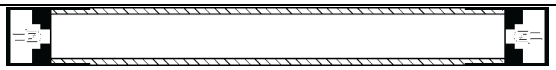
- 600mm long x 300mm deep **overall** size
- White U channel on one long edge
- White edge finish on all other edges

1) The illuminated length is 600mm less 2mm for each edge
2) The illuminated depth is 300mm less 16mm for the U channel and 2mm for the long edge
3) The actual **illuminated area** of the panel is 596mm long by 282mm deep



2.3 Panel Size

Pixalux® Structural Light Panels can be made to any rectangular size as per the table below. Panels are engineered to work within these specific sizes and can only be made larger by installing panels next to each other

Depth Range (mm)	Max. length (mm)	No. LED inputs & extrusions
200[1] - 300	1800	 (1x)
301 - 400	1500	
401 - 800	1200	 (2x)

1. Smaller sizes available by special order.

2.3.1 Depth

The depth of a panel is the dimension perpendicular to the LED channel. Depth is a critical dimension as it will affect the brightness of the panel.

> **Tip:** When specifying, we always recommend that the depth is the smallest dimension where practical to maximise panel brightness.

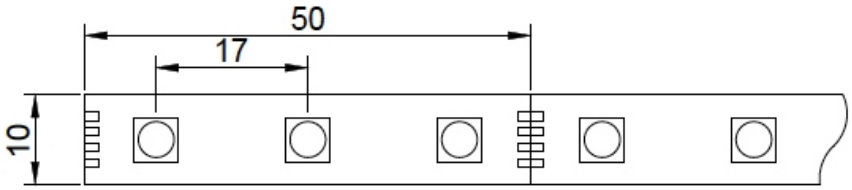
2.3.2 Length

The LED channel is fitted to the length of the panel. This will determine the length of LEDs on the panel, and how much power it will draw.

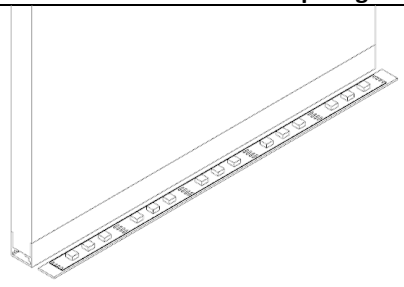
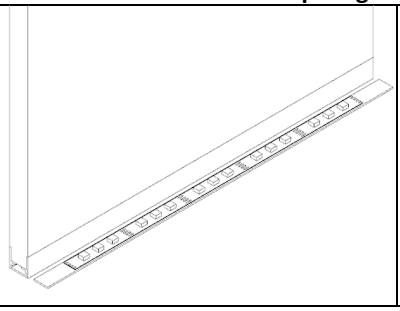
LED Pitch

LED pitch is the interval that the LED strip can be trimmed. If a panel length is specified as an exact multiple of the pitch, the LED strip will have to be trimmed to the next available interval which can result in slightly darker corners along the input edge where LEDs are not present.

For optimal panel length, we recommend that the length is a multiple of **50mm + 15mm**.



Above: Example LED strip pictured detailing the pitch.

Ideal strip length		Unideal strip length	
	Panel length: 265mm LED length: 250mm		Panel length: 300mm LED length: 250mm

In the example above, the same length of LED strip is used for 2 different panel lengths.

2.3.3 Production Tolerances

Pixalux® Structural Light Panels are made to order and have a typical tolerance of ±1mm on both length and depth. Where tight tolerances are required:

1. Specify the size less 1mm on both length and depth
2. Request a + or – tolerance only

2.3.4 Size Optimisation

When the option is available, panels may be specified with a preference for either 1) cost, or 2) brightness. We always recommend optimising for brightness to maximise light output quality.

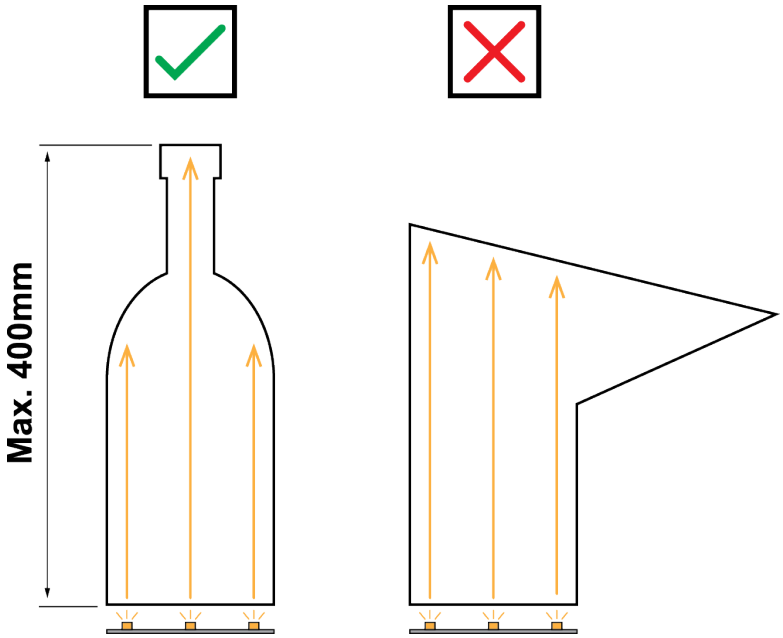
1. **Cost Optimisation**: Specify the **length** of the panel as the shortest dimension thus reducing the amount of LEDs required along that edge.
2. **Brightness Optimisation:** Since the light input to the panel is the same across different sizes, reducing the depth of the panel will result in more light per unit area resulting in a brighter panel (total light output is the same).

2.3.5 Custom Shape Panel: Single Edge Lit

Single edge lit shapes are typically used for signage where one part of the panel is cut to represent a brand, product, or message. These shapes have the following constraints and features:

- 400mm maximum depth
- Must have a straight edge for light input
- Standard edge finishes available only with gentle curves such as 50mm radii

Single edge lit shape panels should not have significant overhangs or undercuts as per the image below. This is because there is no light entering the panel directly below these sections, nor is there an edge finish to reflect the light resulting in significant variation in light distribution. Panels with graphics applied are more forgiving to variation in illumination.

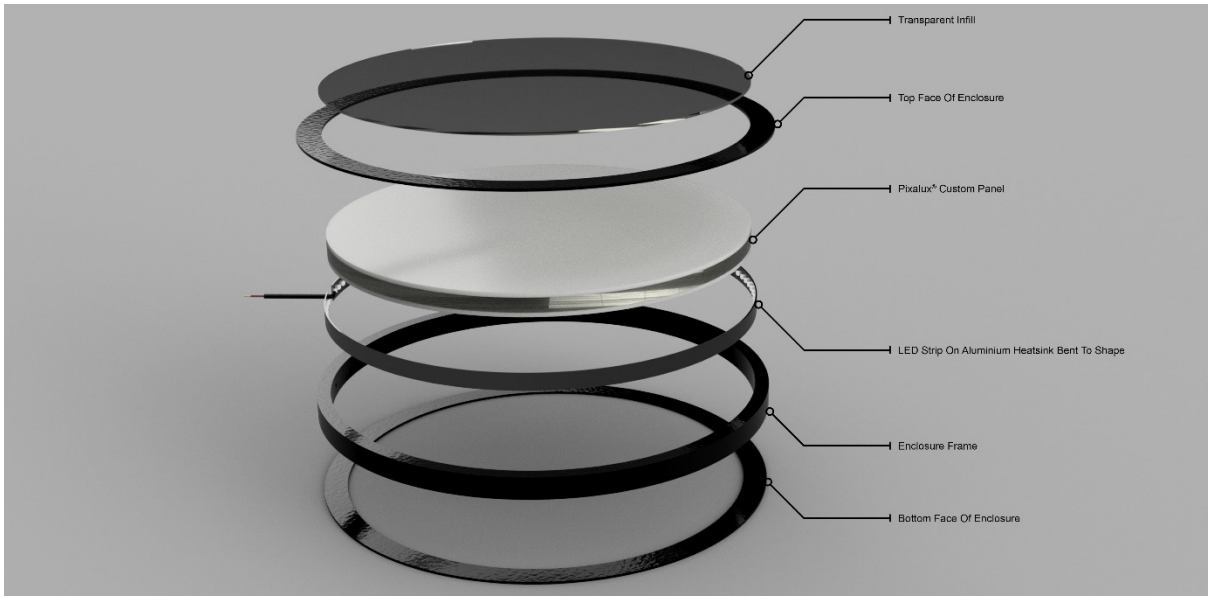


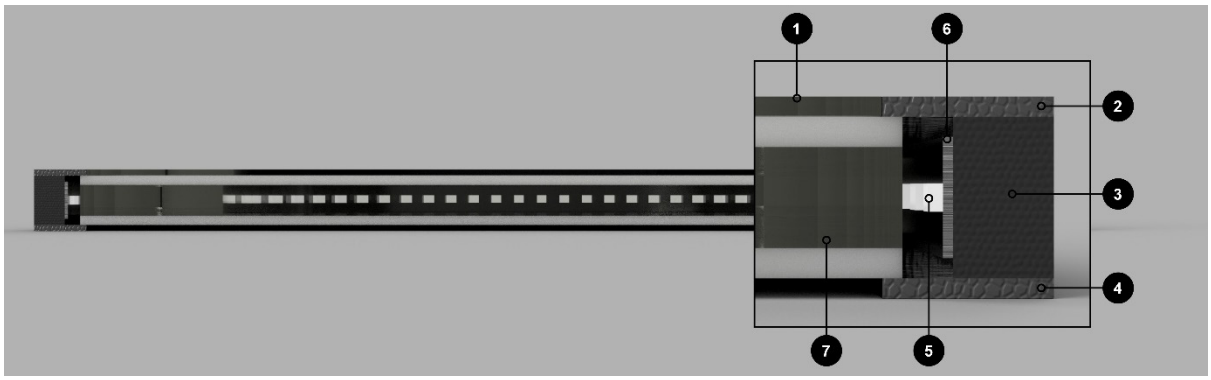
2.3.6 Custom Shape Panel: Perimeter Edge Lit

The key characteristic of a perimeter lit panel is that it has LEDs around the entire perimeter necessitating the fabrication of a custom fixture or enclosure. A typical example of a perimeter lit shape panel is a panel that is symmetrical such as a circular or hexagonal panel.

