

**FUSS**

is in the shortlist of the “Class Access” Project of China National Center for Educational Technology

**Comparison table of *FUSS* products and products of other types**

Machine type	<i>FUSS</i> Rear Projection Unit TV	<i>FUSS</i> Front Projector Unit with Short Focal Length	LCD TV	Common projector	
Item					
Price	Moderate	Low	High	Low	
Whether it is affected by the light pollution of the environment	No	Yes	No	Yes	
Power consumption	Low	Moderate	High	Moderate	
Screen size	Large	Large	General	Large	
Whether anti-glare treatment for the screen is available	Available	Not required	Not available	Not required	
Whether the complete unit has a dust-proof unit	Available	Not available	Not available	Not available	
Screen surface temperature	Cool	Not available	High	Not available	
Maintenance fee	Low	High	Low	High	
Whether it is installed easily	Easy	General	Easy	Hard to be installed	
Whether it is maintained easily	The product has been modular and easy to maintain	The product has been modular and easy to maintain	Hard to maintain	Hard to maintain	
Whether it is operated easily	Built-in intelligent one-key switch easy for operation	Built-in intelligent one-key switch easy for operation	Hard to operate	Hard to operate	
Whether there is an intelligent lock	Built-in intelligent lock can prevent unauthorized personnel from operating it	Built-in intelligent lock can prevent unauthorized personnel from operating it	Not available	Not available	
Scoring	Scoring standard for each item: • 10 scores for good condition • 5 for general condition • Zero for poor condition	115 scores <b>Win</b>	80 scores	50 scores	45 scores

*FUSS* Full High Definition Rear Projection Interactive Whiteboard Computer TV and High Definition Interactive Front Computer Projector with Short Focal Length get high scores in the above comprehensive appraisal including price/performance ratio, consumable fee, operation convenience and maintenance and installation simplicity. Therefore, the adoption of excellent “Class Access” Product selected by China National Center for Educational Technology is a wise selection.

**Ultmost** / **FUSS** / **OVO** Manufacturer & Exporter Since 1987

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**LCoS Full High Definition Large Screen**

- Full HD Rear Projection Interactive Whiteboard Computer TV
- HD Interactive Front Computer Projector with Short Focal Length
- Full HD Intelligent Splicing Wall



