

# nBox+

Advanced Feature Simulation Display Processor



nBox+™ is 3D perception's next-generation, real-time display processor that warps and blends raw Image Generator (IG) content and outputs to multiple projectors. Designed for flexibility, ease of use, and reliability, this solid-state rack-mountable hardware appliance seamlessly processes imagery for high-performance, immersive simulation display applications.



As a part of 3D perception's suite of Northstar™ simulation display technologies, nBox+ can be integrated with auto-alignment systems like WarpSync™ or StarScan™. It also supports 3rd-party alignment technologies and the uploading of warp and blend maps; or even fully manual configuration. Uniquely, nBox+ also supports a combination of methods whereby manual overlays can be reapplied on subsequent automatic alignments. The device can also be integrated with 3D perception's Eclipse™ dynamic optical blenders for image optimization at all times of day.

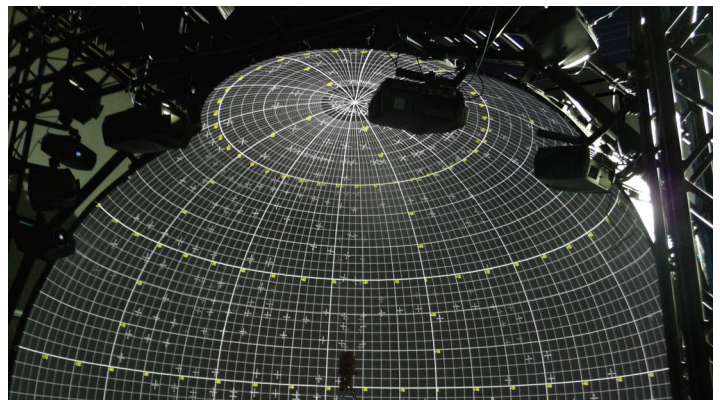
nBox+ can be integrated with head/eye trackers to supply a dynamic eyepoint which can reduce parallax and improve depth perception and fidelity - especially valuable in smaller domes. With this integration, nBox+ can also dynamically blank out unseen areas of a full dome screen to reduce reflection and optimize contrast.

nBox+ treats the multi-projector theater as one contiguous display — not as an array of individually controlled projectors. With no processing or integration dependencies on the user's IG, nBox+ allows for a clear projector upgrade path while keeping display infrastructure in place.

For more information on 3D perception and supportive Northstar technologies, visit [www.3d-perception.com/nbox](http://www.3d-perception.com/nbox).

## Key Features

- Multi-layer warp maps including auto-alignment, lens distortion correction, scaling, and optional manual overlays
- Multi-sided edge blending for complex screen geometry
- Dome and collimated displays, front and rear projection
- WQXGA, 4K, and 8K configurations
- Refresh rates up to 240 Hz
- Up to 6 DisplayPort channels per rack-mount unit
- Unlimited number of channels per system
- Image Generator and projector independence
- Hotspot & black level compensation
- 48-bit color processing, adjustment/correction
- Configurable EDID
- Zero frame latency
- Support for dynamic eyepoint and contrast
- Ideal for in-place tech refreshes and upgrades



## ADVANCED DISPLAY PROCESSING

Non-linear image warping via patented Digital Geometry Processor™  
Multi-sided edge blending  
Sub-frame latency (1-4 ms typical)  
Multi-sided masking  
Resolution conversion (up/down scaling)  
Analog to digital conversion  
Sync conversion  
Hotspot compensation  
Black level compensation  
Brightness uniformity correction and matching  
Stereo shutter glasses control  
16 bits per color processing (48 bits per pixel)  
Color adjustment/correction  
Signal analysis  
Support for IG pixel shift

## CONFIGURATIONS

2 & 3 ch	2560x1600	120 Hz
3, 4, 5, & 6 ch	4096x2400	60 Hz
2 & 3 ch	4096x2400	120 Hz
1 ch	7680x4320	60 Hz
1 ch	4096x2400	240 Hz

## INPUT FORMATS

DisplayPort 1.4

## OUTPUT FORMATS

DisplayPort 1.4

## INSTALLATION

Advanced test pattern generation based on 3D geometry  
Support for Eclipse™ dynamic optical blenders  
Configurable EDID files  
Support for manual auto-alignment overlays  
Advanced Scenario Management

## CONTROL

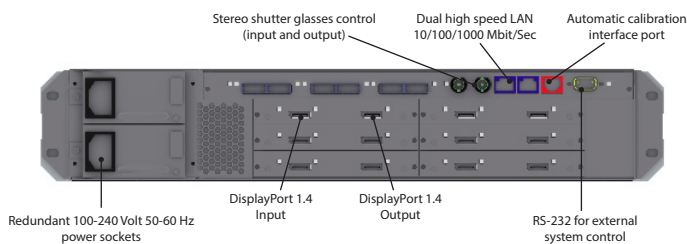
nControl™ user software interface for set up and management  
Support for Northstar auto-alignment (via WarpSync™ or StarScan™)  
Support for 3rd party auto-alignment & importing warp/blend maps  
Support for Northstar color auto-calibration (via ChromaSync™)  
Support for 3rd party color semi auto-calibration (via color meter)  
Active stereo shutter glasses control in 120Hz modes

## SYSTEM

Weight: 13.5 kg / 29.7 lbs  
Dimensions: 19" 2U form factor, 44 cm x 9 cm x 44 cm  
Power Requirements: 100V - 240V AC, 50 Hz - 60Hz  
Power Consumption: 250W  
Embedded 64-bit processor  
Real-time embedded operating system  
Meets US Government standards for Information Assurance  
Stackable for any size system installation  
Optical DVI extender output power  
Redundant power supplies  
Hot-swappable I/O cards

## I/O PORTS

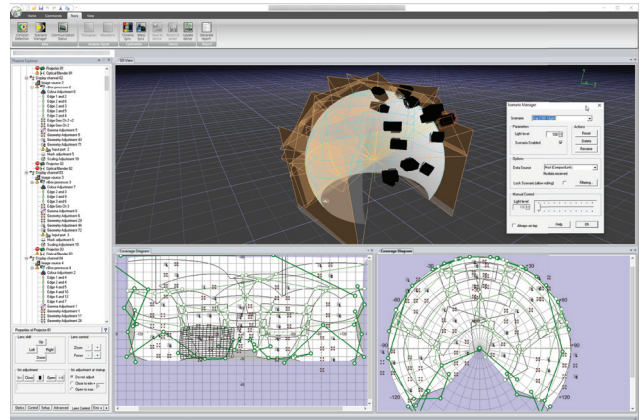
High-speed LAN 10/100/1000 MBits/Sec and additional diagnostic port  
Stereo shutter glasses control  
RS232 Port for external system control  
Automatic calibration interface port  
100-240 Volt, 50-60 Hz power socket  
3rd-party system controller interface



# nControl

## Display System Management Software

With the nBox+ intuitive interface software, nControl™, users are empowered to perform all configuration and adjustments necessary to create and maintain a seamless projected display. nControl is responsible for maintaining a consistently pixel-perfect image, and in concert with nBox+, performs geometry adjustment, edge blending, color and gamma correction.



## Key Features

- Centralized interface for integrated control of display system
- One-click power up/down and maintenance
- Save/load multiple scenario configurations – change eye-points, time of day tuning, account for differing obstructions
- Automate procedures which could otherwise take hours



## About 3D perception

3D perception designs and supplies seamless, immersive visual display systems and technologies for simulation applications. Serving worldwide defense and aerospace customers since 1997 with an international force of engineers, installers, project managers, and support staff, 3D perception ensures seamless focused performance.