



CommBox Interactive Pulse

USER MANUAL

Rev.15/03/2018

(changed I/O port's positions)

commBOX
Interactive Touchscreens

NOTICES

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General

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REGULATORY

The product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part of KC, CE, CB, and FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

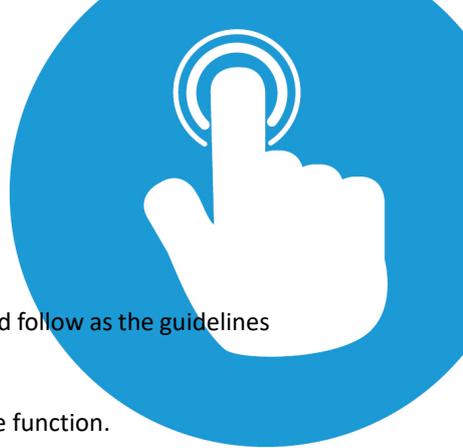
Environmental

The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in!

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1 BEFORE USING THE PRODUCT

- Before installing or using the product, to avoid damaging the product, read and follow as the guidelines of the user manual for your safety.
- The color, design and specification may change without notice to enhance the function.

1.1 Safety Precautions

Precautions are divided into two "Warning" and "Caution" and meaning of the each is as follows.



Warning: If you do not follow, it could result in serious injury or death.



Caution: If you do not follow, it could result in minor injury or product damage.

Please keep users to access **USER MANUAL** easily.



This illustration below is for reference only.



Warning



Do not use a damaged power cable or plug which does not meet the standard.
- This may cause a fire or an electric shock.



If you are using a power strip, do not use several devices at the same time.
- Due to the heat generated by the multi-outlet, it may cause fire.



Do not touch the power plug with wet hands.
- This may cause an electric shock.



Plug in the outlet end exactly.
- If the connection is not stable, it may cause fire.



Connect the power cable to a grounded outlet.
- This can cause electric shock when the ground is broken or shorted.
- When installing on a place that cannot be grounded, connect to the outlet by using a circuit breaker to protect the product from electric shock.



Do not pull or bend the power cable forcibly.
Avoid placing heavy objects on the cables.
- If the cable is damaged, it may result in electric shock or a fire.



Do not use the power cable near heating appliances and products.
- This may cause a fire or electric shock.



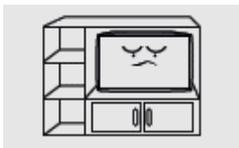
In case of contamination around the power plug or outlet, wipe clean with a dry cloth.
- This may cause a fire.



Do not place flammable objects near the product.
- This may cause a fire.



If you want to install by using the wall mount, make the product be installed by a trained technician. Refer to the User Guide Wall Mounting.
- This may cause injury.



Do not install the product in poorly ventilated places such as a bookshelf or closet.
- Otherwise it may affect internal temperature to be increased and cause a fire.



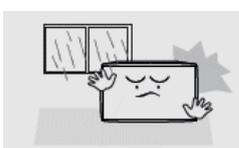
Install the product at least 10 cm far from the wall.
- Otherwise it may affect internal temperature to be increased and cause a fire.



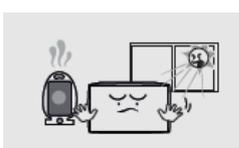
After unpacking the product, packaging vinyl should be kept away from the hands of young children.
- If a child uses it incorrectly, it may cause a choking accident.



Do not install in locations where has vibration or in an unstable position.
- Product fall may occur, and it might cause damage.
- This may cause a fire.



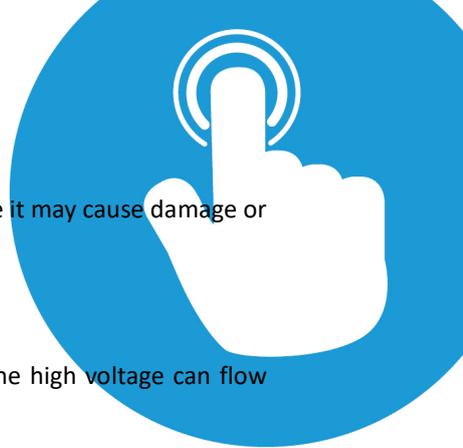
Do not install in places which dirt, moisture, smoke, much water or rain water can reach.
Do not install under the air conditioner that could fall water drops.
- This may result in electric shock or fire.



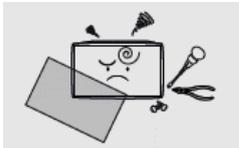
Avoid exposure to direct sunlight and do not place near hot objects such as a fire or heater heat.
- This may cause a fire or shortening the product life.



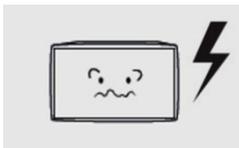
Do not install in the low place where a child can touch.
- A child may be injured while playing and touching the product.



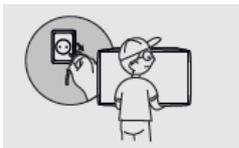
Do not install near any kitchen or kitchen counter because it may cause damage or deformation of the product by the vapor or oil.
- This may cause a fire.



Do not try to repair or transform the product because the high voltage can flow inside the product.
- This may cause a fire or electric shock.
- When problem is found in the product, contact a service center.



Do not use electrical equipment which uses high-voltage around the product.
- This may result in poor quality of display or cause amblyopia.
- This may cause a fire or electric shock.



When moving the product, turn off the power and remove all of the cables including power cables connected to the product.
- If the cable is damaged, it may cause a fire or electric shock.



When smelling something burning or hearing strange sound from the product, disconnect the power cable immediately and contact a service center.
- This may cause a fire or electric shock.



Do not allow a child to get on or hang on the product.
- If the product falls off, a child may result in injury or death.



Do not place heavy object, toy or sweets that a child can play with on the product.
- If a child hangs the product and fall, it may cause personal injury or death.



When the product is damaged or falls off, disconnect the power cable immediately and contact a service center.
- This may cause a fire or electric shock.



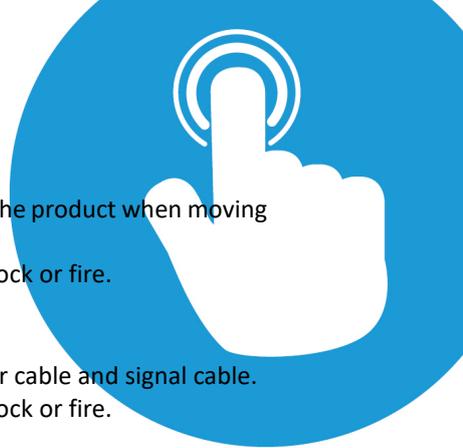
When lightning occurs, turn off the power switch and disconnect the power cable.
- This may cause a fire or electric shock.



Do not drop the product or throw something to the product.
- This may cause a fire or electric shock.



Do not give a shock or scratch to the screen with sharp objects.
- This may cause damage to the product.



Do not pull the power cable or signal cables connected to the product when moving the product.

- Cable damage may cause a malfunction or an electric shock or fire.



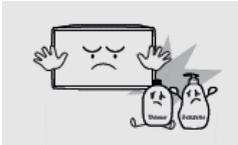
Do not shake or uplift a product by holding only the power cable and signal cable.

- Cable damage may cause a malfunction or an electric shock or fire.



If you smell a gas around the place of the product or there is a risk of a gas leakage, Do not plug in or turn on the product. Make sure to ventilate.

- A spark in the appliance power can cause an explosion or fire.



Do not store or use flammable material and flammable sprays near the product.

- This may cause an explosion or fire.



Please do not block a vent with the curtain or cloth, etc.

- The rise of internal temperature may cause a fire.



Do not put a steel rod, coin, hair pin etc. in the vent and input/output terminals of the product.

Also, do not put a flammable object such as papers.

- When a strange substance enters into the product, turn off the power of the product. Please contact the Service Center after unplugging the power cable.

- This may cause a malfunction or an electric shock or fire.



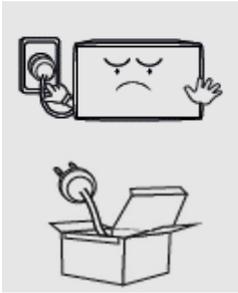
Do not place anything containing liquid or metals on the product.

- When a strange substance enters into the product, turn off the power of the product. Please contact the Service Center after unplugging the power cable.

- This may cause a malfunction or an electric shock or fire.



Caution



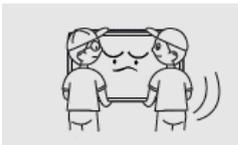
Do not unplug the power cable while using the product.
- This may cause a fire or electric shock.