- For best illumination quality, shape should be less than 600mm across in any direction
- Shapes should be symmetrical for best light output
- Symmetrical panels have significantly more LEDs than equivalent rectangular panels and are often brighter

The following is an example of a typical perimeter lit shape enclosure:





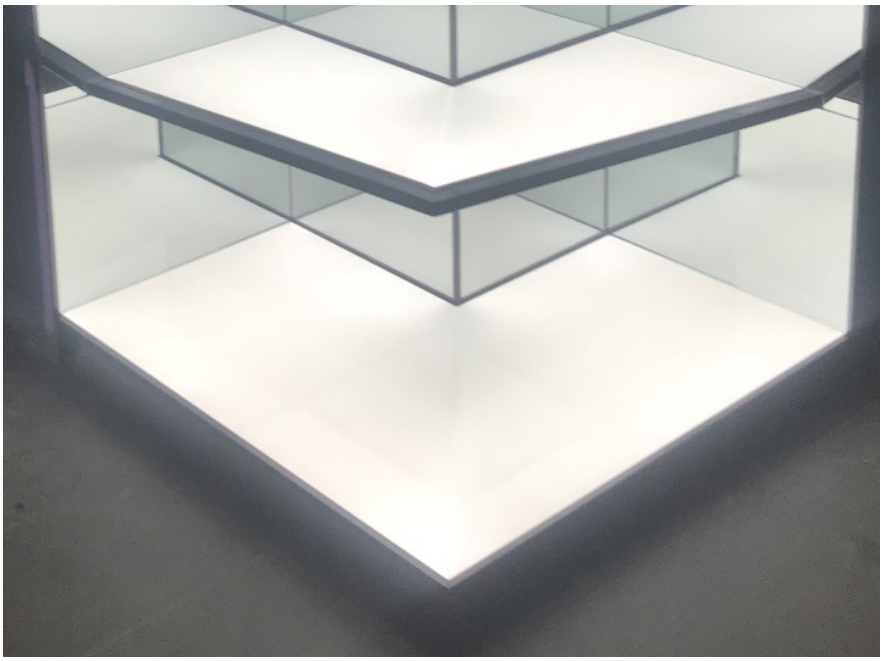
1	Transparent infill ensures top surface is flush
2 & 4	Bottom and top surfaces hold panel in place and overlap edge to prevent light bleed
3	Side wall provides framework for assembly of enclosure
5	LED strip used to illuminate panel is mounted to aluminium heat sink (no.6)
6	Aluminium heatsink keeps LEDs cool and is bent by hand to the desired perimeter shape
7	Pixalux® panel secured firmly by enclosure

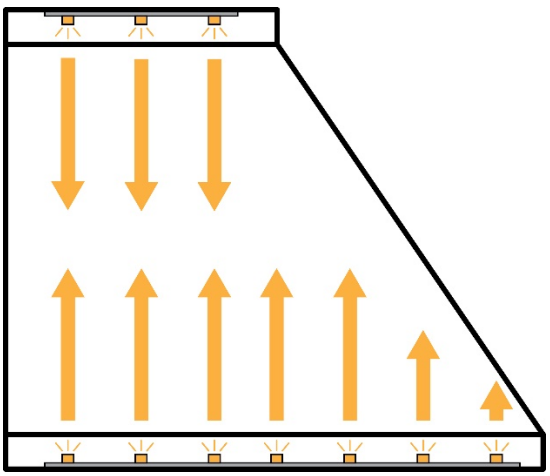
2.3.7 Tiling Panels and Angled Edges

In applications where panels cannot be made large enough to meet the desired size, they can be tiled end on end without any edge finish to reduce the visual effect of the join line. Sometimes this join might be required at an angle.

The example below demonstrates both a join line and an angled join where each shelf in the picture is comprised of two panels that meet in the middle at an angled join.

1. The join line in the middle typically appears brighter, or can appear darker if the panels are not butting.
2. There is a variation in illumination toward the angled edge as the illuminated depth is varied and light is not input evenly into the panel.





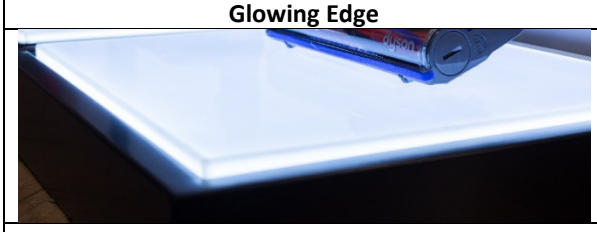
2.3.8 Ordering A Custom Shape Panel

We require drawings for custom sizes and shapes preferably in a vector format. Working to templates is not ideal and will necessitate additional cost and lead time. Preferred vector drawing formats are .ai / .eps / .dwg / .dxf.

2.4 Edge Finishes

Pixalux® Structural Light Panels are available with a range of edge finishes depending on specification.

- Standard Finishes
  - Black – 2mm ABS
  - White – 2mm ABS
  - Brushed look aluminium – 2mm ABS
- Special Finishes
  - Opal (glowing) – 2mm opal acrylic
  - No edge (exposed or silver tape) – typical on most custom shapes

Glowing Edge	Exposed Edge
	
• Uses the same material as panel surface • Brighter glow than surface • Darker zones along outside edges	• Cross section of panel Is visible • LEDs directly exposed at certain angles • Gives glowing aura effect to surrounds • Has a polished edge

Reflection colour

As covered in section 2.2, the type of edge selected will affect the illumination of the panel due to the colour of reflection from that edge finish. Please be aware that using two panels with different edge finishes directly next to each other may appear noticeably different due to the contrasting illumination.

2.4.1 Custom Edging

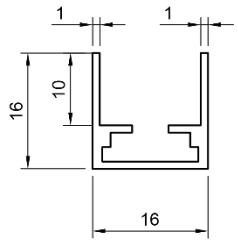
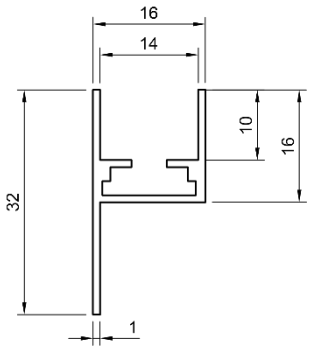
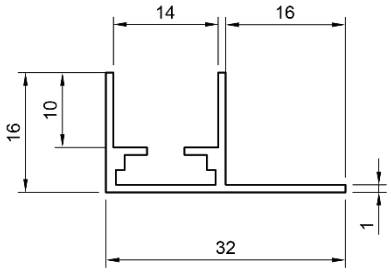
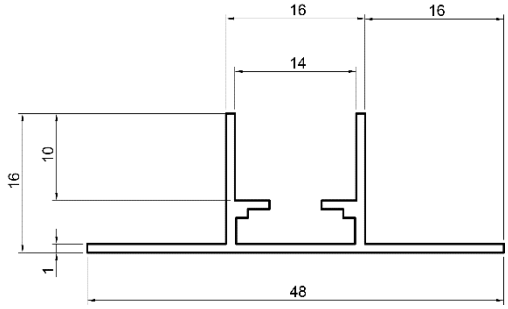
Pixalux® Structural Light Panels can be finished with most off the shelf edge tape products typically used in the joinery industry. As custom edges are untested, we cannot guarantee their performance. Key performance criteria to consider is

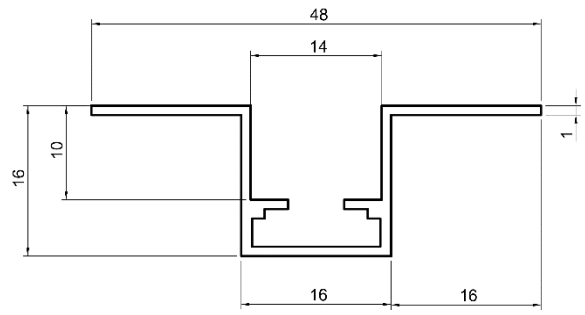
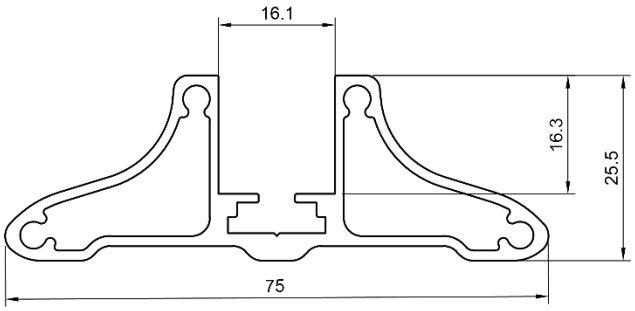
- Opacity – many ABS finishes at 2mm thick are **translucent**
- Reflection colour

2.5 LED Extrusion Profile

Pixalux® Structural Light Panels are fitted with an aluminium extrusion profile that's used to house the LEDs and provide fixing options. The extrusion profile is flush fitted to the panel edge with a press fit that allows it to be removed if required.

2.5.1 Extrusion Profile Types

	**U profile** • Standard profile • Flush mounted to panel face
	**H profile** • Flange for fixing to parallel surface such as for signage • Flush mounted to panel face
	**F profile** • Flange for fixing to perpendicular surface • Flush mounted to panel face
	**T profile** • 2 x perpendicular flanges at base • Surface mount for vertical signage applications such as header boards

	**Ω (Omega) profile** • 2 x perpendicular flanges at top • Recess mount
	**Panel stand profile** • Solid base for freestanding vertical signage panel • Compatible with panels up to 400mm deep • Matching ABS end caps

2.5.2 Extrusion Profile Finishes

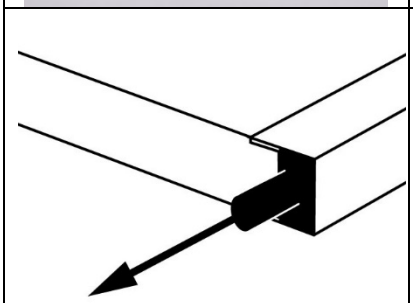
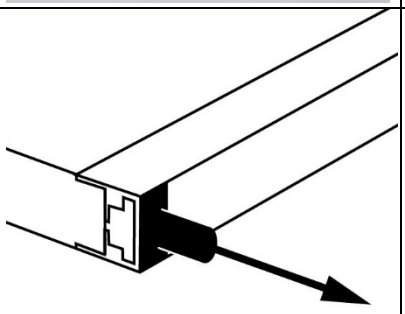
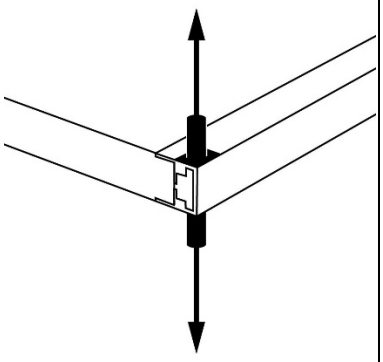
- Gloss white powder coat
- Satin black powder coat
- Natural anodised
- Custom powder coated colours available by request. Minimum order charge applies.

2.5.3 Extrusion Framing

The extrusion channels can be used to frame the entire panel if desired. A butt join is recommended but mitre is also available. Please note there will normally be some light bleed where extrusion edges meet. An additional surcharge for materials and labour applies.

2.5.4 Cable Exit Location

Pixalux® panels are provided with a 500mm cable that is hardwired to the LED strip that is either a 2, 3, or 4-core as required by the LED type. Specification of the desired cable location is critical. We define 3 standard 'exit' types relative to the end of the LED extrusion profile as per the table below.

End exit	Back exit	Side exit
		
Cable is protruding perpendicular to the cut profile edge	Cable protrudes from the bottom face of the extrusion profile, which is typically behind the panel when used horizontally	Cable protrudes from either side of the extrusion profile, perpendicular to the illuminated panel faces (may also be referred to as a top or bottom exit)

Note: H & F extrusion channels are asymmetric, thus requiring the side exit option to be specified relative to the flange of the extrusion.

2.6 LEDs

Pixalux® Structural Light Panels are driven by efficient LED strip lighting. This design enables a degree of modularity through ease of upgrade or maintenance to the electrical components, depending on how the product is installed.

2.6.1 LED Types

The modular design of Pixalux® enables different LED types to be fitted to suit various applications. The standard options are listed below:

LED type	Colour temp	Power (W/m)*	Voltage (V)	Current (A/m)	Pitch (mm)
Warm white	3000k	14.4 / 28.8	12	1.2	25
Natural white	4000k				
Cool white	5700k				
High brightness white for signage	6500k	19.2 / 38.4	24	0.8	50
Adjustable white (WW+CW)	2500 – 6000k	19.2 / 38.4	24	0.8	50
RGB standard	Full colour	14.4 / 28.8	12	1.2	50
RGB bright	Full colour	28.8 / 57.6	24	1.2	50

*Panels with a depth greater 400mm require 2 x LED channels, doubling the power output

Note: We are working to transition all of our LEDs to 24V for consistency and the added advantage of less power loss during transmission.

