CATALOGUE
ISSUE 19

Designers & Manufacturers Of
Audio Broadcast Equipment

Index

INTRODUCTION

This is the 19th issue of the Glensound Electronics Ltd catalogue and there are more products in it than ever before. We continually strive to design new and innovative products and therefore nearly as soon as the catalogue is printed it there will be new products that haven't been included in it, so please keep looking at our new web site www.glensound.co.uk where all the latest product news will be published.

Glensound Electronics was established in 1966.
Its mission is to design & manufacture audio broadcast equipment to the highest standards.

Since 1966 Glensound Electronics' products have become World renowned for their design & build quality, indeed many products that were manufactured over 30 years ago are still in use today.

All equipment is designed & manufactured by Glensound Electronics in its own factory complex.
The manufacturing processes used have been developed over many years specifically to produce quality equipment. Producing everything in house means that minor alterations to equipment for specific customers can be easily accommodated and custom manufacturing of equipment can normally be undertaken economically.

Some of the equipment in this catalogue is sold in quantity around the World and as such is generally kept in stock, some of the more specialised pieces of equipment are only manufactured to order, so please allow enough time when ordering for your equipment to be manufactured.

If you require further information on any of our products, a written quotation or to place an order then please feel free to contact us.

Details of any new products will be published on our web site at **www.glensound.co.uk**

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ATM…AES47 (SONET/SDH)

IN BRIEF

Asynchronous Transfer Mode (ATM) is the backbone of Worlds Data networks.
ATM is a core protocol used over the SONET/SDH backbone of the Integrated Services Digital Network (ISDN)
AES47 is the Audio Engineering Society standard for distribution of audio over an ATM network.
IEC 62365 is the International Electro technical Commission standard that replicates AES47.

For many Years broadcasters have wanted to be able to reliably distribute audio in an expandable network environment, Internet Protocol (IP) due to it's low hardware cost and common standard should be the ideal audio network solution, however it's collision based packet architecture makes it unable to offer the reliability of service that is required for real time audio applications.

Like IP, ATM is a packet based network, where it differs from IP (and what makes it perfect for audio distribution) is that ATM offers a guaranteed bandwidth across the network. This means that when an audio packet is sent into the network you can be certain that it will emerge at it's destination with little delay and in the correct order in relation to other packets.

POINT TO POINT AUDIO DISTRIBUTION

In the simplest situation 2 pieces of our AES47 equipment can be directly connected together by a single cat5 cable (or fibre) without an ATM switch. This offers the ability to transmit and receive up to 8 off AES3 signals at a maximum of 192k sampling (24 bit).
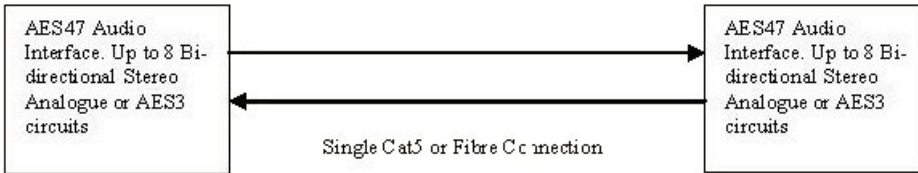
This is an ideal solution when 2 studios/ locations require a very high quality direct link of multiple audio sources by a single cable.

If the studios/ locations to be joined together are some distance apart, then our AES47 audio interfaces can be connected to an ATM circuit provided by a telecoms company and then 2 studios can be joined together that are in different cities or even in different countries.

MORE COMPLEX AUDIO DISTRIBUTION

AES47 can of course be distributed over a large ATM network. AES47 allows for point to point, point to multipoint **AND** multipoint to point working. There is no limit to the theoretical maximum size of an AES47 network.
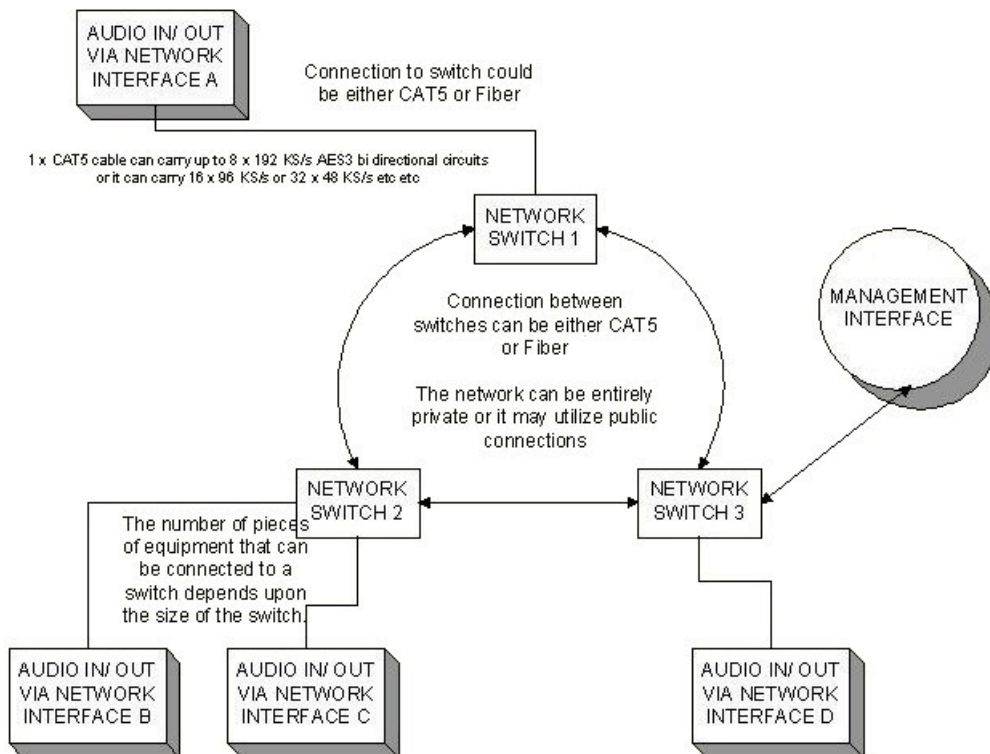
AES47 allows for a mixture of AES3 sample rates across the network.

OTHER ADVANTAGES OF AN ATM NETWORK

The advantages of networks in general are their expandability. Because of its guaranteed bandwidth this is particularly true of an ATM network. When an ATM network reaches capacity it does not slow down and allows more users to join, it continues with the guaranteed level of service for the existing users and only allows new users to join when a space becomes available. If the network needs expanding then more network switches or larger circuits between switches can easily be added.

ATM is also a fast distribution medium for data, with network latency of a few milliseconds 2 different sites really can be joined together in real time.

GLENSOUND AES47 HARDWARE

We have designed and manufacture a common set of ATM printed circuit boards (pcbs) that are available in a number of different packages. There are 2 main pcbs the network card and the channel card. The network card interfaces with the ATM network (or directly connects to another network card) and provides connectivity for up to 8 channel cards. The channel cards connect to your existing audio equipment either AES3 or stereo analogue. The network interface is STM-1 (155.52 Mbit/s) available as STS (electrical) or OC (optical).

As well as the network and channel cards the equipment requires a power supply. There are 2 basic different power supplies 1 running from 100 to 250 Volts AC and 1 running from 50 Volts DC. Equipment can be fitted with any combination of the 2 power supplies. The equipment will run from just a single power supply fitting the 2nd is for redundancy.

The power inlet panel also gives relay loop outputs to indicate alarm conditions, the type of faults indicated by the alarm can be user programmed by software.

The AES47 equipment is available in 1, 3 and 5RU 19 Inch subracks. The 1RU subrack houses just 1 network card and 1 channel card. The 3RU subrack houses 1 network and up to 4 channel cards. The 5RU subrack houses 1 network and up to 8 channel cards.

SOFTWARE

A comprehensive setup program is supplied with each AES47 subrack. This windows based software allows a user to set up and configure the ATM connection, the Audio connections and to control alarm conditions. The hardware does not require a permanent connection to a PC and once the initial parameters have been set no PC connection is required.
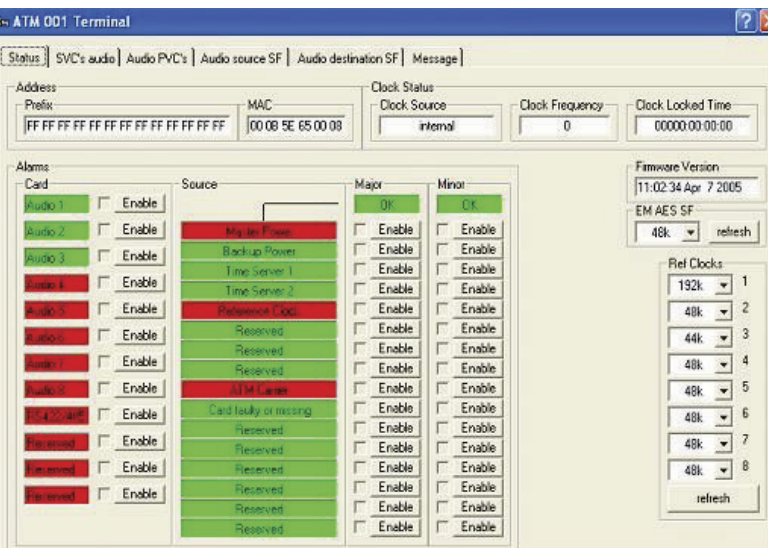
STATUS

This shows some basic information about the AES47 subrack, including the MAC address (a unique identifier for all pieces of ATM equipment) and allows the user to set the operation of the alarm relays.

