



VISUAL DISPLAYS

Panasonic projectors

Sales opportunities out of lockdown and beyond

We are passionate about projection!

DISPLAYS, LIGHT, ENVIRONMENTAL & STANDARDS EXPERTISE

Presenter – Greg Jeffreys



- ▶ Managing Director of Visual Displays (formerly Paradigm AV)
- ▶ Specialist consultant in standards, displays, light & lighting, VC lighting, teaching space & meeting room design
- ▶ Current chair, AVIXA Standards Steering Committee
- ▶ Lead writer, PISCR image contrast standard – and new ISCR standard task group
- ▶ Task group chair ANSI/AVIXA DISCAS standard – image size, resolution, viewing positions/angles, content size guidance
- ▶ Task group working on AVIXA's new UX for AV Design standard
- ▶ President of InfoComm/AVIXA 2012, board member 2008-13
- ▶ 2020 Outstanding Contribution Award -

Projection evangelist and nerd!

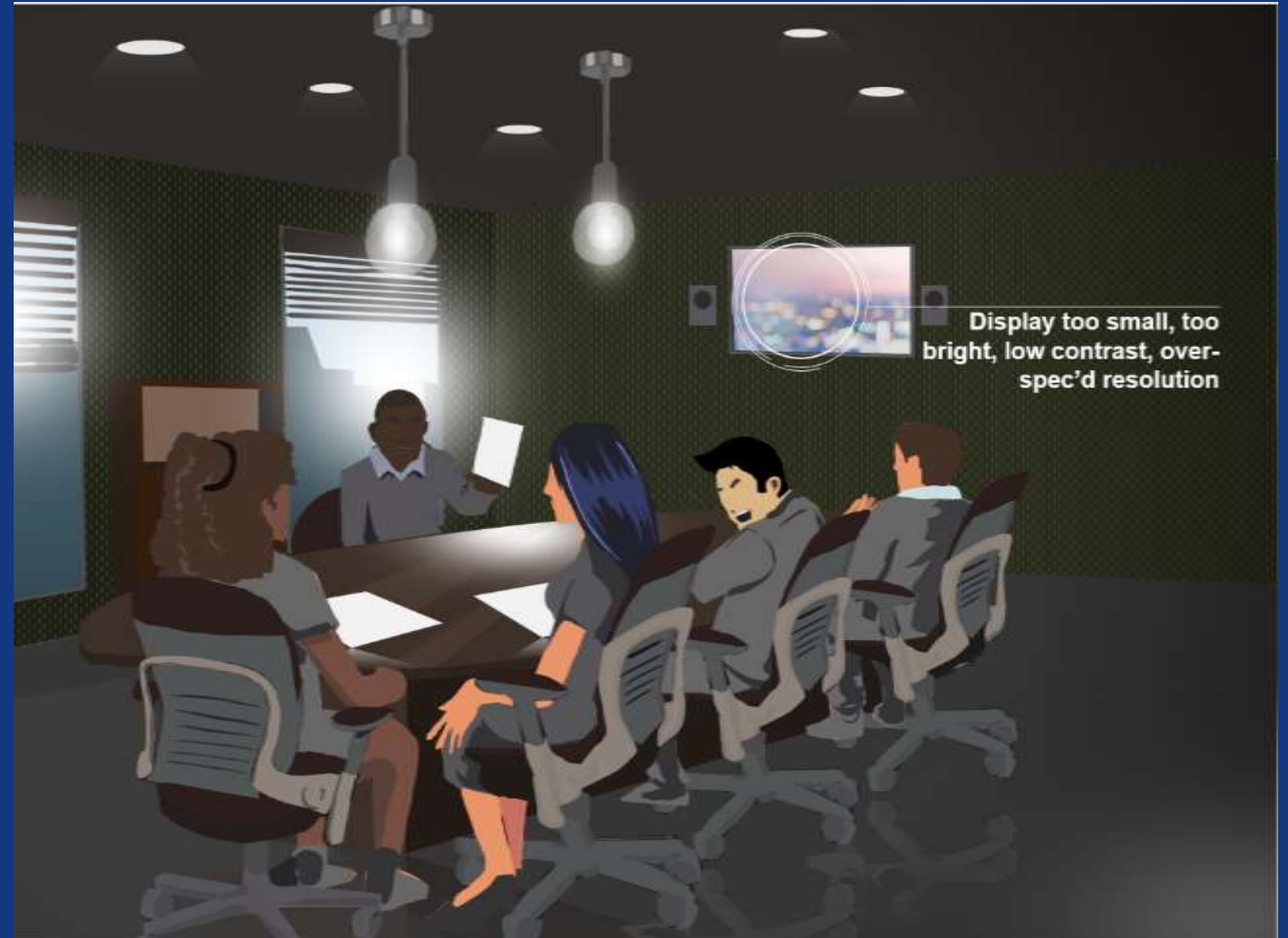
Introduction



- ▶ Learnings from LTSMG, consultant and integrators webinars
 - ▶ ...very positive for projection
- ▶ Social distancing places spreads viewers into entire space.
 - ▶ Everyone needs to see images – even from the back of the room
- ▶ Transforming projection sales by selling 'displays' rather than a list of components
 - ▶ Option to buy complete displays as single SKUs
- ▶ Selling on the delivered image performance
- ▶ A solution-based approach
- ▶ Using using global standards – now in daily use – a game changer
 - ▶ So easy to use – provides such compelling arguments
- ▶ Using powerful sales tools and calculators
- ▶ Making it work with existing channels

Background – the realities

- ▶ Many dealers think projection is yesterday's technology
 - ▶ De-skilling in favour of low voltage and IP
 - ▶ Harder to sell than a large format display (flat panel)
- ▶ The difference between perfect brochure images and washed out realities under ambient light is expected
- ▶ Low expectation levels



The future is bright...

Laser is the game changer – we can use it to change the message

- ▶ Viewers don't look at the projector – they look at the screen
- ▶ If the screen is unsuitable your projector looks bad – no matter how good it really is
- ▶ How can that image we see in the darkened room, home cinema etc be translated into the real pro-AV world of high ambient light?
- ▶ Standards are also the game changer here
- ▶ With all the qualities and the ancillary software and benefits available
- ▶ ...ambient light rejecting screens!
 - ▶ Standards make this measurable outcomes
- ▶ By widening the focus to the screen, to the delivered image, to 'displays' we can transform existing attitudes to projection, inspire new users and find new opportunities.

