HYUNDAI
Smartboard α

Model : S65UCAI/S75UCAI/S86UCAI

User Guide

Contents

IMAGE QUALITY OF THE PRODUCT

CAUSE
Due to the nature of LCD's property, Afterimage can occur. Afterimage appears when identical frames/ images are displayed continuasly. If dispalyed for prolonged periods of time this can become permanent.

PREVENTION
When you display a freeze frame for a long time, lower the brightness and contrast (Brightness, 70/ Contrast, 80).
Also it can be decreased by using Pixelshift function.

COUNTERMEASURES
- Temporary afterimage can be alleviated by displaying white or moving frame about 10 hours.
  (But, permanent afterimage cannot be disappeared according to the property of LCD)
  This method is used to remove temporary afterimage that may occur after displaying a still frame for a certain time.
- It can take several minutes or hours to remove afterimage according to the severtiy.
  In this case that you cannot avoid displaying identical still image continuously, you can prevent it by displaying moving image for 2 or 3 minutes in every hours.
- As the brightness of still image and time of display are the cause of after image, you are recommended to lower the brightness in that case.

⚠ Above problem shall not be covered by warranty.

PRECAUTIONS FOR USE
Electricity is used to perform many useful functions, but it can also acuse personal injuries and property damage if improperly handled. This product has been engineered and manufactured with the highest priority on safety. However, improper use can result in electric shock and/or fire. In order to prevent protential danger, please observe the following instrctions when installing, operating and cleaning the product. To ensure your safety and prolong the service life of your LCD product, please read the following precautions carefully before using the product.

- Do not place wet objects around the product and power code.

- Do not cover or put something in air vents of product in any way.

- Install in a place that not harmed oil, smoke, high temperature, high humidity or dust.

- Make sure that the power code or other codes are securely and correctly plugged in.

- Insert the power code correctly to the inside end to prevent it from shaking. It can cauese electric shock and fire.

- Do not touch the power code with wet hands. It can cause electric shock.

- AC socket-outlets or extension cords are as dangerous as old power cords or broken cords.
  It can cause electric shocks or fires, so refer them to service technician for replacement.

- Do not use multiple devices simultaneously with one outlet. Overheathing can cause fire.

- Do not use sharp tools such as pins and pencils near the LCD surface of the product.
  The LCD surface can be damaged.

- LCD surface is chmically sevsitvie and has a spceial coating, Please use water or soft cloth to wipe
  the surface. Do not use chemical solvent to wipe, such as benzene, can cause fatal damage to the
  LCD surface.

- Do not use strong chemical agents or alcohol such as methyl, ethyl or isopropyl.

- Be sure to remove the power code and wipe with a soft dry cloth when cleaning.

- Keep batteries used in remote control out of sight of children.

- When replacing batteries, fit them to the polarity (+,-).

- The battery should use the specified specifications and do not mix the new battery with the old one.

- Use an unstable and unshakable stand or install on a flat surface when installing the product.
- Make sure that at least 4 people work safely when moving or installing the product.
- Do not hanging on or climbing over the stand or product.
- Remove the power code when the product is not in use for a long time.
- If the product is dropped or its appearance is damaged, power off the product, unplug the power cord, and contact the service center.
- Make sure that the product does not drip or splash water, and do not place any liquid items such as vases on the product.
- Ground the product and connect it to the protected main socket outlet.
- Leave the disconnected device to ready for use.
- Install the socket outlets close to and easliy accessible around the device.
- When moving the product, use a cart, pedestal, tripod, bracket, custom table made by the manufacturer, or a tabel sold with a device containning the product. Also, be careful when moving the product using a cart, as it may fall, cause injury or damage to the product.

PRECAUTIONS FOR INSTALLATION

1. Install it at least 30cm away from the electric or heating system.
2. Avoid direct sunlight and where sunlight is reflected on the screen.
3. Ensure that the stand is secure and before installing the product.
4. Install the machine at a location 30cm from the wall and at least 10cm from the floor for ventilation.

⚠ Please take extra care when installing so that the produdct does not fall apart.

⚠ Make sure to use the approved and correct parts to meet the VESA specification and not warranted any injury or injury casued by the use of improper parts.

- Installing the product on the wall requires special expertise and should be conducted by a qualified installation specialist. Not liable for accidents or injuries casued by improper installation or handling.
- This product cannot be used in a vertical direction
- When moving the product, make sure that at least 4 people use the handle and floor surface of the product properly, but do not hold the screen and sensor parts,trays, or power buttons. This can cause product damage, failure, or injury.
- Please enough space around the product to avoid heat scalling inside it.

Example of unventilated product

Example of fitting product to wall
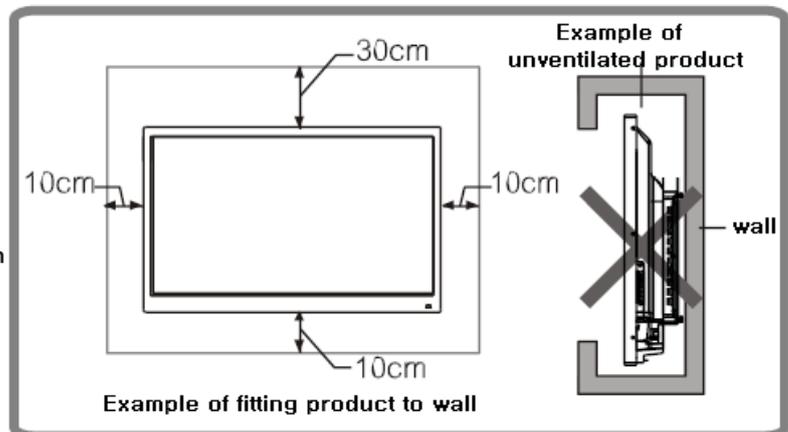
ACCESSORIES

Unpack the boxes and check the accessories provided below.

|				
Remote Control	User Guide	Warranty Card	Wall Mount Instructions	Power Cord
Battery	HDMI Cable	Touch Pen	USB Cable	
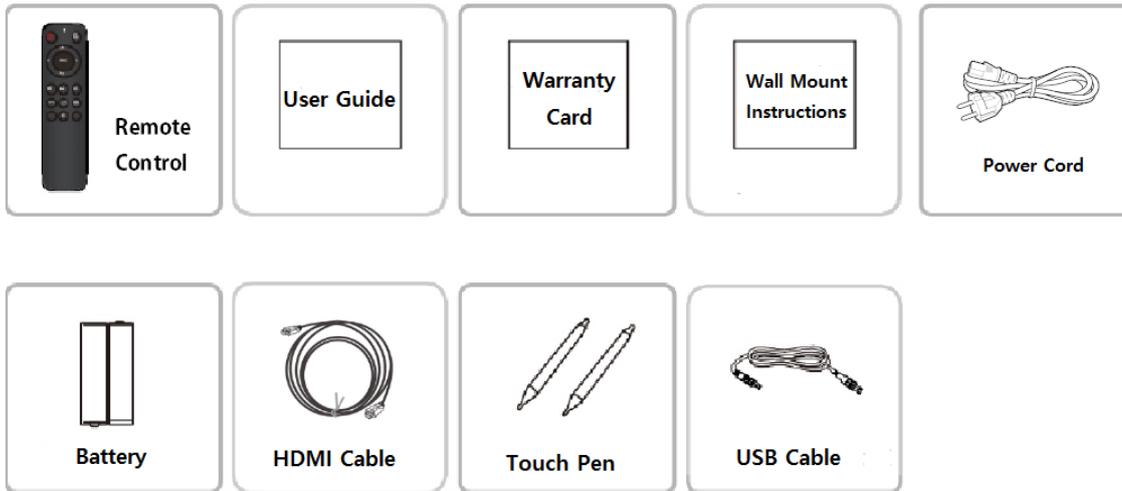
! Please open the product packaging to make sure it contains the items above and contact the services center if any items are missing. The content may vary depending on the purchase model and may be attached to the product.

HOW TO USE

If you are installing the product, hold it on both sides and carefully lift it up. Take care that the panel surface do not touch the floor.

Panel
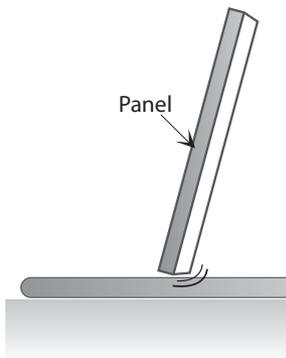
When placing the product down, prepare a cushion on a flat surface and place the front of the product downwards.
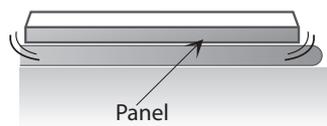
Panel

If there is no suitable cushion, make sure that the floor is clean before the front face up or down. Do not allow objects to fall onto the front of the panel.

