

SCHURTER TrenoLux

Railway
Exterior & Interior
Lighting

Railway Technology at SCHURTER

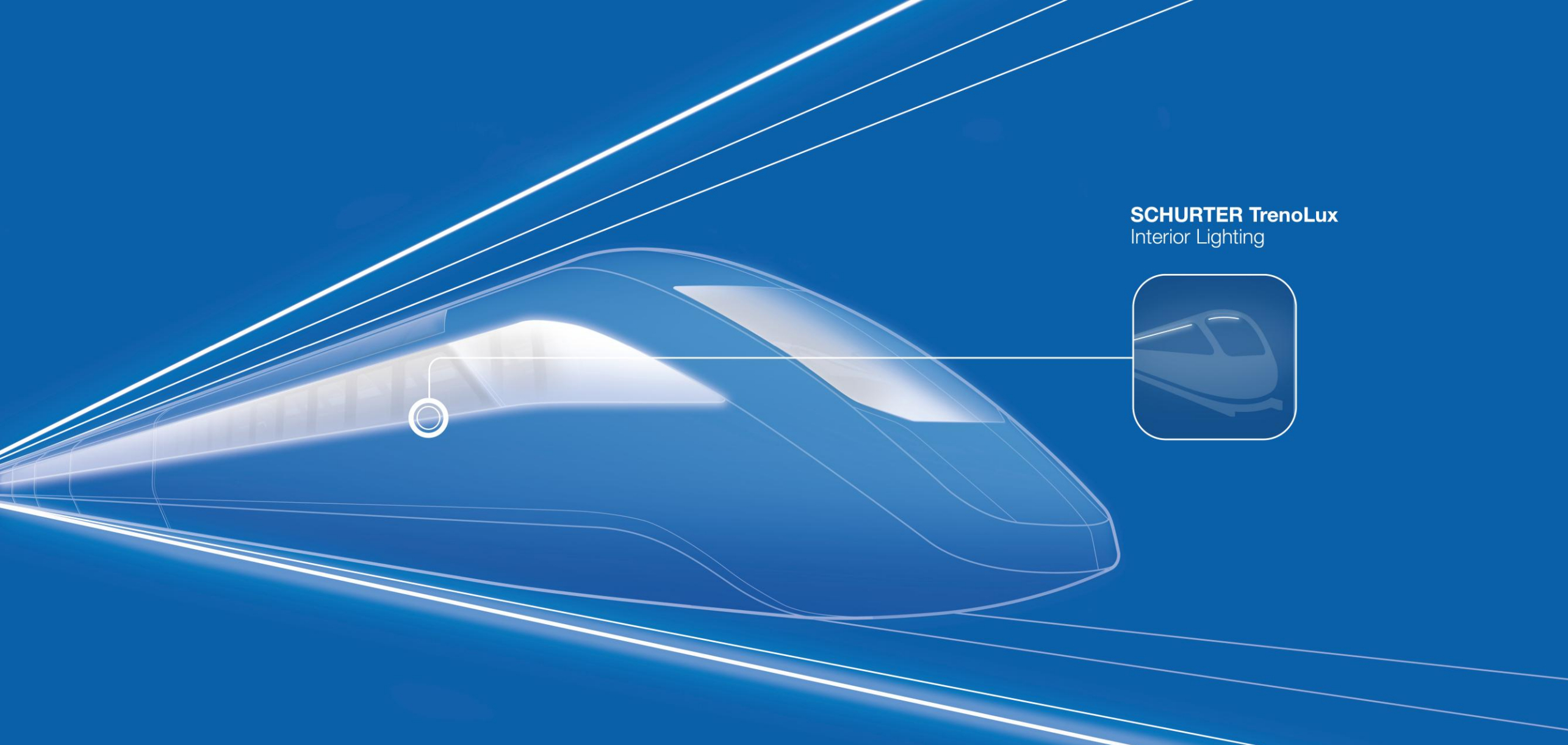
- > SCHURTER TrenoLux – Exterior & Interior Lighting for Railway Vehicles
 - > **SCHURTER Group:** Strong brand with global market presence
 - > **SCHURTER in Austria (Burisch):** Development – Prototyping – Certification – Sales – Project Management
 - > **SCHURTER in Hungary:** Production of TrenoLux exterior & interior light assemblies
 - > **SCHURTER in the US:** Sales & Project Management for US projects
 - > **SCHURTER in India:** Future production opportunities



