

GAMING PORTFOLIO

CDS

Crystal Display Systems Ltd



GAMING

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TECHNOLOGY COMPETENCE

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Back Light Unit Technology	19
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GAMING

Video Lottery Terminal



Lottery Vending



Curved Slot Machine



Redemption Kiosk



Bingo Machine



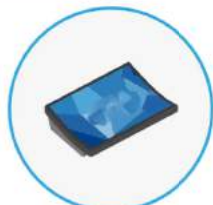
Roulette



Flat Slot Machine



Amusement with Prize



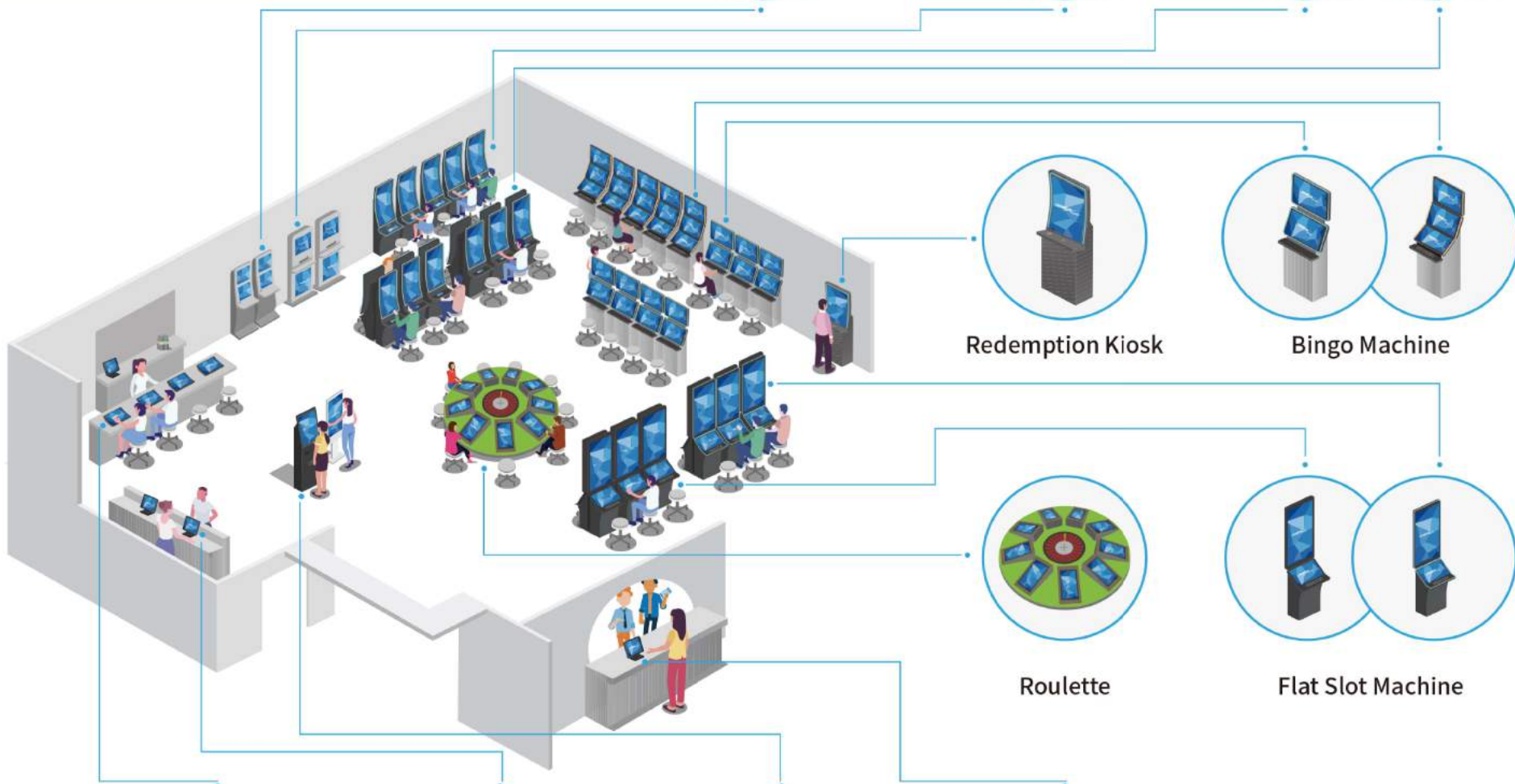
Hotel Check-in



Cash I/O Kiosk



Casher





SLOT BINGO AWP

As the most common type of equipment in casinos, slot, bingo and AWP machines play essential roles. Human-Machine interaction experience plays a very important part.