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Currently we only support Permanent Virtual Circuits (PVC's). A PVC is one method of setting up a route across an ATM network. Each channel card can receive audio on one vci and transmit audio on up to 8 vci's. If a number of channels are all transmitting on the same vci, then the channel receiving that vci will mix the signals together.

AUDIO SOURCE SF

Comprehensive sample rate settings & converters are available.

For the analogue inputs ADC conversion can be set at any rate from 8 to 192 kHz.

For the AES3 inputs the sample rate being sent to the AES47 network can be fixed, in which case if the incoming AES3 sample rate does not match then sample rate converters will automatically switch in. Alternatively an AUTO mode is available where a range of acceptable sample rates can be set, if the AES3 input sample frequency matches one of the set rates then the AES3 signal will be transparently sent across the network, if the sample frequency does not match then sample rate converters will be switches in. This is a particularly useful facility if bandwidth across the ATM network needs to be managed carefully.

AUDIO DESTINATION SF

Sample rate conversion can also be set for audio being received from the AES47 network.

DAC can be set for the analogue outputs (an AUTO mode is available to prevent incompatible rates being set).

Sample rate converters can also be set for the incoming AES3 signals, these can be permanently fixed or like the Source SF an AUTO mode is available. The software is intelligent and will prevent unusable settings being programmed by the operator.

SOLUTIONS FOR ASYNCHRONOUS NETWORKS

As with any digital environment with lots of digital audio equipment the coherent locking of equipments clocks is important to prevent jitter. Single sites generally have a master clock, therefore 2 separate sites have 2 master clocks and although these 2 clocks are likely to be working to a high degree of accuracy they will inevitably not be completely in sync with each other. Joining up equipment on these 2 clocks via an ATM network could therefore potentially cause jitter. The technically correct solution is to lock all 'master' clocks at different sites together using satellites or a telecoms clock.

Inevitably sites are not always locked together. To cope with this our AES47 equipment incorporates a clever algorithm that is capable of realising that two clocks are not locked together and then as necessary to prevent audible jitter the equipment will drop or repeat samples during periods of silence in the audio or if not available during periods of consistent similar frequency and level.

GS1U-051 TIME CODE & REFERENCE CLOCK DISTRIBUTION AMPLIFIER

CLOSE UP OF GS1U-051

The Glensound GS1U-051 has been developed especially for use with the BBC ATM project. It is a distribution amplifier for a master reference frequency of 153.6KHz mixed with a standard time code signal. It is essential that the 153.6KHz reference frequency is not modulated with the time code and great care has been given to ensure an excellent performance.

Provision is made for two separate inputs of both reference frequency and time code. Front panel LEDs indicate the presence of signals and, along with front panel multi-turn presets, permit the correct levels to be set.

- 64 individually buffered 200 ohm outputs
- 4 outputs provided on each of 16 RJ45 front panel connectors
- 4 separate inputs provided on rear panel XLR connectors
- XLR input sockets are paralleled with plugs to simplify interconnection of 2 units
- Time code inputs are > 10k ohms and accept 0.5 to 5.5 volts pk to pk signals
- Reference frequency inputs are 600 ohms and accept 1 to 4 volts pk to pk signals
- Automatic selection of second source if first source fails
- Reference frequency sources are checked for frequency and amplitude
- Modulation products within +/- 500Hz of the ref frequency are > 90dB down
- Output level of reference frequency alone = 2v pk to pk into 200 ohms
- Output level of time code alone = 1v pk to pk into 200 ohms

GS-COM001 Intercom Unit

The GS-COM001 is a 2 part intercom unit consisting of a user handset and control panel type GS-COM001-CP and a 3U rack mounted base station type GS-COM001-SR. Although it is practical to use the system as an intercom system by itself its features make it ideal as an intercom unit for a studio fitted with one of our ATM interface sub racks (it was for this use that the unit was originally designed).

The base station and control panel are linked together by one single CAT5 cable that carries all audio, data & power circuits.

GS-COM001-CP Control Panel

This is designed as a free standing desktop unit.
It allows for communications to 7 different locations via the CAT5 link to the base station GS-COM001-SR.

6 off these locations feature identical facilities (called sources) while the 7th (called destination circuit) is slightly different. Each of the 7 communication circuits has its own dedicated BUZZ, CALL & ANSWER push switches.

BUZZ:
For the 6 source circuits, the switch illuminates in response to a BUZZ signal input on the associated serial data connection. It remains on until the switch is pressed to cancel the alert.
For the destination circuit, the switch illuminates only while there is an AMBER signal input present on the destination serial data connection. Pressing the switch transmits a BUZZ signal on the destination serial data connection (and generates a pulsed tone on the local buzzer).

CALL:
In all cases, the switch illuminates in response to a CALL signal input on the associated serial data connection. It remains on until the corresponding ANSWER switch is pressed to answer the call. Pressing the switch transmits a CALL signal on the associated serial data connection.

ANSWER:
In all cases, pressing the switch toggles the connection between the handset and the corresponding control line audio circuit. The switch is illuminated when the connection is made and, if present, the CALL waiting lamp is extinguished.

The Control Panel has two high brightness 'ON-AIR' LEDs, these can flash alternatively (Yellow) or be switched permanently on (Red) depending on serial data information supplied to the base station.

GS-COM001-CP Base Station

The base station has individual audio inputs and outputs for the 7 communication circuits, the level of which is nominal zero level, +/-6dB trimming pots are provided.

An individual RS422 connection is also provided for all the communication channels.

BELT PACK RANGE

This new range of equipment will be continuously added to, please check our web site **www.glensound.co.uk** for the latest details. We are always interested to hear of product suggestions to be included in this range. The concept of this range is small rugged belt pack units aimed at the outside broadcast/ recording/ production market. Please note that throughout this catalogue you will find many more products that are small and battery operated.

GS-FW021 Four Wire Box For Use With Headsets

The Glensound GS-FW021 is the smallest of our belt pack range and has a very long battery life (in excess of 100 hours). Three user selectable modes make it versatile for a number of uses and compatible with many other manufacturers' products.

FEATURES
- Battery powered from 9volt PP3
- Long battery life (in excess of 100 hours)
- Power on switch
- Power on LED
- Low battery indication
- 3 user selectable modes:
- 4 wire (for standard connection to other broadcast eqpt)
- Interrupt loop through (IFB) for monitoring & adding talkback over incoming audio
- 2 – wire conference mode for connecting multiple GS-FW021 together
- 2 – wire mode compatible with prospect C1B
- Headset connection on 3 pole 6.35mm (A/B gauge)
- Push to talk button for mic input
- Limiter circuit for mic input
- Headphone volume control
- Auxiliary audio input (on 3.5mm jack) fed to headphone circuit
- Transformer balanced 4 wire input/ output
- Maximum dimensions just 152 x 42 x 72mm (l x w x d)

GS-MCA001 Microphone Preamplifier

The Glensound GS-MCA001 is a portable, battery powered microphone preamplifier with limiter. It's lightweight, small and rugged construction makes it ideal for outside broadcast and film production. As well as offering a high quality compressor/ limiter circuit (with bypass) it also has selectable LF cuts, 48 volts phantom power and a rotary stepped gain control. A belt clip is included for hands free operation and the single PP3 9 Volt battery offers good operational life. Manufactured in Glensound's UK factory using high quality components & trusted manufacturing techniques the GS-MCA001 will give many years of reliable performance.

SPECIFICATIONS
- Frequency response: 20Hz to 20kHz > -1dB
- Noise @ Minimum Gain -72 dBu (RMS 20Hz to 20kHz)
- Noise @ Maximum Gain -52 dBu (RMS 20Hz to 20kHz)
- Equivalent input noise @ maximum gain 127 dBu
- Input Gain -25 to -75dB in 5dB steps
- Gain accuracy > +/- 0.3 dB in relation to front panel scale
- Maximum Output level: +19 dBu into high impedance
- Maximum Output level: +17 dBu into 600 Ohms
- Electronically balanced input
- Input impedance 1K2 Ohms
- Transformer Balanced Output
- Output impedance 50 Ohms
- THD + Noise: Measured at any gain setting (no limiter) <0.05%
- CUT LF front panel switched 160Hz/ Flat /80Hz @ 12dB per octave
- Limiter/ compressor circuit
- Maximum input level before clipping -6dBu (limiter off)
- Maximum input level before clipping +14dBu (limiter on)
- Phantom power switch selectable (rear panel) 48Volts
- CE marked
- External Power input +12 to 20 volts <150 mA
- Maximum Dimensions (excluding belt clip): 101 mm x 104 mm x 45mm
- Weight (without battery): 355g

GS-CU004 Commentary System With Two Circuits

The GS-CU004 is an economical versatile belt-pack box designed for use in outside broadcast environments.

