crystalscreen

United Screens GmbH - *future display technology*

USER **MANUAL**

CONTENTS

INTRODUCTION

The Crystal Screen transparent display system showcases dynamic or interactive information on a transparent surface glass. The display allows users to view what is shown on a glass video screen while still being able to see through it. Designers can overlay text, digital images, and video content onto physical objects or scenes that sit behind the glass.

TRULY SEE-THROUGH INSTALLATIONS

The Crystal Screen transparent display system comprises a self-emitting display that utilizes Organic Light Emitting Diode (OLED) to eliminate the need for a backlight or enclosure, making it possible to create truly see-through installations. The design offers 45 percent light transmissivity, creating clear, unobstructed views of objects, scenes, or other digital screens behind the transparent display.

BRILLIANT PICTURE QUALITY IN PORTRAIT FORMAT

The Crystal Screen transparent display offers vibrant colors greater than 100 percent
National Television System Committee (NTSC) performance as well as wide viewing angles with no off-axis contrast or brightness limitations. The display provides Full HD resolution that allows for beautiful graphics and full-motion video.

COMPATIBILITY AND FEATURES

The Crystal Screen system features a powerful integrated PC for FHD video playback as well as demanding interactive applications. It also comes with external player support featuring HDMI input and Touch output as well as optional USB Camera support and is compatible with sources ranging from PCs and players to consumer video devices that rely on High-bandwidth Digital Content Protection (HDCP V1.1) compliance.

Before using your Crystal Screen system, please read this manual
thoroughly to help protect against damage and to ensure personal safety.
For your safety, be sure to observe ALL the warnings detailed in this manual.
For installation or adjustment, please follow this manual's instructions and refer all servicing to qualified service personnel.

SAFETY PRECAUTIONS

- If water is spilled or objects are dropped inside the system, remove the power plug from the outlet immediately. Failure to do so may result in fire or electrical shock. Contact United Screens for inspection.

- If the system is dropped or the chassis is damaged, remove the power plug from the outlet immediately. Failure to do so may result in fire or electrical shock. Contact United Screens for inspection.

- If the power cord or plug is damaged or becomes hot, turn off the main power switch of the system. Make sure the power plug has cooled down and remove the power plug from the outlet. If the system is still used in this condition, it may cause a fire or an electrical shock. Contact United Screens for a replacement.

  Caution: Installation location must be solid and stable. DO NOT place the system on uneven or non-loadbearing ground.

IMPORTANT SAFETY INSTRUCTIONS

01. Read these instructions.

02. Keep these instructions.

03. Heed all warnings.

04. Follow all instructions.

05. Do not use Crystal Screen systems outdoors or near water.

06. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.

07. Protect the power cord(s) from foot traffic or kinks particularly at plugs, convenience receptacles and the point where they exit from any of the Crystal Screen systems.

08. You should only use replacement parts, accessories and other components specified by United Screens.

09. Unplug all Crystal Screen systems during lightning storms or when unused for long periods of time.

10. You must follow all National Electrical Code regulations. In addition, be aware of local codes and ordinances when installing your system.

11. Refer all servicing to qualified service personnel. Servicing is required when a Crystal Screen system has been damaged in any way, such as when the AC power cord or plug is damaged, liquid has been spilled or objects have fallen into a product, the products have been exposed to rain or moisture, do not operate normally or have been dropped.

RECOMMENDED USAGE

In order to get the most from your Crystal Screen system, use the following recommended guidelines to optimize the display.

Crystal Screen display systems are designed for fixed installation, indoor use only.

Normal use definition: 12 hours per day at 25° C, moving image, 75 nits average luminance.

In use the Crystal Screen system should be operated in the open air to prevent heat buildup and without direct or indirect heat sources such as nearby lighting fixtures or heating ducts that can cause the system to experience elevated temperatures.

If the system will be installed in a recessed area with a surround trim or other enclosing feature around the Crystal Screen Electronics Box (system foot), ensure adequate openings are provided for proper air flow and ventilation.

At sea level, the maximum ambient operating temperature for the Crystal Screen system cannot exceed 35° C nor be below a minimum ambient operating temperature of 0° C (as measured within - 2 feet (0.6 m) of the Electronics Box). If one of these conditions is exceeded, it is the duty of the installer to ensure that display placement is changed, thermal shielding is provided, and/or additional ventilation is provided to keep the system within its nominal operating parameters.

For proper cooling, the Electronics Box should not be mounted closer than the spacing described in the „Requirements for All Installations" section on page 11 to any continuous surface. The FAN slots in the metal foot on both sides of the Crystal Screen Electronics Box (system foot) must be kept clear of obstruction or any sort of cover.

SYSTEM ARCHITECTURE

The Crystal Screen system is made up of three subcomponents:

- Touch Display Chassis with IR Frame
- stele struts
- stele electronics Box/Foot with integrated playback PC

The Crystal Screen System is intended for floor-mounted installations in customer controlled environments. It is not intended for unattended use in public areas like shopping malls or train stations.

The Touch Display chassis consists of a 3.2mm thick protection glass, a 55-inch diagonal TAMOLED (Transparent Active Matrix Organic Light Emitting Diode) panel and an infra-red touch metal frame. The IR touch enables a maximum of 10 simultaneous touch points.

The Touch Display Chassis is securely joined to the stele, but should never be used as the main load-bearing element as a primary handle or principal support during transport.