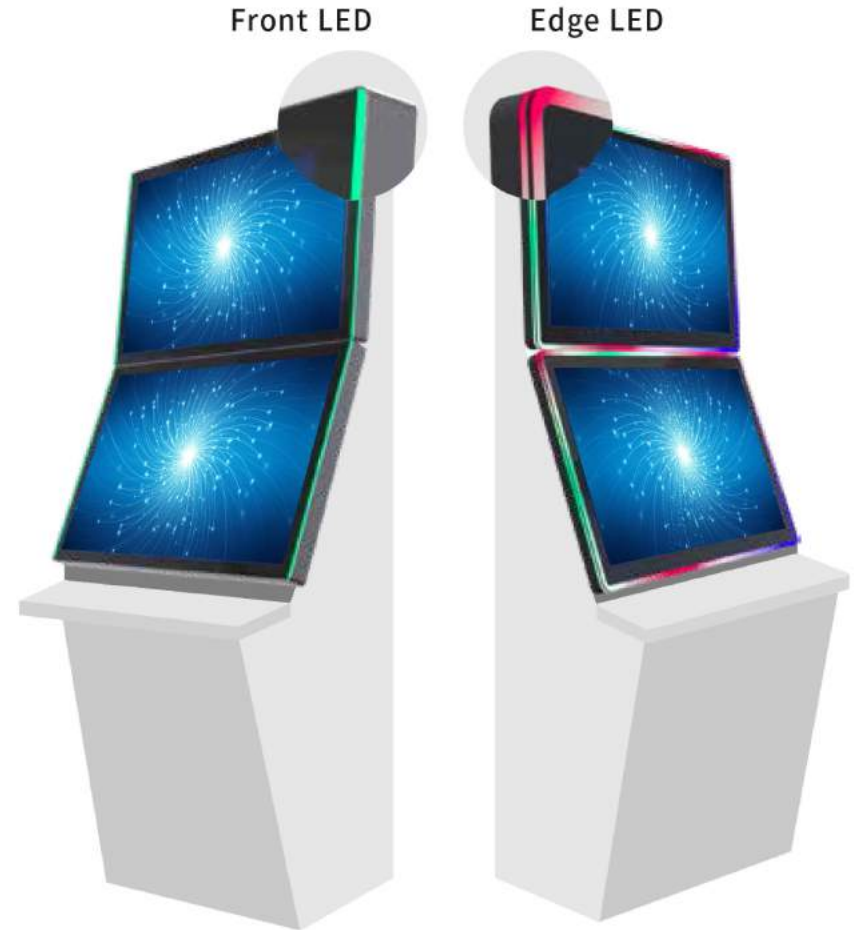
As a world-leading provider of gaming display solutions, CDS is fully dedicated to the continual improvement of interactive monitors and solutions

LED-FRAMED SOLUTION

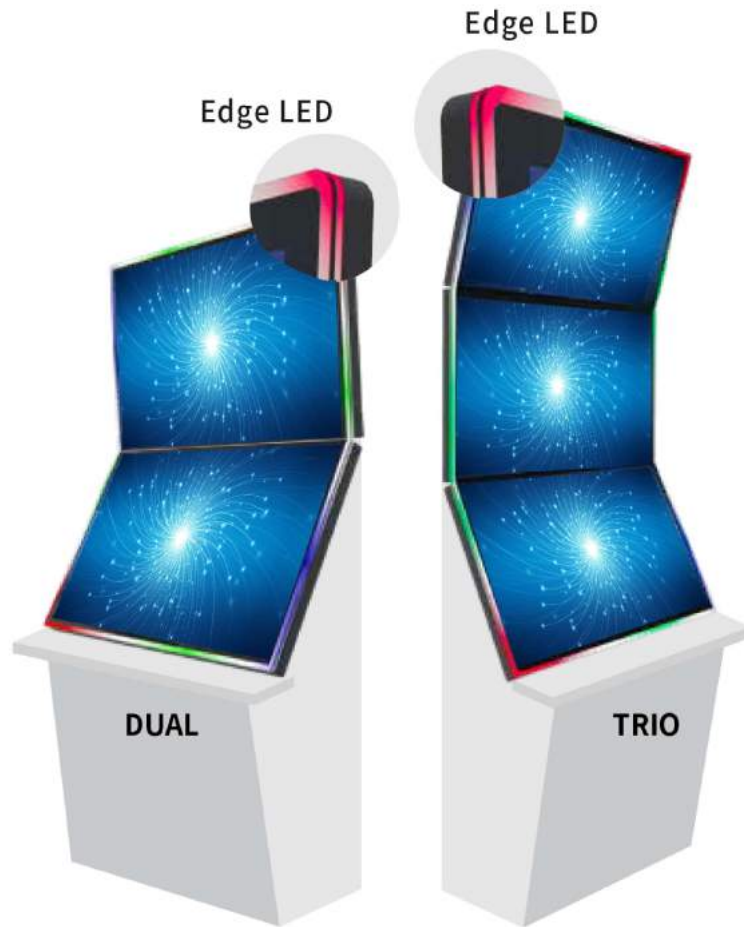
Main Display— Floating Mounting

LED-framed product has already become the most prevalent element in the modern gaming cabinet. Slot, Bingo and Amusement With Prize (AWP) players love the feedback from LED interactions when winning games. For the operator of casino and gaming premises, they expect the main display to be space saving, maintenance free and slim within the cabinet. Our product design meets all of our customers expectations.

