projection**design**®

HIGH PERFORMANCE PROJECTORS

professional projector series

FL32 series

Failsafe ReaLED™ technology

Predictable TCO

Unmatched colour performance

24/7 operation warranty

REALED

DLP
TEXAS INSTRUMENTS
PICTURE BY

Pro**Net**
COMPATIBLE

projectiondesign®

HIGH PERFORMANCE PROJECTORS

professional projector series

The projectiondesign professional series of projectors includes high resolution, high performance products conceived and built especially for graphically challenging appllications such as scientific visualisation, motion platform simulation, medical imaging, and public displays.

As our utmost concern is image quality and operational reliability, all professional series projectors are available with 24/7 operation warranties, and a wide range of configuration options to ensure the best possible application fit and customer satisfaction.

FL32 series

The FL32 is the first completely customisable professional front projector based on LED lighting and high resolution DLP® imaging technologies. projectiondesign's ReaLED™ technology provides unmatched predictability. With an incredible 100,000 hours uninterrupted light output, extremely low power consumption, no required recalibration or adjustments, and no lamp changes – it is the ultimate in reliability and low Total Cost of Ownership

What is ReaLED™?

LED (Light Emitting Diode) lighting technology has been around for many years in all sorts of electronics and appliances. The main reason for this is its unique combination of reliability, low power consumption, and application adaptability. ReaLED is projectiondesign's implementation of high power LED lights; one per Red, Green, and Blue colour, and paired with our unique, patented optical design. This combination results in a large range of features that benefits the user in every possible way.
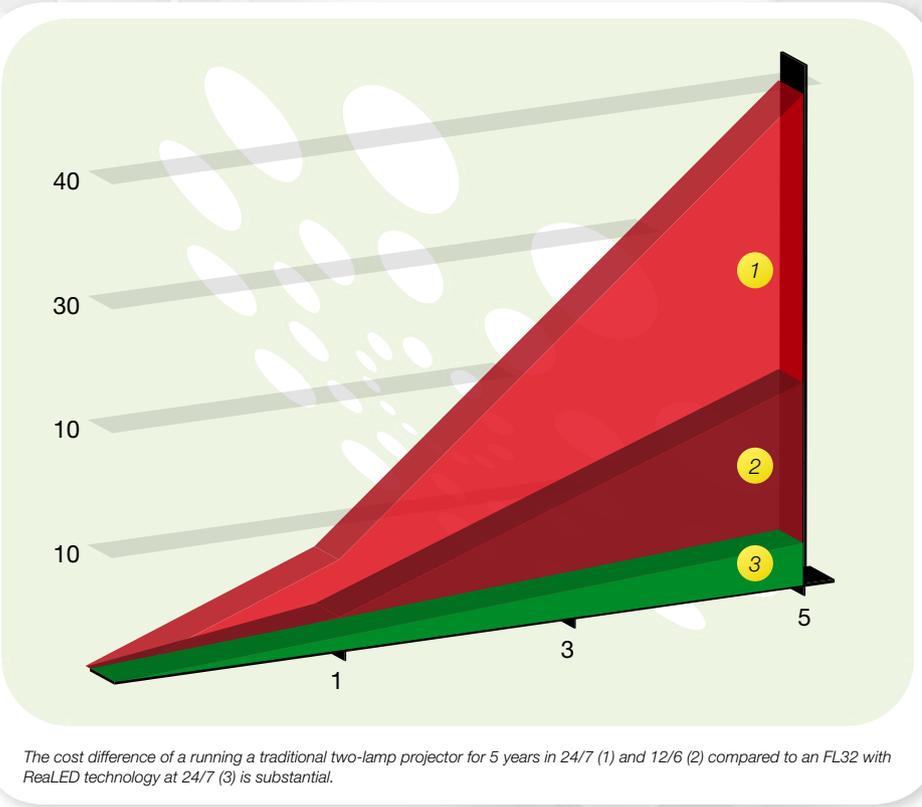
Predictable Total Cost of Ownership

Mission critical installations and applications are everywhere. From process control and infrastructure and utilities monitoring, through safety and defence applications, projectors are expected to run 24/7 year after year. The FL32 series is designed to do this effortlessly, and unlike traditional discharge lamp based projectors, the FL32 does not require periodic lamp replacements, and can be run for years with only the most basic maintenance. Additionally, with its low power consumption, operating and owning costs become extremely low, and totally predictable. In fact, every single FL32 series projectors comes with a standard two-year 24/7 warranty which can be extended up to five years.