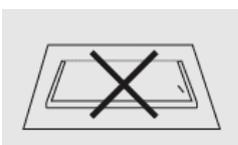
Use only the power cable qualified for the standard.
- This may cause a fire or electric shock.



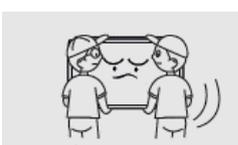
Connect the power cable to the nearest outlet.
- If having a problem with the product, unplug the power cable completely.



When disconnecting the power cable from the outlet, do not pull the cable wire.
Please be sure to hold the plug and separate it.
- This may cause a fire or electric shock.



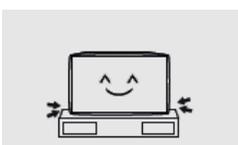
Please move the product carefully not to occur the twist and drop.
- This may cause a malfunction or injury.



Put the product's screen faces upwards.
- The screen may be damaged.



Work together more than one person if the product is heavy.
- This may cause a malfunction or injury.

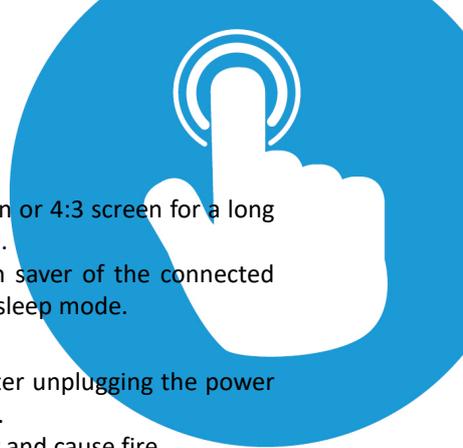


When installing the product on a cabinet or shelf, use the larger size of the tray than the product to use and maintain the horizon.
- The product may fall and cause damage or injury.



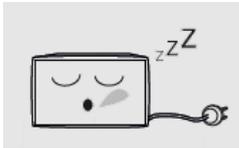
Please do not shock when installing the product.
- This may cause a malfunction.

When installing the product in a special place, contact a dealer or a service center because the peculiar environment can be effected to the event of a problem with the
- This may cause a malfunction or fire.



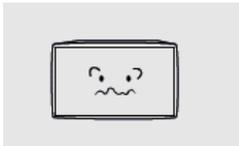
Turning on the product in the condition of the fixed screen or 4:3 screen for a long time may also cause an afterimage or stain on the screen.

- When using the product for a long time, set a screen saver of the connected computer or signaling equipment products or set it in sleep mode.



When you are not using the product for a long time, after unplugging the power cable and take action to prevent the product from a dust.

- Dust accumulation, heat generation or sparks can occur and cause fire.



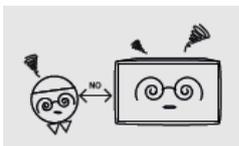
Set a resolution and frequency appropriately to the product.

- The state of the screen can result in poor or blurred vision.



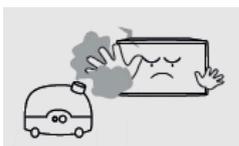
For products with a stand, do not move the product by holding only the stand or lift the product upside down.

- The stand might be split from the product and it may cause damage or injury.



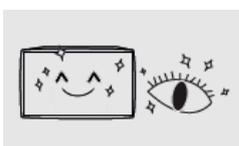
Look at the screen from a distance of about longer 2.5 times than the screen diagonal length.

- Looking at the screen for a long time can lead to vision loss.

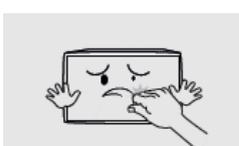


Do not use anything that causes the water vapor near the product. (Moisturizers, etc.).

- This may cause a malfunction or an electric shock or fire.



After 1 hours use, rest your eyes for more than 5 minutes.



If the product is turned on for a long time, do not touch the screen surface or vent because it may be hot.

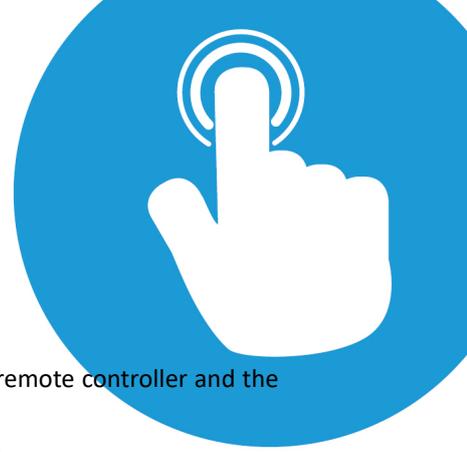


Keep the accessories of the products out of reach of children.

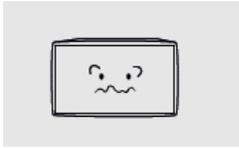


For products with a stand, be careful when adjusting the angle and height of the stand of the product.

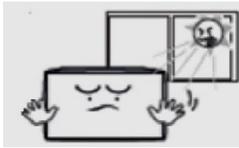
- Tilting severely the product may cause the product to fall off and injury.
- Stuck a finger or hand may cause an injury.



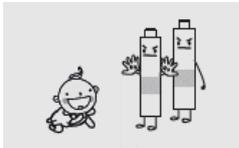
Do not place heavy objects on the product.
- This may result in a malfunction or an injury.



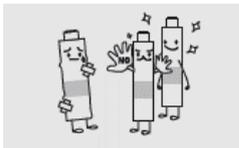
Please put obstacles away from the space between the remote controller and the product.
- The product may not be operated by remote controller.



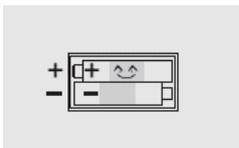
The remote control may not be good in this operation under the sun or strong light.
Please change the location of the product in this case.



Make sure that a child does not eat the battery and keep it out of a child's reach.
- If a child eats the battery, please consult a doctor immediately.



When replacing the battery, insert it to the correct polarities (+, -).
- If it is different from the polarity of the battery, it may cause a fire or injury to break or leak.
- This may also contaminate the surrounding.



Use a standard battery; do not mix old batteries with new one.
- If it is different from the polarity of the battery, it may cause a fire or injury to break or leak.
- This may also contaminate the surrounding.



The depleted Battery and rechargeable batteries must be handled separately from the general waste and it needs to be collected for recycling.
- If the end-of-life battery, please bring your nearest recycling center or battery dealer
- This may cause an explosion or fire.

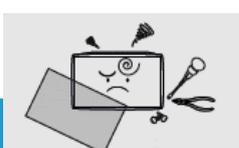
Cleaning



After disconnecting the power cable, wipe contaminated parts and each part of the product screen lightly with a dry and soft cloth.

Do not clean the product directly with a wet cloth or wet spray water.
- There is a risk of fire or an electric shock.

When washing by various cleaning agents, brighteners, abrasives, waxes, benzene, alcohol, solvent, surface active agent, the surface of the product may be damaged.



If cleaning inside the product is required, please contact your dealer or service center.
- This may result in fire or electric shock.



2 PREPARATIONS

2.1 Parts List



If these items are missing, contact your dealer or service center.



The following images may differ from the image shown.



Other parts not packed in contents may cause performance degradation or problem during usage.



HDMI Cable



Power Cable
(Option)



Remote
Control



AAA 1.5V
Battery x 2



Touch USB Cable



Cleaning cloth

2.2

Control product



 The following images may differ from the image shown.

- You can control the product by using the control buttons on the rear side of the product.



*Note : sound bar is an optional item.

Remote Sensor / Power indicator

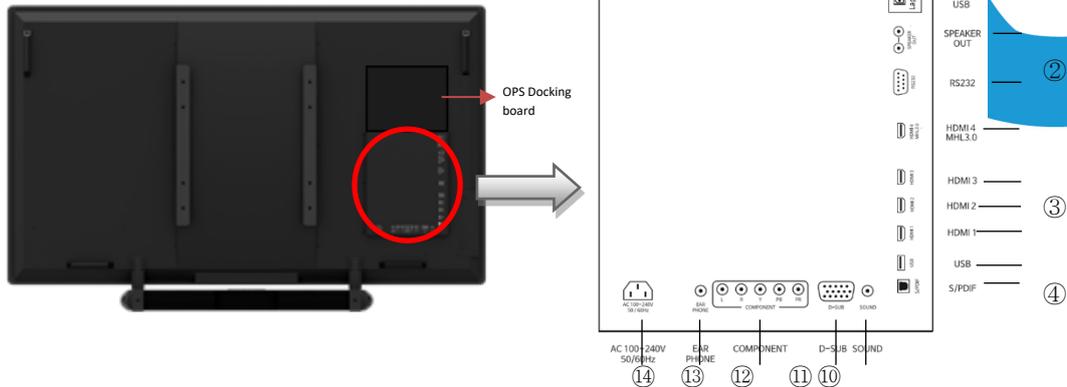
Power on	Green
Stand-by	Red

Control buttons

Power	Power on/off button
Menu	To display or hide the on-screen menu
Source	To display input signal
Vol+	To turn up the volume.
Vol-	To turn down the volume
Down	To move to the lower menu
Up	To move to the upper menu or select

2.3 Input/output connection

 The items may differ from the image shown.



