innovason

PUSH THE LIMITS.



SR - 16

Mini Stage Box

User Manual

Edition : 2010

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Important Safety Information
read carefully before using this equipment!

Follow these instructions and keep them in a safe place! Keep in mind that damages due to failure to observe the instructions contained in this manual are not covered by warranty.

Instructions importantes de sécurité
lire soigneusement avant d'utiliser l'équipement!

Lisez et suivez ces instructions. Conservez les pour consultation ultérieure! Les dommages dus au non-respect des instructions contenues dans ce manuel ne sont pas couverts par la garantie.

Wichtige Sicherheitshinweise
vor Inbetriebnahme des Gerätes sorgfältig lesen!

Befolgen Sie die Anweisungen und bewahren Sie sie für spätere Fragen auf! Bei Schäden, die durch Nichtbeachten dieser Bedienungsanleitung verursacht werden, erlischt der Garantieanspruch!



Throughout this manual, the lightning bolt triangle is used to alert the user to the risk of electric shock.



The exclamation point triangle is used to alert the user to important operating or maintenance instructions.



Do Not Open the Cabinet

There are no user-serviceable components inside this product. Opening the cabinet may present a shock hazard, and any modification to the product will void your warranty. If it is necessary to open the device for maintenance or advanced configuration purposes, this is to be done by qualified personnel only after disconnecting the power cord and network cables!



Power supply

The device is to be connected only to a power supply as specified in this manual and marked on the equipment. The power cord connector being a means of disconnecting the power supply of the device, the outlet must be installed near the device and must be easily accessible. If the power cord is not supplied, electric cable including a connector complying with the standards of the country of operation shall be used.

This equipment must be earthed!

Do not block any of the ventilation openings!

Humidity

To reduce the risk of fire or shock, do not expose this device to rain or moisture. Do not place objects filled with liquid on this device.

Installation Location

To ensure proper operation and to avoid safety hazards, the device must be installed in a 19" rack mount chassis. If this is not possible, place it on a firm and level surface. Avoid installation in extremely hot or cold locations, or in an area that is exposed to direct sunlight or heating equipment. Avoid moist or humid locations.

Connection of this product to an IT power supply system is only in Norway.

Cleaning

Clean only with a soft, dry cloth. If necessary, after disconnecting the unit's cables, wipe it with a soft cloth dampened with mild soapy water, then with a fresh cloth with clean water. Wipe dry immediately with a dry cloth. NEVER use benzene, aerosol cleaners, thinner, alcohol or any other volatile cleaning agent. Do not use abrasive cleaners, which may damage the finish of metal or other parts.

Refer all servicing to qualified service personnel.

Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Moving the device

Before moving the unit, be certain to disconnect any cables that connect with other components.

In **Finland**:
Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.



Ne pas ouvrir l'appareil

L'ouverture du coffret peut produire un risque de choc électrique et toute modification du produit annule votre garantie. S'il est nécessaire d'ouvrir l'appareil pour l'entretien ou la configuration avancée, cela doit être fait par du personnel qualifié, après avoir débranché le cordon d'alimentation et les câbles réseaux !



Alimentation

Il est primordial de connecter l'appareil à une alimentation électrique telle que spécifiée dans ce manuel d´utilisateur et sur le matériel même. La fiche de prise du courant du câble d'alimentation pouvant servir de dispositif de sectionnement, le socle de prise de courant doit être installé à proximité de l'appareil et doit être aisément accessible. Dans le cas où le câble d'alimentation n'est pas livré, il faut utiliser un câble d'alimentation comprenant une prise de courant conforme aux normes du pays d'utilisation.

Cet équipement doit être raccordé à la terre !

N'obstruer aucune ouverture de ventilation !

Humidité

Afin de réduire les risques de feu ou de choc, n'exposez pas cet appareil à la pluie ou l'humidité. Ne placez pas d´objet contenant un liquide sur l'appareil.

Installation, mise en place

Afin d'assurer le fonctionnement correct et de minimiser les risques potentiels liés à la sécurité, l'appareil doit être installé dans un châssis 19 pouces. Si cela ne vous est pas possible, placez-le sur une surface solide et plane.

Évitez une installation dans des endroits très chauds ou très froids ainsi que dans des lieux exposés directement au soleil. Evitez les lieux présentant un excès d'humidité.

Le raccordement de ce produit à un régime d'alimentation IT n'est possible qu'en Norvège.

Nettoyage

Nettoyez uniquement avec un chiffon doux et sec. Si nécessaire, après avoir débranché le cordon d´alimentation, essuyez-le avec un chiffon doux humidifié avec de l´eau savonneuse puis rincez le á l´aide d un chiffon propre et d´eau claire.

