

## Display Wall



Photograph courtesy of Hossana B. Ashagrie, Project Manager, Greater Toronto Airports Authority

# LED Display Wall

[120 Series High-Quality, Durable, Rear-projection Display Wall Cubes]

Redundant



# New Wide-format LED Display Wall Cubes Guarantee High Performance and Quality

Combining long-life LED light source and DLP™ imaging technology designed to realize reliable and durable visual display for true 24/7 continuous use.

Introducing the latest addition to our 120 Series line of display wall cubes, furthering our commitment and enhancing our ability to offer custom solutions to suit your mission-critical control center applications.



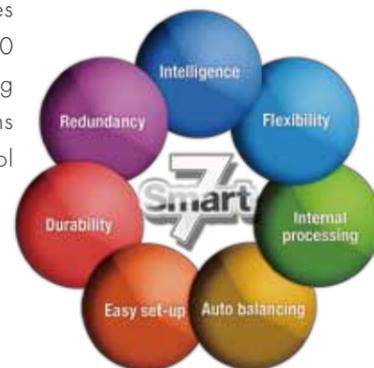
Centro de Operações da Prefeitura de Belo Horizonte

America Free Trade Zone Industrial Park

NIT West Kobe IOC Center

## Smart 7 ~ Cutting-edge Features for High-performance, High-quality Large Display Wall Systems

The key to visual communications can be found in Mitsubishi Electric's Smart 7 technologies, the core concept behind display wall design at Mitsubishi Electric. These advanced cutting-edge technologies are incorporated in all 120 Series products, ensuring innovative display solutions for command and control room applications.

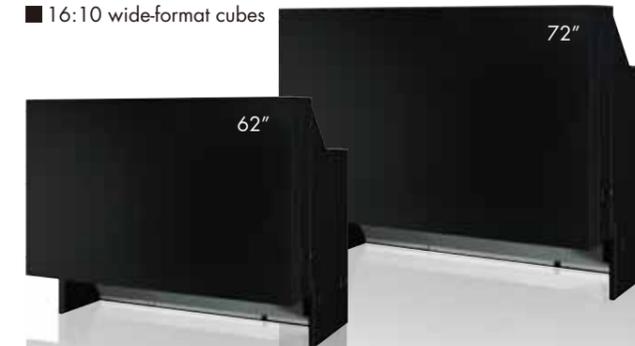


## New 62" and 72" cubes in 16:10 wide-format broaden our wide-screen cube lineup to meet your critical applications

Our current lineup now offers 16:9 aspect cubes available in 60- or 70-inch displays in full HD resolution, as well as 16:10 aspect cubes available in 62- or 72-inch displays in new WUXGA resolution, allowing you to easily build the system that best matches your application needs and requirements. Two screen options are offered as well, Black Stripe (standard) and Cross-lenticular, which vary in brightness and viewing angle capabilities. This expanded range of choices gives users more flexibility in creating the optimal system to match the application and installation environment.

\*All Mitsubishi Electric display wall cubes are manufactured using seismic simulation which was performed at the product design stage.