Add 'projection *displays*' to the repertoire

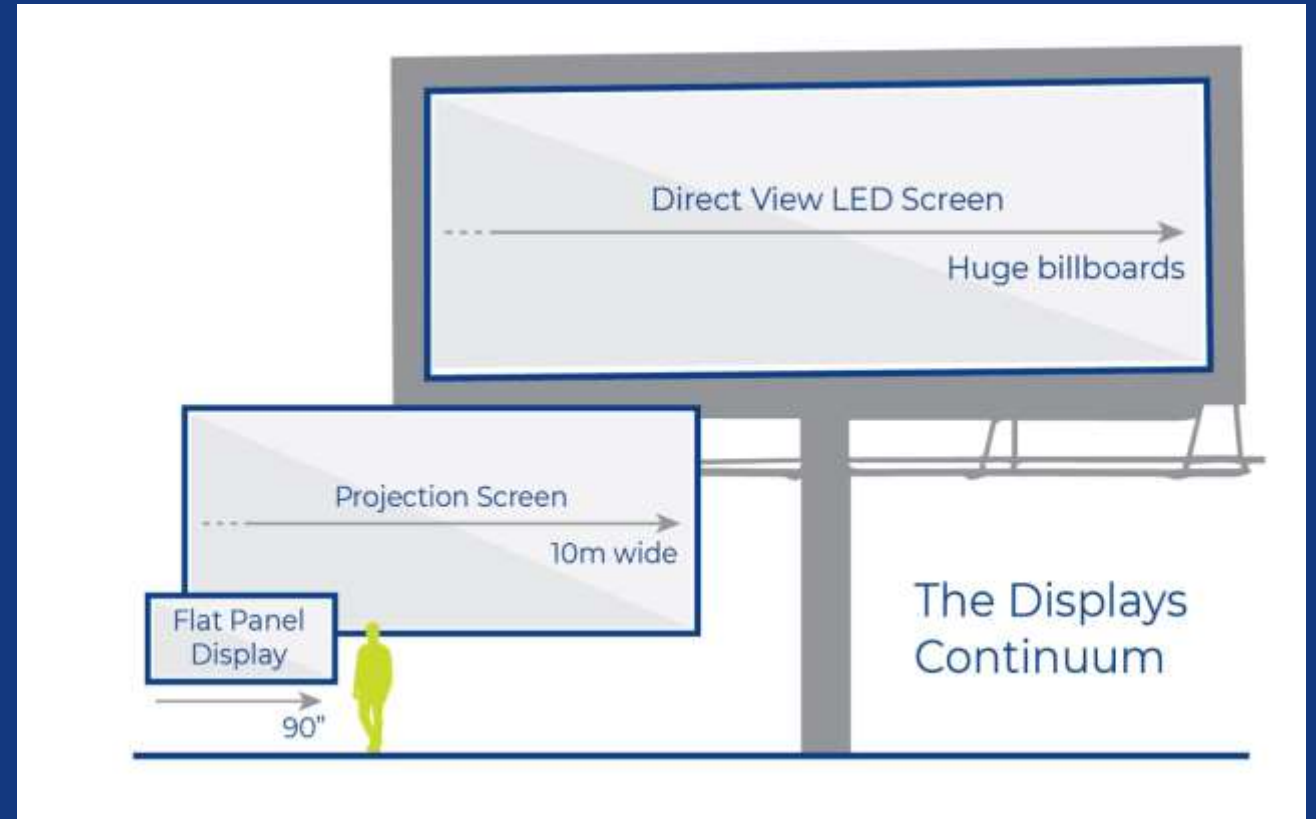


- ▶ Objectives
 - ▶ Have specifiers and integrators get the size right
 - ▶ Make it as easy for clients to buy a 120" projected display as a 98" NEC LFD
 - ▶ Sell the deliverable, not the projector spec, e.g.
 - ▶ All image sizes at 350cd/m² and 500cd/m² image luminance (brightness)

It's all done with standards and their easy-to-use calculators

The displays continuum

- ▶ Up to 90" – flat panels (LFD, FPD)
- ▶ Above 90" – ALR projection
- ▶ Variable entry point for dvLED



For perfect images you need two
numbers

15 & 6

That's all!!

15?

15:1 contrast ratio

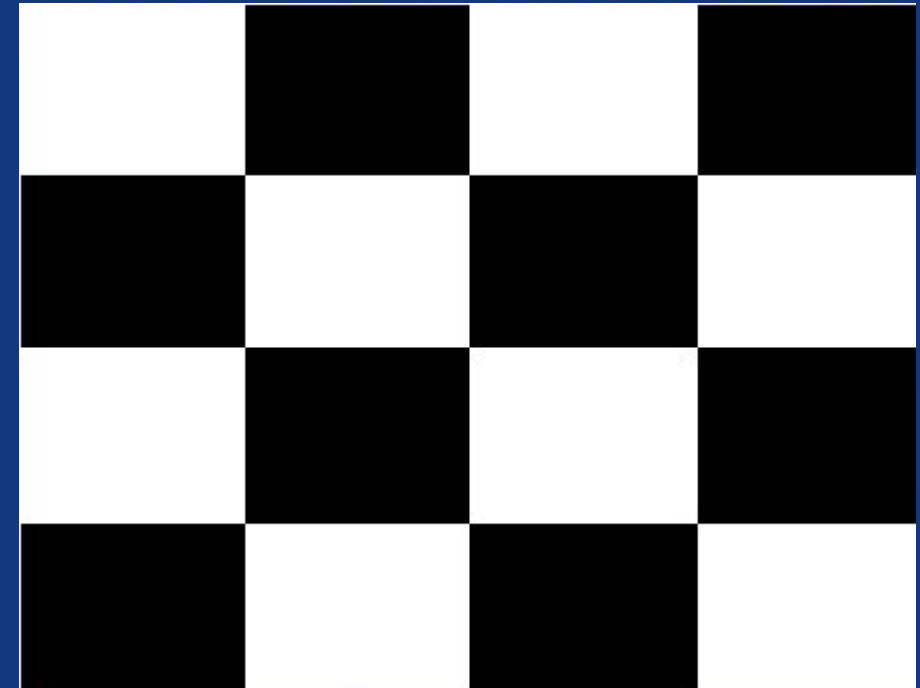
- ▶ The PISCR/ISCR image standard has four viewing categories
- ▶ 99% of our sales are Basic Decision Making Category

The viewer can make basic decisions from the displayed image. The decisions are not dependent on critical details within the image, but there is assimilation and retention of information. The viewer is actively engaged with the content (e.g., information displays, presentations containing detailed images, classrooms, boardrooms multi-purpose rooms, product illustrations).

- ▶ In standard installations 15:1 is almost always impossible to achieve
- ▶ ***But why.....?***