Séchez-le immédiatement avec un chiffon sec. N'utilisez JAMAIS d´essence, de nettoyants en aérosols, d´alcool ou tout autre agent nettoyant volatile. N'utilisez pas de produits nettoyants abrasifs qui pourraient endommager les finitions métalliques ou d´autres pièces.

Réparation

Lorsque l'appareil a été endommagé quelle qu'en soit la cause ou qu'il ne fonctionne pas normalement, toute réparation doit être effectuée par du personnel qualifié. Avant de transporter l´unité, assurez-vous d'avoir bien déconnecté le cordon d'alimentation ainsi que tous les câbles la reliant à d'autres appareils.

In **Norway**:
Apparatet må tilkoples jordet stikkontakt.



Gerät nicht öffnen

Öffnen des Geräts kann eine Gefährdung durch Stromschlag und Erlöschen der Garantie zur Folge haben. Reparaturarbeiten und Änderungen der Hardwarekonfiguration dürfen nur von qualifiziertem Personal nach entfernen der Strom- und Netzwerkkabel durchgeführt werden.



Stromversorgung

Das Gerät darf nur mit der in dieser Bedienungsanleitung und auf dem Gerät angegebenen Stromversorgung betrieben werden. Da das Kabel der Unterbrechung der Stromzufuhr dienen kann, muß die Steckdose in Reichweite des Gerätes angebracht und leicht zugänglich sein. Sollte im Lieferumfang kein Kabel enthalten sein, so sind ein Kabel und ein Stecker zu verwenden, die den jeweiligen nationalen Standards des Landes der Nutzung entsprechen.

Erdung ist zu gewährleisten!

Belüftungsschlitze nicht verdecken!

Wasser und Feuchtigkeit

Um Brand- oder Stromschlagrisiken zu vermeiden, darf das Gerät nicht mit Feuchtigkeit in Berührung kommen.

Aufbau des Geräts

Um den einwandfreien Betrieb zu gewährleisten und Sicherheitsrisiken zu vermeiden, muss das Gerät in einem 19-Zoll Baugruppenrahmen montiert werden. Nur wenn dies nicht möglich ist, stellen Sie das Gerät auf einen festen, waagerechten Untergrund. Meiden Sie Standorten in den Nähe von Wärme- oder Feuchtigkeitsquellen sowie direkte Sonneneinstrahlung.

Anschluß dieses Produktes an eine spezielle IT-Stromversorgung ist nur in Norwegen genehmigt.

Reinigen des Geräts

Säubern Sie das Gerät nur mit einem weichen, trockenen Tuch. Bei Bedarf verwenden Sie ein mit mildem Seifenwasser befeuchtetes Tuch, nachdem Sie die Netzanschlußkabel aus der Steckdose gezogen haben, anschließend ein weiches, mit klarem Wasser befeuchtetes Tuch. Trocken Sie das Gerät sofort im Anschluß. Keinesfalls Benzol, Verdünner oder sonstige starke Lösungsmittel oder Scheuerreiniger verwenden, da hierdurch das Gehäuse beschädigt werden könnte.

Lassen Sie etwaige Reparaturen nur von qualifizierten Fachleuten durchführen!

Sollten das Netzkabel oder der Netzstecker beschädigt sein, oder sollte das Gerät selbst beschädigt worden sein (z. B. durch Eindringen von Feuchtigkeit durch Fall auf den Boden), oder sollte es nicht ordnungsgemäß funktionieren oder eine deutliche Funktionsabweichung aufweisen, ist es von qualifizierten Fachleuten zu reparieren.

In **Sweden**:
Apparaten skall anslutas till jordat uttag.

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INFORMATION FOR THE USER

This equipment has been tested and found to comply with the limits for a CLASS B digital device, pursuant to Part 15 of the FCC Rules and with the following European and international Standards for:

User safety	EMC
International : *IEC 60950 1 (2005)* *Europe :* *European Directive 2006/95/EC "Low Voltage Directive"* *EN60950 1 (2006)*	*International :* *CISPR22 (2005) Class B + A1/2005 + A2/2006* *United States :* *FCC rules Part 15 Class B* *Europe :* *European Directive : EMC 2004/108/EC* *Disturbance Emissions: EN55022 (2006) +A1/2007 Requirements for Information Technology Equipment (ITE)* *Immunity: EN55024(1998+A1/2001+A2/2003) (ITE)* Harmonics: EN61000-3-2 (2006) Voltage fluctuation and flickers test EN 61000-3-3 (1994+A1/2001+A2/2005)
RoHS: European directive 2002/95/EC aka "RoHS"	**Note: to comply with standard EN55024, use shielded network cables!**

In order to guarantee compliance with the above standards in an installation, the following must be done:

- the provided cables must not be modified
- additional cables used must have their respective shield connected to each extremity
- shielded network cables shall be used

The limits specified in the standards are designed to provide reasonable protection against harmful interference in an industrial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* reorient or relocate the receiving antenna.