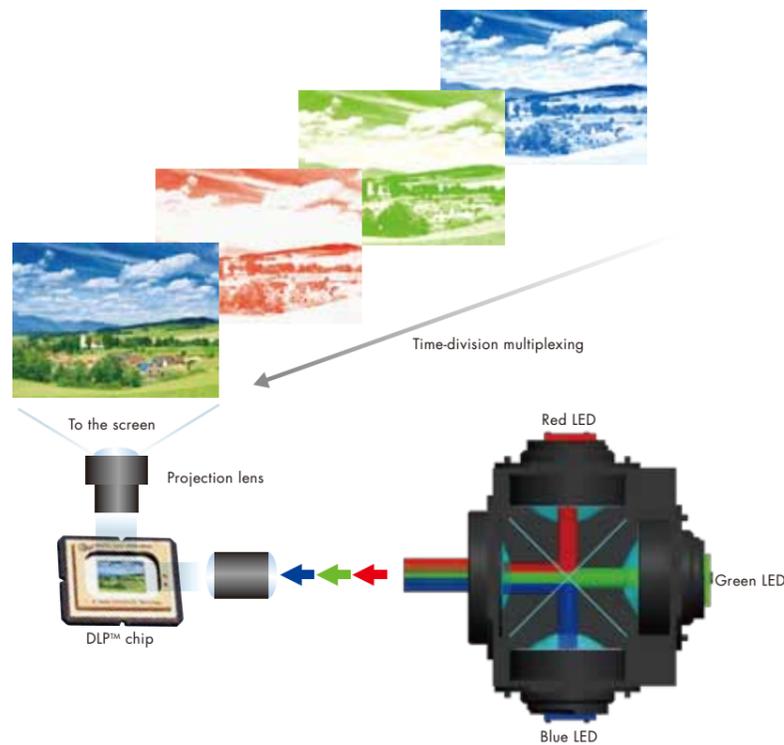
■ 16:10 wide-format cubes



■ 16:9 wide-format cubes



## DLP™ Imaging Technology for the Ultimate in High-quality Digital Displays



At the core of Mitsubishi Electric projection technology is the DLP™ digital micro-mirror imaging chip built with minute mirrors arranged at multiple points on a silicon base using the most advanced semiconductor fabrication technology available. Each micro-mirror corresponds to a single pixel or element of the picture. Images are produced by maneuvering these micro-mirrors electronically.

\*DLP and the DLP medallion logo are registered trademarks of Texas Instruments in the United States of America.

### Consistent High-quality Images

Full digital control of color and gradation at every micro-mirror results in images with consistently high picture quality and uniform color and brightness throughout the display wall, from the center point to the edges of each display.

### Higher Reliability

The DLP™ chip is a reflective device with a very high light reflection ratio, thus the chip itself retains very little to no heat. This characteristic allows still images, text data and other fixed patterns to be displayed for long periods of time without image retention or burn-in that tends to occur with other display technologies or image processing methods.

## LED Light Source Advantages

### Virtually Maintenance Free

An LED light source has an average service life that is approximately 10 times longer than that of conventional ultrahigh-pressure mercury lamps. Combined with the 100,000hr, ultra-long service life of our engine fans, the average service life of Mitsubishi Electric LED display wall cubes is more than 10 years, even when operated continuously on a 24/7 basis.

### Choice of Four Brightness Modes

Equipped with an original LED power control circuit, each display wall cube can be set to operate in one of four modes. As a result, command and control room operators can select the brightness level appropriate for their environment and user, avoiding user eye-fatigue over long periods of viewing time.

\*With the new WE120 Series models, the LED light source lasts for 130,000 hours (100,000 hours in bright mode). Mitsubishi Electric LED display wall cubes can thus be used 24/7 for more than 11 years virtually maintenance free.

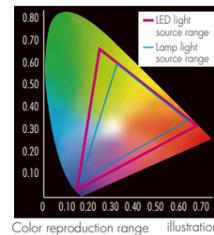
### Proven Performance

Over 78,000 Mitsubishi Electric display wall products have been installed in mission-critical command and control rooms around the world. Our LED projection engines and display wall cubes are designed and developed with the deep understanding and experience we gained from market feedback and from market feedback and closely listening to the diversified needs of our customers.

\*As of March 2016 in-house research.

### Wider Color Reproduction Range

The LED light source offers a much wider range of color reproduction, allowing a larger array of vivid colors to be used for the icons and symbols frequently used in command and control rooms. This ultimately makes it easier for command and control room operators to share information.



### Multiple Picture Settings

Mitsubishi Electric LED display wall cubes have multiple picture settings, giving customers the freedom to choose the best setting suitable for the application and content being displayed. Optimized Color is best for reproducing natural looking colors, Vivid Color realizes more striking colors in icons/symbols, and Low Color Temperature is ideal for backdrop applications in broadcasting studios.