Connector name and description

No.	Connector	Description
①	Touch USB (Switcher)	To connect Touch USB for PC or Laptop (default)
②	Speaker Out	To connect External Speaker (WT passive spks)
③	RS-232C	To connect RS232 input cable with control device
④	HDMI 4	To connect HDMI 1.4/2.0(MHL 3.0) video & audio input – 4
⑤	HDMI 3	To connect HDMI 1.4/2.0(MHL 3.0) video & audio input – 3
⑥	HDMI 2	To connect HDMI 1.4/2.0 video & audio input – 2
⑦	HDMI 1	To connect HDMI 1.4/2.0 video & audio input - 1
⑧	USB	To connect with USB device
⑨	S/PDIF	To connect SPDIF
⑩	SOUND	To connect sound input (3.5Φ)
⑪	D-SUB	To connect D-sub 9pin
⑫	Component	To connect component for (PR,PB,Y/CVBS,R,L) etc.
⑬	Earphone	To connect audio output (it will be removed.)
⑭	AC 100-240V, 50/60Hz	Power connector (AC 100-240V, 50/60Hz)

※Note, 1-When you use VGA connector, please use a standard cable. Wrong VGA cable damages to RS-232 board.
2-Depends on models, the connectors may be different. Further more information, please contact us.

- USB Multimedia playback format

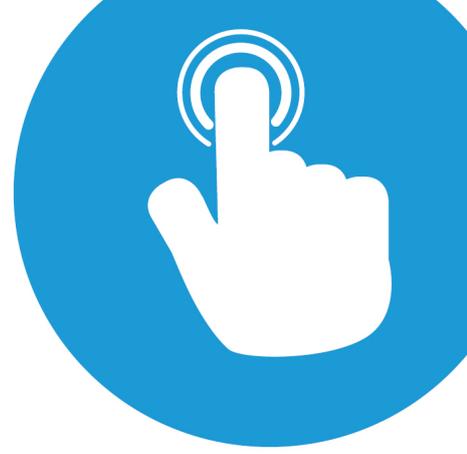
Media	File Ext.	Decoder	Notes
Music	.mp3	MPEG1 Audio Layer (Not corresponding MP3 Pro)	Sampling Frequency【k】32/44.1/48 Sample Rate: 8K~48KHz Bit Rate: [Kbit/s] 32/40/48/56/64/80/96/112/128/160/192/224/256/320/VBR
Photo	.jpg/.jpeg	Progressive JPEG	Max Resolution: 1024×768
		Baseline JPEG	.avi, .mpg, .dat, .vob, .div, .mov, .mkv, .rm, .rmvb, .mp4, .mjpeg, .ts, .trp, .wmv, .asf, .flv

 Caution

- When you connect the signal cables to the input / output terminals, check the above picture of the input / output terminal, and connect in the right direction. If connected incorrectly, it may cause damage or breakdown of the input / output terminals.
- If the product does not operate even though the power is supplied, check if the power switch is set to power-on or not.

2.4

Remote Controller Button Description



Button Description



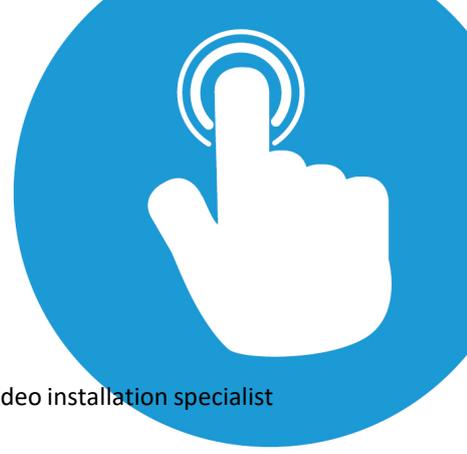
The following images may differ from the actual items.



Button not described does not work.

POWER	Power on/off button
SOURCE	Select input signal
ASPECT	Adjust the window's ratio
▲	Move to the upper menu
▼	Move to the lower menu
◀	Move to the left menu
▶	Move to the right menu
OK	Select to change menu
MENU	Display or hide menu on the screen
+	Volume up
-	Volume down





3 INSTALLATION GUIDE

3.1 Caution before installation

 **Caution:** Installation must be performed by a qualified custom video installation specialist under the conditional installation environment as below.

Ambient Lighting

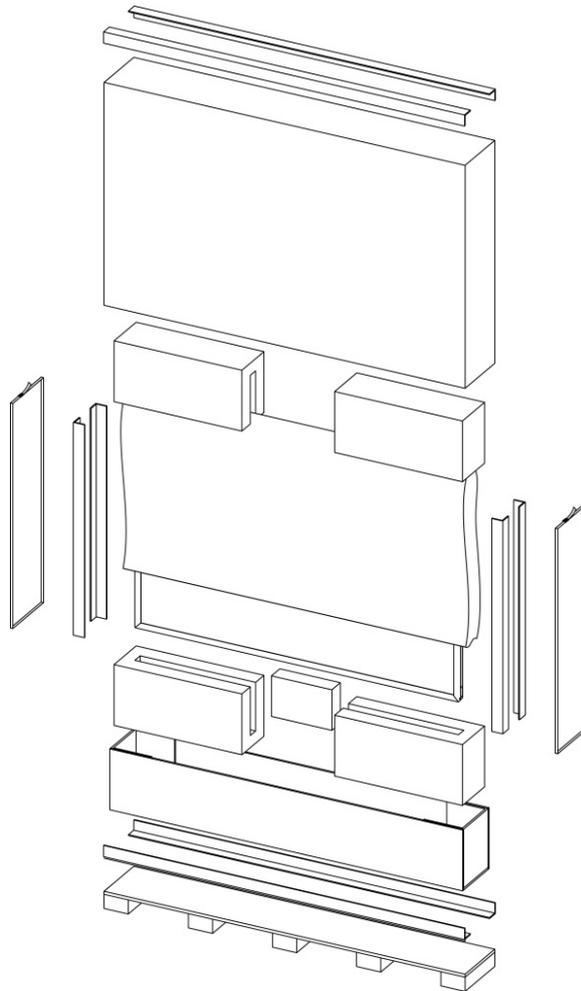
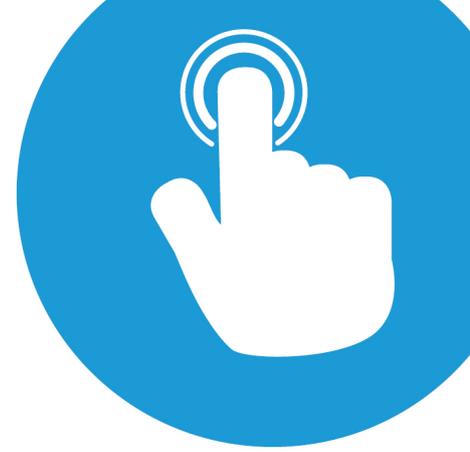
- When the sun or strong light shines on the front screen of the product, image contrast can be seen as it is decreased conspicuously, or the image is fading.
- If direct sunlight or strong artificial light (halogen lamps, etc.) shines on the front screen of the product (if the product has touch function, it may cause of malfunction of touch.), install the product in the shady environments or in the opposite direction of the source of the sunshine or the artificial light.

Ambient temperature

- Install the product in the well-ventilated place with maintaining the ambient temperature of below 35° C (95° F).

3.2 Unpacking Process

 The following images may differ from the actual items.
Before unpacking the box, refer to the diagram below.