* increase the separation between the equipment and the receiver.

* connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

* consult the dealer or an experienced audio/television technician for help.

Note: Connecting this device to peripheral devices that do not comply with CLASS A requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.

You have just acquired a SR-16 Mini stage box and we congratulate you!

SR-16 features ES-100 and Es-Giga (1) compatible network interfaces, with audio analog mic/line inputs and analog line outputs. They allow for realization of flexible and powerful EtherSound networks.
The manual at hand will guide through installation and operation. For any software related issue, please refer to the specific documentation provided in its on-line help.

(1) The ES-Giga firmware is still under development and not yet available. An update through software will be possible in future. At the same time we will provide an update of the manual at hand.

KEY FEATURES

SR-16:

- 16 balanced analog mono mic/line inputs*, with programmable analog gain on XLR-3 connectors (16 EtherSound channels).
- 16 servo-balanced analog mono line outputs**, with analog gain on Sub-D 25 connector (16 EtherSound channels)

Other features:

- 3 RJ45 ports for EtherSound interface
- 1 Word Clock input
- 1 Word Clock output
- 1 RS232/422 serial port
- 8 General Purpose Inputs (GPI)
- 8 General Purpose Outputs (GPO)
- 19“ 2 RU aerated enclosure
- Remote control and management via ‘EScontrol’ software

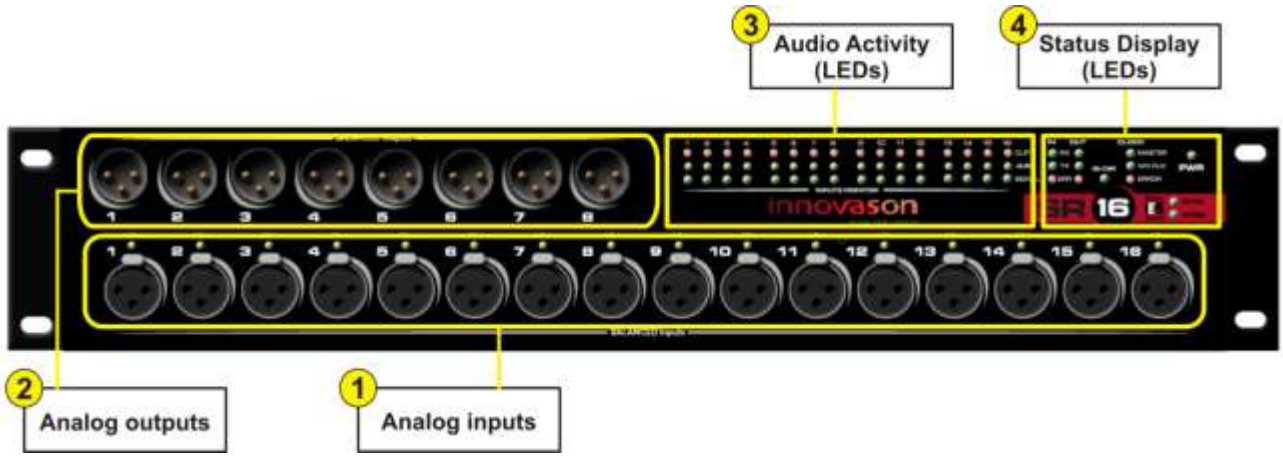
OVERVIEW

Contents of this package

The package consists of the following components:

- one SR-16 19” 2U rack device
- a power cord type IEC320 C13 with USA/Japan connector
- A Quick Start Guide

SR-16 front panel



1. Analog Inputs

16 balanced analog mono mic/line inputs* (inputs 1 – 8/1 – 16) with programmable analog gain on XLR-3 connectors.

2. Analog outputs

8 servo-balanced analog mono line outputs** with analog gain on male XLR-3 connectors

3. Vu-meters (LEDs)

- **1– 8 (1 – 16), vu-meters**
  These vu-meters relate to the signals on the inputs.
  - **SIGNAL**
    Green LEDs, indicating the presence of a signal exceeding -30 dBfs after A/D conversion
  - **-9 dB**
    Yellow LEDs, indicating that the nominal signal exceeds -9 dBfs
  - **CLIP**
    Red LEDs, indicating that the signal exceeds -2 dBfs and that therefore there is a high
    risk of saturation (clipping)
- **IN**
  These LEDs relate to the signals on the inputs.
  - **RX**
    Green LED, lit if the SR-16 IN port is connected to an Ethernet device, blinking if valid ES traffic reception

---

* can be used with unbalanced signals

** electronically servo-balanced outputs provide automatic level adjustment to accommodate either balanced or unbalanced lines

- **TX**

  Green LED, lit if the SR-16 IN port is connected to an Ethernet device, blinking if the SR-16
  is transmitting on this port
- **ERR**

  Red LED, lit for a few moments if reception of an incorrect frame (invalid CRC or packet non-ES)

- **OUT**

These LEDs relate to the signals on the outputs.