Key Competencies

- > Engineering & Development
 - > Light Design & Light Simulation
 - > 3D CAD Engineering
 - > Circuit & Layout Development
 - > Software Development
 - > FE Analysis & Mechanical Simulation
 - > Lab for Prototyping
 - > Certification Light Measurement In-House
 - > Design to Cost
- > Production
 - > Digital & Smart Processes
 - > IRIS / TS22163 Silver Level
 - > EN17460 A1 (Bonding)



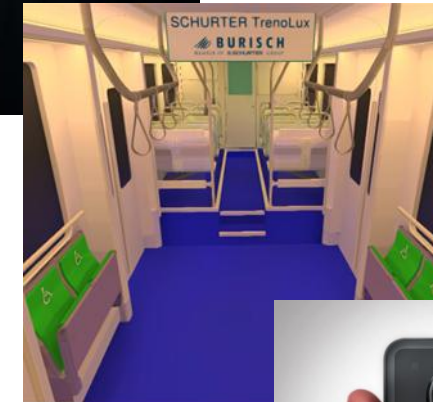
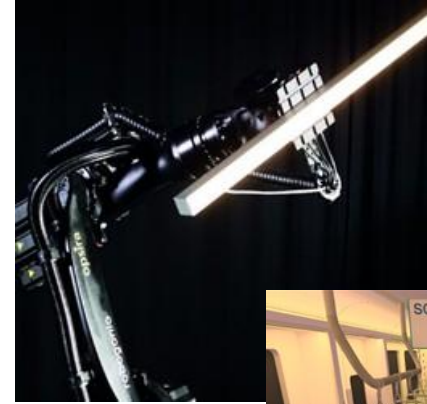


SCHURTER TrenoLux
Interior Lighting



Interior Light – Excellence

- > **Imagination:** We provide continuously updated 3D models & lighting simulations for every phase of the project.
- > **Verification:** In our own light lab we measure the solutions on prototypes and series samples to deliver reliable feedback to customer requirements.
- > **Certification:** We don't stop at delivery. During typetesting on your vehicle, we are creating light measurement reports to bring your project to final approval.

