


FSN

## Image Processing System

# Instructions for Use

IPS4000 Rev.02
UHD Modular Video Matrix Switcher and Converter.

Before connecting, operating or adjusting this product, please read this instruction booklet carefully and completely.

English

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The specifications and information in this document are subject to change without notice.




Instructions for Use for this product are also available in electronic form (eIFU). Choose from several languages. Use Adobe Acrobat software to view eIFUs. Access the eIFUs online at: fsnmed.com/support/eifu/

# Product Description / Intended Use



The next generation of medical image processing and control is here with IPS4000. FSN has developed a powerful, yet compact, digital video integration solution that offers compatibility for today, and tomorrow.

Configurable up to 16 inputs, 32 outputs, IPS4000 features 4096 x 2160 max resolution, signal options for DisplayPort, HDMI, 12G-SDI, and analog. Users can save and recall custom presets, choose from multi window layouts including dual (9 types) and quad (6 types). Dashboard interface control can be accessed on the built-in 7 inch diagonal touch screen, or an external screen via web, tablet or PC.

## Intended Purpose

This device is intended to be connected to other medical equipment. This device is not intended for diagnosis. This device is intended to be compatible with other highly specialized surgical and diagnostic equipment used in surgical suites, operating rooms, emergency rooms, and procedural facilities.

## Intended Use Environment

This device is intended to be used by a trained medical professional in a healthcare facility setting where contact with a patient is unlikely (no applied part).

This device is designed to meet the medical safety requirements for a patient vicinity device.
**Warning:** This device may not be used in connection with life support equipment.

## Indications for Use

This device is to be used by a trained medical professional. This device connects to medical imaging equipment to display images, videos or patient information during surgical procedures. This device is not intended for diagnosis.

# Symbol Definitions

The following symbols appear on the product, its labeling, or the product packing. Each symbol carries a special definition, as defined below:

| | | | | | |
|---|---|---|---|---|---|
|  | Dangerous : High Voltage |  | Power adapter |  | Consult accompanying documents |
|  | Direct current |  | Indicates equipotential earth ground |  | Unique Device Identifier |
|  | Indicates protective earth ground |  | Indicates top-bottom direction |  | Korea Certification |
|  | DC Power control switch |  | Fragile |  | Approved according to the CCC regulations |
|  | Do not get wet |  | Maximum Stacking |  | China RoHS labels |
|  | Consult the operating instructions |  | Indicates the manufacturer |  | Catalog Number |
|  | Indicates the manufacturing date |  | Authorized representative in the European community |  | Medical Device |
|  | Serial Number |  | Humidity limitation |  | Consult the operating instructions - electronic |
|  | Temperature limitation |  | Atmospheric pressure limitation |  | Importer Entity |
|  | UK Conformity Assessed |  | Power ON |  | Power OFF |
|  | UK Responsible Person |  | Available from licensed healthcare provider |  | Follow instructions for use |
|  | Indicates proof of conformity to EU 2017/745 Medical Devices Regulation and applicable standards. | | | | |
|  | Medical Equipment is in accordance with ANSI/AAMI ES60601-1ES 60601-1:2005/A2:2021, CAN/CSA-C22.2 No. 60601-1 (Amendment 2:2022) in regards to electric shock, fire hazards, and mechanical hazard. | | | | |
|  | Tested to comply with FCC Class B standard (USA). | | | | |
|  | Waste electrical and electronic equipment (WEEE Directive 2012/19/EU). This symbol indicates that the waste of electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact the manufacturer or other authorized disposal company to decommission your equipment. | | | | |

Note: A printed copy of the manual in English is provided with the product. Users within EU member states, please contact local distributor for other languages. This applies to EU member states where the product has been purchased through authorized channels.

# Warnings and Precautions

## Caution Information




This symbol alerts the user that important literature concerning the operation of this unit has been included. Therefore, it should be read carefully in order to avoid potential problems.

This symbol warns users that un-insulated voltage within the unit may have sufficient magnitude to cause electrical shock. Therefore, it is dangerous to make contact with any part inside the unit. To reduce the risk of electrical shock, DO NOT remove cover (or back). There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

To prevent fire or shock hazards, do not expose this unit to rain or moisture. Do not use this unit's polarized plug with an extension cord receptacle or other outlets unless the prongs can be fully inserted.

**Underwriters Laboratories (UL) Classification:**
**UL safety Compliance:**
This device is U.L. Classified WITH RESPECT TO ELECTRIC SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL 60601-1/CAN/CSA C22.2 NO. 601.1

**EU Conformity and EMC Compliance:**
This device meets the requirements of EN60601-1 and EN60601-1-2 so as to conform to the EU Medical Devices Regulation (MDR 2017/745). CE class I medical device accessory.

Use 120V rating 5-15P type plug only in the U.S.

Caution: Make sure the power cord is the correct type that is required in your geographic area. This device has a universal power supply that allows operation in either 100-120V AC or 200-240V AC voltage areas (no user adjustment is required).

Use the proper power cord with correct attachment plug type. If the power source is 120 V AC, use a power cord which is a Hospital Grade Power Cord with NEMA 5-15 style plug, labeled for 125 volts AC with UL and C-UL approvals. If the power source is a 240 V AC supply, use the tandem (T blade) type attachment plug with ground conductor power cord that meets the respective European country's safety regulations.



**Recycling (WEEE Directive 2012/19/EU)**

Follow local governing ordinances and recycling plans regarding the recycling or disposal of this equipment.

**Warning:** Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

**Warning:** Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

**Warning:** Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of this device, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

**Warning:** Using this equipment in the X-ray or magnetic resonance environment could result in degradation of the performance of this equipment, interference with other equipment or interference with radio services.

**Warning:** The use of cables and/or other accessories with this device, other than those specified, may result in increased emissions or decreased immunity of this device.

**Warning:** This product is not considered physically to connect to HF (High Frequency) electrosurgical equipment.

**Warning:** Not suitable for use in the presence of a flammable anesthetics mixture with oxygen or with nitrous oxide.

# Safety Instructions

## On Safety

1. Before connecting the AC power cord to the outlet, make sure the voltage designation corresponds to the local electrical supply.

2. Never insert anything metallic into the cabinet openings of the device. Doing so may create the danger of electric shock.

3. To reduce the risk of electric shock, do not remove cover. No user-serviceable parts inside. Only a qualified technician should open the case of the device.

4. Never use the device if the power cord has been damaged. Do not allow anything to rest on the power cord, and keep the cord away from areas where people can trip over it.

5. Be sure to hold the plug, not the cord,when disconnecting the device power cord from an electric socket.

6. Unplug the device power cord when it is going to be left unused for an extended period of time.

7. Unplug the device power cord from the AC outlet before any service.

8. If the device does not operate normally, in particular, if there are any unusual sounds or smells coming from it, unplug it immediately and contact an authorized dealer or service center.

9. Please contact the manufacturer if the set should be installed in an inaccessible area.

**Warning:** Do not touch input or output connectors and the patient simultaneously.

**Warning:** This device is intended for connection to input/output signals and other connectors that comply with relevant IEC standard (e.g.,IEC60950 for IT equipment and IEC60601 series for medical electrical equipment). In addition, all such combination-system shall comply with the standard IEC 60601-1-1 or clause 16 of the 3 Ed. of IEC 60601-1, respectively, safety requirements for medical electrical systems. Any person who has formed a combination-system is responsible for the system to comply with the requirements of IEC 60601-1-1 or clause 16 of the 3 Ed. of IEC 60601-1, respectively. If in doubt, contact qualified technician or your local representative.

**Warning:** To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth. Do not position equipment in such a way that it is difficult to disconnect the power cord plug from the appliance inlet.

**Warning:** Do not modify this equipment without authorization of the manufacturer.

Product fuse has a lower breaking capacity. Do not install at the building power system, prospective short-circuit current exceeding 35 A.

## Environmental Conditions for Operation and Storage

Temperature range within 0°C to 40°C(operation), -20°C to 60°C (storage)
Relative humidity range 10% to 85%
Atmospheric pressure range within 500 to 1060hPa.

## On Installation

1. Openings in the device cabinet are provided for ventilation. To prevent overheating, these openings should not be blocked or covered. If you put the device in a bookcase or some other enclosed space, be sure to provide adequate ventilation.

2. Do not expose the device to rain or use it near water. If the device accidentally gets wet, unplug it and contact an authorized dealer immediately. You can clean the device with a damp cloth if necessary, but be sure to unplug the device first.

3. Place your device near an easily accessible AC outlet.

4. High temperature can cause problems. Max operating temperature is 40°C. Don't use your device in direct sunlight and keep it away from heaters, stoves, fireplaces, and sources of heat.