The stele foot incorporates four M8 mounting points on its underside. Leveling feet are pre-installed in these mounting points in the Crystal Screen. The feet should be removed if a fixed installation is required. The stele struts and foot are the part of the system to use as a primary handhold during transport and mounting.
There are four secondary M8 mounting points on the underside of the Electronics Box for the two transportations plates, which must be installed prior to transportation in the designated TOLED FlightCase.

The bottom view of the Crystal Screen in the figure below illustrates the leveling feet and the transportation plates.

SYSTEM ARCHITECTURE

The backside of the stele Foot also contains the rear panel / controlling I/0 for the display, the integrated PC and the connectors for an external player. This is shown in the figure below.

The keypad is described in detail in the „OSD Keypad" section on page 11. There are two HDMI connectors, one in the INTERNAL PLAYER section on the left side of the rear panel and one in the EXTERNAL PLAYER section in the middle of the rear panel. The internal player HDMI connector (1.) is an output and is intended for use of a secondary display – e.g. as a control or maintenance display – but can also be used to connect a second Crystal Screen system to be run by only one Crystal Screen integrated PC. The External Player HDMI connector (2.) is an HDMI input (Rev 1.4a) to the T-OLED display. Right next to it are the Touch (3.) and Camera (4.) USB-B outputs to connect the IR touch and the optional camera to an external player.
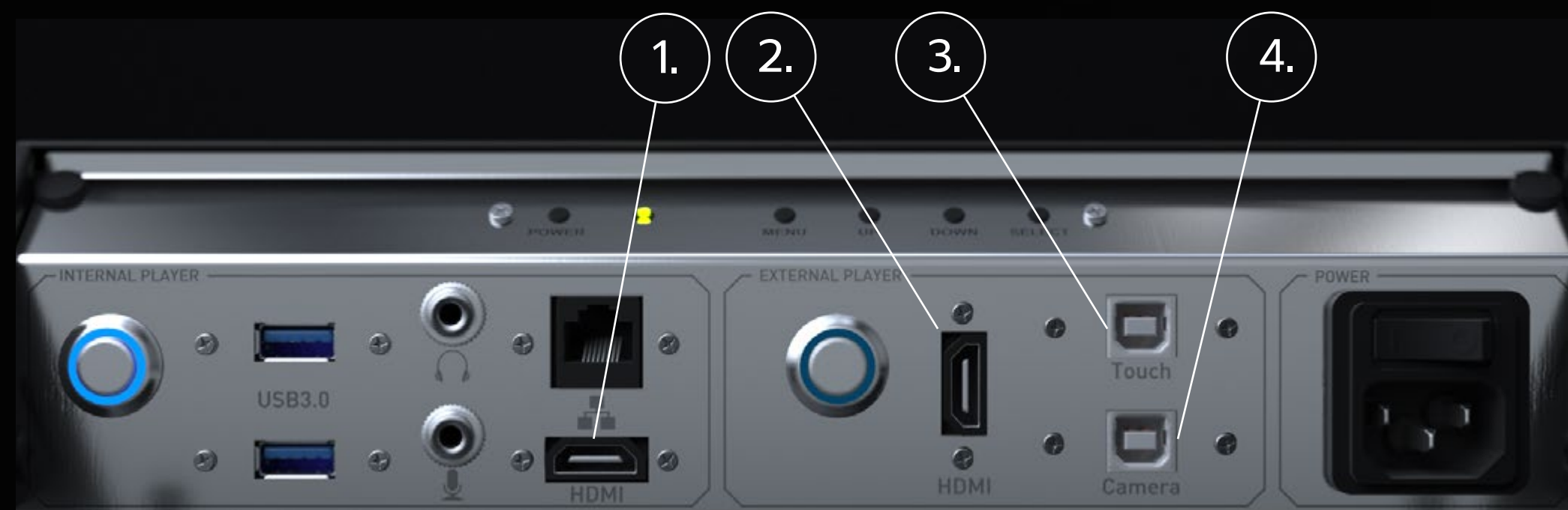
ADDITIONAL COMPONENTS

ADDITIONAL COMPONENTS SHIPPED WITH EVERY SYSTEM

Remote Control and Sensor

A remote control, used to access the OSD, is included with all systems. Refer to „Using the Remote Control" on page 12 for details on operation and function.

Rear panel Cover

The rear panel cover closes the stele foot and restricts access to the I/0 features when locked with its key. Never try to turn the key with force! Instead: move the cover slightly until the key turns easily. Remove the key when the cover is locked to prevent accidental break off of the key.

Cables

A 220VAC cable is included.

Transport Plates

Two transport plates with screws are included. Every system is shipped with the transport plates attached. The transport plates must be re-installed before returning the system in its designated flight case. A combination spanner is included for mounting and de-mounting the plates. It is kept in the flight case compartment on the back of the flight case.

OPTIONAL ACCESSORIES

Camera

An external camera can be ordered separately. This is attached to the top of the system. Please let us know your camera requirements before ordering.

Cables for external Player

An angled USB-B cable for IR touch connection and a flexible HDMI cable can be booked. These special cables are needed to enable rear panel cover closing while having an external player connected to the system. Standard USB and HDMI cables are too big and protrude too much from the rear panel so that a closing of the cover is prevented.

LAN Cable, UMTS Stick, USB Hub, Mouse & Keyboard

Can be ordered separately.

