INDUSTRY LEADERS IN
LED LIGHT SHEET TECHNOLOGY
TECHNICAL BROCHURE
Welcome,

Thank you for taking the time to read our Technical Brochure covering Addlux LED Light Sheet products. In it we describe our technology and give you an insight into technical advantages that they offer when you use them in your products and applications.

The benefits of using LED lighting are now well known within our industry – high brightness, energy-efficiency, long-life, low maintenance, no disposal problems, etcetera.

“We and our partners are industry leaders in LED light sheet technology – we develop and manufacture our own low energy LEDs, produce both the largest and the thinnest light sheet (now a mere 3 mm thick and flexible). We guarantee high and even brightness over the entire surface of the light sheet.”

In addition, we specialise in providing bespoke solutions and assistance with development projects. We pride ourselves in providing outstanding technical advice, prompt quotes, excellent delivery performance and a first-class after-sales service. Our technical service will assist you to find the optimum product for your end-use at the best price. However complex your enquiry may be, we are confident we can work with you to find a solution.

We look forward to receiving your enquiries and to working with you together as long-term business partners.

Kind regards,

Niels Fullerton-Batten
Addlux LED Light Sheet

Super large, Super thin, Super bright, Super flexible, Super service

High technology solutions for any requirement

Major differences in technology and design concepts distinguish our LED light sheet products from other similar products available in the market. We offer you greater flexibility in choosing various properties to match your specific requirements (see the Data Sheet). In addition, we assure you of sound technical advice, high quality, a speedy and reliable delivery, superb back-up service and a reasonable price.

Shapes to almost any design

We supply shapes and curved configurations to any specific design – small or large, simple or complicated. Our technical team will guide you and help you develop any concept ideas that you may have.

More Features Offering Great Flexibility for Your Design

• single- and double-sided LED light sheet
• very high brightness levels
• guaranteed even brightness across the entire light sheet surface
• LED lighting with a wide range of colour temperatures – bright cool, natural and warm whites to RGB multi-colour
• LED power cable exit points of your choice, from any edge or the back surface of the light sheet
• easy connectivity, male-female barrel connections between the light sheet and the PSU
• different voltage power supply units (PSU), 12V and 24V, or to your specification
• UK 3-pin, continental and other international power plugs hard-wired to the PSU
• IP67 rated light sheet for outside use or in wet environments

Our Comprehensive Service

What you have always hoped for. We give a complete service – sound technical advice, prompt and comprehensive quotes (usually within 24 hours), attractive delivery schedules for standard and bespoke light sheet as well as for development samples (our delivery performance exceeds 99%), and exceptional post-sales support. We are flexible and innovative. We welcome your enquiries for the unusual and encourage you to try us for your development projects.

A Handy Data Sheet

Our attached Data Sheet gives you a full summary of dimensions, available property options and warranties for our range of light sheet. It is your to-hand guide for the many possibilities offered by Addlux LED Light Sheet.
An Addlux light sheet comprises essentially the light source, a light guide (LG), a reflector sheet, and the power supply/driver/transformer (PSU), see Illustration 1.

**Function of the Reflector Sheet**

The reflector sheet reflects light from the LEDs forward through the specially designed and manufactured, very efficient light guide (LG).

**In-house LED Light Source Development and Manufacture**

The light source for our LED light sheet are high light intensity, low energy LED strips. We develop and manufacture our own LED strip products in our factory from highest quality components.

We can supply light sheet with light from LEDs of widely different colour temperatures – 6000K or 5300K (cool white); 4000K (moonlight white); 3000K (warm white); single colour (red/green/blue) and RGB multi-colour, see Illustration 2.

**Brightness? Whatever level you want!**

Depending on the size and specification of the light sheet, LEDs are (a) mounted on the edge(s) of the LG or (b) embedded in the LG (see Illustration 1).

The brightness of the light sheet can be adjusted by attaching LEDs to one edge, two opposite edges or to all four edges. We can achieve higher level of brightness by using multiple rows of LEDs or more powerful LEDs.

