

Orchestrating a brighter world

NEC

NEC Display Solutions

The Future is Bright

Laser Projection Solutions

laser
light source



The Future is Bright

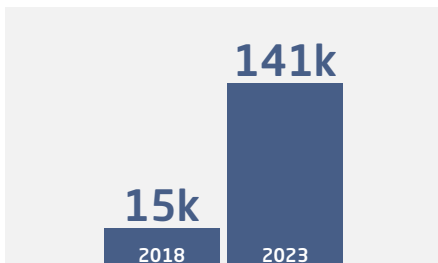
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Laser technology destined to become standard

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Attractive Total Cost of Ownership	5	Besides impressive visualisation, the key differentiator for laser compared to lamp based projectors is the long lasting maintenance-free operation time of typically between 20,000 and 30,000 hours which leads to a highly attractive Total Cost of Ownership (TCO) calculation.
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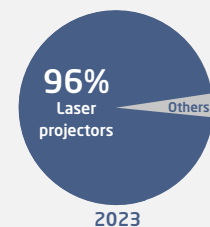
Laser Projectors 6,000-10,000 lm



With 75% annual growth rate (CAGR) in 2018 – 2023 the quickest growth segment in the projector market (excluding consumer projectors)*

70%
growth

70% market growth for laser installation projectors in 2018 (year over year)*



96% of the installation projectors will be based on laser in 2023*

“The University decided in early 2016 to invest in three new projectors for our largest lecture theatre. The room is used to teach up to 500 students per session and also hosts many events and conferences throughout the year. We appraised the marketplace looking for cost effective, high brightness DLP projectors which would require minimal demand for maintenance by our support team. Following demonstrations from several manufacturers we chose NEC’s PX803UL units as best fit for our requirements. So far, the projectors have been very well received by our academic team and are exceeding all of our expectations.”

Kev Sach, ICT Field Services Manager, University of Hull.

* Source: Futuresource, EMEA, laser installation projectors 6,000 – 10,000 lumen

Revolutionised Projection

Laser technology has changed projection in many different areas

Why is laser projection of benefit to your business?

- Long life performance – quality is only as good as the weakest link; all NEC projector components are specially designed to support the long lifetime operation advantage of the laser light source
- Limitless versatility - versatile projection characteristics like free-tilt and portrait installation and unique geometric adjustment allow for simple positioning of the projector, making installation easy and potentially saving set up costs
- Cost Saving Device Management – save effort whilst administrating all connected NEC projectors from a centralised location with the NaViSet Administrator 2 software tool
- Impress with visualisation - from vivid colours to Adobe RGB and Rec. 2020; NEC masters colour processing technologies to demand attention for your business
- Save your resources - laser light source makes lamp replacement obsolete whilst the filter-free design reduces maintenance efforts to a minimum
- Worry free – NEC's extensive line up of Risk Group 2 projectors require no special safety precautions during installation and operation



Laser projection installation on NEC booth at ISE

The Laser Arenas

Laser has established itself

Especially for the **large venue** sector, NEC offers a huge range of laser projectors, covering almost any brightness level and screen size. Looking more closely at vertical application scenarios; even where specific needs differ, all requirements can be perfectly addressed with laser projection.

Higher education requires a virtually maintenance free environment. With a Quick Start feature providing almost instant power up and shut down, classes or lectures can commence immediately. Eliminating the need for lamp changes lowers maintenance costs whilst providing piece of mind, ensuring no interruption to the professor's presentation.



P502HL Laser projector installed across teaching areas at the University of Bath, United Kingdom

Boardroom and large meeting room projection demands accurate colours and detailed scrutiny of critical information such as company profiles, financial figures and business presentations. Showcasing your message in the best light nurtures productivity and efficiency.

For effective **Digital Signage**, content must demand attention. Capture your audience with brilliant colours and an unrestricted layout pattern. High availability and minimum downtime of the projection system ensures revenue streams remain supported.



PX803UL Laser projector installed at the Blank Hotel in Milano, Italy

Rental and Staging houses need state of the art products for reliable performance in large arenas and auditoriums. Laser projectors offer a longer lifecycle compared to traditional lamp-based systems and there is no need to carry extra lamps to events, minimizing shipping costs. Furthermore, with multiple laser diodes there is no risk of failure which can be a cause for concern with lamp based projection. The projected image delivers presentation content whilst creating atmosphere and ambience, all requiring reliable, consistent and accurate colour rendition.