Projectors used in multichannel simulators and vizualisation systems are suceptible to periodic maintenance and calibration to be performing well. Images courtesy of Air Force Research Lab (AFRL) Mesa, AZ, USA.

Real benefits from ReaLED technology

ReaLED technology addresses numerous performance aspects with traditional lamp based systems. Lamps change performance characteristics as they go through their usable lamp life by changing colour temperature, reducing their light output, and becoming more likely to experience premature shut off. ReaLED stays completely stable over its entire life time, maintaining consistent light output and accurate colours. And, importantly, it is very unlikely to experience any premature shut down, and if it does, it will not damage itself, or any other part of the projector.

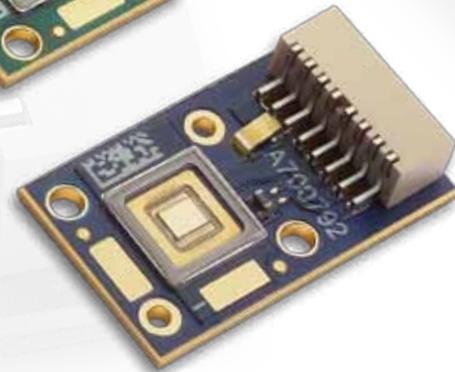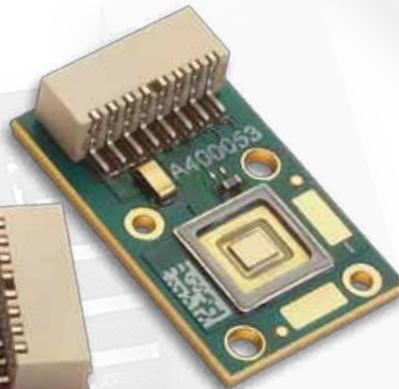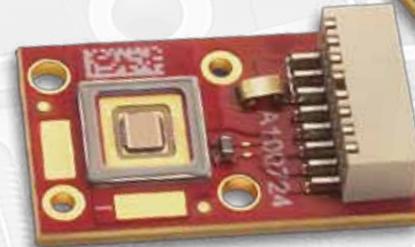## Greatly enhanced image quality

Using ReaLED technology improves on image quality in many ways. When paired with single chip DLP technology, ReaLED replaces the rotating colour wheel, and increases the active colour cycle to 24x per frame of content. The result is a near elimination of any sequential colour and disturbing processing artefacts, and reducing colour smear and blur with fast moving images. But one of the greatest features of LED lighting is its ability to reproduce any visible colour. Using three independent LED sources, colours are pin sharp, with the accuracy of lasers. Primary colours are extremely precise, and LED provides a much larger, and more accurate colur gamut than any other lighting technology – perfect for anyone looking to reproduce accurate, natural colours.

The cost difference of a running a traditional two-lamp projector for 5 years in 24/7 (1) and 12/6 (2) compared to an FL32 with ReaLED technology at 24/7 (3) is substantial.

RealColor™ colour management

RealColor is projectiondesign's unique colour management calibration suite. Each F32 projector is uniquely characterised during its manufacture. Unique performance values and characteristics are recorded and matched to the electronics processing in order to secure perfect on-site calibration. With RealColor, it is possible to match any number of projectors, and ensure they all project the same primaries and grey scale, without going through a very complicated process.

FL32 with RealColor

As with all projectiondesign professional projectors, each FL32 projector is uniquely characterised and calibrated during the last stages of its manufacture. Unique optical performance values are recorded and matched to the electronics processing in order to secure perfect on-site calibration. With RealColor, it is possible to match any number of projectors, and ensure they all project the same primaries and grey scale, without going through a very complicated process.
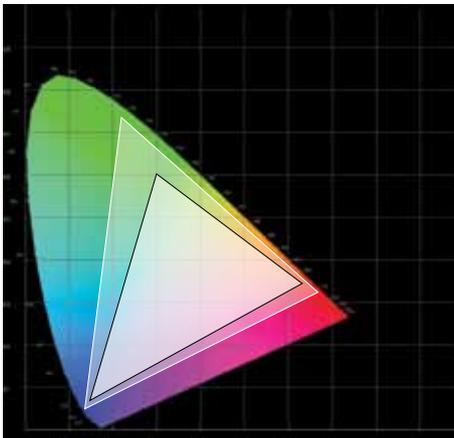
Colour matching and consistency of image

Anybody familiar with multi-channel displays and setups will recognize the fact that display tiles based on standard discharge lamps change over time. The stability of ReaLED means that it stays completely consistent over time, and does not alter in output, neither in brightness nor in colours. In reality, what that means, is that all tiles of a specific display will look the same after years of use.