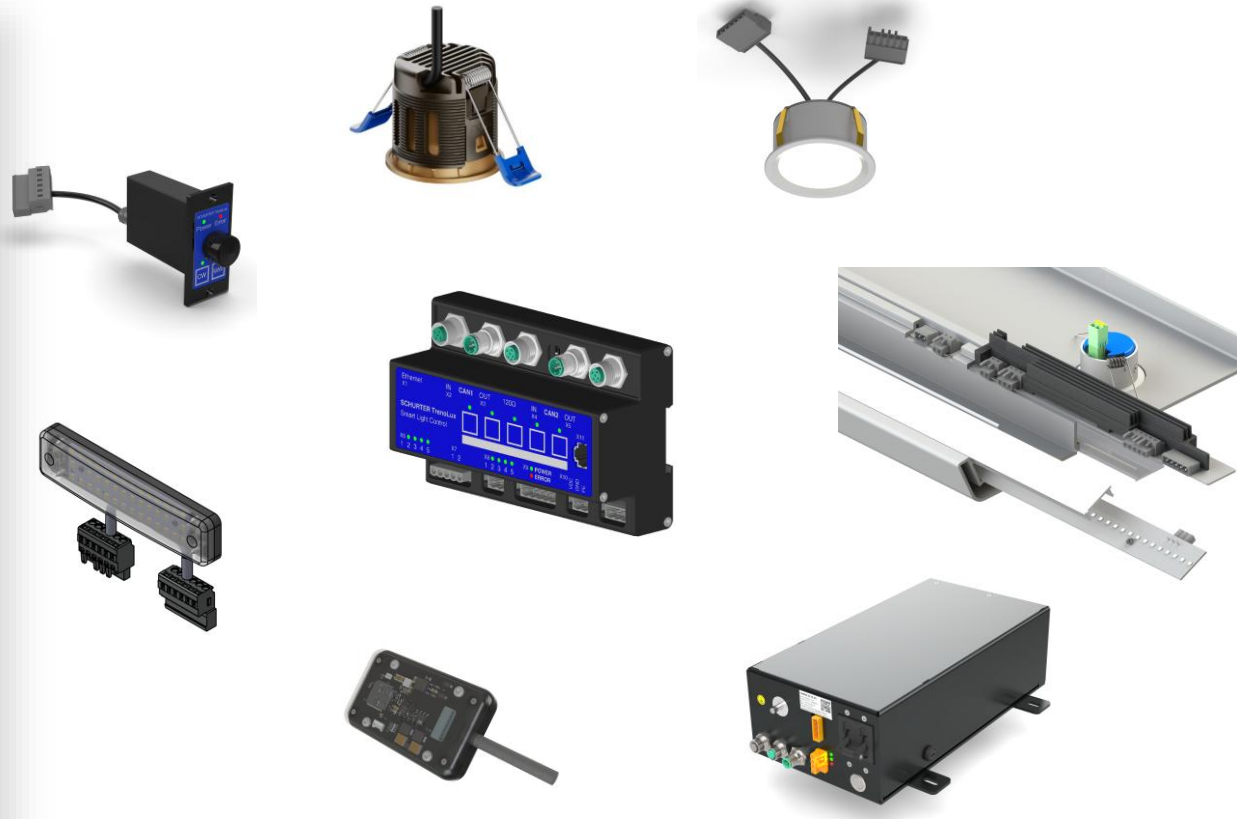


Interior Lighting – SMART Ecosystem

TrenoLux CAN Light Network

- > 24-110VDC
- > Dimmable
- > Tuneable White
- > Advanced monitoring
- > Highly customizable
- > High speed / online configuration & firmware updates
- > Real time events

