



LET THERE BE INNOVATION.



Teknoware NXC Series
Light Control Units

 **TEKNOWARE[®]**

The image shows the interior of a modern high-speed train car. The seats are blue with a white dot pattern and have silver handrails. The ceiling is white with recessed lighting. A digital display at the front of the car shows "ICE 802" and "Hamburg-Altona". The train is moving, as indicated by the blurred background.

The future is now

The evolution of rail travel is moving at an ever-increasing speed – not just on the tracks but inside rail cars too. Teknoware now uses ethernet connectivity and the Internet of Things to deliver new levels of efficiency and cohesiveness in lighting solutions for all types of rolling stock.

Smart lighting for smoother travel

Your guide for new and vital innovations

As the global leader in rolling stock lighting solutions, We are the ideal partner to guide manufacturers and operators towards the future of experiential rail lighting. As well as creating a positive ambient environment for passengers, lighting can also help a train run as efficiently as possible, prevent overcrowding and make for a safer, smoother journey.

Greater efficiency and comfort with active lighting control

Active lighting control uses sensors to adjust the interior lighting of a vehicle according to external factors, such as daylight. This means that the LEDs are only used to the exact degree they are needed. This makes for a more comfortable journey for passengers and extends the lifecycle of the lights. The result? Reduced costs and increased efficiency.

Everything you need. Nothing more.

We get it – sometimes a straightforward solution works best. Our range of light control units cover end uses ranging from the pioneering passenger experiences found in high speed intercity rail, to smaller-scale ethernet-operated lighting systems for urban environments and I/O based connectivity for low-maintenance lighting setups, such as those needed in older train cars. Keeping in line with our promise, each unit is designed for optimal performance regardless of technical parameters. We work closely with you during every step of the process to ensure that the end result is exactly what you are after.

Retrofit without raising costs

When operators or manufacturers decide to refurbish old train cars, rising energy usage is often among the main concerns. New setups bring new opportunities – but something needs to power this added functionality. Fortunately, Teknoware's NXC's all have active lighting control which is designed to minimise power consumption.

WHICH NXC WORKS BEST FOR YOU?



Teknoware NXC Wide Intercity trains

- Linux system that covers wide range of control protocols
- Ethernet connectivity creates an opportunity to centralise lighting control throughout a train—or even a fleet
- Unique cybersecurity capabilities



Teknoware NXC Essential Trams, commuter trains

- I/O or Ethernet connectivity
- Wide range of customer-defined connectors
- Cybersecurity protection not available



Teknoware NXC Lite Retrofit lighting projects

- Active Lighting Control
- I/O control
- Local parameter and software updates

Teknoware NXC Wide

Leading the way in lighting control

A digitalised experience is increasingly synonymous with modern visions of comfort and security – especially when it comes to premium travel.

Right time, right tone

The Teknoware NXC Wide lighting control unit creates a seamless passenger experience while also improving core requirements such as safety and energy efficiency. LED lighting matches our natural circadian rhythm and can also incorporate other more playful capabilities such as programming RGB lighting to match the colours of a local sports team, or seasonal themes to fit major holidays. Lighting can even prevent potential overcrowding situations during rush hours, by directing passengers to less congested parts of the train.

A solution that works for you – no more or less

Such opportunities are just a few examples of the flexibility that ethernet lighting control can bring. Near-limitless configurability allows system engineers and operators to work closely with our in-house experts to devise a custom-built solution that meets exact requirements.

Light a fleet of trains in your two hands

The Teknoware NXC Wide operates on a comprehensive Linux-based system which allows operators to create a centralised solution that can be controlled from a single point. Our team will work closely with customers to integrate the unit with the necessary communication protocols. This is a new kind of light operation – bringing agility and efficiency that enhances the passenger experience and ensures a safer and smoother journey for all concerned.

Industry-leading cyber protection

The new possibilities opened up by the Internet of Things intensify an increasingly relevant threat to rail travel – a potential vulnerability to cyber criminals. Our cybersecurity capabilities deliver the three essential qualities needed with regards to data: Confidentiality, Integrity and Availability. Systems hardening, continuous vulnerability monitoring and security patching during operation give rail operators full confidence of running a safe and uninterrupted service with optimal protection.





Purpose-built lighting scenario editing tools

The multitude of possibilities presented by this light control unit are all controlled via a web browser. A sandbox function means that engineers and on-train staff are able to prepare for all possibilities and try out new things without having to worry about potential repercussions. Our staff can provide in-depth training which ensures all personnel know exactly what it takes to get the most out of the Teknoware NXC Wide at any given time.