Rear Projection Interactive Whiteboard Computer TV

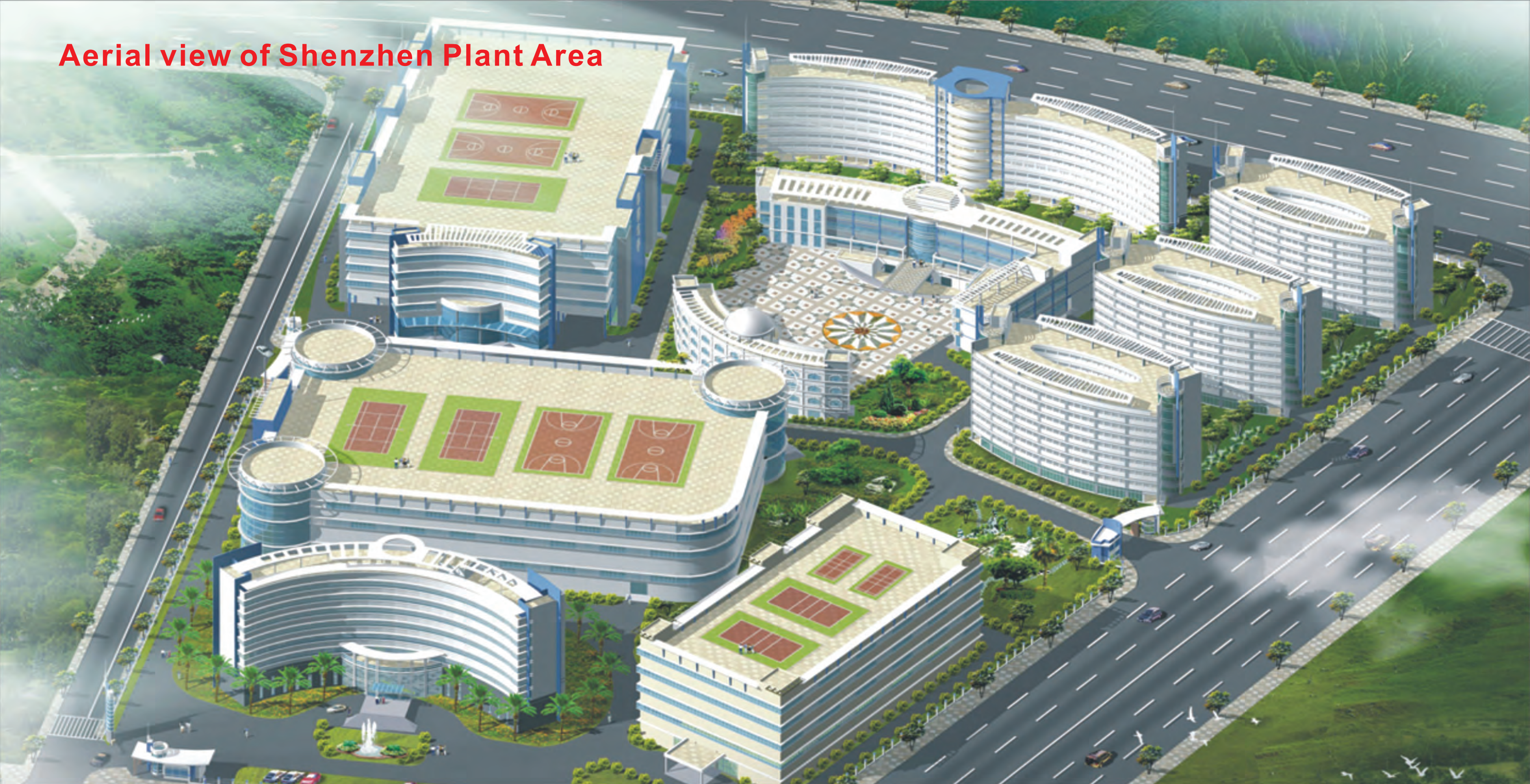


HD Interactive Front Computer Projector with Short Focal Length



Full HD Intelligent Splicing Wall

## Aerial view of Shenzhen Plant Area



## Company profile

Ultmost Technology founded in Taiwan in 1987. It has dedicated to the research and development of LCoS optical engines for many years. It has now become the third company which has the capacity of producing LCoS projection TVs (the first Chinese manufacturer). Over years of unremitting efforts, key components used in optical engines such as the housing, lens, PBS, PS converter and optical filters can be manufactured independently rather than being controlled by other manufacturers. Its LCoS optical engine and application products contain several patents and intellectual properties. Now its main products include full high definition LCoS TVs, LCoS interactive whiteboards, LCoS large screen splicing walls and advertising space, etc. Its manufacturing base is located in the beautiful environment of Longgang District, Shenzhen and the entire plant covers an area of 80,000 square meters with elegant environment, configured with complete staff recreation facilities (basketball court, football court, billiards, Pingpong, Internet café, dancing hall, library room, a 400-seat cinema, apartment buildings for employees, clean and tidy canteen, fully-air conditioned production workshop and provide employees a comfortable and clean working environment and living space.

Ultmost Technology (Shenzhen) has passed internationally authoritative certifications such as the ISO 9001, UL and CE certifications and domestic mandatory 3C certification. Every step has proved its undisputable technology-leading position around the world. Over years of continuous development, Ultmost Technology Company always adheres to meeting customers' demand as its guideline, taking the optimization of people's life as its mission and making customers satisfied as its objectives; it is based in China and goes global and its products have been widely recognized by users around the world for its high quality and competitive price. It has become one of the influential leaders in the high definition digital display product industry. Facing intensified competition, Ultmost Technology will continue to uphold the philosophy of making technology innovation and serving customers to provide excellent products and services for customers, making the lives of more people become richer and more colorful.

## Qualifications and honors



ISO 14000 Certification



3C Mandatory Certification



ISO 90001 Certification



ISO 13485 Certification



China Quality Long March Campaign Certification



Interactive Whiteboard Modular Patent Certification



Heat Radiation Unit Patent Certification



Aperture Positioning Structure Patent Certification

## Some cases



Interactive classroom of the High School Affiliated to Hunan Normal University, China