Panel
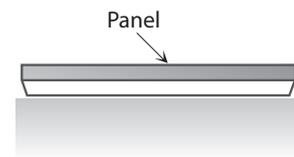
TITLE AND FUNCTION OF EACH PART 1

The front part

PUBLIC-USB   **TOUCH-USB**   **HDMI**

1   2   3   4   5   6   7

❶ Indicator, Remote control receiver and Optical sensor receiver
❷ Power button
❸ Home button (go back to main home)
❹ Return button
❺ System button
❻ VOLUME −
❼ VOLUME +

TITLE AND FUNCTION OF EACH PART 2

The side part

| HDMI2 | HDMI1 | DP | USB2 | USB1 | TOUCH-USB | SPDIF | HDMI-OUT |
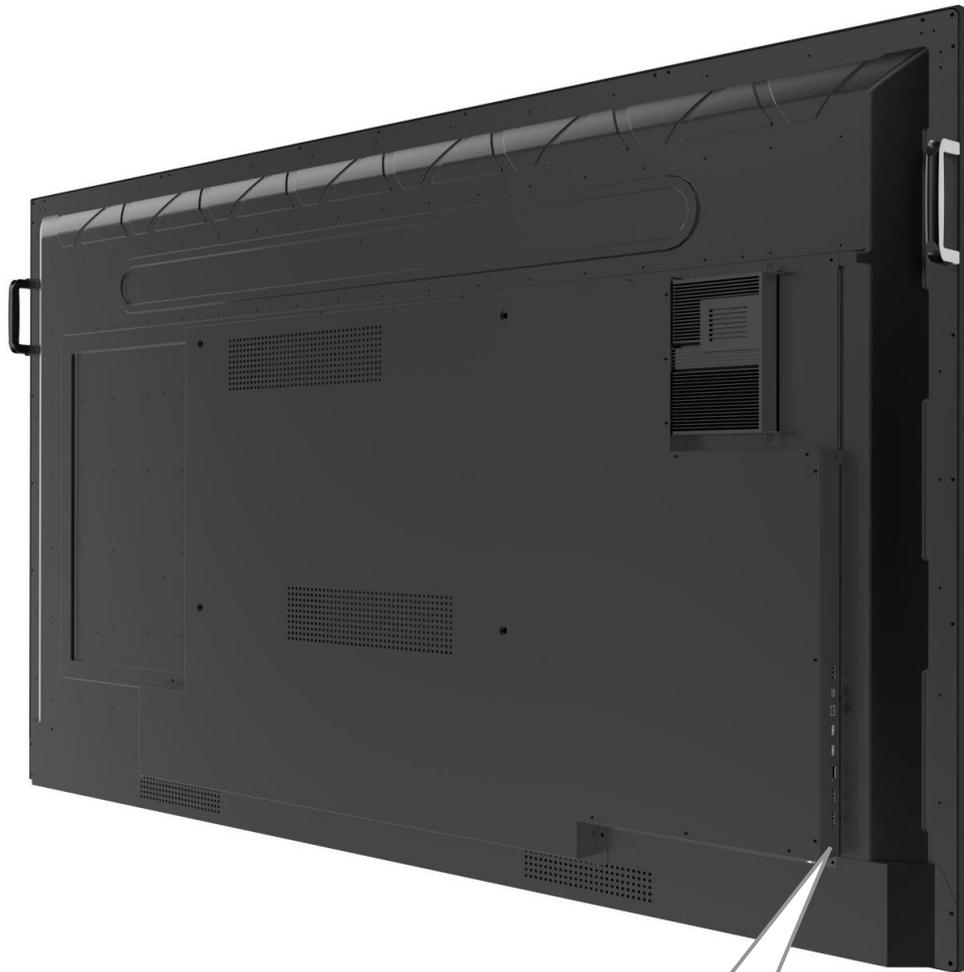
❶ HDMI2 2.0 Input Port   ❼ SPDIF Output Port
❷ HDMI1 2.0 Input Port   ❽ HDMI Output Port
❸ DP Input Port
❹ Android USB2 Port
❺ Android USB1 Port
❻ Touch-USB Port

TITLE AND FUNCTION OF EACH PART 3

The bottom part
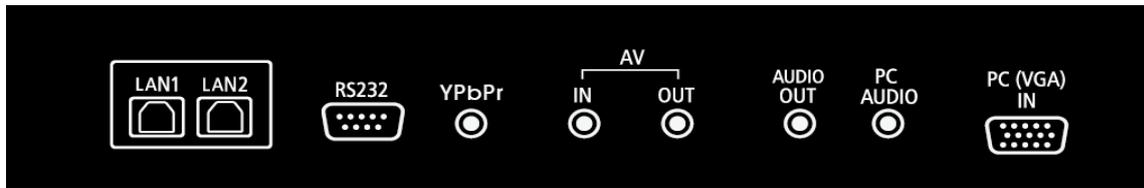
① RJ45 Port   ⑦ PC AUDIO Port

② RS232 Port   ⑧ VGA Port

③ YPbPr Port(for option）

④ AV Input Port(for option）

⑤ AV Output Port(for option）

⑥ AUDIO Output Port

REMOTE CONTROL

Insert Battery

Open the rear cover, check the positive (+) and negative (-) marks, insert the ″AAA″ battery correctly and close the cover.

〔Information〕
· If the battery is exhausted, it will not work properly, so replace it with a new battery.
· If the remote control is not used for a long time, remove the battery.
· Dropping or stepping may cause malfunction.
· Do not drop or store in water or in a humid place.
· If the remote sensor is under direct sunlight or stong illumination, it may not function properly.

KEY	Function
POWER (⏻)	Switch between power-on and the standby.
SOURCE (🖥)	Open / Close the signal source list.
NAVIGATION KEYS〈 〈 〉∧∨〉	Select or adjust menu options.
OK〈OK〉	Confirm the operation.
MEUN〈≡〉	Show/hide the main menu.
HOME〈⌂〉	Display the Android home page.
BACK〈 ↰〉	Return to the previous interface.
OPS	Swtich to OPS source.
WRITING PAGE〈☑〉	Switch to the writing software program.
SNAPSHOT〈📷〉	Take a screenshot.
VOL-〈—〉	Decrease the volum.
MUTE〈◁✕〉	Mute.
VOL+〈+〉	Increase the volume.

⚠ Risk of explosion if battery is not replaced correctly.
Dispose of used batteries according to
the manufacturer′s instructions.

CONNECTING PERIHERAL EQUIPMENT

WARNING

- Make sure that the peripheral is switched off, then connect the signal cable and power cord in order.
- Connect the termianl cable with care not to confuse the output/input terminals.

TIPS

- To use touch panel, connect the USB cable to the connected computer.
- On some specific video cards, the image might not appear properly.

☞ Power Connection
• Do not overload the power outlet and use a certified power outlet.

Power Cord

AC 100-240V, 50/60Hz

☞ TOUCH USB Port
• To use touch panel, connect the touch panel to your computer with the provided USB cable.

USB Cable

PC
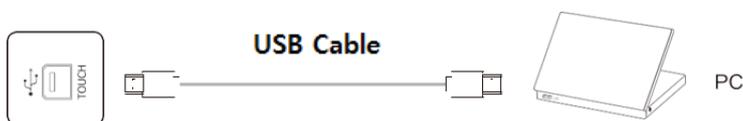
☞ HDMI Input Port

- Use the enclosed HDMI cable or as standard cable when purchased to used on the market.
- HDMI: Audio signals are included in the HDMI signal.

HDMI Cable

STB/player/PC/DVD
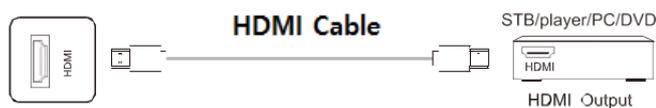
HDMI

HDMI Output

☞ Display Port

- Use DP cables as standard.
- Display Port: Audio signals are included in the DP signal.

DP Cable

DP

DP output device
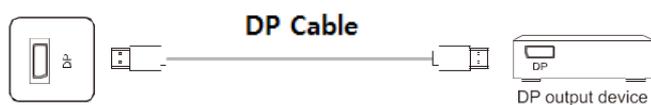
☞ HDMI Output Port

- HDMI output terminals can output audio & video signals to the HDMI input terminals of the secound product, and this second product can output audio & video signals to the third product. (Daisy Chain)

HDMI Cable

Monitor
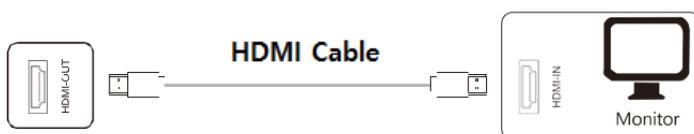
CONNECTING THE POWER CORD

1. First, connect to the power cord provided on the AC power terminal at the back of the product.
2. Second, connect the power cord to the power outlet.

3. Push the button   2. AC Port   Power Cord   1. Power Outlet
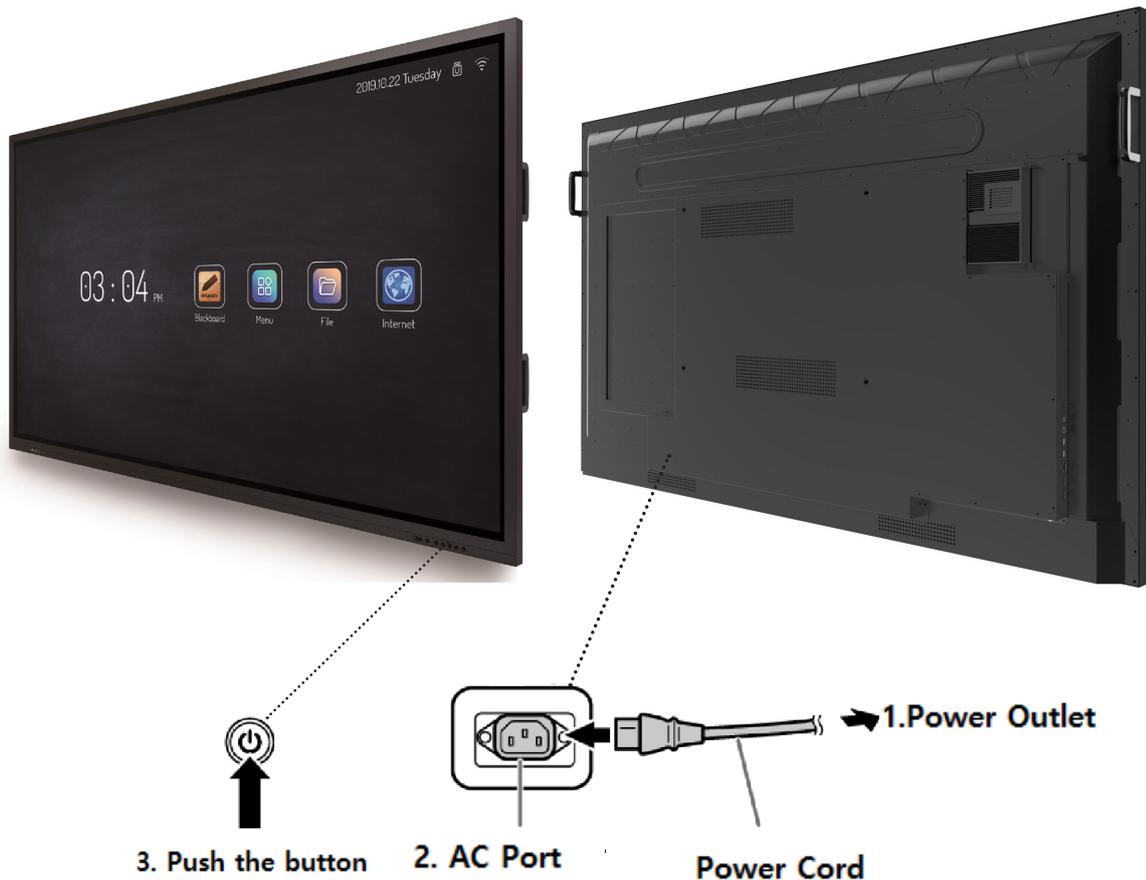
LED light	Mode
Green	Power On
Off	Power Off
Red	Signal Standby(Sleep)

Startup/Shutdown

1. Use 100-240V AC as the power supply.

2. In the non-Android main interface, if there is no signal input within 15min,
   the product will automatically enter the standby mode.
   In the Android main interface, whether there is signal input or not, the product
   will not enter the standby mode.