- **RX**

  Green LED, lit if the SR-16 OUT port is connected to an Ethernet device, blinking if valid ES
  traffic reception
- **TX**

  Green LED, lit if the SR-16 OUT port is connected to an Ethernet device, blinking if the SR-16 is transmitting on this port
- **ERR**

  Red LED, lit for a few moments if reception of an incorrect frame (invalid CRC or packet non-ES)

4. Status display (LEDs)

- **BIDIR**

  Indicates whether the device is inside a bi-directional network section
- **CLOCK**

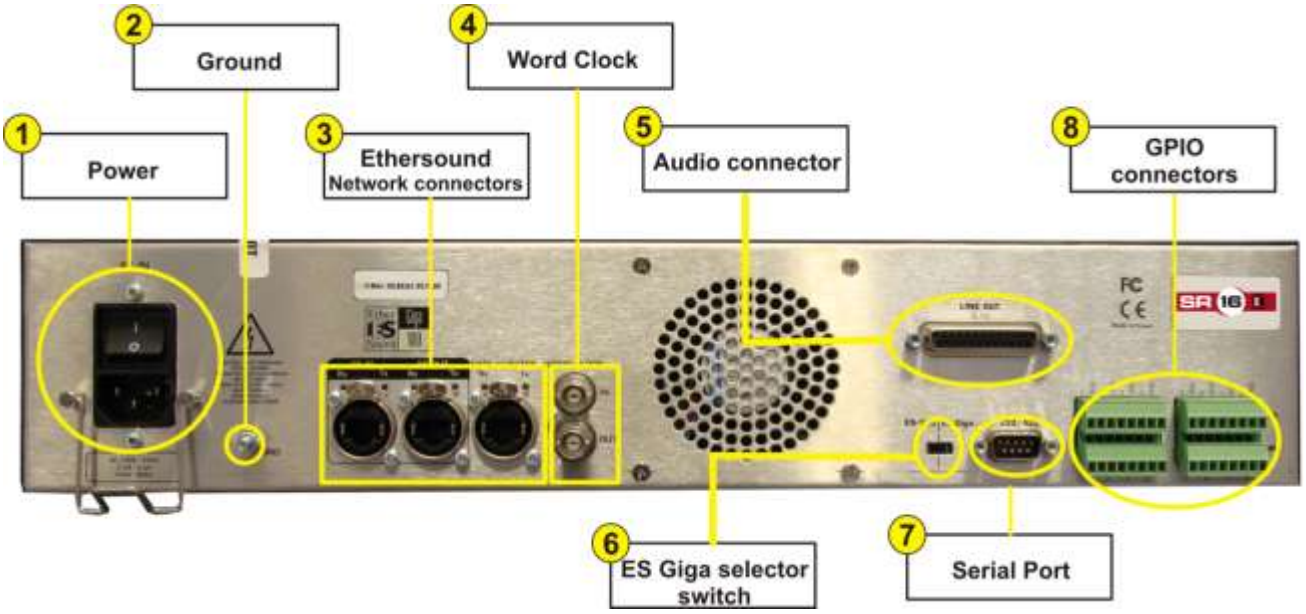
  These LEDs relate to the signals on the outputs.
  - **MASTER**
    Green LED, lit if the device provides the synchronization reference for the network
  - **WD CLK**
    Word Clock, green LED indicating that the Word Clock input is selected as source of synchronization for the device
  - **ERROR**
    Red LED, indicating that the source of synchronization selected (internal, network or Word Clock) is not valid (clock missing or frequency other than 44.1 kHz or
    48 kHz +/- 5%)
- **PWR**

  This LED (green) indicates that the device is powered up.
- **ES-100**

  LED (blue) indicating that the device is in ES-100 mode.
- **ES-GIGA**

  LED (blue) indicating that the device is in ES-Giga mode.

SR-16 back panel



1. **Power supply**
   Power plug MUST be earthed properly.

2. **Ground**
   Connect this ground bolt to the chassis of the mounting rack for a better grounding of the electronics, thus ensuring immunity to electromagnetic interference.