CANopen®

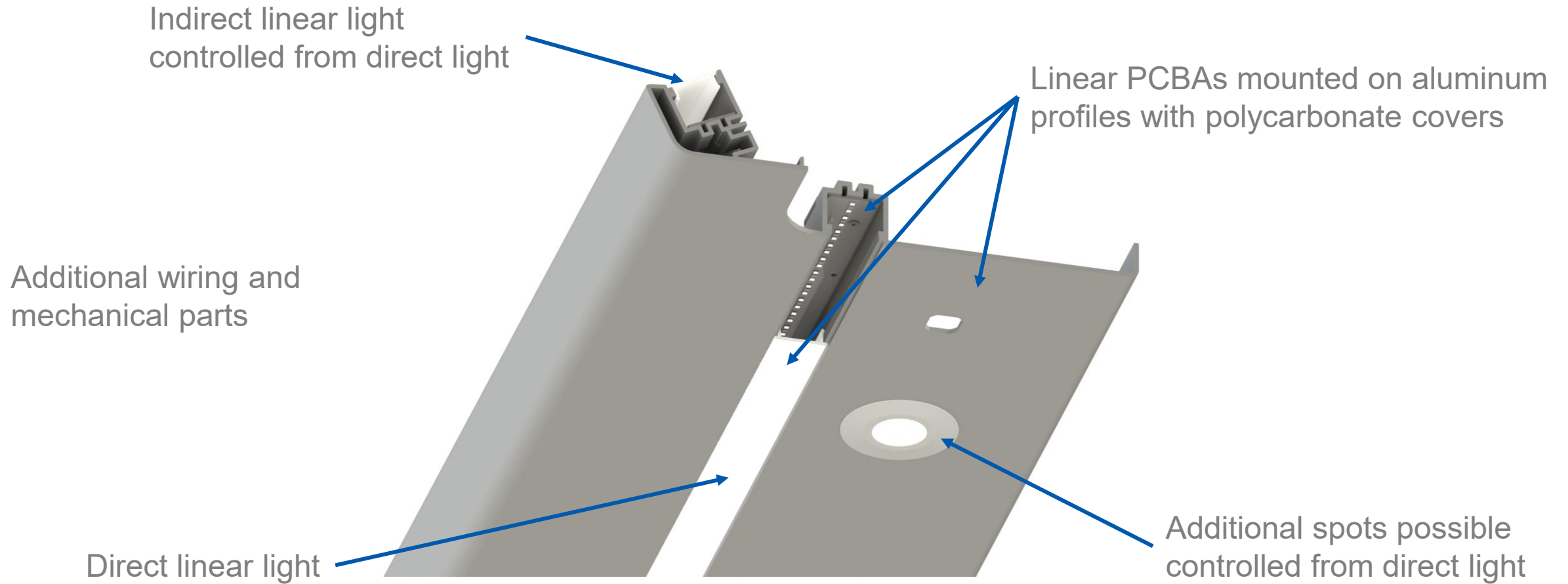


Digital Addressable Lighting Interface

- > 24-110VDC
- > Dimmable
- > Tuneable White (DT-08)
- > Interoperability with third party DALI modules
- > Simple communication according IEC 62386

