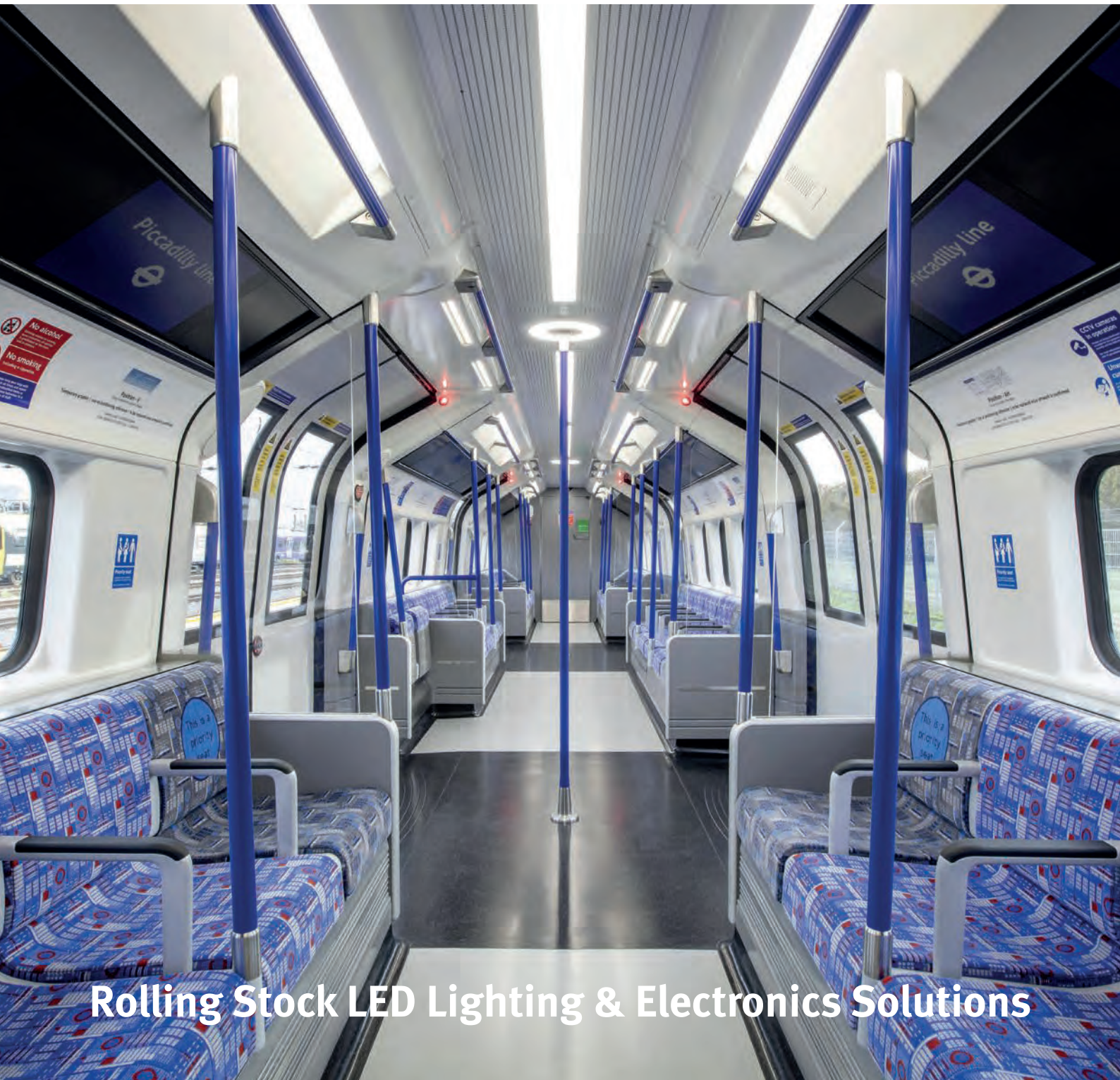




Rolling Stock Lighting Systems



Rolling Stock LED Lighting & Electronics Solutions

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Rolling Stock Lighting Systems

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

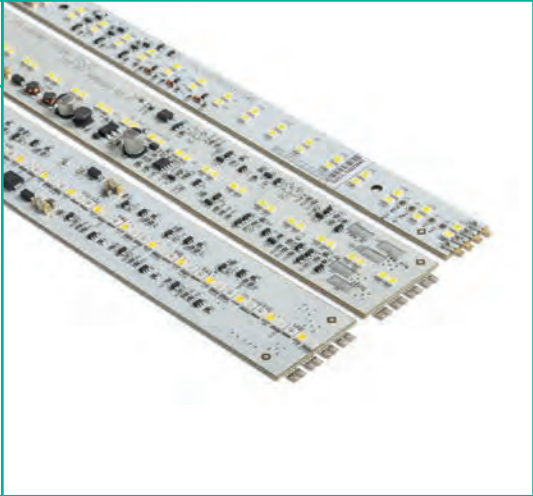
For the last 40 years LPA has developed a strong reputation for product innovation, high reliability and performance in the rail industry.