It is powered from 1 x PP3 battery (greater than 10 hours life) and also has an external DC input.

A toggle switch turns the unit on/off and a bright blue LED indicates that the unit is on and flashes when the battery is getting low.

The unit has 1 input switchable between: MIC / LINE / MIC + 12v PHANTOM

This input has a gain control for setting the level and can be switched to a program or talkback output, it is fed through a broadcast quality compressor/ limiter circuit. Both the outputs are transformer balanced.

A small PPM (4 x LEDs) is situated on the front panel for setting up the output level. For listening to return program and talkback 2 off zero dB inputs are fed into a headphone amplifier from rear panel XLRs.

These inputs are fed to the headphone circuit by their own level controls, each having a switch to select the audio to Left / Right / Both ears of the headphones.

SPECIFICATIONS

- Frequency response: 50Hz to 20kHz > -1dB
- Equivalent input noise @ maximum gain 119 dBu
- Mic Input Gain -44 to -67dBu
- Mic + Phantom power Input Gain -36 to -59dBu
- Phantom Power P12L (12 Volt)
- Line Input Gain -1 to -24dBu
- Electronically balanced input
- Input impedance >80K Ohms
- FB & Cue input gains -20 to +10dBu
- Transformer Balanced Outputs
- Output impedance 50 Ohms

- THD + Noise: Measured 50Hz to 20kHz <0.25%
- Limiter/ compressor circuit threshold line up
- Compression ratio 3:1
- PPM meter 4 x LEDs, -12,-6,0,+6dBu (ref to pgm out)
- FB & Cue inputs can be routed to left/right/both sides of headphone amp
- Sidetone fixed at -10dBu ref to output level
- Powered from 1 x PP3 9 volt battery
- External Power input +12 to 20 volts <80 mA
- Maximum Dimensions (excluding belt clip): 153 mm x 104 mm x 43mm
- Weight (excluding battery): 355g

GS-HA009 Ear Piece Driver/ Headphone Amp

This unit has been designed by popular request.

The GS-HA009 is suitable for driving a wide range of impedance headphones and earpices from 8 to 2000 Ohms.

It has a small inbuilt loudspeaker which can be used for simple monitoring and is disconnected when a headphone jack is inserted.

The GS-HA009 is a mono headphone amplifier capable of driving both mono & stereo headphones & earpieces. A limiter is built in to protect the user from a sudden loud input level. The limiter can be switched into & out of the circuit.

The audio input is balanced on an XLR (a loop through XLR is provided for daisy chaining several devices together). A 20dB gain switch is provided to boost the input level if required.

The design of the GS-HA009 is very low current and as such it provides a very long battery life.

GS-HA001 Headphone Amp

The GS-HA001 like other units in this range is small, robust and economical. It provides 1 off headphone amplifier in a compact format.

A toggle switch turns the unit on/off and a bright blue LED indicates that the unit is on and flashes when the battery is getting low.

Audio input is on 2 XLRs normally feeding left & right channels of the headphone amp. A switch is provided to allow an unbalanced stereo signal input on just 1 off these XLRs to be feed to both channels of the headphone amp.

A phase reverse of the right ear facility is provided (operation by a small toggle switch).

2 off headphone jack connections are provided (in parallel) each connector is suitable for use with both A and B gauge jack plugs.

GS-HA010 Single Input Headphone Amp

A portable, belt pack style single channel headphone amplifier.

Audio input is via XLR with a loop through XLR output. Two headphone sockets are offered, 1 on 6.35mm and the other on 3.5mm. These are wired tip & ring to allow connection of regular stereo headphones (with audio on both ears) or a single ear piece. There is a volume control for adjusting level to 32-1000ohm impedance headphones.

Power is via a 9v PP3 battery (>18 hours use) or via external DC power. There is an on/off switch and a low power LED light.

Glensound belt pack cases are very rugged to withstand the rigours of portable use. There are loop anchor points on each of the front corners for shoulder straps or tying down, and there is a belt clip.

SPECIFICATIONS
- Portable single channel headphone amplifier
- Battery(PP3) or DC power
- Adjustable headphone level control
- 6.35mm and 3.5mm headphone sockets
- Audio input on XLR with loop through
- On/off switch
- Low battery light
- Belt clip

GS-HA011 Single Input Headphone Amplifier
With Input Gain Adjust & Transformer Balanced Inputs

A portable, belt pack style single channel headphone amplifier.

Audio input is transformer balanced with recessed adjustable gain control. Input connection is via XLR with a loop through XLR output. Two headphone sockets are offered, 1 on 6.35mm and the other on 3.5mm. These are wired tip & ring to allow connection of regular stereo headphones (with audio on both ears) or a single ear piece. There is a volume control for adjusting level to 32-1000ohm impedance headphones.

Power is via a 9v PP3 battery (>18 hours use) or via external DC power. There is an on/off switch and a low power LED light.

Glensound belt pack cases are very rugged to withstand the rigours of portable use. There are loop anchor points on each of the front corners for shoulder straps or tying down, and there is a belt clip.

SPECIFICATIONS
- Transformer balanced inputs
- Input gain control
- Battery(PP3) or DC power
- Adjustable headphone level control
- 6.35mm and 3.5mm headphone sockets
- Audio input on XLR with loop through
- On/off switch
- Low battery light
- Belt clip

GS-CU005 Two Channel Mixer with Headphone Amp

The GS-CU005 like many of our products was designed to meet a customers specification. It has a 2 channel mixer, each channel can accept mic or line level inputs and 12volt phantom power is available. Both channels have gain controls & on/off switches and an LF cut switch (160Hz/ 80Hz or flat). The 2 channels are mixed together and fed to the transformer balanced output via a limiter (which can be turned off) and a small 4 LED PPM indicates output level.
The output of the mixer also goes to the headphone amp via a level control.
A cue input (rear panel XLR electronically balanced) is also fed via a level control to the headphone amplifier.
It is powered from 1 x PP3 battrey or from an external DC source.

SPECIFICATIONS
- Frequency response: 40Hz to 20kHz >+0.5 to -1dB
- Noise @ Minimum Gain -74 dBu (RMS 20Hz to 20kHz)
- Noise @ Maximum Gain -52 dBu (RMS 20Hz to 20kHz)
- Equivalent input noise @ maximum gain 119 dBu
- Mic Input Gain -44 to -67dB
- Mic + Phantom Power Input Gain -36 to -59dB
- Line input Gain -24 to -1dB
- Electronically balanced inputs
- Cue input impedance > 80K
- Transformer Balanced Output
- Output impedance 50 Ohms

- Distortion measured at 1kHz gain -57dBu <0.05%
- CUT LF front panel switched 160Hz/ Flat /80Hz @ 12dB per octave
- Limiter/ compressor circuit (switchable on/off)
- Limiter threshold -1dBu below line up
- 2 Headphone outputs (parallel) both A/B gauge
- Headphone impedance 200 to 2K Ohm
- Phantom power P12L (12 volt)
- CE marked
- External Power input +12 to 20 volts <80 mA
- Maximum Dimensions (excluding belt clip): 153 mm x 103 mm x 45mm
- Weight (without battery): 500g

GS-POT001 Headphone Pot Box

SPECIFICATIONS
- Provides adjustable level control when connected to a headphone amplifier
- Full size volume control
- 6.35mm jack socket for headphones
- 3.5mm jack socket for an earpiece
- Audio input on female XLR socket
- Loop output on male XLR socket
- Front and back has metal overhang to protect connections
- Mounts on or under desk
- Includes belt clip
- Dimensions: Length 80mm, Width 55mm, Height: 35mm excluding belt clip, 45mm including

GS-FW008 Four Wire Talkback + Talkback into Headphone Circuit

The GS-FW008 is a versatile small beltpack unit. It provides a traditional 4 wire circuit (with IFB facility) and also allows for the insertion of talkback over a headphone circuit. A headphone amp is incorporated for listening to the incoming audio circuits and a mic/ line input is provided for sending audio to the outputs. A front panel latching/ momentary lever key switch switches the mic/ line input to the outputs.

SPECIFICATIONS
- Frequency response: 40Hz to 16kHz >+0.5 to -1dB
- Mic to 4 wire Noise @ Minimum Gain -74 dBu (RMS 22Hz to 22kHz)
- Mic to 4 wire Noise @ Maximum Gain -53 dBu (RMS 22Hz to 22kHz)
- 4 wire in to 4 wire out Noise > -85 dBu (RMS 22Hz to 22kHz)
- Stereo in to Stereo out Noise > -85 dBu (RMS 22Hz to 22kHz)
- Mic Input Gain -43 to -65dB
- Mic + Phantom Power Input Gain -35 to -57dB
- Line input Gain -22 to 0dB
- Phantom Power P12L (12 volt)
- Electronically balanced inputs
- Stereo input impedance > 47K
- Transformer Balanced 4 wire Output
- 4 wire in to 4 wire out loop through gain +/- 0.5dBu
- Stereo in to Stereo out loop through gain +/- 0.5dBu

GS-D2A001 Digital To Analogue Converter

The GS-D2A001 is a high quality digital to analogue converter capable of automatically locking onto digital signals between 32kHz and 192kHz. For full compatibility with the incoming digital signal there are 3 digital inputs (AES3/EBU on XLR, S/PDIF on Phono and TOSLink), selection between these inputs is done fully automatically. High quality digital to analogue converters are used and the electronically balanced analogue outputs are on XLRs.