- ▶ LED-framed increases customer interaction
- ▶ PCAP touch technology offers a safe and reliable tactile experience.
- ▶ Addressable or RGB LED patterns, captivating the player
- ▶ Front, Edge LED design, creating better immersion
- ▶ LED light uniformity, enhancing the light texture
- ▶ Closed frame design, simplifying the maintenance
- ▶ Available size from 21.5" to 55"



Size	21.5"	23.8"	27"	32"	43"	49"	55"
Ratio	16 : 9						
Resolution	1920 × 1080				3840 × 2160 (4K)		
Brightness (nits)	250	300	400	500			
LED Design	Front / Edge						
Video input	VGA & DVI & DP			HDMI & DVI & DP			



LED-FRAMED SOLUTION

Main Display — Combo Product

To attract the players' attention to play fantastic games, operators and cabinet designers spend a lot of time and effort around the innovative design of the main display. It is well-known that narrow bezel, lighter, and thinner displays are the players' trends. CDS combination product of LED-framed touch monitor is designed to keep up with trends and meet innovation demands.



PCAP X-Trim design (Ultra-narrow bezel), a seamless visual experience

- ▶ Combo products are specially designed to create a large format loop LED light effect
- ▶ Imitating the curved shape and more cost-effective than pure curved monitors
- ▶ Air bonding and optical bonding optional
- ▶ Addressable or RGB LED patterns
- ▶ Edge LED design
- ▶ Simulate Curved Display Experience

Size	27"		32"	
Combo	27" × 2	27" × 3	32" × 2	32" × 3
Ratio	16 : 9			
Resolution	1920 × 1080			
Brightness (nits)	250			
LED Design	Edge			
Video input	VGA & DVI & DP			

CURVED SOLUTION

Main Display

The curved touch monitor is a high-end casino symbol. More and more games are designed for curved style. Introducing large format curved monitors creates exciting opportunities for casino slot machines, entertainment kiosks, sports betting, lottery and bingo application. The series is available with versatile curvatures and 4K ultra HD options.

- ▶ Our self-developed curved TFT module allows us to carry out customization and innovation
- ▶ Available for the shape of C, J and S
- ▶ Radius R800 and R1500 (different radii customizable upon request)
- ▶ Edge LED design and front LED design optional
- ▶ Closed frame, floating mounting and edge-to-edge design, simplifying the maintenance
- ▶ Default brightness 500 nits (higher brightness customizable)
- ▶ 4K UHD resolution, higher display quality
- ▶ GT self-produced curved PCAP touchscreen, more reliability
- ▶ Available size from 32" to 55"



Size	43"	49"	50"	55"	32"	43"	49"	50"
Ratio	16 : 9				16 : 9	16 : 9		
Resolution	3840 × 2160 (4K)				2560 × 1440	3840 × 2160 (4K)		
Outline Shape	J-Type				C-Type	C-Type		
Brightness (nits)	500				500	500		
Radius	R1500		R800		R1500	R1500		
LED Design	Edge				Without	Edge		
Video input	HDMI & DVI & DP				HDMI & DVI & DP	HDMI & DVI & DP		

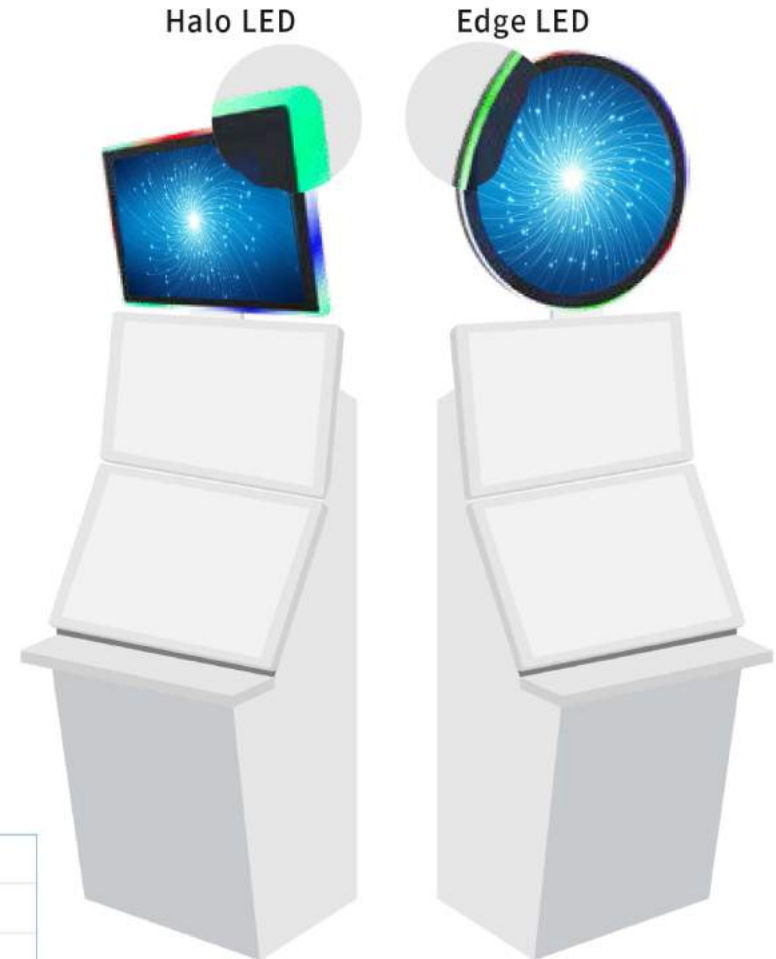
* Non-LED curved touch monitors are available.