5. Always use only the original cables and accessories with the device.

## Repair

Do not attempt to service the device yourself, as opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel. Unplug the device from its power source and refer servicing to qualified personnel under the following conditions:

- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the device.
- If objects have fallen into the device.
- If the device has been exposed to rain or moisture.
- If the device has been subjected to excessive shock by being dropped.
- If the cabinet has been damaged.
- If the device seems to be overheated.
- If the device emits smoke or abnormal odor.
- If the device fails to operate in accordance with the operating instructions.

## Biohazards

To prevent spreading of infections, this device should only be used in environments where biological decontamination can be successfully performed.

## Returned Product

After troubleshooting, if problems persist, disinfect the device and return it to FSN using the original packaging. Include the accessories that came with the device in the return shipment. Please enclose a brief explanation of the malfunction.

Contact FSN Medical Technologies for a Return Authorization Number and instructions, prior to returning the device.

## Accessories

Use only accessories specified by the manufacturer, or sold with the device.

## Classification for Safety Compliance

- Protection against electric shock : Class I including AC/DC adapter. This medical equipment is in accordance with ANSI/AAMI ES60601-1 (2005) + AMD 1 (2012) and CAN/CSA-C22.2 No. 60601-1 (2014) in regards to electric shock, fire hazards, and mechanical hazard.
- Applied Parts : No Applied Parts.
- Degree of safety in the presence of flammable anesthetics mixture with air or with oxygen or with nitrous oxide. Not suitable for use in the presence of a flammable anesthetics mixture with oxygen or with nitrous oxide.
- For critical applications, it is recommended to have a replacement device available.
- Mode of operation : Continuous.

## Notice to the user:

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established. Contact your local FSN Medical Technologies sales representative for information on changes and new products.

# Electromagnetic Compatibility

This unit has been designed and tested to comply with IEC 60601-1-2:2014/AMD1:2020 requirements for EMC with other devices. To ensure electromagnetic compatibility (EMC), the device must be installed and operated according to the EMC information provided in this Instructions for Use.

This unit has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against interference. This device can radiate radio frequency energy and, if not installed and used in accordance with the instructions, it may interfere with other radio communications equipment. There is no guarantee that interference will not occur in a particular installation. If this equipment is found to cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by carrying out one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the device and the subject of interference.
3. Plug the device into an outlet on a different electrical circuit than that to which the subject of interference is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

## NOTICES TO USER

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## FCC WARNING

This device  generates or uses radio frequency energy. Changes or modifications to this device may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose authority to operate this equipment if an unauthorized change or modification is made.

## PRODUCT LIFETIME

The performance of this device may deteriorate over long periods of time. Periodically check that this device is operating correctly. The expected service life of the device is four years. Keep clean to prolong its operational lifetime.

## 1. Guidance and manufacturer's declaration - electromagnetic emission

| The device is intended for use in the electromagnetic environment specified below. The user of the device should make sure that the device is operated in such an environment. | | |
|---|---|---|
| Interference emission measurements | Conformity level | Electromagnetic environment -guidance |
| RF emissions acc. to CISPR 11 | Complies with Group 1 | The characteristics of this device determined by broadcasting permit its industrial and hospital use (CISPR 11, Class A). When used in a living area (for which CISPR 11 usually requires Class B), this device may not provide adequate protection of radio services. The user must, if necessary, take remedial action such as implementation or reorientation of the device. |
| RF emissions acc. to CISPR 11 | Complies with Class B | |
| Emission of harmonic oscillations acc. to IEC 61000-3-2 | Complies with Class A | |
| Voltage fluctuations/flicker emissions acc. to IEC 61000-3-3 | Complies | |

## 2. For the use of ME devices in professional healthcare facilities. Guidance and manufacturer's declaration - electromagnetic immunity

| The device is intended for use in the electromagnetic environment specified below. The user of the device should make sure that it is used in such an environment. | | |
|---|---|---|
| Interference immunity test | IEC 60601-1-2:2014 conformity level | Electromagnetic environment-guidance |
| Electrostatic discharge (ESD) acc. to IEC 61000-4-2 | Complies ±2 kV, ±4 kV, ±6 kV, ± 8 kV contact discharge ±2 kV, ±4 kV, ±8 kV, ± 15 kV air discharge | Floors should be made of wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity must be at least 30% |
| Rapid transient electric interferences/ bursts acc. to IEC 61000-4-4 | Complies ± 2 kV for mains lines ± 1 kV for input/output lines | The quality of the supply voltage should correspond to that of a typical business or hospital environment. |
| Surge acc. to IEC 61000-4-5 | Complies ± 1 kV push-pull voltage ± 2 kV common-mode voltage | The quality of the supply voltage should correspond to that of a typical business or hospital environment. |
| Voltage dips, short interruptions and fluctuations of the supply acc. to IEC 61000-4-11 | 0 % $U_T$*; 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°<br>0% $U_T$; 1 cycle and 70% $U_T$; 25/30 cycles Single phase: at 0°<br>0% $U_T$; 250/300 cycle | Mains power quality should be that of a typical commercial or hospital environment.<br>If the user of the device requests continued functioning even when interruptions of the power supply occur, it is recommended that the device be supplied from a power supply that is free of interruptions. |
| *Note: $U_T$ is the mains alternating voltage before applying the test levels. | | |

## 3. For the use of ME devices in professional healthcare facilities. Test specification for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment (according to IEC 60601-1-2:2014)

The device is intended for use in the electromagnetic environment specified below.
The user of the device should make sure that it is used in such an environment.

| Test frequency MHz | Band MHz | Service | Modulation | Maximum power W | Distance m | IMMUNITY TEST LEVEL V/m |
|---|---|---|---|---|---|---|
| 385 | 380 to 390 | TETRA 400 | Pulse modulation 18 Hz | 1.8 | 1.0 | 27 |
| 450 | 430 to 470 | GMRS 460, FRS 460 | FM ± 5 kHz stroke ± 1 kHz sine wave | 2 | 1.0 | 28 |
| 710 | 704 to 787 | Band 13, 17 | Pulse modulation 217 Hz | 0.2 | 1.0 | 9 |
| 745 | | | | | | |
| 780 | | | | | | |
| 810 | 800 to 960 | GSM 800/900 TETRA 800, iDEN 820, CDMA 850, LTE Band 5 | Pulse modulation 18 Hz | 2 | 1.0 | 28 |
| 870 | | | | | | |
| 930 | | | | | | |
| 1720 | 1700 to 1990 | GSM 1800, CDMA 1900, GSM 1900, DECT, LTE Band 1,3, 4, 25 UMTS | Pulse modulation 217 Hz | 2 | 1.0 | 28 |
| 1845 | | | | | | |
| 1970 | | | | | | |
| 2450 | 2400 to 2570 | Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE Band 7 | Pulse modulation 217 Hz | 2 | 1.0 | 28 |
| 5240 | 5100 to 5800 | WLAN 802.11 a/n | Pulse modulation 217 Hz | 0.2 | 1.0 | 9 |
| 5500 | | | | | | |
| 5785 | | | | | | |

*Note: If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the device may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

## 4. Guidance and manufacturer's declaration – electromagnetic immunity – for equipment and systems that are not life-supporting

The device is intended for use in the electromagnetic environment specified below.
The user of the device should make sure that it is used in such an environment.

| Interference immunity tests | IEC 60601-1-2:2014 test level | Conformity level | Electromagnetic environment – guidelines |
|---|---|---|---|
| Conducted RF disturbances acc. to IEC 61000-4-6<br><br>Radiated RF disturbances according to IEC 61 000·4·3 | 3 V rms<br>150 kHz to < 80 MHz<br><br>3 V/m<br>80 MHz to 2.5 GHz | 3 V eff<br><br>3 V/m | Portable and mobile RF communications equipment should be used no closer to any part of the device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br><br>Recommended separation distance:<br><br>$d = 1.2 \sqrt{P}$<br><br>Where P is the nominal power of the transmitter in watts [W] according to the information provided by the manufacturer of the transmitter and d is the recommended separation distance in meters [m].<br><br>The field strength of stationary transmitters at all frequencies on site a should be, according to **a** study, less than the conformity level **b**.<br><br>$d = 1.2 \sqrt{P}$<br>80 MHz to < 800 MHz<br><br>$d = 2.3 \sqrt{P}$<br>800 MHz to 2.5 GHz<br><br>Interference may occur in the vicinity of equipment marked with the following symbol:<br> |

Note: These guidelines may not apply in all situations. The propagation of electromagnetic quantities is affected by absorptions and reflections of buildings, objects, and persons.

