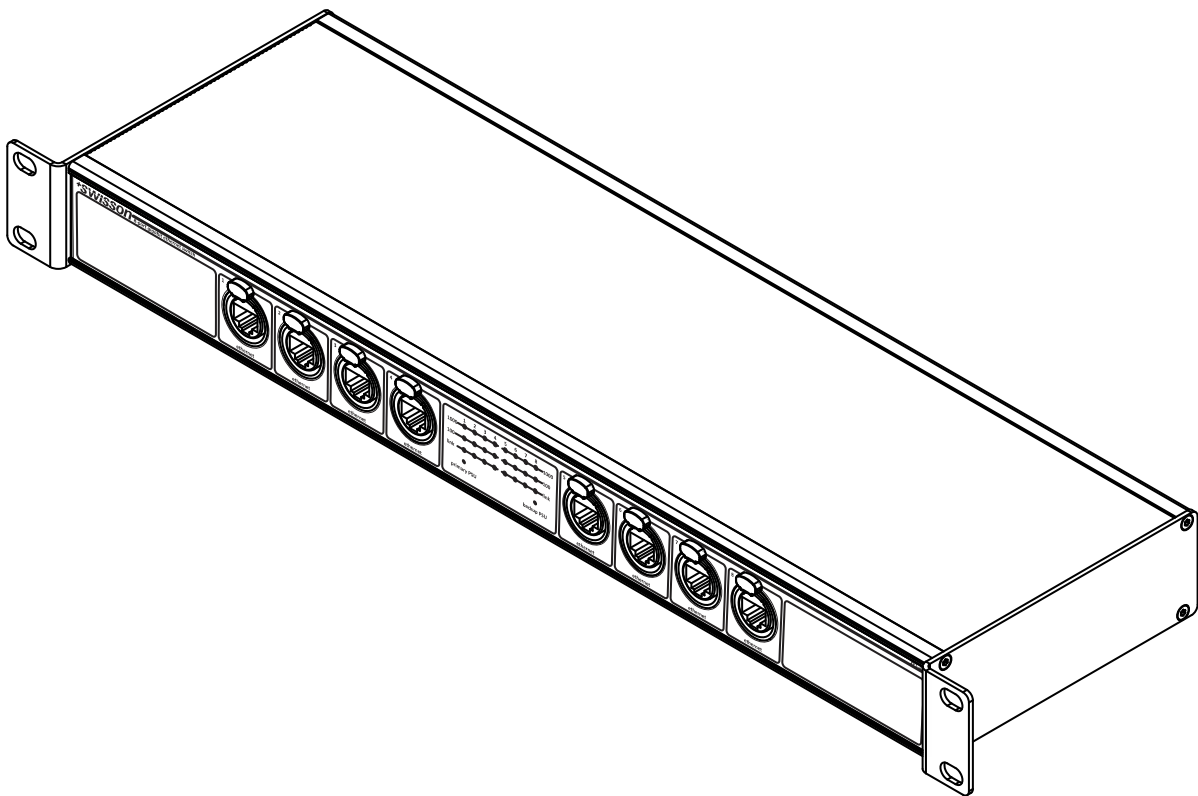


# XES-8G

## 8-Port Gigabit Ethernet Switch

### User Manual





## Index

Index .....	3
Introduction.....	4
Unpacking.....	5
Safety Information .....	5
Device Overview .....	7
Differentiated Services (DiffServ) Based QoS.....	8
Unlimited Broadcast Traffic.....	9
Ready to Forward Data Anytime .....	9
Technical Data .....	10
Ordering Information .....	11

## Introduction

Its ease of use makes the XES-8G a perfect fit for smaller and midrange productions with demanding requirements. With the growing popularity of TCP/IP and Ethernet based protocols for lighting and sound, it is expected that more and more network capacity will be required for those applications in the upcoming years. The XES-8G provides enough bandwidth for controlling the light of almost any show and it can handle the data rates required for transmitting many audio channels or even those needed for displaying high resolution motion pictures on LED walls.

As a layer 2 switch, the XES-8G is generally unaware of the application and therefore it works well with any protocol that operates on top of TCP/IP and with many Ethernet<sup>1</sup> based protocols. However, special precautions have been taken to ensure that the XES-8G works perfectly with Art-Net, sACN and Dante. The Art-Net specification for example expects the controller to only send data every few seconds or when an update is available. A typical switch might put itself into sleep mode when no traffic is observed, not so the XES-8G; it stays ready to forward data any-time without a delay.