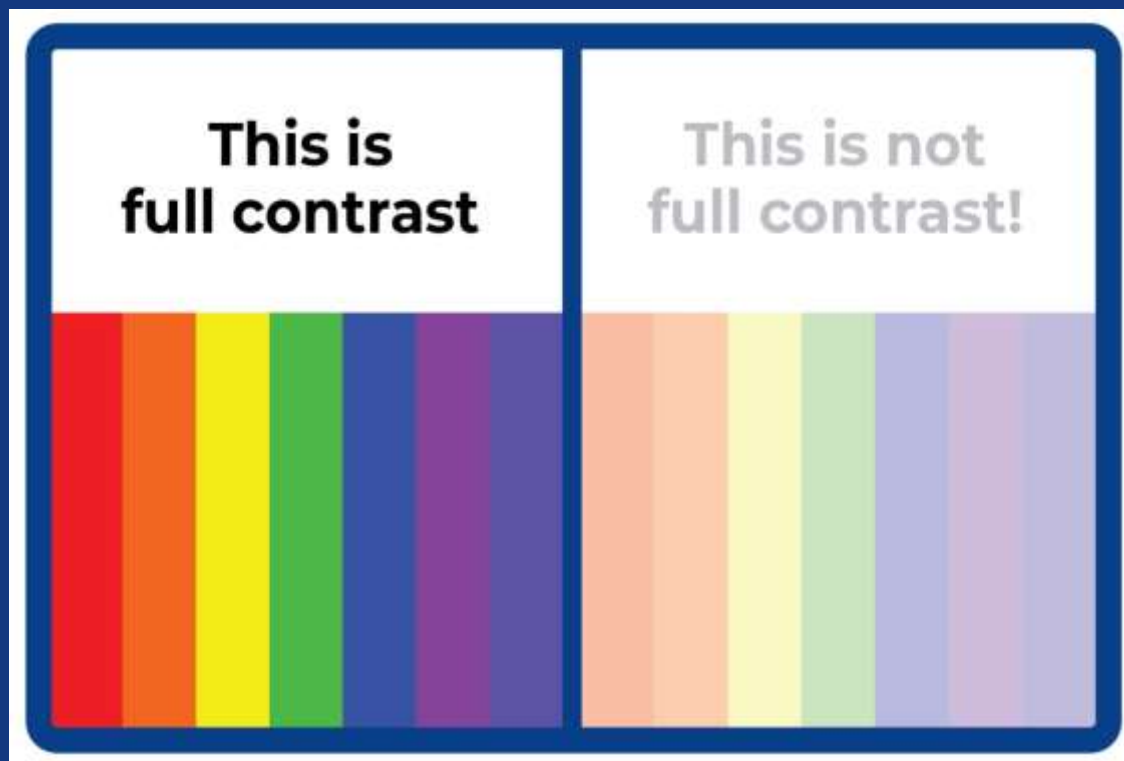


VISUAL DISPLAYS



The white squares' average luminance (brightness) must be 15 x more than the black squares.
ONSCREEN – NOT FROM PROJECTOR

Contrast is key driver for image quality



Low contrast even damages perceived resolution.

Contrast in real life

A typical scenario

Image contrast calculator. Front screen black levels are limited by ambient light falling on screen. (This calculator assumes projector black levels are perfect!)			Conversion to US	
If ambient light on screen is	200	lux	18.0	foot-candle (ft-c)
If the screen is	1	gain		
resulting max screen black level	64	nit	18.6	foot-lambert (fL)
so...				
If projector has	5000	ANSI lumens		
& screen size is	120	inches diagonal		
(so screen width is	2665	mm		
...and screen height is)	1499	mm		
so screen area is	3.99	m ²		
Then screen max white can be	398	nit	116.3	foot-lambert (fL)
So max possible contrast ratio	7.3	:1		

Double screen gain? ...no change

Image contrast calculator. Front screen black levels are limited by ambient light falling on screen. (This calculator assumes projector black levels are perfect!)			Conversion to US	
If ambient light on screen is	200	lux	18.0	foot-candle (ft-c)
If the screen is	2	gain		
resulting max screen black level	127	nit	37.2	foot-lambert (fL)
so...				
If projector has	5000	ANSI lumens		
& screen size is	120	inches diagonal		
(so screen width is	2665	mm		
...and screen height is)	1499	mm		
so screen area is	3.99	m ²		
Then screen max white can be	797	nit	232.7	foot-lambert (fL)
So max possible contrast ratio	7.3	:1		

Double the lumens (and price?!) ...small improvement

Image contrast calculator. Front screen black levels are limited by ambient light falling on screen. (This calculator assumes projector black levels are perfect!)			Conversion to US	
If ambient light on screen is	200	lux	18.0	foot-candle (ft-c)
If the screen is	1	gain		
resulting max screen black level	64	nit	18.6	foot-lambert (fL)
so...				
If projector has	10000	ANSI lumens		
& screen size is	120	inches diagonal		
(so screen width is	2665	mm		
...and screen height is)	1499	mm		
so screen area is	3.99	m ²		
Then screen max white can be	797	nit	232.7	foot-lambert (fL)
So max possible contrast ratio	13.5	:1		

Control the ambient light? ...massive improvement!

Image contrast calculator. Front screen black levels are limited by ambient light falling on screen. (This calculator assumes projector black levels are perfect!)

If ambient light on screen is	50	lux
If the screen is	1	gain
resulting max screen black level	16	nit
so...		
If projector has	5000	ANSI lumens
& screen size is	120	inches diagonal
(so screen width is	2665	mm
...and screen height is)	1499	mm
so screen area is	3.99	m ²
Then screen max white can be	398	nit
So max possible contrast ratio	26.0	:1

Image contrast calculator. Front screen black levels are limited by ambient light falling on screen. (This calculator assumes projector black levels are perfect!)

If ambient light on screen is	10	lux
If the screen is	1	gain
resulting max screen black level	3	nit
so...		
If projector has	5000	ANSI lumens
& screen size is	120	inches diagonal
(so screen width is	2665	mm
...and screen height is)	1499	mm
so screen area is	3.99	m ²
Then screen max white can be	398	nit
So max possible contrast ratio	126.2	:1

Real life contrast is driven 100% by ambient light

- ▶ Projector contrast can't be perceived until you're in a darkened room
- ▶ If you can't control the light, you need screen technology that can...