2.6.2 Calculating Power

The power per metre rate from the table above can be used to determine the power of each panel. This is necessary for determining the power supply and the accessories required.

- **Panel Power = Panel Length (m) x Power (W/m)**
- Example configuration: 600mm long by 300mm deep panel with cool white LEDs
- Power = 0.6m x 14.4 W/m = 8.64 W
- Always check to ensure the power rating of the cables and splitters are never exceeded

2.6.3 Custom LEDs

It is possible to source special LEDs depending on project requirements such as the examples below. A minimum order fee will apply.

- Various colour temperatures (warm, natural, & cool white)
- Higher or lower brightness
- Fixed single colour (green / blue / red etc)
- Low power

2.6.4 LED & Panel Brightness

As each Pixalux® Structural Light Panel is a custom product, perceived brightness will vary on a per panel basis due to the range of configuration options available. In the following table, we have provided basic illuminance measurements for an A4 sized Pixalux® panel. We have also provided a range of values for our adjustable LED products due to different colours of light having different output intensities. Illuminance is measured in lumens per square metre (Lux).

- Illuminance was measured using a Digitech QM1584 Light Meter
- Measurement taken at 1m from panel
- Ambient illuminance of 0.2 Lux
- A4 sized illuminated area of panel (297mm x 210mm)

LED Type	Colour	Illuminance (Lux) – Single Sided	Illuminance (Lux) – Double Sided
White	5700 k	40.0	24.3
WW + CW	Warm white	25.5	15.1
	Cool white	28.8	17.1
RGB standard	Red	7.4	4.7
	Green	10.2	6.4
	Blue	8.0	5.1
	White	25.0	14.7
RGB bright	Red	16.9	10.0
	Green	22.2	13.0
	Blue	15.0	9.0
	White	52.2	30.5

Please note that the information above is purely for general advice only and is in no way a substitute for laboratory testing and certification. In applications where lighting intensity and colour are critical, please speak to the team for a demonstration or sample.

2.6.5 Testing & Certification

Certification is important for many applications but as a custom product, each Pixalux® configuration is not individually certified. We can provide certification to AS/NZS standards, along with illuminance laboratory reports and IES files on a case-by-case basis.

We use Meanwell power supplies certified to Australian standards as detailed in section 2.7.2 below.

2.7 Accessories & Connectivity

We stock a range of accessories in order to provide a complete out of the box solution. Our standard LED strips are constant voltage and are compatible with a large range of off the shelf hardware if you wish to source your own.

2.7.1 Transformers

We primarily use Meanwell transformers that are fully certified to Australian standards and are available in either 12 or 24 volt versions depending on the LED type specified.

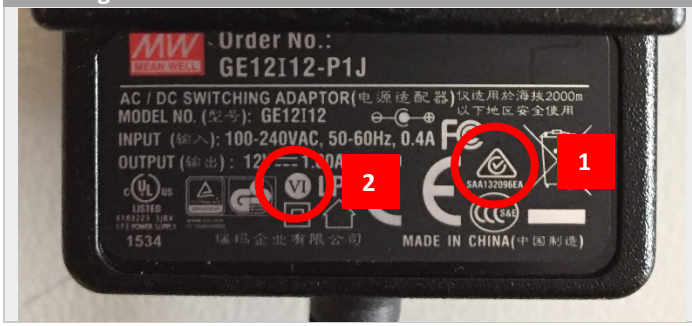
Series	Product code	Description	Voltage (V)	Power (W)	Connector
Powertran	M 9273A	Plug pack for samples & small orders	12	6	P1J
Meanwell GE	GE12I12-P1J		12	12	P1J
Meanwell GST	GST25A12/24-P1J	Standard economy transformer	12 / 24	25	P1J
	GST60A12/24-P1J		12 / 24	60	P1J
	GST120A24-P1M[1]		24	120	P1M
Meanwell PWM[2]	PWM-60-12/24	Integrated PWM dimming and IP67 transformer	12 / 24	60	Bare wire
	PWM-120-12/24		12 / 24	120	Bare wire
Meanwell ELG	ELG-75-12/24DA	Integrated DALI control	12 / 24	75	Bare wire
	ELG-150-12/24DA		12 / 24	150[3]	Bare wire
	ELG-240-12/24DA		12 / 24	240[3]	Bare wire
Meanwell HLG	HLG-240H-12/24B	Large capacity, IP67 and integrated dimming	12 / 24	240[3]	Bare wire
	HLG-320H-12/24B		12 / 24	320[3]	Bare wire
	HLG-600H-12/24B		12 / 24	600[3]	Bare wire

1. Fitted with P1M connector which differs slightly to the P1J on standard units
2. Dimmable transformer compatible with SDF-30 dimmer knob. PWM dimming at 1.47kHz.
3. Actual power varies depending on model voltage and is typically less for 12V models. Consult spec sheet for full specification.

2.7.2 Transformer Certification

There are 3 regulatory requirements for Australia of which all of our power supplies are certified. To request to view the certification documentation please contact us directly.

1. Safety
2. EMC – Control of electrical noise
3. MEPS – Control of efficiency

Marking	Description
	1. Safety & EMC pre March '16 2. MEPS – control of efficiency

1. Safety & EMC post March ‘16
2. MEPS – control of efficiency

2.7.3 Extension Cables & Splitters

Type	Input	Output	Length (m)	Max. Power 12V / 24V
DC extension 1m	P1J	P1J	1	60W / 120W
DC extension 2m	P1J	P1J	2	60W / 120W
DC extension 3m	P1J	P1J	3	60W / 120W
DC extension 5m	P1J	P1J	5	36W / 72W
DC splitter A	P1J	P1J x2, x4, x8	0.3	60W / 120W
DC splitter B[1]	P1M	P1M x2, x4, x8	0.3	60W / 120W
WW+CW extension	Female 4pin	Bare wire	3	36W / 72W
RGB extension	Female 4pin	Bare wire	3	36W / 72W

1. Must be used in conjunction with GST120A24-P1M

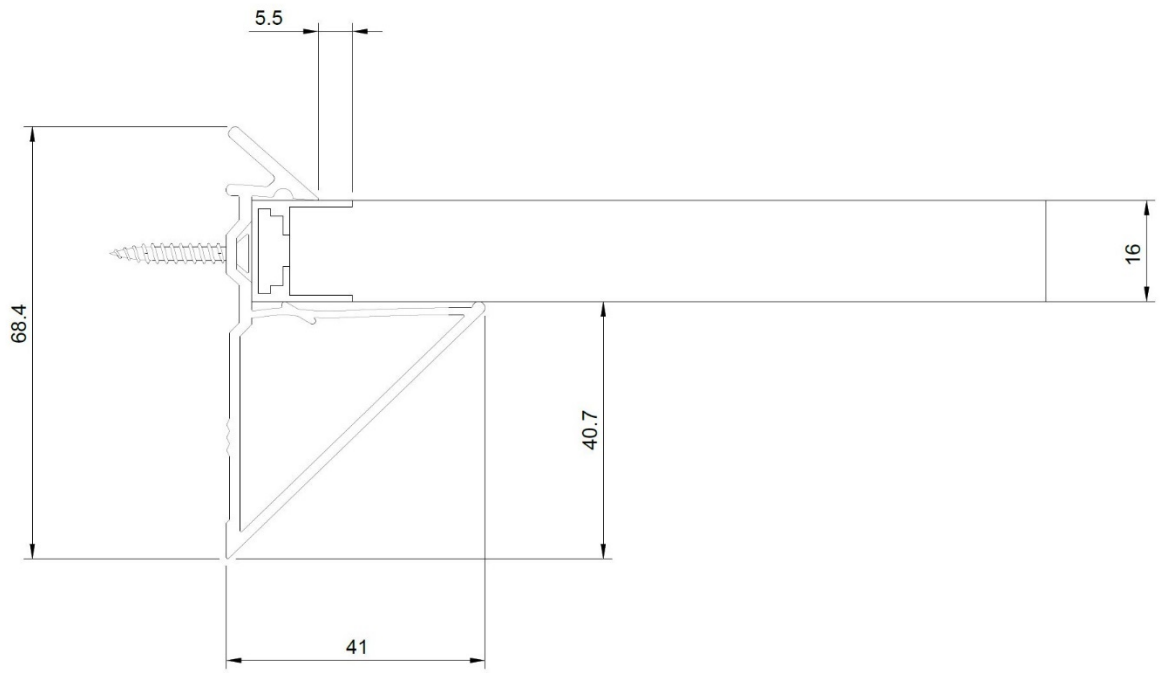
2.7.4 Control Gear

Control Gear	Description
SDF-30	Rotary dimmer knob compatible with standard wall plates for us with PWM and HLG series transformers
SR-1009FA	Universal RF receiver with a maximum of 60W @ 12V & 120W @ 24V
SR-2933K8	8 zone remote controller dimmer with wall bracket for SR-1009FA
SR-2863R(IT)-AC	Wall mounted wireless rotary dimmer for SR-1009FA
SR-2833CCT	4 zone adjustable white remote with wall bracket for SR-1009FA
SR-2830B(IT)	4 zone wall mounted wireless adjustable white controller for SR-1009FA
SR-2819S	4 zone RGB remote with wall bracket for SR-1009FA
SR-2830RGB(IT)	4 zone wall mounted wireless RGB controller for SR-1009FA

Our stock range of controllers and receivers operate on a 2.4GHz wireless frequency with a range up to 15m in ideal conditions. Physical obstructions such as walls will affect the range.

2.7.5 Cantilever Shelf Bracket

The Cliff Hanger cantilever shelf bracket is an aluminium bracket designed for 16mm thick shelves and is mounted to wall studs. It is available in a gloss white finish for floating shelf applications. This bracket must be fixed to wall studs for strength. An example bracket application is pictured below.



2.8 Connectivity

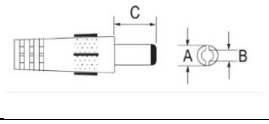
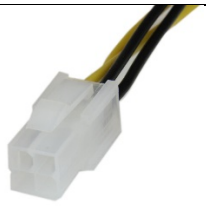
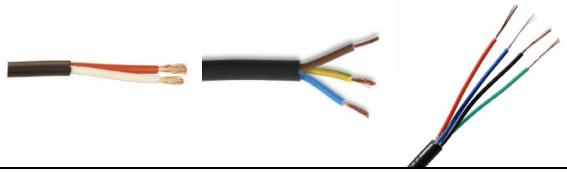
2.8.1 Extension Cables

We have standardised our wiring system for ease of use, as determined by the LED type selected. Two types of cable are available:

1. DC extension cables
2. Multi-core extension cables

Where custom hardware or wiring is required, an electrician may modify or extend the cables as required.

2.8.2 Connection Types

<table>
<tr><th>Item</th><th colspan="4">Image</th><th>Description</th></tr>
<tr><td>P1J / P1M connector</td><td colspan="2">Male
 </td><td colspan="2">Female
 </td><td>Standard DC barrel plug. P1J & P1M differ by the internal pin diameter as detailed below.</td></tr>
<tr><td>P1J / P1M specifications</td><td colspan="2">  </td><td colspan="3"><table><tr><td></td><td>A (OD)</td><td>B (ID)</td><td>C (Length)</td></tr><tr><td>P1J</td><td>5.5 mm</td><td>2.1 mm</td><td>11 mm</td></tr><tr><td>P1M</td><td>5.5 mm</td><td>2.5 mm</td><td>11 mm</td></tr></table></td><td></td></tr>
<tr><td>Molex-style connector</td><td colspan="2">Male
 </td><td colspan="2">Female
  </td><td>This connector is fitted to adjustable white or RGB panels when an extension cable has been ordered</td></tr>
<tr><td>Bare wire</td><td colspan="4">2, 3 & 4-core cable
  </td><td>Bare wire ends are required to connect adjustable LEDs to the SR-1009FA receiver</td></tr>
<tr><td>Receiver</td><td colspan="4"> </td><td>Receivers can be powered by bare wire And can only output to bare wires via screw terminals.</td></tr>
</table>

2.8.3 Connector Availability

We've carefully curated a range of accessories to maximise inter-component compatibility to make installation hassle free. The following table details connector availability.