IP protection for connectors available

The Teknoware NXC Wide comes in an anodised aluminium enclosure

FEATURES

- Premium product designed for flagship train experiences
- Designed to meet the most demanding requirements
- Advanced cybersecurity capabilities
- Capability to quickly and effectively control lighting settings across whole fleet
- Configure any lighting scenario with easy-to-use interface
- Advanced maintenance functions
- Option of controlling intelligent devices
- Active lighting control uses light sensors to maximise system's lifecycle
- Easily upgradable and comprehensive ethernet-based configuration software
- IP protection for connectors available
- Wide range of customer-defined connectors



Teknoware NXC Essential

Streamlined innovation for cities

The Teknoware NXC Essential applies pioneering technological innovation to smaller scale applications. It is a streamlined solution that is both advanced and innovative, but does not feature cybersecurity protection. This light control unit is also available as a carefully formulated lighting solution for urban tram networks.



Easy operability

An online webpage provides a wide range of maintenance tools and parameters that ensure smooth and agile operation. Lighting can be adjusted to fit any scenario that may arise.

Bespoke ethernet set up for trams

The Teknoware NXC Essential can be run using either a I/O connection for locally controlled vehicles, or via an ethernet connection. Ethernet connectivity provides a level of cohesiveness to interior lighting in the vehicle cars. For instance, large crowds on urban trams may benefit from guidance such as RGB lighting capabilities and crowd control while on short-scale journeys.

Technical data

- Many capabilities of the Teknoware NXC Wide in a smaller, streamlined package
- Configure lighting scenarios with easy-to-use interface
- Hybrid solution provides option of I/O control and advanced user interface and maintenance
- Easy full software and configuration upgradeable when using Ethernet
- Active lighting control uses light sensors to maximise lifecycle of lighting system

Teknoware NXC Lite

Reliability and speed

This is a high-performing and reliable I/O-connected light control unit for cases in which fast deployment and a practical lighting set up is required. Setup and installation is straightforward and affordable, while performance can be relied upon long into the future.



Active Lighting Control

An active lighting system automatically adjusts the interior lighting to match ambient conditions, using a smart lighting algorithm of LEDs which appears entirely natural to passengers.

Level up with minimal effort

In recent years, the capabilities of lighting systems have changed significantly. When modernising a decades-old train interior, the added demand for electricity can cause issues and drive up expenses. Reliable I/O connectivity, active lighting control and a streamlined setup ensure the Teknoware NXC Lite channels the power needed to light a train interior without placing an unnecessary burden on energy supplies.

Hassle-free setup and operation with Teknoware

The Teknoware NXC Lite is a versatile, low-maintenance solution that works well for retrofitting refurbishments and non-ethernet-based lighting installations. In short, it is the kind of out-of-sight-out-of-mind setup that will suit some projects well. When necessary, software or configuration updates can be carried out with the help of our technical service.



Technical data

- Excellent choice for applications calling for predefined-scene settings
- All the necessary parameters for shorter train and LRV setups
- Vehicle-level light control unit optimal for refurbishments and straight-forward solutions
- Easy and fast vehicle-level lighting changes
- I/O controllable uses predefined light scenes
- Active lighting control uses light sensors to maximise lifecycle of lighting system
- Robust design and streamlined settings ensure reliable and straightforward operation

Technical data, all series

	NXC WIDE	NXC ESSENTIAL	NXC LITE
Maximum lighting zones per car	12 / Unlimited	8	6
Input voltage range	24-110 VDC	24-110 VDC	24-110 VDC
Typical power consumption	10 W	8 W	5 W
IP protection	IP54*	IP20	IP20
Dimensions (L x W x H)	210 mm x 170 mm x 56 mm	206 mm x 120 mm x 40 mm	166 mm x 105 mm x 30 mm

* Other IP ratings on request

LET THERE BE CONFIDENCE.

People tend to take the presence of light for granted. We take it seriously. Our passion for finding the best interior solution or lighting for our customers' needs is the foundation which unites our three businesses. The Bus & Coach and Rail Divisions aim to increase our customer vehicles' comfort, safety and functionality. The Emergency Lighting Division is innovating new means and measures to improve the safety and usability of buildings and cruise ships.

Teknoware is your local partner. We employ over 500 experts in 8 countries, and our sales network serves customers in over 50 countries. Our head office and largest production facilities are located in Finland, and our other world-class production units are located in the UK, Malaysia, Poland and the US.

Teknoware is part of the Teknower Group.

Teknoware – Designed in Finland.