**a** Field strengths from fixed transmitters, such as base stations for radio [cellular/cordless] telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment of the stationary transmitters, a site survey should be considered. If the measured field strength in the location at which the device is used exceeds the above conformity levels, the device should be observed to verify normal operation. If unusual performance characteristics are observed, additional measures may be necessary, such as a modified orientation or a different location for the device.
**b** Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

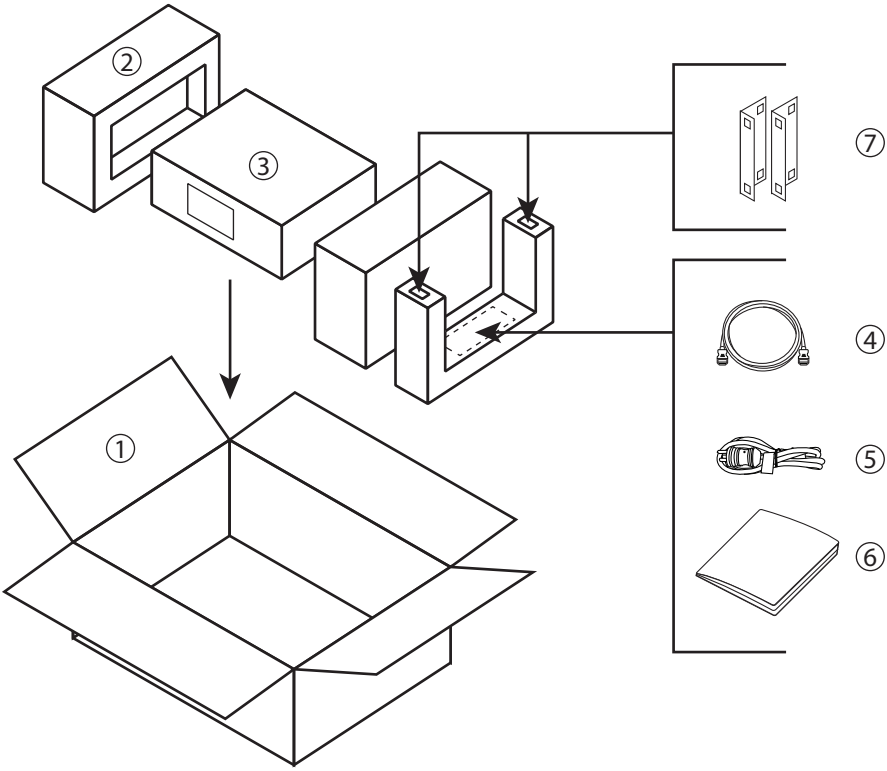
## 5. Recommended separation distances between portable and mobile RF communications equipment and the device

The device is intended for use in the electromagnetic environment in which the RF disturbances are controlled. The user of the device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the device – as a function of the output power of the communication device, as shown below.

| Nominal power of transmitter [W] | Separation distanced [m] according to frequency of transmitter | | |
|---|---|---|---|
| | 150kHz to< 80 MHz $d = 1.2 \sqrt{P}$ | 80 MHz to< 800 MHz $d = 1.2 \sqrt{P}$ | 800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$ |
| 0.01 | 0.12 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 7.3 |
| 100 | 12 | 12 | 23 |

For transmitters rated at a maximum output power not listed above, the recommended separation distance **d** in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where **P** is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

# Accessories IPS4000




| Item | Description | Pack Qty |
|---|---|---|
| 1 | Carton Box | 1 |
| 2 | Cushion | 3 |
| 3 | IPS4000 Unit | 1 |
| 4 | HDMI Cable | 1 |
| 5 | AC power Cord (6ft, Medical Grade) | 2 |
| 6 | Instructions For Use | 1 |
| 7 | Rack Mount Brackets | 2 |

# IPS4000 Sample System Configuration

**Input**
Up to 4096 x 2160 resolution.
Up to 16 inputs.

**HDMI 2.0**

**DP 1.2**

**12G SDI**

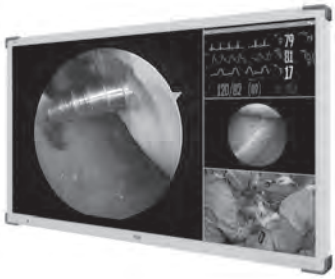
**Analog**

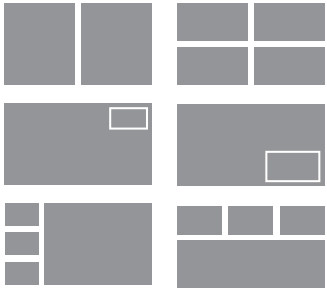


**IPS4000**




**Output**
Multi window layouts.
Streaming.
Up to 32 outputs.





Multi window layout options.

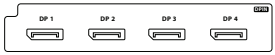
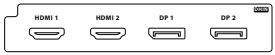
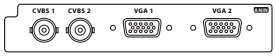
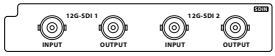
**Interface Control**
Dashboard is accessed on the built-in 7 inch diagonal touchscreen, or an external touchscreen or tablet.



# Connections

IPS4000 is designed for modular configuration. Various combinations of input and output cards can be assembled at the factory. Not all IPS4000 units will look the same.

Following are descriptions of IPS4000 input and output cards and their unique functions.

| | |
|---|---|
| HDMI quad input card.<br>Name: HDIN |  |
| DisplayPort quad input card.<br>Name: DPIN |  |
| Dual HDMI, dual DisplayPort input card.<br>Name: DHIN |  |
| Analog input card.<br>Name: ANIN |  |
| 12G SDI input card.<br>Name: SDIN |  |

| | |
|---|---|
| HDMI quad output card.<br>Name: HQOUT |  |
| DisplayPort quad output card.<br>Name: DQOUT |  |
| HDMI (scalable)* output card.<br>Name: HDOUT |  |
| DisplayPort (scalable)* output card.<br>Name: DPOUT |  |
| 12G SDI (scalable)* output card.<br>Name: SDOUT |  |
| VoIP (scalable)* output card.<br>Name: IPOUT |  |

* Scaled output board can adjust various functions such as resolution, window layout, zoom, pan.

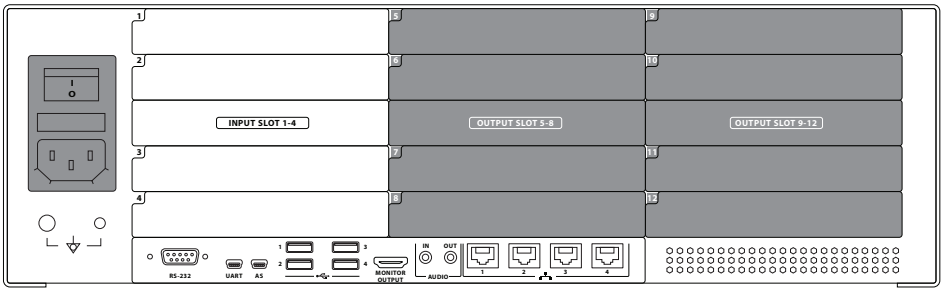
**Input**

Up to 4 input slots available.

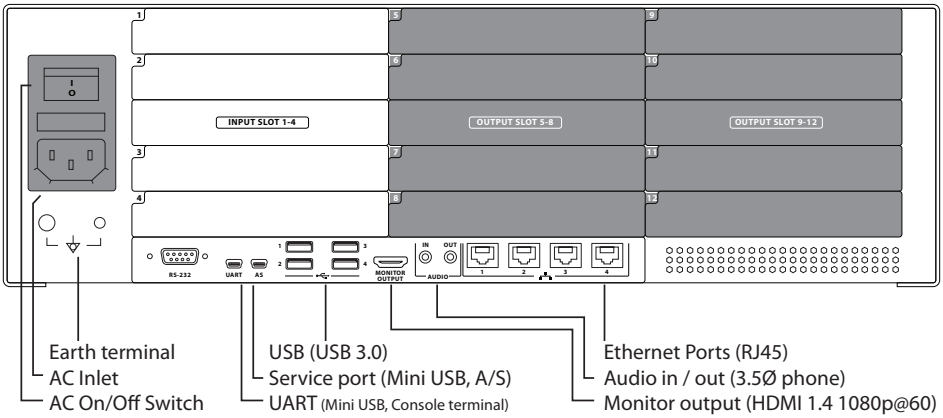
**Output**

Up to 8 output slots available.