### Eco-conscious

The LED light source eliminated the use of mercury lamps, helping us keep the environment cleaner. At the same time, the Eco mode setting lets users consume less power, reducing CO<sub>2</sub> emissions, leaving a smaller, eco-conscious carbon footprint than conventional lamp-based systems.

## Durability

### Air Cooling System for LED Light Source Enhances Engine Longevity

#### Liquid Cooling System

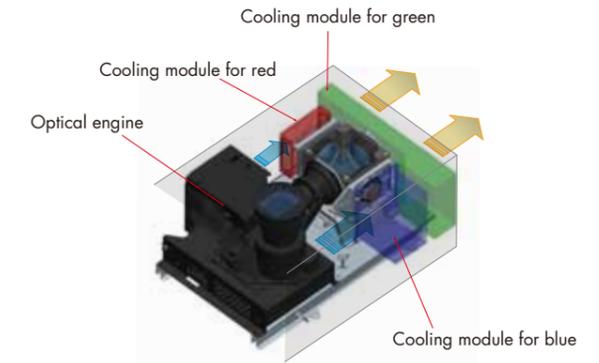
- Pump/Drive parts are required to circulate the liquid
- Complex system requiring liquid reservoir and tube
- Coolant must be replaced frequently due to deterioration and loss
- Pump has a short service life (approx. 50,000hr)

#### Air Cooling System

- Highly efficient, compact cooling module
- No moving parts that require frequent replacement
- Long service life

### Efficient Air Cooling System Realizes Higher Reliability

The system has an optimal airflow path and cooling module design that are perfectly matched to the characteristics of the LED light source.



\*The cooling module consists of a highly efficient cooling tube and aluminum plate.

## Redundancy

### Built-In Features that Ensure Reliable, Consistent, Continuous Operation of Mission-critical Systems

#### Redundant Power Supply

A redundant power supply system can be configured by adding a second (optional) power source. Even if one power supply fails, power will continue to be supplied from the other power supply, so displays continue to be operational with no downtime.



\* Option only available for the WE120 Series.

#### Redundant LED

Mitsubishi Electric's original LED light source utilizes the ideal combination of fully redundant RGB LEDs and an air cooling system, creating perfect display solutions for 24hr operations. Each RGB LED maintains high image quality even if a light element malfunctions, thereby enhancing reliability for various mission-critical environments.

#### Smart Switch

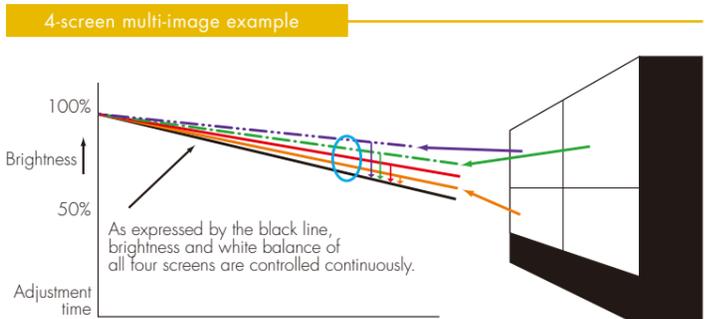
A "Smart Switch" function has been added to Mitsubishi Electric display wall cubes to deliver the signal redundancy necessary for mission-critical applications that require round-the-clock operation. If a signal is unexpectedly lost, the display wall automatically switches to the alternative signal source from port-to-port within seconds after the 'no signal' status is detected. This function makes it possible for users to minimize downtime in the event of a signal source failure.