3. Before shutdown, the product will save the picture and sound settings.
   Upon restart, these setting will be used.

4. If the product is installed with the OPS module and it is in OPS signal source,
   the OPS module will start automatically.
   If not, start it manually. (NOTE: The OPS module is optional.)

ANDROID HOMEPAGE

❶ Operate writing software program.
❷ Displays a list of available apps.
❸ Operate file explorer.
❹ Operate an Internet browser.
❺ Touch to display the sidebar menu.
❻ Bottom bar menu. (Swiped up along the edge of the bottom left corner of the screen)

Bottom bar menu

❶ Help
❷ Switch to mute mode
❸ Popup loop quick menu
　(Two fingers are placed in the middle of the screen to call up the Popup loop menu)

Current information
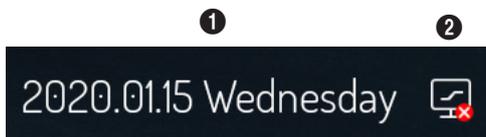
❶ Display the current date and day of the week.
❷ Display the current network connection information.

Pop-up menu 1
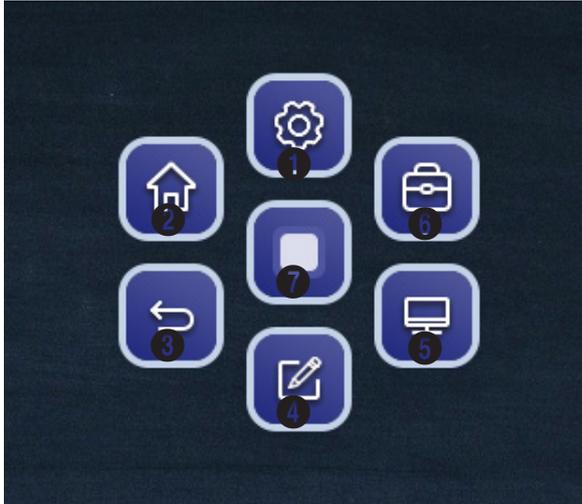
❶ System setting

❷ Returns to the Homepage

❸ Returns to the previous page

❹ Operate the overlay writing software

❺ Signal source/menu setting

❻ Swicthing to the Pop-up menu 2

❼ Reduce the Pop-up menu

Pop-up menu 2
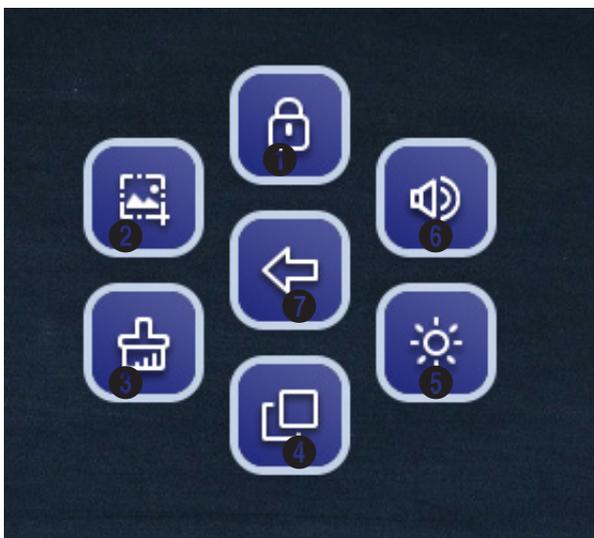
❶ Operate the screen lock

❷ Specifing a range to take a screenshot

❸ Operate the qiuck clean memory

❹ View the current running apps

❺ Adjust the screen brightness

❻ Adjust the volume

❼ Returns to the Pop-up menu 1

Sidebar menu

❶ System setting
❷ Signal source/menu setting
❸ Small tools
❹ View the current running apps
❺ Returns to the Homepage
❻ Exit the sidebar menu
❼ Operate the overlay annotation writing software

Signal source setting

The signal source can be switched using the remote control or touch function.
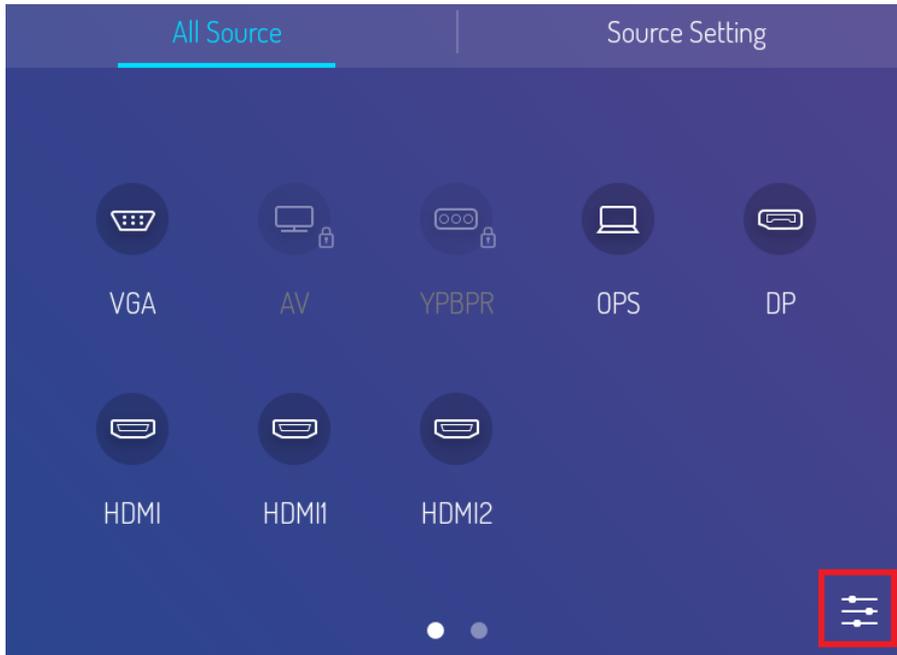
1. Press the "Source" Key on the remote control, click the signal source menu, select the source with the orientation key and press OK button

2. Sidebar menu -〉 Select a source in the signal source settings to swtich to that signal source

3. Touch the button in the lower right corner to adjust settings such as image, voice, and backlight
   (Can adjust image mode when you change to an external input source）
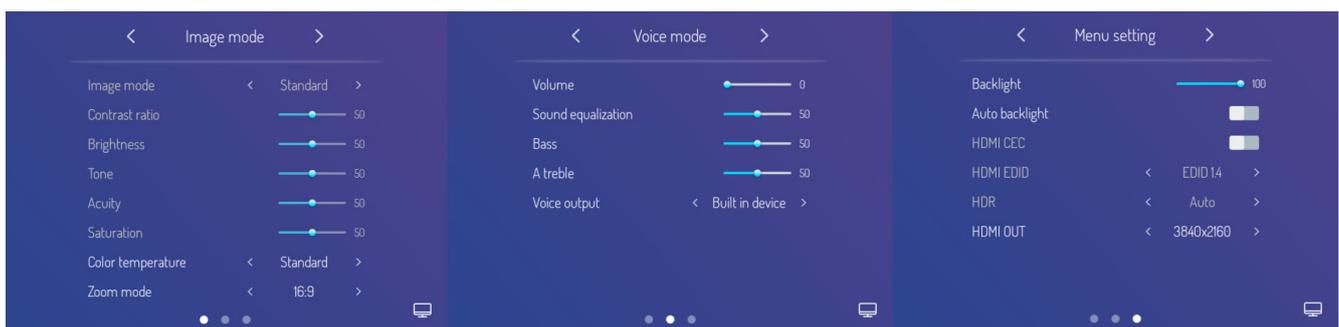
Quick menu (Small tools)
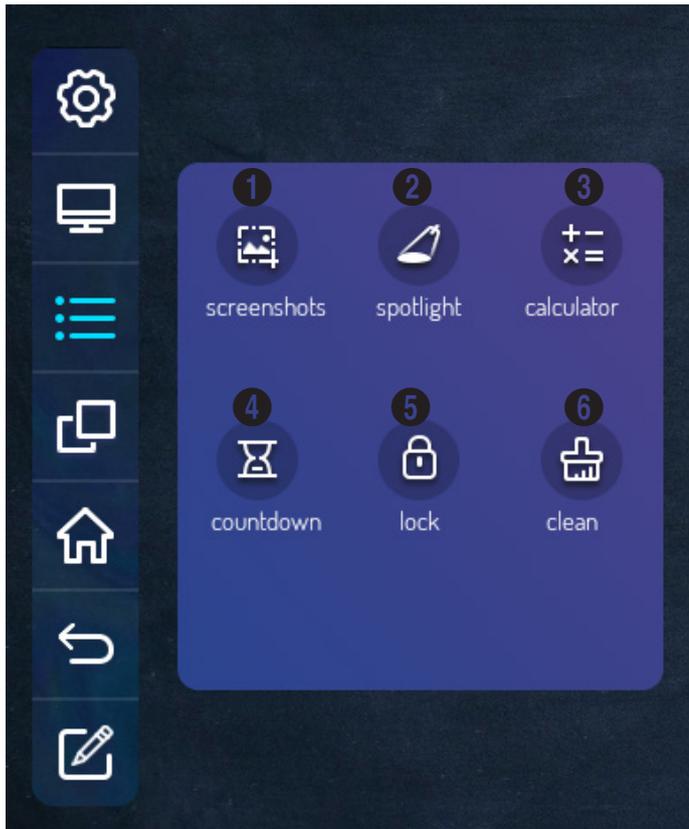
❶ Specifing a range to take a screenshot
❷ Shaded and higlighted, excluding certain areas
❸ Operate Calculator
❹ Operate countdown function
❺ Lock the screen to prevent others using
❻ Improve speed by organizing unnecessary tasks

Writing Software(Blackboard)

Though accurate touch writing software enables efficient presetation, meetings and more.