No colour wheels

Because the FL32 projectors use solid state lighting with ultra fast colour switching, they do not use colour wheels for filtering light and creating colours. By removing the colour wheel, the much dreaded effect of sequential colour separation is eliminated, and colours are displyed up to 24 times per frame of content, for an artefact free display. This is very important for contents with fast moving objects, and even more so with very high constrast scenes, with lots of bright detail on dark backgrounds.

Optical colour processing and calibration

All colour processing on the FL32 series is done optically, and not electronically. That means that the actual light source is altered, and not the electronic source signal. Every FL32 projector features a number of pre-set optical colour profiles, that give spot on colours to any optical standard, for instance REC709 or SMPTE, but without the loss of bit depth and compromise.

Precision projection lens optics

A great advantage with the FL32 series is the range of six different HD resolution projection lenses, inherited from the F32 series projectors. Proven in resolution, performance, and range, all lenses are very high quality to provide the image clarity and performance one demands from a high performance projector.

The colour gamut of a LED based projector is much greater than that of a traditional lamp based projector, resulting in deep, saturated colours.

The "Orbitarium" at the Technorama - The Swiss Science Center (Photo: Thomas Hofer).

Unprecedented deep black levels

One of the foremost features of the FL32 series of projectors is the the superbly deep black levels. Comparing to standard lamp based projectors, black is considerably more black, both measured and perceived. Night scene simulation, star fields, planetariums, and other types of content that rely on contrasting elements from a velvety black background are benefiting tremendeously from the ReaLED technology and display.

Dynamic contrast

Additional to the already deep black levels, the FL32 series can be configured and set up to dynamic adjust levels to fit the histogram of the input, for an even higher contrast. With standard native contrast already high, dynamic contrast enhancement gives an unmeasureably high contrast, where black is simply "no light" when there is no input level.

Installation options

the FL32 series can be installed in any orientation without affecting output or illumination performance. Unlike traditional lamp based projectors, where orientation and rotation is severely affecting lamp life, this is not the case with solid state illumination. As such, the FL32 series can also be installed in portrait mode for that increased vertical resolution without special attention to the angle of projection.

Instant power on / off

Because it does not use lamps that need warming up and cooling down periods to function optimally, the FL32 series can be swithced on and off in a matter of seconds.

Security and network manageable

Fully networkable, vital projector settings and features can be set through the built-in web page, thus allowing remote asset management. Optional projectiondesign software, ProNet.Manager, can be used to asset manage, monitor, and control an unlimited number of projectors in single, or multiple sites. The ProNet.Installer version also handles colour management, matching and performance over time.
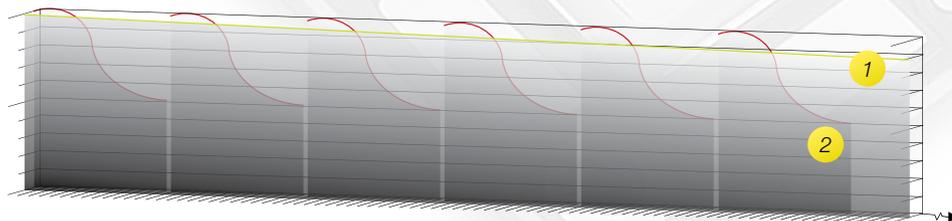
ReaLED technology keeps the projector light output near constant over its entire lifetime (1), spanning as much as 50 sets of traditional discharge lamps, and negating the requirements of re-calibration and adjustments during operation. Traditional lamps can drop as much as 50% of their light output during their operating life (2), making it time consuming and costly to maintain in a multi-channel system.