Component / accessory	Detail	Connection type							
		P1J		P1M		Bare wire	Molex style		Screw terminals[6]
		M	F	M	F		M	F	
White panel[1]	2-core cable		•			•			
WW+CW panel[2]	3-core cable					•	•		
RGB panel[2]	4-core cable					•	•		
SR-1009FA	12V / 24V								•
GE12I12-P1J	12 V / 1A	•							
GST25A12-P1J	12 V / 2.08A	•							
GST25A24-P1J	24V / 1.04A	•							
GST60A12-P1J	12V / 5A	•							
GST60A24-P1J	24V / 2.5A	•							
GST120A24-P1M	24V / 5A			•					
PWM series PSU	12V / 24V					•			
HLG series PSU	12 V / 24V					•			
DC extensions	5A max.	•	•						
Ribbon extension[4]	3A max.					•		•	
DC splitter A	2, 4 & 8 way	Up to 8	1						
DC splitter B[5]	2, 4 & 8 way	Up to 8			1				

1. Supplied standard with 150mm cable & P1J plug
2. 500mm ribbon cable with either bare wire for direct to driver or male connector for use with extension cable
3. Power input via P1J socket or screw terminals / output to panel screw terminal only
4. Ribbon extension is female connector to bare wire for WW+CW & RGB panels only
5. Splitter Type B must be used with GST120A24-P1M
6. We recommend a maximum of 2 x sets of wires per receiver terminal due to physical size and current restrictions

2.8.4 Control System Compatibility

Pixalux® Structural Light Panels use constant voltage LEDs that can be controlled in a number of ways including dimming, adjustable colour temperature and colour. We stock a limited range of compatible hardware. Our LEDs are compatible with all common hardware such as, but not limited to:

- DMX
- Dali, Dali II
- Z-wave or similar home automation protocols

For complex lighting designs or broader system integration, we recommend working with a lighting designer or architectural lighting specialist.

3.0 Layout & Configuration

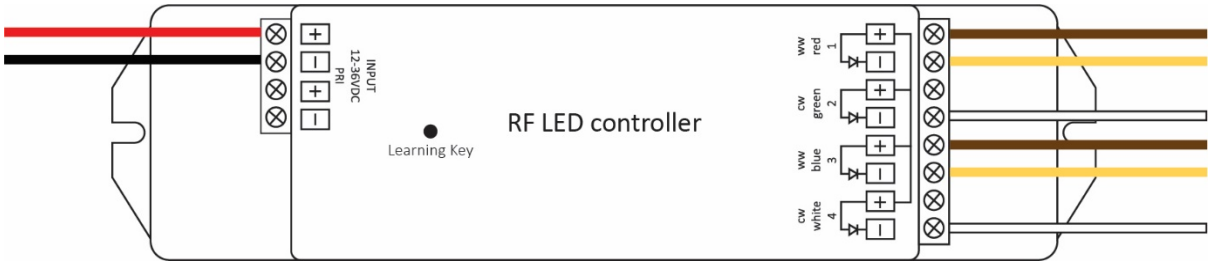
When ordering a Pixalux® Structural Light Panel, it is important to determine the configuration of panels so that product features and accessories can be correctly specified.

3.1 Wiring Diagram

The following wiring diagrams below apply when using our universal RF receiver SR-1009FA. If using other control hardware, the wire colours are labelled below.

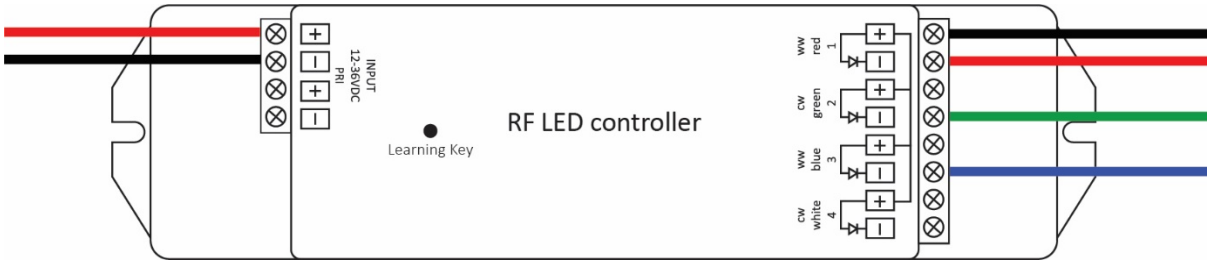
Adjustable White Panel (CW+WW)

- 3-core wire
- Brown = positive channel
- Yellow = warm white channel
- White = cool white channel



RGB Panel

- 4-core wire
- Black = positive channel
- Red = red channel
- Green = green channel
- Blue = blue channel

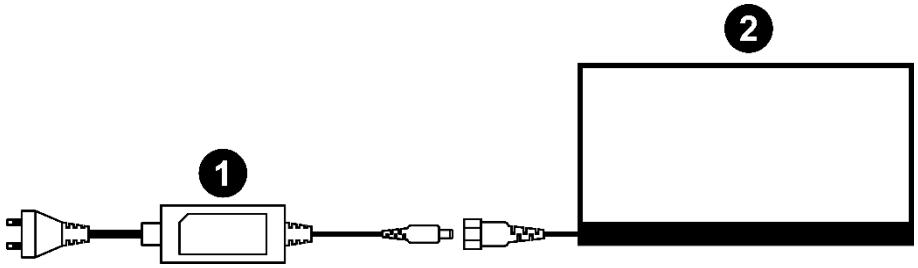


3.2 Panel Configuration Examples

Below are some example configurations depicting how panels can be wired using our standard range of accessories. There are many different ways that panels can be connected. Always remember to calculate the required power when designing your configuration.

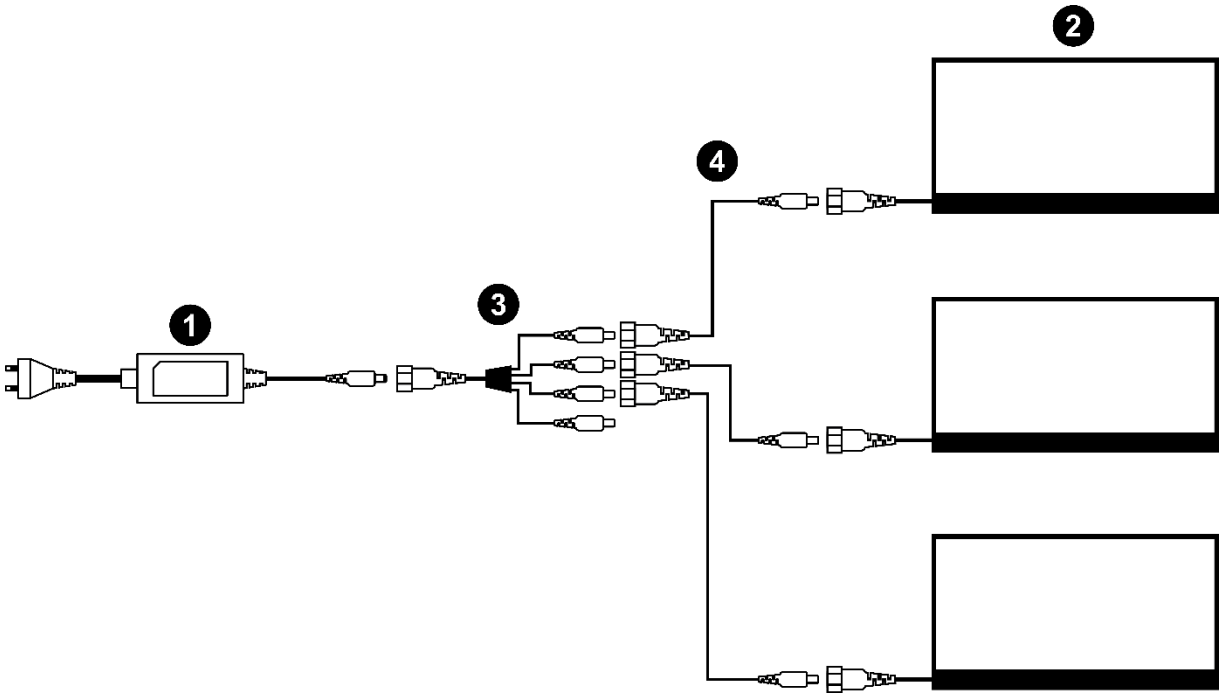
3.2.1 Single White LED Panel Configuration

1. DC transformer
2. White Pixalux® Structural Light Panel



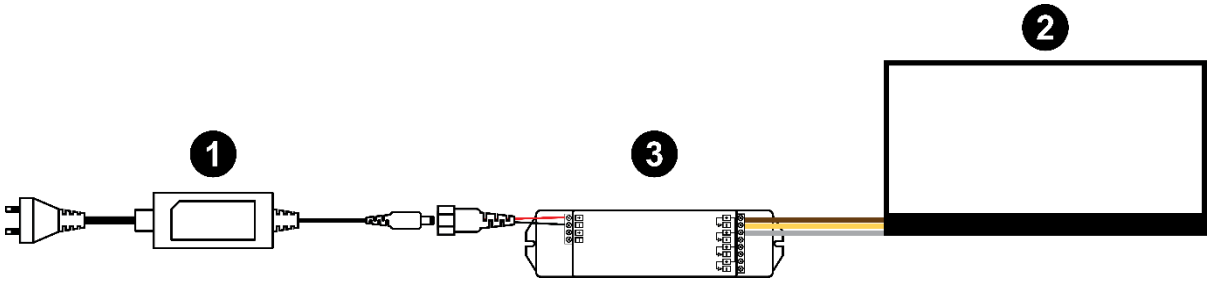
3.2.2 Multiple White LED Panel Configuration

1. DC transformer
2. White Pixalux® Structural Light Panel x 3
3. 4-way DC splitter
4. DC extension cable (1-5m) x 3



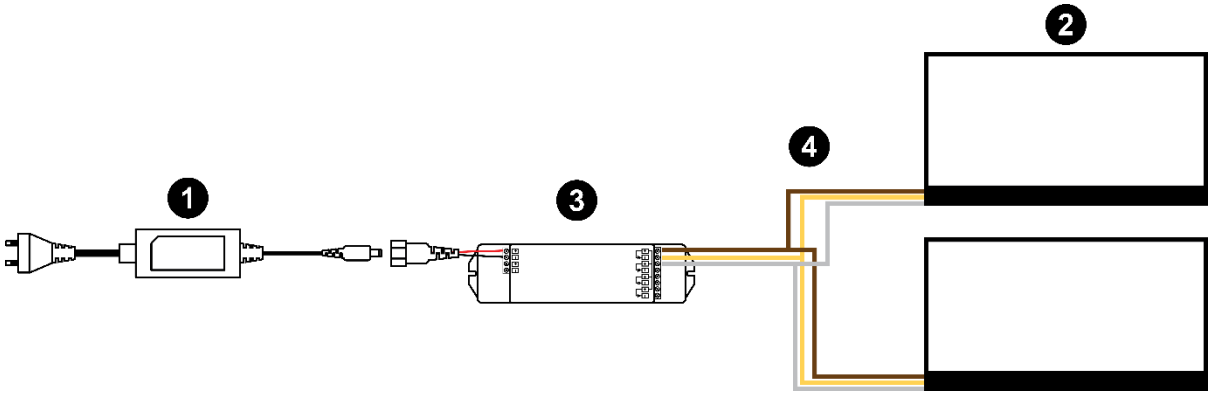
3.2.3 Single Adjustable White Panel Configuration