How to use
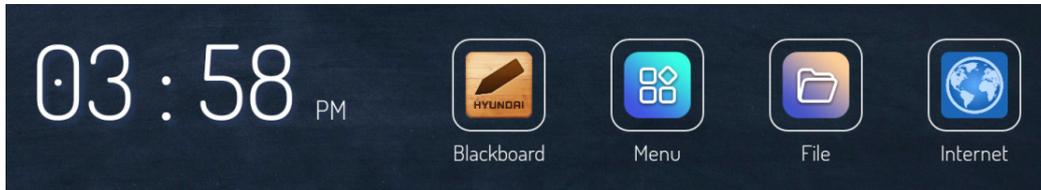
1. Touch the Blackboard on the Homepage or select a remote control to run it.

2. When running normally, the screen above is displayed.

UI Setting

❶ **Background Setting**
❷ **Brush Setting**
❸ **Nib Setting**
❹ **Single point/Multi-point**
❺ **Memo/ Spot light/ Import Picture/ Split Writing**
❻ **Lasso Move**
❼ **Previous Step/ Next Step**
❽ **One Key Clear**

Background Setting
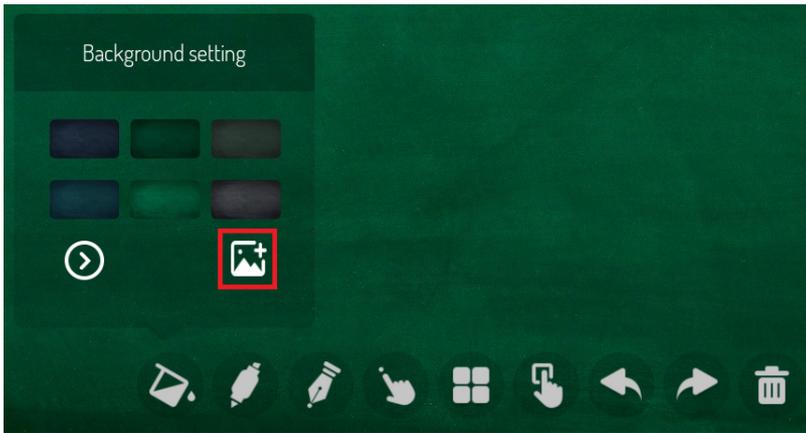
■You can change the predefined background screen and add a background through the lower right icon.

Brush Setting
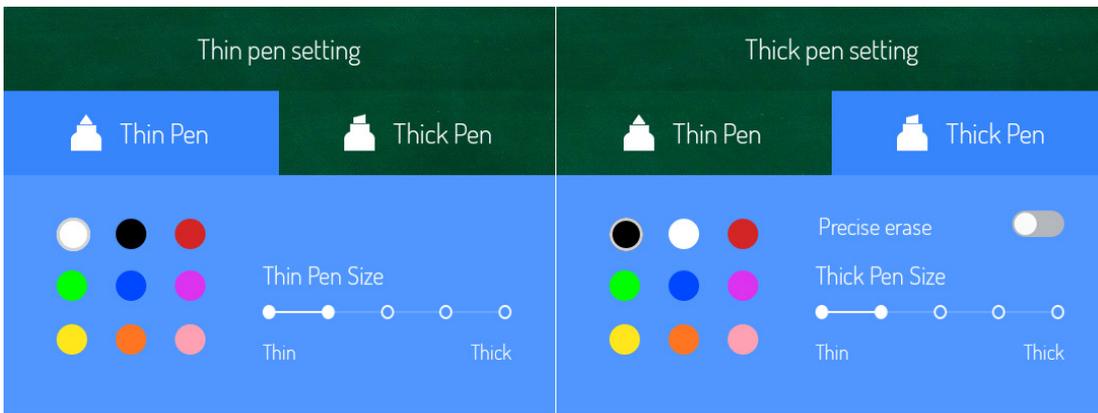
■The thickness difference in the front and back of the touch pen included in the product allows you to specify different settings for your writing edition. When enabling the accurate eraser function, the thick brush part can be used like an eraser.

Nib Setting

■Touch to apply the settings, the icon turned to dark and the end of the letter be sharp as if it were written in a Nib brush.

Single point/Multi-point

■When you touch, it can switched to single or multi-touch mode, and up to 10 points can be recognized.

Memo/ Spot light/ Import Picture/ Split Writing
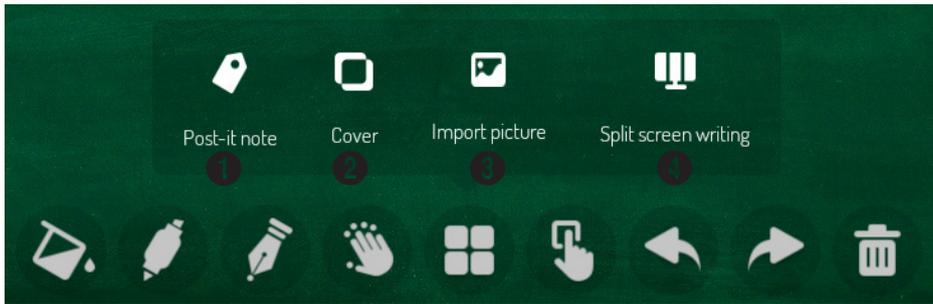
❶ Can use Memo by placing it on the screen.
❷ Shaded and higlighted, excluding certain areas.
❸ Import Picture
❹ 2 or 3 screen division split writing

Lasso Move

◼ When activating the function, the icon is displayed darkly and you can select a certain area to copy, move, or delete.

Previous Step/ Next Step

◼ Revert the work to its previous step or restore the work to its original work.

One Key Clear

◼ Initialize the work and return it to its initial mode.

File Save And Share
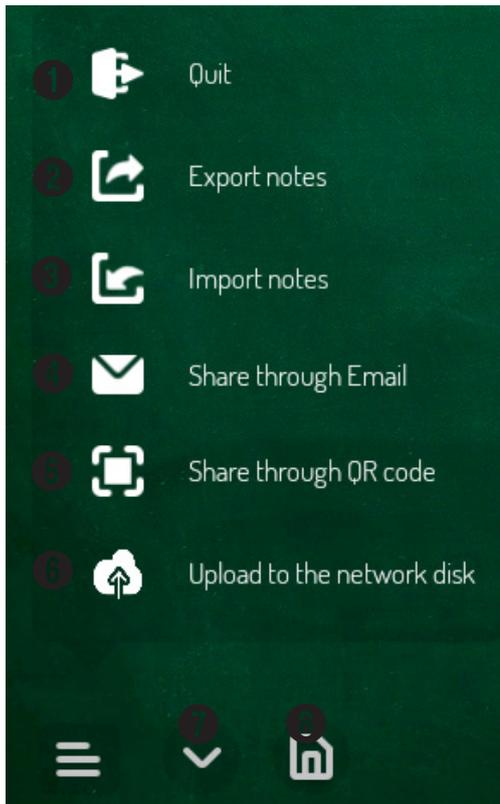
❶ Exit the Blackboard.

❷ Saves the current work.

❸ Bring the saved memo from the export of memo.

❹ Converts the current work states to an image and shares it with an email.

❺ Converts the current work states to an image and shares it with QR cord.

❻ Converts the current work states to an image and shares it with Personal Cloud.

❼ Temporarily hide the UI of the Blackboard.