TOPPER SOLUTION

Topper is an option for gaming cabinets displaying ads, cabinet branding, or game content. The diverse design aims to improve its value. The larger the monitor's LED frame, the better. An unusual shape will catch players' eye from a long distance. Our topper solution will take those requirements and realize them.

- ▶ LED style of Front, Edge and Halo LED design can be topper fashion element
- ▶ Addressable or RGB LED patterns
- ▶ LED light uniformity, no hotspot, dark spot and dark corner
- ▶ Unusual round shape, standing out from toppers
- ▶ The LED-framed monitor available sizes are from 21.5" to 32"
- ▶ The round monitor available size is 23.6" with 1280 X 1280 resolution better than others

Size	21.5"	23.8"	27"	32"	23.6" (Round)
Ratio	16 : 9	16 : 9			1 : 1
Resolution	1920 × 1080	1920 × 1080			1280 × 1280
Brightness (nits)	250	250	300	400	500
LED Design	Halo	Front & Edge			Edge & Without
Video input	VGA & DVI & DP	VGA & DVI & DP			VGA & HDMI



BUTTON DECK SOLUTION

Button deck is a vital part of games and cabinets. It features highly with frequent player interaction on the betting side, in any case of loss, win or break. Our button deck solution is customized by your requirements regarding rigor, stability and diversity.

- ▶ Button deck products are designed with high impact resistance
- ▶ The optional haptic motor creates tactile feedback to excite the players
- ▶ Irregular shapes, logos and other items are customizable
- ▶ Wireless charging design for smart phone
- ▶ PCAP touch technology offers a safe and reliable experience
- ▶ LED-frame optional
- ▶ Open frame design, flush mount, embedded into cabinet



Size	10.1"	12.3"	13.3"	15.6"
Ratio	16 : 10	16 : 6	16 : 9	16 : 9
Resolution	1280 × 800	1920 × 720	1920 × 1080	1366 × 768
Brightness	500	1000	600	400
Glass shape	customizable			
Glass strength	Customizable (default: 3.9J Option: 10J)			



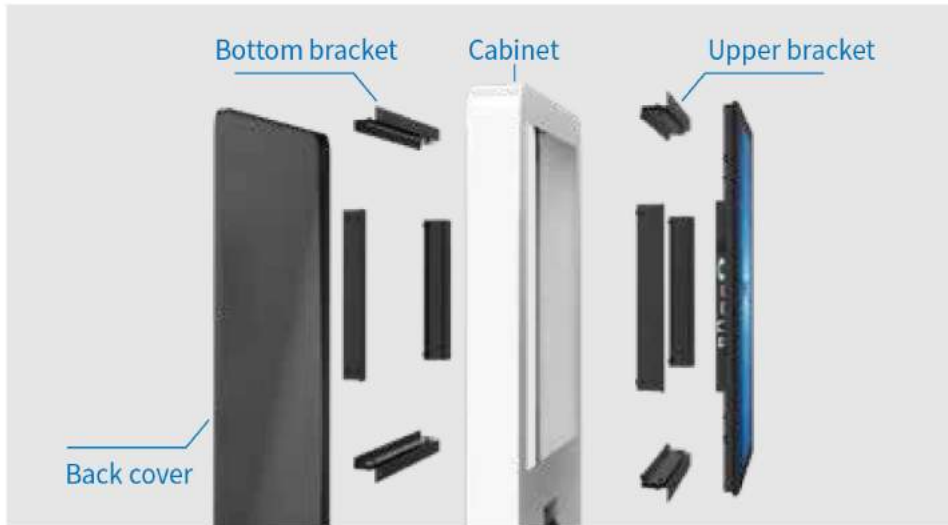
ELECTRONIC TABLE GAMING

As a multi-game machine, Electronic Table Games (ETG) combine the human involvement of a live dealer and live table game outcomes with an electronic betting terminal. These game machines bear more pressure to ensure that no machine glitches interfere with game results.

After being rigorously tested, all our products can withstand tens of millions of touches and resist various environmental influences (dust, oil, grease or moisture). Crystal Displays puts much effort into providing the best tactile experience in ETG.

ETG BARTOP—OPEN FRAME SOLUTION

Open Frame Touch Monitor is the most prevalent in the ETG display solution. Industrial-grade monitors are welcome and popular. Our open frame products are oriented for the industry monitors with the configuration of flush mounting and pure flat design, easy installation and elegant appearance.