And **Digital Cinema**,* where laser illumination creates an extraordinarily bright picture, laser projection is especially appreciated for 3D movies.

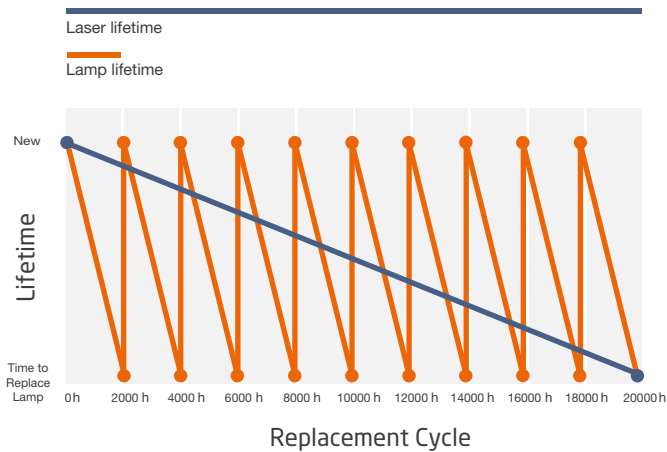
*For further information on cinema applications, visit www.digital-cinema-nec.com

Attractive Total Cost of Ownership

Laser has matured very quickly to a point at which it is now an easy-to-use working technology that quickly delivers a good return on investment

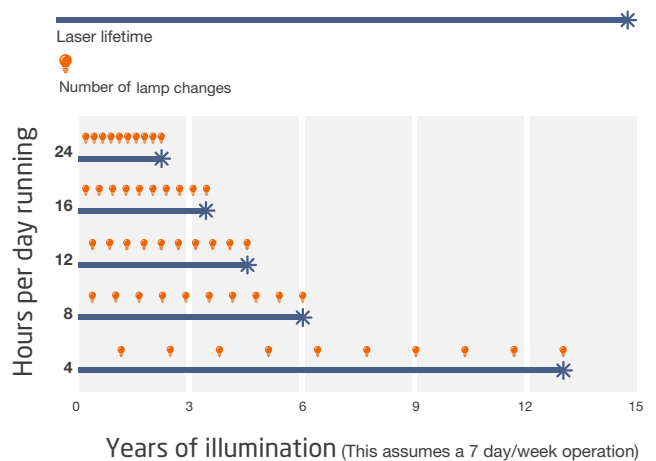
Constant colour and brightness rendition

The laser projectors' colour rendition and brightness change stays constant throughout the 20,000 hours of laser life.

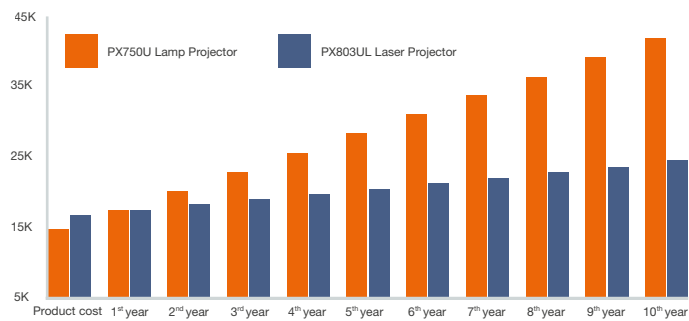


20,000 hours of illumination

20,000 hours of operation require 10x lamp replacement effort, while laser light source still remains unchanged.



Total Cost of Ownership (TCO)



Average cost savings in € throughout the life of a laser projector far outweighs that of a lamp projector

No lamp replacement effort

Cost saving of approximately 12,000 € within 20,000 h of operation

Based on the NEC PX803UL vs the NEC PX750U projectors



The Perfect Match



Choose the right projector for your needs

With a comprehensive range of projection technologies, NEC is well placed to recommend the best fit projection solution to perfectly meet our customers' needs.