Loudspeaker

The Teufel Bamster is „... a real power station that indulges the listener with rich basses as well as with gentle sounds" *. Its design perfectly integrates into our stele look. Just connect it to headphone jack in the I/O rear panel and place it onto the stele foot. For more information visit: www.teufelaudio.com

UNPACKING AND INSTALLING THE CRYSTAL SCREEN T-OLED

SAFE HANDLING

Flight Case
Before opening the Crystal Screen Flight Case, it must be brought into an upright position. The castor brakes must be locked and two persons are needed to set up the flight case. Pay attention to the UP arrows on the flight case, which need to point upwards once the case stands in upright position.

Unpacking
Open all 4 butterfly closures. A butterfly catch is secured with a combination lock. The corresponding numerical code is located on the warning sign on the side of the flightcase. Now pull the cover off the flightcase.

When removing the system from its flight case, use the indicated handhold locations shown in the picture below.
We recommend the stele be handled by at least two people. At no time should the IR frame be held where the weight of the stele is borne by the IR frame. Proper handling is demonstrated in the picture below.

Be certain any surface where the system(s) will be placed can safely support the 165 lbs (75.0 kg) weight of the system. When using a sack barrow to move the stele, the long transport plate must be installed to prevent damage from the angled stele foot. The stele must only be moved with a sack barrow from its rear side. To prevent the TOLED panel to be put under strain by the upper part of the sack barrow, use a hard foam or Styrofoam piece which is wider than the stele struts.

ENVIRONMENTAL CONSIDERATIONS

- The Crystal Screen is intended for indoor use only.

- Systems should only be installed in an environment where the temperature and humidity are kept within the proper use range. See the Environmental Specifications on page 19.

- Crystal Screen displays are not designed to be sunlight readable.

- Do not locate the displays in direct sunlight or where the Display Glass will be exposed to ultraviolet (UV) light.

- The stele foot carrying the electronics should not be located near heat sources or in an environment where there is less than 20 mm of free space on all sides. Note that the Display Glass and the Display Chassis do not rise in temperature much above ambient during operation.

- For best use of the display transparency, make certain there is adequate illumination in the space behind the screen so that items of interest can be viewed optimally through the display. We recommend you experiment with the level and orientation of the illumination.

INSTALLATION DISCLAIMER

Proper installation of the display is the responsibility of the end customer. Failure to follow the safety and installation instructions in this manual or Content Developer's Guide, or any installation of the display in a manner not described in this manual or Content Developer's Guide, may result in damage to the system or unsafe conditions, for which the renter will be made responsible for.

REQUIREMENTS FOR ALL INSTALLATIONS

Make sure the surface or structure where the display is to be mounted is capable of supporting the weight of the display or displays to be used. Consult the „Specifications" section on page 19 for weights and measures. If the display is to be attached to a surface or structure, use the four M8 mounting points in the stele foot as the primary attachment point. No fewer than two of mounting holes should be used in any installation. Make sure the Display Glass maintains a neutral position and is not loaded in any way. The front Display Glass surfaces should be mounted straight and plumb, i.e. perpendicular to the horizontal in all axes.

For mounting a Crystal Screen, the leveling feet must be removed. For this purpose, please lay the column carefully on the floor by means of two persons so that the pedestal foot is vertical. Attention: please ensure that foam/foam-parts are provided for the upholstery of the upper part of the column/display chassis. The leveling feet can then be safely removed.

The ventilation openings in the stele foot are a part of the thermal management system and should never be covered or have any solid surface be located closer than what is defined in the figure below.

20mm   20mm
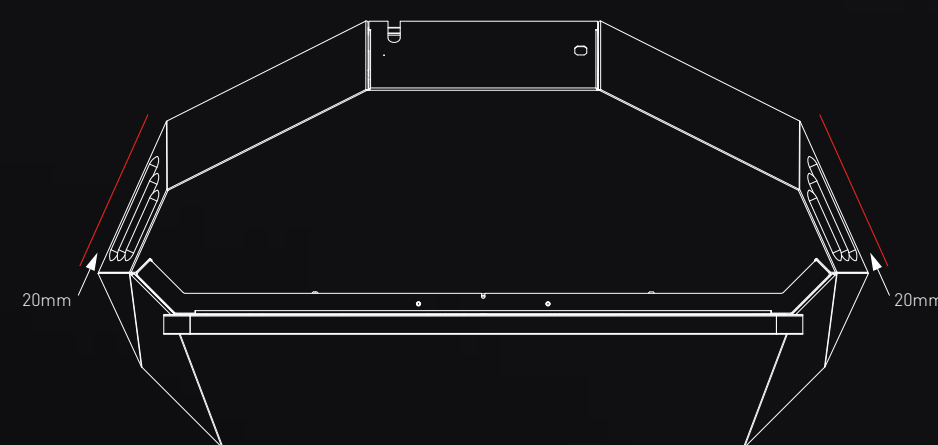
OPERATING THE DISPLAY

OSD KEYPAD

OSD KEYPAD BUTTONS

POWER	MENU	UP	DOWN	SELECT
Power ON / Power OFF	Main Menu	Menu Up	Menu Down	Select / Enter
	MENU		DOWN	
	Back / Exit		Source selection (use select to confirm)	

POWER   MENU   UP   DOWN   SELECT

EXTERNAL PLAYER

crystalscreens

OPERATING THE DISPLAY

USING THE REMOTE CONTROL

The Remote Control included with every Crystal Screen model is shown on the right. An IR sensor is located in the lower part of the right stele strut. The shaded circles in the figures on the right indicate the approximate range of coverage of that sensor.