1. DC transformer
2. Adjustable White Pixalux® Structural Light Panel
3. Universal RF receiver (SR-1009FA)
4. Controller (not pictured)



3.2.4 Multiple Adjustable White Panel Configuration

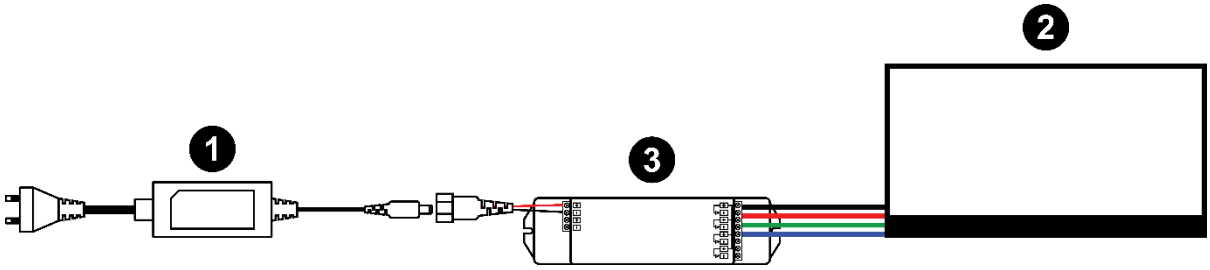
1. DC transformer
2. Adjustable White Pixalux® Structural Light Panel
3. Universal RF receiver (SR-1009FA)
4. Adjustable white extension cables
5. Controller (not pictured)



Note: Multiple panels can be connected to one universal receiver where multiple sets of wires are inserted into the same terminal. Do not overload the receiver with more than 5A of current.

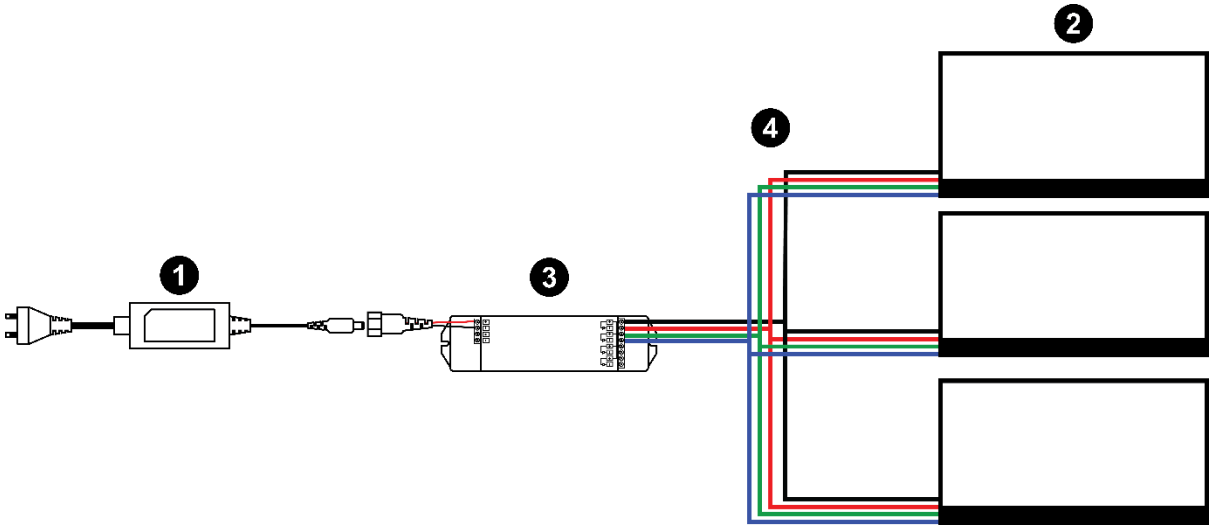
3.2.5 Single RGB Panel Configuration

1. DC transformer
2. RGB Pixalux® Structural Light Panel
3. Universal RF receiver (SR-1009FA)
4. Controller (not pictured)



3.2.6 Multiple RGB Panel Configuration

1. DC transformer
2. RGB Pixalux® Structural Light Panel
3. Universal RF receiver (SR-1009FA)
4. Adjustable white extension cables
5. Controller (not pictured)



Note: Multiple panels can be connected to one universal receiver where multiple sets of wires are inserted into the same terminal. Do not overload the receiver with more than 5A of current.

3.3 Multiple Panel Configuration

When multiple panels are required for an application, it is important to consider the power requirements and method of distribution to determine the required accessories and most efficient configuration.

3.3.1 Running Power

✓ - Always place the transformer as close to the panel as possible

✓ - Use 240V extension leads to bring the PSU closer to the panel

✓ - Use available DC extension leads

✗ - Do not connect DC extensions in series

- Connecting DC extensions in series can cause significant voltage drop resulting in reduced panel performance
- Cables and connections may become hot to touch
- Maximum DC extension should be 5 metres

3.3.2 Powering Multiple Panels

It is important to consider the overall application layout when using multiple panels to ensure the correct and most efficient use of parts.

1. Determine the power of each panel as per 2.6.2
2. Ensure the combined power of the panels does not exceed the power of the chosen transformer
3. Ensure that the extension cables can reach all of the required panels
4. If panels are spaced too far apart, you may need to order additional transformers
5. If using a qualified electrician, ask them about running longer cables as appropriate for the power
6. We always recommend using a splitter directly from the transformer to minimise power loss
7. Do not branch multiple splitters where the current is greater than 5 amps

3.3.3 Using Receivers & Control Hardware

1. Ensure access to receivers for installation and maintenance
2. Extend the reach of panel to driver up to 3m using the available extension cable
3. We do not recommend more than 2 panels be connected to a single driver due to physical terminal size restrictions
4. Do not overload receivers (receivers are limited to 5A max. per channel, consult manufacturer for exact specification)

4.0 Design & Installation Recommendations

There are many different applications available for the Pixalux® Structural Light Panel, however they're all derivatives of either a horizontal or vertical illuminated panel.

- A **horizontal illuminated panel** is most commonly used for shelving or another type of display surface where there is often an object directly on the panel surface.
- A **vertical illuminated panel** is where the panel is typically used for signage or backlighting.

4.1 Fixture Design

As every Pixalux panel is different, and every application unique, it's difficult to make specific recommendations for how the panel is fixed. Please observe the following checklist prior to installation:

1. Never use the panel in an application where it's bending under load or its own weight

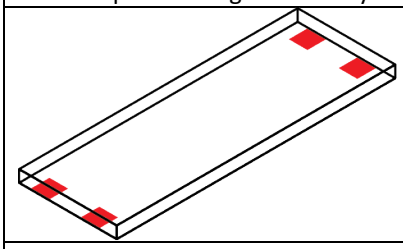
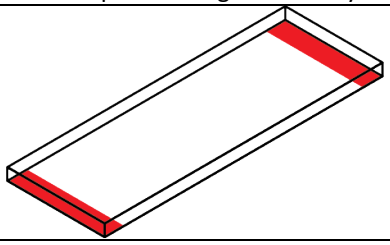
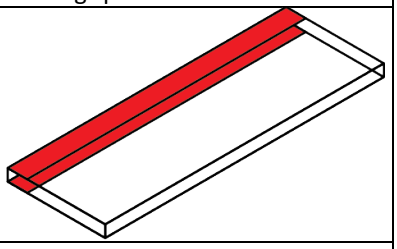
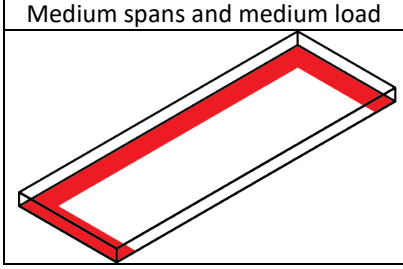
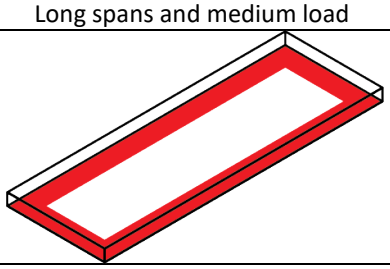
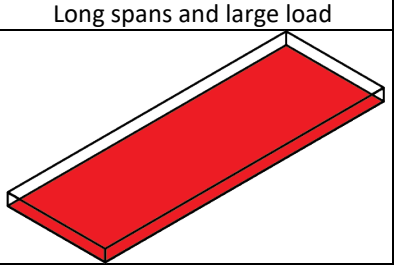
2. The recommended weight limit is 13 kg/m
3. Allow up to a 14mm diameter hole for the power plug (white LEDs)
4. Make sure the power cables are long enough to reach where they need to go
5. All supporting surfaces should be clean and free from debris
6. Use only in a dry interior application
7. Do not use as shelving for a span greater than 600mm without longitudinal support such as our aluminium extrusion
8. Where ever possible, allow a way to remove a panel for serviceability
9. Do not subject the panel to any harsh chemicals or abrasives
10. Do not modify the panel in any way

4.1.1 Load Ratings

Type	Max. span	Max. depth	Max load	Comments
Standard shelf brackets	1200mm	400mm	13 kg/m	Evenly distributed loading
Cliffhanger cantilevered shelf bracket	1800mm	300mm	13 kg/m	Evenly distributed loading
Ω profile cantilever[1]	1800mm	250mm	5 kg/m	Evenly distributed loading
Short edges and one long edge supported	1500mm	300mm	13 kg/m	Evenly distributed loading
All 4 edges	As per max. sizes		13 kg/m	Evenly distributed loading
Fully supported below[2]	As per max. sizes		100 kg/m^2	Such as directly on the ground

1. Fixture strength dependent on wall strength & fitment tolerance
2. Support surface must be level and protected against surface irregularities. We recommend a layer of dense foam such as EVA to protect the panel.

Types Of Panel Support

Short spans and light load only	Short spans and light load only	Long spans and medium load
		
Medium spans and medium load	**Long spans and medium load**	**Long spans and large load**
		

4.2 Panel Modification

We do not recommend modification to the Pixalux® panel by 3rd parties. Please work with the Pixalux® Manufacturing team during the project design phase to determine a suitable solution.