	P525WL	P525UL / P605UL	PA653UL / PA803UL	PX803UL / PX1004UL	PX1005QL	PH1202HL	PH2601QL / PH3501QL	NC3540LS
Brightness & Resolution								
Brightness ANSI lumen	5,000	5,000 / 6,000	6,500 / 8,000	8,000 / 10,000	10,000	12,000	26,000 / 35,000	35,000
WXGA resolution	●	–	–	–	–	–	–	–
Full-HD	–	–	–	–	–	●	–	–
WUXGA	–	●	●	●	●	–	–	–
4K	–	–	–	–	–	–	●	●
4K ready	–	–	●	–	–	–	–	–
4K 30 Hz	●	●	–	–	–	–	–	–
4K 60 Hz	–	–	–	–	–	–	●	–
4KUHD 60 Hz	–	–	–	–	●	–	–	–
Usage Behaviour								
Standard	●	●	●	–	–	–	–	–
Heavy usage	–	–	–	●	●	●	●	●
Price Segment								
Standard	●	●	–	–	–	–	–	–
Price sensitive	–	–	●	–	–	–	–	–
Professional	–	–	–	●	●	–	●	–
Special	–	–	–	–	–	●	–	●
Special Characteristics								
Laser Risk Group	2	2	2	2	2	3	3	3
REC2020	–	–	–	–	–	–	–	●
OPS Slot	–	–	–	●	●	–	–	–
Filter-free design	●	●	●	●	●	–	–	–
Filter washable	–	–	–	–	–	●	●	●
20,000 h laser life	●	●	●	●	●	●	–	–
30,000 h laser life	–	–	–	–	–	–	●	●
Phosphor laser	●	●	●	●	●	●	–	–
RB laser	–	–	–	–	–	–	●	–
RGB laser	–	–	–	–	–	–	–	●
3 LCD	●	●	●	–	–	–	–	–
1-Chip DLP	–	–	–	●	●	–	–	–
3-Chip DLP	–	–	–	–	–	●	●	●
Projection screen size diagonal (up to)								
300"	●	●	● / –	–	–	–	–	–
500"	–	–	–	●	●	–	–	–
600"	–	–	– / ●	–	–	●	–	–
1,000"	–	–	–	–	–	–	●	–
32 m (screen width)	–	–	–	–	–	–	●	●

Impact on Your Business

How to benefit from the right laser Risk Group

Comparing projectors from different manufacturers, whilst they may provide the same light output and projection technology, with regard to the Risk Group category, some may demand significantly more effort during installation and operation than others.

Projector Risk Groups are regulated, among other things, by the International Electrotechnical Commission, IEC 62471-5:2015 standard. The standard regulates the light transmission inside and outside of the projector and covers the installation and the operation of projectors.

How does the Risk Group impact your business?

Part of this standard refers to the categorisation of different Risk Groups, based on the hardware design of the projector. Depending on the Risk Group category, end-users and system integrators may have to invest significant effort to meet relevant safety regulations during the installation and operation of the projector.

The information required for a correct projector installation and operation is listed in the user or installation manuals.

For **Risk Group 2** projectors - no out of the ordinary safety procedures are required.

For **Risk Group 3** projectors - important safety measures must be adhered to.

Here are some key extracts listed in the manuals:

- Risk Group 3 projectors are only allowed for professional usage.
- For projectors used in overhead installations, a 3m distance is recommended between the floor and the RG3 area. This area, also known as the hazardous distance in front of the projector, must be maintained to restrict entry.
- The end-user is responsible for compliance to the safety procedures.
- The administrator/supervisor must set up a barrier to restrict anyone from entering the RG3 area in front of the projector. This precaution ensures that nobody can look directly into the light beam.
- The integrator must request information from the projector supplier regarding the RG3 area.

How you can benefit from NEC laser projectors

Effortless operation of audio visual equipment is key, enabling you to focus on the operation of your business. The effort resulting from different Risk Group categories has a decisive influence on a projector's TCO calculation.

All the NEC laser projectors up to 10,000 ANSI lumen light output listed below are Risk Group 2 compliant. This means that there are no prescribed safety precautions necessary and therefore installation and operation requires less effort.

Manufacturer	Projector, Brightness	RISK GROUP 2
NEC	P525WL 5,000 lm	✓
	P525UL 5,000 lm	✓
	P605UL 6,000 lm	✓
	PA653UL 6,500 lm	✓
	PA803UL 8,000 lm	✓
	PX803UL 8,000 lm	✓
	PX1004UL 10,000 lm	✓
	PX1005QL 10,000 lm	✓

For further information, please take a look at the NEC Risk Group Whitepaper available via our web site www.nec-display-solutions.com