TURNING THE SYSTEM ON

1. Insert the power cord into the stele and into the power outlet.

2. Ensure the AC switch is set to "I"

3. Press the Power button on the remote or on the keypad.

4. Press the Power button of the internal player (for at least 1 second).

Note: If no digital input is connected, the display will wait for a few seconds and then switch the display into Power Saving Mode. The LED indicator turns from green to red. This will occur until a digital input is established.

TURNING THE SYSTEM OFF

With the power on, press the POWER button on the remote or the power button on the keypad to put the Crystal Screen in a standby mode.
Note: This does not switch off the integrated PC! To switch off the integrated PC, use the ON/OFF icon in the Windows Start menu and shut down the PC. The integrated PC is switched off when the blue LED ring around the POWER button in the Internal Player area is off. (4)
To fully turn off the system, turn the power switch to „0" or unplug the power cord from the wall outlet.
Note: Do not switch off the system using the power switch if the integrated PC is still running.

CONNECTING AN EXTERNAL PC

Press the Power Button of the external Player (5) and connect your external computer/playback device via the HDMI connector. Connect the touch with an USB-B to USB-A cable. Turn on the OLED via the keypad or the remote and then start your external computer/playback device.
Note: If the OLED does not automatically recognize the external input, use the remote SOURCE button or the keypad DOWN button (use SELECT to confirm) to switch to HDMI input.

OSD KEYPAD LED INDICATOR

The LED indicator light (6) is visible next to the power button of the OSD keypad
LED STATUS OPERATING STATUS
Led Green   Normal
Led Red   Power Saving
Led Off   Power Off

FRONT VS REAR VIEWING

Because each pixel is emitting its own light, the display can be viewed from the back as well as the front. However, the light emitted toward the rear is much less than that on the front and any image viewed from behind will be reversed.

GLASS TREATMENT

The front surface of the Display is made of toughened Glass that is installed in front of the OLED panel and covered with an anti-reflective coating. The toughened Glass provides scratch resistance on the front of the display only. The back side of the display is susceptible to damage from sharp and/or hard objects and should be protected accordingly.

OPERATING THE DISPLAY

USING THE TOUCH SCREEN

You can use the touch screen to control your Windows (Mac, or Linux via external PC) operating system. The Crystal Screen is HID compliant, delivering up to 10 points of touch on both Windows and Linux without a driver. Single touch only is supported for Mac operating systems. There is no driver required to enable Mac support.

DEVELOPING CONTENT

We strongly recommend you make use of the Crystal Screen Content Developer's Guide at www.united-screens.tv/en/support#crystalscreen
Use of this guide will both enhance the viewing experience of your Crystal Screen users and maximize the life of the display.

Note: SBD – Stress boundary diffusion

The OLED has a „burn-in protection" against static contents, as the organic components in the display would otherwise be subject to a faster aging process if a region were to be permanently illuminated. This burn-in protection moves the image clockwise by one pixel at regular intervals to prevent this. However, since this shift occurs only for the image and not for the touch overlay, there is sometimes a shift of up to 13mm between the touch and the image. Therefore, the touch buttons/surfaces of Custom Made Apps should be about 4cm in diameter (the larger touch surface can also be invisible, i. e. simply larger than the visible button). This ensures that touch surfaces are always hit correctly. Furthermore, a distance of approx. 2cm to the outer edge of the content area should be maintained to prevent the SBD from „cutting off" the content. For Windows10 operating systems, a higher value for the size of text, apps and other elements can be set in the display settings to increase the size of touch surfaces such as buttons, etc.

INTEGRATED PLAYBACK PC

The integrated PC is powered by an Intel Skylake Core i5-6400T processor (quad-core 2.2 GHz, up to 2.8 GHz) and a NVIDIA GeForce® GTX 960, enabling a superior performance for FHD video playback and demanding interactive applications.
The latest version of Windows 10 Home is pre-installed as well as Adobe Acrobat Reader DC, the Mozilla Firefox Browser and a Power Point Viewer.
For further information on the specs of the integrated PC please see the full specifications on page 19.

FEATURES

• Intel Hyperthreading technology
• Intel Clear Video technology
• 4K Support
• Microsoft DirectX 12 compatible, feature level 12_1
• NVIDIA® Maxwell™ Architecture
• 802.11ac WiFi & Bluetooth 4.0

TROUBLESHOOTING

When the power switch is toggled from the „o" switch position (power off) to the „I" switch position (power on), you should see green LED illuminate in the keypad section on the rear panel. If the LED indicator is red, please press the POWER button on the key pad. After less than 20 seconds you should see an OSD info box stating that no input is detected if the internal PC is off and no external PC/player is connected and running. If the internal PC is running or an external PC/player is connected and enabled, the image from either source will be visible after couple of seconds. A Sources Status window from the OSD will also be visible for a few seconds.

POSSIBLE PROBLEM: THE POWER SWITCH IS TOGGLED AND NOTHING HAPPENS.

Items to check: (1)
Make sure that the power cord is securely connected at both ends and that the power supply is available. Check the LED display in the OSD control panel. When it lights red, press the POWER button on the OSD panel.