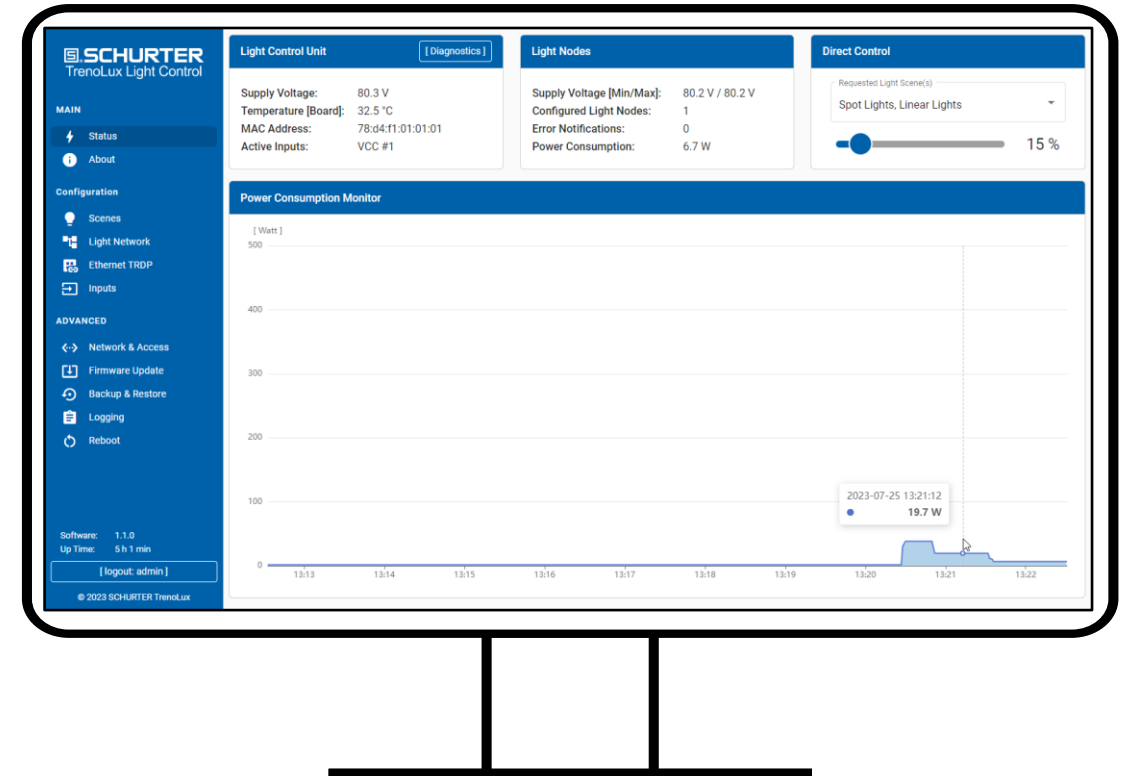
DALI®
Alliance

Customized Solutions



Light Control

- > Highly customizable & modular lighting system
- > Intuitive web-based configuration
- > Dual control
 - > Stand-alone and/or Ethernet TRDP
- > Individual light diagnostics
- > Event and error logging
- > Firmware updates & backup/restore



Interior Light – References



Stadler – Gornergratbahn

- Main passenger area illumination realized with spots
- Dimmable via CANopen (LCU)



ÖBB – Fleet Retrofit

- Retrofit solution for entire ÖBB fleet
- Modular system for fluorescent tube replacement
- 3 analog adjustable light channels