The split screen technology demonstration



dnp
Supernova
08-85

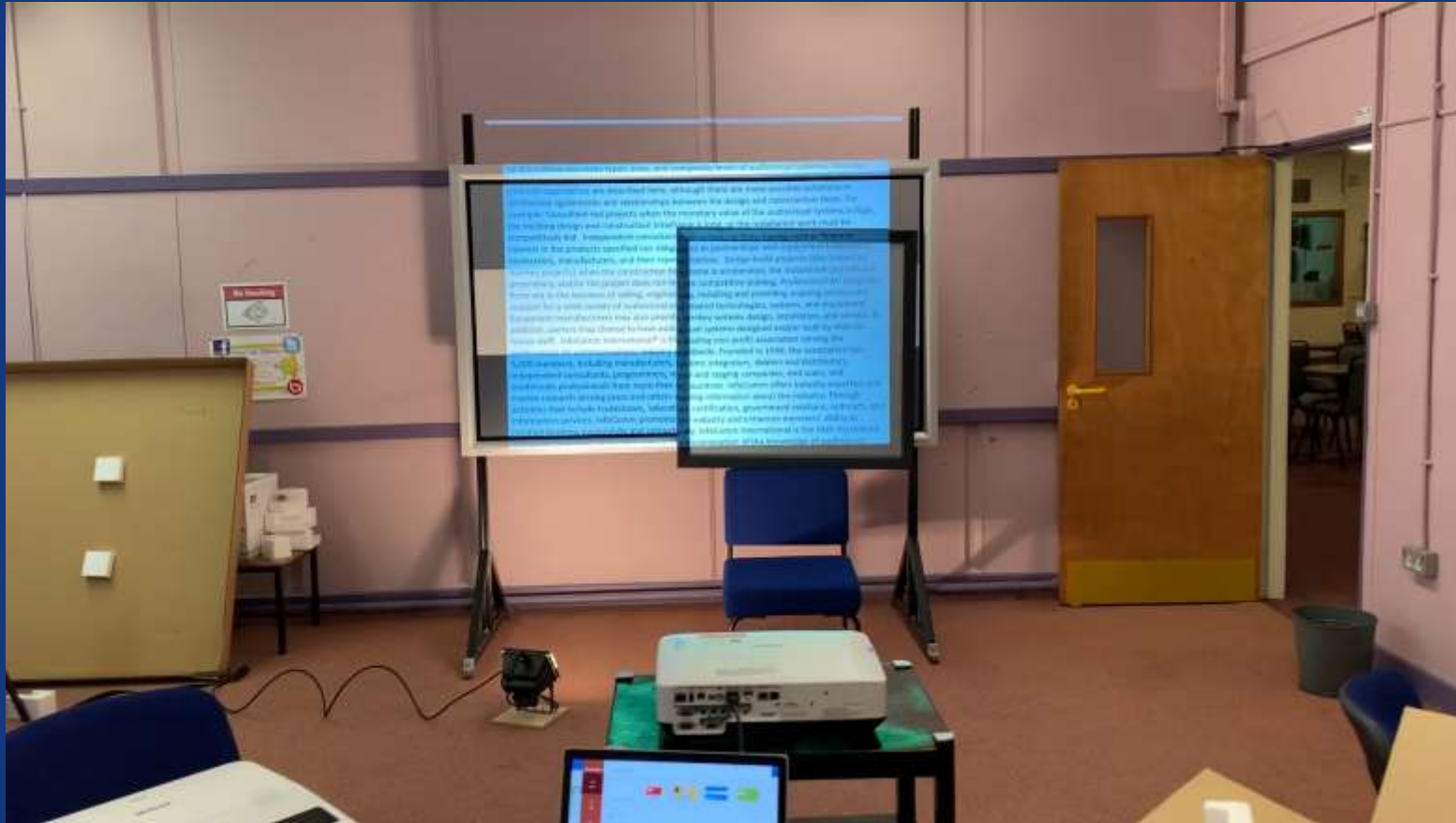
dnp
Supernova
23-23

Standard white
Da-Lite
gain 1

See full Gary
Kayye ISE
video here -

<https://www.dnp-screens.com/en/video/dnp-ambient-light-rejecting-screens-at-ise-2015/>

The split screen technology demonstration



Play video here -
<https://www.youtube.com/watch?v=i82O9xYxRxk>

15:1 contrast

Make it happen!

- ▶ Example 120" image
- ▶ Normal lighting scenario
- ▶ 15:1 image contrast impossible with standard screen
 - ▶ Easy with dnp ALR(ambient light rejecting) material!
 - ▶ 3 x better is typical with dnp – up to 7 x better
- ▶ Try it yourself - <http://pdf.dnp.dk/html/>

Change to US unit ▶

Copy information from scenario 1 to 2 ▶

Image brightness needed based on best estimates:		
Ambient brightness level in the room	ALR	?
Ambient brightness level on the screen surface	ALS	?
Screen reflectance factor	SRF	?
Contrast level needed in final image	ICR	?
Projector checkerboard contrast	C	?
Ambient light reflected back to the audience	R	
Image brightness needed based on best estimates	B	
Maximum brightness allowed to be "eye-gonomical"	Bmax	

Scenario 1		Scenario 2	
500	LUX	500	LUX
150	LUX	150	LUX
25.0	%	5.0	%
15.0	:1	15.0	:1
120	:1	120	:1
37.5	NIT	7.5	NIT
600.0	NIT	120.0	NIT
477.5	NIT	477.5	NIT

Projector brightness needed for the actual screen size:	
Image height	Set size ▼
Image width	
Image area	
Peak gain	?
Gain efficiency for horizontal viewing position	?
Gain efficiency for vertical viewing position	?
Effective gain in viewing position	
Effective (net) projector brightness needed	PBN

Scenario 1		Scenario 2	
1,493	mm	1,493	mm
2,657	mm	2,657	mm
3.97	m2	3.97	m2
1.00		1.00	
94	%	73	%
94	%	69	%
0.88		0.50	
8,462	lum	2,969	lum

Dimensioning the projector(s):	
Loss for start-up adjustment of colours	?
Number of projectors	
Blending zone	?
Lamp efficiency	?
Brightness need adjusted for start-up adjustment of colours	
Brightness need adjusted for loss for edgeblending	
Brightness need adjusted for loss due to lamp decay	
Specified (gross) projector brightness needed	PBG

Scenario 1		Scenario 2	
15	%	15	%
1		1	
100	%	100	%
90	%	90	%
9,956	lum	3,493	lum
9,956	lum	3,493	lum
11,062	lum	3,881	lum
11,062	lum	3,881	lum



VISUAL DISPLAYS

World-class optical projection screens from dnp denmark



As the exclusive distributor for dnp in UK and Ireland, we are uniquely placed to offer the industry's best projection screens and displays – and secure your opportunities.

Next-generation optical screen technology combats issues caused by high ambient light. High-contrast ratio (15:1 and above) means content is sharp, bright and vivid, for maximum impact.

- Pioneering true ALR technology
- Large displays - 100" to infinite size
- 7x contrast level of a standard screen
- Huge cost savings vs flat panel, videowall and Direct View LED
- ISF certified colour rendition



dnp Supernova Blade

Frameless, space-saving, sleek design. Up to 120"



dnp Supernova Flex Classic

Noiseless, motorized, retractable. With / without ceiling unit. Up to 120"



dnp Supernova Infinity

Up to any size. Modular, seamless viewing experience

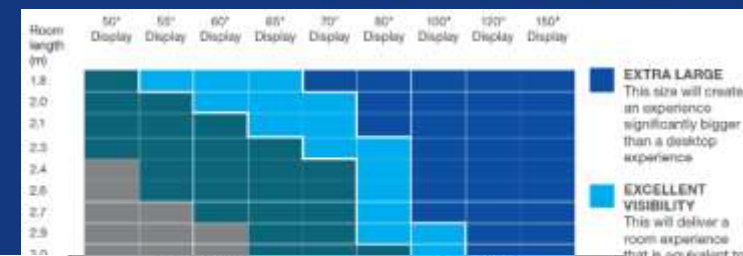
6 ?

...because size matters

- ▶ The DISCAS image size standard is globally recognised
- ▶ Content (font size/height) is the 'big new thing'
- ▶ Easy-to-use calculator
- ▶ Recommended starting point = 3%EH
 - ▶ which means...
- ▶ The maximum viewing distance should be no more than 6x the image height
- ▶ Download calculator here - <https://visualdisplaysltd.com/resources/useful-calculator-tools>