POSSIBLE PROBLEM: THE MONITOR POWERS ON AND SHOWS THE MISSING INPUT DIALOG SCREEN BUT AFTERWARDS REMAINS EMPTY EVEN THOUGH THE INTERNAL OR EXTERNAL PLAYER ARE RUNNING.

Items to check: (2)
Check if the internal player is turned on. When the player is switched on, the blue LED ring lights up. If necessary, a control display can be connected to the HDMI port in the Internal Player section to determine if the internal player is running.
Check via OSD control panel or remote control which SOURCE input is selected on the display. DVI must be selected for the Internal Player and HDMI for the External Player.

If these troubleshooting instructions do not resolve the problem, please contact United Screens' Technical Support team to determine the next steps.
Hotline during opening hours: +4940 571 996 47

Opening hours: Mo-Fr 9am – 6pm

MAINTENANCE

CLEANING THE CRYSTAL SCREEN T-OLED

Both after installation and throughout the life of the display, appropriate cleaning will be necessary.

METAL SURFACES

These can be wiped with an absorbent towel. Do not allow any liquid to get into the foot with the electronics!

DISPLAY FRONT AND IR FRAME

Use a soft, lint-free cloth or paper. Microfiber cloths are best suited.
Use a high-quality glass cleaner suitable for LCD screens. A Premium Isopropanol (IPA) cleaner can also be used alone or as a supplement to a glass cleaner. Use IPA separately from the glass cleaner, i. e. do not mix it. Ideally, you should use different cloths for each liquid.
Note: IPA is flammable. Do not use the cleaner near open flames or other sources of ignition.
Glass cleaners or IPA must NOT get into the electronics base or into the area between display glass and display housing/IR frame.
Apply cleaning fluid, glass cleaner or IPA sparingly to a cloth (not directly to the glass surface) and start on one side of the screen. Wipe the screen evenly under circular movements. If you do not get a streak-free surface, increase the amount of cleaning agent on the cloth and change the cloths more often.

CLEANING THE BACKSIDE OF THE DISPLAY GLASS

Use the same materials as described above. Liquids must not get into the area between the back of the display and the display chassis. Be even more careful. The back of the display has no protective glass. Make sure that you use a clean cloth which is free of hard residues (crumbs, chips, etc.).
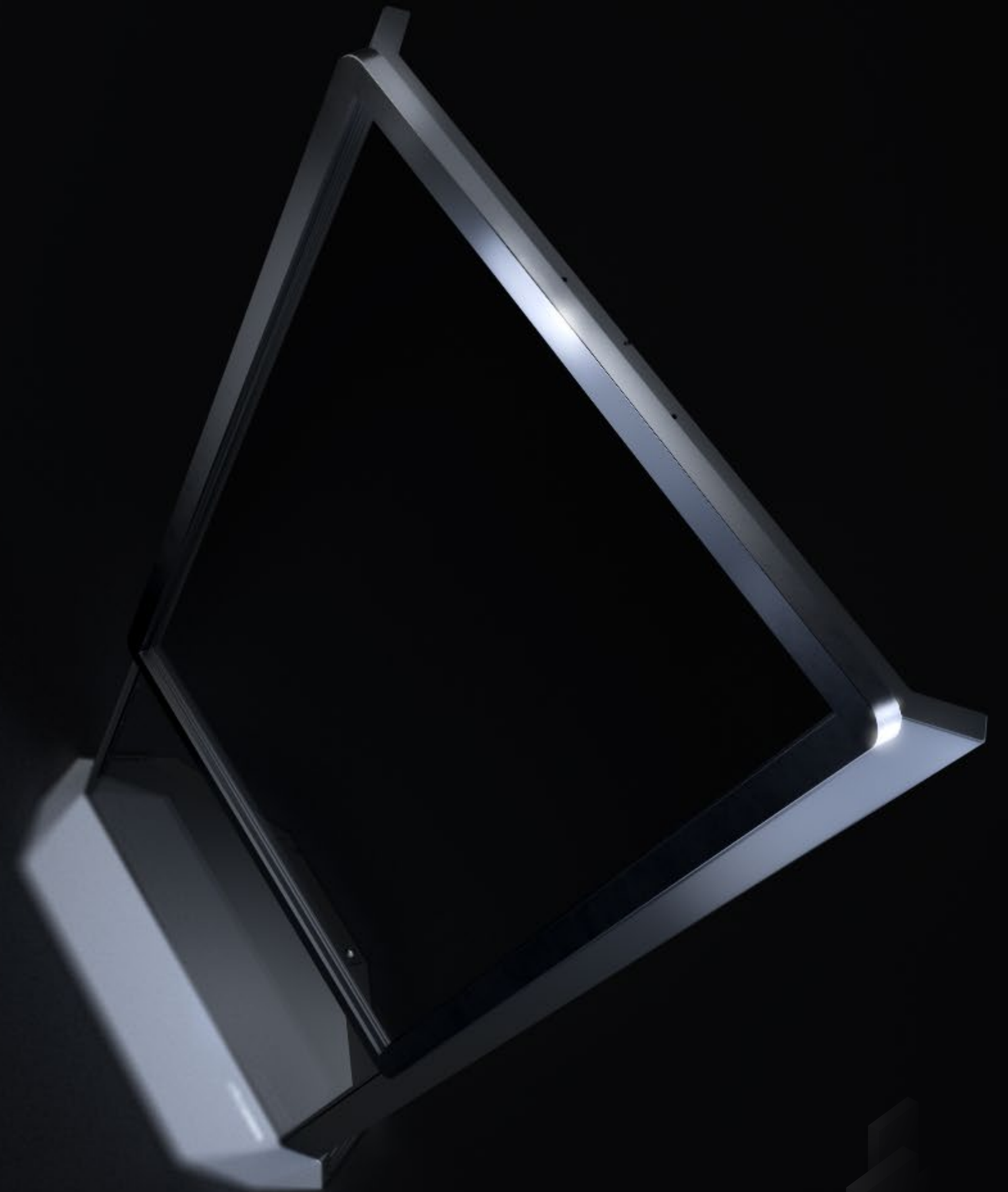
Specifications	Crystal Screen T-OLED
AMOLED Panel	
Resolution	1080 x 1920
Aspect Ratio	9 x 16
Screen Size	55"
Pixel Pitch	0.64mm
Viewing Angle	180°
Color Gamut	100% NTSC
# of Display Colors	1.07 Billion (10 bits)
Connectivity	
Inputs	HDMI 1.4 (external Player)
	RJ45 -LAN (internal Player)
	2 x USB 3.0 (internal Player)
Outputs	HDMI 2.0 (internal Player)
	Touch (external Player)
	Camera (optional - external Player)
Control Elements	Remote Control, OSD-Keypad
Mechanical	
Aktive Screen	678.4 x 1208 mm
System Dimensions (cm)	
Total	91.6 x 203.5 x 50.7 cm
Foot	91.6 x 77.5 x 50.7 cm
Touch Display Chassis	76.0 x 129.0 x 23.6 cm
System Weight (Kg)	75
Mounting	Yes, 4 x M8
Usage	
Recommended Usage	≤ 12 Std/Day, moving image, 75 nits average luminance
Luminous Life*	30.000 hours
Power/Electrical	
Power consumption, Max	380W
Power consumption, Typ. (Video)	190 - 220W
Standby Power consumption	< 0.5W
Input Voltage	100 - 250V / 50-60Hz
Front Glass	
Glass Type	toughened safety glass
Touch	
Touch Technology	IR
Supporting OS	Windows 7, 8, 10, Mac OSX and Linux
Detectable Touch Points	10
Min detectable Object	1.5mm
Touch Sample Rate	up to 250 fps
Environmental	
Storage temperature	-20 to 60
Operating temperature	0 to 35
Integrated PC	
Operating System	Windows 10
CPU/Chipset	Intel Skylake Core i5-6400T (quad-core, 2.2 GHz, up to 2.8 GHz)
System Memory	8 GB DDR3L-1600
Graphics	NVIDIA GeForce® GTX 960 - 1280 CUDA Cores / 3GB GDDR5 memory / 192-bit
USB Ports	2 x USB 3.0
Storage	Samsung SSD 750 Evo 2,5 120GB SATA III (6 Gb/s)
LAN/RJ45	10/100/1000 Mbps operation - supports IEEE 802.3
WiFi/Bluetooth	802.11ac WiFi & Bluetooth 4.0
Audio	Stereo analog Audio output and Microphone input - Loss-less Bitstream via HDMI