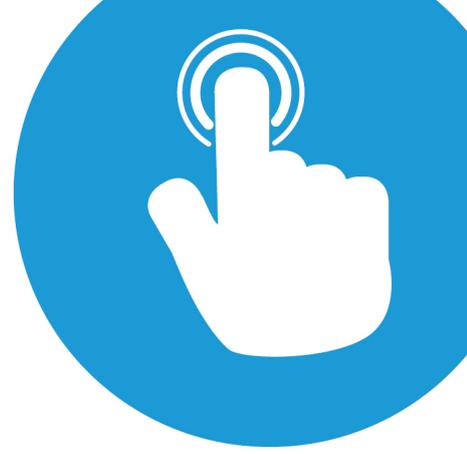
1. Remove the outer packing box.

2. Remove the top foam.

3. Lower down or remove the wrapping.

4. Three or more people, remove the packing from the product.

3.3 Handling Guide



 The following images may differ from the actual items.

Holding a product

1. Right way

At least two persons are required to handle the product during transportation.

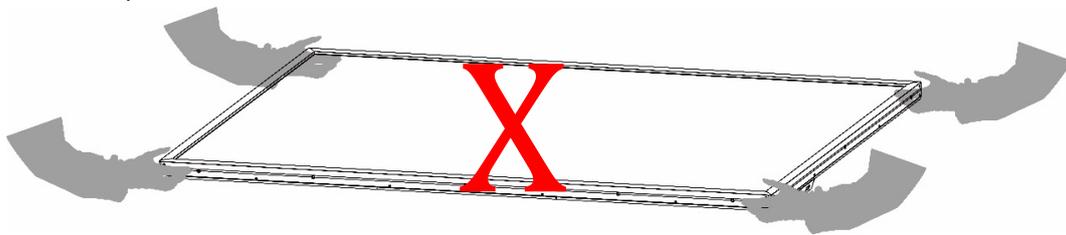
Two persons should hold each left and right hand grips of the backside of the product with one hand of the each person and with the other hand, grip the bottom portion of the rear side of the product to move.

(The illustration below may differ from the actual items.)



2. Wrong way

Do not use or touch any part of the front screen of the product during transportation





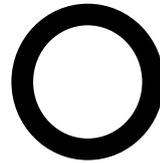
Frame rubber is for protecting any damage during the delivery. You peel off the rubber after installation.



Putting a product

1. Right Way

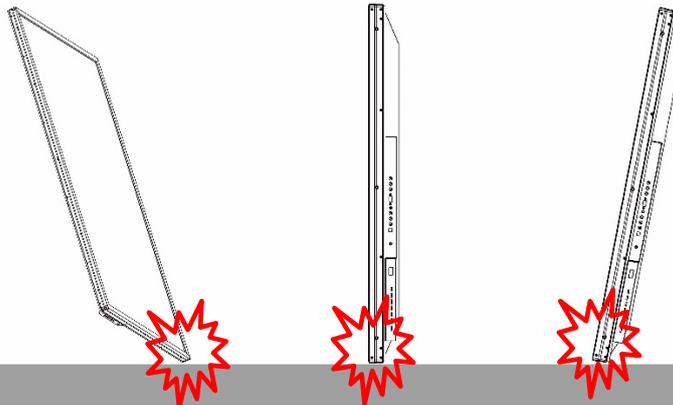
Before putting the product on the floor, prepare flat and soft cushions. Place the product horizontally and slowly on the floor. If firstly laying the edge of the bezel of the product, the screen panel of the product may be fragile or damaged.



Cushions

2. Wrong way

Put down carefully not to damage the outside of the product. If the corner part of the product is placed first, the bezel may be damaged easily.





Handling (PCAP Sensor & AG glass)

Use gloves and finger coat to prevent stains on the touch panel and injury by the sharp edge of the touch panel.

Do not take hold of FPC tail when handing the touch panel.

Do not pile up touch panels.

Do not put anything on the touch panel.

Do not fold the FPC tail.

Clean off the touch panel with alcohol and soft clothes when necessary

Prevent alcohol from penetrating into the touch panel and do not use organic solvents except for alcohol.

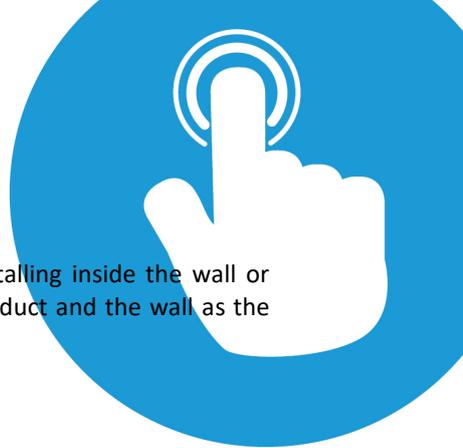
3.4 Product Installation

When installing the product with wall mount, make the product installed by a well-trained technician. Please refer to the User Guide of Wall Mounting.

 The product has VESA standard of 600X400 MM for wall mounting, and of M8 (Maximum length 35mm) of the screws by size.

 Warning: We are not responsible for the product damage or personal injury caused by user's own installation.

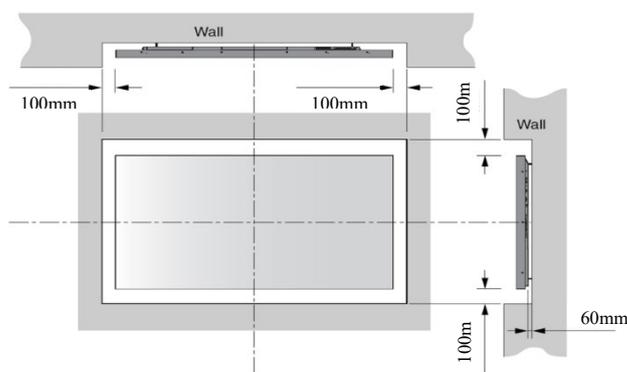




3.5 Wall mounting Installation

Install the product only on the robust and vertical wall. When installing inside the wall or cabinet, install the product with the space behind between the product and the wall as the illustration below.

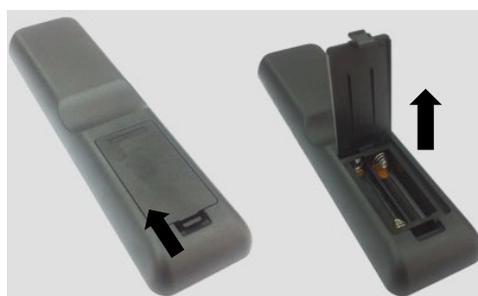
Ambient temperature is kept below 35 °C.



3.6 Remote Controller

Inserting batteries in the remote controller

- Press the tab on the battery case and open it.
- Insert the battery (1.5V AAA) into the battery case.
- Insert the battery case until clack sounds.



- When loading the battery, check if the polarity of the batteries is correct.
- If not using the remote controller for long time, remove the batteries to prevent damage caused by battery fluid leak.
- Don't expose the battery to direct sunlight or excessive heat such as a fire.

⚠ Notes on the remote controller

- If anything interrupts in front of IR receiver or between IR receiver and remote controller, the remote controller may not work.
- If the receiving distance of the remote controller becomes narrow or does not work, replace the battery with new one.
- In case of the product is exposed to direct sunlight or fluorescent light, it may not operate.

3.7

Setup

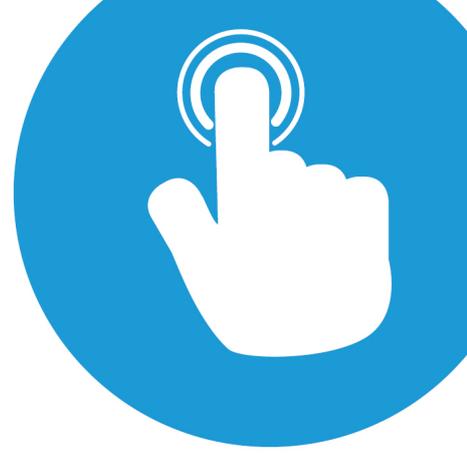


Turning on the power

1. Connect the power cable of the product into outlet with AC 100-240V 50 / 60Hz.
2. Turn on the main AC power switch.
3. If the power indicator is green, the screen turns on automatically.
4. If the power light is red not green, press the power key on the remote controller or operate to turn on the power.

Changing language of the menu

- The language of the menu is basically English as the default set.
- Users can select a language
- To change the menu language,
 1. Press the Menu button to go to the menu.
 2. Select the OSD from the main menu.
 3. Select the language of the OSD setup menu.
 4. Select the language you want to select, and then exit the menu.



4 REMOTE CONTROL

4.1 RS-232C connection

Physical Connector

Connector on the display: DB9 Male, configured as DTE.