## Auto-balancing

### Brightness and Color Uniformity is Evenly Maintained Across Multiple Screens, Making the Entire Display Visually Seamless

#### Dynamic Color & Brightness Balancing

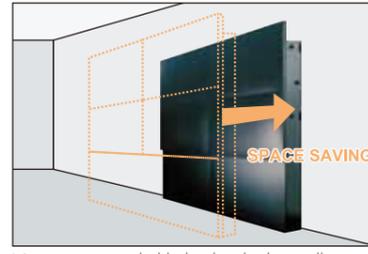
Each display wall cube is equipped with three built-in sensors (one for each primary color) that use a color and brightness maintenance algorithm. The sensors continually monitor the individual red, green and blue output of each display wall cube, share the data with adjacent cubes, and adjust performance automatically to produce extremely accurate colors and brightness balance over the entire display. These features makes it possible to maintain image uniformity on multi-screen configurations over long periods of operation without using external software or third-party calibration computers. Furthermore, the newly developed XYZ color sensor allows multiple screens to be adjusted precisely and easily to a desired color tone. Time-based color changes in multi-screen configurations are also minimized so that image quality is maintained over a long period of time.



## Easy Set-up

### Available Full Front Access for Simpler Maintenance and Space Savings

Mitsubishi Electric offers a wide lineup of display cubes that are accessible from the front, including 60, 62, 70, and 72-inch models. The specially designed slide-and-lift screen and air-ventilation system allow all installation and maintenance work to be completed from the front. As a result, no maintenance space is needed behind the display wall cubes even if they are tiled as a display wall installation.



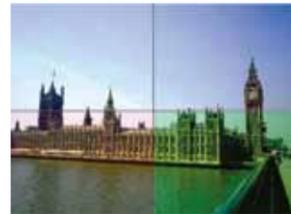
No space is needed behind a display wall

## Intelligence

### High-resolution Images Created with Mitsubishi Electric's New Optical Engine and Optimal Image-quality Circuit Design

#### Color Space Control Circuit

To compensate for the color and brightness inconsistencies on display wall cubes, Mitsubishi Electric has developed an original Color Space Control Circuit that balances and blends colors. The ratios of each primary color (red/green/blue) and other color mixtures are adjusted to provide consistent color blending and superior uniformity on multi-screen configurations.



without Color Space Control



with Color Space Control

#### Digital Gradation Circuit

Loss of brightness at the screen edges is no longer a problem owing to Mitsubishi Electric's innovative digital gradation circuit. Brightness is distributed evenly across the screen, ensuring the reproduction of sharp, vivid images from edge to edge on multi-screen configurations.



without digital gradation



with digital gradation

## Flexibility

### Equipped with Intel® OPS Slot for On-board Computer and Other Peripheral Equipment Installation



120 Series display wall cubes are equipped with an open pluggable specification (OPS) slot. Simply install the optional computer board\* to expand the scope of applications.

A variety of peripheral equipment can be connected quickly and easily for future system expansion.

\* The new WE120 Series models are also compatible with ultraHD, the superhigh-resolution 4K signal (3840 x 2160 pixels), and can display 4K ultrahigh-definition images when using DisplayPort™ cables in a daisy chain configuration.

## Internal Processing

### Built-in Processor

The 120 Series display wall cubes are equipped with an internal image data processing function. In addition to the background image (desktop), a window can be of any size or displayed across the entire wall without using an external computer.

Used in combination with Mitsubishi Electric's D-WALL Control Software Suite, the entire imaging system can be controlled intuitively from a user-friendly graphical user interface.