With the increased acceptance of TCP/IP and Ethernet based protocols, the proper operation of the network and its equipment has become critical for many shows. In stage lighting for example, the control data transmitted from a light controller will often be passed through at least one switch, before it reaches any actual fixture. Therefore, it is crucial to professionally plan, configure and install the network for any show or venue. As a measure to further lower the chances of network outages, the XES-8G comes equipped with two separate switch mode PSUs that can be powered from two different mains supplies.

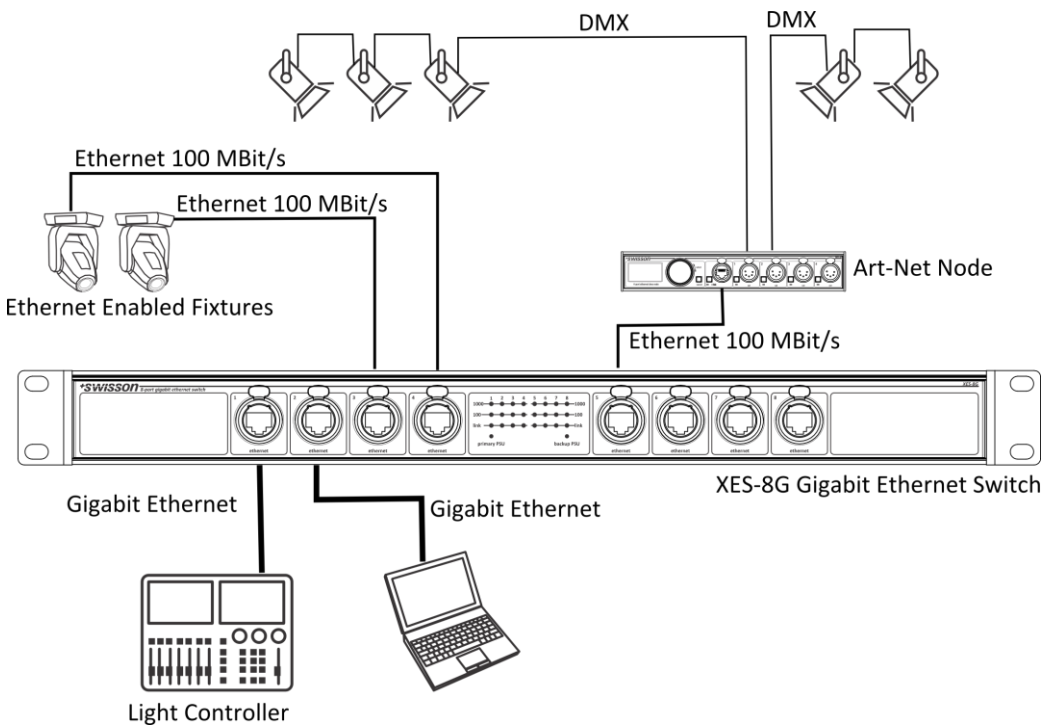
## Applications

- Concert lighting
- Live events
- Multimedia shows
- Theaters
- TV studios
- Theme parks
- Architectural lighting
- Touring / Festivals

---

<sup>1</sup> As a layer 2 switch, the XES-8G works with all protocols that operate on top of the Ethernet protocol. However, there are some protocols which are based on the lower layers of Ethernet but are not fully Ethernet compliant. Such protocols may not work with Ethernet switches. Examples of such protocols are: AES50, SuperMAC, HyperMAC and Aviom A-Net.

## Typical Application



## Unpacking

The XES-8G is packaged in a cardboard box including the following items:

- The device.
- This user manual.