Type(Version)	Male (4)
RX	2
TX	3
G	5

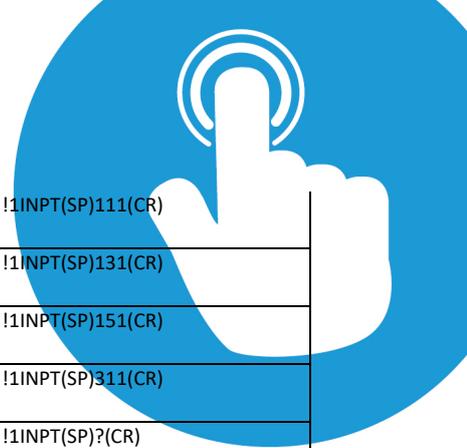
※ Please check the RS-232pinout type in your serial number.

Communication Parameter

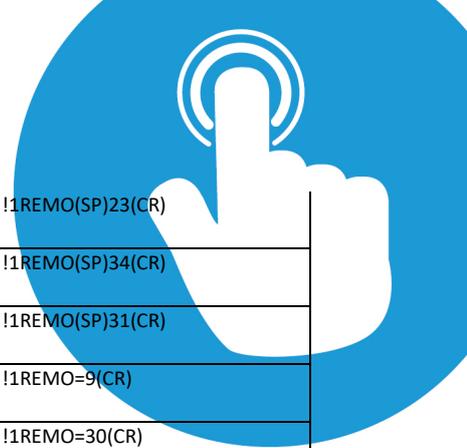
Baud Rate	9600
Data Length	8 bit
Parity Bit	None
Stop Bit	1 bit
Hardware Handshake	Not supported
Authentication	None

Serial Command List

Parameter	Character code in hexadecimal	Character
POWER_ON	21 31 50 4F 57 52 20 31 0D	!1POWR(SP)1(CR)
POWER_OFF	21 31 50 4F 57 52 20 30 0D	!1POWR(SP)0(CR)
Response Power Off	21 31 50 4F 57 52 3D 30 0D	!1POWR=0(CR)
Query the Power Status	21 31 50 4F 57 52 20 3F 0D	!1POWR(SP)?(CR)
Error Response-Display	21 31 50 4F 57 52 3D 45 52 52 34 0D	!1POWR=ERR4(CR)
SOURCE_HDMI1	21 31 49 4E 50 54 20 32 31 31 0D	!1INPT(SP)211(CR)
SOURCE_HDMI2	21 31 49 4E 50 54 20 32 31 32 0D	!1INPT(SP)212(CR)
SOURCE_HDMI3	21 31 49 4E 50 54 20 32 31 33 0D	!1INPT(SP)213(CR)



SOURCE_VGA	21 31 49 4E 50 54 20 31 31 31 0D	!1INPT(SP)111(CR)
SOURCE_COMPOSITE	21 31 49 4E 50 54 20 31 33 31 0D	!1INPT(SP)131(CR)
SOURCE_COMPONENT	21 31 49 4E 50 54 20 31 35 31 0D	!1INPT(SP)151(CR)
SOURCE_USB	21 31 49 4E 50 54 20 33 31 31 0D	!1INPT(SP)311(CR)
INPUT STATUS Query	21 31 49 4E 50 54 20 3F 0D	!1INPT(SP)?(CR)
Response HDMI 1	21 31 49 4E 50 54 3D 32 31 31 0D	!1INPT=211(CR)
INC VOL BY 15	21 31 56 4F 4C 4D 20 2B 31 35 0D	!1VOLM(SP)+15(CR)
DEC VOL BY 1	21 31 56 4F 4C 4D 20 2D 0D	!1VOLM(SP)-(CR)
SET VOL LEVEL 25	21 31 56 4F 4C 4D 20 32 35 0D	!1VOLM(SP)25(CR)
VOL level query	21 31 56 4F 4C 4D 20 3F 0D	!1VOLM(SP)?(CR)
Response VOL 25	21 31 56 4F 4C 4D 3D 32 35 0D	!1VOLM=25(CR)
VOL ERROR Response	21 31 56 4F 4C 4D 3D 45 52 52 32 0D	!1VOLM=ERR2(CR)
Audio Mute off	21 31 4D 55 54 45 20 30 0D	!1MUTE(SP)0(CR)
Toggle Audio Mute	21 31 4D 55 54 45 20 32 0D	!1MUTE(SP)2(CR)
Query Audio Mute Status	21 31 4D 55 54 45 20 3F 0D	!1MUTE(SP)?(CR)
Response Audio Mute	21 31 4D 55 54 45 3D 31 0D	!1MUTE=1(CR)
Freeze On	21 31 46 52 45 5A 20 31 0D	!1FREZ(SP)1(CR)
Query Freeze Staus	21 31 46 52 45 5A 20 3F 0D	!1FREZ(SP)?(CR)
Response Freeze on	21 31 46 52 45 5A 3D 31 0D	!1FREZ=1(CR)
Remote_Aspect	21 31 52 45 4D 4F 20 39 0D	!1REMO(SP)9(CR)
Remote_MENU	21 31 52 45 4D 4F 20 33 30 0D	!1REMO(SP)30(CR)
Remote_UP	21 31 52 45 4D 4F 20 32 35 0D	!1REMO(SP)25(CR)
Remote_DOWN	21 31 52 45 4D 4F 20 32 36 0D	!1REMO(SP)26(CR)
Remote_OK	21 31 52 45 4D 4F 20 32 39 0D	!1REMO(SP)29(CR)
Remote_LEFT	21 31 52 45 4D 4F 20 32 37 0D	!1REMO(SP)27(CR)
Remote_RIGHT	21 31 52 45 4D 4F 20 32 38 0D	!1REMO(SP)28(CR)
Remote_PREV	21 31 52 45 4D 4F 20 34 35 0D	!1REMO(SP)45(CR)
Remote_REW	21 31 52 45 4D 4F 20 34 36 0D	!1REMO(SP)46(CR)
Remote_FF	21 31 52 45 4D 4F 20 34 37 0D	!1REMO(SP)47(CR)
Remote_NEXT	21 31 52 45 4D 4F 20 34 38 0D	!1REMO(SP)48(CR)
Remote_PLAY	21 31 52 45 4D 4F 20 35 30 0D	!1REMO(SP)50(CR)
Remote_STOP	21 31 52 45 4D 4F 20 35 31 0D	!1REMO(SP)51(CR)



Remote_FREEZE	21 31 52 45 4D 4F 20 32 33 0D	!1REMO(SP)23(CR)
Remote_MUTE	21 31 52 45 4D 4F 20 33 34 0D	!1REMO(SP)34(CR)
Remote_EXIT	21 31 52 45 4D 4F 20 33 31 0D	!1REMO(SP)31(CR)
Response of Aspect	21 31 52 45 4D 4F 3D 39 0D	!1REMO=9(CR)
Response of MENU	21 31 52 45 4D 4F 3D 33 30 0D	!1REMO=30(CR)
Response of UP	21 31 52 45 4D 4F 3D 32 35 0D	!1REMO=25(CR)
Response of DOWN	21 31 52 45 4D 4F 3D 32 36 0D	!1REMO=26(CR)
Response of OK	21 31 52 45 4D 4F 3D 32 39 0D	!1REMO=29(CR)
Response of LEFT	21 31 52 45 4D 4F 3D 32 37 0D	!1REMO=27(CR)
Response of RIGHT	21 31 52 45 4D 4F 3D 32 38 0D	!1REMO=28(CR)
Response of PREV	21 31 52 45 4D 4F 3D 34 35 0D	!1REMO=45(CR)
Response of REW	21 31 52 45 4D 4F 3D 34 36 0D	!1REMO=46(CR)
Response of FF	21 31 52 45 4D 4F 3D 34 37 0D	!1REMO=47(CR)
Response of NEXT	21 31 52 45 4D 4F 3D 34 38 0D	!1REMO=48(CR)
Response of PLAY	21 31 52 45 4D 4F 3D 35 30 0D	!1REMO=50(CR)
Response of STOP	21 31 52 45 4D 4F 3D 35 31 0D	!1REMO=51(CR)
Response of FREEZE	21 31 52 45 4D 4F 3D 32 33 0D	!1REMO=23(CR)
Response of MUTE	21 31 52 45 4D 4F 3D 33 34 0D	!1REMO=34(CR)
Response of EXIT	21 31 52 45 4D 4F 3D 33 31 0D	!1REMO=31(CR)

5. CONNET THE EXTRAL DEVICES

5.1 HDMI Connection

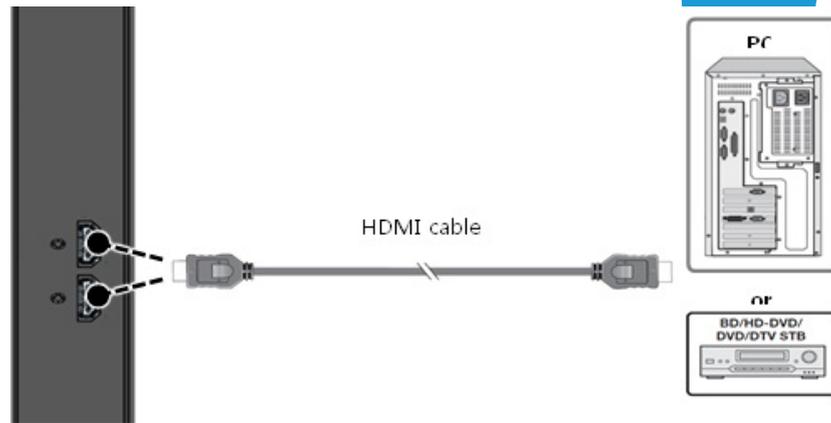
- HDMI input is recommended because it receives a digital signal input from an external device with HDMI output to ensure high quality of digital signal.