❽ Saved current work in local file or USB.
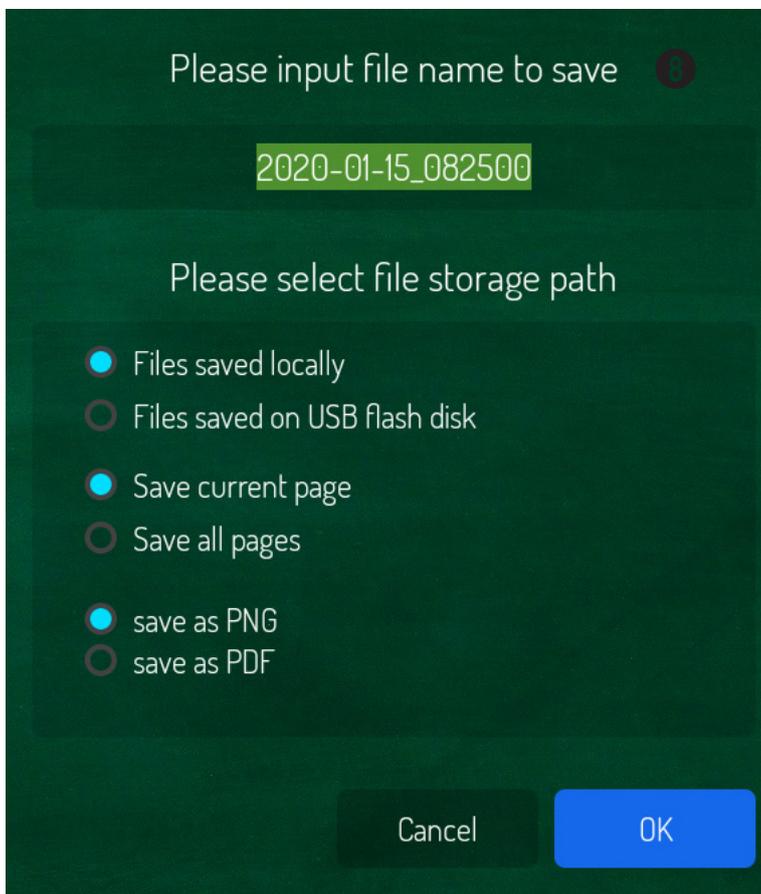
Share through Email(SolMail)
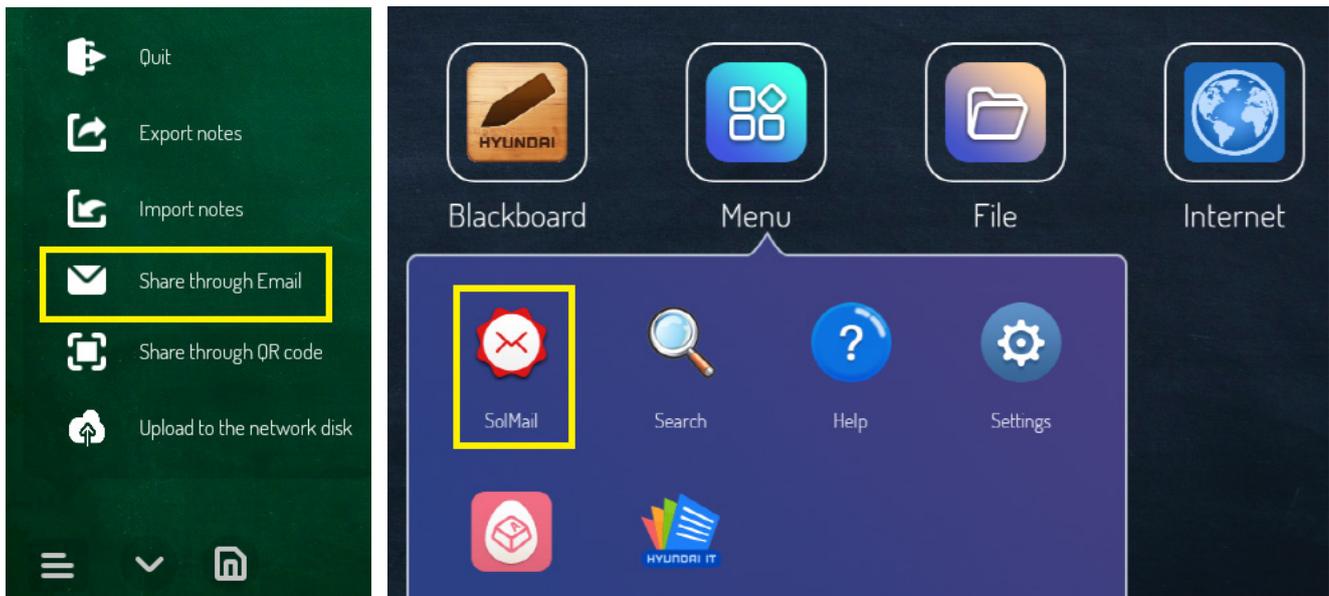
■ When you choose email sharing feature, SolMail app launched automatically
    You can launch the SolMail app in the Menu folder on the Home menu separately.
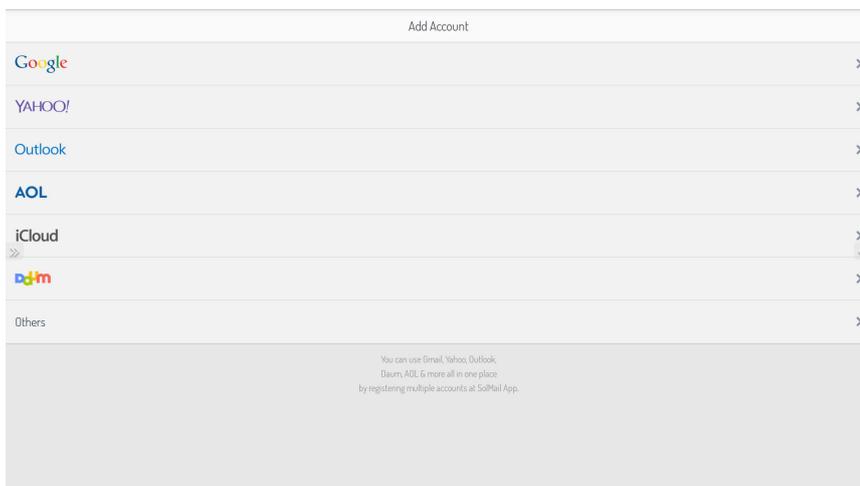
■ After launched the app, the menu is shown above and use the email service you choose.
    (Currently, the Google Gmail is not available)

※If you fail your email account setup, please switch the server setting between POP3/IMAP
 and check the status in your current email service.

Mirroring (Screen Sharing)

For iOS
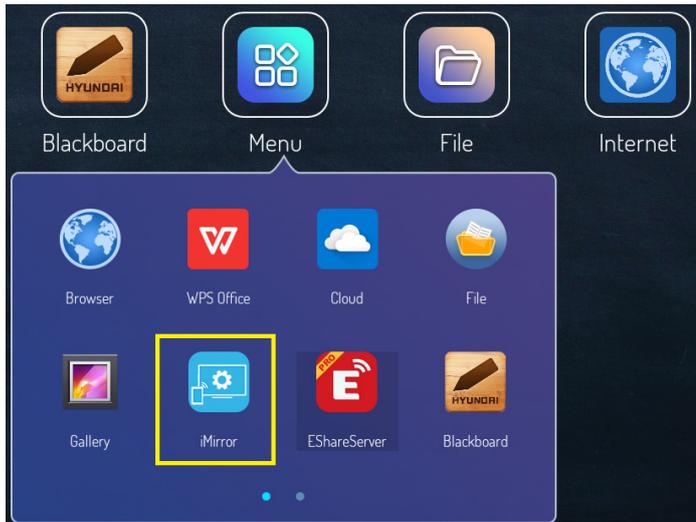
1.Launch the iMirror app in the Menu folder on the Home Menu

2.The 'Screen Name' is on the display, then set your iOS devices network connection to the same with your IFPD
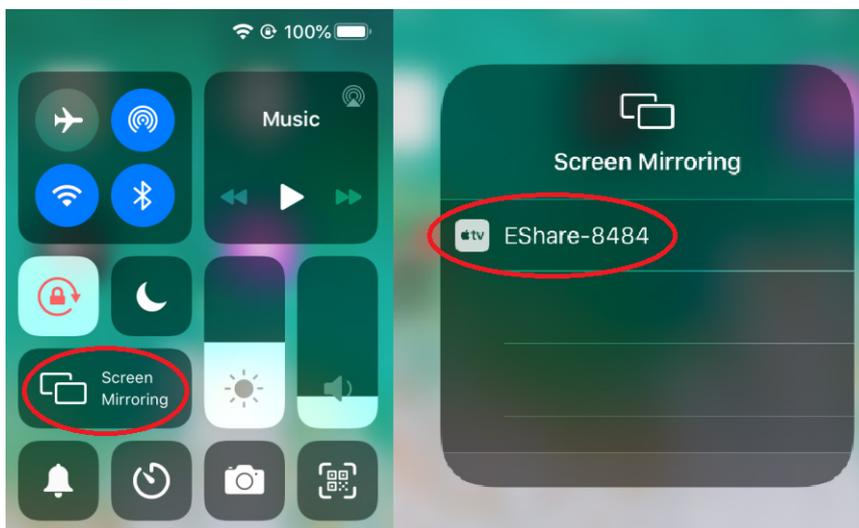
3. In the Control Center menu on iOS, select 'Screen Mirroring'. The Screen Name will be shown in the list then select it.

