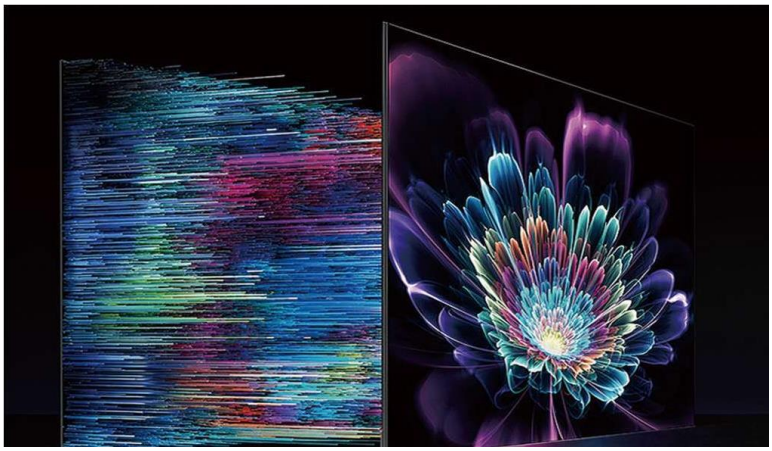
TWL Series

Laser Projector

01 FEATURES

HIGH COLOR BRIGHTNESS

The Crystal Color dual-color series products feature an RGB three-color fluorescent wheel + glass color wheel solution, combined with a separate red laser, which excites more monochromatic energy to achieve efficient color brightness output. The color brightness accounts for more than 90%, comparable to 3LCD products, and far exceeds the 60% color brightness of conventional single-color laser DLP projectors. While ensuring brightness output, it achieves ultimate color expression.



DUAL-COLOR LASER DISPLAY

In addition to the traditional blue laser excitation fluorescent scheme, the Crystal Color dual-color series products use 1-2 red lasers to generate a high proportion and wide color gamut red image that is independent of the laser fluorescent system. After being coupled by the optical system, it produces an ultimate single-color color output, compensating for the insufficient red energy of single-color laser excitation. At the same time, due to the support of the independent red light system, the RGB color...

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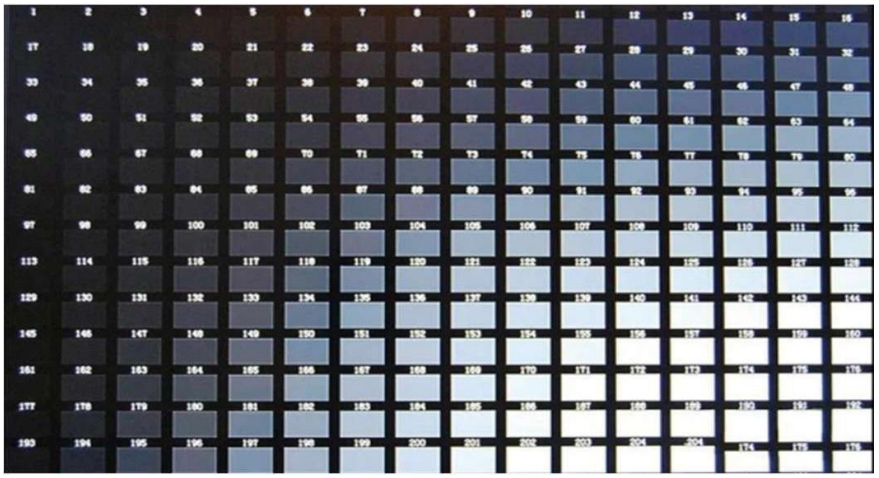
THE ORIGINAL COLORS OF MOVIES

The product is calibrated based on the REC.709 color standard, with a color range of >115%, and is referenced to the DCI-P3 color standard (DCI-P3 is a color gamut standard shared by the color film industry). DCI-P3 has an Rx of 0.68. TWT red and blue dual-color laser creates an ultimate red output, allowing the product's red light Rx to be >0.675, with red coordinates far exceeding those of 3LCD and DLP projectors of the same brightness level, presenting true cinematic colors.