* Use the cable provided with the product. Otherwise, no image may be shown on the screen or normal display may not be shown.

- If connecting the product to the PC, it supports the VESA Display Data Channel (DDC) standard. This standard supports "plug and play" function which helps the PC recognize the product automatically to output the optimal resolution.

In order to operate the 'plug and play' after connecting the product, connect the video cable of the PC to the product before turning on your PC, and turn on the power of this product first and then turn on the power of the PC.

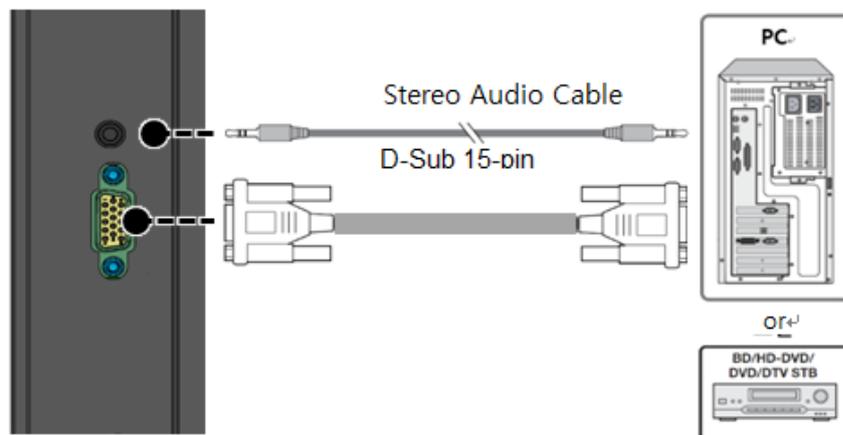
- When the incompatible resolution of the input signal is input to the product no image is shown on the screen or normal display is not shown. As for the supported resolutions, refer to page 31.

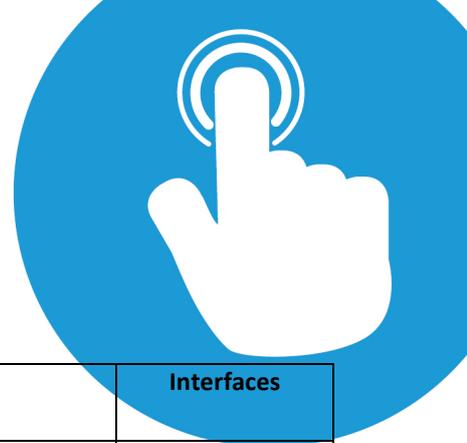


 If you receive a 3840 x 2160 60Hz input HDMI cable, please use the 4K,2K certified products. The screen may look strange.

5.2 VGA Connection

- To see the video, connect D-Sub 15P cable of the PC to the VGA In port of the product.
 - If connecting the product to the PC, it supports the VESA Display Data Channel (DDC) standard. This standard supports "plug and play" function which helps the PC recognize the product automatically to output the optimal resolution.
- In order to operate the 'plug and play' after connecting the product, connect the video cable of the PC to the product before turning on your PC, and turn on the power of this product first and then turn on the power of the PC.
- When the incompatible resolution of the input signal is input to the product no image is shown on the screen or normal display is not shown. As for the supported resolutions, refer to page 31.



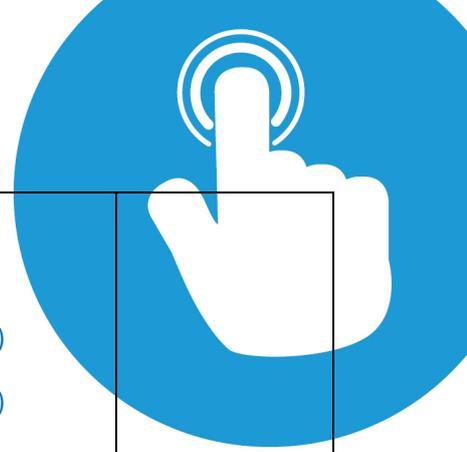


6. Touch Requirements

6.1 Touch Requirements

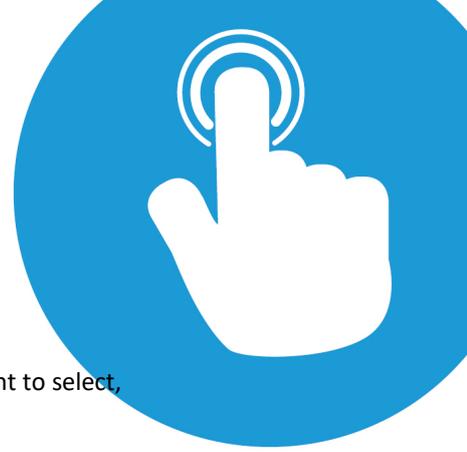
OS Compatibility

OS	Version	Interfaces																																
Windows	Windows 10(not support OEM version OS.) Windows 8(not support OEM version OS.) Windows 7 Windows Vista, XP/2000 Windows CE.net/5.0/6.0/7.0 Windows Embedded Windows XP Tablet PC edition	USB/RS232																																
Linux	The Linux public driver supports most of the Linux distribution, including Ubuntu, Debian, SuSE(openSuSE), Fedora Core, Mandriva, Slackware and so on. Please according to your kernel version, download corresponding driver. <table border="1" data-bbox="491 1064 1228 1608"> <thead> <tr> <th rowspan="2">Kernel</th> <th colspan="2">X86 / X-window</th> <th rowspan="2">ARM/MIPS</th> <th rowspan="2">Multi-Touch</th> </tr> <tr> <th>32bits</th> <th>64bits</th> </tr> </thead> <tbody> <tr> <td>3.x.x/4.x.x</td> <td>O</td> <td>O</td> <td>O</td> <td>O</td> </tr> <tr> <td>2.6.36 Upward</td> <td>O</td> <td>O</td> <td>O</td> <td>O</td> </tr> <tr> <td>2.6.24~35</td> <td>O</td> <td>O</td> <td>O</td> <td>X</td> </tr> <tr> <td>2.6.23 Downward</td> <td>O</td> <td>O</td> <td>X</td> <td>X</td> </tr> <tr> <td>2.4.x</td> <td>O</td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Kernel	X86 / X-window		ARM/MIPS	Multi-Touch	32bits	64bits	3.x.x/4.x.x	O	O	O	O	2.6.36 Upward	O	O	O	O	2.6.24~35	O	O	O	X	2.6.23 Downward	O	O	X	X	2.4.x	O	X	X	X	USB/RS232
Kernel	X86 / X-window		ARM/MIPS	Multi-Touch																														
	32bits	64bits																																
3.x.x/4.x.x	O	O	O	O																														
2.6.36 Upward	O	O	O	O																														
2.6.24~35	O	O	O	X																														
2.6.23 Downward	O	O	X	X																														
2.4.x	O	X	X	X																														
Android	Please download the driver and refer the programming guide to install From EETI Homepage Android 2.3 ~ later	USB/RS232																																
Mac	Please download the driver and refer the programming guide to install. Mac OS X (Power PC) - Mac OS X 10.5.3 Leopard -> 1.17.4003 (driver)	USB																																