Conference room of Beijing Shoukong Iron and Steel Group, China



## Production capacity



Optical grinding equipment



POP precision alloy workshop



Precision 3D measuring equipment



SMT automatic production line



2,600-ton large injection equipment



High precision spark machine



Large CNC milling machine



Fully automatic precision injection equipment



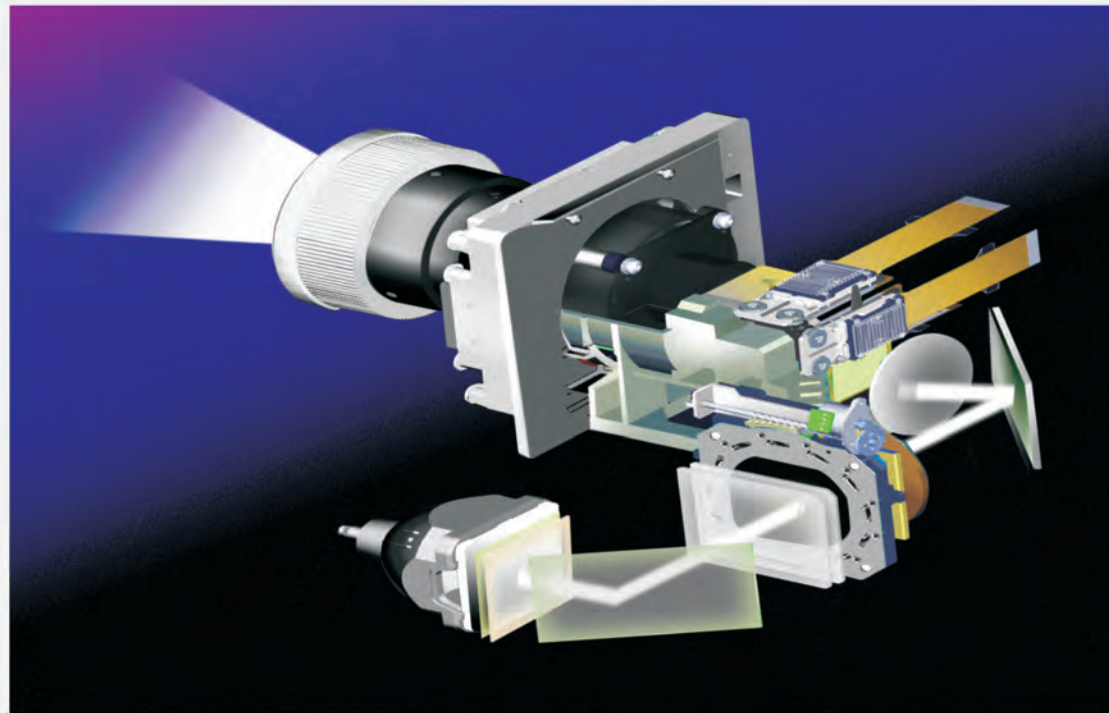
## Dedicated to the development of the LCoS optical engine

### ■ LCoS introduction

LCoS is a kind of product with the best physical phenomenon in the MDP technology of the new generation. LCoS is the abbreviation of Liquid Crystal on Silicon. It is a revolutionary reflection panel projection technology, which can be applied in projection TV, high resolution TV walls and other projection applications. Its optimum application is LCoS projection TVs. The image quality of LCoS is superior to that of LCD and DLP for its high resolution, brightness, fine and vivid pictures. Moreover, it features low power consumption, radiation-free, low cost and good compatibility.

## Optical engine system

- The optical engines system was jointly developed by several professional engineers in electronic software and hardware, structure, heat flow and optics of **Fuss** over years of research. The system owns a handful of patents and intellectual property. It absolutely constitutes an across-the-era breakthrough in the high definition MDP TV industry.



Internal dissection drawing of the optical engine  
(more than 90% of the optical parts used are manufactured in the plant)

### ■ Single-bulb/double-bulb optical engine developed by **Fuss**



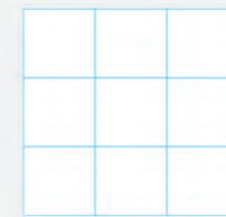
Single-bulb optical engine (used on the interactive whiteboard TV/projectors)



Double-bulb optical engine (used on the splicing wall)

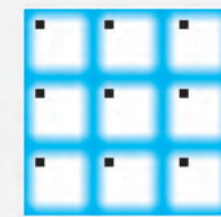
## Performance comparison of LCoS, LCD and DLP

### ■ LCoS has very high aperture ratio (it refers to the ratio between the effective area and the ineffective area on the screen)



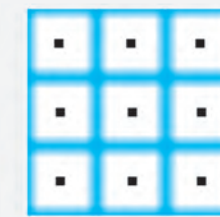
LCoS

LCoS is manufactured by semi-conductor processing technology, with all circuits at the bottom; therefore, its surface aperture ratio is the largest.



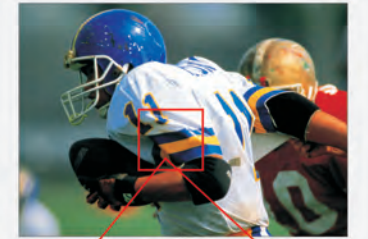
LCD

LCD needs to be wired on the surface of the display screen, which will occupy a very large area; therefore, its aperture ratio is low.

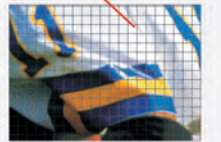


DLP

Every pixel on the DLP display panel needs to do a mechanical swing; therefore, a gap is needed between pixels; as a result, the aperture ratio is low.



LCoS has high aperture ratio; therefore, the pixel grid is not visible.



Clear pixel grid is visible on LCD and DLP.

### ■ LCoS and LCD adopt three-panel projection technology while DLP adopts single-panel projection technology

- LCoS and LCD projection technology use red, green and blue display to project imaging simultaneously; therefore, projected images are very vivid, excellent and stable.
- DLP adopts the single-panel projection technology, which emits red, green and blue colors successively via turning the color wheel by sequence, which may easily produce flickering and rainbow effect; as a result, the projected image can not have its desired color.  
"Rainbow effect" is a kind of color separation phenomenon appearing on the screen by stripes. When it appears, it will make you be distracted or fretful.