- ▶ Open frame structure for embedding into the bartop cabinet
- ▶ Flexible mounting brackets ensure the display fits into your cabinet perfectly and support side mounting with brackets and standard VESA
- ▶ Foam gasket surround works as a buffer and ensures better sealing after installation
- ▶ Assembled cabinet have the true flat surface, edge to edge with maintenance free
- ▶ Gorgeous appearance, seamless, edge-to-edge glass touch displays provide modern, true flat designs without compromising brightness, optical clarity or response time
- ▶ Continues to work even with scratches, passes UL Ball Drop test and IK07
- ▶ Standard electronics and mechanical design across all sizes, including HDMI, VGA, display port, USB type B, S-Video (OSD remote controller)
- ▶ Wide range of sizes — 15", 17", 19", 21.5", 23.8", 27" and 32"
- ▶ Projected Capacitive (P-Cap) GG (two glass solution) technology, EETI controller, support single or dual latex gloves, cloth gloves, and provide durable performance in high traffic settings

Size	21.5"	23.8"	27"	32"
Ratio	16 : 9			
Resolution	1920 × 1080			
Brightness (nits)	250	300	500	
Video input	VGA & HDMI & DP			

15/17/19 inch are available

INNOVATION FOR ETG BARTOP

- ▶ Small size 23.6" C-type curved touch monitor
- ▶ R1500 C on the short edge comfort players
- ▶ Open frame structure
- ▶ LED framed with front design

Size	23.6"	
LED design	Edge	Without
Outline Shape	C-Type & Short edge curved	
Radius	R1500	
Brightness (nits)	300	
Video input	VGA & HDMI & DP	



SELF-SERVICE

CDS provides reliable touchscreen solutions for casino self-service kiosks.

Ambient, attractive LED illumination alongside the cabinet will suit the casino environment well.



Crystal Display Systems provides industrial-grade touchmonitors for the casino kiosks for Redemption and charging of tickets (TITO), Redemption and charging of player cards, Exact payout of credit, Handling of magnet, chip and RFID cards, Bill breaking, Jackpot payouts, ATM, Secure storage of cash, Documentation of all transactions, Enrollment, Promo, E-check, Food ordering and others.

Customization options include LED-framed, open frame, closed frame, curved monitor, etc.