#### 1 background (desktop)



#### 1 window + 1 background (desktop)



Model name	60HE120	60HEF120	70HE120	70HEF120	60WE120	60WEF120
Screen size	60"		70"		60"	
Resolution	Full HD (1920 x 1080 pixels)					
Accessibility	Rear	Front	Rear	Front	Rear	Front
Technology	DLPTM technology (0.65" DLPTM 1 chip) / Dark Chip3™ / BrilliantColor™ (*1)				DLPTM technology (0.96" DLPTM 1 chip) / Dark Chip3™ / BrilliantColor™ (*1)	
Brightness	Bright mode		580cd/m <sup>2</sup> (Typ.)		1160cd/m <sup>2</sup> (Typ.)	
	Normal mode		460cd/m <sup>2</sup> (Typ.)		820cd/m <sup>2</sup> (Typ.)	
	Eco mode		340cd/m <sup>2</sup> (Typ.)		550cd/m <sup>2</sup> (Typ.)	
	Advanced Eco mode		190cd/m <sup>2</sup> (Typ.)		210cd/m <sup>2</sup> (Typ.)	
Viewing angle	Horizontal		1/2 gain: ±35deg, 1/10 gain: ±57deg		1/2 gain: ±35deg, 1/10 gain: ±57deg	
	Vertical		1/2 gain: ±10deg, 1/10 gain: ±28deg		1/2 gain: ±10deg, 1/10 gain: ±28deg	
Contrast ratio	1500:1 (Typ.)				1500:1 (Typ) Up to 3800:1 (*5)	
Screen-to-screen gap	Horizontal		0.2 - 2.0mm (*2)		0.2 - 1.5mm (*2)	
	Vertical		0.2 - 1.5mm (*2)		0.2 - 1.0mm (*2)	
Light source	Redundant LED (RGB)					
	Expected lifetime		100,000hr (Advanced Eco mode) 80,000hr (Normal mode, Eco mode), 60,000hr (Bright mode)		130,000 hr (Normal mode, Eco mode, Advanced Eco mode) 100,000 hr (Bright mode)	
Key components lifetime (average)	DLPTM chip					
	Cooling fan					
Control signal input	RS-232C: Dsub9					
	LAN: RJ45 (10BASE-T/100BASE-TX)					
	Mitsubishi Electric Original Control Link: Dsub9 x 2 (IN/OUT)					
	Wire remote: F3.5 jack					
Signal input terminal	DVH (digital with HDCP, analog) x1 DVI-D (digital with HDCP) x1 DisplayPort™ (DP1.1a) x1 (*3)				DVH (digital with HDCP, analog) x1 DVI-D (digital with HDCP) x1 DisplayPort™ (DP1.2a) x 2 (IN/OUT) (*3)	
	IR receiver					
Recommended Intel®OPS board	Advantech DS280GB 1701ET (i7-6822EQ, 4+4GB DDR4, 256GB SSD) / Advantech DS280GF 1701ET (i7-6822EQ, 4+4GB DDR4, 500GB HDD)					
Power consumption (w/o input board)	Bright mode		172W (Typ.)		225W (Typ.)	
	Normal mode		131W (Typ.)		137W (Typ.)	
	Eco mode		95W (Typ.)		97W (Typ.)	
	Advanced Eco mode		80W (Typ.)		77W (Typ.)	
Voltage range	100-240VAC±10%, 50/60Hz±1Hz					
Operating current (100/240V)	2.5/1.2amp.				Single power mode (Main or Exit): 3.3 / 1.4amp. Redundant power mode (Main or Exit): 3.4 / 1.7amp.	
Operating conditions	Temperature		10-35°C (50-95°F)		10-35°C (50-95°F)	
	Humidity		20-80% non-condensing		20-80% non-condensing	
Weight	85kg/188lb	91kg/201lb	101kg/223lb	106kg/234lb	86kg	92kg
Model no.	Projection engine					
	Cabinet					
	Screen unit					