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

LED Module

Features:

- Low power chip LED light engine
- Flexibility of dimensions and shape
- Built-in drive electronics
- Logic or PWM dimming control
- PWM colour temperature control available
- 140,000 hours to L70B10
- Colour Rendering Index (CRI) > 85



LED Gear Tray

Features:

- LED modules mounted on an aluminium plate
- Fully tested
- Plug and play



LED Luminaire - Direct & Indirect

Features:


- Complete LED luminaire
- W, RGW or RGB+W
- Profile down to 20mm x 18mm
- Includes aluminium profile, diffuser, LED modules and drive electronics
- Up to IP65 rated
- Dimmable
- Colour temperature control
- Can be interfaced with the LPA Smart Lighting Control Unit



Door Status Luminaire

Features:

- Interior or exterior units available
- Green, red, yellow or amber, and white colours supplied either as a complete luminaire or as LED modules
- Flexibility on configuration and shape
- Built-in drive electronics



LED Tube

Features:


- Drop-in replacement LED tubes in T8, T5, 2G11 & 2D
- Fully compliant to rail standards
- Adjustable end caps for LED tube orientation
- Flicker free with instant start
- High reliability LED and drive technology (110,000 hours MTBF)
- 65,000 hours to L70
- No mercury content
- No UV emission (no yellowing effect of diffuser)
- Colour rendering index > 80 for a more pleasant passenger environment
- 50% energy saving



LED Tube Inverter Bypass Unit

Features:


- Allows the use of an LED tube replacement without wiring configuration changes
- Replaces fluorescent inverter units to distribute the vehicle power to the LED tube power terminals
- Suitable for UIC 555 and EN 50311 Annex D vertical faston blades enclosures



LED Lamp Holder, Bracket & Harness Kit

Features:


- New lamp holders, bracket and harness kit
- Ideal for when existing lamp holders become brittle after many years of service and may jeopardise the reliability of the new LED tube system
- Different cable lengths are available to suit all lamp variants




LED Power Supply Unit


Features:

- AC and DC voltage input
- Dimmable and non dimmable
- Ultra, high reliability design
- 40 years design life




