



# Rolling Stock Lighting Systems



Rolling Stock LED Lighting & Electronic Solutions

# Contents

Rolling Stock Lighting Systems	1
Seat Electronics & Lighting Solutions	6
Electronics Design & Manufacture	8
Customer References	10

# Rolling Stock Lighting Systems

LPA Lighting Systems is a world leader in the design and manufacture of high reliability LED lighting and electronic systems for rail rolling stock.

LPA offers cost effective and energy efficient lighting solutions to improve reliability, reduce maintenance and life cycle costs for transportation applications across the world.

The LPA rail compliant product range includes T8 and T5 LED tubes, LED smart lighting, LED modules, LED luminaires, down lights, step lights, door status lights, reading lights, ambient lights, USB charging units and seat control systems.

LPA Lighting Systems products are used on LRVs, metro, suburban, regional and high-speed trains.

For the last 40 years LPA has developed a strong reputation for product innovation, high reliability and performance in the rail industry.

LPA is IRIS, ISO 9001 and ISO 14001 certified and part of the LPA Group Plc.

<b>LED Module</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Low power chip LED light engine</li> <li>▪ Flexibility of dimensions and shape</li> <li>▪ Built-in drive electronics</li> <li>▪ Logic or PWM dimming control</li> <li>▪ PWM colour temperature control available</li> <li>▪ 140,000 hours to L70B10</li> <li>▪ Colour Rendering Index (CRI) &gt; 85</li> </ul>	

<b>LED Gear Tray</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ LED modules mounted on an aluminium plate</li> <li>▪ Fully tested</li> <li>▪ Plug and play</li> </ul>	

<b>LED Luminaire - Direct &amp; Indirect</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Complete LED luminaire</li> <li>▪ W, RGW or RGB+W</li> <li>▪ Profile down to 20mm x 18mm</li> <li>▪ Includes aluminium profile, diffuser, LED modules and drive electronics</li> <li>▪ Up to IP65 rated</li> <li>▪ Dimmable</li> <li>▪ Colour temperature control</li> <li>▪ Can be interfaced with the LPA Smart Lighting Control Unit</li> </ul>	

<b>Door Status Luminaire</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Interior or exterior units available</li> <li>▪ Green, red, yellow or amber, and white colours supplied either as a complete luminaire or as LED modules</li> <li>▪ Flexibility on configuration and shape</li> <li>▪ Built-in drive electronics</li> </ul>	

<b>LED Tube</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Drop-in replacement LED tubes in T8, T5, 2G11 &amp; 2D</li> <li>▪ Fully compliant to rail standards</li> <li>▪ Adjustable end caps for LED tube orientation</li> <li>▪ Flicker free with instant start</li> <li>▪ High reliability LED and drive technology (110,000 hours MTBF)</li> <li>▪ 65,000 hours to L70</li> <li>▪ No mercury content</li> <li>▪ No UV emission (no yellowing effect of diffuser)</li> <li>▪ Colour rendering index &gt; 80 for a more pleasant passenger environment</li> <li>▪ 50% energy saving</li> </ul>	

<b>LED Tube Inverter Bypass Unit</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Allows the use of an LED tube replacement without wiring configuration changes</li> <li>▪ Replaces fluorescent inverter units to distribute the vehicle power to the LED tube power terminals</li> <li>▪ Suitable for UIC 555 and EN 50311 Annex D vertical faston blades enclosures</li> </ul>	

<b>LED Lamp Holder, Bracket &amp; Harness Kit</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ New lamp holders, bracket and harness kit</li> <li>▪ Ideal for when existing lamp holders become brittle after many years of service and may jeopardise the reliability of the new LED tube system</li> <li>▪ Different cable lengths are available to suit all lamp variants</li> </ul>	

<b>LED Power Supply Unit</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ AC and DC voltage input</li> <li>▪ Dimmable and non dimmable</li> <li>▪ Ultra, high reliability design</li> <li>▪ 40 years design life</li> </ul>	