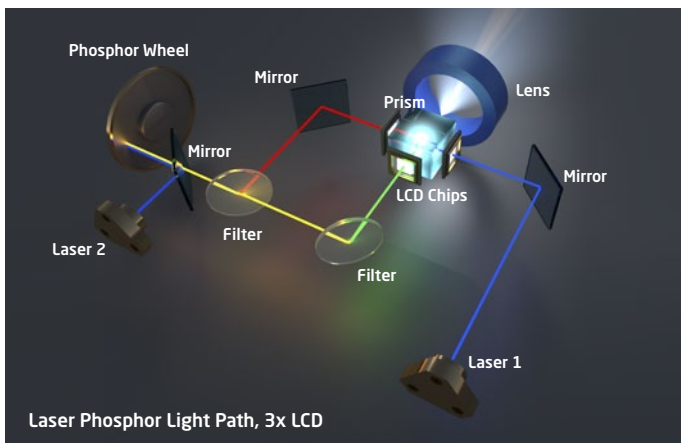
Which Technology is Right for You?

Laser Phosphor Light Source

Cost-effective Laser Phosphor projectors use an array of blue laser LEDs to create the blue colour in the final image, but another blue laser is also used to illuminate a yellow phosphor wheel, which emits the yellow light. This yellow light is then split by a filter into green and red light components.

3 LCD panel Technology

Blue laser based LCD projectors use three LCD panels to generate the red, green and blue picture part of the visualisation, leading to vivid colour representation.

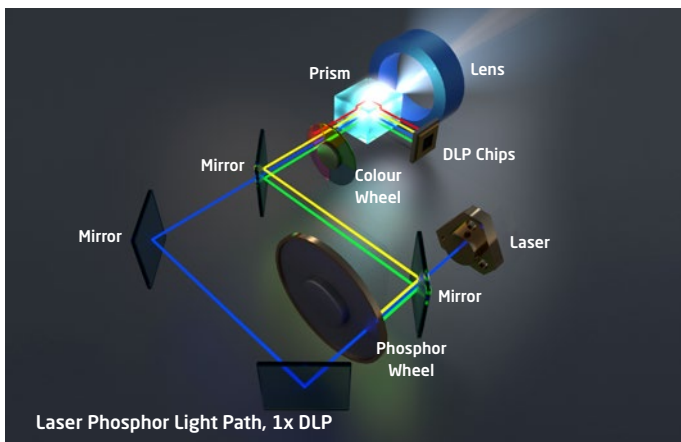


- Vivid colour representation
- High brightness
- Low projector weight

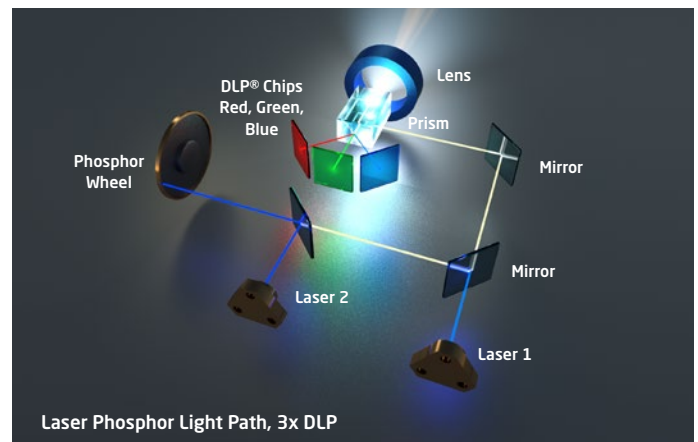
1 or 3-chip DLP Technology

Blue laser based DLP projectors use one or three micro-mirror-device engines (DLP chips).

- Single chip DLP plus colour wheel projectors generate the red, green and blue coloured parts of a picture step by step, providing natural colour representation.
- 3-chip DLP projectors generate the three coloured parts of a picture in parallel, generating improved colour representation and brightness uniformity.