	<p>Mac OS X (Intel CPU)</p> <ul style="list-style-type: none"> - Mac OS X 10.7.4 Earlier (32Bit) -> 1.20.1004 32Bit (driver) - Mac OS X 10.7.4 Earlier (64Bit) -> 1.20.1004 64Bit (driver) - Mac OS X 10.7.5 (32bit) -> 1.23.1507.75 - Mac OS X 10.7.5 (64bit) -> 1.23.0925.89 64Bit - Mac OS X 10.8.x Mountain Lion -> 1.23.0925.89 64Bit - Mac OS X 10.9.x Mavericks -> 1.23.0925.89 64Bit - Mac OS X 10.10.x Yosemite -> Without driver - Mac OS X 10.11 El Capitan -> Without driver - Mac OS 10.12 Sierra -> Without driver 	
QNX	QNX RTOS v6.3	USB/RS232

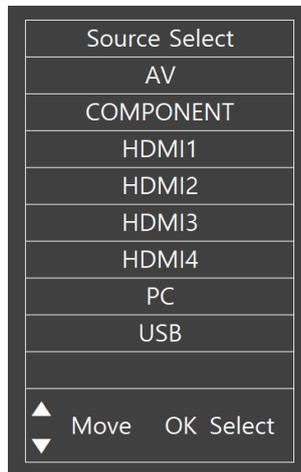
USB/RS232 Type Controller	
Circuit Board Dimension	325mm x 100mm
Channels of Panel	Max. Tx:108 Rx:192 channels (include shielding pin)
Input Voltage	3.5V~5.5V.Typical 5V.
Operating Temperature	-40 to 85 °C
Storage Temperature	-40 to 85 °C
Relative Humidity	95% at 60 °C, RH Non-condensing
Interface	1.1 Full Speed, RS232: No parity,8 data bits,1 stop bit, baud rate 19200bps
Resolution	4096×4096 resolution
Report rate(points/sec)	> 100 Hz
Response time	Average < 25 ms



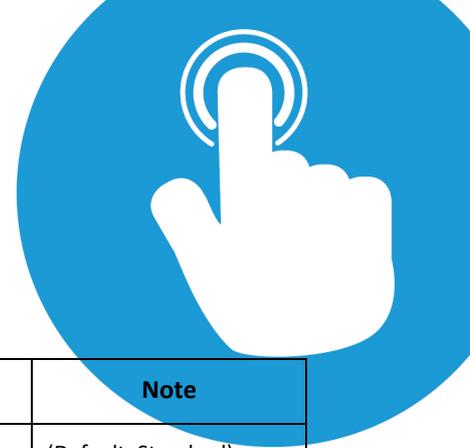
7 MENU CONTROL

7.1 Input selection

Press the Input button and then select ▲ or ▼, or the input you want to select, and then press the ► (+) button.



Input	Description
AV	AV input
Component	Component input
HDMI1	HDMI1 input
HDMI2	HDMI2 input
HDMI3	HDMI3 input
HDMI4	HDMI4 input
PC	VGA input
USB	USB input



7.2 User function

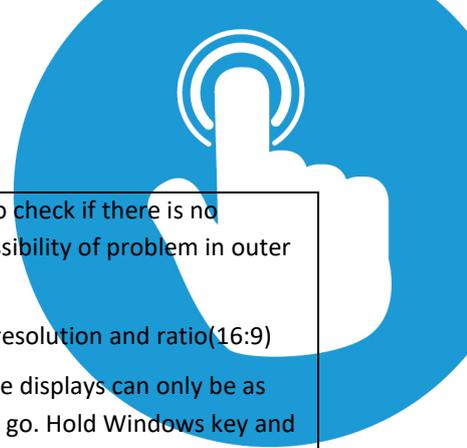
Upper	Lower	Value	Note	
VIDEO	Picture mode	Standard, Movie, Soft, User	(Default: Standard)	
	Color Mode	Normal, Warm, Cool	(Default: Normal)	
	Screen size	Full, Normal, Zoom, Cinema, Wide	(Default: Full)	
	Noise Reduction	Strong, Off, Weak, Middle	(Default: Strong)	
	Dynamic Contrast	On, Off	(Default: Off)	
AUDIO	Sound Mode	Standard, Music, Movie, Sports, User	(Default: Standard)	
	Digital Audio Output	Off, PCM, RAW	(Default: Off)	
	Surround	On, Off	(Default: Off)	
	Speaker Output	On, Off	(Default: On)	
SETUP	Menu Language	English, Korean	(Default: English)	
	Menu Transparence	0, 24, 50, 75, 100%	(Default: 25%)	
	TIME	No Signal Power Off	Off, 1min, 3min, 5min, 10min, 15min	Off
		Sleep Timer	Off, 5-240Min	Off
	HDMI Setting	HDMI1	1.4, 2.0	1.4
		HDMI2	1.4, 2.0	1.4
		HDMI3	1.4, 2.0	1.4
		HDMI4	1.4, 2.0	1.4
	OSD Time Out	5, 15, 30, 45, 60 sec,	(Default: 30sec)	
	All Reset	Yes, No	All Reset	

8 TROUBLE SHOOTING

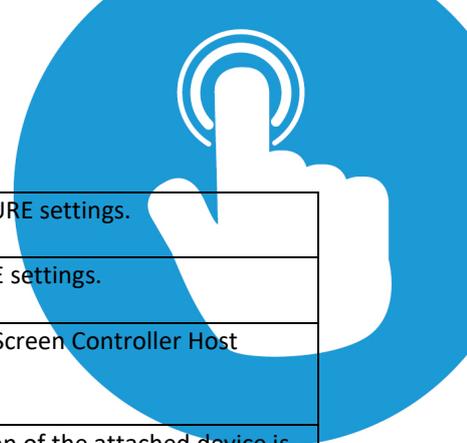


The table below provides some general guidelines for trouble shooting problems you may encounter with your product. If the suggested solutions fail to resolve the problem or if you encounter an issue not described here, please contact your dealer or service centre.

Symptom	Checklist & Solution
The power is not turned on. (When the LED light indication is red or orange.)	<ul style="list-style-type: none"> • Turn on power switch of the product or by using remote controller, check if the product is in power saving mode for no input of video signal.
The power is not turned on. (LED indication that the light is off)	<ul style="list-style-type: none"> • Ensure that the product is plugged in and that the AC outlet is active. • Set the main power switch to the on position. • Try to connect other electric equipment to AC outlet to check if there is no problem in power source.
The remote controller does not work.	<ul style="list-style-type: none"> • Replace the batteries in the remote controller. • If the remote controller receiver of the product is prevented by any object, delete the object and try to operate again. • If the remote controller receiver of the product is exposed to direct sunlight or strong light, try to block the light and operate again. • Check the control buttons (OSD buttons) work properly.
The power is on only but the screen does not appear.	<p>When the LED indicator of the product is green, video displays on the screen. Turn on the power of the product by using the power switch or remote controller.</p> <ul style="list-style-type: none"> • Turn off the AC power, and then turn it on again.
A message of 'Input out of range' is displayed.	<ul style="list-style-type: none"> • Check if a signal with other resolution which the product does not support is input to the product and refer to the details in the page 31.
Images are not displayed correctly or noise is shown on the screen.	<ul style="list-style-type: none"> • Ensure the cables are connected in and video signal is active. • Change the cable. • Check if a signal with other resolution which the product does not support is input to the product and refer to the details in the page 31.



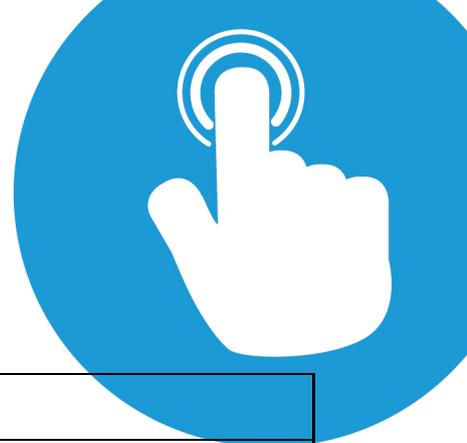
	<ul style="list-style-type: none"> • Connect another product to check if there is no problem, considering the possibility of problem in outer video signal equipment. • Ensure the input windows resolution and ratio(16:9) • When mirroring or duplicate displays can only be as high as the device screen will go. Hold Windows key and press P to Display only
'No Signal' message is displayed.	<ul style="list-style-type: none"> • Check to see if the external signal device is turned on. • Check if computer is on power saving mode by handling the mouse or pressing keyboard to wake. • Check to see if the external signal devices and cables are connected. • Check to see if the cable connections are loose or missing out. • Try changing the cable. • Check if the input selection of products is correctly set to an external device by using the SOURCE button on the remote controller.
HDMI screen is not displayed. Or screen appears strange.	<ul style="list-style-type: none"> • Check to see if the cable connections are loose or missing out. • Try changing the cable. • If you use an HDMI cable not certified, it may result in a problem.
HDMI display is small or large visible.	<ul style="list-style-type: none"> • Try adjusting video output size of the graphic card in case of computer.
The colour of VGA screen is strange.	<ul style="list-style-type: none"> • Check to see if the cable connections are loose or missing out. • Try changing the cable. • Connect another product to check if there is no problem, considering the possibility of problem in outer video signal equipment.
The position of VGA screen is strange.	<ul style="list-style-type: none"> • Try adjusting the automatic position by using the menu on the remote controller.
The screen is too bright and the image is not separated.	<ul style="list-style-type: none"> • From the menu, try making the value of the black level lower on the screen menu setting. • Or try to initialize the screen menu settings.
The dark area of the screen is too bright	<ul style="list-style-type: none"> • From the menu, try making the value of the contrast lower on the screen menu settings.