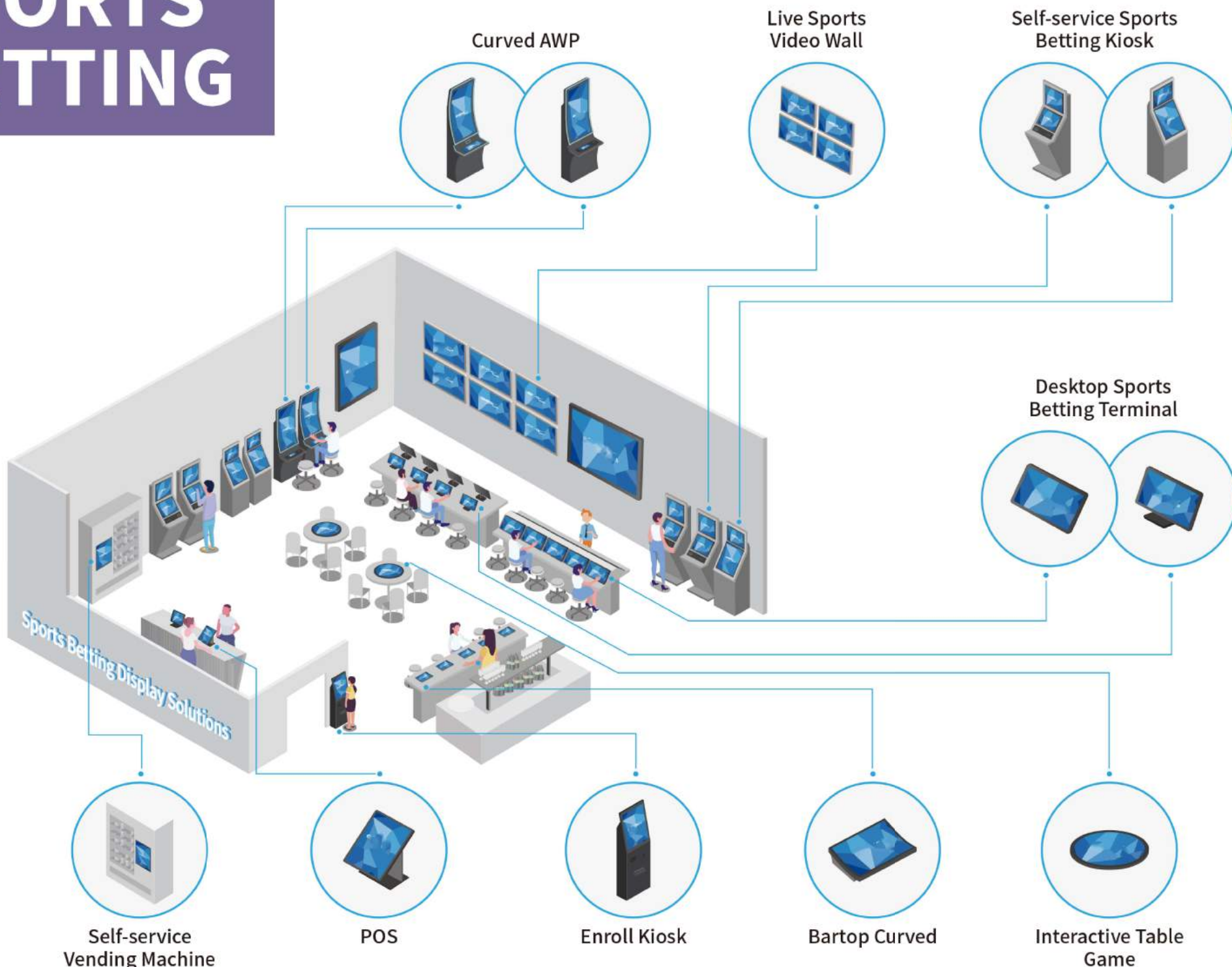
Mechanical

Touch Solution	Surface Treatments	Glass Strengthen	Cosmetic	Assembly
PCAP, SAW	Clear, AG, AR, AF, Mirror	Heat Treatment, Chemically Tempered, Strength Can Meet 20J(IK10)	Width, Length, Border Color, Logo, Camera Hole, Microphone Hole	VESA, Side Mount, Panel Mount
Structure	Shape	Lamination	Others	
Open Frame, Closed Frame, Rear Mount Touchmonitor, Desktop Touchmonitor	Curved Touchmonitor, Special Ratio Such as 1:1	Air Bonding, Optical Bonding (LOCA, OCA)	Privacy Filter, Function Film, Light Sensor, Assembly Bracket, Electric Magnetic Signature, LED Lightbar	

Hardware & Software

Size	Display Parameter	Voltage	Video Interface	Audio
7" to 86"	Resolution, Luminance, Contrast Ratio, Viewing Angle, Response Time	9 to 36V DC 100 to 240V AC	HDMI, DP, DVI, VGA, Mini VGA, Mini USB, Type-C	Speaker, Microphone
Protection	Outdoor Solution	ESD	System Compatibility	Approvals
IP64, 65 Anti-sunlight (IR Outdoor Solution)	Wide Operation Temperature High Brightness	Special Market: 30kv, 15kv Industrial Market: 15kv, 8kv General: 8kv, 6kv	Windows, Android, Linux, Dos, Mac, Chrome OS	CCC, UL, FCC, BIS, PSE

SPORTS BETTING



SPORTS BETTING TERMINALS

With PCAP monitors, you can count on the highest quality touch technology with a modern and slim design. Whether your customers are betting, paying or browsing, they can get the same smooth touch experience and clear image.

For embedding into the the sports betting terminal or just laying on the desktop, we always have the right display for your requirements. With our diverse product with years of experience and professional customization service, you'll benefit from an optimal price-performance ratio and high investment protection for your shop.



DESKTOP BETTING TERMINAL & LIVE VIDEO WALL

Perhaps your shop has desktop betting terminals showing your sportsbook and large format video walls to display exciting live sporting events, which often place high demands on the appearance of a touch screen. Our closed frame touch monitors are beautifully designed and elegant with many size options.

- ▶ Pure-flat design with edge-to-edge glass
- ▶ Full HD 1080p even 4K display from 21.5" to 55" (More screen sizes available)
- ▶ Commercial grade usage is efficient and always ready (24h/7d)
- ▶ Flexible installation methods with standard VESA mount
- ▶ Multiple interfaces for peripherals - USB, VGA, DP, DVI or more

Size	21.5"	27"	32"	43"	55"
Ratio	16 : 9				
Resolution	1920 × 1080			3840 × 2160 (4K)	
Brightness (nits)	250	300	500		
Video input	VGA & HDMI & DP		VGA & HDMI & DP & DVI		



SELF-SERVICE SPORTS BETTING KIOSK

The self-service sports betting kiosk is the most common in-store device, and touchscreens are usually embedded inside the kiosk. Our open frame touch displays are suitable for use in any type of cabinet and have a comprehensive customization service to meet individual requirements.

- ▶ Gorgeous appearance, seamless, edge-to-edge glass touch displays provide modern, true flat designs without compromising brightness, optical clarity or response time
- ▶ Durability and reliability for commercial environments
- ▶ Maintenance and after-sale friendly

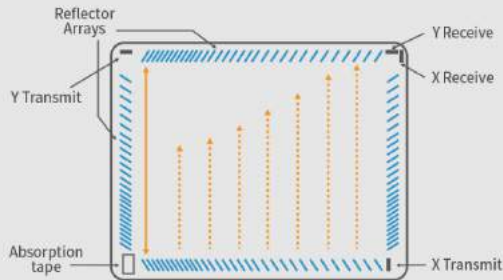
Size	21.5"	23.8"	27"
Ratio	16 : 9		
Resolution	1920 × 1080		
Brightness (nits)	250	300	
Video input	VGA & HDMI & DP		