**Output**



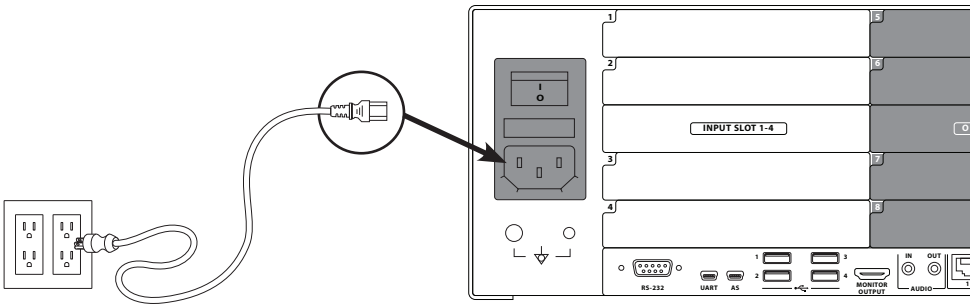
# Connections




| Item | Description |
|---|---|
| Earth terminal | A direct physical connection to ground or earth. |
| USB | Connects a keyboard, mouse, or memory stick, or firmware updating. |
| Service port | For factory use. |
| UART | Use for serial communication with other devices. |
| Monitor output | Connects an external web or PC screen for interface viewing and controlling. |
| Ethernet ports | For network streaming. |
| Audio in<br>Audio out | Connects audio. |

# Connect Power

Only use the specified plug and voltage. Power requirements are: AC 100~240V / 50~60Hz , 2A(max). Use the supplied 6 ft. hospital grade AC power cord. Improper power may cause electric shock or equipment damage. To avoid the risk of electric shock, this equipment must only be connected to a power supply with protective grounding.

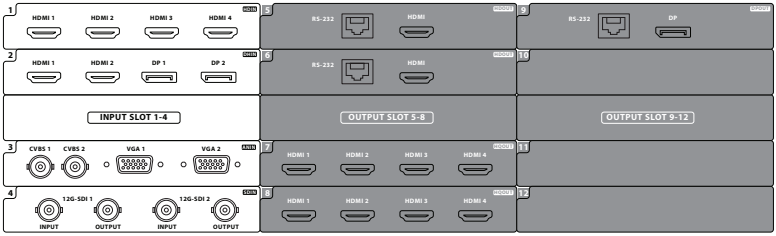


# Board Configurations

## Configuration A

| Input Boards | Description |
|---|---|
| HDIN | HDMI quad input x 1 |
| DHIN | HDMI/DP dual input x 1 |
| ANIN | CVBS/VGA (DSub15) dual input x 1 |
| SDIN | 12G SDI dual input + dual loop out x 1 |

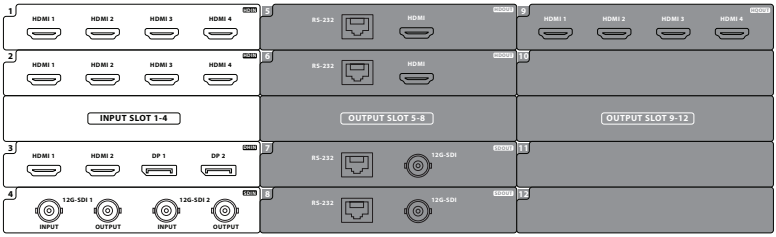
| Output Boards | Description |
|---|---|
| HDOUT | HDMI scaler output x 2 |
| DPOUT | DP scaler output x 1 |
| HQOUT | HDMI quad output x 2 |




## Configuration B

| Input Boards | Description |
|---|---|
| HDIN | HDMI quad input x 2 |
| DHIN | HDMI/DP dual input x 1 |
| SDIN | 12G SDI dual input + dual loop out x 1 |

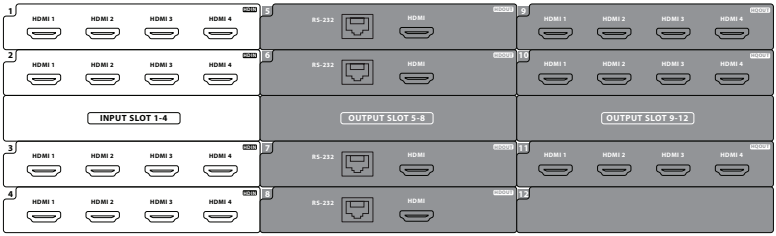
| Output Boards | Description |
|---|---|
| HDOUT | HDMI scaler output x 2 |
| SDOUT | 12G SDI scaler output x 2 |
| HQOUT | HDMI quad output x 1 |




## Configuration C

| Input Boards | Description |
|---|---|
| HDIN | HDMI quad input x 4 |

| Output Boards | Description |
|---|---|
| HDOUT | HDMI scaler output x 4 |
| HQOUT | HDMI quad output x 3 |

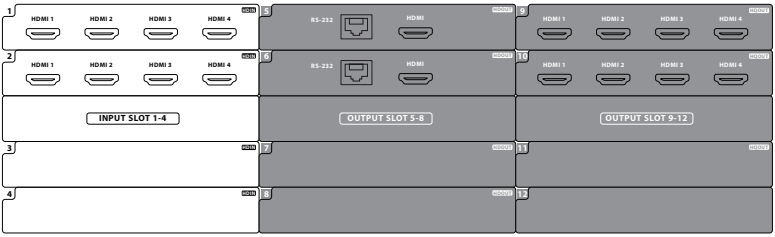


# Board Configurations

## Configuration D

| Input Boards | Description |
|---|---|
| HDIN | HDMI quad input x 2 |

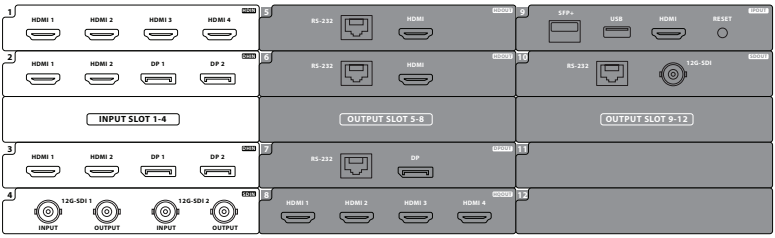
| Output Boards | Description |
|---|---|
| HDOUT | HDMI scaler output x 2 |
| HQOUT | HDMI quad output x 2 |



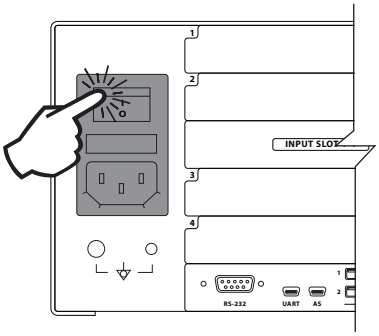

## Configuration E

| Input Boards | Description |
|---|---|
| HDIN | HDMI quad input x 2 |
| DHIN | HDMI/DP dual input x 1 |
| SDIN | 12G SDI dual input + dual loop out x 1 |

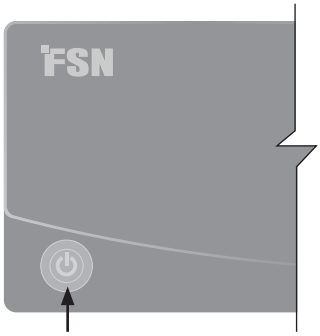
| Output Boards | Description |
|---|---|
| HDOUT | HDMI scaler output x 2 |
| DPOUT | DP scaler output x 1 |
| HQOUT | HDMI quad output x 1 |
| IPOUT | VoIP scaler output x 1 |
| SDOUT | 12G SDI scaler output x 1 |



## Starting IPS4000




1. Turn on power using the AC switch on the back of IPS4000.

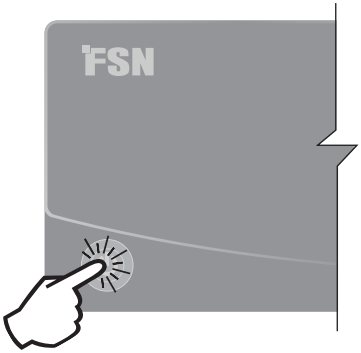



2. The power button on the front will illuminate green.




3. Press the power button to turn on IPS4000. The green light will flash during initialization, then go dark when the system is ready.