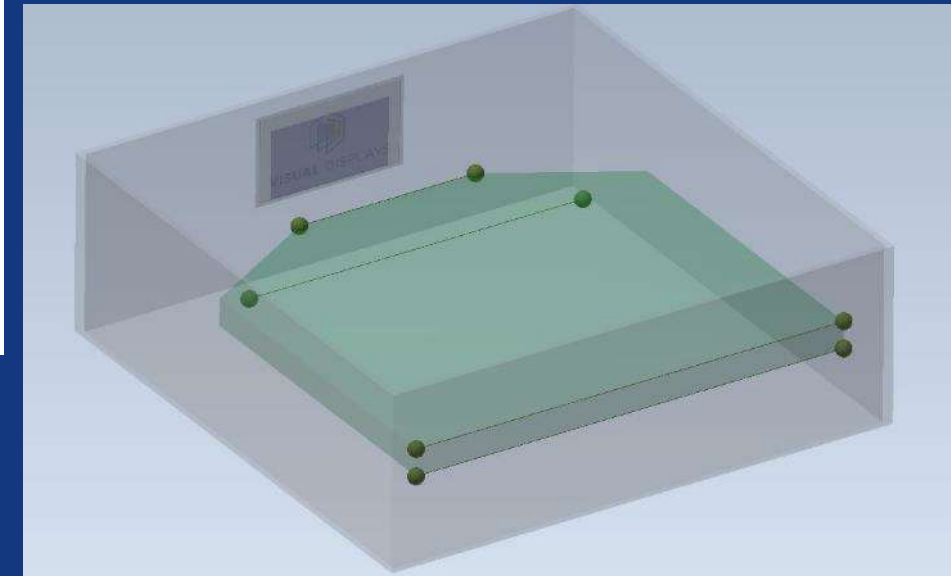
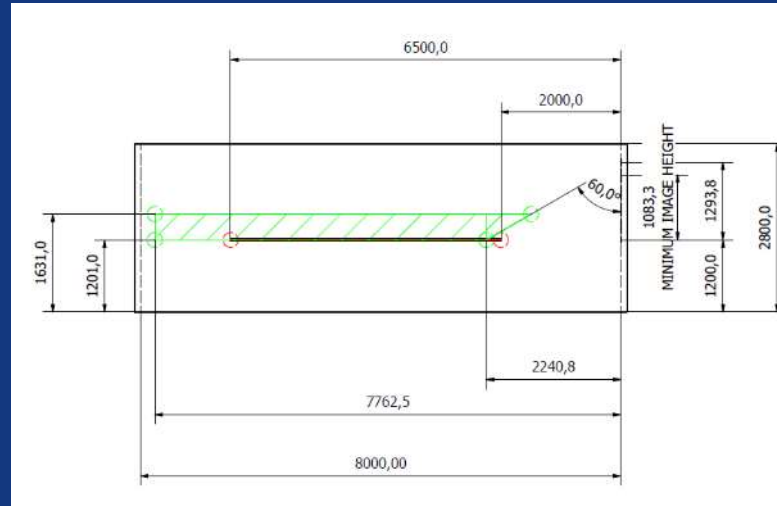
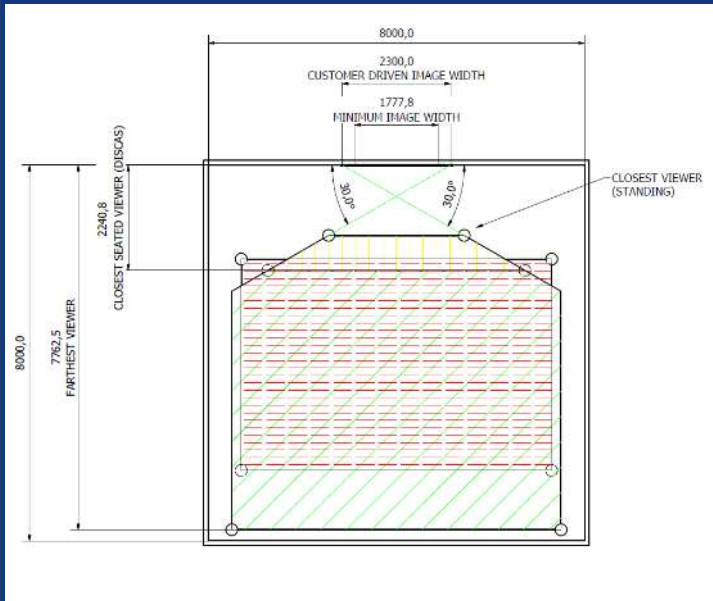


VISUAL DISPLAYS



	TO FIND:		
<i>Do not add measurement labels (" , mm)</i>	Farthest Viewer	Minimum Image Height	
Image Height	1000	1000	NOT RECOMMENDED This is a poor experience that does not meet any standards
Distance from floor to bottom of image	1220	1220	
Image Offset	0	0	
Image Width	1780	1780	
Farthest Viewer	6000	6000	
Viewing Ratio	6.00	6.00	
Minimum %Element	3.00%	3.00%	
TO FIND	Farthest	Minimum	
CLOSEST VIEWER	Viewer	Image Height	
Vertical Viewing Factor	1000	1000	
Closest Viewer	1732.0	1732.0	
Viewing Ratio	1.73	1.73	
Nominal Viewing Depth	4268.0	4268.0	
Max. Length of CV Plane	4220	4220	

DISCAS CAD tools ...helping partners win business



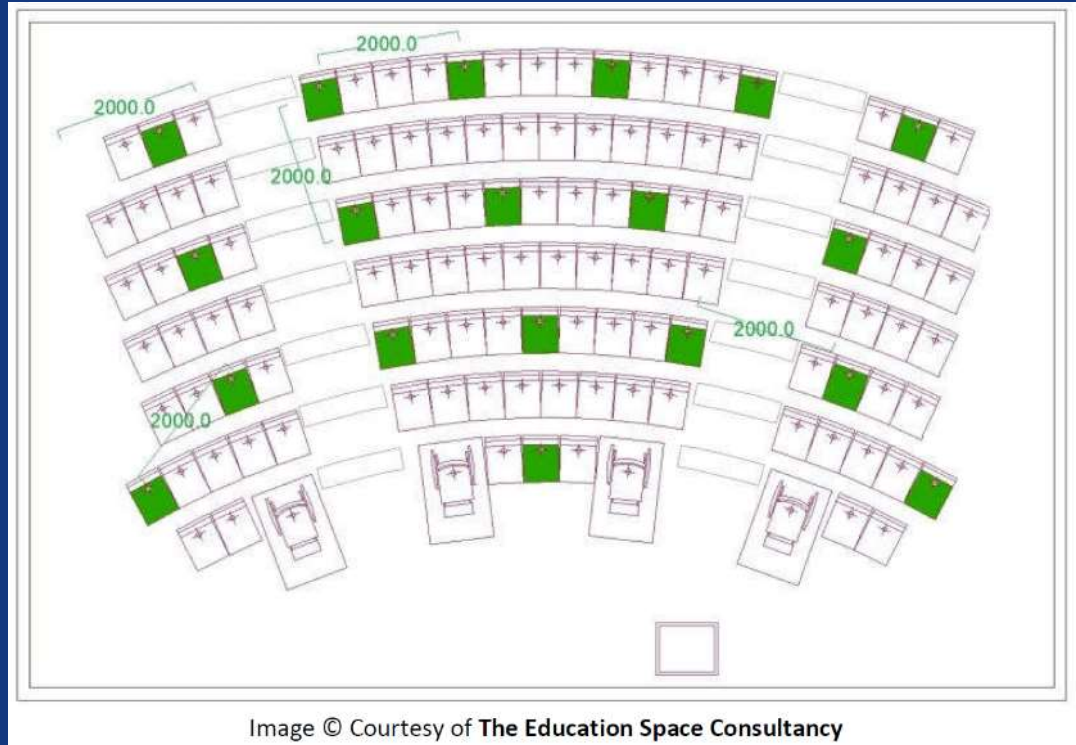
For perfect image you need two
numbers

15 & 6

...and that's why!!