- Natural colours and good brightness uniformity
- High brightness
- Excellent white reproduction
- Compact size

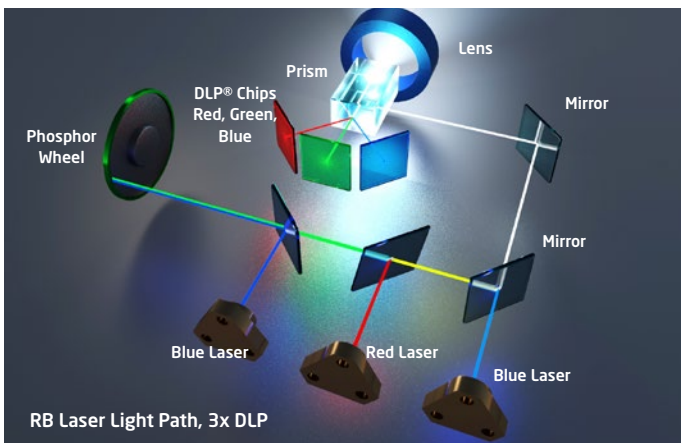


- Excellent colours and very good brightness uniformity
- High brightness
- DCI (Digital Cinema Initiative) compliant colour space

RB Laser Light Source with 3-chip DLP Technology

RB laser technology combines the advantages of brilliant colour reproduction with cost efficiency. In RB laser projection a blue laser is used to create the blue colour and a red laser is used to create the red colour in the final image. The green colour is generated by a green phosphor wheel emitting green light. Picture processing is realised with 3 chip DLP technology.

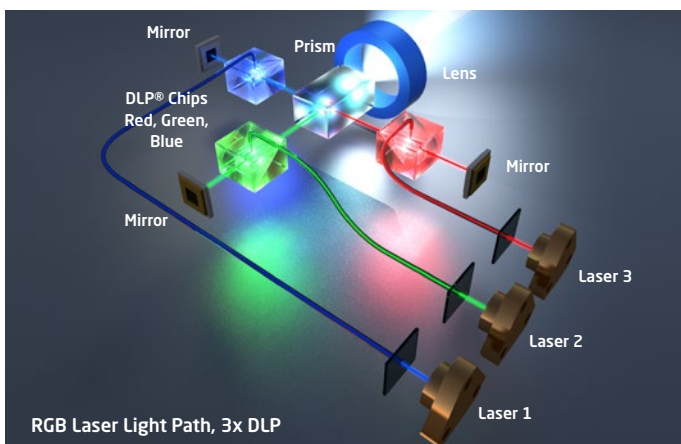
This technique allows very efficient light reproduction by avoiding optical filters resulting in more intense and more natural colours especially in the red colour segment plus a higher brightness output.



- Brilliant colours and brightness uniformity
- Higher brightness
- Lower power consumption
- High light efficiency
- Wider colour space

RGB Laser Light Source with 3-chip DLP Technology

RGB laser uses the so-called 'pure laser' technology. Red, green and blue lasers are delivered directly to the 3 DLP image chips. The product of this technique creates a light pipe consisting of absolutely pure light that is split into the three RGB components. The light is emitted in very narrow RGB bands with very distinct spectral frequencies. This technology allows the creation of a large colour space that easily exceeds even that of Adobe-RGB or DCI and can already cover the demanding Rec. 2020 colour space.



- Best colours and brightness uniformity
- Highest brightness
- Adobe-RGB, DCI compliant, Rec. 2020

The NEC Promise

How can NEC satisfy customers' needs?

NEC's added value to customers is the capability to provide an unbiased and comprehensive consultancy in the field of projection to perfectly address the needs of its customers.

Customer centric consultancy

- Mastering DLP and LCD laser projection technology in parallel
- Wide portfolio of laser technologies (Phosphor, RB and RGB)
- Widest spectrum of projectors