PRECISION PURE COLOR OUTPUT

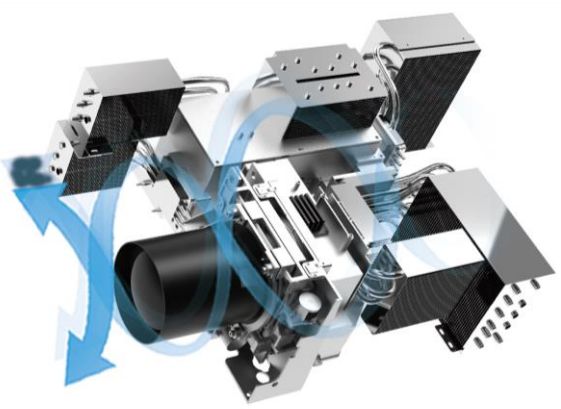
TWT core patented SLPL technology, by diffusing the light spots of the matrix light source system multiple times, achieves a JBMA uniformity of over 95% for pure color output, making the image as uniform as a mirror, and eliminates the impact of speckle on the image, ensuring the picture is not muddied.



01 FEATURES

RELIABLE AND DURABLE PERFORMANCE

The powerful TEC (Thermoelectric Cooler) cooling technology can quickly dissipate the heat generated by the light engine, providing a continuous constant temperature environment for its use, and offering ample assurance for the product's long-term stable operation. Laboratory tests have shown that the product can operate in extreme ambient temperatures up to 40°C, and it can still provide reliable and stable image output even in extreme conditions.



FULLY ENCLOSED LIGHT SOURCE

Utilizing a fully enclosed light source, the protection level reaches IP66, ensuring that even when used in shallow water, it will not affect the product's functionality; the superior optical protection performance of the entire machine prevents dust from affecting the core components of the product in complex and extreme engineering environments.

01 FEATURES

MULTIPLE LENSES AVAILABLE FOR SELECTION

The Crystal Color dual-color system products can be adapted to a variety of brand original lenses. Users can choose from a range of lenses with a projection ratio of 0.34 to 7.0 according to the actual needs on-site, flexibly adapting to various application scenarios such as ultra-short distance and ultra-long distance. Some lenses have an offset value reaching ±100%, offering a wide range of picture movement and flexible installation.

MULTIPLE CONTROL PROTOCOLS

The product has various control methods, including serial port and network, and supports multiple control protocols such as RS232C, PJlink, and Web, enabling long-distance menu control functions and providing an interface for upgrading and feedback of information. In conjunction with external resources, it can achieve synchronized applications with lighting, sound, and other auxiliary equipment. In stage applications and large-screen conference scenarios, it leverages the product's scalability.

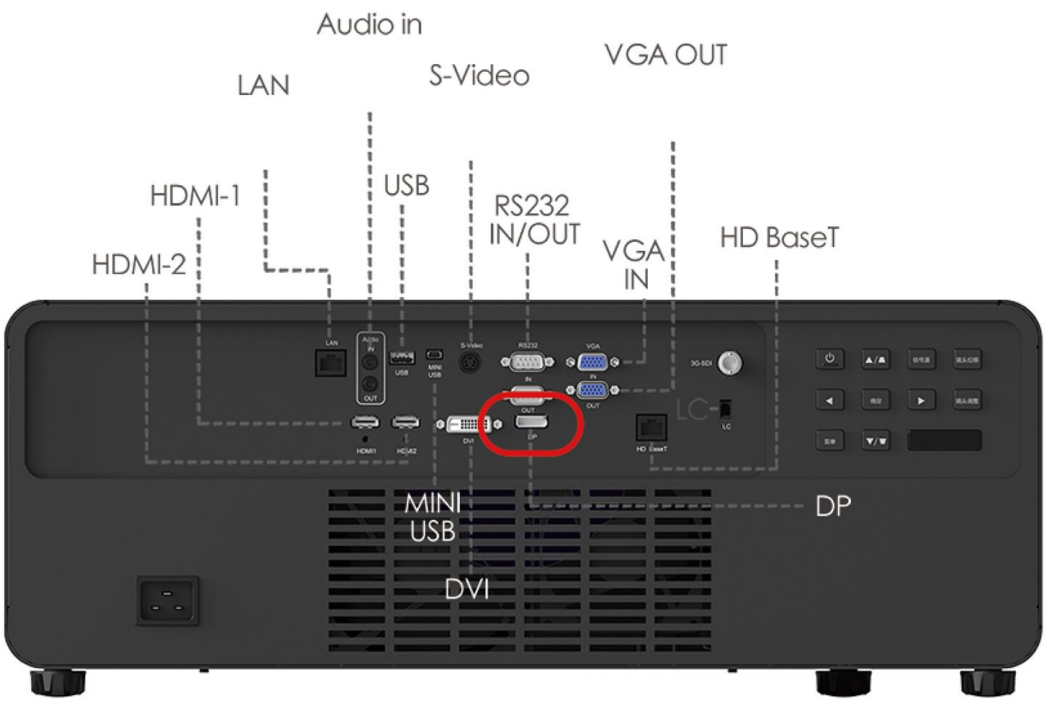
SCHEDULED LOCKING/TRIAL FEATURE

The product features a powerful software protection system that can achieve scheduled locking functionality through decoding calculations, providing users with a comprehensive software protection solution.