* More screen sizes available



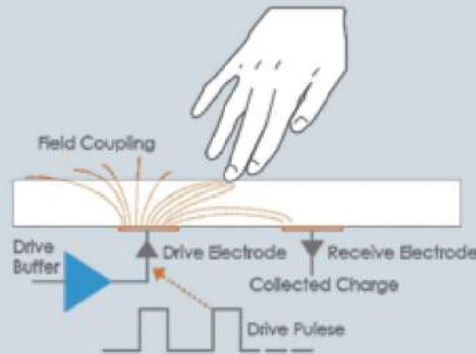
TOUCH TECHNOLOGIES

Surface Acoustic Wave



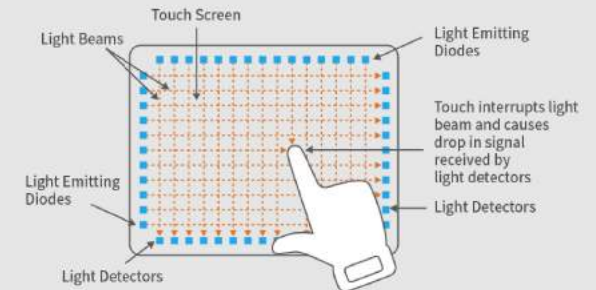
- ▶ Better for a rigid environment.
- ▶ Light transmittance $\geq 90\%$.
- ▶ Wide temperature range (-40 °C ~+80 °C).
- ▶ True flat and classic all available.
- ▶ Support single and gesture touch.
- ▶ Glass surface treatments are accessible to compatibility.
- ▶ Self-own control card and original code.
- ▶ Hundreds of patents in SAW touch technology.

Projected Capacitive

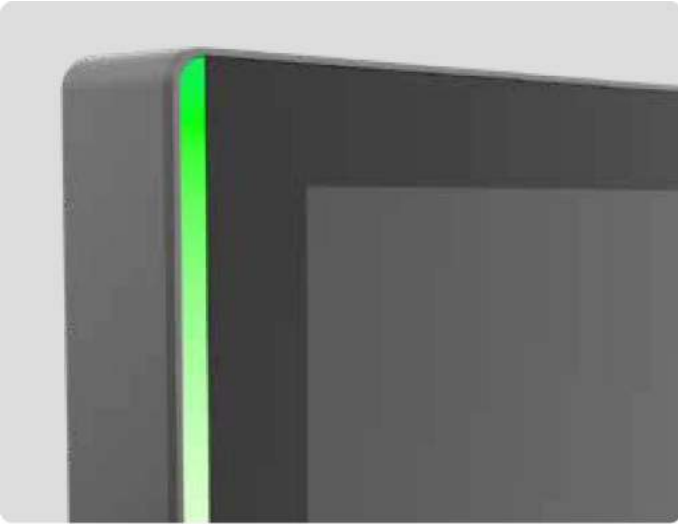


- ▶ X-Trim super narrow bezel technology ($\leq 4\text{mm}$ per side).
- ▶ Hover touch technology, touch active height up to 20 mm.
- ▶ Through Touch Technology, enables shop window interactivity.
- ▶ Excellent water and salt water proofing for outdoor and semi-outdoor applications.
- ▶ Glass/film sensors and touch panels are all designed and manufactured in our factory.

Infrared



- ▶ Revolutionized IR patented projected infrared touch technology.
- ▶ Touchable in sunlight, especially for outdoor applications.
- ▶ Slim PCB figure (width $\leq 3\text{mm}$).
- ▶ Hover height $\leq 1\text{mm}$.
- ▶ Minimum active diameter $\leq 1\text{mm}$.
- ▶ Multi-touch up to 40 points.



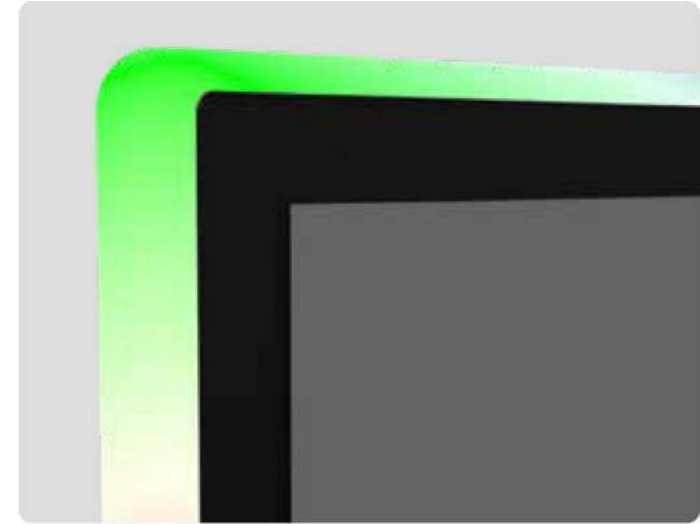
Front Design

For floating monitor outside your cabinet, 2 short side LED bars.



Edge Design

For front and edge illumination, external use.



Halo Design

For floating monitor outside your cabinet. Surround color in front, side, rear for a halo effect.