**The Light Guide (LG)**

The function of the LG is to diffuse and distribute light from the LEDs evenly across its surface. The LG is made from acrylic sheet which is laser machined on one surface with a pattern unique to the size of the LED light sheet. After machining, the LG is assembled together with the LEDs and a reflector sheet.
**TECHNICAL DESCRIPTION**

**Unique Technology Guarantees Even Brightness across the Entire Surface**

The design and manufacturing processes used in the creation of the LG of our LED light sheet products represents a major development in LED light sheet technology. It enables us to guarantee even brightness across the entire surface of the light sheet regardless of its size and shape. Even brightness ultimately determines the quality of the end product, and, in many instances, the functionality and success of the product/application for which you will use it. A further benefit of this technology is that UV light emissions are prevented.

Depending on size, thickness, arrangement of the LED strips and the specification for your order, the LG is engraved or laser-machined on one surface with a unique pattern of grids or dots. The grids are made up of 3D grooves and the dots are 3D pits. The pattern is computer-generated and is unique to the size of the light sheet and varies in the spacing and the density of the grooves or dots, see illustrations 3 and 4.

The unique pattern and the three dimensional nature of of the grooves and dots distributes the light evenly across the entire surface of the light sheet. The evenness of brightness across an Addlux LED light sheet of any size or shape exceeds 90% even on very large sized light sheet. Actual brightness measurements on a 3.05m x 1.52m light sheet are shown in Illustration 5.

---

**Addlux Light Distribution Sheet Properties**

We use three different approaches to form the unique patterns on the LG - dot matrix, micro-dot matrix and grid matrix - each has specific properties and advantages, see Table 1.

<table>
<thead>
<tr>
<th>Reflecting Matrix</th>
<th>Matrix Dimension</th>
<th>Max. size (mm)</th>
<th>Brightness</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dot</td>
<td>3-D</td>
<td>1500 x 1500</td>
<td>Typically 2000 lux</td>
<td>Indoor and outdoor*</td>
</tr>
<tr>
<td>Grid</td>
<td>3-D</td>
<td>4000 x 1600</td>
<td>Similar to dot matrix</td>
<td>Indoor and outdoor*</td>
</tr>
<tr>
<td>Micro-dot</td>
<td>3-D</td>
<td>600 x 600</td>
<td>25% brighter</td>
<td>Indoor and outdoor*</td>
</tr>
</tbody>
</table>

*IP67-rated light sheet upon request; see definition below under User Guide

---

**Table 1 Summary of Addlux Light Guide Properties**
**Handling Guidelines**

Please observe the following guide lines for handling your LED light sheet.

**Opening the delivery**
Take care when opening the packaging. Wherever possible, avoid using very sharp-edged tools.

**Handling**
Always wear cotton gloves or equivalent to avoid scratching or fingerprints during handling of the light sheet. Avoid spillages or airborne contamination.

**Protective Film**
Remove the clear protective film covering the light sheet before installing it into the display.

**Attaching graphics/art-work**
Do not glue graphics/art-work directly to the front surface of the light sheet. Graphics/art-work is usually attached to a separate clear or opal panel, alternatively held in a frame and mounted in front of the light sheet.

**Product Inspection**
Ensure that the light sheet works properly before assembling it by connecting it to the transformer provided and then to a power supply.

**Cleaning**
When you find fingerprints or other contamination on the light sheet, gently wipe the surface with a non-abrasive cloth soaked in a watered down vinegar based cleaning liquid e.g. Mr Muscle all-purpose cleaner. Do not use alcohol-based solutions.

**Packing, transporting and storing your light sheet**
Do not bend, flex or drop the LED light sheet, as it can damage the LEDs and/or soldered joints. Avoid bending the 3mm thick flexible light sheet too often. Protect the surface at all times with an anti-scratch protective film. Support, move and store the light sheet by laying it on a clean, flat substrate.

If the light sheet exceeds 1 meter in any dimension it should be packed separately for transport or storing - use plywood or equivalent of the same or larger dimensions to support the item and prevent bending. We advise that you pack larger quantities of light sheets in a wooden case.