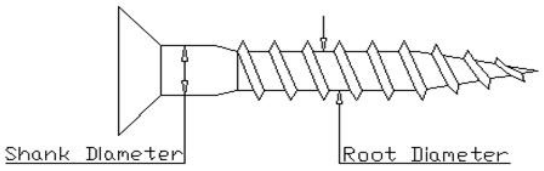
4.2.1 Making a Hole

Holes may be required for mounting panels. Holes can be made through the main surface of the panel, but are not recommended into the edge. We can provide panels with holes to specification using our in-house laser capabilities. If you can't provide us with the required information, panels can be drilled using a high speed bit designed for plastic or a "blunt" metal bit. Drilling should be done with extreme care by an experienced operator due to the brittle nature of the material. Pressure should be applied close to the drilling point, and increasing the hole sizes in steps may help. Note there will be some change to the light output near any holes in the panel (see next page)

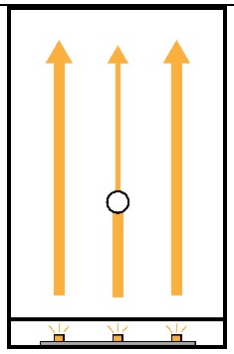
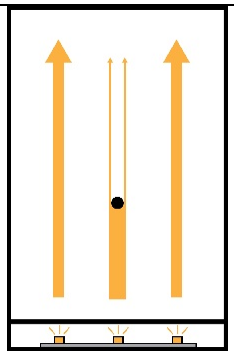
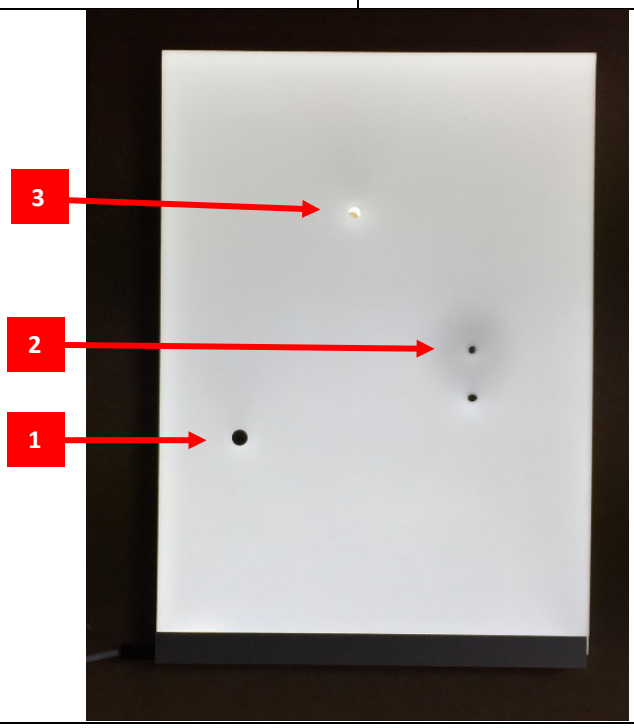
4.2.2 Screw Fixing

The preferred method of fixing a panel is using a bolt or stand-off type thru-fixture that has no interference with the panel and will ensure that any load is borne through the cross-section of the panel.

Screws can be fixed into the panel but this method is not recommended. If there is no alternative, ensure the mounting hole is at least the same diameter as the screw shank diameter. Too small a mounting hole may result in the screw threads separating the panel layers or the screw head shearing off.



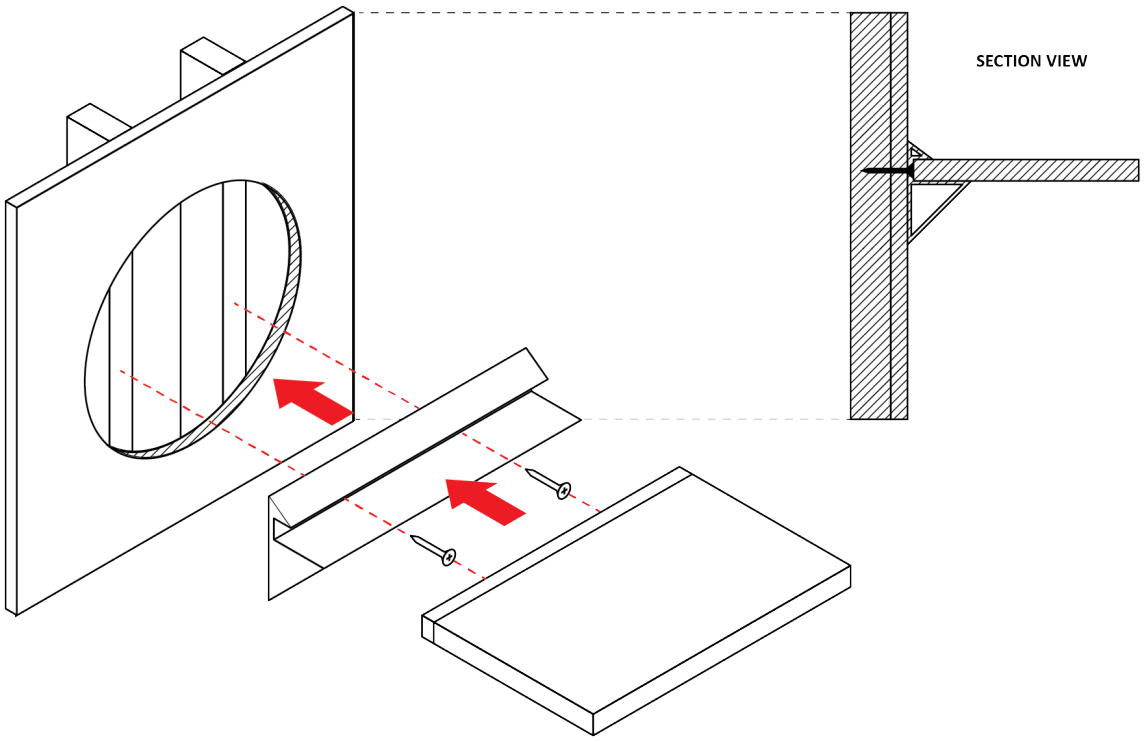
4.2.3 Hole Effects

Open Hole		An open hole will allow some light to pass and have minimal effect on the overall distribution. The area around hole will appear brighter.
Closed Hole		A closed hole (typically a bolt fixing) can block the light creating a small shadow behind the fixing for 10 – 15mm where the light is unable to pass. This is mitigated in other areas of the panel due to diffusion and reflection effects for example when close to the panel edge. Holes larger than 10mm are not recommended.
Example panel with closed and open holes. Light is input from the left edge of the panel. 1. Closed hole 2. Separation of panel layers (delamination) 3. Open hole		

Horizontal Application Examples

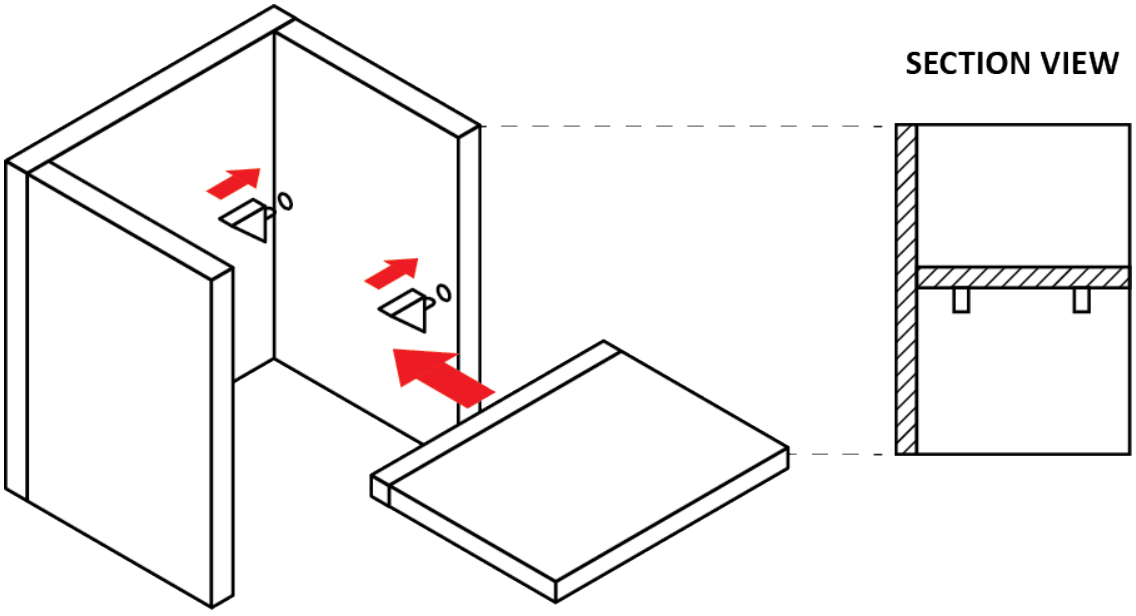
Cantilevered Shelf

Use with Cliffhanger cantilevered shelf bracket or equivalent. Bracket must be fixed to studs or noggins. Maximum panel depth of 300mm.



Pin Supported Shelf

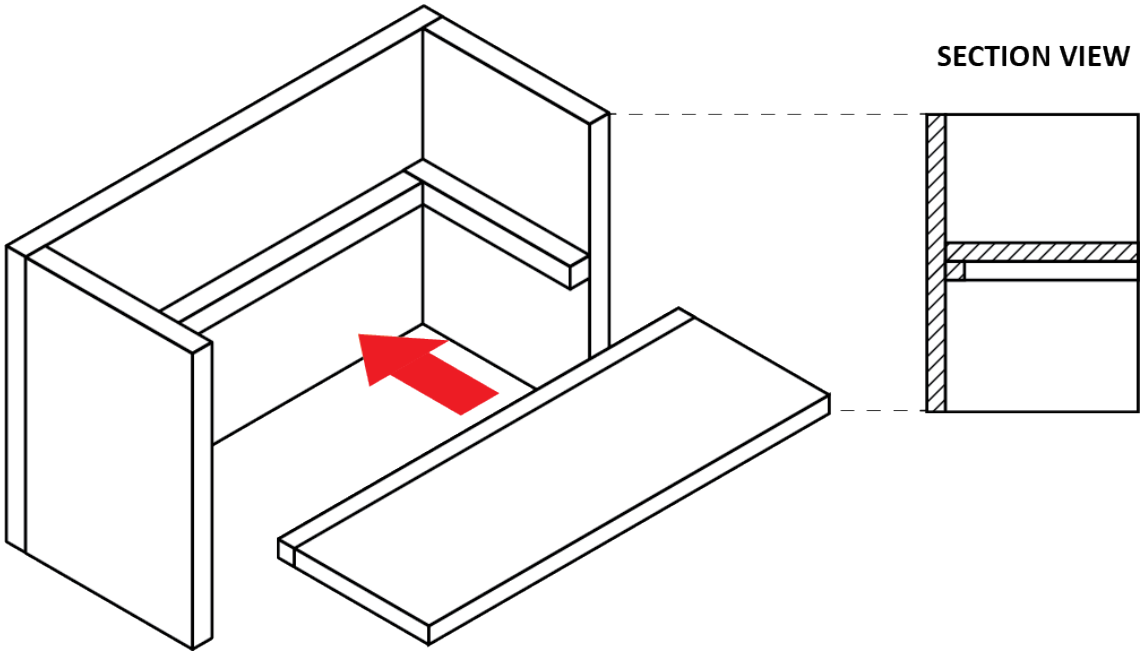
Support the panel along the short edges using standard shelf pins. Do not use for a span greater than 600mm. A greater number of shelf pins is recommended. For use with light loads only.