DLP

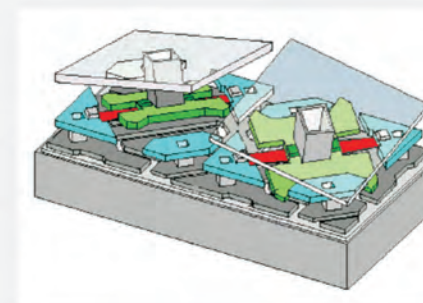
DLP rotating color wheel effect will appear by stripes on the camera screen during camera shooting.



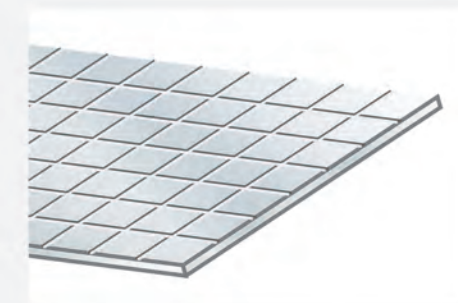
LCoS

### ■ High reliability

Every pixel of LCoS is fixed while every pixel of DLP needs to make high speed mechanical swing. Therefore, compared with DLP, LCoS core is not configured with movable parts such as movable lens and rotating color wheel, thus ensuring that the LCoS has higher reliability and stability.



DLP display module is dotted with rapidly-moving lens.



The LCoS surface has fixed semi-conductor reflection layer without making any mechanical swing, thus increasing high reliability.

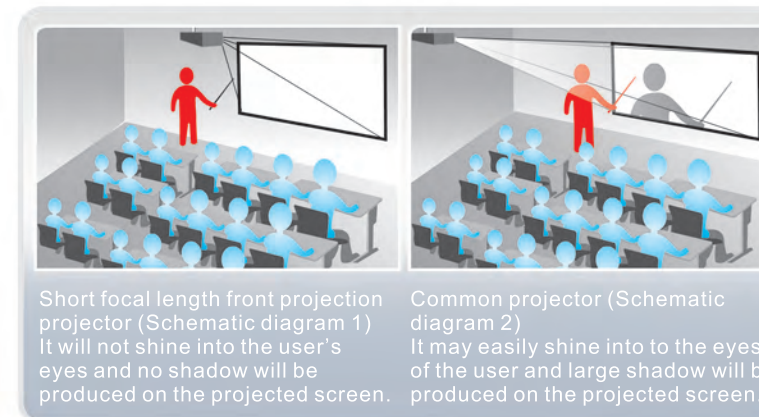
# High Definition Interactive Front Computer Projector with Short Focal Length

- **FUSS** High Definition Interactive Front Computer Projector with Short Focal Length is the world's first-ever comprehensive audio-video education display terminal solution for classroom. It features the simplest operation, the best performance, the easiest maintenance and the highest price/performance ratio.



- No shade during use with super-short focal length design which does no harm to eyes.
- High definition aspect ratio (16:10). On a screen of the same height, the screen with the aspect ratio of 16:10 offers larger area for writing compared with that with the aspect ratio of 4:3.
- Modular design makes maintenance easy and rapid.
- Special intelligent control box design only needs one key to realize all operations.
- Anti-lightning stroke design makes the system safer.

## Special design of **FUSS** High Definition Interactive Front Computer Projector with Short Focal Length

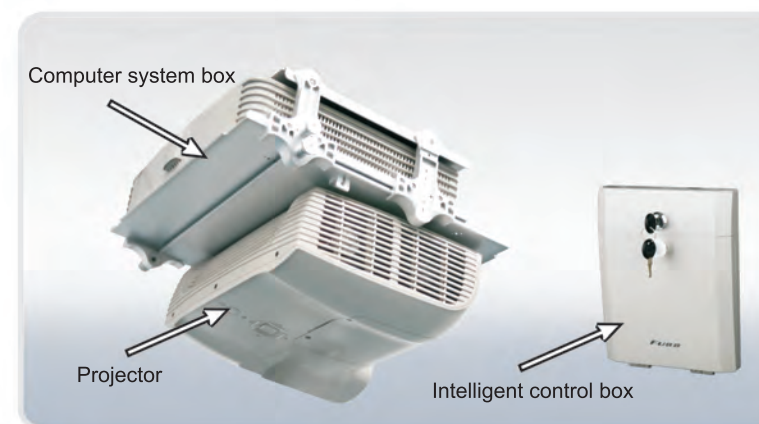


Short focal length front projection projector (Schematic diagram 1)  
It will not shine into the user's eyes and no shadow will be produced on the projected screen.

Common projector (Schematic diagram 2)  
It may easily shine into the eyes of the user and large shadow will be produced on the projected screen.