3. **Network connectors**
   These three Neutrik™ EtherCon™ RJ45 connectors allow of a steady and reliable connection to the EtherSound network. The IN port receives the descending EtherSound stream (*downstream*) and transmits the ascending EtherSound stream (*upstream*), while the OUT port receives the ascending EtherSound stream (*upstream*) and transmits the descending EtherSound stream (*downstream*). For more details on the concepts of “upstream” and “downstream”, please refer to the document “**EtherSound Overview**”. The “DATA/CONTROL” port allows device management and control of your network through an EtherSound network software such as EScontrol or ESmonitor.

4. **Word Clock**
   A Word Clock input and a Word Clock output allow for external synchronization. The Word Clock input can only be used with signals of a frequency close to 44.1 or 48 kHz.

5. **Audio connectors**
   On SR-16, a female Sub-D 25 connector is available to restore outputs 9 to 16 (analog, line level).

6. **ES100 / ES-Giga selector switch**
   Allows to select the mode of operation.

7. **Serial port**
   RS232/422 interface on DB9.
   Note: The serial port is not operational yet.

8. **GPIO connectors**
   These terminal blocks allow the connection of external control devices through protected GPIOs. See the dedicated appendix for more details.

   Note: The GPIOs are serviceable only through the configuration software.

INSTALLATION

Connecting your SR-16 rack

It is recommended to establish all connections before powering the device up.

Power supply

Before plugging the power cord, make sure that:

- The cord it is not damaged
- the AC outlet used is properly earthed

Just like for any other audio system, power the individual devices up following the audio path and power down in the opposite direction.

Do not allow anything to rest on the power cable. Keep the power cable away from where people could trip over it.

Network

The cable type most commonly used today is CAT5e.



The network connections are established via two Neutrik™ EtherCon™ RJ45 receptacles. Use the connector labeled “ES IN” to connect the descending EtherSound stream (downstream, coming from the ‘Primary Master’), the connector labeled “ES OUT” to connect the ascending EtherSound stream (‘upstream’).

Use the RJ45 labeled “DATA/CONTROL” to connect your SR-16 to any PC on the network running an EtherSound control and management software such as EScontrol to remotely configure and manage your network.

The Neutrik™ EtherCon™ RJ45 provide secure connection through a latching system. To disconnect the cable from the device, press the latch, then withdraw the cable while maintaining the latch pushed.

Example 1: bi-directional point-to-point transmission of eight / sixteen audio channels

This application is very easy with two EtherSound SR-16.

Connect a standard Ethernet cable between the “OUT” port of the first Ethernet bridge to the “IN” port of the second Ethernet bridge. Connections the inputs and the outputs of the two devices via the EtherSound channels.

Example 2: more complex architectures

System topology may be daisy chain, star, or a combination of both.

Generally speaking, the “OUT” of an EtherSound device has to be connected with the “IN” port of the following EtherSound device.

Repeat this step for each device in the network. Media converters (copper / fiber optic) can be used to establish connections over very long distances. It is also possible to use Ethernet switches to build complex topologies networks.

Synchronization

SR-16 provides several modes of synchronization.

Synchronization by means of:

- an internal oscillator (44.1 or 48 kHz)
- The network (except for “Primary Master” mode (see glossary))
- the Word clock input

If a SR-16 is “Primary Master”, it can be synchronized on its internal oscillator, or on the signal present on the Word Clock input.

If the equipment is not in “Primary Master” mode, it can be synchronized on the clock provided by the “Primary Master” through the network, or on the signal on its Word Clock input. In this last case, it has to be made sure that the reference clock of the “Primary Master” and the Word Clock signal provided to the device are synchronous.

These elements can be parameterized through the EScontrol configuration software, available on our web site.

Audio

The pinout used on the XLRs is standard: pin 1 carries the signal ground, pin 2 carries the positive signal (“hot”, +) and pin 3 carries the negative signal (“cold”, -).

GPIOs

SR-16 is delivered with eight GPIs and eight GPOs on terminal block connectors; the counterparts are provided. For details see Appendix A.

Serial port (RS232/422 on DB9)

SR-16 features an RS232/422 serial port on male DB9 on the back panel. Use this port to connect any compatible device. For the specifications of the serial port, please refer to appendix B of this manual).

Note: The serial port is not operational yet.

Connecting a computer to configure the device and the manage an EtherSound network

To connect a PC directly to a SR-16, it must be equipped with a network card. Use an Ethernet cable to connect the network card to the “DATA/CTRL” port of the SR-16.

It is also possible to connect to the device through a conventional Ethernet network.

Two software applications allow for configuration of a SR-16 and control of an EtherSound network: EScontrol, available on the Digigram web site, and ESmonitor available on Auvitran web site. For details on their use, please refer to their on-line help.