Edge Supported Shelf

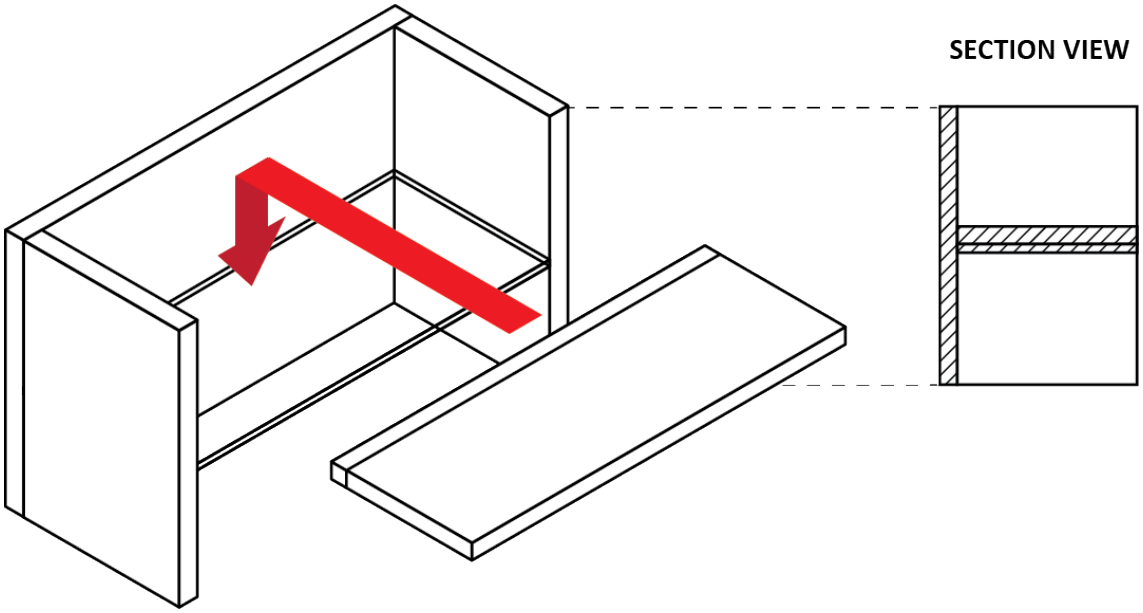
Edge Supported Shelf

Support the panel with a lip along the two short edges and the rear edge for greater strength using permanent edges.



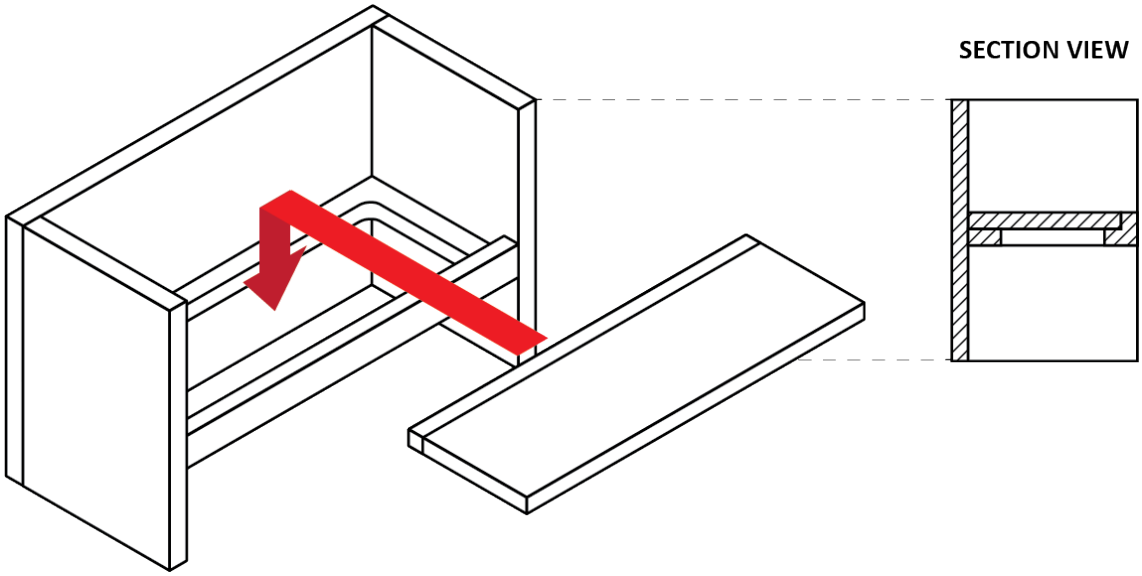
Supported Shelf (Glass)

Where an existing glass shelf is already installed, your Pixalux shelf can be installed by placing it on top of the glass shelf. Because the glass is transparent this will allow double sided illumination without any hindrance. You can also use the same method for any kind of shelf, however you will be limited to illumination from one face only.



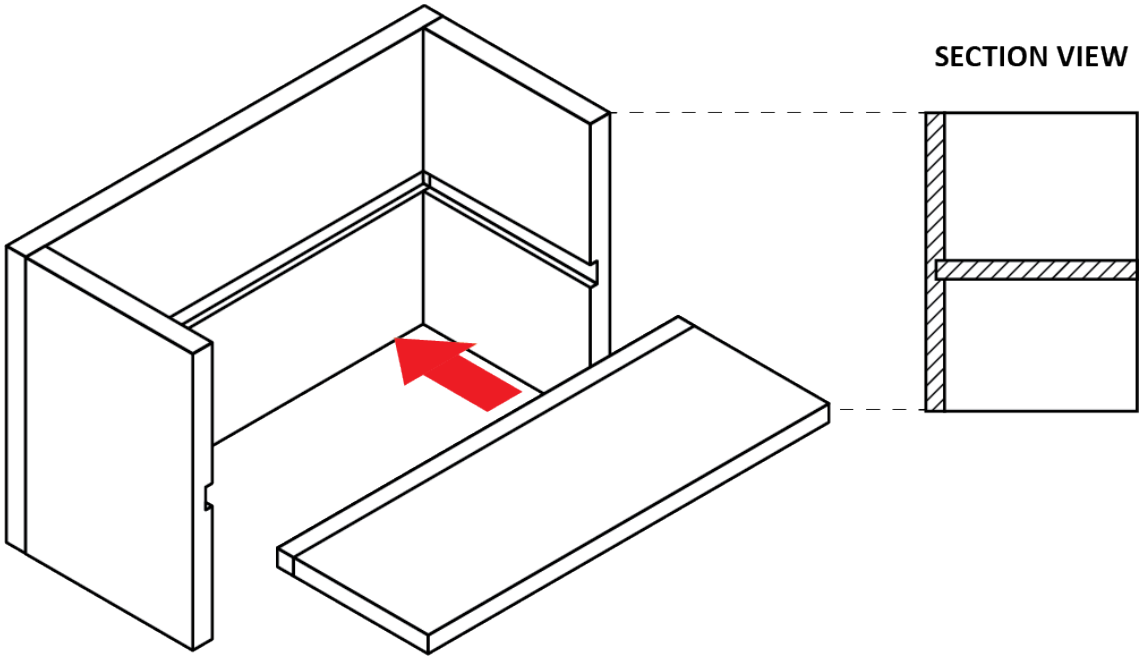
Drop-In Shelf

Where you require discrete integration, you can create a support for the panel around the perimeter with a front face return using the same material as the joinery to conceal the panel.



Rebated Shelf

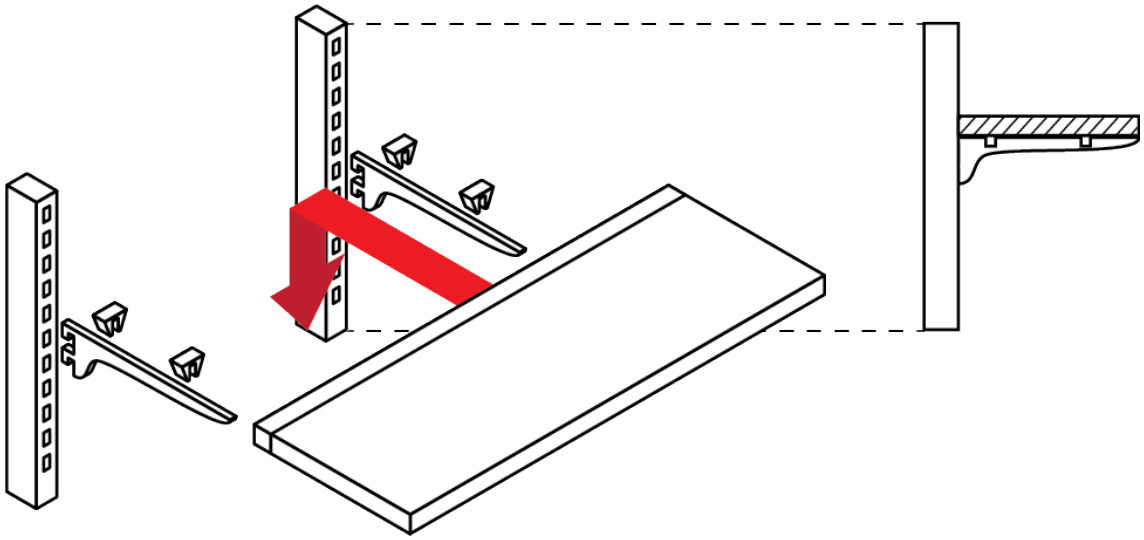
For a seamless installation, channels can be rebated into the internal faces of the carcass. The rebate will also hide the edge finishes of the Pixalux panel, instead showing only illumination. Be sure to allow more than 16mm at the rear rebate to conceal the aluminium extrusion profile.



Bracket Supported Shelf

Standard shelf bracket arms are suitable for supporting Pixalux so long as large and grippy contacts are used underneath the panel, such as those used to support glass. Alternatively, place the panel on to an existing glass shelf. Be careful to ensure that the panel is secure from slipping. Light loads only.

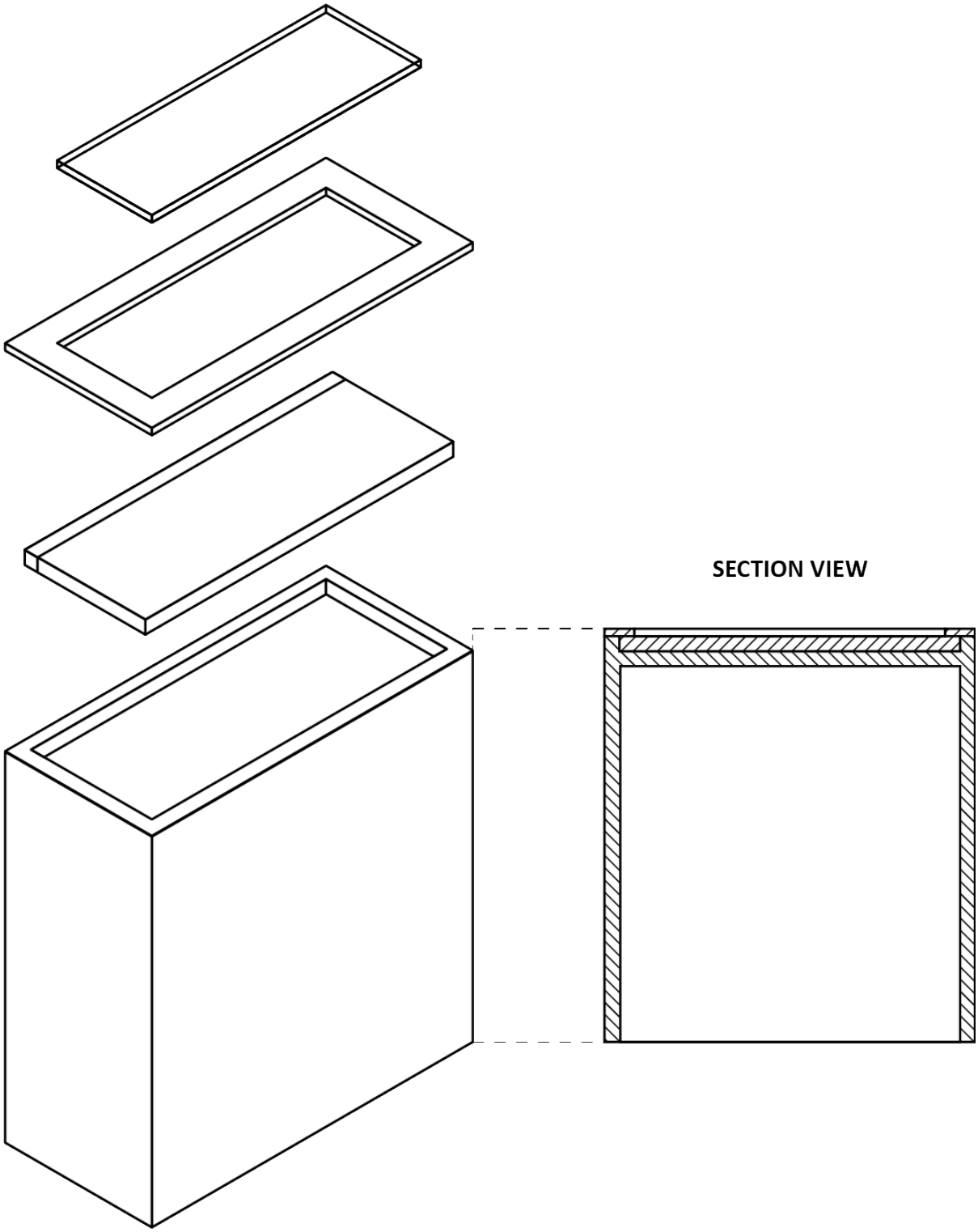
SECTION VIEW



Integrated Counter (Illuminated Top Surface)

This example below is but one of many ways to create an integrated illuminated surface. This type of configuration is typically used for display counters or bars.