Uniquely the GS-D2A001 is powered either from batteries (4 x AA cells) or from an external DC input. As well as being suited for use in a studio being battery powered makes the unit perfect for outside broadcasts and location recording. As with all of our equipment it is housed in a rugged purpose built aluminium box capable of withstanding regular outside broadcast work.

FEATURES
- Battery powered from 4 x AA cells
- External DC power input
- Low battery LED indication
- 3 x Digital audio inputs with auto detection between them
- AES3/EBU on XLR
- S/PDIF on Phono
- TOSLink (optical)
- Auto detects & selects sample frequencies from 32kHz to 192kHz
- 24 Bit resolution
- LED indicates Lock of digital signal
- Electronically balanced analogue audio outputs
- Rugged construction suitable for studio and location use

GS-DDA001 & GS-DDA002 Two & Three Way Digital Distribution Transformers

Front View of GS-DDA001

These 2 digital distribution units are based on the excellent lundahl transformers. They allow a single 110 Ohm balanced digital source to be split to either 2 (GS-DDA001) or 3 (GS-DDA002) 110 Ohm balanced destinations.
They are a passive device and do not require power.
Digital input is via a 3 pole Neutrik front panel mounted female XLR and each digital output is via a 3 pole Neutrik rear panel mounted male XLR.

GS-A2D001 Analogue to Digital Converter

The GS-A2D is a high performance A-D converter module which produces multiple digital audio outputs from two stereo balanced XLR inputs. The sampling rate for the digital outputs is set by DIP switches which are read at power up.
The AES/EBU XLR status bits are set to professional use and the S/PDIF and TOSLINK status bits are set to show consumer use.
The AES/EBU XLR and S/PDIF outputs support up to and including 192KHz. The TOSLink supports up to and including 96KHz only.

Uniquely the GS-A2D001 is powered either from batteries (4 x AA cells) or from an external DC input. As well as being suited for use in a studio being battery powered makes the unit perfect for outside broadcasts and location recording. As with all of our equipment it is housed in a rugged purpose built aluminium box capable of withstanding regular outside broadcast work.

FEATURES
- Battery powered from 4 x AA cells
- External DC power input
- Low battery LED indication
- Stereo balanced analogue inputs on XLRs
- AES3/EBU output on XLR
- S/PDIF output on Phono
- TOSLink output (optical)
- All 3 digital outputs work simultaneously
- Output sample frequencies from 32kHz to 192kHz
- 24 Bit resolution
- Sample frequency set by dp switches (accessible on side of unit)
- +18dBU produces 0dBFS
- Rugged construction suitable for studio and location use

GS-DIC001 AES3 to S/PDIF Impedance Converter

This useful unit is based on the excellent lundahl transformer.
It allows a 110 Ohm balanced digital source to be connected
to an unbalanced S/PDIF 75 Ohm circuit.
It is a passive device and does not require power.
The balanced digital input is via a 3 pole Neutrik front panel
mounted female XLR and the S/PDIF digital output is via a
front panel mounted phono connector.

Front View of GS-DIC001

GS-COUGH001 Cough Switch

This is a very simple passive beltpack box. It is robust and lightweight.
It houses a high quality switch capable of silently switching mic signals (and line
levels) on and off.
The switch (a lever key) is a momentary action and in its normal state allows audio
to pass from the input to the output.
Two XLRs for audio input and output are provided.

GS-OBLS-1 Loudspeaker Amplifier

The GS-OBLS-1 like other units in this range is small, robust and
economical. It provides 1 off loudspeaker amplifier in a compact
format (with inbuilt loudspeaker).
The amplifier is battery powered (with an external DC input available)
and a front panel LED flashes when the battery needs replacing.
Two balanced XLR audio inputs are provided for Left and Right
inputs. A front panel switch allows the Left, Right or a Mono mix of
both Left & Right to be monitored.

GS-OBLS-2 Headphone & Loudspeaker Amplifier

The GS-OBLS-2 combines a headphone amplifier and inbuilt loudspeaker. A
toggle switch turns the unit on/off and a bright blue LED indicates that the unit is
on and flashes when the battery is getting low.
The headphone jack on the front panel operates as a 'break jack' for the
loudspeaker, therefore when a pair of headphones is plugged in the loudspeaker
is turned off.
The input is on a rear panel XLR and an internal preset control allows this input to
be either balanced mono, or unbalanced stereo. A loop through output XLR is
provided in parallel with the input allowing many units to be daisy chained
together.
The headphone amp is optimised for driving headphones with impedances of 100
to 2000 Ohms.

GS-U2B003 Stereo Unbalanced to Balanced Converter

FEATURES
- Battery powered from 1 x PP3 cell
- External DC power input
- Low battery LED indication
- Stereo converter
- Unbalanced inputs on phono connectors
- Balanced outputs on XLR plugs
- Single +/- 10dB gain control for both channels
- @ unity gain -15dB input provides 0dB output

GS-PLI001 Line Ident

The GS-PLI001 is a small robust unit that provides line identification for a single audio channel.
It is a self-contained battery operated unit.
A message of up to 16 seconds can be recorded from a front panel microphone.
On playback the recorded message is continuously looped to the output. If any of the 16 seconds is not used then a 1kHz tone at nominal zero level is automatically inserted.
The output is nominal zero level and electronically balanced on a front panel XLR.

GS-CAP001 Cough & Pot Box

This is a very simple passive beltpack box. It is robust and lightweight.
It has the same facilities as the GS-COUGH001 with the addition of an attenuation pot and headphone jack for reducing the level of an incoming headphone feed.

GS-SW001 Audio Switch

This is a very simple passive beltpack box. It is robust and lightweight.
It houses a high quality switch capable of silently switching mic signals (and line levels) on and off.
The switch (a lever key) has a momentary/ off/ latching action.
Two XLRs for audio input and output are provided.

GS-MCS002 Mic Splitter (1 in 3 out)

This is a simple passive beltpack box. It is robust and lightweight.
It is based on a high quality lundall audio transformer which provides 3 outputs (2 transformer coupled and 1 direct) from a single microphone input. The 2 transformer coupled outputs have earth lift switches fitted. Phantom power can be passed from the direct coupled connector to the microphone.
The mic input and direct output are via 3 pin neutrik XLRs mounted on the front panel and the 2 transformer coupled outputs and earth lift switches are mounted on the rear panel.

Roaming Compressor

FEATURES
- 2 mono independent or stereo linked compressors
- Electronically balanced XLR I/O
- Operates from 3 x C cell batteries
- 5V USB power
- Set recovery time between fast/Auto/Slow
- Set compression ration to 1:1/5:1/10:1
- Threshold pot
- 4 LED meter to show the level of compression

Roaming EQ

FEATURES
- 2 independet general purpose EQ channels
- Transformer balanced XLR I/O
- In the event of no power, audio will travel through unit but with no EQ
- Opertaes form 3 x C cell betteries
- 5V USB power
- LF Shelf from 20-220Hz with +/- dB cut/boost
- Presence/mid (select between 640Hz and 6K4) with +/_ 12dB cut/boost
- HF cut/boost (select between 2K2 and 3K9) with +/- 12dB
- HF Shelf between 20K and 2K2.

COMMENTATORS' EQUIPMENT 2 PART SYSTEMS

Glensound Electronics Ltd have been a specialist manufacturer of commentators equipment since 1977 when we first built Mobile International Control Room (MICR) equipment. The MICR equipment used 7 pair Quad cable for connection between engineering positions and commentators/ producers. This equipment is still operational and is still in occasional use today

CAT5 Commentators Equipment

This range of equipment offers excellent facilities in a small package. The Commentators boxes and producer's box are all very compact and are ideal to use where space is at a premium. Interconnection distances of up to 250 meters from the base station using standard cat 5 cable terminated in RJ45 connectors make this equipment particularly easy to install when used in buildings and stadiums already installed with structured wiring.

This equipment is a two-part system with an engineering base station *GSGC21B* connected to a maximum of 4 commentator's boxes *GSGC19B* and 1 producer's box *GSGC22B*. One base station can produce two completely separate programs.