Important: If the device is not Primary Master, the DATA/CTRL port of the SR-16 can only be used to control the network from a PC, if all devices on the network operate with an EtherSound technology version (kernel) higher than 3.0. If this is not the case, only the DATA/CTRL port or the IN port of the Primary Master can be used for this purpose.

Firmware update

Innovason may decide to publish updates of the embedded firmware. It may then become necessary to upgrade your devices. In this case, all necessary Firmware updater tools and attached files will be available on the Innovason web site.

SPECIFICATIONS

Configuration

Size	2U 19” Rack: 88x482.6x325 mm
Power supply	100 – 250 V_{AC}, 50-60 Hz switching-mode, automatic voltage detection **WARNING:** Do not open the power supply module. It contains hazardous voltages. There are no user-serviceable parts inside. **ACHTUNG**: Gerät nicht öffnen, Stromschlaggefahr! Es befinden sich keine vom Nutzer zu wartenden Teile im Inneren!
Temp / humidity (non-condensing) **Operating:** **Storage:**	 0 °C – 50 °C / 5% - 90% -5 °C – 70 °C / 0% - 95%
Power consumption **at 100 V** **at 250 V**	**SR-16**: 0. 6 A 0.27 A
Net weight	~5,75 kg (~12.68 lbs)

Entrées

(measurements done at 48 kHz, with filter on the 22 Hz - 22 kHz range)

	SR-16
Balanced analog inputs (mono)	16 (line / mic level)
A/D converter resolution	24 bits
Programmable input gain	-22 to 71 dB by steps of 1 dB
Sampling frequency	48 kHz or 44.1 kHz
Maximum input level (minimum gain)	+22 dBu
Maximum input level (maximum gain)	-73 dBu
Input impedance	>5 kΩ
Frequency response at 48 kHz	20 Hz - 20 kHz: +0 /-0.5 dB
Dynamic range (A-weighted)	> 114 dB
THD + noise 1 kHz at –2 dBfs 1 kHz at –6 dBfs	 < -97 dB < -100 dB
Crosstalk 1 kHz at +22 dBu 15 kHz at +22 dBu	 < -115 dB < -105 dB
Word Clock	TTL level 44.1 or 48 kHz +/- 5% (75 ohm)
GPI	8 ‘Ground Sensing’ inputs

Microphone

(measurements done at 48 kHz, with filter on the 22 Hz- 22 kHz range)

Equivalent Input Noise G=60 dB Z=150 Ohms	< -126 dBu

Outputs

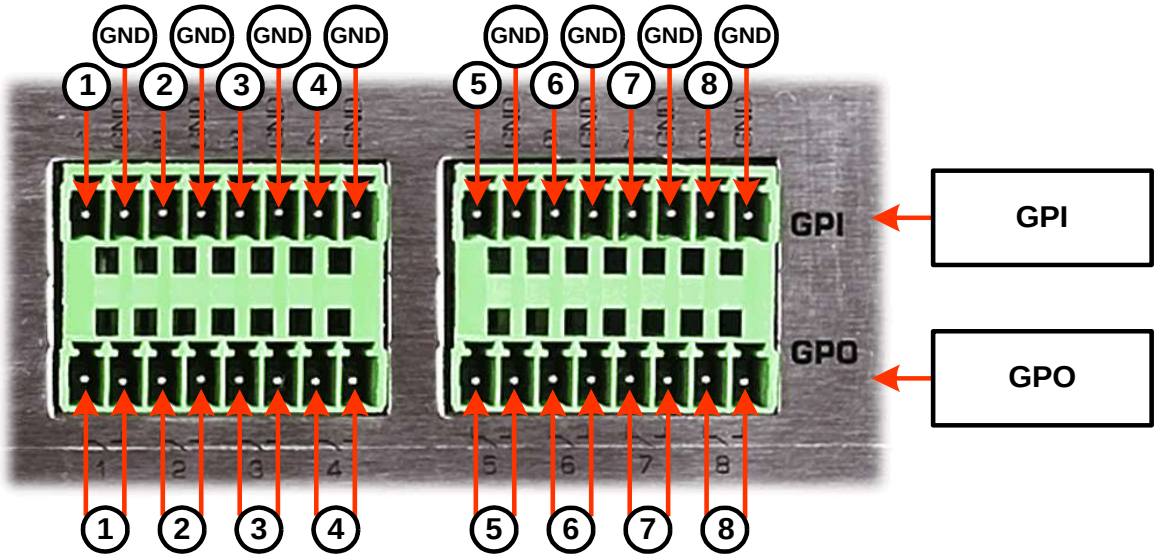
	SR-16
Servo-balanced analog outputs (mono)	16 (line level)
A/D converter resolution	24 bits
Sampling frequency	48 kHz or 44.1 kHz
Programmable attenuation	-118 dB to 0 dBby steps of 0,5 dB
Maximum output level/impedance	+22 dBu / < 100 Ω
Frequency response at 48 kHz	20 Hz - 20 kHz: +0 /-0.4 dB
Dynamic range (A-weighted)	> 114 dB
THD + noise **1 kHz at -2 dBfs** **1 kHz at -6 dBfs**	 < - 98 dB < -100 dB
Crosstalk: **1 kHz at +22 dBu** **15 kHz at +22 dBu**	 < -115 dB < -105 dB
Word Clock	TTL level (75 ohm)
GPO	8 relay outputs