## Comparison between **FUSS** short focal length projector and common projector

- When using a front projection projector with short focal length, as the projection distance of the projector is short, 1m can project an 89-inch large screen. Therefore, the projector will not shine on the teacher, and no shadow will be produced on the screen during teaching while students in every corner can see projected contents clearly (as shown in Figure 1 at the left).
- When using a common projector, the projector may shine into the user's eyes and leave a large shadow on the screen; as a result, students are unable to see the projected contents during teaching (as shown in Figure 2 at the right).



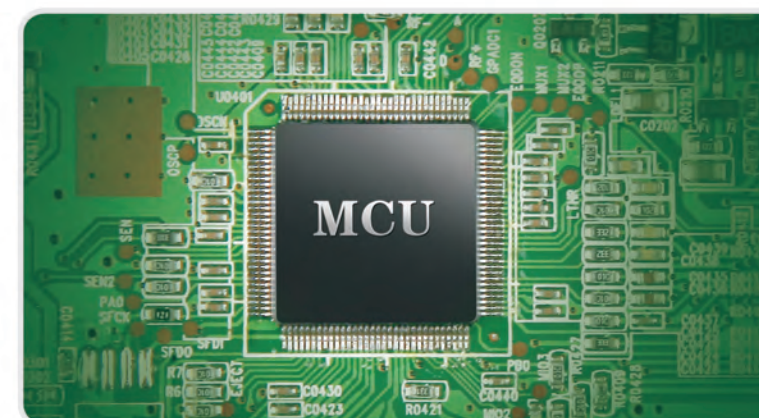
## Modular design

- The system has completed the easy-to-plug modular design of three major parts including the projector, the computer system box and the intelligent control box.
- Modular design based on the whole unit can be maintained without professionals during maintenance.



## Intelligent control box design

- Well-designed intelligent control box of the **FUSS** Front Computer Projector with Short Focal Length may prevent unauthorized personnel from starting up the system.
- The system will start up automatically without any commissioning operation as long as the user opens the intelligent control box with a key. Any one who is not familiar with the computer may operate it easily.
- When the user closes the intelligent control box, the system will detect automatically whether the light pen and the remote control have been placed back to its original place. If not, the system will send out signals prompting the user to put them in place.



## Anti-lightning stroke design

- An MCU is provided inside when the user turns off the machine, it will switch off the power supply automatically and cut off the external power supply so as to prevent hazards to the machine during lightning.

# Full High Definition Rear Projection Interactive Whiteboard Computer TV 65-inch / 72-inch / 82-inch

■ LCoS interactive whiteboard Computer TV is a comprehensive audio-video display terminal solution for classroom widely promoted with the highest price/performance ratio, the highest performance, the simplest operation and the easiest maintenance.

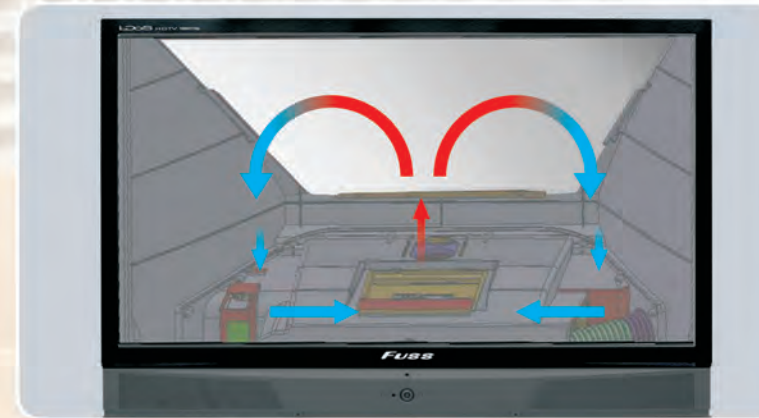


- High definition
- High brightness
- High contrast
- High price/performance ratio
- No radiation
- Free from flickering
- No ghosting
- No tailing
- Low power consumption

## ■ Introduction of software functions of *FUSS* Full High Definition Interactive Whiteboard Computer TV

<b>Mouse</b>	The mouse function can be achieved by the touch pen.
<b>Mark</b>	Marks of several preset colors can be achieved on the screen when any software runs.
<b>Zoom in/out</b>	It can zoom in or out local or full screen.
<b>Eraser</b>	Marked or written contents on local or full screen can be erased.
<b>Focusing</b>	It can display the part desired to be displayed locally and hide other parts; moreover, highlighted light ring can be moved at random.
<b>Whole-course recording (speech recording available)</b>	It can record marked contents and speech of the user during the teaching process and save it in AVI format.
<b>Resource pool</b>	Teaching modules saved in the resource pool can be called out for use at random.
<b>Resource importing</b>	Import resources needed to be used directly from the interactive whiteboard, which support video formats like MPEG/MPG/DAT/WMV and audio formats such as WMA/ASF.
<b>Content save and playback</b>	Mark, modify and save PPT files as PPT files. It is recorded and saved as SWB format for full-screen playback or as WMF / HTML / JPG / BMP for playback screen by screen.