01 FEATURES

DIRECT LC FIBER OPTIC CONNECTION, RICH AUDIO AND VIDEO INTERFACES

Fiber optic interface allows for long-distance transmission of fiber optic video signals directly through the LC interface without the need for patch cords, with a transmission distance of over 1000 meters; a variety of rich digital interfaces enable seamless transmission of audio and video, among which the high-speed DP2.0 digital interface has a transmission bandwidth of up to 80Gbps, which is 1.6 times that of the HDMI 2.1 interface.



02 SPECIFICATIONS

Model	TWL1300U	TWL1500DU	TWL1700U
Chip Size	0.67in (WUXGA) TypeA	0.67in (WUXGA) TypeA	0.67in (WUXGA) TypeA
Display Mode	DLP *1	DLP *1	DLP *1
Physical Resolution	1920 x 1200	1920 x 1200	1920 x 1200
Light Source	SLPL Pure laser light source	SLPL Pure laser light source	SLPL Red and blue two-color pure laser light source
Fluorescent Wheel	RGB Three color fluorescent wheel + color wheel	RGBY Four color fluorescent wheel + color wheel	RGB Three color fluorescent wheel + color wheel
Lumens	13000lm	15000lm	17000ml
Dynamic Contrast Ratio	5000000:1	5000000:1	5000000:1
JBMA Evenness	95%	95%	95%
Maintenance	Standard: 20,000 H / Energy-Saving: 25,000 H	Standard: 20,000 H / Energy-Saving: 25,000 H	Standard: 20,000 H / Energy-Saving: 25,000 H
Standard Lens	1.5-2.4:1	1.5-2.4:1	1.5-2.4:1
Optional Lens	0.55:1, 0.8:1, 0.9:1, 1.07-1.7:1, 2.2-3.59:1, 4.5-7.0:1		
Zoom Ratio	X 1.6	X 1.6	X 1.6
Screen Size (clear)	70in-600in	70in-600in	70in-600in
Lens Adjustment	Electric Zoom, Focus, Electric Displacement	Electric Zoom, Focus, Electric Displacement	Electric Zoom, Focus, Electric Displacement
Projection Offset (full)	Vertical: ±50%, Horizontal: ±10% (Offset Off-axis vertical: ±100%, Horizontal: ±20%)		
Color Space	>115% REC.709	>115% REC.709	>115% REC.709
Trapezoidal Adjustment	Vertical/Horizontal ± 30degrees	Vertical/Horizontal ± 30degrees	Vertical/Horizontal ± 30degrees
Tetragonal correction	Y	Y	Y
Power Dissipation	(Highlight) 1100W±10%	(Highlight) 1100W±10%	(Highlight) 1100W±10%
Standby Power Dissipation	<0.5W	<0.5W	<0.5W
Input Port	VGA computer input 1 (15-pin) x2, DP x1, DVI-I x1, stereo audio input (3.5 mm) x1, HDMI (v1.4 with audio) x2, 3G-SDI x1, fiber optic signal transmission interface LC x1, HDBaseT x1 (for long-distance network transmission of video and control signals up to 500 meters)		
Output Port	USB Type-A (power supply) x1, display output (15-pin) VGA out x1, audio output (3.5mm mini-jack) Audio out x1, 3D SYNC OUT x1		
Control Port	RS232 serial interface (9-pin, male) input x1, USB (Type Mini) x1, network interface (RJ45) x1		
Net Weight	≤30KG	≤30KG	≤30KG
Dimensions (W x H x D)	600*590*210mm	600*590*210mm	600*590*210mm
Noise (Typical)	38dB	38dB	38dB