<b>Smart Lighting Control Unit</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Addressable lighting controller</li> <li>▪ Fully compatible with the vehicle control system via Ethernet</li> <li>▪ Unlimited dimming and scene setting scenarios</li> <li>▪ Condition monitoring</li> <li>▪ Ambient light control</li> <li>▪ Colour temperature control</li> <li>▪ Future proofing of lighting modes and configuration</li> </ul>	

<b>LED Emergency Light</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Provides over three hours of emergency lighting in compliance with GM/RT 2130</li> <li>▪ High reliability battery-maintained unit (ELU) with intelligent power management</li> <li>▪ In-built self diagnostic facility with automatic fault reporting</li> <li>▪ Operating temperature -25°C to +55°C</li> <li>▪ Ultra, high reliability design</li> <li>▪ IP65 rated</li> </ul>	

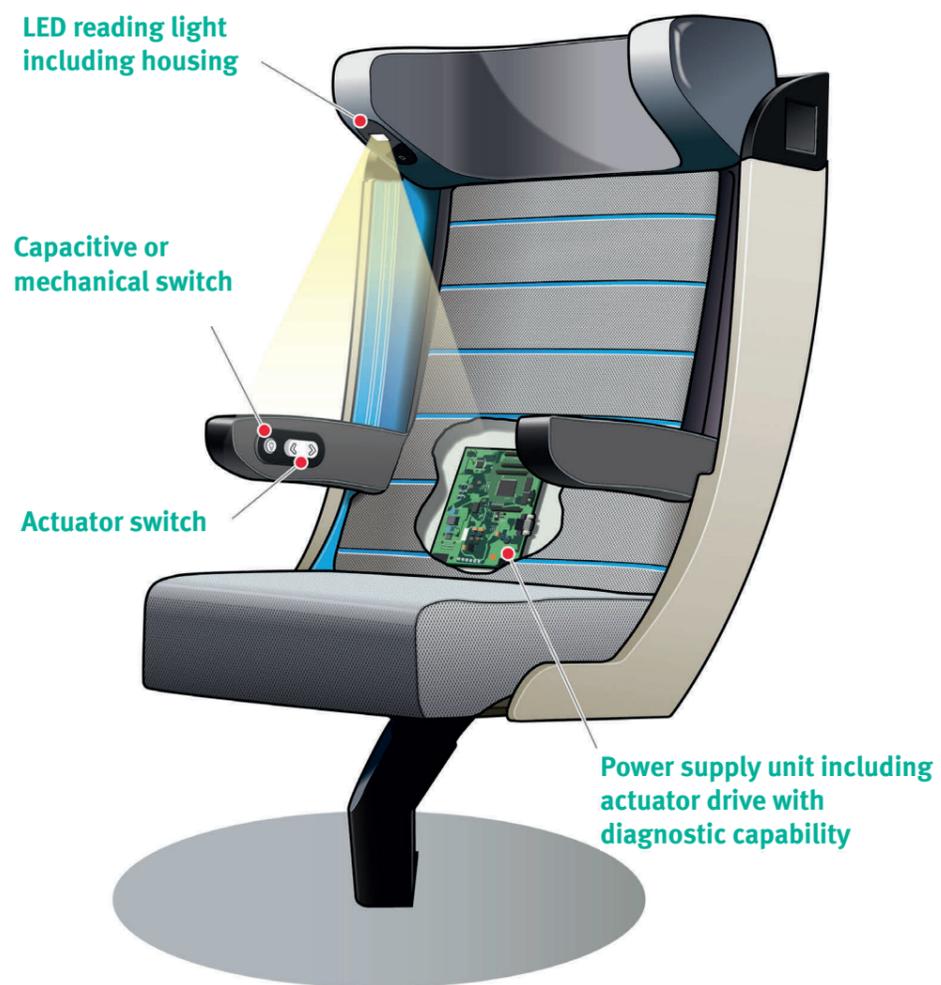
<b>Electronic ballast for Fluorescent Lamps</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Advanced electronic lamp drive incorporates true soft-start technology to prolong lamp life and reduce maintenance cost</li> <li>▪ High efficiency</li> <li>▪ Minimum 20,000 hours lamp life</li> <li>▪ Automatic shut-down and restart</li> </ul>	