## Safety Information

**It is essential that you read and understand this manual before operating the device and that you follow the instructions given below closely when you set up, connect and use the XES-8G. Do not use the device in any way or for any purpose not described in this user manual.**

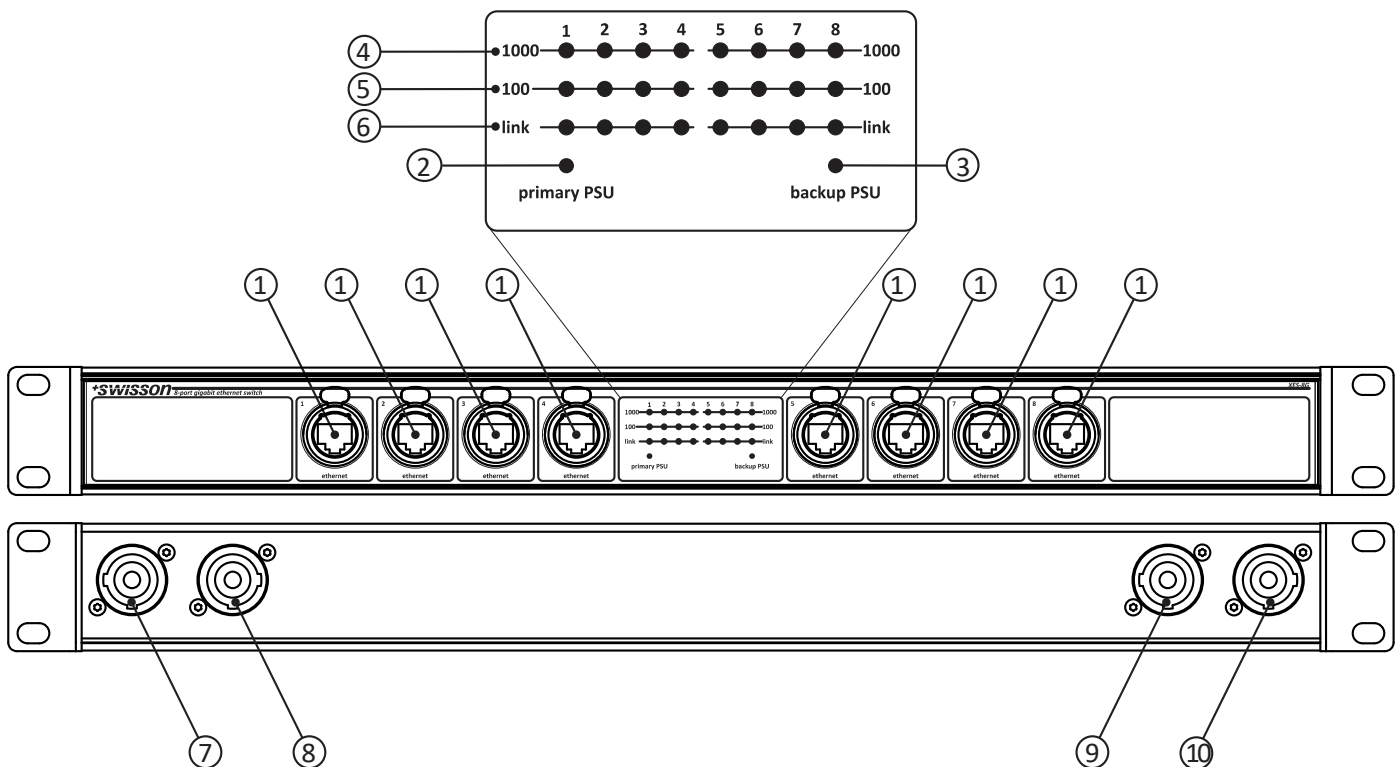
**This product is approved for professional use only; it is not intended for household usage. Pay attention to all warnings given in this manual and use this device only in accordance with applicable laws and regulations.**

## Safety Precautions

- **Disconnect the device from all AC power supplies before removing any cover or part, including fuses, even when not in use.**
- **Ensure that the device is electrically connected to ground (earth).**
- **Use only sources of AC power supply that comply with local building and electrical regulations and which have both overload and ground-fault (earth fault) protection.**
- **Before using the device, check that the power distribution equipment and cables are in perfect condition and rated for the electrical current consumed by all connected devices.**