## Powering Off IPS4000

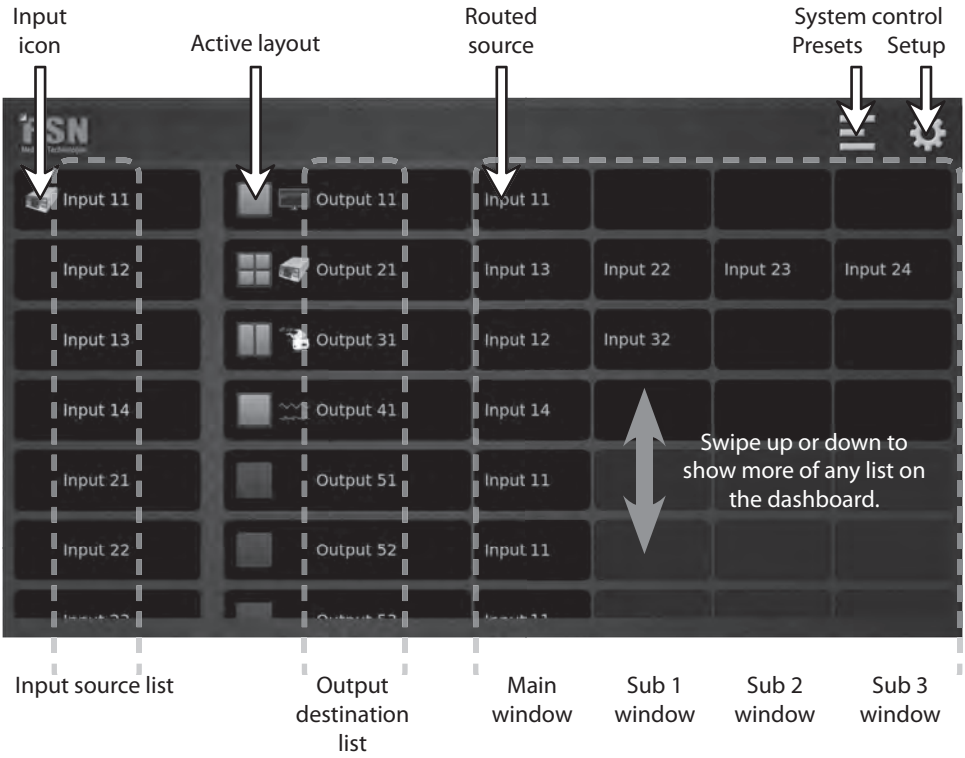



Press the power button, and a dialog will appear.

Press **Power Off** or **EXIT**. After powering off, the green light will stay on unless power is turned off on the back of IPS4000.

# Dashboard

After IPS4000 has initalized, the interface control dashboard will appear on the built-in 7 inch diagonal touch screen, or a connected external screen (tablet or PC).



# Dashboard - Routing

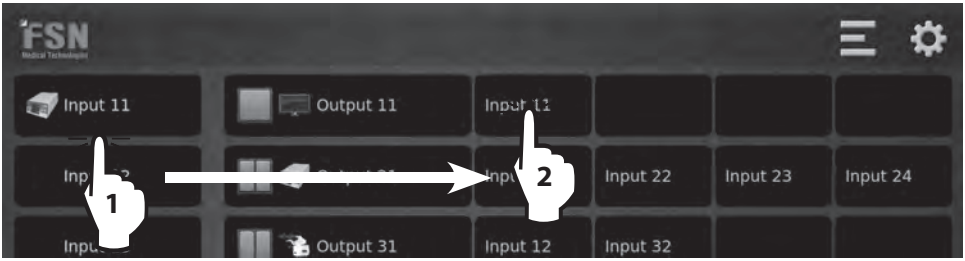


Active source.



**Step 1**
Tap an active source highlighted in yellow from the input source list.

**Step 2**
Tap a destination highlighted in yellow from the output destination list. The signal will be routed.

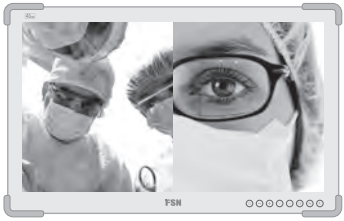


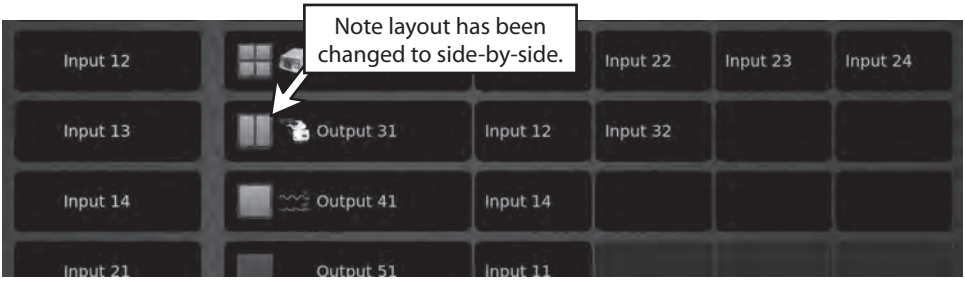

Conversely, routing can also be acheived by first selecting an output destination on the dashboard, then selecting an input source.

# Dashboard - Routing, Multi Window

For multi window layouts, route up to four active sources to the same output destination.





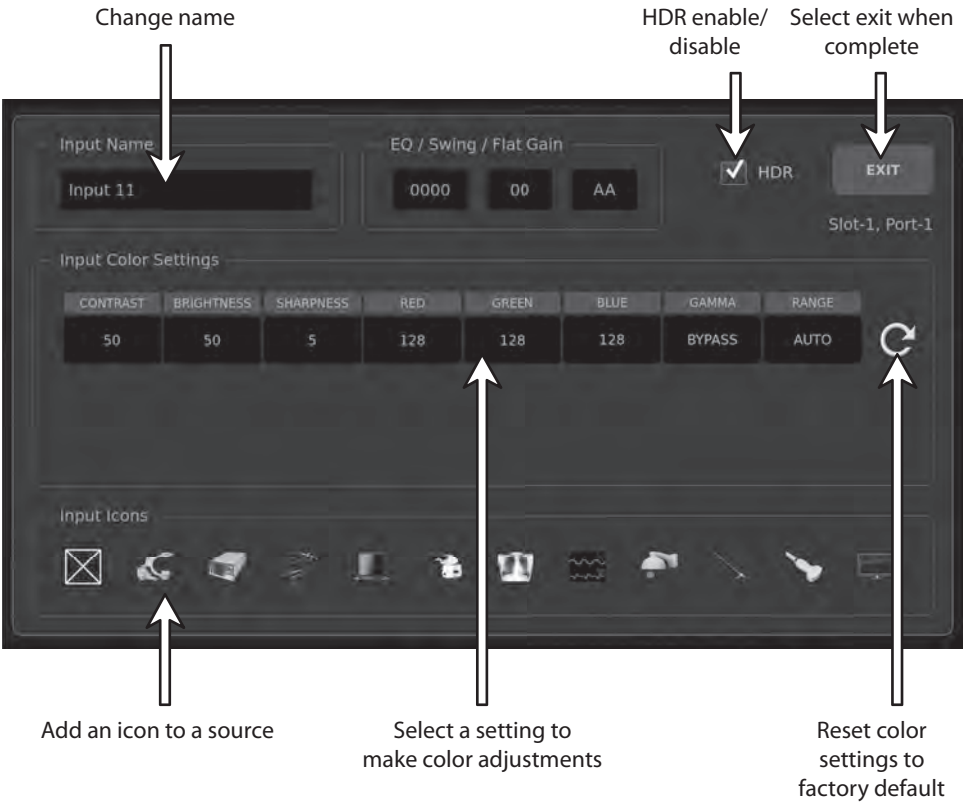


# Input Configurations

From the dashboard, press and hold a source to show the input configuration screen.




Configure each input source as desired. Changes take effect immediately.

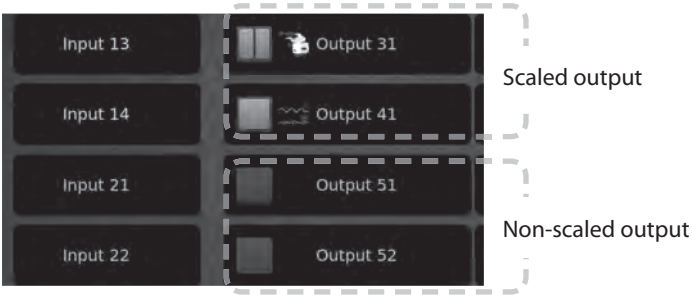


# Output Layout

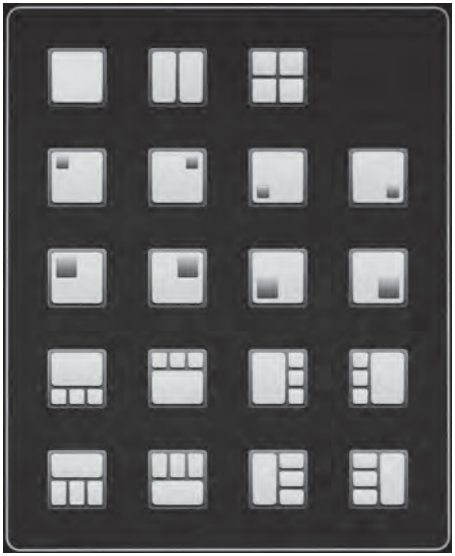
From the dashboard, select the layout icon to show the output layout options.




If the layout icon is gray, this indicates that multi window layouts are not available (non-scaled output board).