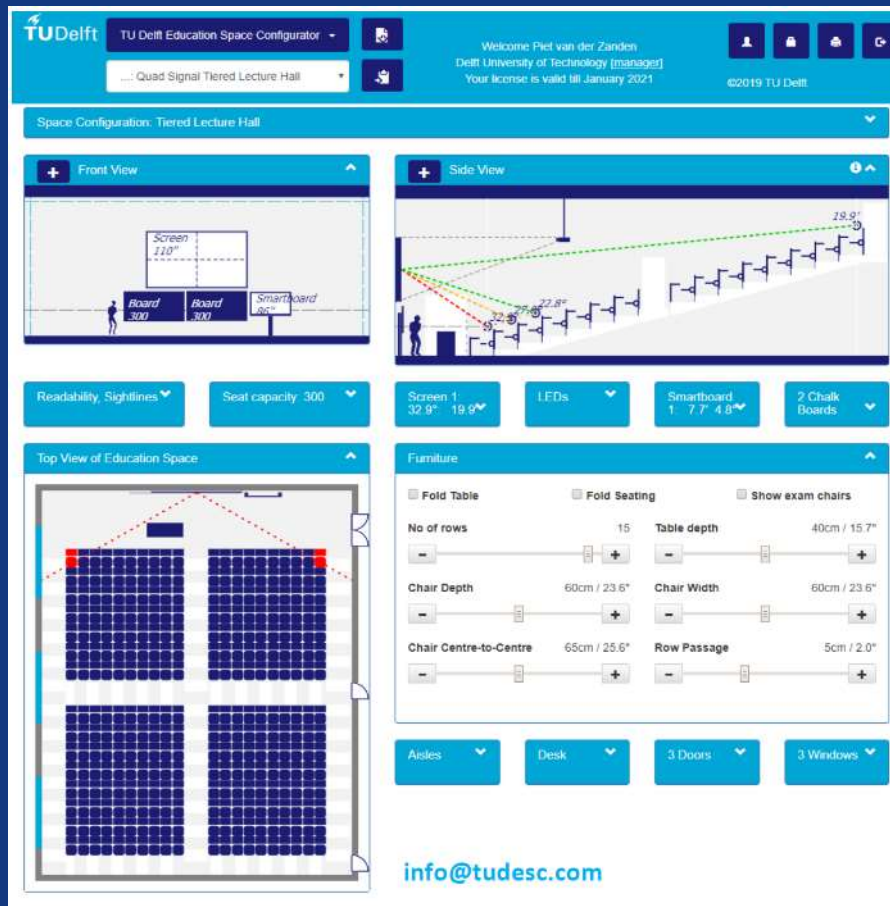
And now size REALLY matters

- ▶ Post COVID-19 lock-down, social distancing will have radical impact on space occupancy
- ▶ Imperial College Uni expects <16% possible occupancy
 - ▶ Other estimates start at 9%
- ▶ **People will need to be at – and see from – the back of the room**
 - ▶ They won't want to spend a fortune achieving this...

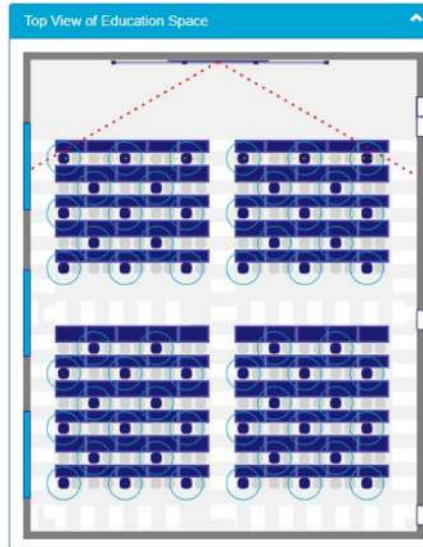


Social distancing space configurator

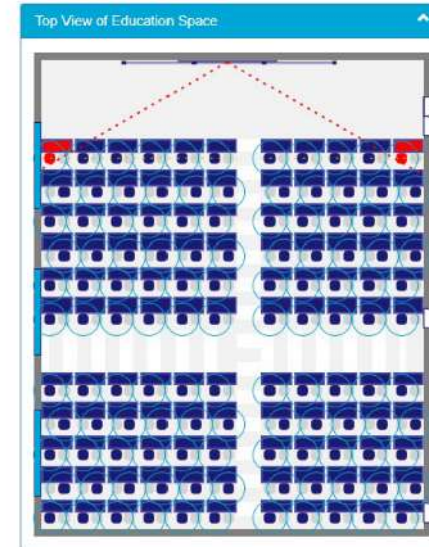
Complete space configuration and management



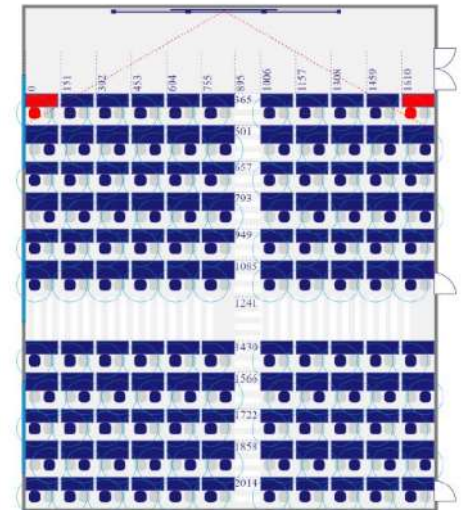
Social Distance with normally generated Seat Capacity (56)



Social Distance with optimized Seat Capacity (121)



Printed detailed Floorplan for facility instructions



Market research - projectors

- ▶ Pacific Media (Q3 2019)
 - ▶ WUXGA 5-15,000 lumens
 - ▶ Best estimate, post lockdown – 9-11,000 units – say 10,000
 - ▶ Each 1% market share = 100 units

WUXGA/1080HD resolution 5-15,000 lumens						
PMA Research - EMEA Projector Census						
		YearQtr				
Values	Brand	2017Y	2018Y	2019Q1	2019Q2	2019Q3
Units	Panasonic	2,296	2,588	676	748	990
	Epson	1,590	2,124	630	758	846
	NEC	1,322	1,276	361	461	314
	Optoma	662	1,129	367	213	225
	Sony	493	791	207	73	194
	BenQ	163	211	132	41	139
	Christie	804	339	103	61	133
	zOther	392	420	120	93	104
	Maxell	299	353	124	117	59
	Canon	292	268	53	51	47
	Vivitek	129	210	43	29	44
	ViewSonic	113	97	41	26	22
	Acer	28	9	6		5
	Dell	11	16	2	2	2
	JVC	1				
	InFocus	2	12			

Market research – LFDs

- ▶ Total 2020 market of possible pivot to projection = 3000
- ▶ What % can we pivot to projection?
- ▶ Each 1% = 30
 - ▶ 5% = 150
 - ▶ 10% = 300
- ▶ 350cd/m2 from £5,900 trade

UK		2019	2020 Q1
Screen Size	Interactive	Volume	Volume
80	No	215	37
	Yes	431	74
85	No	1001	327
	Yes	395	62
98	No	1197	418