Save time & cost

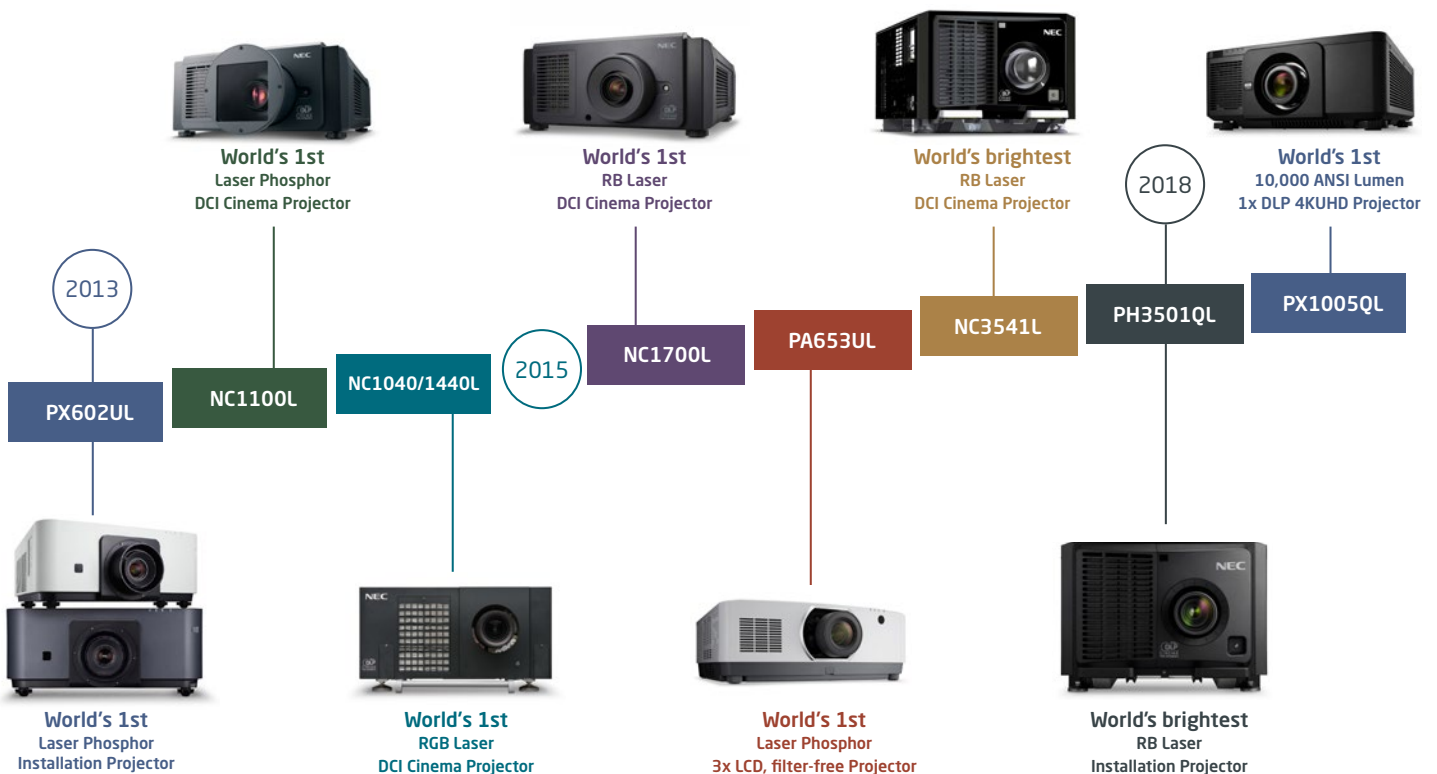
- Relaxed operation with Risk Group 2 classification for most projectors
- Filter-free optical laser light engine for all projection technologies to reduce maintenance effort

Reliable after sales support

- Proven product quality and long lifetime
- Long term product availability and spare part supply

The NEC expertise

NEC's long term laser expertise is proven in a track record of world's first laser implementations:



NEC Service Plus - Our commitment to quality

NEC has built a world-renowned reputation developing Display Solutions that offer the ultimate in quality, performance and longevity. We have become recognised for professional performance and our product philosophy has enabled NEC to become a leading name in the Finance, Transportation, Colour, Corporate, Healthcare, Retail, Education and Cinema sectors.

NEC Service Plus takes that philosophy further for the entire sales cycle from pre-sales through to the replacement phase. We take the guessing out of installing and managing a Display Solution inventory over a standard or extended lifecycle. Our customers can concentrate on their business activities, confident that their IT infrastructure is underwritten by the Service Plus promise.

- 5 years warranty extension
- Ad-hoc warranty extension
- 24/7 for selected displays and projectors
- De-/ Re-install service



Professional support for Global Accounts

NEC Display Solutions offers a network of regional service centres active on every continent. Experienced and highly qualified support staff provide professional support and technical expertise in your local language.

For further information, please see www.nec-display-solutions.com/support

You are not alone - Service Helpdesk

Professional support over the phone or via email, NEC's Service Helpdesks serve 51 countries within the EMEA region.



We make you fit for the future - NEC Training Academy

With the Training Academy, NEC Display Solutions builds up product intelligence for Channel Partners in order to increase the effectiveness and performance of their sales and technical support functions. NEC Display Solutions provides professional training sessions for Large Format Displays, Projectors, LED, Interactive Solutions and Hiperwall.

For further information, please visit www.solutionsplus.nec-display-solutions.com



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