Our standard product is NOT waterproof. Do not store these light sheets in water or high humidity areas, they can be damaged by moisture or water ingress.

To reduce this effect leave adequate space between the LG and the graphic/art-work in planning your design, or alternatively use a diffusing sheet. Please ask our technical staff for more details.

**Note:** Alterations or modifications carried out on the light sheet without authorisation will invalidate the warranty, as will incorrect application of the light sheet.

---

**DUST, IMPACT AND WATERPROOF LED LIGHT SHEET**

In many applications, light sheet need to be resistant to damage from dust, impact and water ingress. Addlux LED light sheet are made to IP20 and are suitable for indoor use only. Waterproof light sheet, rated IP67, are suitable for outside use or in wet environments.

**IP20 Rated Light Sheet**

- **Impact Protection**: Rated at 1mm³ maximum impact.
- **Dust Protection**: Rated against dust intrusion.
- **Water Protection**: Rated against limited ingress permitted.

**IP67 Rated Light Sheet**

- **Impact Protection**: Rated at 1mm³ maximum impact.
- **Dust Protection**: Rated against dust intrusion.
- **Water Protection**: Rated against immersion in liquids up to 1m in depth for a maximum time of 30 minutes.

**Non Structural Use**

Addlux light sheet should NOT be used as a load-bearing structural component in your design. They should be installed into a load-bearing structural component in your enquiry.

**Attaching Graphics/Art-Work**

Our standard product is NOT waterproof. Do not store these light sheets in water or high humidity areas, they can be damaged by moisture or water ingress. Our standard product is NOT waterproof. Do not store these light sheets in water or high humidity areas, they can be damaged by moisture or water ingress.

**Opening the delivery**
Take care when opening the packaging. Wherever possible, avoid using very sharp-edged tools.

**Handling**
Always wear cotton gloves or equivalent to avoid scratching or fingerprints during handling of the light sheet. Avoid spillages or airborne contamination.

**Protective Film**
Remove the clear protective film covering the light sheet before installing it into the display.

**Attaching graphics/art-work**
Do not glue graphics/art-work directly to the front surface of the light sheet. Graphics/art-work is usually attached to a separate clear or opal panel, alternatively held in a frame and mounted in front of the light sheet.

**Product Inspection**
Ensure that the light sheet works properly before assembling it by connecting it to the transformer provided and then to a power supply.

**Cleaning**
When you find fingerprints or other contamination on the light sheet, gently wipe the surface with a non-abrasive cloth soaked in a watered down vinegar based cleaning liquid e.g. Mr Muscle all-purpose cleaner. Do not use alcohol-based solutions.

**Packing, transporting and storing your light sheet**
Do not bend, flex or drop the LED light sheet, as it can damage the LEDs and/or soldered joints. Avoid bending the 3mm thick flexible light sheet too often. Protect the surface at all times with an anti-scratch protective film. Support, move and store the light sheet by laying it on a clean, flat substrate.

If the light sheet exceeds 1 meter in any dimension it should be packed separately for transport or storing - use plywood or equivalent of the same or larger dimensions to support the item and prevent bending. We advise that you pack larger quantities of light sheets in a wooden case.

Our standard product is NOT waterproof. Do not store these light sheets anywhere where they will be exposed to high humidity, or to dripping, splashing and sprayed liquids and rain. If this is likely, please order our IP67-rated waterproof light sheet version.

**Caution**
Please DO NOT under any circumstances:
- disassemble the light sheet
- connect an AC power supply directly to the light sheet
- connect an incorrect DC power transformer
- pull on the power cable
- glue graphics directly to the surface of the acrylic LG
- use alcohol or any solvent for cleaning the light panel

---

**USER GUIDE**

**DATA SHEET**
PHONE
0333 800 1828

EMAIL
sales@addlux.com

ADDLUX LIMITED
1F, 30 London Road
Sawbridgeworth CM21 9JS
United Kingdom

All product names, logos, and brands are property of their respective owners. All company, product and service names used in this brochure are for identification purposes only. Use of these names, logos, and brands does not imply endorsement.