GSGC19B Commentators Box

GSGC22B Producers Box

GSGC21B Base Station

GSGC19B Main Features:

- Powered from base station
- 2 x headphone jack sockets
- 1 mic /line switched input
- Headphone sources can be switched to left/ right or both sides of headphone amp
- 7 headphone sources
- 6 of the 7 sources have commentator controlled level controls.
- Each commentator has off air talkback to: Producer, Engineer and 2 external outputs.
- Power on indication
- Compact size 140 x 120 x 80mm

GSGC22B Main Features:

- Powered from base station
- 2 x headphone jack sockets
- 1 mic /line switched input
- 8 headphone sources
- Speak to program 1 or 2
- Off air talkback to each commentators individually
- Off air talkback to engineer, 3 external outputs
- Power on indication
- Compact size 185 x 120 x 80mm

GSGC21B Main Features:

- 19 inch 1RU
- Mains Powered 100 – 250 Volts AC
- 1 base station can connect to 4 commentators boxes & 1 producers box
- Facilities to mix two independent programs with international sound
- Pre fade outputs of each commentator
- Full monitoring off all sources
- All sources have gain controls
- Monitoring via PPM, headphone amp or external LS feed.
- Monitoring can lock together if more than 1 base station in use
- Line identification recorders with tone for the 2 program outputs
- Talkback to commentators, producer, program and 3 other external outputs

DIGITAL COMMENTATORS EQUIPMENT 2 PART

The future of commentary equipment is digital. Glensound Digital Commentary builds on the 20 years of experience as the leading developers and manufacturers of commentary equipment. The reality of the previous generation of analogue systems is that the coax link didn't give the audio quality now expected in the digital world. This 'weak point' has now been made the strongest part of the chain with an audio signal at 24bit 48 kHz.

With digital routing systems and consoles now common in the outside broadcast world, adding this level of control and configuration to a commentary system is a welcome world first for Glensound.

Glensound Digital Commentary: GDC-6432

The new 2 part digital system consists of a pair products: the Digital Commentators Unit dCU/3, and the Digital Commentary Control Unit dCCU. A GDC-6432 system consists of 1 x dCU/3 and 1 x dCCU.

GDC-6432 dCU/3 Main Features:

- Commentary Unit for up to 3 commentators
- Single link to dCCU on either Coax, copper Ethernet or fibre Ethernet.
- Single link carries 8 channels of digital audio in each direction at 24 bit 48 kHz
- Coax and copper Ethernet link carry audio, power, and data. One dCU/3 = 1 link.
- All switches on unit can be configured to always on/off, lazy, push to talk, trigger internal or external event. Via engineer connected to dCCU, not an operator.
- Simple layout and familiar Glensound operation to assist users.
- High power headphone drive to provide high levels in noisy environments.
- Line input and outputs balanced for professional equipment, and unbalanced for domestic equipment.
- Eight adjustable level inputs per commentary position which can be individually switched to left ear, right ear, or both.
- Four talkback circuits

GDC-6432 dCCU Main Features:

- 1u subrack control unit for the dCU/3
- Control from front panel, hardware remote front panel, or Ethernet via web browser.
- Ethernet link shows visual unit with all switch and pot positions and allows remote control and talkback. Ethernet link can also carry audio if suitable bandwidth is available.
- Gives engineer complete control
- Gives control of each input for level adjustment, phantom powering, and enables talkback. Includes individual meter per input
- Gives control of each of 5 output levels in a mixer with assignable meter
- Two digital line idents for programme and co-ord.
- Full monitoring system with assignability of all inputs to either or both ears.
- Internal mic plus XLR for connecting an external mic.
- Software router allows complete control of a 64 input, 32 output mixer/router. This offers complete customisation of audio routing and system template per application or event.

Complete GDC 6432 information is available in a separate PDF file. Please visit www.glensound.co.uk

Coaxial Commentators Equipment

GENERAL INFORMATION

In the late 1980s Glensound Electronics developed and started to manufacture commentators equipment that interconnected between a base station and commentators box by using a standard coaxial cable. All the communications and programme lines including the power for the commentators box were all sent on this single coaxial cable. This system became so popular that after many years of production we developed a new improved yet fully backwards compatible version.

Three units are available in this range, the commentators box *GSOC24,* a 1U base station *GSOC26* and a portable base station *GSOC23*
A further development of the GSOC24, & GSOC23 is now in manufacture, the new units are called GSOC34 & GSOC33, they are **NOT** backwards compatible with any of our other coaxial commentators equipment. The GSOC34 & GSOC33 were designed specifically for larger events and offer extra facilities not found on any of the original range.

2 PART ANALOGUE COMMENTATORS SYSTEMS

GSOC24, GSOC26 & GSOC23 Coaxial Commentators

This range of coaxial commentators equipment is fully backwards compatible with all our original GSOC4A, GSOC5 & GSOC3 equipment.

GSOC24 Commentators Box

GSOC24 Main Features:

- Facilities for 3 commentators
- Each commentator has separate headphone levels
- Each headphone source can be switched to both or either ears
- +12 Volt phantom power
- Mic C input switchable to tape
- Mic on programme indicator LEDs
- Speak to coordination facilities
- Call tech & call home circuits
- 7 return audio circuits
- Powered through coax from base station
- Intelligent automatic Mic gain (hardware override)
- Mix output for local recording
- Size 235 x 227 x 91mm

GSOC26 Main Features:

- 19 Inch 1RU Base station
- Mains powered 100 – 250V AC
- Connects to 1 x Commentators box
- Mixer for generating mix output of 3 commentators and international sound
- Pre fade outputs of commentators mics
- Comprehensive monitoring off all sources
- Gain controls for incoming sources
- 7 audio circuits sent to commentators box
- Monitoring via PPM, headphone amp or external LS feed
- Monitoring can lock together if more than 1 base station in use
- Talkback circuits to commentators, program, co-ordination and 4 wire
- Line identification for both program and co-ordination circuits

GSOC26 Base Station

GSOC23 Main Features:

- Portable Modular Base station
- Mains powered 100 – 250V AC
- Master module for monitoring & setup
- Channel modules (up to 5 per base station)
- 1 channel module connects to 1 commentators box & produces 1 program
- Provides power for commentators boxes via coax
- Each channel has mixer for mixing 3 commentators mics & international sound
- 7 audio circuits sent to commentators box
- Monitoring via PPM, headphone amp or external LS feed
- Monitoring can lock together if more than 1 base station in use
- Talkback circuits to commentators, program outputs & co-ordination circuits
- Individual line identification for all program and co-ordination circuits

GSOC23 (5 Channel) Base Station

GSOC34 & GSOC33 Coaxial Commentators

This range of coaxial commentators equipment is **NOT** compatible with any of our coaxial commentators equipment. It is ideal for the larger event.

GSOC34 Main Features:

- Facilities for 3 commentators
- Each commentator has separate headphone levels
- Each headphone source can be switched to both or either ears
- +12 Volt phantom power
- Mic C input switchable to tape
- Mic on programme indicator LEDs
- Speak to co-ordination & engineer facilities
- All 3 commentators have access to outgoing co-ordination circuit
- 7 return audio circuits
- Powered through coax from base station
- Fixed mic gain with level control on base station
- Mix output for local recording
- Size 235 x 227 x 91mm

GSOC33 (10 Channel) Base Station

GSOC33 Main Features:

- Portable Modular Base station
- Mains powered 100 – 250V AC Redundant PSU option
- Master module for monitoring & setup
- Channel modules (up to 10 per base station)
- 1 channel module connects to 1 commentators box & produces 1 program
- Provides power for commentators boxes via coax
- Each channel has mixer for mixing 3 commentators mics & international sound
- 7 audio circuits sent to commentators box
- Monitoring via VU or PPM meter, headphone amp or external LS feed
- Monitoring can lock together if more than 1 base station in use
- Talkback circuits to commentators, program outputs & co-ordination circuits
- Individual line identification for all program and co-ordination circuits
- Level controls for outgoing circuits
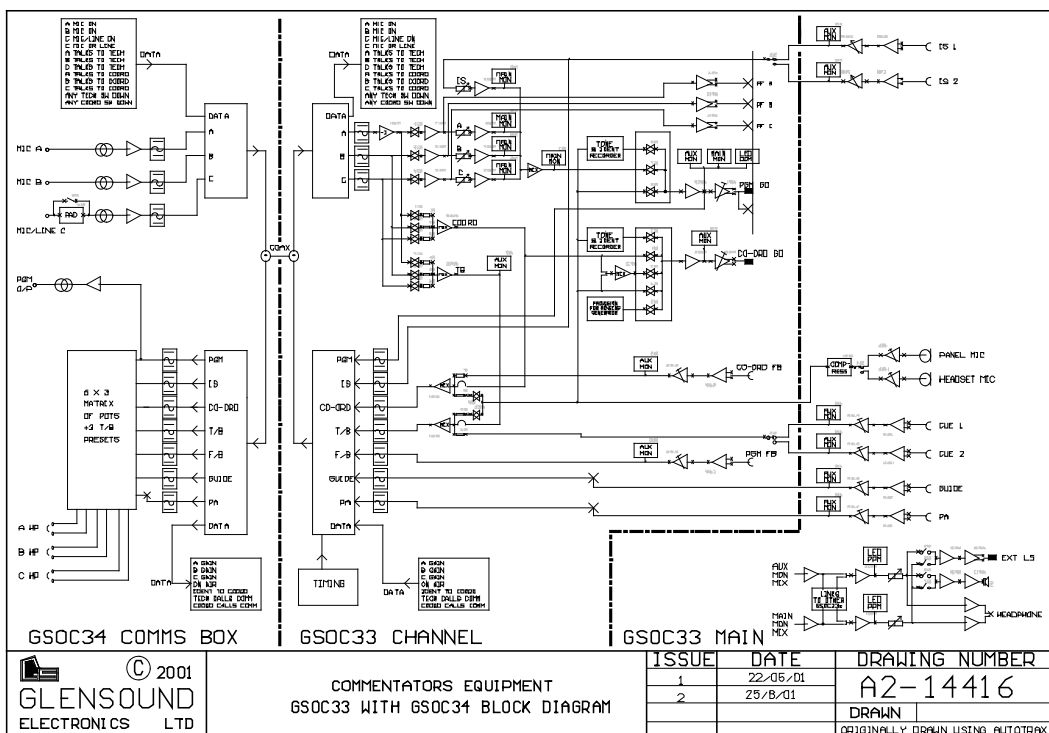
GSGC2, GSGC3 & GSGC11 Multi Wire Commentators System