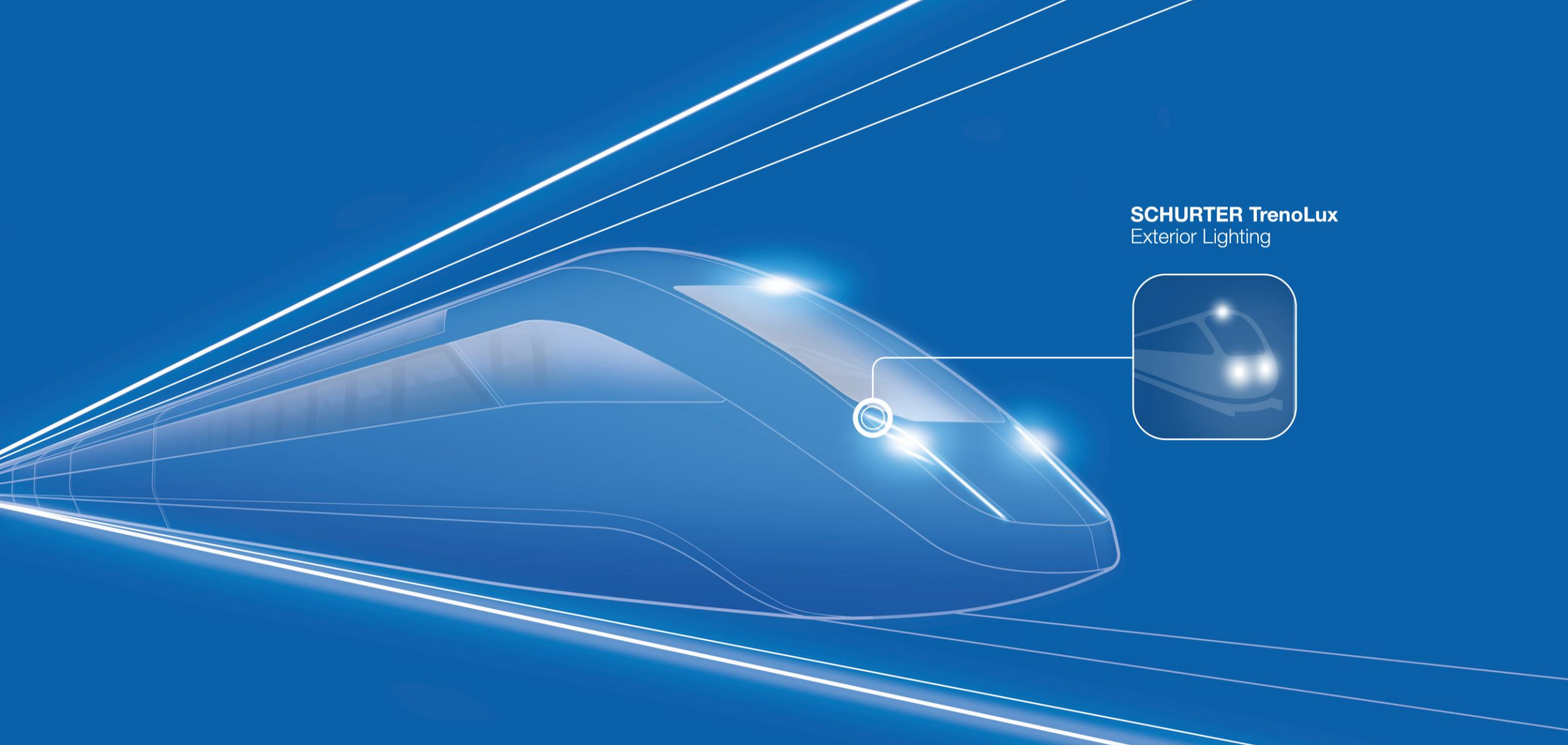
Stadler – SBB Evo FLIRT

- Main passenger area illumination realized with customized aluminium/PC profile
- Simple, discrete control from vehicle



Stadler – Tramtrain VDV

- Luminaires include profile, PC, RGBW and tuneable white
- Indirect & direct lighting
- Smart and digital configurable light scenes



SCHURTER TrenoLux
Exterior Lighting



Standard Products – TSI Modules



All-in-One Module
(mounting behind glass)

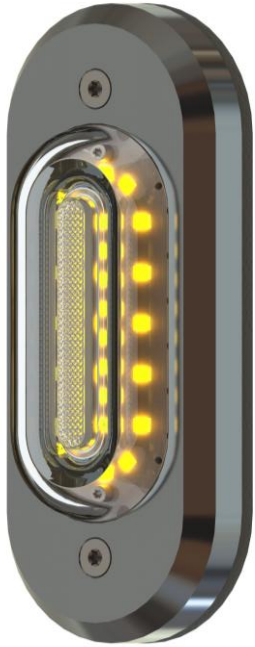


Marker + Taillight
(external mounting)



Rectangle All-in-One Module
(vehicle wall mounting)