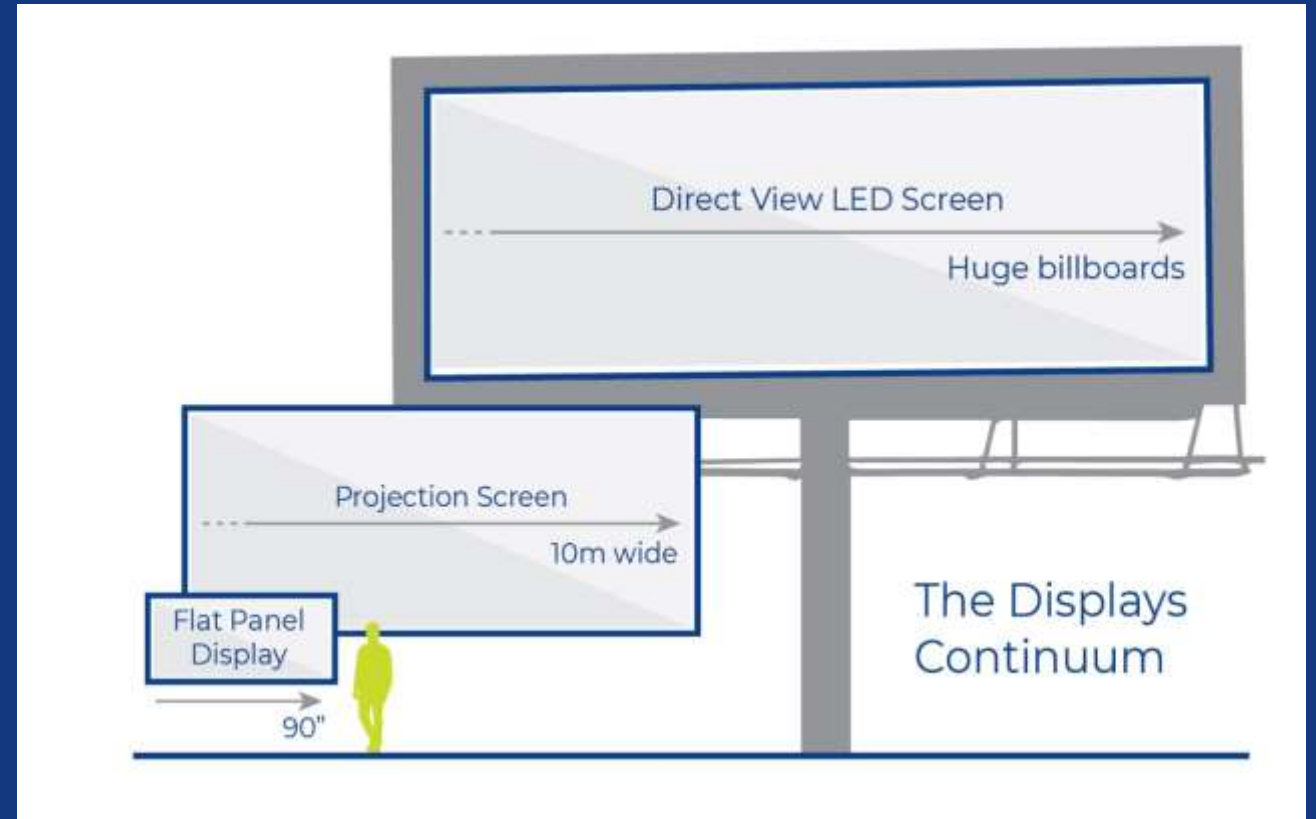
© 2020 Futuresource Consulting Ltd

Selected
Q1 x 4 x 0.8

148	
296	
1308	1046.4
248	
1672	1337.6
3672	2937.6
	say - 3000

The displays continuum

- ▶ Up to 90" – flat panels (LFD, FPD)
- ▶ Above 90" – ALR projection
- ▶ Variable entry point for dvLED



Products
per page: 20

Sort by:

RRP (Low - High)



NEC 98" MULTISYNC C981Q DISPLAY

98", Black, Large Format Display, 4K UHD, 350 cd/m², 24/7 Operation, 3x HDMI

☐ Compare

RRP: £10,247.00

Your price: £7,029.00

5 in stock

Mfr. Part #: 60004516

Our Part #: NECLDC981Q



IIYAMA 98" LH9852UHS-B1 DISPLAY

98", Black, Large Format Display, 4K UHD, 350 cd/m², 24/7 Operation, 3x HDMI

☐ Compare

RRP: £10,904.00

Your price: £5,900.00

2 in stock

Mfr. Part #: LH9852UHS-B1

Our Part #: IYLCD9852UHS



LG 98" 98UM3E DISPLAY

98", Black, Large Format Display, 4K UHD, 350 cd/m², 24/7 Operation, 3x HDMI

☐ Compare

RRP: £10,995.00

Your price: £5,999.00

32 in stock

Mfr. Part #: 98UM3E

Our Part #: LG98UM3E



PHILIPS 98" 98BDL4150D/00 DI ...

98", Black, Large Format Display, 4K UHD, 500 cd/m², 3x HDMI and 3x VGA

☐ Compare

RRP: £11,149.00

Your price: £8,299.00

1 in stock

Mfr. Part #: 98BDL4150D/00

Our Part #: PH98BDL4150D



SAMSUNG 98" Q98R DISPLAY

98", Black, Large Format Display, 4K UHD, 350 cd/m², 24/7 Operation, 2x HDMI

☐ Compare

RRP: £11,769.00

Your price: £8,616.67

23 in stock

Mfr. Part #: LH98QBREBGCXEN

Our Part #: SMOB98R



LG 98" 98UH5F-B COMMERCIAL D ...

98", Black, Large Format Display, 4K UHD, 500 cd/m², 24/7 Operation, 3x HDMI

☐ Compare

RRP: £11,999.00

Your price: £8,250.00

30 in stock

Mfr. Part #: 98UH5F-B

Our Part #: LG98UH5F



PLANAR 98" ULTRARES UR9851 D ...

98", Black, Large Format Display, 4K UHD, 24/7 Operation, 500 cd/m², 3x HDMI

☐ Compare

RRP: £12,489.47

Your price: £10,824.21

0 in stock

Mfr. Part #: 997-7960-00

Our Part #: PLAUR9851



SAMSUNG 98" QM98N DISPLAY

98", Black, Large Format Display, 4K UHD, 500 cd/m², 24/7 Operation, 2x HDMI

☐ Compare

RRP: £13,500.00

Your price: £9,239.13

43 in stock

Mfr. Part #: LH98QMNEBGC/EN

Our Part #: SMQM98N



PLANAR 98" ULTRARES UR9851-E ...

98", Black, Large Format Display, 4K UHD, 500 cd/m², 24/7 Operation, 4x HDMI

☐ Compare

RRP: £15,444.82

Your price: £13,385.51

0 in stock

Mfr. Part #: 997-8091-00

Our Part #: PLAUR9851ERO



NEC 98" MULTISYNC V984Q DISPLAY

98", Black, Large Format Display, 4K UHD, 500 cd/m², 24/7 Operation, 3x HDMI

☐ Compare

RRP: £15,525.00

Your price: £12,569.00

5 in stock

Mfr. Part #: 60004318

Our Part #: NECLCDV984Q



PANASONIC 98" TH-98SQ1W COMM ...

98", Black, Large Format Display, 4K UHD, 500 cd/m², 24/7 Operation, 2x HDMI

☐ Compare

RRP: £15,550.00

Your price: £7,999.00

4 in stock

Mfr. Part #: TH-98SQ1W

Our Part #: PPDTH98SQ1W



LG 98" 98UH5E DISPLAY

98", Black, Large Format Display, 4K UHD, 500 cd/m², 24/7 Operation, 3x HDMI

☐ Compare

RRP: £16,000.00

Your price: £7,795.00

8 in stock

Mfr. Part #: 98UH5E

Our Part #: LG98UH5E

Complete laser display packages – 350cd/m² [nit]



Image size " diagonal	Image width	Image area	dnp Supernova ALR End User £	Lumens required for 350 Cd/m ² [nit]	Closest Panasonic lumens	Panasonic model #	Approx end user £	TOTAL DISPLAY PRICE £
100	2.21	2.76	£ 2,600	3,787	4,500	PT-VMZ40EJ	£ 1,940	£ 4,540
110	2.44	3.34	£ 3,500	4,582	5,000	PT-VMZ50EJ	£ 2,400	£ 5,900
120	2.66	3.97	£ 3,800	5,453	6,000	PT-VMZ60EJ	£ 2,800	£ 6,600
130	2.88	4.66	£ 5,700	6,400	6,500	PT-MZ670EJ	£ 4,700	£ 10,400
140	3.10	5.40	£ 5,700	7,423	8,000	PT-MZ770EJ	£ 5,700	£ 11,400
	3.5	6.89	£ 5,700	9,466	10,000	PT-MZ10KEJ	£ 10,400	£ 16,100
	4	9.00	£ 13,800	12,364	13,000	PT-MZ13KEJ	£ 13,500	£ 27,300
	5	14.06	£ 17,900	19,318				
	6	20.25	£ 34,400	27,818				
	7	27.56	£ 34,400	37,864				
	8	36.00	£ 34,400	49,455				