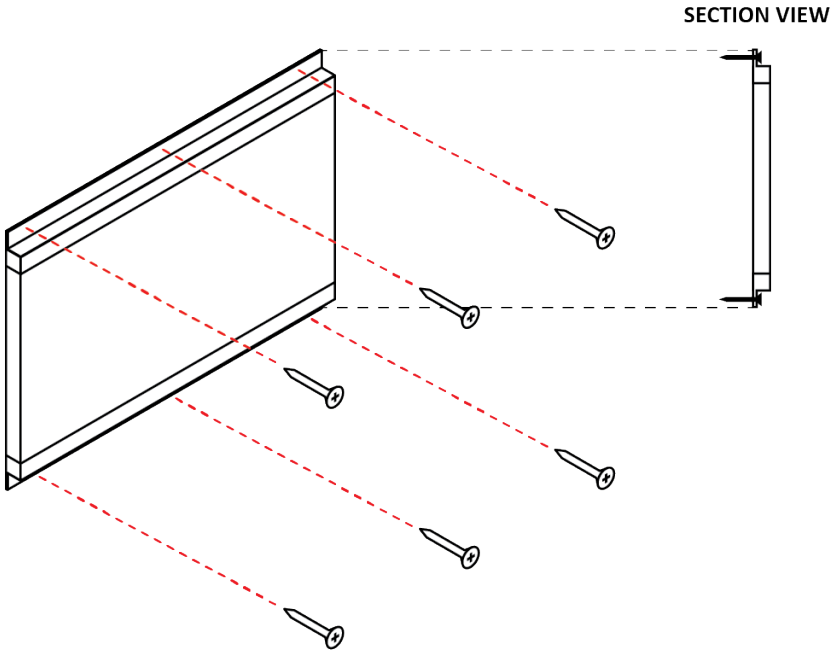
A recess is created for the panel, with a cut-out overlapping the top surface to seal in the panel. A transparent insert is used to create a flush surface and to protect the panel.



Vertical Application Examples

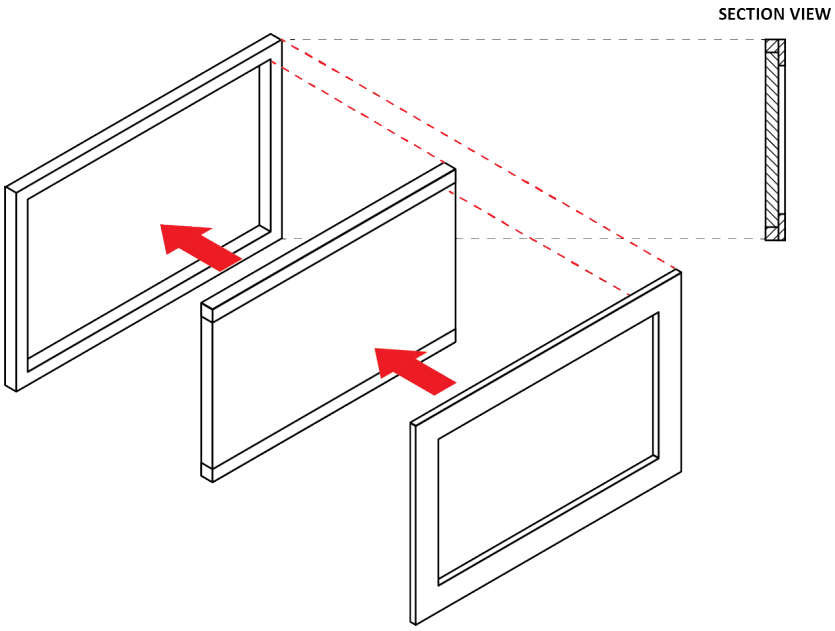
Wall Mounted Panel

You can easily mount the panel directly to a wall by specifying both aluminium channels with 'H' profiles. Screw through the H profiles on the panel into the wall to fix it in place, running the power cable through the wall behind. For maximum strength, fix into studs, noggins or other structural elements inside the wall.



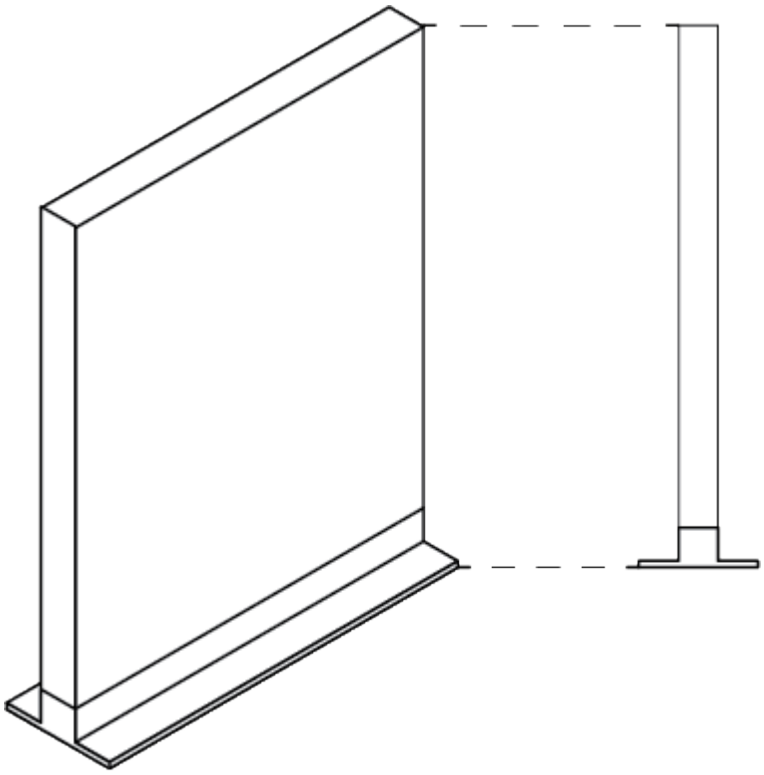
Integrated / Rebated Sign

Create a recess that fits and supports the panel, with a front cover plate that secures it in place and conceals the edge finishes. While this creates a border, it means the frame can be made finished however you like, while also making it easy to remove the panel or to add graphics.



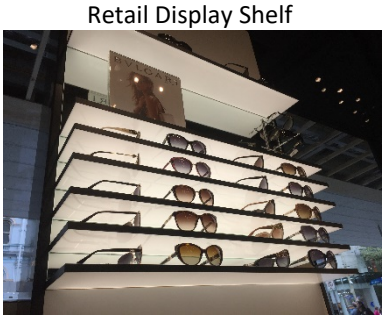
Surface Mounted or Freestanding Sign

Using the T, Ω, Panel Stand profile, or a mechanism of your own devising, you can easily create a vertical, double sided sign where the panel is free to stand on its own. Both T and Ω profiles have flanges that allow the panel to be fixed. Not suitable for panels with a depth greater than 400mm.



5.0 Application Examples

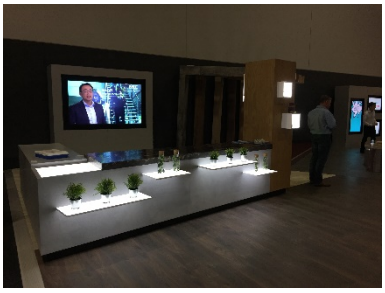
Retail Display Shelf



Retrofit Retail Shelf

Illuminated Header Board

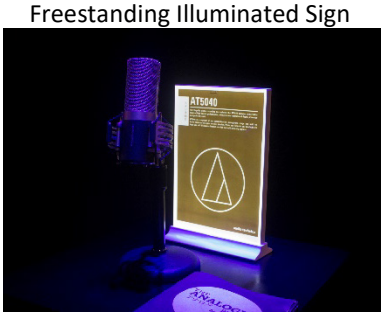
Tradeshow Stand



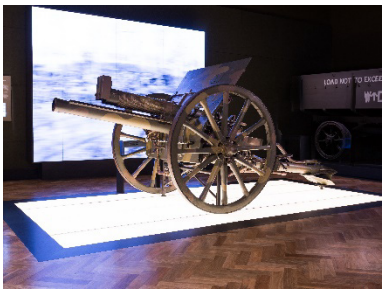
Overhead Cabinet

Bar Shelving

Freestanding Illuminated Sign



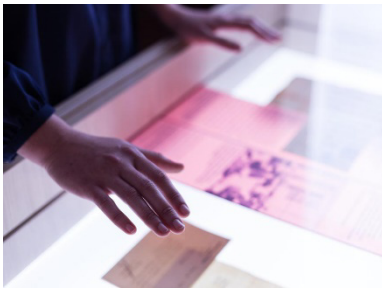
Museum



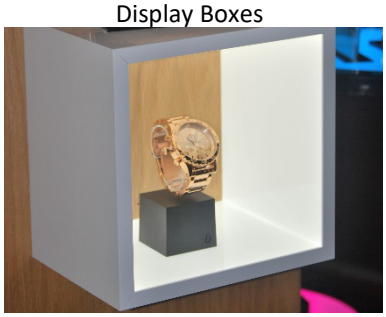
Floating Shelves

Wardrobe

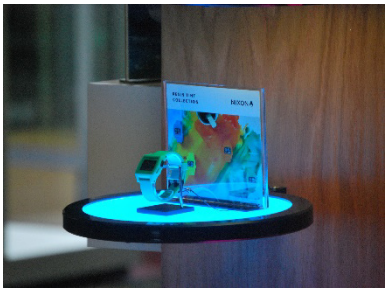
Sensitive Artefact



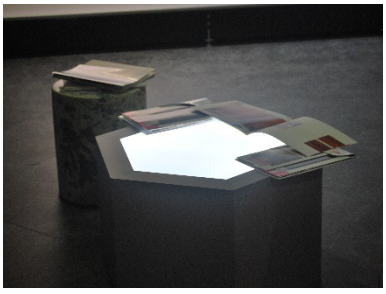
Display Boxes



Hero Pad



Plinth or Work Surface



Laser Cut Shapes & Graphics