Model name	70WE120	70WEF120	62WE120	62WEF120	72WE120	72WEF120
Screen size	70"		62"		72"	
Resolution	Full HD (1920 x 1080 pixels)			WUXGA (1920x1200 pixels)		
Accessibility	Rear	Front	Rear	Front	Rear	Front
Technology	DLPTM technology (0.96" DLPTM 1 chip) / Dark Chip3™ / BrilliantColor™ (*1)					
Brightness	Bright mode		860cd/m <sup>2</sup> (Typ.)		1160cd/m <sup>2</sup> (Typ.)	
	Normal mode		610cd/m <sup>2</sup> (Typ.)		820cd/m <sup>2</sup> (Typ.)	
	Eco mode		410cd/m <sup>2</sup> (Typ.)		550cd/m <sup>2</sup> (Typ.)	
	Advanced Eco mode		150cd/m <sup>2</sup> (Typ.)		210cd/m <sup>2</sup> (Typ.)	
Viewing angle	Horizontal		1/2 gain: ±35deg, 1/10 gain: ±57deg		1/2 gain: ±35deg, 1/10 gain: ±57deg	
	Vertical		1/2 gain: ±10deg, 1/10 gain: ±28deg		1/2 gain: ±10deg, 1/10 gain: ±28deg	
Contrast ratio	1500:1 (Typ) Up to 3800:1 (*5)					
Screen-to-screen gap	Horizontal		0.2 - 2.0mm (*2)		0.2 - 2.0mm (*2)	
	Vertical		0.2 - 1.5mm (*2)		0.2 - 1.5mm (*2)	
Light source	Redundant LED (RGB)					
	Expected lifetime		130,000 hr (Normal mode, Eco mode, Advanced Eco mode) 100,000 hr (Bright mode)		130,000 hr (Normal mode, Eco mode, Advanced Eco mode) 100,000 hr (Bright mode)	
Key components lifetime (average)	DLPTM chip					
	Cooling fan					
Control signal input	RS-232C: Dsub9					
	LAN: RJ45 (10BASE-T/100BASE-TX)					
	Mitsubishi Electric Original Control Link: Dsub9 x 2 (IN/OUT)					
	Wire remote: F3.5 jack					
Signal input terminal	DVH (digital with HDCP, analog) x1 DVI-D (digital with HDCP) x1 DisplayPort™ (DP1.1a) x1 (*3)				DVH (digital with HDCP, analog) x1 DVI-D (digital with HDCP) x1 DisplayPort™ (DP1.2a) x 2 (IN/OUT) (*3)	
	IR receiver					
Recommended Intel®OPS board	Advantech DS280GB 1701ET (i7-6822EQ, 4+4GB DDR4, 256GB SSD) / Advantech DS280GF 1701ET (i7-6822EQ, 4+4GB DDR4, 500GB HDD)					
Power consumption (w/o input board)	Bright mode		225W (Typ.)		225W (Typ.)	
	Normal mode		137W (Typ.)		137W (Typ.)	
	Eco mode		97W (Typ.)		97W (Typ.)	
	Advanced Eco mode		77W (Typ.)		77W (Typ.)	
Voltage range	100-240VAC±10%, 50/60Hz±1Hz					
Operating current (100/240V)	Single power mode (Main or Exit): 3.3/1.4amp. Redundant power mode (Main or Exit): 3.4/1.7amp.					
Operating conditions	Temperature		10-35°C (50-95°F)		10-35°C (50-95°F)	
	Humidity		20-80% non-condensing		20-80% non-condensing	
Weight	102kg	107kg	89kg	96kg	107kg	111kg
Model no.	Projection engine					
	Cabinet					
	Screen unit					

(\*1) DLPTM, DarkChip3™ and BrilliantColor™ are trademarks of Texas Instruments.

(\*2) Depending on configuration and environment. The maximum screen-to-screen gap size is recommended for large display walls to allow for screen expansion due to heat and humidity.

(\*3) DisplayPort™ is a trademark of the Video Electronics Standards Association.

(\*4) The above figures are when using Black Stripe screen.

(\*5) @full on / off contrast ratio.

(\*6) Intel is a registered trademark of Intel Corporation in the US and other countries.

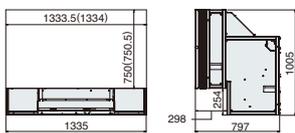
### Optional Cross-lenticular screen upon special request