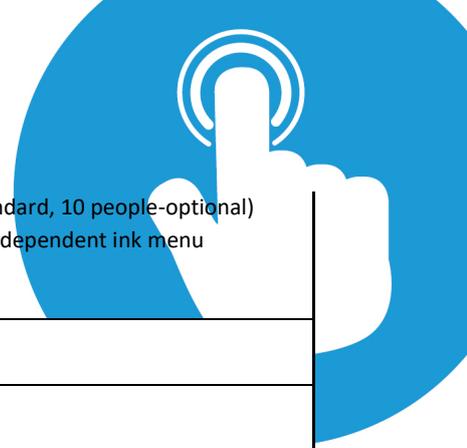
	<ul style="list-style-type: none"> • Or try to initialize the PICTURE settings.
Screen looks too dark.	<ul style="list-style-type: none"> • Try to initialize the PICTURE settings.
Touch doesn't work	<ul style="list-style-type: none"> • See Connecting the Touch Screen Controller Host Computer to the Display
Touch Alignment	<ul style="list-style-type: none"> • Ensure the output resolution of the attached device is set to a 16:9 • Using T3k software(touch setting program) check the alignment of the cameras
No Sound on VGA	<ul style="list-style-type: none"> • Install into the "Sound" socket or check the Audio setting in the computer
No Sound on internal speaker	<ul style="list-style-type: none"> • Increase the volume level on both the CommBox interactive display, Media Player and Device e.g. laptop or PC
No Sound on External Speakers	<ul style="list-style-type: none"> • Ensure the external speakers are connected to the correct jacks. • Check for any shorts on the wires connecting to the speakers. • Power down the touchscreen, remove any external speaker connection, wait for 30seconds, reapply power and test internal speakers only.
UD@60Hz is not displayed.	<ul style="list-style-type: none"> • Connect directly from HDMI 2.0 of PC to HDMI port of the screen. Screen has to be set HDMI 2.0 in OSD setting menu. • Use the bellow's gender of DP and HDMI port if your computer has only DP port for UD@60Hz.
What kind of computer or specification do I need for 4K@60Hz?	<ul style="list-style-type: none"> • Video output must be 4K@60Hz • Memory and graphic card: 8GB above and NVIDIA® GeForce® GTX 745 (included 4GB DDR3) • HDD : 1TB(64MB cash)7200RPM SATA 6Gb/S <p>Same or above specification</p> <p>(※ e.g. Gamming desktop is normally suitable for this specifications: Dell Alienware X51 series)</p>

9 PRODUCT SPECIFICATION

 Product specifications are subject to change without notice.



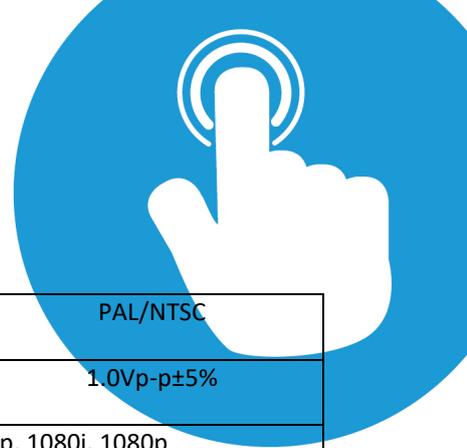
Model		Pulse (Silver Nano wired)
Size (WxHxD)		1512 x 887 x 75mm
Weight		62Kg
Display	Display size (WxHxD)	1430.4 x 805.6mm (64.5inch)
	Resolution	3840 x 2160
	Brightness	500cd/m ²
	Response time	8ms
	Viewing angle	Horizontal/vertical 178°/178°
	Touch	20point as standard
	PCAP technology	PCAP (Silver Nano wire)
	Surface Treatment	Soda lime (thermal Strengthened) Black, AG transparency : More than 86%±2.0% (Typical)
	Cover glass thickness	4mm
	Glass hardness	7H
	Anti-glare coating	Yes
	Supported OS	Windows7/8/8.1 above, Mac OSX 10.5above (Multi touch support from 10.10), Linux Ubuntu12.04,13.04, Android 3.0 above
	Interface	USB 1.1/2.0FS
	Life time	50,000h
Connectivity	Video Input	HDMIx4,VGAx1, YPBPR1x1, USB for media
	Audio Input	3.5 Stereo, AV in x 1
	Audio Output	AV outx1, SPDIFx1, SPK out
	USB for touch	USB
	Control	RS-232
	Built-in speaker	15Wx2
	Plug & Play	VESA



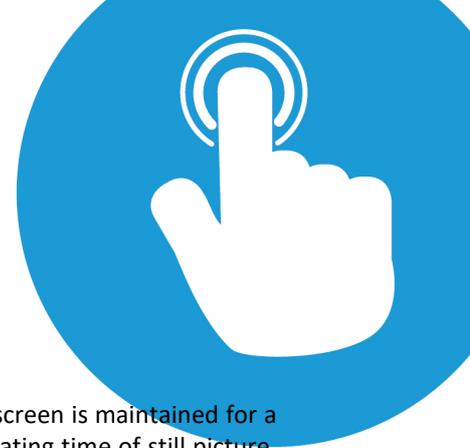
Solution	Annotation Software	- Multi natural ink for collaboration (2 people-standard, 10 people-optional) - Real time multi writing with 10 people ink and independent ink menu bar(optional)
Built-in PC (optional)	Storage/RAM	SSD 128GB with 8GB RAM
	Processor	6th generation intel Skylake core i5
	Graphics	Intel HD Graphics 530
	Ports	DP -out , HDMI-out , Mic/Audio jack , DC jack , RJ45 LAN , USB3.1 Type C , 2 x USB3.1 , 3 x USB2.0
	OS	Windows10
	Wi-Fi/Bluetooth	Intel Wireless -AC 3160 802.11AC / BT 4.0
Power	Power requirements	100 to 240V AC, 50/60Hz
	Power consumption Typ.	108W
Operating Environment	Temperature Operating	5 to 60'C
	Temperature Storage	- 20to 60'C
	Humidity Operating	8 to 85%
	Humidity Storage	8 to 90%
Accessories	Cable	HDMI &USB extension cables, Power cable, Remote controller, Quick guide, Passive pen
	Options	Passive pen, Active pens Sound bar-Harman kardon, JBL Wall mount bracket, Motorized moveable stand

※ Product design and specification can be changed for quality improvement without prior notice.

10 SUPPORTED RESOLUTIONS



Video Input	CVBS	Video system	PAL/NTSC
		Video Level	1.0Vp-p±5%
	Component	480i, 480p, 576i, 576p, 720p, 1080i, 1080p	
	HDMI	480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 4K 30Hz, 4K 60Hz	
Audio Input	CVBS & component Audio	L/R RCA input	0.2 ~ 2.0 V RMS



11 REQUIRED INFORMATION

11.1 Prevent image sticking

⚠ The fixed image (title, menu image, picture, motionless movie etc.) on the screen is maintained for a long time, image sticking may occur. Image sticking may be subject to operating time of still picture. Since the image sticking is not defect but a characteristic of the product, it is restricted from the product warranty.

Thus, please refer to the following information for the prevention of image sticking.

- When external device (PC) is not used for a long time, please use screensavers. (The screensaver should be monochrome or moving image.)
- If 4:3 aspect ratio is used for a long time, image sticking might occur. So, it is recommended to use the full screen.
- In case of displaying still picture for long time, change pictures a certain time.

If image sticking is shown, turn off the unit for a while and turn it on again.
Turn off time may be requiring.