<b>LED Flood &amp; Detrainment Light</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Flood light for rail track maintenance vehicle or detrainment door</li> <li>▪ AC and DC variants</li> <li>▪ Power LED light engine with multiple secondary optical options</li> </ul>	

<b>LED Step Light</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Low level threshold illumination</li> <li>▪ 24VDC or 110VDC</li> <li>▪ Built-in drive electronics</li> <li>▪ Connects direct to AC and DC power supply</li> <li>▪ IP65 rated</li> </ul>	

<b>LED Downlight</b>	
<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>▪ Built-in or remote drive electronics</li> <li>▪ Narrow, medium or wide beam angle</li> <li>▪ Single or triple LED spot</li> <li>▪ Choice of colour temperature</li> <li>▪ Front or back mounting arrangement/anti-vandalism</li> <li>▪ IP65 rated front face</li> </ul>	

# Seat Electronics & Lighting Solutions

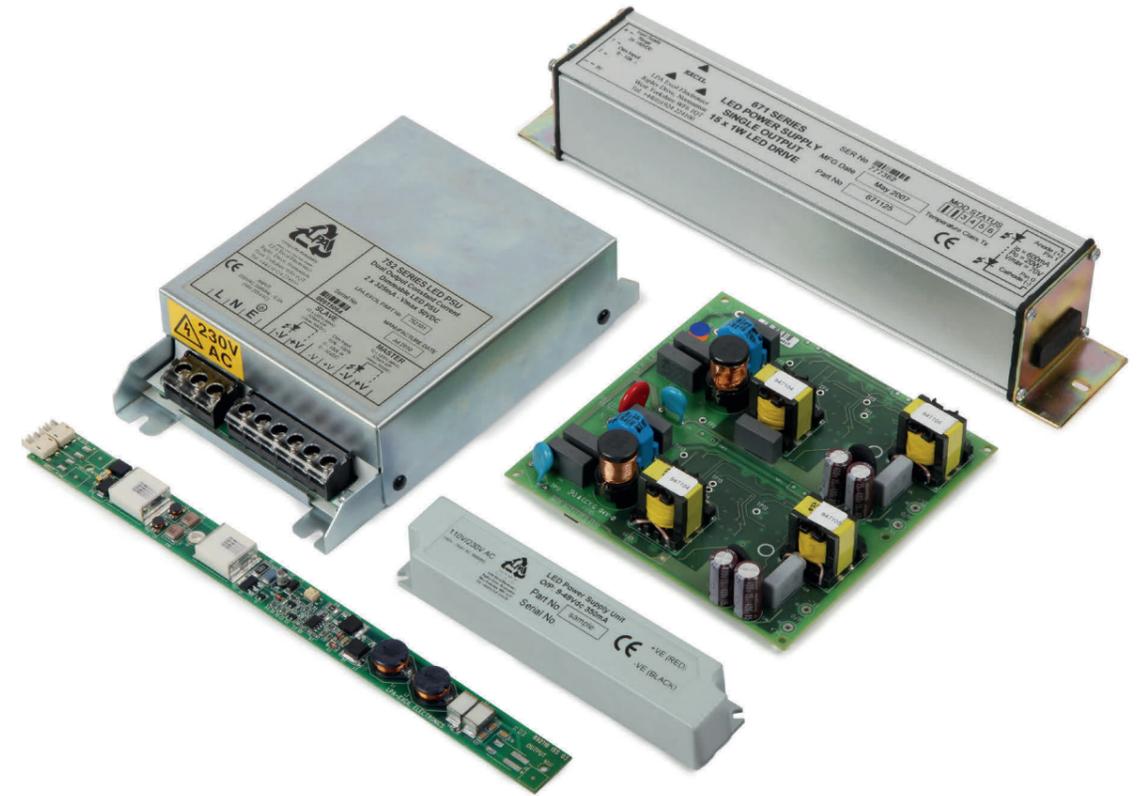
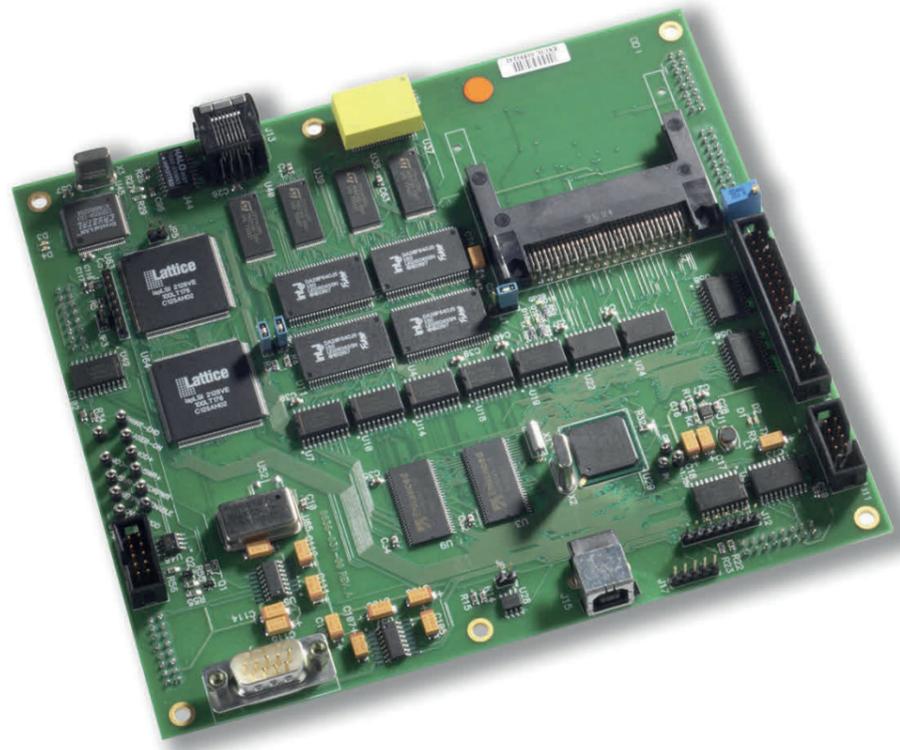


Complete seat electronics and light solutions for rail rolling stock

**Features:**

- Reading light, table light (with dimming function) and under seat / ambient light
- Power sockets and USB A or C
- Switches - capacitive or mechanical
- Power Supply Unit + drive electronics for the actuator
- Interconnection looms

# Electronics Design & Manufacture



LPA Lighting Systems offer a comprehensive electronic design service. From concept design through to finished product, and complete with all the necessary approvals.

LPA are able to offer a complete product design solution.

Electronics expertise in analogue and power electronics design, with extensive specialist knowledge in LED technology and mechanical design expertise.

We use design software for printed circuit board layout, 3D and 2D mechanical design and lighting illumination simulation.

A comprehensive knowledge of the appropriate standards and approval processes, in conjunction with high reliability design techniques ensures performance optimisation, full compliance and often unique design outcomes.

Our state of the art manufacturing facility supports a wide range of electronic, electrical and mechanical production requirements. Typical products manufactured include printed circuit boards, luminaires and electronics incorporated into enclosures or chassis.

Our electronics manufacturing facility is equipped with fully automated surface

mount assembly lines including screen printing of solder paste, automatic component pick and place, and seven zone reflow ovens. Conventional components are inserted using laser guided semi automated equipment.