Select the desired output window layout. Changes take effect immediately.



# Output Configurations

From the dashboard, press and hold an output destination to show the output configuration screen.




Configure each output destination as desired. Changes take effect immediately.

Change name.

Select exit when complete.



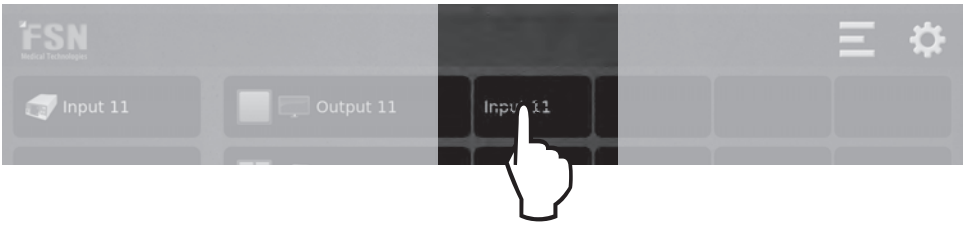

Add an icon to a destination.

Select an output resolution setting.

When a non-scaled output board is used (gray output layout icon), resolution adjustments are not available.

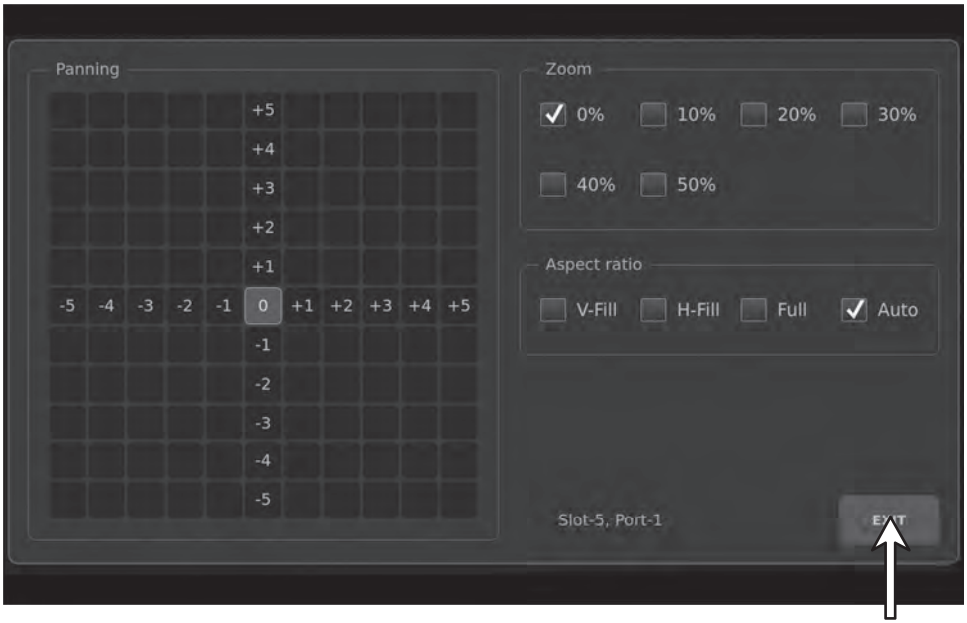
# Routed Source Configurations

From the dashboard, press and hold a routed source to show the configuration screen.




If the layout icon is gray, this indicates that routed source configurations are not available (non-scaled output board).

Configure pan, zoom, and aspect ratio as desired. Changes take effect immediately.




Select exit when complete.

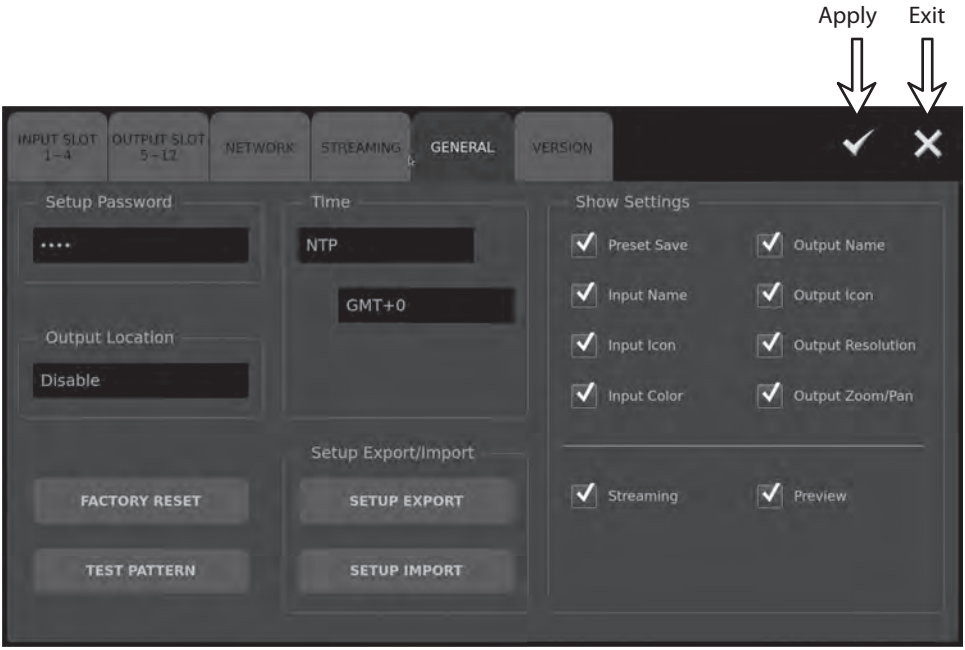
# Setup

From the dashboard, select the setup icon. Setup is passwaord protected. The initial password is 0000.




Tabs in the setup screen control functions as outlined below.

| | | |
|---|---|---|
| **INPUT SLOT 1-4** - Setup input slot boards. Select to adjust port order. | **OUTPUT SLOT 5-12** - Setup output slot boards. Select to adjust port order. | **NETWORK** - Setup network addresses, servers, and other configurations. |
| **STREAMING** - Setup streaming channels and volume. | **GENERAL** - Setup password and time, show or hide features, identify output locations, export or import saved settings. | **VERSION** - View and update firmware, typically using a USB memory stick. |

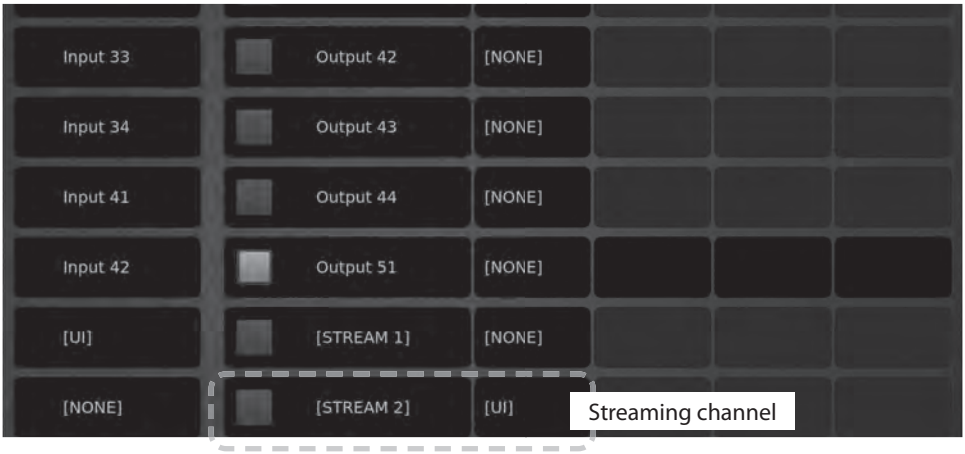


# Streaming

**Route a source to a destination window**

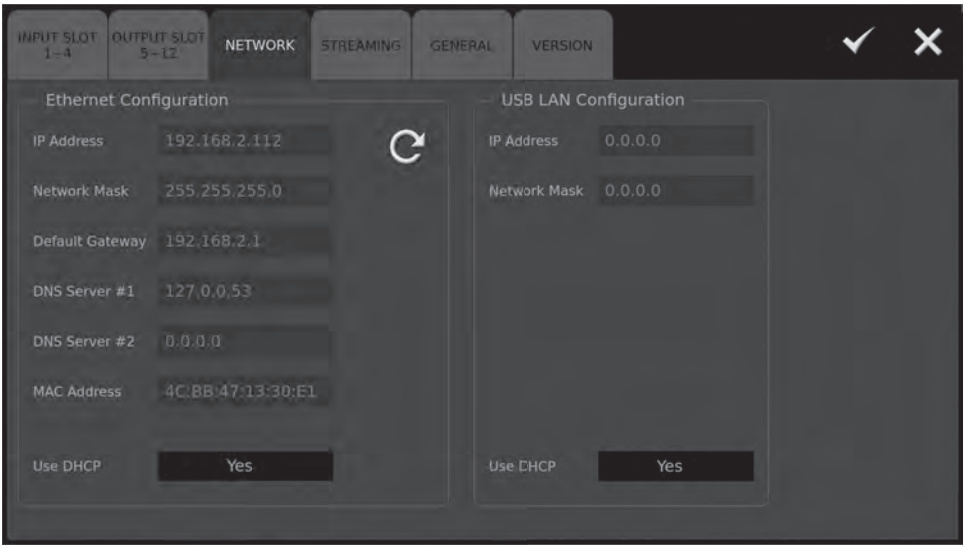
1. Click a source and the source becomes highlighted.
2. Route the highlighted source to the desired streaming channel [STREAM 2].