Other devices (Android, PC)
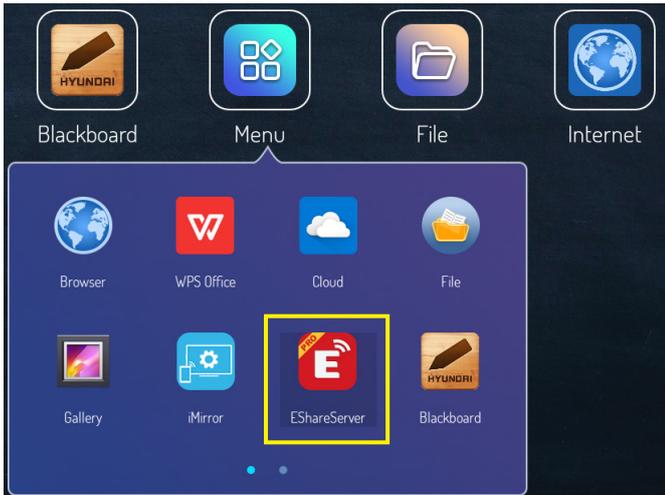
1.Launch the EShareServer in the Menu folder on the Home menu.
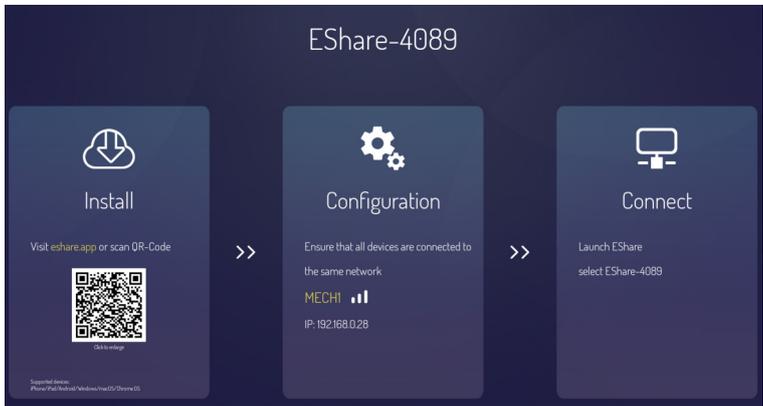
2.Once the app is on the screen, check the 'Screen Name' on top of the screen.
Then set your devices network connection as the same with your IFPD.
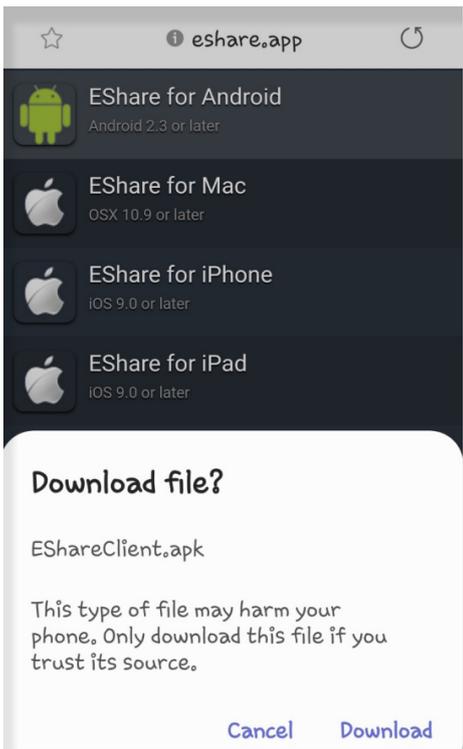
3.To connect IFPD, visit the eshare.app website or
scan QR code. Depending on the OS of your
device, download and install the Eshare client app.
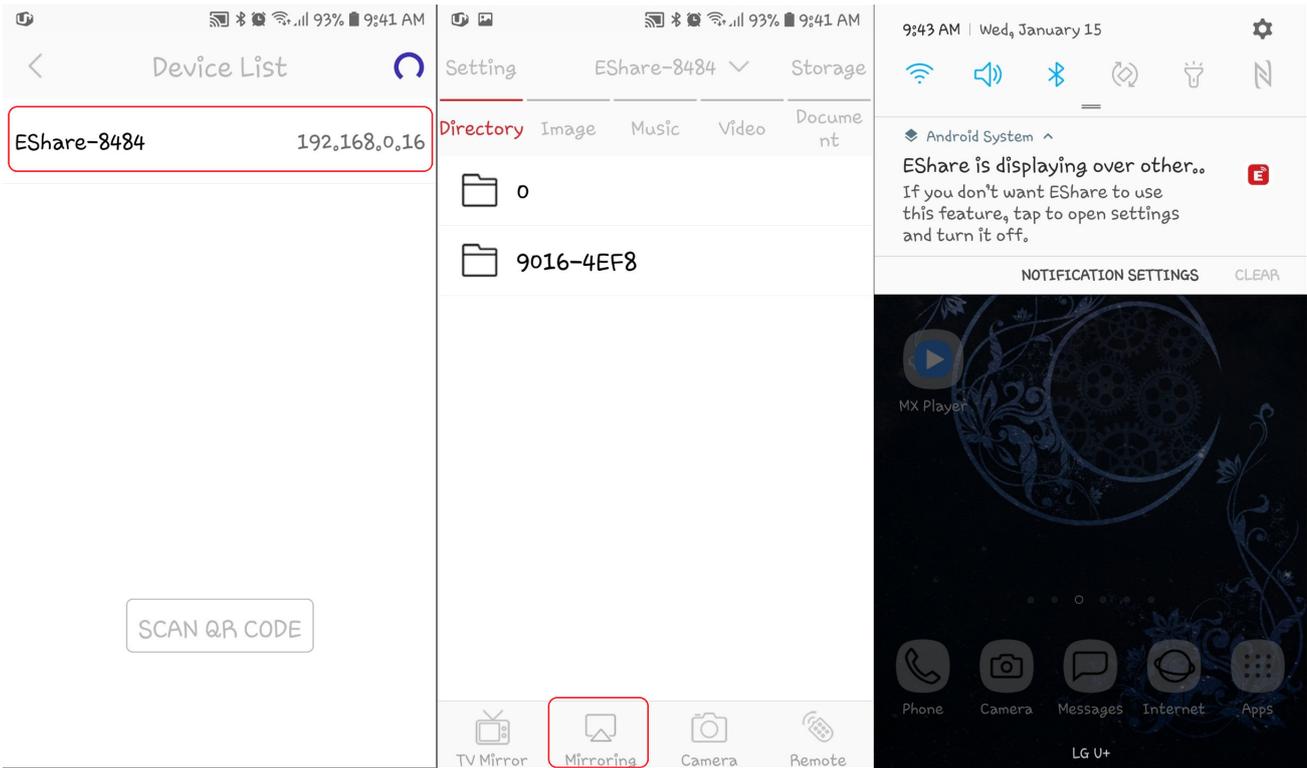
4. Launch the Eshare client and select the same 'Screen Name' on the IFPD. Mirroring will be start.

System Setting

Network Setting

WLAN
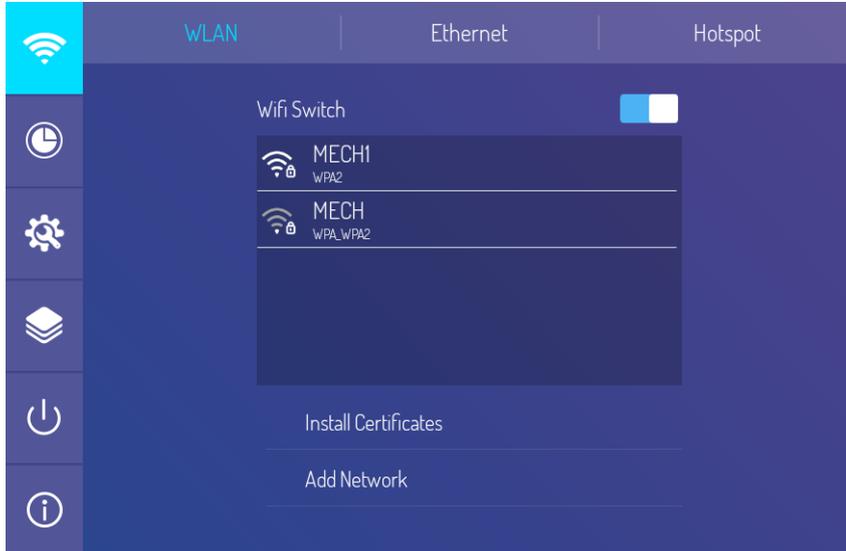
◼ To use WLAN feature, it is required USB type wireless network dongle(option)

Ethernet Setting
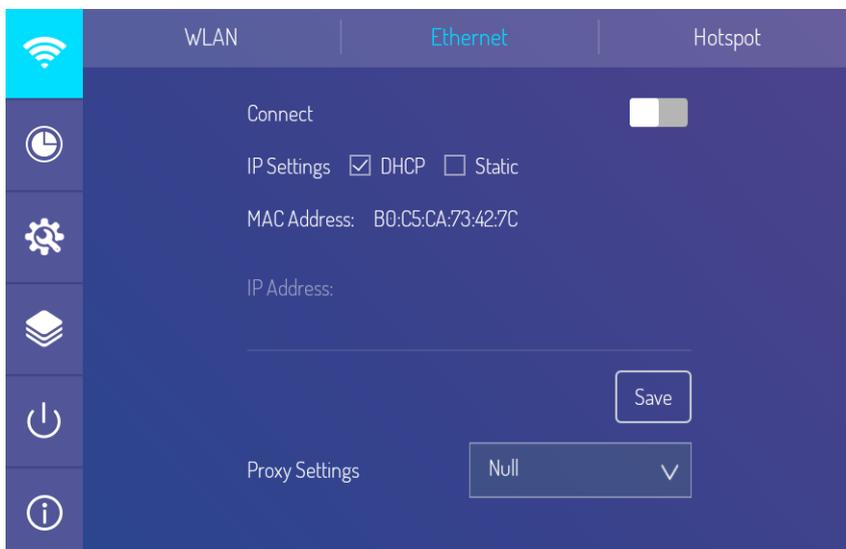
◼ To use Ethernet connection, connect RJ45 cable to the LAN port of IFPD

◼ Select "DHCP" in IP settings, and then the machine will automatically obtain an IP address and connect to network. Select "Static" in IP settings, manually input IP address, gateway, network prefix length, DSN address, and then click "Finish" to connect to network.

Network Setting

Hot Spot
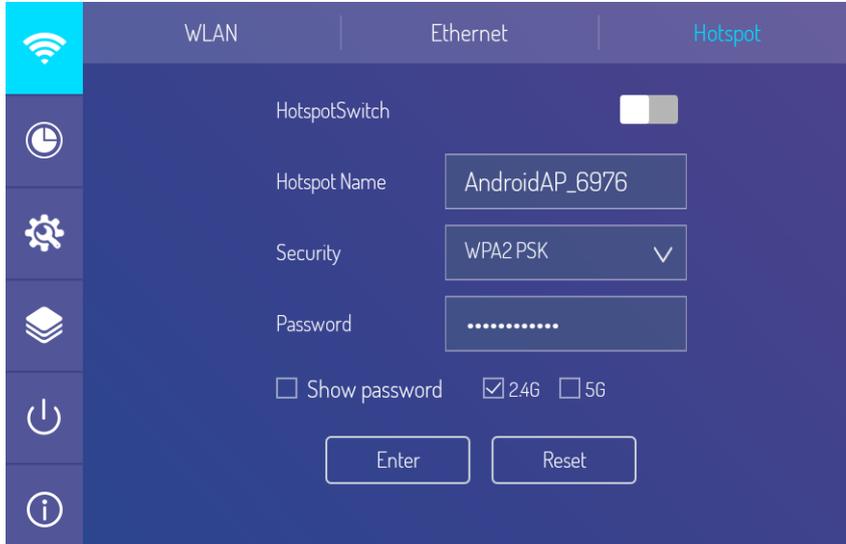
■ To activate Hot Spot, turn on hot spot switch. But the WiFi connection
   will be disconnected.

■ Depending on the selecting bandwidth between 2.4G and 5G, the connection
   may not be recognized properly.
   So please make sure the bandwidth availability to use Hot Spot.

Date and Language Setting

Date Setting
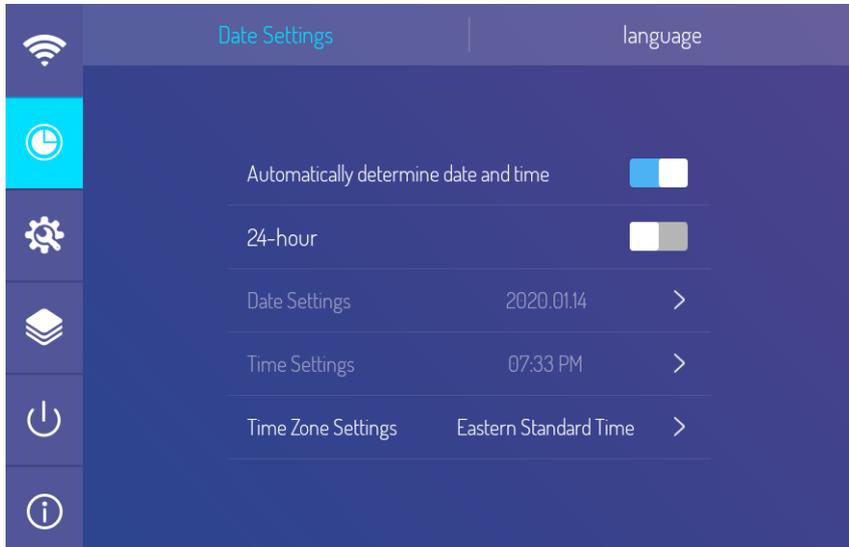
■ During the setting, the error may occur if the network connection is not available in Date and Time Auto Configuration mode.