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technical specifications
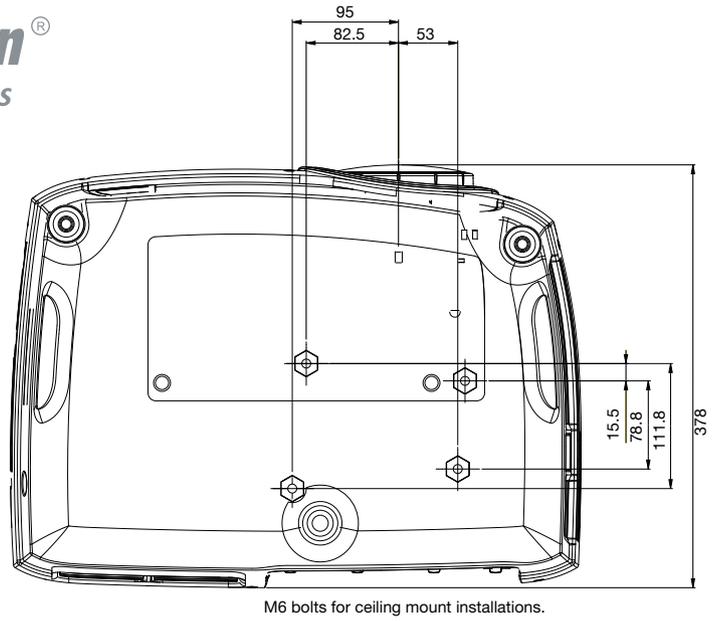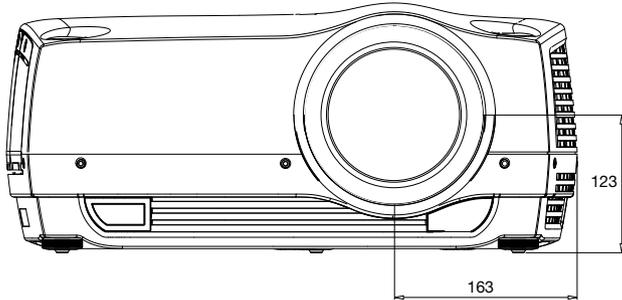
Technical specifications

projector		LED based DLP® digital projector
display	technology	0.95" / 0.98" DMD™ with ReaLED™ technology
	concept	all-glass optical design with lens shift
	available resolutions	1920 x 1200, 1920 x 1080
	brightness	up to 750 ansi lumens
	contrast ratio	infinite (not measureable) sequential
		up to 7500 : 1 adjusted
	colour depth	30-bit
	colour management accuracy	± 0.002 on x, y, z axis
	image processing latency	~ 22 ms on graphics port
input signal compatibility	computer	up to 1920 x 1200 pixels
		RGBHV, RGBS, RGsB
	horizontal scan frequency	15 - 150 kHz
	vertical scan frequency	48 - 190 Hz
	video	HDTV (1080i, 720p, 576i/p, 480i/p)
		NTSC 3.56/4.43, PAL BGHI, M, N, SECAM
	bandwidth	205 MHz analog RGB
		165 MHz digital RGB (DVI or HDMI)
optics	available lenses	0. 79 : 1 ultra wide angle
		1.16 : 1 wide angle
		1.24 - 1.60 : 1 wide angle zoom
		1.60 - 2.32 : 1 standard zoom
		2.37 - 3.79 : 1 short tele zoom
		3.80 - 6.50 : 1 long tele zoom
	focusing distance	0.5 - 40m (see separate lens specifications)
	optical lens shift	vertical/horizontal (motorized)
		1080 vertical: ± 125% horizontal: ± 84%
		WUXGA vertical: ± 117% horizontal: ± 84%
	mechanical shutter	yes, optical
	illumination	ReaLED™ technology
	lamp life (typical expected)	>100,000 hours
	colour cycles / frame	up to 24x
	adjustable IRIS	yes, motorized