03 Adaptive Lens Pitch Parameter Table

Image Size		Lens Selection (16:10 Models)					
Image Size (Inch)	Diagonal length (mm)	TWL-GL042C	TWL-GL055C	TWL-GL080C	TWL-GL090C	TWL-GL160C	
		0.42: 1	0.55: 1	0.8: 1	0.9: 1	1.07-1.7: 1	
		Projection distance (mm)	Projection distance (mm)	Projection distance (mm)	Projection distance (mm)	Min. Projection distance (mm)	Max. Projection distance (mm)
70	1778	633.25	829.26	1206.20	1356.97	1613.29	2563.16
80	2032	723.72	947.72	1378.51	1550.82	1843.76	2929.33
90	2286	814.18	1066.19	1550.82	1744.68	2074.22	3295.50
100	2540	904.65	1184.66	1723.14	1938.53	2304.69	3661.66
110	2794	995.11	1303.12	1895.45	2132.38	2535.16	4027.83
120	3048	1085.58	1421.59	2067.76	2326.23	2765.63	4394.00
130	3302	1176.04	1540.05	2240.08	2520.09	2996.10	4760.16
140	3556	1266.50	1658.52	2412.39	2713.94	3226.57	5126.33
150	3810	1356.97	1776.98	2584.70	2907.79	3457.04	5492.50
160	4064	1447.43	1895.45	2757.02	3101.64	3687.51	5858.66
170	4318	1537.90	2013.92	2929.33	3295.50	3917.98	6224.83
180	4572	1628.36	2132.38	3101.64	3489.35	4148.45	6591.00
190	4826	1718.83	2250.85	3273.96	3683.20	4378.92	6957.16
200	5080	1809.29	2369.31	3446.27	3877.06	4609.39	7323.33
210	5334	1899.76	2487.78	3618.59	4070.91	4839.86	7689.49
220	5588	1990.22	2606.24	3790.90	4264.76	5070.33	8055.66
230	5842	2080.69	2724.71	3963.21	4458.61	5300.80	8421.83
240	6096	2171.15	2843.17	4135.53	4652.47	5531.27	8787.99
250	6350	2261.62	2961.64	4307.84	4846.32	5761.74	9154.16
260	6604	2352.08	3080.11	4480.15	5040.17	5992.21	9520.33
270	6858	2442.55	3198.57	4652.47	5234.03	6222.67	9886.49
280	7112	2533.01	3317.04	4824.78	5427.88	6453.14	10252.66
290	7366	2623.47	3435.50	4997.09	5621.73	6683.61	10618.83
300	7620	2713.94	3553.97	5169.41	5815.58	6914.08	10984.99

03 Adaptive Lens Pitch Parameter Table

Image Size		Lens Selection (16:10 Models)					
		TWL-GL120C		TWL-D-GL130C (Index mirror)		TWL-GL450CA	
		0.75-1.2: 1		1.5-2.4: 1		4.5-7.0: 1	
Image Size (Inch)	Diagonal length (mm)	Min. Projection distance (mm)	Max. Projection distance (mm)	Min. Projection distance (mm)	Max. Projection distance (mm)	Min. Projection distance (mm)	Max. Projection distance (mm)
70	1778	1130.81	1809.29	2261.62	3618.59	6784.85	10554.21
80	2032	1292.35	2067.76	2584.70	4135.53	7754.11	12061.95
90	2286	1453.90	2326.23	2907.79	4652.47	8723.38	13569.70
100	2540	1615.44	2584.70	3230.88	5169.41	9692.64	15077.44
110	2794	1776.98	2843.17	3553.97	5686.35	10661.90	16585.18
120	3048	1938.53	3101.64	3877.06	6203.29	11631.17	18092.93
130	3302	2100.07	3360.12	4200.14	6720.23	12600.43	19600.67
140	3556	2261.62	3618.59	4523.23	7237.17	13569.70	21108.42
150	3810	2423.16	3877.06	4846.32	7754.11	14538.96	22616.16
160	4064	2584.70	4135.53	5169.41	8271.05	15508.22	24123.90
170	4318	2746.25	4394.00	5492.50	8787.99	16477.49	25631.65
180	4572	2907.79	4652.47	5815.58	9304.93	17446.75	27139.39
190	4826	3069.34	4910.94	6138.67	9821.88	18416.02	28647.14
200	5080	3230.88	5169.41	6461.76	10338.82	19385.28	30154.88
210	5334	3392.42	5427.88	6784.85	10855.76	20354.54	31662.62
220	5588	3553.97	5686.35	7107.94	11372.70	21323.81	33170.37
230	5842	3715.51	5944.82	7431.02	11889.64	22293.07	34678.11
240	6096	3877.06	6203.29	7754.11	12406.58	23262.34	36185.86
250	6350	4038.60	6461.76	8077.20	12923.52	24231.60	37693.60
260	6604	4200.14	6720.23	8400.29	13440.46	25200.86	39201.34
270	6858	4361.69	6978.70	8723.38	13957.40	26170.13	40709.09
280	7112	4523.23	7237.17	9046.46	14474.34	27139.39	42216.83
290	7366	4684.78	7495.64	9369.55	14991.28	28108.66	43724.58
300	7620	4846.32	7754.11	9692.64	15508.22	29077.92	45232.32

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