Language Setting
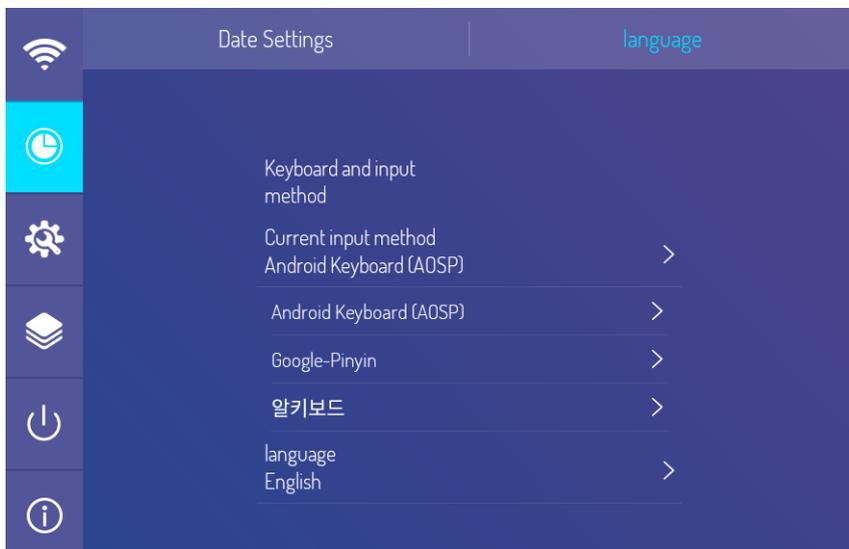
■ If you install an additional keyboard app for the product, it may cause a problem.

Lock Control Setting

System configuration

System Settings		Apps
Wallpaper	>	
Screensaver	>	
No Signal Background	>	
Days Left	>	
Change Password	>	
Boot lock screen		
Restore factory settings	>	
Auto check update		
Check update	>	

▣ The default Screen Lock password is '888888'.

Lock Control

Lock control		Centralized control
Remote Lock		
Touch Lock		
Keypad Lock		
Anti-Burn-In Two hours refresh without operation		
Gesture switch	>	
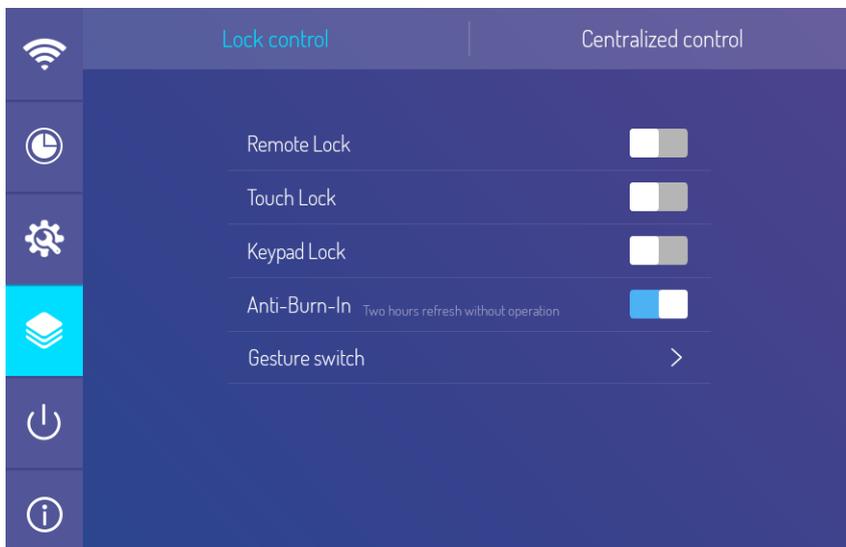
▣ Note that you cannot control the product if you choose the touch lock option without remote controller.

Troubleshooting Guide

Requriements before contacting the service center.

Issues	Solutions
Lines or dotted line appears on the screen	It may be caused by electric interference. Please do not use the product near the cars, neon lights, hairdryer to avoid electric signal interference.
The video and audio do not come together.	Please check the power is on. Make sure if there is a power outage or power cord is connected properly. Please change the plug to the other outlet to check if it is active.
The touch response time is slow and does not work properly.	It may be caused by insufficient memory space. Shut down the memory-intensive program and reboot the product.
Pressed the power button, but the screen won't turn on.	Check that the power cable is connected properly
The screen is too bright or too dark.	Adjust Brightness and Contrast.
The screen is on but has no sound.	Press the volume up/down button on the remote control. Check the audio output setting.
The remote controller is not working	Check the power LED indicator (If the power is connected, the indicator is RED in standby mode) Check if there any obstacle between the product and remote controller. Make sure the battery polarity (+, -) of the remote controller is correctly installed. If the battery is run out, replace the 2 batteries with the new one.
The product freezed or doesn't work.	It may be caused by insufficient memory space or the interference by the external environment (eg. static electricity). Shut down the memory-intensive program or disconnect the power cord from the product and wait for 1 or 2 minutes before connecting again.
The message "Signal out of range" is displayed on the screen and there is no picture.	Refer to Standard Signal mode table and adjust the resolution. Check your video card specifications. If it doesn't work on supported hardware, try upgrading the drivers on your video card.
OPS won't work.	Make sure the connection between the module and the product.

SPECIFICATION

	S65UCAI	S75UCAI	S86UCAI
Size	65"	75"	86"
Resolution	3840 x 2160 @60Hz		
Aspect ratio	16:9		
Backlight	DLED / IPS Ultra HD		
Brightness (typ.)	450cd/㎡	450cd/㎡	400cd/㎡
Touch Resolution	32767 x 32767		
Touch response	〈10ms		
Touch Type	Advanced Infra-red		
Multi Touch	Windows 20 points/ Android 10 points		
Interface	USB 2.0 compatible(full speed), Plug & Play compatible		
Palm	Enable		
Touch error range	±1mm		
Bezel(T/B/L/R)(mm)	27/47/27/27		
Monitor	3840 x 2160		
Contrast	1200:1		
Display Color	1.07B(10bit)		
OPS Power	12V(DC)/5A		
Input voltage	100 – 240V AC		
Power consumption	170 W / 2.0 – 0.9A	400 W / 4.0 – 1.7A	440 W / 4.4 – 1.7A
VESA	4-M8 Screw hole 600mm x 400mm	4-M8 Screw hole 600mm x 400mm	4-M8 Screw hole 700mm x 400mm
(W x H x D) mm	1506.3 x 901.3 x 89.2	1735.98 x 1034.52 x 103.75	1991.57 x 1182.61 x 113

* THE SPECIFICATIONS IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE FOR QUALITY IMPROVEMENT.
* AUDIO-OUT, SPDIF IS THE PORT FOR THE AMLIFIER CONNECTION.

Hyundai IT Commercial

Commercial Display RS232 & LAN Protocol

Specification

Commercial Display RS232 & LAN Protocol

Outline the feed:

Version control:

Date	Reversion	Changes and additions	by
2020/01/29	1.0	Initial Defined release	Daniel.Jang

1   Introduction

This document describes the hardware interface spec and software protocols of RS232 & LAN interface communication between Commercial Display and PC or other control unit with RS232 & LAN protocol.

The protocol contains two sections command:
- Set-Function
- Get-Function

※ In the document below, "PC" represents all the control units that can sent or receive the RS232 & LAN protocol command.

2   Description

2.1   Hardware specification

Hyundai Display RS232 communication port on the rear side
(1) Connector type: DSUB 9-Pin Male
(2) Pin Assignment

Male DSUB 9-Pin
(outside view)
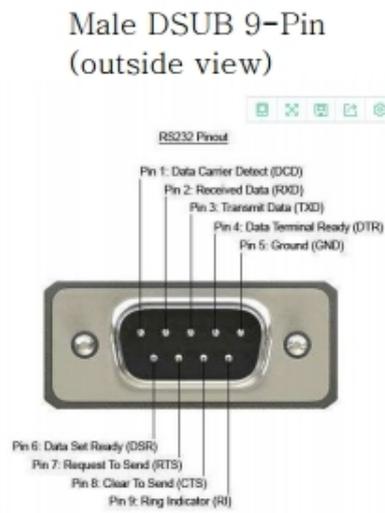
Pin #	Signal	Remark
1	NC	
2	RXD	Input to Commercial Display
3	TXD	Output from Commercial Display
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	+5V Out	Provide +5V/1A power for external specific dongle
frame	GND	

*Use of crossover (null modem) cable required for use with PC

Pin #	Signal	Remark
Tip	TXD	Output from Commercial Display
Ring	RXD	Input to Commercial Display
Sleeve	GND	

[Special case]
3.5mm barrel connector

Communication Setting:

- Baud Rate Select: 38400bps (fixed)
- Data bits: 8 bits (fixed)
- Parity: None (fixed)
- Stop Bits: 1(fixed)

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2.2 Command Message Reference

PC sends to Monitor command packet followed by "CR". Every time PC sends control command to the Monitor, the Monitor shall respond as follows:

1. If the message is received correctly it will send "y" (79h) followed by "CR" (0Dh)
2. If the message is received incorrectly it will send "n" (6Eh) followed by "CR" (0Dh)

3   Protocol (The same of RS232 and LAN)

3.1   Set-Function Listing

The PC can control the Display for specific actions. The Set-Function command allows you to control the Display behavior in a remote site through the RS232 and LAN port. The Set-Function packet format consists of 9 bytes.