Glensound CO-AXIAL commentators equipment is an industry standard for international events with a large number of commentators. This multi wire equipment was developed for use with fewer commentators but where sound quality is of particular importance. The system consists of 1, 2 or 3 commentators boxes type GSGC2 along with a base station. There is a choice of base station. The first and simplest is a GSGC3 which is basically a power unit and break out box to handle up to 3 GSGC2s. A more comprehensive base station is our GSGC11 whose facilities include mixing and monitoring circuits. Interconnection between base station and boxes is using 25 way multiwire cables terminated in 25 way 'D' plugs & sockets.

GSGC2 Commentators Box

SYSTEM FEATURES
- Use with 1,2 or 3 Commentators / Producers
- Wide bandwidth and low noise
- High headphone levels possible
- Very flexible
- Interfaces with a standard audio mixer
- Compact and Robust

GSGC2 FEATURES
- Separate 5 channel mixer provided for each ear
- TB switches cut programme output
- Massive Headroom
- Connected to base station with a single multi-pair cable
- Facilities for 1 commentator

GSGC3 FEATURES
- 3 separate program outputs - 1 for each GSGC2
- 3 separate TB outputs - Each box can talk to any or all of the others
- All inputs and outputs balanced
- Each GSGC2 can be fed from 1 of 2 Talk Back inputs
- Each GSGC2 can be fed from 1 of 2 Feed Back inputs

GSGC11 FEATURES
- All the features of the GSGC3
- Contains a 4 channel mixer to balance the 3 GSGC2s and international sound
- Contains a LED PPM and headphone amp to monitor all inputs and outputs
- Input level controls fitted for the two feedback inputs
- Constructed in a 1U subrack with rear panel varicons

GS2U-014   CAT5 Presenter's System

This presenter's system offers easy to operate facilities suitable for most studio voice over/ off tube commentary work, yet its functions and build quality make it suitable for use in OB environments and outside broadcast trucks.
It is a 2 part system incorporating 1 off 2U base station and 4 off small presenter's boxes. The system interconnects using cat5 cable.
The system offers individual outputs of the 4 presenter's mic inputs and 2 talkback outputs which any of the presenter's can talk to. There are 4 audio inputs to the base station all of which are sent to the individual presenter's headphone feeds.

GS2U-014 BASE STATION FACILITIES
- Individual talkback to the 4 presenter's boxes
- Monitoring of the 4 presenter's outputs and the 2 off TB outputs
- Monitoring and level set up of the 4 incoming audio feeds
- Headphone listen control
- 21 LED PPM

GS2U-014 PRESENTERS BOX FACILITIES
- 4 off Headphone level controls for the 4 external incoming audio feeds
- 1 off headphone level control for side tone
- 1 off headphone level control for mix of the other presenters
- Talk to other presenters button
- 2 off Talk to Aux buttons
- Main program mic on/off button
- 12 volt phantom power available

GSCCU-001 & GSCU-002/3 System with inbuilt ISDN

This commentators system has a base station that is mains powered and battery backed up and it has internal ISDN Codecs. The inbuilt battery backup provides in excess of 2 hours usage. 3 small commentators boxes and 1 producers box connect to the base station via cat5 cable. The base station is set out as 7 channels plus an operators channel and master/ ISDN module. The ISDN facilities included are 2 x G722/G711 Codecs.

GSCCU-001 Base Station

GSCU-002 Comms Box

FEATURES OF GSCCU-001
- Mains powered & battery backed up
- Inbuilt ISDN Codecs (2 x G722/G711)
- 7 channels:
- 3 x remote commentators boxes
- 2 x radio mic commentators
- 1 x local Co-ordination circuit
- 1 x producers box
- Large channel on/off buttons
- Engineering talkback to all channels
- 8 audio sources selectable to headphone feeds of the 7 channels
- 3 outputs
- PGM out on ISDN and duplicated on 3 balanced XLRs
- PCC out on ISDN and duplicated on 2 balanced XLRs
- Aux out on 2 balanced XLRs
- Channels can be selected to outputs individually
- Pre fade monitoring

FEATURES OF GSCU-002
- Up to 3 can be used with GSCCU-001
- Cat5 connection to base station
- Separate left/right headphone level controls
- Power on indicator
- Talkback to producer
- Mic Mute switch
- Small size
- **FEATURES OF GSCU-003**
- 2 Mic inputs
- 2 Headphone jack sockets
- Cat5 connection to base station
- Talkback to the 3 commentator's boxes, the operator, 2 radio mic commentators & the 3 outputs.
- Small size

GS-CCU002 & GS-CU006 Multi Wire Commentators System

This commentators system has a 3RU base station and up to 4 commentators boxes. The interconnection is via multicore cable and the system offers excellent audio quality.

GS-CCU002 Base Station

GS-CU006 Comms Box

FEATURES OF GS-CCU002/ GS-CU006 SYSTEM
- Mains powered 90 – 240V AC
- 19 Inch 3RU base station
- 4 commentators boxes connect to 1 x GS-CCU002
- Multi Wire connections between comms boxes and base station on DEF32 connectors
- 1 Mixed output & 4 Pre Fade outputs
- 4 x 4 wire circuits
- 4 x additional audio inputs
- Monitoring and level control for all sources
- Monitoring on all outgoing audio circuits
- LED PPM and headphone monitoring on GS-CCU002
- XLR audio inputs & outputs
- Commentators have headphone level controls for all 8 sources plus side tone level
- All commentators can talk to all 4 off 4 wire circuits
- GS-CU006 powered from base station
- Mic gain control on comms box
- Mic on/off button on comms box
- GS-CU006 size 242 x 183 x 92 mm

GS-CCU003 & GS-CU007 Simple Commentators System with Routing

This system was like many of our units built to meet a particular customers requirements. It's simple features with inbuilt routing make it useful for off-tube work and permanent studio installations.

It is a 2 part system with 1 x 19 inch 1RU base station and 2 x small commentators' boxes. Each of the commentators' boxes connects to the base station with a cat5 cable (for audio and data) and a separate 4 pin XLR cable (for power).

COMMENTATORS BOX

Each commentators box provides the facilities for 1 commentator.

Each commentator can select to speak to the program output or a talkback output. These outputs can be routed to a number of locations depending on the settings of the base station. The operation of the program/ talkback switches can be set by the user.

There are 3 headphone level controls on each commentators box. These are marked PGM, SIDETONE & TB. Each of these signals can be sent via front panel switches to the left, right or both sides of the commentators headphone feed. How many audios are present on each of these level controls will depend upon the routing that has been set up in the base station.

BASE STATION

The GS-CCU003 is a 1RU 19 inch base station. It is mains powered (100 - 240 volts).

It is easy to operate as it has just 12 large illuminated front panel switches. These switches are broken down to 2 sets of 6, with each set being the routing for 1 of the commentators' boxes. When a switched is pressed both the send and return audio feeds from that location are routed to the relevant commentator.
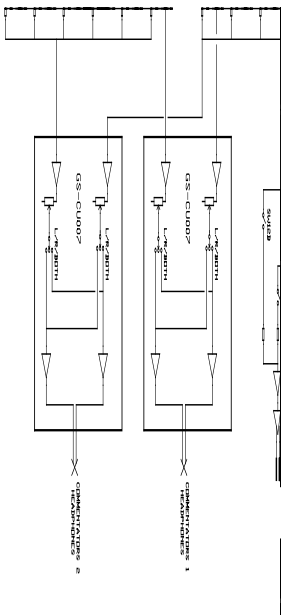
GS-CCU003 & GS-CU007 Block Diagram

GS-CCU003 Rear View

GS-CCU003 Front View

COMMENTATORS' EQUIPMENT 'STAND ALONE' SYSTEMS

Our 'stand alone' commentators boxes are all self contained units that do not require a base station to produce a program. They are often used with direct connections back to an OB truck, sometimes they are used in permanent installations at sports grounds or in studios for 'off-tube' work and they can also often be found in translation facilities.