Connectivity

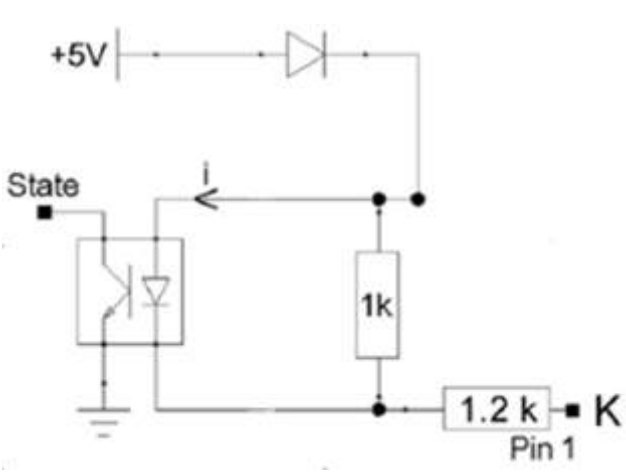
	SR-16
Analog inputs	16 inputs on female XLR-3
Analog outputs	8 outputs on male XLR-3 8 outputs on female DB-25 (back panel)
EtherSound	2 female RJ45 compatible Neutrik™ EtherCon™ (connections “IN”/“OUT”)
Control	1 female RJ45 compatible Neutrik™ EtherCon™ (“DATA”/“CONTROL”)
GPI	8 ‘*Ground Sensing*’ inputs on 2x8 pins terminal blocks
GPO	8 relay outputs on 2x8 pins terminal blocks
Serial port	RS232/422 on DB-9
Word Clock	IN/OUT on BNC

APPENDIX A: GPIO CONNECTORS

SR-16 features eight ground sensing GPIs and eight relay GPOs. A virtual link between GPIs and GPOs of various devices on the same EtherSound network can be realized by means of the EScontrol application. The GPIO pins are labeled 1 through 8 on the rear panel as illustrated.



General Purpose Inputs (GPIs)



The GPI status can be either “1” or “0”.

Switching the GPI state to “0”:

It is read “0” as soon as the pin labeled “**K**” on the scheme is connected to ground, e.g. to a pin labeled “GND”.

Switching the GPI state to “1”:

Leave pin K floating

The GPIs do not need external power supply.

GPI specifications

Minimum current i_{min} to switch GPI	1 mA
Maximum current i_{max} supported	60 mA
Maximum voltage V_K supported	+50 V_{DC} / -5 V_{DC}

General Purpose Outputs (GPOs)

The ES8 GPOs are relay outputs. They feature two pins each and are all configured the same way.

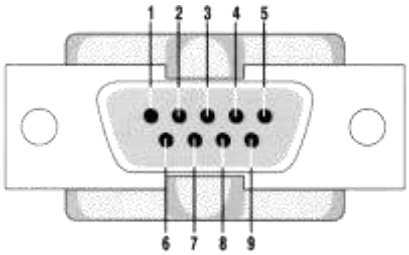
It responds to commands of configuration and management software sent by the clock source. If written at "1", the GPO closes the associated relay. If written at "0", the GPO opens the associated relay.

GPO relay specifications

Maximum power switching capability	10 W
Maximum switching current	500 mAdc
Maximum carrying current	1 ADC
Maximum switching voltage	100 V_{dc}
Typical life expectancy (switching max power)	10^6 operations

APPENDIX B: RS232/422 SERIAL PORT

RS232/422 on DB9



Pin	RS232 description:	RS422 description:
1	not connected	not connected
2	RxD (received data)	RxD - (received data)
3	TxD (transmitted data)	TxD - (transmitted data)
4	not connected	TxD - (transmitted data)
5	signal ground (GND)	signal ground (GND)
6	not connected	RxD + (received data)
7	RTS (request to send)	RTS (request to send)
8	CTS (clear to send)	CTS (clear to send)
9	signal ground (GND)	signal ground (GND)