Set-Function description:

Head Code	"k" means the short of Hyundai K series
Display ID	Identification for each of Display (01~98; default is 01) ID "**99**" means to apply the set command for all connected displays. Under such circumstances, only ID#1 display has to reply. The Display ID can be set via the OSD menu for each Display set.
Command Type	Identify command type, "s" (0x73h) : Set Command "y" (0x79h) : Valid command Reply "n" (0x6Eh) : Invalid command Reply
Command:	Function command code: One byte ASCII code
Value[1~3]:	Three bytes ASCII that defines the value
CR	0x0D

Set-Function format
Send: (Command Type="s")

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Byte Count	1 Byte	2 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte
Bytes order	1	2~3	4	5	6	7	8	9

Reply: (Command Type="y" or "n")

Name	Head	ID	Command Type	CR
Byte Count	1 Byte	2 Byte	1 Byte	1 Byte
Bytes order	1	2~3	4	5

[NOTE]
When PC applies command to all displays (ID=99), only the #1 set needs to reply by the name of ID=1.

Example1: Set Brightness as 58 for Display and this command is valid
Send (Hex Format)

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Hex	0x6B	0x31 0x33	0x73	0x44	0x30	0x35	0x38	0x0D

Reply (Hex Format)

Name	Head	ID	Command Type	CR
Hex	0x6B	0x31 0x33	0x79	0x0D

Example2: Set Brightness as 158 for Display and this command is NOT valid
Send (Hex Format)

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Hex	0x6B	0x31 0x33	0x73	0x24	0x31	0x35	0x38	0x0D

Reply (Hex Format)

Name	Head	ID	Command Type	CR
Hex	0x6B	0x31 0x33	0x6E	0x0D

Set-function table

Set Function	Head	ID	Command Type (ASCII)	Command Code (ASCII)	Command Code (Hex)	Value Range (Three ASCII bytes)	Comments
Power on/ off(standby)	k		s	A	41	000: STBY 001: ON	
Input Select	k		s	B	42	000 : ATV 010 : DTV 001 : AV 002 : S-Video1 012 : S-Video2 003 : YPBPR 004 : HDMI 014: HDMI1 024: HDMI2 034: HDMI3 044: HDMI4 005 : DVI 006 : VGA 007: OPS1 017: OPS2 008: USB 009: DP 00A: Main(Android) 00B:SDI1 01B:SDI2	
Contrast	k		s	C	43	000 ~ 100	
Brightness	k		s	D	44	000 ~ 100	
Sharpness	k		s	E	45	000 ~ 100	
Saturation	k		s	F	46	000 ~ 100	
Hue	k		s	G	47	000 ~ 100	
Color mode	k		s	H	48	000: Normal 001: Warm 002: Cold 003: User	
Sound	k		s	I	49	000: SRS Off	

						001: SRS On	
Bass	k		s	J	4A	000 ~ 100	
Treble	k		s	K	4B	000 ~ 100	
Balance	k		s	L	4C	000 ~ 100	Sets Balance position
Picture Size	k		s	M	4D	000 : FULL 001 : NORMAL 002 : CUSTOM 003 : DYNAMIC 004 : REAL	
OSD language	k		s	N	4E	000: English 001: French 002: Spanish 003: Traditional Ch 004: Simple Ch	Extend the value for more supported languages
Power lock	k		s	O	4F	000 : Unlock 001 : Lock	
Volume	k		s	P	50	000 ~ 100 200:Volume down(-1) 201:Volume up(+1)	
Mute	k		s	Q	51	000: OFF 001: ON (mute)	
Button lock	k		s	R	52	000: Unlock 001: Lock	
Menu lock	k		s	S	53	000: Unlock 001: Lock	
Number	k		s	T	54	000~009	
Key Pad & IR Pad	k		s	U	55	000: UP 001: DOWN 002: LEFT 003: RIGHT 004: ENTER 005: INPUT 006: MENU 007: EXIT	
Remote Control	k		s	V	56	000: Disable 001: Enable	Disable: IR has no effect on Display. Enabled: IR controls the Display.
Setup wizard	k		s	W	57	000: Disable 001: Enable	Disable: to skip the initial setup wizard Enable:run the setup wizard
Date	k		s	X	58	Month:M+XX Day:D+XX (See example in List table)	
Time	k		s	Y	59	Hour:H+XX Min:M+XX Sec:S+XX (See example in List table)	
Restore default	8		s	Z	5A	000	Rests Display to factory setting

[NOTE]

1. Behavior at lock modes

Lock Mode	Behavior
Button Lock	1. Lock all buttons on the front panel and IR, except for "Power" 2. All the SET functions should be workable via RS232&LAN, even the ones with according hot key in IR like Mute,…etc.
MENU Lock	1. Lock "MENU' key of front panel and IR 2. The Factory and Hospitality modes should not be blocked for the model using MENU-combined key to enter these two modes. Alternative approach will be indicated separately if any limitation by model.
POWER Lock	1. Lock "POWER" key on the front and IR. 2. The SET_POWER on/off should be workable via RS232&LAN, but does not mean the POWER lock will be released under this case. 3. Can not be unlocked by reset in OSD setting 4. Will auto AC power-on in power-lock 5. Under power-lock, the set will not enter power saving when no PC signal and neither not turn off when no other video signals after 5min.
Remote control disable	Lock the IR keys, but keep the front panel buttons workable.

3.2 Get-Function Listing

The PC can interrogate the Display for specific information. The Get-Function packet format consists of 9 bytes which is similar to the Set-Function packet structure. Note that the "Value" byte is always = 000,be excepted for date&time.

Get-Function description:

Head Code:	"k" means the short of Hyundai K series
Display ID	Identification for each of Display (01~98; default is 01)
Command Type	Identify command type, "g" (0x67h) : Get Command "r" (0x72h) : Valid command Reply "n" (0x6Eh) : Invalid command Reply
Command:	Function command code: One byte ASCII code
Value[1~3]:	Three bytes ASCII that defines the value
CR	0x0D

Get-Function format
Send: (Command Type="g")

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Byte Count	1 Byte	2 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte
Bytes order	1	2~3	4	5	6	7	8	9

Reply: (Command Type="r" or "n")
If the Command is valid, Command Type ="r"

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Byte Count	1 Byte	2 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte
Bytes order	1	2~3	4	5	6	7	8	9

[NOTE] The reply for "Get-Operation time" and "Get-Device name" command is the exception.

If the Command is Not valid, Command Type="n"

Name	Head	ID	Command Type	CR
Byte Count	1 Byte	2 Byte	1 Byte	1 Byte
Bytes order	1	2~3	4	5

Example1: Get Sharpness from Display and this command is valid.
The Sharpness value is 38.
Send (Hex Format)

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Hex	0x6B	0x39 0x31	0x67	0x63	0x30	0x30	0x30	0x0D

Reply (Hex Format)

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Hex	0x6B	0x39 0x31	0x72	0x63	0x30	0x33	0x38	0x0D

Example2: Get Sharpness from Display , but the Sharpness command ID is error and it is NOT in the command table.
Send (Hex Format)

Name	Head	ID	Command Type	Command	Value1	Value2	Value3	CR
Hex	0x6B	0x39 0x31	0x67	0X63	0x30	0x30	0x30	0x0D

Reply (Hex Format)

Name	Head	ID	Command Type	CR
Hex	0x6B	0x39 0x31	0x6E	0x0D

Get-function table

Get Function	Head	ID	Command Type (ASCII)	Command Code (ASCII)	Command Code (Hex)	Response Range (Three ASCII bytes)	Comments
Get-Contrast	k		g	a	61	000 ~ 100	
Get-Brightness	k		g	b	62	000 ~ 100	
Get-Sharpness	k		g	c	63	000 ~ 100	
Get-Saturation	k		g	d	64	000 ~ 100	
Get-Hue	k		g	e	65	000 ~ 100	

Get-Volume	k		g	f	66	000 ~ 100	
Get-Mute	k		g	g	67	000: Off 001: On (muted)	
Get-Input select	k		g	h	68	00~	See Set-function table
Get-Power status: ON/ STBY	k		g	i	69	001: ON	STBY is no back
Get-Remote control	k		g	j	6A	000: Disable 001: Enable	Gets IR mode status
Get-Power lock	k		g	k	6B	000: Unlock 001: Lock	
Get-Button lock	k		g	l	6C	000: Unlock 001: Lock	
Get-Menu lock	k		g	m	6D	000: Unlock 001: Lock	
Get-Temperature	k		g	n	6E	XXX:000~100	
Get-Operation time	k		g	o	6F	000 (See below note)	
Get-Date	k		g	p	70	000 (See the Set-Date command)	
Get-Time	k		g	q	71	000 (See the Set-Time command note)	
Get-Device name	k		g	r	72	000 (See below command note)	
Get-MAC address	k		g	s	73	000 (see below command note)	
Get RS232 & LAN Version	k		g	t	74		

[NOTE]

1. Get Operation-Time example
Assumed the Operation time record of display as below(.hour)
123456(hour)

Send: 0x 6B 30 31 67 6F 30 30 30 0D
Reply:
#1 0x 6B 30 31 6F 31 31 32 33 0D (123)
#2 0x 6B 30 31 6F 32 34 35 36 0D (456)

2. Get Device Name example
Assumed the device name is SYKJ-9800

Send: 0x 6B 30 31 67 72 30 30 30 0D (Get Device Name)

Reply:
#1   0x 6B 30 31 72 31 53 59 4B 0D ("S" "Y" "K")
#2   0x 6B 30 31 72 32 2D 4A 2D 0D ("J" "-" "9")
#3   0x 6B 30 31 72 33 38 30 00 0D ("8" "0" "0")
#4   0x 6B 30 31 72 34 00 00 00 0D ("(NULL)" "(NULL)" "(NULL)")

3. Get MAC address example
Assumed the MAC address is b0:c5:ca:70:1e:eb

Send: 0x 6B 30 31 67 73 30 30 30 0D(Get MAC address)
Reply:
#1   0x 6B 30 31 72 73 31 62 30 0D ("b0")
#2   0x 6B 30 31 72 73 32 63 35 0D ("c5")
#3   0x 6B 30 31 72 73 33 63 61 0D ("ca")
#4   0x 6B 30 31 72 73 34 37 30 0D ("70")
#5   0x 6B 30 31 72 73 35 31 65 0D ("1e")
#6   0x 6B 30 31 72 73 36 65 62 0D ("eb")