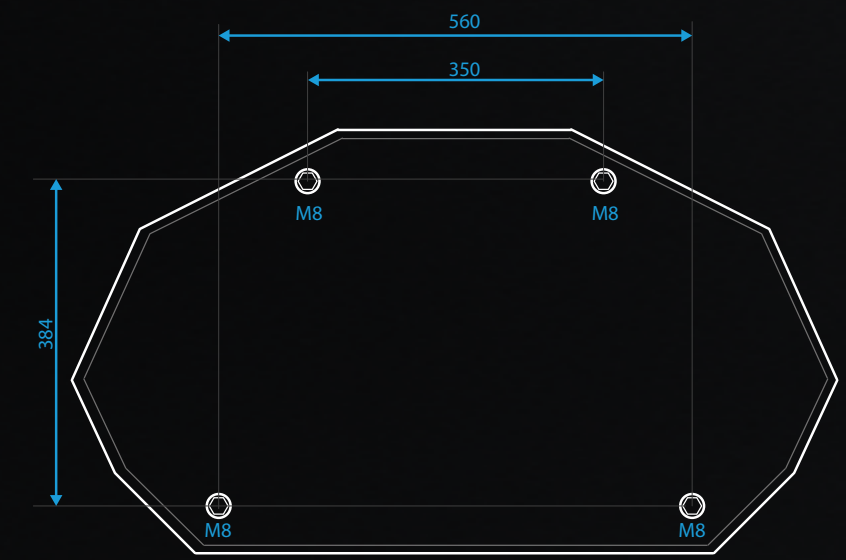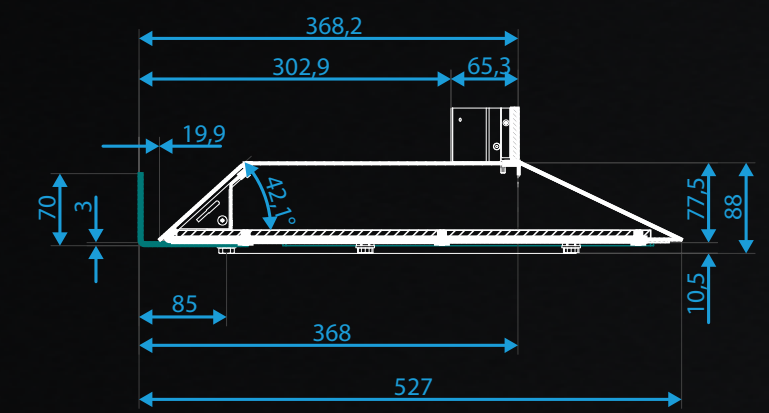*Time to 50% of the output brightness, at 25° C, moving image and an average luminance of 75 nits.