The production test function is an extremely important phase of the manufacturing process and therefore, a combination of automatic test equipment (ATE), manufacturing defects analysis (MDA) and advanced optical inspection (AOI) are used to ensure a totally functional product which operates to the designed specification.

## Customer References

**ÖBB Railjet und Nightjet der neuen Generation**  
Siemens

**Location:** Austria  
**Timescale:** 2021-2023  
**Quantity:** Up to 700 cars  
**Scope of supply:** Complete lighting system including LED luminaires with RGB+W and smart lighting features, LED downlights and reading lights



**Merseyrail – Class 777**  
Stadler

**Location:** Liverpool – UK  
**Timescale:** 2019-2021  
**Quantity:** Up to 208 cars  
**Scope of supply:** Complete LED luminaires, door status lights, LED step lights and LED downlights




**DTUP**  
Siemens

**Location:** UK  
**Timescale:** 2022-2026  
**Quantity:** Up to 846 cars  
**Scope of supply:** Complete lighting system and external door status luminaire

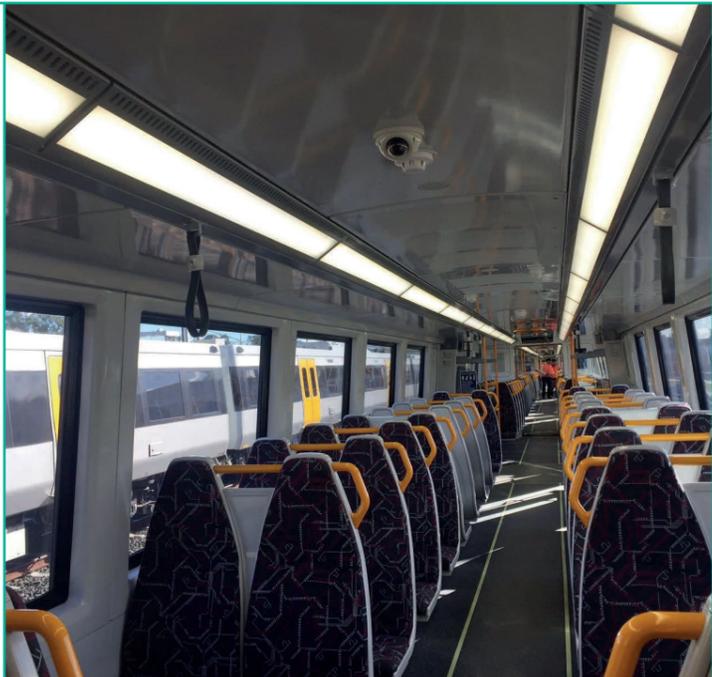


**Doha Metro – Qatar Rail**  
Kinki Sharyo

**Location:** Qatar  
**Timescale:** 2017-2019  
**Quantity:** 330 cars  
**Scope of supply:** Complete LED luminaires, LED step lights and LED downlights

**QNGR – Queensland New Generation Rolling Stock**  
**Bombardier Transportation**

**Location:** Australia  
**Timescale:** 2016-2019  
**Quantity:** 450 cars  
**Scope of supply:** LED gear tray, diffuser assembly, LED downlights and LED step lights



**3UFC – SNCF Double decker TGV Oceane**  
**Alstom**

**Location:** France  
**Timescale:** 2016-2018  
**Quantity:** 400 cars  
**Scope of supply:** LED reading lights, secretary lights, USB chargers and ambient lights



**Munich Metro – MVG**  
**Siemens**

**Location:** Germany  
**Timescale:** 2012-2014 & 2018-2019  
**Quantity:** 270 cars  
**Scope of supply:** LED modules and door status lights



**PP – SNCF Porteur Polyvalent**  
**Alstom**

**Location:** France  
**Timescale:** 2012-2019  
**Quantity:** 600+ cars  
**Scope of supply:** LED reading lights with touch sensitive switches



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