## Special design of *FUSS* Full High Definition Rear Projection Interactive Whiteboard Computer TV

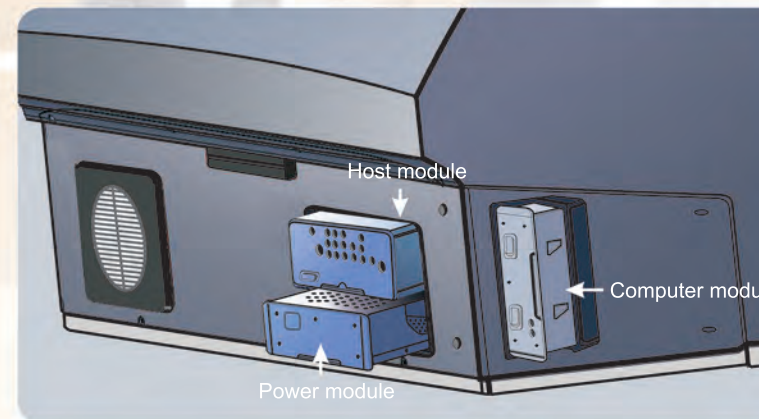


### Dust-proof circulation design inside the machine - Achieve truly dust-free space.

The machine has fully separated the high temperature area of the bulb from the lighting system to prevent high temperatures produced by the bulb from entering the machine.

Other parts inside the machine (except bulb) have been isolated from the outside to prevent dust from entering the machine, thus increasing the service life of the optical engine.

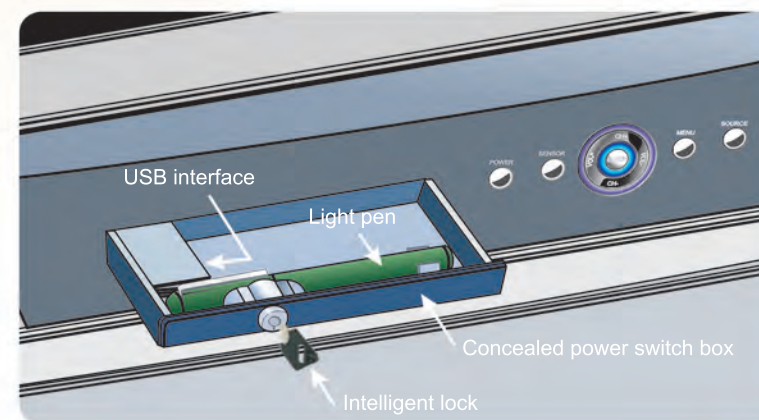
The machine is designed to have a precise internal circulation heat conduction system to reduce its inside temperature effectively.



### Modular design - Achieve truly easy maintenance

The system has completed the easy-to-plug modular design of the main board, the power panel and the computer panel.

Modular design based on the whole unit can be maintained without professionals during maintenance.

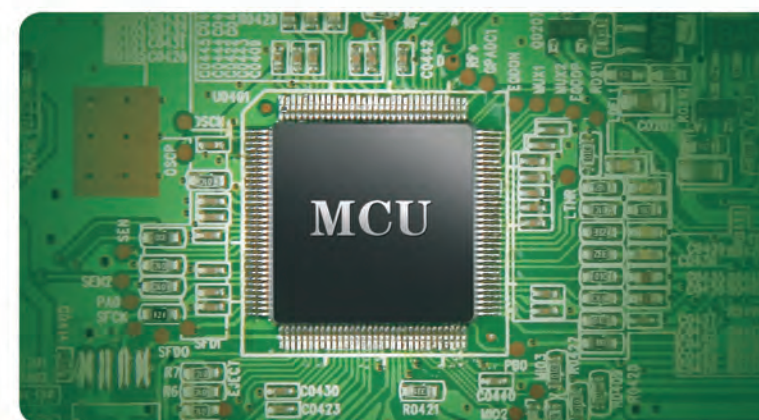


### Intelligent power lock design - Realize truly simple operation (Only by pressing one key all starting up/shutting down operations can be realized).

An independent intelligent power lock is provided in the system to prevent unauthorized personnel from starting up the system.

The system will start up automatically without making any startup operation as long as the user opens the power lock.

When the user locks it, the system will detect automatically whether the light pen is placed in its original place. If not, the system will send out signals, prompting the user to put the pen in place.