[STREAM 1] channel is used for controller streaming via the Web GUI and requires caution during use.




**Check network information**

1. IP address verification is required to connect to the streaming server.
2. The IP address can be found on the 'NETWORK' tab of the setup page.



# Streaming

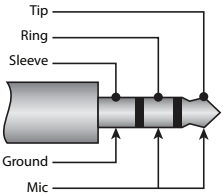
**Connect to streaming server using a web browser**

1. Launch a web browser such as Chrome.
2. Enter the IPS4000 IP address in the browser address bar.
3. http://IP Address/player (Example) http://192.168.11.143/player
4. Up to 8 sockets can be connected for streaming on the same network.

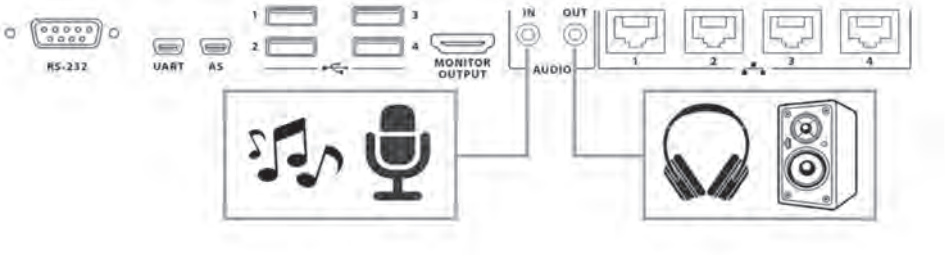



**Audio connection**

1. Bi-directional audio transmission is supported via streaming.
2. Connect the device to be transmitted, such as a player or microphone, to the AUDIO IN port (3.5mm TRS connector plug).
3. Connect a headset or speaker to the AUDIO OUT port (3.5mm TRS connector plug).
4. Up to 8 sockets can be connected on the same network, and conference calls are supported.




Condenser microphone with an external power supply and 3.5mm TRS connector plug must be used.



# Presets

From the dashboard, select the user preset icon to name presets or save and load system configurations.




To change a preset name, select the preset name, edit and press the APPLY button.




To save a current IPS4000 configuration as a preset, select a preset ID/NAME and press the SAVE button. The system will initialize.

To recall a saved preset, select a preset ID/NAME and press the LOAD button. The system will initialize.

# General Specification

| Item | Description |
|---|---|
| Model | IPS4000 Rev.02 |
| Input | 4 board slots, 5 board options. Can be installed in any input slot. |
| Output | 8 board slots, 5 board options. Can be installed in any output slot. |
| Control | Internal screen: built-in front 7 inch diagonal touch screen display.<br>External: mouse and keyboard with monitor output display, or tablet/PC screen via web. |
| OSD Language | English |
| Power | AC 100~240V / 50~60Hz , 2A-1A |
| Serial Communication | RS-232C |
| Network | Ethernet TCP/IP |
| Unit Dimension | 437(W) x 140(H) x 423(D) mm<br>17.21(W) x 5.51(H) x 16.65(D) inch |
| Package Dimension | 520 (W) x 237 (H) x 592 (D)<br>20.47 (W) x 9.33 (H) x 23.31 (D) |
| Weight | 10.7 kg, 23.59 lbs. (unit)<br>14 kg, 30.86 lbs. (shipping package) |
| Compliance & Certifications | ANSI/AAMI ES60601-1, CAN/CSA-C22.2 NO.60601-1:14, IEC/EN60601-1,<br>FCC Part 15 subpart B, CE(EN60601-1-2,EN55011,EN61000-3-2/3), RoHS |

# Input/Output Characteristics

| Signal | Type | Connector | Supported Resolution |
|---|---|---|---|
| Input | HDMI | HDMI A | Up to 4096x2160 / 60Hz |
| | DP | DisplayPort (20P) | Up to 4096x2160 / 60Hz |
| | 12G-SDI | BNC | Up to 4096x2160 / 60Hz |
| | Analog | VGA - Dsub15<br>CVBS - BNC | VGA up to 1920x1080 / 60Hz<br>CVBS: 480i, 576i |
| Output | Scaled HDMI | HDMI A | 1920x1080 / 50Hz<br>1920x1080 / 60Hz<br>3840x2160 / 50Hz<br>3840x2160 / 60Hz |
| | Non-scaled HDMI | | Up to 3840x2160 / 60Hz |
| | Scaled DP | DisplayPort (20P) | 1920x1080 / 50Hz<br>1920x1080 / 60Hz<br>3840x2160 / 50Hz<br>3840x2160 / 60Hz |
| | Non-scaled DP | | Up to 3840x2160 / 60Hz |
| | 12G-SDI | BNC | 1920x1080 / 50Hz<br>1920x1080 / 60Hz<br>3840x2160 / 50Hz<br>3840x2160 / 60Hz |
| | VoIP | 10G SFP+ | Up to 3840x2160 / 60Hz |

# Standard Input Signal Table

| Resolution | Timing Information | | | Signal Source | | | | |
|---|---|---|---|---|---|---|---|---|
| | H-Freq (KHz) | V-Freq (Hz) | Clock (MHz) | HDMI | DP | SDI (12G) | CVBS | VGA |
| 640 x 480 | 31.47 | 59.94 | 25.173 | • | • | | | • |
| 640 x 480 | 37.86 | 72.82 | 31.503 | • | • | | | • |
| 640 x 480 | 37.50 | 74.99 | 31.496 | • | • | | | • |
| 640 x 480 | 43.27 | 85.01 | 36.001 | • | • | | | |
| 800 x 600 | 35.16 | 56.25 | 36.000 | • | • | | | • |
| 800 x 600 | 37.88 | 60.32 | 40.000 | • | • | | | • |
| 800 x 600 | 48.08 | 72.19 | 50.000 | • | • | | | • |
| 800 x 600 | 46.88 | 75.00 | 49.500 | • | • | | | • |
| 800 x 600 | 53.67 | 85.06 | 56.250 | • | • | | | |
| 1024 x 768 | 48.36 | 60.00 | 65.000 | • | • | | | • |
| 1024 x 768 | 56.48 | 70.07 | 75.000 | • | • | | | • |
| 1024 x 768 | 60.02 | 75.03 | 78.750 | • | • | | | • |
| 1024 x 768 | 68.68 | 85.00 | 94.500 | • | • | | | |
| 1152 x 864 | 67.50 | 75.00 | 108.000 | • | • | | | • |
| 1280 x 720 | 44.76 | 60.00 | 74.486 | • | • | | | • |
| 1280 x 720 | 56.63 | 75.30 | 96.036 | • | • | | | • |
| 1280 x 720 | 58.63 | 84.84 | 117.500 | • | • | | | |
| 1280 x 960 | 60.02 | 60.02 | 108.043 | • | • | | | • |
| 1280 x 960 | 85.99 | 85.05 | 148.582 | • | • | | | |
| 1280 x 1024 | 63.98 | 60.02 | 108.500 | • | • | | | • |
| 1280 x 1024 | 79.98 | 75.03 | 135.000 | • | • | | | • |
| 1280 x 1024 | 91.15 | 85.02 | 157.500 | • | • | | | |
| 1600 x 1200 | 74.01 | 60.00 | 162.000 | • | • | | | |
| 1680 x 1050 | 64.67 | 59.88 | 119.000 | • | • | | | • |
| 1920 x 1200 | 74.04 | 59.95 | 154.000 | • | • | | | |
| 720 x 480i | 15.74 | 59.94 | 13.500 | • | | • | • | • |
| 720 x 576i | 15.63 | 50.00 | 13.500 | • | | • | • | • |
| 1280 x 720p | 22.50 | 30.00 | 74.250 | • | • | • | | • |
| 1280 x 720p | 37.50 | 50.00 | 74.250 | • | • | • | | • |
| 1280 x 720p | 44.96 | 59.94 | 74.176 | • | • | • | | • |
| 1280 x 720p | 45.00 | 60.00 | 74.250 | • | • | • | | • |
| 1920 x 1080i | 28.13 | 50.00 | 74.250 | • | • | • | | • |
| 1920 x 1080i | 33.72 | 59.94 | 74.176 | • | • | • | | • |
| 1920 x 1080p | 28.13 | 25.00 | 74.250 | • | • | • | | • |
| 1920 x 1080p | 33.72 | 29.97 | 74.176 | • | • | • | | • |
| 1920 x 1080p | 33.75 | 30.00 | 74.250 | • | • | • | | • |