Model Name (w/Cross-lenticular screen)	60HE120L2	60HE120L	70HE120L2	70HE120L	60WE120L2	60WE120L
Model No. (projection engine)	VS-HE120U				VS-WE120U	
Model No. (Cross-lenticular screen)	SC-60HE120L	SC-60HE75LF	SC-70HE120L	SC-70HE75LF	SC-60HE120L	SC-60HE75LF
Brightness with cross-lenticular screen	Bright mode	400		290		590
	Normal mode	320		230		420
	Eco mode	230		170		280
	Advanced Eco mode	90		70		100
Viewing angle with Cross-lenticular screen	Horizontal	1/2 gain:±35deg, 1/10gain:±57deg				
	Vertical	1/2 gain:±33deg, 1/10gain:±55deg				
Screen-to-screen gap	Horizontal	0.2 - 1.0mm(*2)	1.0 - 2.5mm(*2)	0.2 - 1.0mm(*2)	1.0 - 3.0mm(*2)	0.2 - 1.0mm(*2)
	Vertical	0.2 - 0.5mm(*2)	1.0 - 2.0mm(*2)	0.2 - 0.5mm(*2)	1.0 - 2.5mm(*2)	0.2 - 0.5mm(*2)

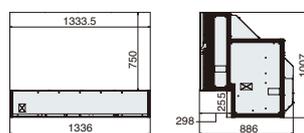
Model Name (w/Cross-lenticular screen)	70WE120L2	70WE120L	62WE120L2	62WE120L	72WE120L2	72WE120L
Model No. (projection engine)	VS-WE120U					
Model No. (Cross-lenticular screen)	SC-70HE120L	SC-70HE75LF	SC-62WE120L	SC-62WE75LF	SC-72WE120L	SC-72WE75LF
Brightness with Cross-lenticular screen	Bright mode	440		590		440
	Normal mode	310		420		310
	Eco mode	210		280		210
	Advanced Eco mode	70		100		70
Viewing angle with Cross-lenticular screen	Horizontal	1/2 gain:±35deg, 1/10gain:±57deg				
	Vertical	1/2 gain:±33deg, 1/10gain:±55deg				
Screen-to-screen gap	Horizontal	0.2 - 1.0mm(*2)	1.0 - 3.0mm(*2)	0.2 - 1.0mm(*2)	1.0 - 2.5mm(*2)	0.2 - 1.0mm(*2)
	Vertical	0.2 - 0.5mm(*2)	1.0 - 2.5mm(*2)	0.2 - 0.5mm(*2)	1.0 - 2.0mm(*2)	0.2 - 0.5mm(*2)

### ■ 16:9 wide format \* Figures in ( ) are for 120 Series.

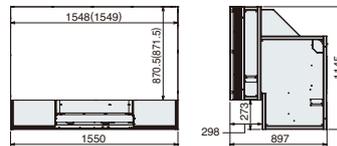
60HE120/60WE120



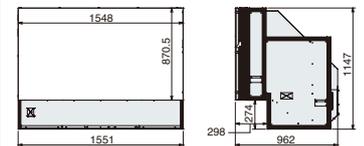
60HE120/60WE120



70HE120/70WE120



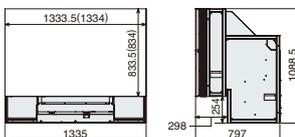
70HE120/70WE120



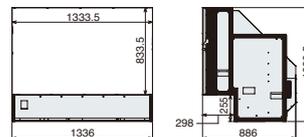
(unit:mm)

### ■ 16:10 wide format \* Figures in ( ) are for 120 Series.

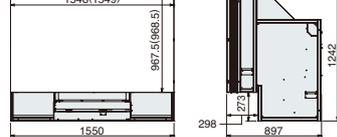
62WE120



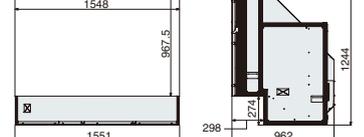
62WE120



72WE120



72WE120



(unit:mm)

\*The design and measurements are subject to change without notice.

\*All pictures shown are for illustrative purposes only.

\*When Cross-Lenticular Screens are used, each screen size will be approximately 0.5mm wider and higher than the dimensions of the standard Black Stripe Screen.

\*Operating temperature range is 20-30°C.



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



## MITSUBISHI ELECTRIC CORPORATION

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[www.MitsubishiElectric.com/products/vis/displaywalls](http://www.MitsubishiElectric.com/products/vis/displaywalls)