- Isolate the device from power supply immediately if the power cable or the power plugs are in any way damaged, defective or wet, or if they show signs of overheating.
- Do not expose the device to rain or moisture.
- Do not operate the device if any cover or component is missing, damaged or deformed.
- Refer any service operation not described in this manual to Swisson.
- Provide unrestricted airflow around the device.
- Do not operate the device if the ambient temperature exceeds 55°C (131°F).
- Do not modify the device in any way not described in this manual or install other than genuine Swisson parts.
- Do not attempt to bypass any fuse. Replace any defective fuse with one of the specified type and rating only.
- When suspending the device, ensure that the supporting structure and all hardware used can hold at least 10 times the weight of all devices suspended together.
- When suspending the device, install a secondary attachment such as a safety cable that is approved by an official body, e.g. TÜV (German Technical Monitoring Association), for the total weight it secures. The safety cable must comply with EN 60598-2-17 section 17.6.6 and be capable of bearing a static suspended load of 10 times the weight of the device.
- Make sure that any external cover and rigging hardware is securely fastened.
- Provide an adequate clearance underneath the work area and a stable platform whenever installing, servicing or moving an overhead device.
- Do not use the device in areas where it is exposed to direct sunlight.
- Do not use the device in areas that are considered to be “highly inflammable”.

## Device Overview



1. 8 x Neutrik etherCON Cat 5e RJ45 connector. See Network Connectors on page 8.
2. Status LED for primary PSU.
3. Status LED for backup PSU.
4. 1000 Mbit/s Activity LED.
5. 100 Mbit/s Activity LED.
6. Link LED.
7. Neutrik powerCON input for primary PSU mains.
8. Neutrik powerCON output for looping through primary PSU mains.
9. Neutrik powerCON input for backup PSU mains.
10. Neutrik powerCON output for looping through backup PSU mains.

## Mains Connections

The user must supply suitable power cables. He may then either hard-wire the power cables to the building's electrical installation, providing an easily accessible power on/off switch close to the device, or install on the power cables a grounding-type (earthed) mains plug that is suitable for the local power outlets, following the power plug manufacturer's instructions.

It is possible, but not required to use two different mains sources. However, it is important to notice that the earth conductors of the two mains supplies will be short-circuited by connecting the two mains supplies to the same XES-8G. Consult a qualified electrician, if you have any doubts about the proper installation.

A blue *Neutrik powerCON NAC3FCA* cable mount connector must be used to supply power at the XES-8G's power input socket.

**Warning! For protection against dangerous electrical shocks, the device must be grounded (earthed). The local AC power source must be supplied with both overload and ground-fault (earth fault) protection.**

**Important! Only attach or remove a Neutrik powerCON connector while it is connected to the mains in case of an emergency, as doing so may cause arcing at the terminals that will damage the connectors.**

## Backup Power Supply

The device has two built-in PSUs. If both PSUs are connected to the mains, the primary PSU will supply the device while the backup PSU stays in standby mode. Should the primary PSU fail, the backup PSU will immediately start to power the device without an interruption.

## Power Outlets

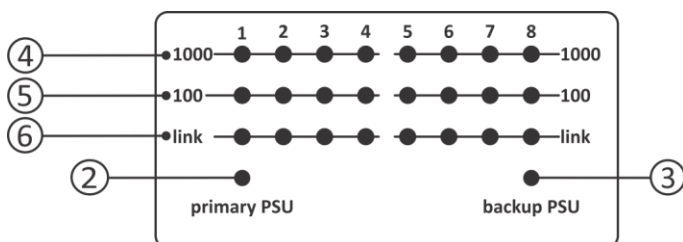
**Warning! The current load of each of the AC mains power outlets of the XES-8G must not exceed 19.8 amperes.**

- A power cable that meets the requirements specified in the safety instructions section of this manual must be used to connect the XES-8G to AC mains power and to connect other devices to the power outlets.
- A light-grey Neutrik powerCON NAC3FCB cable-mount connector must be used to draw AC mains power from the XES-8G's power outlet.
- No matter what the AC mains power voltage is, the current drawn by all the devices that draw AC mains power from one of the power outlets of an XES-8G must not exceed a total of 19.8 amperes. That is 19.8 amperes for the primary PSU mains loop through output and another 19.8 amperes that may be drawn from the backup PSU mains loop through output.

## Network Connectors and Cables

All network connectors are Neutrik etherCON Cat 5e RJ45 connectors. These connectors may be used with a standard RJ45 plug. For a better fixation, you may use a cable with a Neutrik etherCON plug. For Gigabit Ethernet (1000BASE-T) operation, Cat 5e (or better) RJ45 cables are required. 100 Mbit/s (100BASE-TX) requires at least Cat 5 cables. For 10 Mbit/s (10BASE-T) Cat 3 cables are sufficient. In any case, the maximum allowable cable length is 100 m (328 feet).