GS-CU008 General Purpose Single Commentator's Box

The GS-CU008 is an incredibly useful commentators box. It has been designed as a true general purpose unit that is as suitable to off tube commentaries and announcer positions in studios and booths as it is to daily use on outside broadcasts.
A number of versions of the GS-CU008 are available. Each different version offers a different number of talkback circuits. The first unit is a GS-CU008 this just has the outgoing program mic and return program cue, then the GS-CU008A adds 1 talkback channel, the GS-CU008B adds 2 talkback channels, the GS-CU008C adds 3 talkback channels….etc etc.

Front & Rear Views of GS-CU008A

FEATURES OF GS-CU008
- Mains powered 90 – 240V AC
- External 10 to 18v DC input.
- Power on LED.
- 1 x mic input
- Mic on/off switch can be user set between on/off or cough.
- 48 volt phantom power switchable on each mic input.
- When phantom power is turned on mic gain is reduced.
- +/-10dB mic gain control on front panel
- Transformer balanced inputs & outputs
- Program output level can be switched between:-10dB no limiter (more headroom): 0dB no limiter: 0dB with limiter.
- Band pass filter optimized for voice.
- Talkback outputs can be lazy or momentary
- Can be ordered with no talkback circuits or 1 or 2 or 3 etc etc.
- 7 Segment LED PPM .
- 1 x commentators headphone amp
- Headphone Amp is terminated on switchcraft (A or B) gauge jack socket.
- Cue return & talkback inputs are 0dB on rear panel XLRs
- Each headphone input has its own level control
- Each headphone input can be switched between L/R/Both channels of the headphone amp.
- Commentators side tone has it's own front panel level control & L/R switching
- Size: GS-CU008 and GS-CU008A 158 x 92 x 222 mm (w x h x d). Then for each extra talkback channel add 32mm to width.
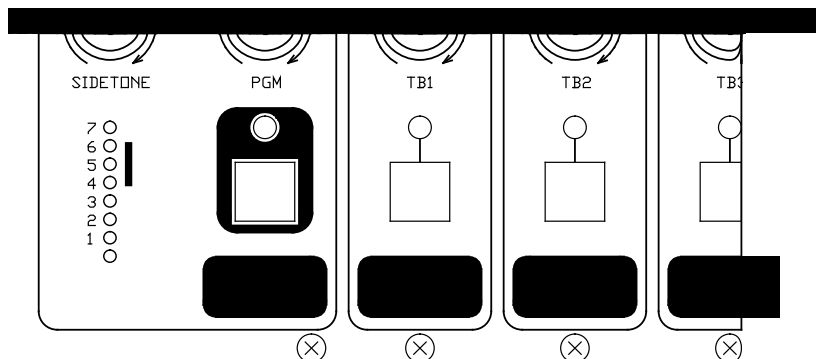
Panel drawing of commentators controls of GS-CU001C

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COIN GT-013 Single Commentator's Box with Integrated TELEX Keypad

The Glensound COIN GT-013 is first of a new generation of commentary and intercom units. In many broadcast infrastructures, the line between commentary and intercom systems is blurring. The COIN range was established to produce hybrid units featuring the best of both worlds, from the world's best developers in each specialist area. The leading commentary system designer Glensound Electronics, provide the commentary interface, and the leading intercom system design RTS/Telex provide the intercom interface. The result is the world's first dedicated commentary and intercom unit, the COIN GT-013

FEATURES OF COIN GT-013
- Mains powered 90 – 240V AC
- 1 x mic input on XLR connection
- Transformer balanced commentators mic output
- Balanced audio output of the return from the Telex matrix
- RJ45 connection with bi-directional audio and data for seemless integration to the Telex matrix
- Output level limiter selectable 0dB, 0dB and limiter, -10dB no limeter
- Selectable talkback
- Headphone volume control for external local input and sidetone
- Mic on/off button
- 7 source PPM
- 6.35mm jack headphone socket
- 48V phantom power switchable to on/off
- Mic gain level adjutments using a micro pot
- RTS KP technology (usues genuine RTS components)
- Long life green alphanumeriuc LED display
- TB system fully programmable
- Assignable talkback/listen function
- Assignable keys for all functions (point to point, IFB, ISO, PL, SL, relay and GPI)
- Size: 177 x 106 x 244mm (w x h x d).

Front & Rear Views of GT-013

GS-CU001 General Purpose Commentary Box

The GS-CU001 is a highly versatile commentators box. It was designed after close consultation with end users and the result is a stand alone commentators box which offers all the facilities that are most commonly required and it is equally at home on the terraces as it is in a studio. A number of slight modifications to meet exacting customer requirements of the GS-CU001 have now been produced all are detailed below. All of these modifications are available with 3 different versions of input/ output circuits.

VERSION 1: (The cheapest) Has electronically balanced audio input & output circuits.
VERSION 2: Has Transformer Balanced outputs with electronically balanced inputs.
VERSION 3: Has transformer balanced inputs & outputs with high quality Llundhall transformers on the individual mic outputs.

FEATURES OF GS-CU001
- Mains powered 90 – 240V AC
- External 9 to 18v DC.
- Power on LED.
- 3 x mic/line inputs
- Channel on/off switches are user set between on/off or cough.
- 12 volt phantom power switchable on each mic input.
- 3 position gain control for each input.
- 1 mix output of the 3 inputs (at 0dB)
- Individual outputs of the 3 inputs are switchable between:-20dB no limiter (large headroom): 0dB no limiter: 0dB with limiter.
- 3 x talkback outputs (lazy or momentary)
- Each talkback output can be accessed by either of the 2 main commentators.
- Record output on 3.5mm jack
- 7 Segment LED PPM
- Global switchable LF cut for the inputs.
- 2 x Headphone amps
- Each Headphone Amp is terminated in 2 off switchcraft (A or B) gauge jack sockets.
- 5 off 0dB inputs from rear panel XLRs are fed to the headphone amps.
- Each headphone amp has 5 level controls, 1 for each of the above inputs.
- A 6th level control is for the level of the other commentator & guest.
- Side tone is set up on rear panel.
- Each headphone level control has a pot & L/R/Both switching.
- Size 277 x 266 x 105mm

GS-CU001 Stand Alone Commentators Box

CONFiG PLUS

Modified Versions of GS-CU001 Commentary Box

GS-CU001D
In addition to the normal features of the GS-CU001 this provides a talkback channel between the 2 commentators Size 277 x 266 x 105mm

GS-CU001E
In addition to the GS-CU001D this brings the sidetone pot to the front panel (with a smaller knob than other headphone controls), plus it provides 2 x completely passive outputs from the 2 main commentators mics, plus it provides 4 off individual inputs for each of the 2 headphone amps, allowing each commentator to listen to different sources. For ease of wiring it is possible to switch any of these 4 inputs to both the headphone amps. Size: 277 x 289 x 123mm

GS-CU001F
This is similar to the GS-CU001, but it does not have sidetone and the 6th headphone level control is the mixed output. Size 277 x 266 x 105mm

GS-CU001G
In addition to the normal features of the GS-CU001 this version has full size side tone pots on the front panel. It also has 1 extra audio input into the headphone amps, plus 3 off individual inputs for the 2 headphone amps, with switching to allow 1 off these inputs to be sent to both headphone amps.
Size: 277 x 289 x 123mm

GS-CU001G Stand Alone Commentators Box

GS-CU001L
Based on the GS-CU001E this unit offers a choice of 2 inputs for each of the main commentators mics (A and C). To accommodate the extra inputs it is physically wider than the 'E' version at 345 x 289 x 123mm. Each of the main commentators inputs is mic/ line/ mic + phantom power selectable. For each of the 2 main commentators inputs a recessed front panel toggle switch selects which of the 2 inputs is routed to that commentators outputs. 48 Volt phantom power is also supplied instead of 12 volt phantom power.

GS-CU001L

**GS-CU001 Range brochure available at
www.glensound.co.uk**

FLIGHT CASE FOR GS-CU001 RANGE

By popular demand a hard wearing strong polypropylene flightcase is now available for all of the GS-CU001 range.
It features long life hinges and easy to use catches and being made out of hardwearing polypropylene plastic it will last for years.
Internally the case is lined with cut out medium density foam. The multipurpose cut outs can be adapted to accept any of the different size GS-CU001 units.
A second small cut out is included suitable for a couple of HMD25 headsets & mains cable.

Talent Box and Remote

The Glensound Talent Box is the next generation of single unit commentary systems. Digital in control with extended positions, gives each commentator their own remote control unit. An ethernet link allows an engineer to remotely control incoming audio levels - a first for a single unit commentary box. Talent Boxes can also be linked for multiple commentator systems.