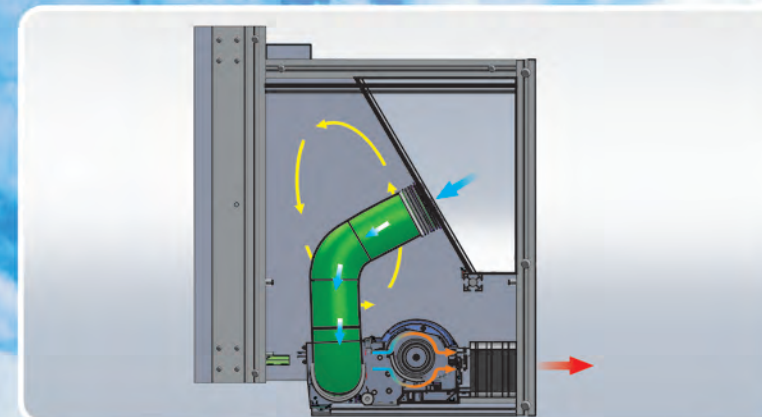
### Anti-lightning stroke design

An MCU is provided inside the machine which will switch off the power automatically after the bulb cools down and cut off the external power supply (220V) when the user turns off the machine so as to prevent lightning from entering the system from external power supply during lightning (220V).

# Full High Definition Intelligent Splicing Wall



## Special design of the *FUSS* Full High Definition Intelligent Splicing Wall



### Dust-proof internal circulation design inside the machine

- The machine has fully separated the high temperature area of the bulb from the lighting system to prevent high temperature produced by the bulb from entering the machine.
- Other parts inside the machine (except bulb) have been isolated from the outside to prevent dust from entering the machine, thus increasing the service life of the optical engine.
- The machine is designed to have a precise internal circulation heat conduction system to reduce its inside temperature effectively.



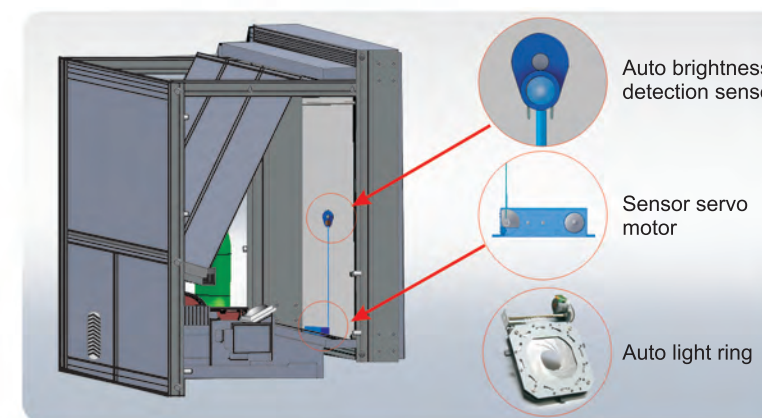
### Modular design

- The system has completed the easy-to-plug modular design of the main board and the power panel. Modular design based on the whole unit can be maintained without professionals during maintenance.



### Double-light structural design

- Patented double-light structure design can set auto light-changing time. When a machine with a conventional single-bulb structure operates for a long time, the bulb has to work continuously, thus the bulb may be burnt down. A machine with a double-bulb structure can work alternatively and each bulb has sufficient time to rest; as a result, bulb service life is lengthened naturally.



### Auto brightness adjustment design

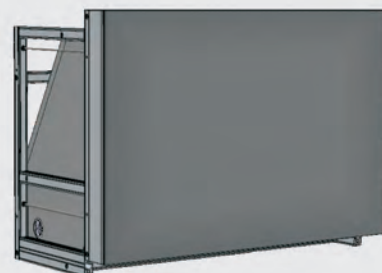
- A brightness detectable sensor and auto light ring are fitted inside, which can adjust the brightness of every unit of the splicing wall into consistent brightness automatically within a set time via a microprocessor.

## Introduction of characteristics of *FUSS* Full High Definition Intelligent Splicing Wall

*FUSS* Large screen splicing wall is a large screen splicing system emerging on the basis of the LCoS full high definition optical engine, every unit on the wall can output full high definition of 1920 x 1080. It is now a large screen splicing wall with maximum resolution available in the industry. It enjoys superiority in high resolution, rich and vivid color and high brightness.

The *FUSS* large screen splicing wall is a splicing system jointly developed by several professional engineers in electronic software and hardware, structure, heat flow and optics, which owns a number of intellectual property and patents such as housing dust-proof design, main board and power panel modular design, double-light structure design, brightness auto adjustment design, etc to make installation, commissioning, operation and maintenance easier.

The *FUSS* large screen splicing wall can be widely used as large screen display systems in various industries such as monitoring centers, dispatching centers, headquarters, meeting rooms, exhibition halls of government organs, power, airports, water conservancy projects, telecommunications, public security, military forces, armed polices, railways, communications, mining industry and iron and steel industry.