## Status LEDs



The XES-8G has three status LEDs for each of the network ports plus a status LED for either of the power supplies. The LED for the primary PSU (2) and the LED for the backup PSU indicate whether the respective PSU is powered from the mains and functioning.

The Link LEDs (6) are lit when the respective network port has established a network connection. The 100 Mbit/s Activity LEDs (5) indicate whether the corresponding port is working at 100 Mbit/s. When a 100 Mbit/s connection has been established, these LEDs also show the activity of the respective ports. The more activity is present at a port, the more frequently the corresponding LED will turn off for an instant. The 1000 Mbit/s Activity LEDs (4) light up when a Gigabit Ethernet connection has been established and display the port activity in the case of a Gigabit Ethernet link.

## Differentiated Services (DiffServ) Based QoS

The switch implements Differentiated Services (DiffServ) with four queues with the following queue assignments as required for optimal quality of service (QoS) with the Dante protocol:



- Traffic with the DSCP (Differentiated Services Code Point) CS7 (0x38) is assigned to queue 1.
- Packets with the DSCP EF (0x2E) are assigned to queue 2.
- Packets with the DSCP CS1 (0x08) are assigned to queue 3.
- All other traffic is processed by queue 4.

Queue 1 is strictly prioritized over all other queues. Similarly, queue 2 has strict priority over queues 3 and 4. The queues 3 and 4 are processed intermittently in a round robin fashion. Queue 3 is processed twice while queue 4 is processed once.

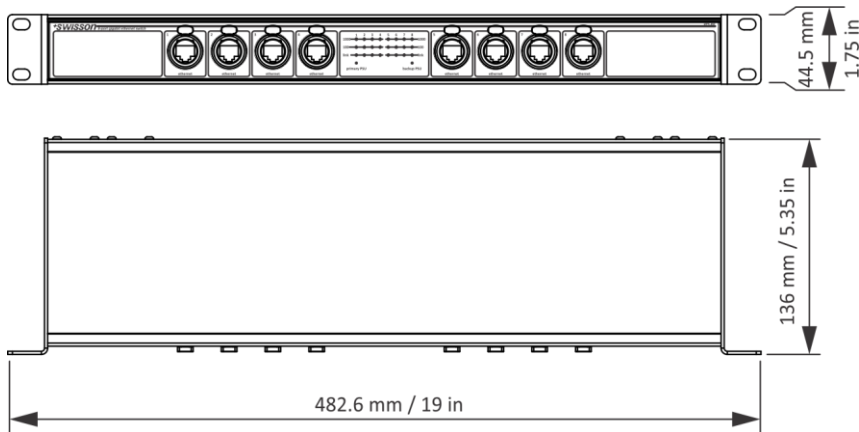
## Unlimited Broadcast Traffic

The device does not limit the amount of allowed broadcast traffic. This is important since some protocols such as Art-Net I depend heavily on broadcast messages.

## Ready to Forward Data Anytime

Some network protocols like Art-Net allow updates to be sent out only sporadically. Therefore, the XES-8G does not enter a sleep mode even if no network traffic is observed at all. If an update is sent after a while of silence, the XES-8G can forward the data without an extra delay in any case.

## Technical Data



Ambient temperature .....	-30°C...55°C (-22°F...131°F)
AC power .....	100 - 240 V nominal, 50/60 Hz
Typical power consumption .....	6.5 W
Ethernet (all ports) .....	1000BASE-T and 10BASE-T / 100BASE-TX, auto negotiating, auto MDI-X
Ethernet ports .....	8
Ethernet switch type.....	Non-blocking layer 2 Ethernet switch
Address look-up engine .....	4000 entries
Packet buffer .....	192 Kbytes
Art-Net/sACN capacity.....	> 1000 simultaneous universes <sup>2</sup>
Dante capacity .....	up to 128 channels per direction at 48 kHz <sup>2</sup>

## Dimensions

Depth .....	136 mm (5.35 in)
Width .....	482.6 mm (19 in)
Height.....	44.5 mm (1.75 in)
Weight.....	1.7 kg (3.75 lb.)

---

<sup>2</sup> Estimate under the assumption that the full bandwidth is available to this application.

## Ordering Information

10 42 18      XES-8G      8-port Gigabit Ethernet switch, rack mountable