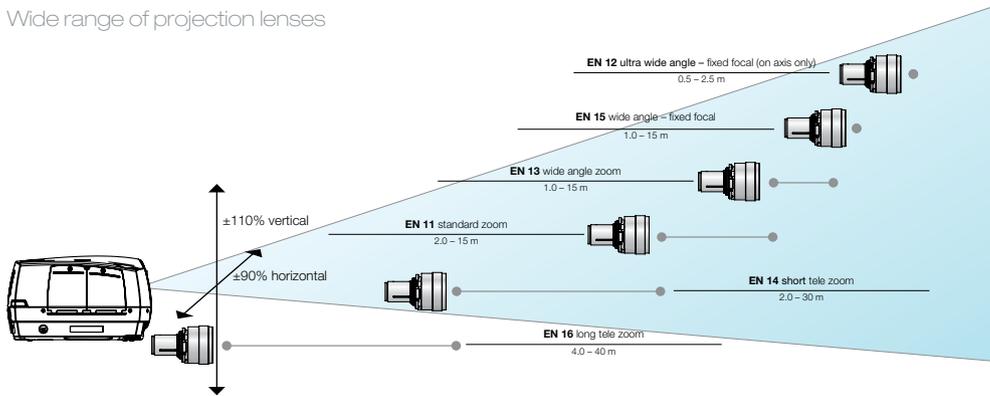|		
connectivity	computer	1x HDMI (1.3)
		1x DVI-D
		1x 15-pin DSUB
		1x BNC x5
	video	1x HDMI (v1.3) (HDCP)
		1x DVI-D (HDCP)
		1x RCA x3 YUV
		1x 4-pin mini DIN Y/C
		1x RCA composite video
	control and communication	1x RJ45 TCP/IP network port
		2x RS232 9-pin DSUB (in / out)
		1x USB – mouse control & firmware upgrade
		2x 12V (60mA) triggers (screen drop / aspect)
		1x RC repeater, 3.5mm mini jack
	other	2x configurable XPort™ (front- / back end)
supplied accessories	cables	4m power cord (country dependant)
	other	backlit IR remote control, ceiling mount cable cover
		product documentation
general	dimensions (dwh)	376 x 510 x 223 mm (ex. lens)
	weight	about 14 kg (ex. lens)
	environmental	RoHS, WEEE
	security	4-digit PIN code, Kensington lock
	power requirements	100 – 240 VAC, 50/60 Hz, +/- 10%
		<350W power consumption
	BTU/hr	<1100
	conformances	CE, CSA "C/US", FCC Class A, CCC
	operating temperature	0 – 40ºC / 32 – 104ºF, 0 – 1500 m
		0 – 35ºC / 32 – 95ºF, 1500 – 3000 m
	operating and storage	20 – 90% RH
	available colours	black metallic, silver metallic
	warranties	limited 2 years parts and labour
		up to 5 years total extended warranty available. Conditions apply.

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Standardised bolt-on ceiling mount interface

95
82.5
53

15.5
78.8
111.8
378

123

163

M6 bolts for ceiling mount installations.

Wide range of projection lenses

EN 12 ultra wide angle – fixed focal (on axis only)
0.5 – 2.5 m

EN 15 wide angle – fixed focal
1.0 – 15 m

EN 13 wide angle zoom
1.0 – 15 m

±110% vertical

EN 11 standard zoom
2.0 – 15 m

±90% horizontal
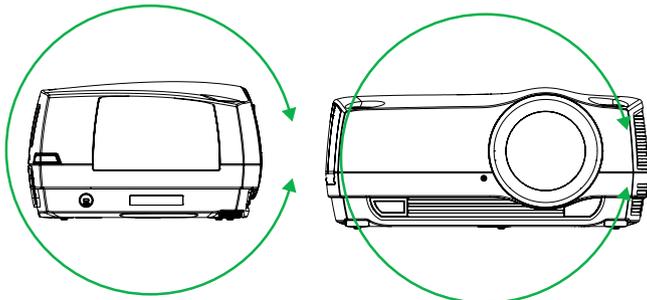
EN 14 short tele zoom
2.0 – 30 m

EN 16 long tele zoom
4.0 – 40 m

Multiple lens options and very wide lens shift adjustment ranges allow for flexibility in installations.

Rotation

The FL32 can be rotated 360 degrees around around all axes without any loss of performance.

Throw ratios

	WUXGA	1080p
ultra wide angle	0.79	0.79
wide angle	1.16	1.16
wide angle zoom	1.24 – 1.60	1.24 – 1.60
standard zoom	1.60 – 2.32	1.60 – 2.32
short tele zoom	2.37 – 3.79	2.37 – 3.79
long tele zoom	3.80 – 6.50	3.80 – 6.50
± 5% accuracy		

Available versions

resolution	1920 x 1200	1920 x 1080
part number	101-1452-08	101-1451-08
Available colour: black metallic.		

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