Standard Products – UN-ECE for Trams and Environmental Lighting



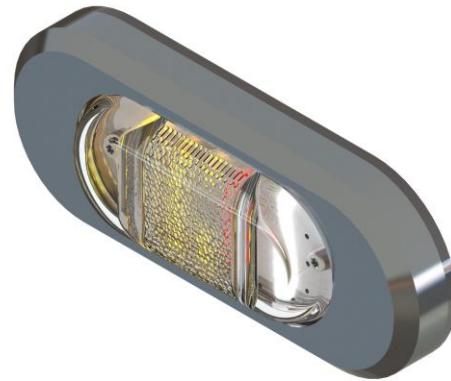
Lateral Side Blinker



Rear Fog Lamp red



Worklight



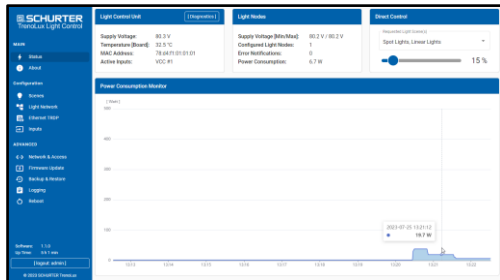
Side Blinker/Marker red & white



Universal Light

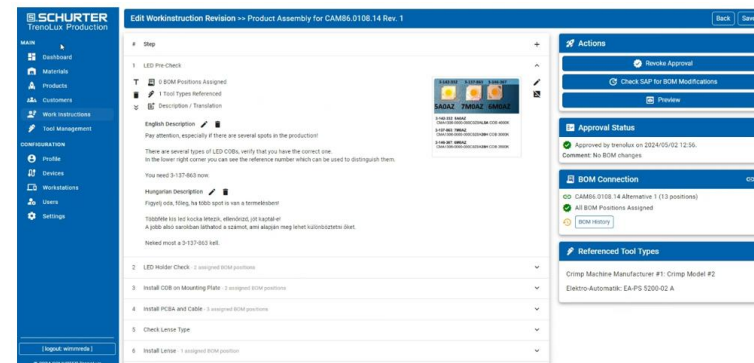
Customer Application / Lighting Systems

- > Modular Design: TrenoLux Core
- > Field Configuration: TrenoLux-A
- > Excellence for connectivity (Ethernet, CAN, ...)



Project Management & Production

- > SAP for every step of value creation
- > Digital & Agile production: TrenoLux-P
- > IRIS certified processes




> Product


- > TSI
- > Light: EN 15153 / EN 13272 / UN-ECE
- > Electronic: EN 50155
- > Shock & Vibration: EN 61373
- > EMC: EN 50121
- > Flammability: EN 45545 / NFPA 130
- > Bonding: EN17460 A1

> Quality

- > IRIS/TS22163
- > ISO 9001:2015
- > ISO 14001 / 45001
- > Deutsche Bahn Q1 Level



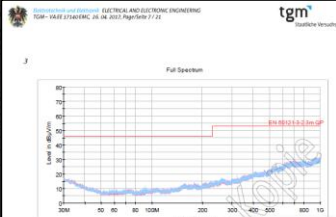
Notified Body Nr. 2250
TSD 001 Accredited Inspection Body



ARSENAL
RACE
RAILWAY CERTIFICATION

EC Type Examination Certificate
 Number: 2250/1/CE/2017/RS1/DEENP2017-720-02-V1.0
 In accordance with Directive 2006/57/EC of 17 June 2008 (as amended)


Interoperability Constituent	Head lamp
Applicant	LED-Signal 89 0026 11
Address	Burisch Elektronik Baselle GmbH Leopoldsdorferstrasse 29, 1210 Vienna, Austria
Assessment requirements	TSI LocPax 13022014EU, amended by regulation 2016/919EU in combination with those Harmonised Standards, Voluntary Standards (or parts thereof), other European or national rules authorised by TSI and Alternative Solutions as identified in the Type examination report chapter 1.4
Module applied	CB of decision 2010/713/EU
Assessment result	The Interoperability Constituent meets the assessment requirements. The assessment results and exempt details within the attached Type examination report have been assessed in accordance with the requirements of the relevant TSI only.
Restrictions	No restrictions.
Exemptions from assessment	The constituent was examined on its own.
Conditions for use	The following interfaces have to be tested in accordance with the requirements of the relevant TSI. The measurements have to be done in parallel to the type examination report.
Type examination report	P2017-720-01-V1.0 of 2017-04-07. This documentation is an integral part of the certificate.
Validity	valid until 2022-04-06. This certificate is valid for the named Interoperability Constituent in its entirety.



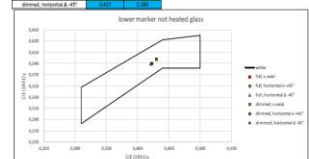
Full Spectrum



Full Spectrum



SCHURTER TrenoLux - LED-Licht						
color	pin	1	2	3	4	5
white	x	2.50	0.240	1.500	0.240	2.50
x	x	3.200	0.200	1.400	0.200	3.200



lower marker not heated glass




Table 2.1: general restriction - lower marker not heated glass (in accordance with EN 15153)

References Standard



References Standard Fitted



References Customized I



References Customized II



SCHURTER TrenoLux

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