Complete laser display packages – 500cd/m² [nit]



Image size " diagonal	Image width	Image area	dnp Supernova ALR End User £	Lumens required for 500 Cd/m ² [nit]	Closest Panasonic lumens	Panasonic model #	Approx end user £	TOTAL DISPLAY PRICE £
100	2.21	2.76	£ 2,600	5,410	6,000	PT-VMZ60EJ	£ 2,800	£ 5,400
110	2.44	3.34	£ 3,500	6,546	6,500	PT-MZ670EJ	£ 4,700	£ 8,200
120	2.66	3.97	£ 3,800	7,791	8,000	PT-MZ770EJ	£ 5,700	£ 9,500
130	2.88	4.66	£ 5,700	9,143	9,400	PT-MZ10KEJ	£ 10,400	£ 16,100
140	3.10	5.40	£ 5,700	10,604	10,000	PT-MZ10KEJ	£ 10,400	£ 16,100
	3.5	6.89	£ 5,700	13,523	13,000	PT-MZ13KEJ	£ 13,500	£ 19,200
	4	9.00	£ 13,800	17,663	16,000	PT-MZ16KEJ	£ 18,750	£ 32,550
	5	14.06	£ 17,900	27,598				
	6	20.25	£ 34,400	39,741				
	7	27.56	£ 34,400	54,091				
	8	36.00	£ 34,400	70,650				

Working with win-win scenarios to SUCCESS



- ▶ Respect for existing routes to market
 - ▶ ..it must enhance existing relationships as well as help build successful new ones
- ▶ Keeping resellers' brand loyalty
- ▶ Creating new 'displays' awareness and sales
- ▶ Turning projection opportunities into sales – especially when they're difficult or the integrator needs assistance
- ▶ Demonstration equipment
 - ▶ We will help your projectors look great
- ▶ Protected bid pricing
- ▶ Marketing collateral – we will versionise for sales partners
- ▶ Seeking to find demo sites across England, Scotland, Wales and Dublin

Let this be a great start...



- ▶ Further more detailed and focused webinars for your team
- ▶ Branded presentations for your resellers and channel partners
- ▶ Demo and event support



VISUAL DISPLAYS

Ideal partners –
*committed to win-win scenarios with every level of the AV
channel*

Visual Displays Ltd



Specialist manufacture, distribution & services

Working in partnership with & through the channel

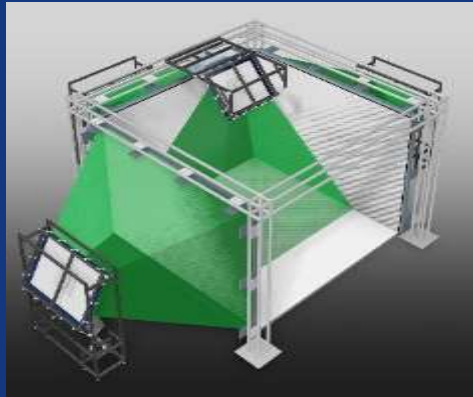
▶ Products

- ▶ dnp Supernova ALR (ambient light-rejecting) projection screens
- ▶ Complete laser projection display bundles – from 100" to any size
- ▶ Comprehensive projection screens, materials
- ▶ Immersive displays
- ▶ Bespoke display & mounting solutions
- ▶ Bespoke interactive displays
- ▶ Daylight control (blinds)

▶ Services

- ▶ Display design and specification
- ▶ Parametric 3D CAD design
- ▶ Expert tender response support and consultant liaison
- ▶ Space redeployment design for social distancing
- ▶ System troubleshooting
- ▶ Room surveys and audits (using meters & reporting to standards)
- ▶ Proof of concept
- ▶ Specialist consultancy

We do some really cool things with projectors



CAVES



RETAIL & SIGNAGE



MULTI-PROJECTION



INTERACTIVE
DISPLAYS,
FLOORS –
ANYTHING!



CURVED SCREENS



AIR TRAFFIC CONTROL

We do some really cool things with projectors



VISUAL DISPLAYS



MIRROR RIGS,
FLOOR PROJECTION



PEPPER'S GHOST



TV STUDIOS



CURVED
REAR
PROJECTION

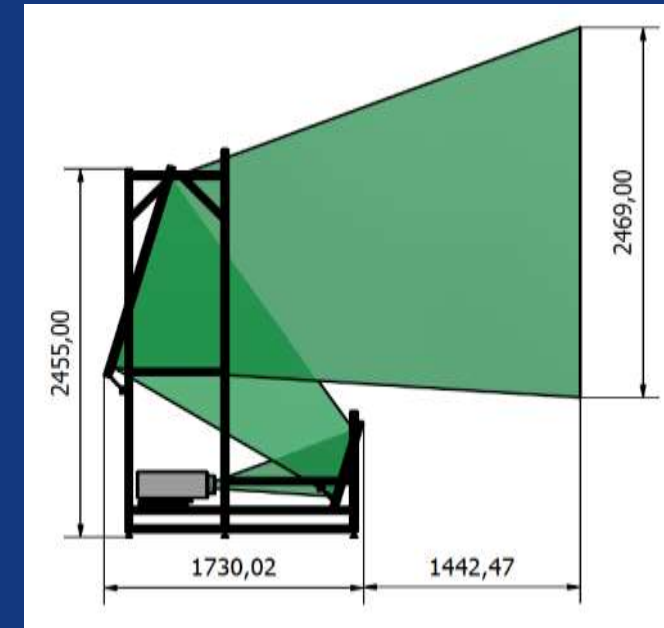
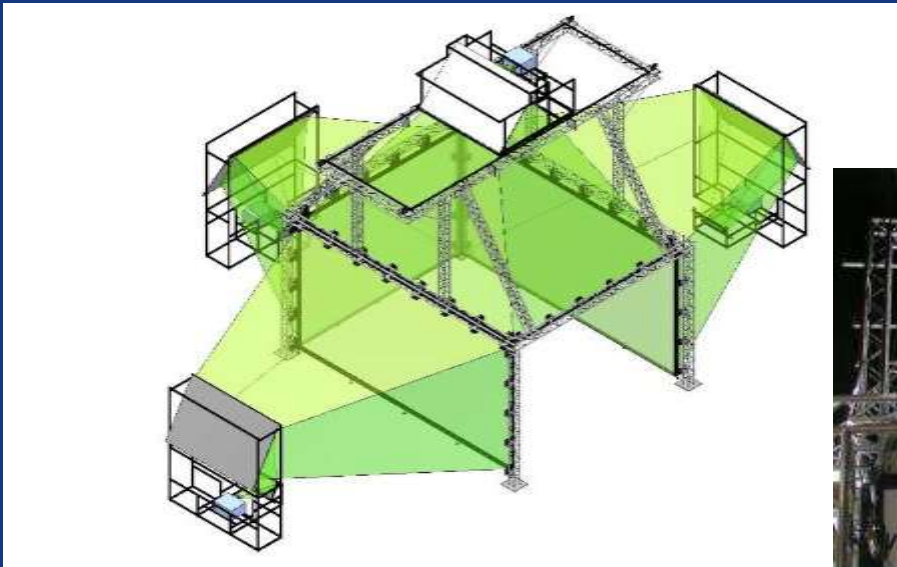


SHOPPING
MALLS

Adding value to projectors with world-leading 3D CAD design and bespoke manufacture



- ▶ You find the opportunities, we turn them into success stories



- ▶ You and your channel partners can offer expert and unique solutions

Q & A



VISUAL DISPLAYS





VISUAL DISPLAYS

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