APPENDIX D: GLOSSARY

AUDIO CHANNEL

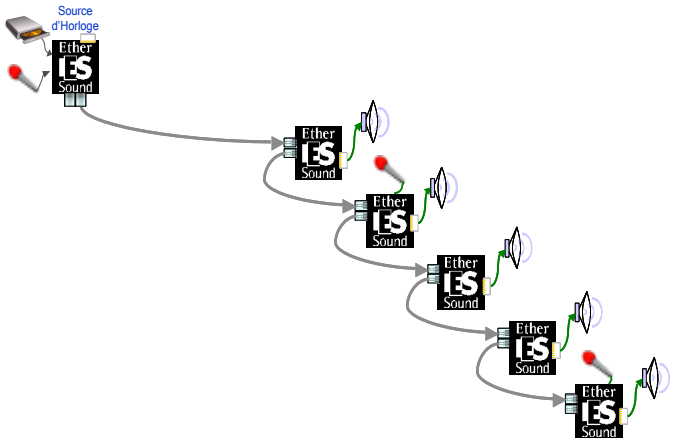
An **audio channel** is a single mono audio signal. By extension, an audio channel is one of the 64 slots of an EtherSound frame, i.e. a signal sampled at 48 kHz (or 44.1 kHz) with a 24-bit resolution. On an EtherSound connection, 64 audio channels are available in each direction.

SWITCH

Device to connect two segments of a Local Area Network. Seeking greater filtering and forwarding speeds, efforts were made to decrease the amount of time required to determine if a packet should be filtered or forwarded ('latency') by only examining the address information contained at the start of the Ethernet frame. The term 'Ethernet Switch' now is used for multiple-port-devices, which are able to filter and forward packets at nearly the speed of Ethernet ('wire speed') regardless of the technique.

DAISY CHAIN

The daisy chain is a network topology where all devices are linked "serially".



GPIOs

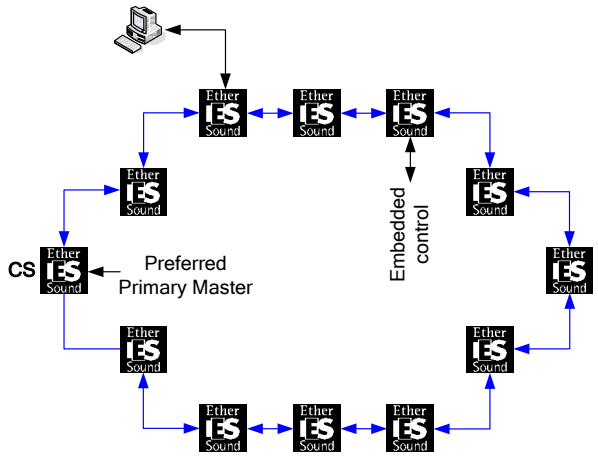
General Purpose Inputs Outputs. SR-16 features eight GPIs and eight GPOs. GPOs can be fully configured to remotely control external devices. GPIs can be used to receive commands from external devices.

PRIMARY MASTER

In an EtherSound ES-100 network, the first device of the chain (the one on which the IN port is not connected to any other EtherSound device) provides the synchronization for the entire network. This device is called '***Primary Master***'.

Ring

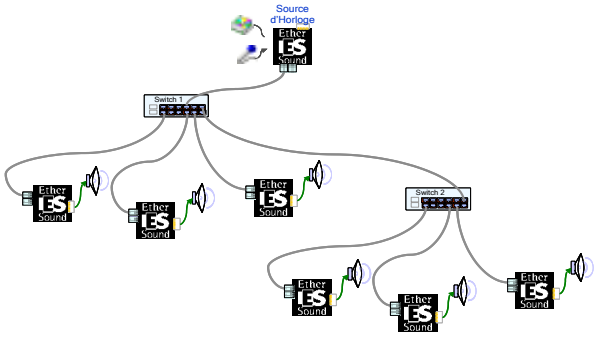
A ring topology may be used in order provide redundancy and thus increase reliability. This topology is to be considered an extension of the daisy chain topology, where the last device is physically connected to the first one. The priority "**Preferred Primary Master**" is defined by the network dministrator through the of EtherSound control software.



- In case of a cable malfunction, the first device following this failure is then automatically designated "**Primary Master**". The network remains entirely functional, it there no audio signal loss.
- In case of a device malfunction, the same recovery mechanism applies, but - obviously - the audio connected to the defective device will be missing.

STAR

The **Star** is a network topology where all devices are connected to a same unit (a switch in the following picture) that handles all communications. A star topology is able to transmit easily and efficiently the EtherSound channels towards a great number of destinations. However, it has to be kept in mind that in this case, the stream of audio data is mono-directional (from the "Primary Master" towards the other devices).



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