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

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

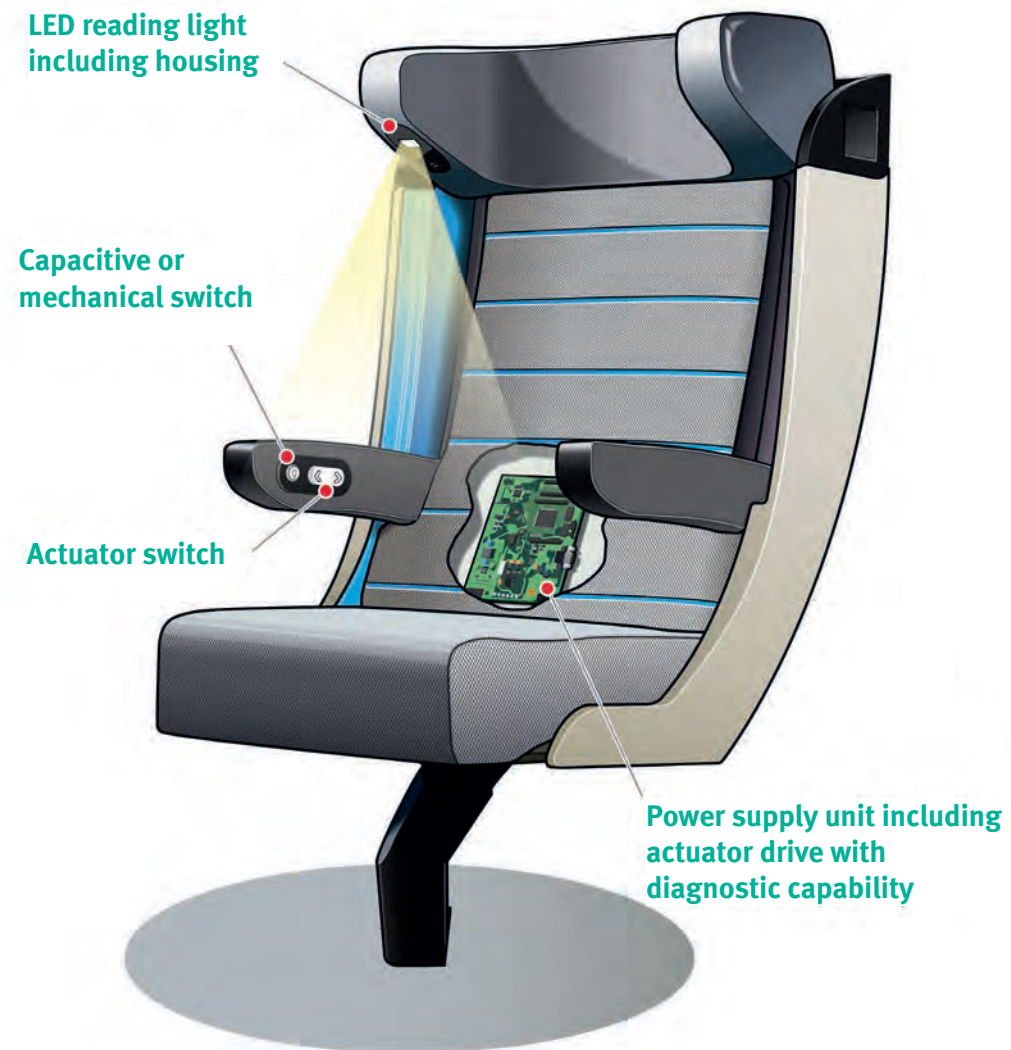
Electronic ballast for Fluorescent Lamps	
Features: <ul style="list-style-type: none">▪ Advanced electronic lamp drive incorporates true soft-start technology to prolong lamp life and reduce maintenance cost▪ High efficiency▪ Minimum 20,000 hours lamp life▪ Automatic shut-down and restart	

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

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

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

Seat Electronics & Lighting Solutions

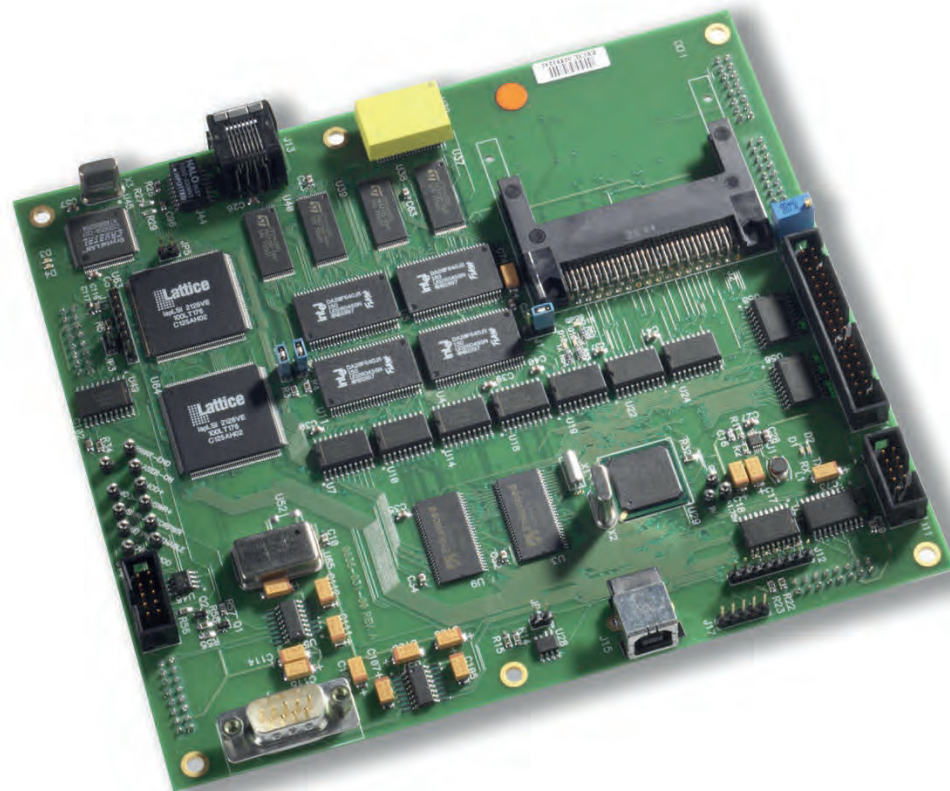


Complete seat electronics and light solutions for rail rolling stock

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 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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