Unit size of 65-inch splicing wall: 1439 x 69 x 93mm

## Specification Table of High Definition Interactive Front Computer Projector with Short Focal Length

Specification	Type	FR-280
Display technology		TI 0.65" DMD™
Actual resolution		WXGA (1280×800) maximum support UXGA (1600×1200)
Display color		24 BIT true color (256×256×256)
Aspect ratio		16:10
Bulb type		UHP 230W
Bulb service life		3,000 hours (enhanced type) , 5,000 hours (standard type)
Brightness		>2600 Lumen
Contrast		3000: 1
Evenness		≥90%
Image offset		108%-118%
Projection ratio		0.54:1
Projection size		30 inches to 180 inches
Projection distance		0.35~2.09m
Input terminal		VGAIn×1, Composite×1, RJ-45×1, 3.5mm audio in×2 RS-232, S-Video, HDMI×1, USB Type B×1
Output terminal		3.5mm audio out X1
Scanning frequency ( horizontal / vertical )		Horizontal: 15K~82KHz, Vertical: 50~85Hz
Video type		480i,480P,576i,576P,720P,1080i,VGA,SVGA,XGA,SXGA,WXGA,UXGA
Power consumption		310W (standard)
Standby power consumption		<1W
Operating environment		Working temperature: 5°C-35°C (41°F-95°F), RH: 10%~85% (no condensing state)
Power requirements		100-240V AC (automatic conversion), 50-60Hz
Working noise		≤32dB
Dimension ( W x H x D )		268x329x124mm
Weight		3.8kgs
Interactive touch control means		Pen touch control

## Configuration sheet for the computer system box of the High Definition Interactive Front Computer Projector with Short Focal Length

Specification	Type	FR-280A	FR-280B	FR-280C	FR-280D	FR-280E
CPU		INTEL dual-core four-wire CPU, with integrated video interface adapter				
Memory DDR3		2GB				
Hard disk		320GB				
Power supply		300 W				
Horn		Not available	Available	Available	Available	Available
Wireless transmission		Not available	Not available	One set	Several sets	Several sets
Wireless microphone		Not available	Not available	Not available	Not available	Available

## Specification Table of Full High Definition Rear Projection Interactive Whiteboard Computer TV

Specification	Type	RP-6502AE (65 inches)	RP-6502AF (65 inches)	RP-6502AG (65 inches)	RP-6502AH (65 inches)	RP-7202AE (72 inches)	RP-8202AE (82 inches)
Display technology		Sony three-panel LCoS digital full high definition projection LCD panel					
Maximum resolution		1920x1080P	1920x1080P	1280x720	1280x720	1920x1080P	1920x1080P
Display color		24 BIT true color (256x256x256)					
Aspect ratio		16:9					
Bulb type		UHP 150W					
Bulb service life		≥8000 hours					
Brightness		≥700 NIST (equal to 3500 lumen of front projection unit approximately)		≥500 NIST		≥500 NIST	
Contrast		≥5000:1					
Angle of visibility		≥179°					
Video mode		NTSC/PAL					
Input terminal		CVBS x 2 / S-VIDEO x 1 / YPbPr x1 / HDMIx1 / VGA x 1					
Power supply requirements		100-240V AC (automatic conversion), 50-60Hz					
Power consumption		<230W# (variable frequency consumption reduction and energy saving)					
Standby power consumption		<1W					
Operating environment		Working temperature: 5°C-35°C (41°F-95°F) RH: 10%-85% (no condensing state)					
Built-in computer		Available	Not available	Available	Not available	Available	Available
Dimension (W×H×D)		1520x1050x510mm	1520x1050x510mm	1520x1050x510mm	1520x1050x510mm	1691x1050x510mm	1897x1200x668mm
Interactive touch control means		Pen touch control					
Whiteboard screen material		Armored glass (anti-glare, anti-scraping and anti-impact)					

## Specification Table of Full High Definition Intelligent Splicing Wall

Display technology		Sony three-panel LCoS digital full high definition projection LCD panel	
Maximum resolution		1920×1080P	
Display color		24 BIT true color (256×256×256)	
Bulb type		UHP 150W	
Bulb service life		≥8,000 hours	
Brightness		≥700NIST (Equal to 3500 lumen of front projection approximately)	
Contrast		≥5000:1	
Screen gap		<1mm	
Screen size		65 inches	
Angle of visibility (horizontal)		≥179°	
Angle of visibility (vertical)		≥80°	
Input terminal		CVBS×2/S-VIDEO×1/YPbPr×1/HDMI×1/VGA×1	
Power supply requirements		100-240V AC (automatic conversion), 50-60Hz	
Power consumption		<230W (variable frequency consumption reduction, energy saving)	
Standby power consumption		<1W	
Operating environment		Working temperature: 5°C-35°C (41°F-95°F), Working temperature: 10%~85% (no condensing state)	
Every unit size		1439×868×693mm	
Screen material		Armored glass (anti-glare, anti-scraping and anti-impact)	