# Standard Input Signal Table

| Resolution | Timing Information | | | Signal Source | | | | |
|---|---|---|---|---|---|---|---|---|
| | H-Freq (KHz) | V-Freq (Hz) | Clock (MHz) | HDMI | DP | SDI (12G) | CVBS | VGA |
| 1920 x 1080p | 56.25 | 50.00 | 148.500 | • | • | • | | • |
| 1920 x 1080p | 67.43 | 59.94 | 148.352 | • | • | • | | • |
| 1920 x 1080p | 67.50 | 60.00 | 148.500 | • | • | • | | • |
| 1920 x 2160 | 133.29 | 59.99 | 277.250 | • | • | | | |
| 3840 x 2160 | 67.50 | 30.00 | 297.00 | • | • | • | | |
| 3840 x 2160 | 112.50 | 50.00 | 594.00 | • | • | • | | |
| 3840 x 2160 | 134.87 | 59.94 | 593.41 | • | • | • | | |
| 3840 x 2160 | 135.00 | 60.00 | 594.00 | • | • | • | | |
| 4096 x 2160 | 67.50 | 30.00 | 297.00 | • | • | • | | |
| 4096 x 2160 | 112.50 | 50.00 | 594.00 | • | • | • | | |
| 4096 x 2160 | 134.87 | 59.94 | 593.41 | • | • | • | | |
| 4096 x 2160 | 135.00 | 60.00 | 594.00 | • | • | • | | |

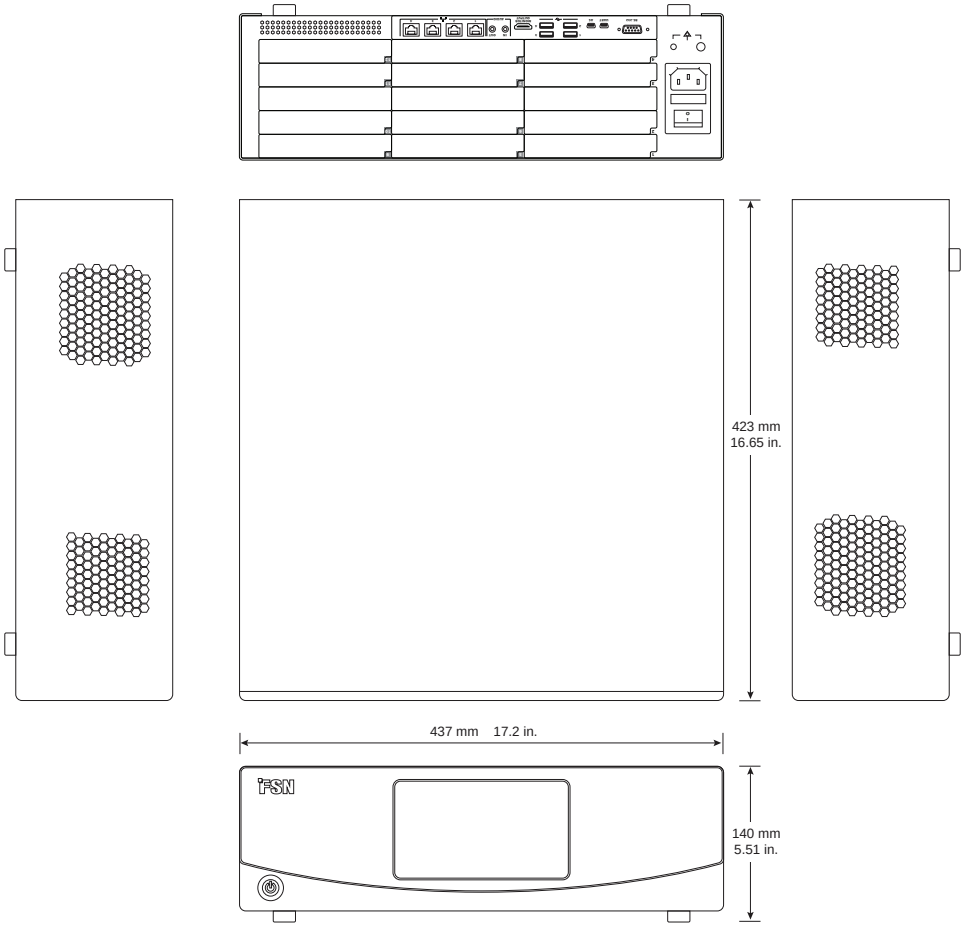
# Supported Output Signal Format

| Resolution | Sampling and Format | Pixel Depth | HDMI | DP | SDI (12G) |
|---|---|---|---|---|---|
| 3840 x 2160@25/30 | RGB 4 : 4 : 4 | 8/10 bit | • | • | |
| | YCbCr 4 : 4 : 4 | 8/10 bit | • | • | |
| | YCbCr 4 : 2 : 2 | 8/10 bit | • | • | • (10 bit) |
| 4096 x 2160@25/30 | RGB 4 : 4 : 4 | 8/10 bit | • | • | |
| | YCbCr 4 : 4 : 4 | 8/10 bit | • | • | |
| | YCbCr 4 : 2 : 2 | 8/10 bit | • | • | • (10 bit) |
| 3840 x 2160@50/60 | RGB 4 : 4 : 4 | 8 bit | • | • | |
| | YCbCr 4 : 4 : 4 | 8/10 bit | • | • | |
| | YCbCr 4 : 2 : 2 | 8/10 bit | • | • | • (10 bit) |
| | YCbCr 4 : 2 : 0 | 8 bit | • | • | |
| 4096 x 2160@25/30 | RGB 4 : 4 : 4 | 8 bit | • | • | |
| | YCbCr 4 : 4 : 4 | 8/10 bit | • | • | |
| | YCbCr 4 : 2 : 2 | 8/10 bit | • | • | • (10 bit) |
| | YCbCr 4 : 2 : 0 | 8 bit | • | • | |

# Standard Output Signal Table

| Resolution | Timing Information | | | Signal Source | | | |
|---|---|---|---|---|---|---|---|
| | H-Freq (KHz) | V-Freq (Hz) | Clock (MHz) | HDMI | DP | SDI (12G) | VoIP |
| 1920 x 1080p@50 | 56.25 | 50.00 | 148.500 | • | • | • | • |
| 1920 x 1080p@60 | 67.50 | 60.00 | 148.500 | • | • | • | • |
| 3840 x 2160@50 | 112.50 | 50.00 | 594.00 | • | • | • | • |
| 3840 x 2160@60 | 135.00 | 60.00 | 594.00 | • | • | • | • |

# Mechanical Drawing



# Cleaning Instructions

 Follow your hospital protocol for the handling of blood and body fluids. Clean the device with a diluted mixture of mild detergent and water. Use a soft cotton towel or swab. Use of certain detergents may cause degradation to the labels and plastic components of the product. Consult cleanser manufacturer to see if agent is compatible. Do not allow liquid to enter the device.

1. Clean the cabinet using a soft cotton cloth, lightly moistened with a recognized cleaning product for medical equipment.
2. Repeat with water only.
3. Wipe dry with a dry cloth.

The cabinet has been tested for resistance to the following products:
• Virex Ready-to-use Disinfectant Cleaner • Misty Clear Lemon 10 Disinfectant • Misty Multi-Purpose Disinfectant Cleaner • Misty Multi-Purpose Disinfectant Cleaner II • Zep Heavy-duty glass & all surface cleaner • Klear Screen • Screen TFT (Kontakt Chemie) • Incidin Foam (Ecolab) • Microzid • Mild detergent • Isopropyl alcohol with concentration < 5% • Household bleach (generic sodium hypochlorite, solutions of 5.25% sodium hypochlorite diluted with water between 1:10 and 1:100) • Precise Hospital Foam Cleaner Disinfectant

# Thank you for choosing our product.

**Service**
Contact the appropriate customer service listed below for product information or assistance.

**Warranty**
One year, parts and labor.

EC REP EC Representative
KTR Europe GmbH
Mergenthalerallee 77, Eschborn 65760, Germany
Tel : +49(0)6196-887170

**FORESEESON GmbH**
Industriestrasse 38a, 63150 Heusenstamm, Germany
Tel. +49(0)6104-643980

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