ADAPTIVE ILLUMINATION TECHNOLOGY

- ▶ Addressable or RGB LED, uniformity and colorfulness
- ▶ Customization of flexible light configuration
- ▶ No hotspots, no darkness & no dark corner
- ▶ LED framed design, three types of LED designs
- ▶ With LED effects provide supplemental visual feedback
- ▶ Combining AIT technology with CDS touch solutions increases the players' role immersion and cabinets' occupancy rate
- ▶ LED framed touch monitor simplifies cabinet design
- ▶ Rear-firing LED lights the cabinet, creating silhouette "glow effect"

Thickness (mm)	Tempered Approach	Common Control Standards		
		Drop Weight/g	Drop Height/m	Potential Energy/J
1.1	Chemically Tempered	227	0.6	2.2
2	Chemically Tempered	227	1.0	3.3
3	Physically Tempered	500	0.8	3.9
3	Chemically Tempered	227	2	4.5
4	Physically Tempered	500	0.8	3.9
4	Chemically Tempered	227	2	4.5
5	Physically Tempered	500	1.2	5.9
5	Chemically Tempered	227	2	4.5
6	Physically Tempered	500	1.2	5.9
6	Chemically Tempered	227	2	4.5
12	Physically Tempered	1040	1	10.2

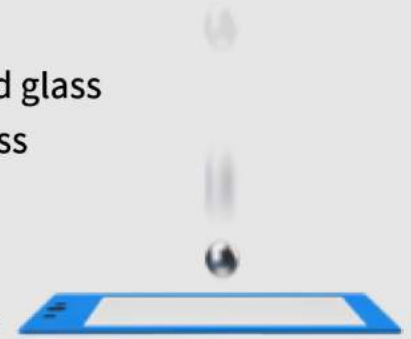
GLASS PROCESSING TECHNOLOGY

GLASS

Chemically strengthened glass

Thermally tempered glass

Impact resistant up to 30 joules



DRILLING HOLES OR SLOTS

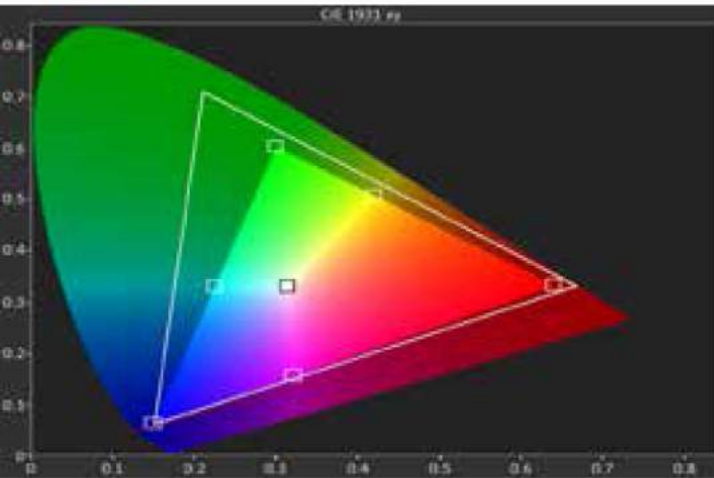
Standard hole diameter
1 mm min

Irregular hole diameter
1.5 mm min

- ▶ Fast and professional cover lens customization ability
- ▶ CNC glass machines process 0.3-6mm glass. Every piece is exquisitely crafted art
- ▶ Unique glass forming processing, combines shape and curve creation and shows your uniqueness
- ▶ Surface treatments like anti-glare, anti-reflection, mirror, and anti-fingerprint
- ▶ CDS highly strengthened technology, best for betting applications, even can withstand the violent destruction of an adult man (up to 34J, BS EN 356:2003 Level10)

LCD BACK LIGHT UNIT TECHNOLOGY

- ▶ Curved module, self-design and mass production in-house
- ▶ High brightness, customizable as per your preference
- ▶ NTSC color gamut up to 94%
- ▶ Local dimming (local control brightness), increases the dynamic contrast ratio and improves uniformity



LCD CURVED MODULE TECHNOLOGY

- ▶ Abundant products, from 24 to 55 inch, C, J and S type, curvature R700 to R1500, long side and short side curved
- ▶ From design to mass production, CDS has assembly lines and processing experience mature
- ▶ Patented curved module mechanical design
- ▶ Customize brightness 500 to 1000nits



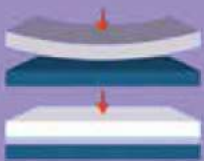
OPTICAL BONDING TECHNOLOGY

By eliminating the reflections between LCD and touchscreen, the user will see the remarkably vivid image with clarity, realistic color, brightness, and unprecedented detail with an ultra-wide viewing angle, even in bright sunlight or strong ambient light environment.



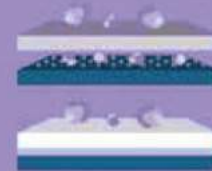
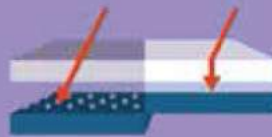
Greater Durability

Increased stability and impact resistance increase up to 300%.



Precise and Accurate Touches

By eliminating parallax, a better touch experience through optical bonding rather than air bonding.



Anti-moisture/dust

Resist stains, dirt, dust, scratches, avoid condensation and gasification.

Slimmer and Lighter

By 1.1mm thinner Cover glass, decrease the total weight. Good for slimmer design.



Heat Dissipation

By filling the insulating air gap, heat can be derived to the outside.

For More Information, Please
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