LINE DRAWINGS

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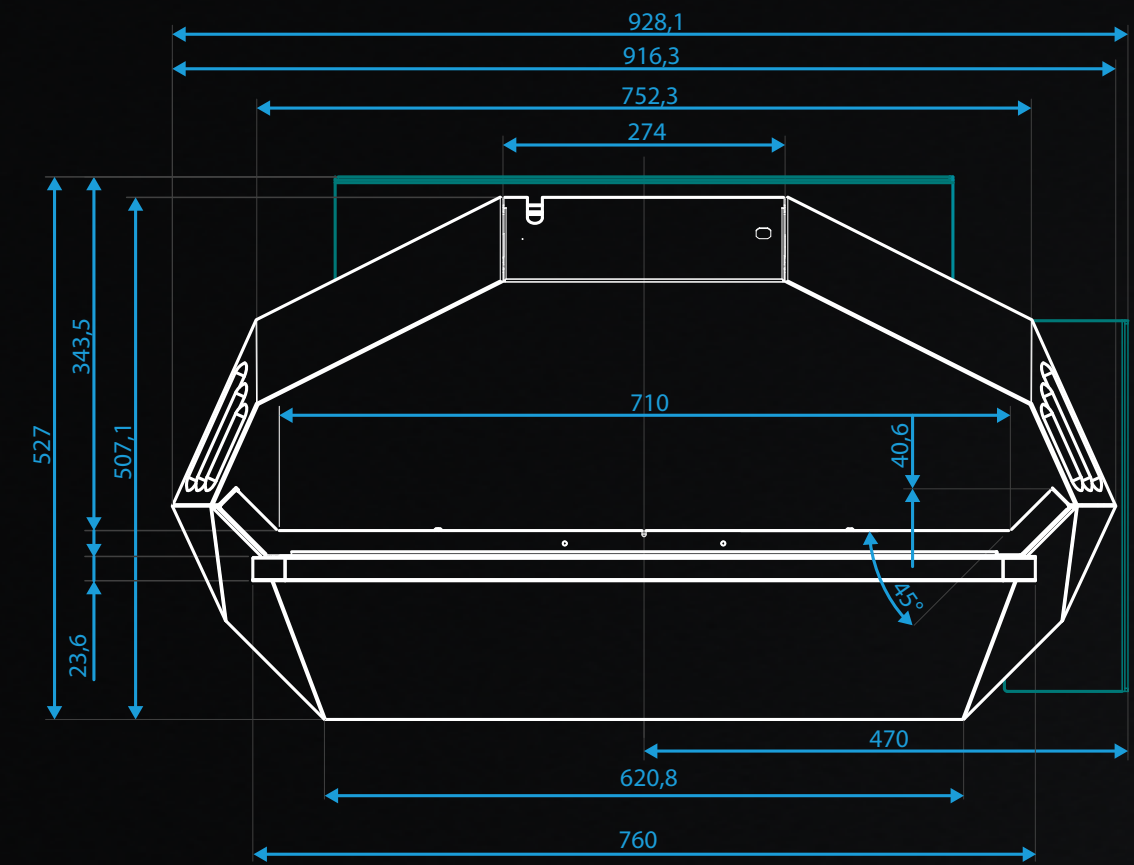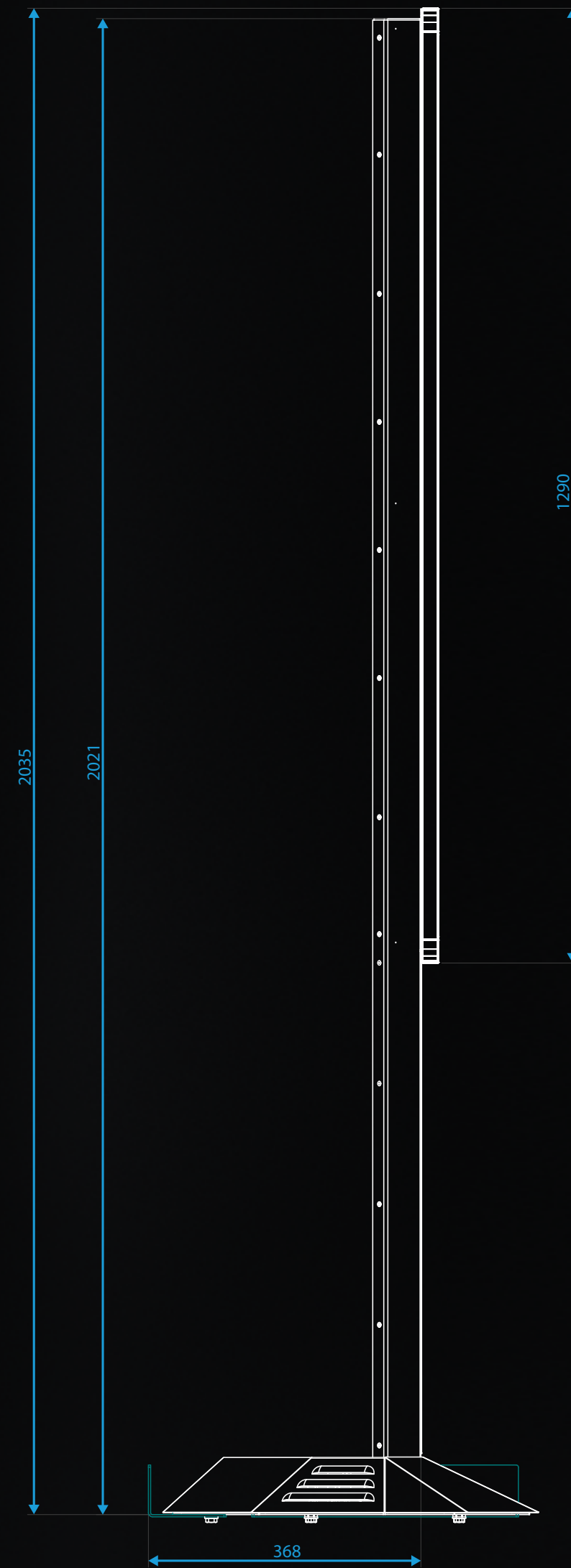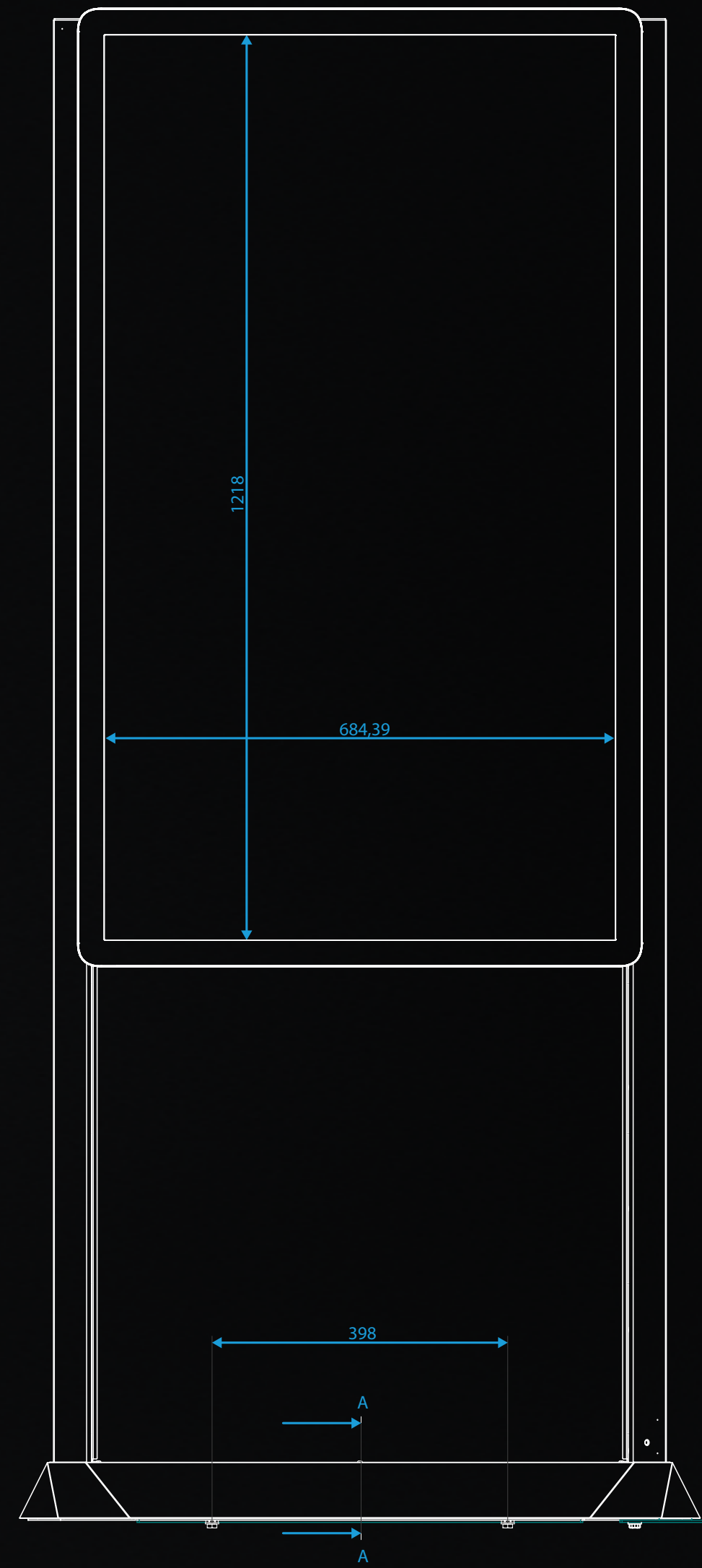
TECHNICAL SUPPORT

ACCESSING UNITED SCREENS TECHNICAL SUPPORT

Visit www.united-screens.tv/en/support for the following documents and resources:

- This user manual
- United Screens Content Developer's Guide
- Support-Ticket

IMPRINT

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