Talent Box

Talent Remote

FEATURES OF THE TALENT BOX/REMOTE
- Mains powered 90 – 240V AC
- External DC power connection
- Fully digital operation, control, with AEO I/O option
- Commentator remotes
- Ethernet remote control of gains
- Five external sources for monitoring
- Three talkback circuits with Config+ button
- Two identical outputs. A mix of the three mic/line inputs
- Multiple Talent Box linking using RJ45 connectors
- 5 headphone monitoring inputs
- Indipendent outputs of each of the three individual mic/line inputs
- 3 talkback send outputs
- Remote control connections using individual locking USB sockets
- Network connection using RJ45 connection
- GPIO remotes using a 9 pin D-type connector
- Ident recorder
- Configurable input and output compressor/limiter
- Phantom power selectable between off/+12V/+48V
- Audio indicator using 3 LED's
- Sectable gain
- 7 segment PPM

GS-CU010 Small Single Commentary Box with add on Talkback unit

The GS-CU010 is a small commentators box designed when used by itself to provide enough facilities for small events but when used in conjunction with the GS-CU010A add on talkback box it becomes a powerful system suitable for much more complex setups. The GS-CU010A connects very simply to the GS-CU010 by just one single cat5 cable. It is designed for just one commentator to use and is powered from batteries.

GS-CU010 Front

FEATURES OF GS-CU010
- Battery powered (4 x AA cells) long battery life.
- External 12 to 20v DC power input.
- Power on LED (flashes to indicate low batteries)
- 1 x mic input
- 12 volt phantom power
- Mic gain control
- High quality compressor/ limiter circuit
- 4 LED PPM to indicate output level
- 2 outputs (PGM and TB)
- Front panel switches route the mic input to the outputs
- LEDs indicate the status of the switches
- Operation of the front panel switches can be user selected
- 2 inputs (Cue 1 and Cue 2)
- Inputs mixed together to 1 stereo headphone output
- Inputs have left/ right switching and individual volume controls
- Single CAT5 cable links to the optional GS-CU010A talkback unit
- Size just 115 x 135 x 110mm (w x d x h) (max dimensions)

FEATURES OF GS-CU010A
- Battery powered (4 x AA cells) long battery life.
- External 12 to 20v DC power input.
- Power on LED (flashes to indicate low batteries)
- Single CAT5 cable links to the GS-CU010 commentators unit
- Provides 5 extra outputs of the commentators mic from the GS-CU010
- Each output has its own on/off switch
- Operation of on/off switches can be user set
- LEDs indicate the status of the on/off switches
- On/off switches link with the switches on the GS-CU010
- Size just 115 x 135 x 110mm (w x d x h) (max dimensions)

GS-CU010A Front

Express Box

The Express Box was designed to provide a quick and easy solution when it is necessary to provide interfacing for two commentators, with simple facilities. This high quality commentary unit is ideal for those looking for cost effective solutions without paying for unwanted features; the Express Box is worthy of investigation

- Two commentary positions
- Four external monitor inputs plus sidetone
- Two common talkback circuits
- Operation of talkback buttons configurable
- Mic inputs with selectable 48v phantom power
- 7 LED PPM meter
- Easy to use and cost effective

Express Box Stand Alone Commentators Box

Glensound Solo

The Glensound Solo is a one position commentary unit designed for ease of use. Compact, robust with a user friendly set up, this unit features a fully configurable mic button, mic level gain control, external source monitoring and adjustable sidetone.

- One commentary position
- One external monitoring input
- Sidetone +10dBU to Off
- Selectable 48V phantom power
- User friendly set out
- Suitable for outside broadcast and studio use.
- B Type USB Powered

Glensound Solo Loop

The Glensound Solo Loop features the same functionality as the Glensound Solo but extends to incorporate a single talkback circuit and facility to link multiple units using the CMBus. This can also be used as an extended poition to the Talent Box

GSBC2 Commentary Box (Originally Designed For Horse Racing)

GSBC2 FEATURES
- No base station required.
- Two main program outputs. Second output can be cut.
- Two commentator's mics normally mixed together to produce one program.
- 2nd comm. mic can be switched to 1st comm's ears so he can act as a spotter (originally designed for horse racing).
- Individual limiter for each commentator.
- More than 35 dBs of headroom
- Each commentator has five individual potentiometers to mix feeds to headphones.
- Two separate talkback go and return circuits provided.
- Speaking to talkback automatically cuts microphone feed to mix.
- Balanced 50 ohm outputs can drive any length line.
- All rear panel inputs and outputs are on standard 3pin XLRs.
- High quality audio with wide bandwidth and low noise.
- Mains operated (100v to 250v)
- Internal battery backup.
- Twelve volt phantom power provided.
- Mic gain automatically reduced when phantom power switched on.
- Size 247 x 247 x 110mm

GSBC2 Stand Alone Commentators Box

GSVC1 Commentary Box (Originally Designed For Interpreters)

GSVC1 Stand Alone Commentators Box

GSVC1 FEATURES

- Contains 2 independent commentators positions
- Mains Operated 100 –250 V AC
- Up to 2 Users/ Mic Inputs
- Each User can talk to either their own main O/P or their own TB Channel
- Individual Cough Switch
- Phantom power available (via internal link)
- 2 Headphone amplifiers each sharing 2 sources & 1 independent TB source
- Individual headphone level controls
- Transformer balanced Mic inputs
- A Limiter on each Mic input
- Audio Inputs & Outputs on rear panel 38 way Varicon (edac) plug
- Now available with XLR audio outputs & inputs instead of the Varicon order code GSVC1X

STAND ALONE COMMENTATORS BOXES

Commentators Beltpack Unit

GS-CU004 Beltpack Commentators Unit

This handy little unit is small, robust & battery powered.
It provides the facilities required for a simple single commentary position.
It is ideal for use as a pitchside reporters unit or just as an spare unit for emergency use.

See the beltpack section of this catalogue for full details.

DIGITAL SNAKE

Digital Snake

GSnake 400M

- Each end can hold up to 8 duel analogue or AES module cards
- There is a perminant coax link, with a choice of Ethernet link as copper or fibre
- Bi-colour signal present LED's with clip indication
- 32 bit internal processing
- All connections (except mains) on front panel
- Base station features world clock input, stage box feature world clock output
- Intyernal mains power supply (Base Station only)
- Both units 2U 19"
- Stage box has extended sides cheeks to protect connections, and has interlocking section for stacking multiples.

GS-DC314 DIGITAL CONVERTER SYSTEM

This new high quality digital to analogue converter and analogue to digital converter system is designed to provide multiple converters in a 3RU 19 inch rack. It is based on a19 inch 3RU modular rack that can accept up to 14 modules. There are currently 7 system items:

1) Analogue to digital module (ADC)
2) Digital to analogue module (DAC)
3) Master clock generator module (CLK GEN)
4) Sample Rate Converter (SRC)
5) Digital Distribution Amp (DDA)
6) Word Clock Distribution Amp (CDA)
7) Mains inlet panel (PSU)

Modules have the audio connectors on their front panels and the 19 inch rack has removable ears that allow the modules to position in the rack facing the front or the rear. The switch mode power supply (100 to 250V) is mounted on the back of the rack and the associated mains inlet panel can be mounted either on the back of the rack, or on the front, in place of one of the converter modules.

DAC
- AES3 Digital Input on XLR
- S/PDIF Digital Input on phono
- Optical TOSLINK Digital input
- Balanced analogue outputs on XLRs
- Digital sample rates from 32 to 192kHz
- Handles up to 24 bit digital signals
- Auto detection of valid incoming digital signal on all 3 inputs
- High quality low noise Wolfson chipsets

ADC
- AES3 Digital Output on XLR
- S/PDIF Digital Output on phono
- Optical TOSLINK Digital Output
- Balanced analogue inputs on XLRs
- Digital sample rates from 32 to 192kHz
- Clock reference & sample rate taken from CLK GEN module
- 24 bit output resolution
- Simultaneaous outputs on all 3 digital circuits
- High quality low noise Wolfson chipsets

CLK GEN
- Word clock input on BNC for connecting to studio clock
- Word clock output on BNC to act as master studio clock
- DARS (digital audio refernce signal) input on XLR (also locks onto AES3)
- Provides clock reference signal to other modules along the racks motherboard
- LEDS indicate sample frequency
- 48 kHz Jitter less than -0.7 parts per million

SRC
- Input and output connections on AES, TOSLINK and S/PDIF
- Digital input sample rates from 32 to 192 kHz
- Output sample rate set at level from CLK GEN card

DDA
- 1 AES input
- Output on 3 identical AES ouputs

CDA
- 6 word clock outputs on BNC

Any combination of A2D and D2A modules can be used in the rack. If A2D modules are required then either 1 x master clock generator module or a DAC module are required to provide a clock reference for the A2D module. Up to 14 modules can be fitted in 1 x 3RU rack. The subracks motherboard is designed such that you can have different A2D modules locked to different clock generators or DACs.

DC-314 UNO Single Card Frame

- Holds a single DC-314 range module
- Internal 100v – 240v switch mode power supply, that will link to a second Uno or Trio for redundancy.
- Will freestand or screw to surface

DC-314 TRIO Three Card Frame

- 1u subrack holds up to 3 module cards
- 100-240v switch mode power supply with twin supply option
- Two UNO or TRIO can link together for redundancy

GS-A2D002 ANALOGUE TO DIGITAL CONVERTER

A desktop analogue to digital converter. Analogue A and B inputs available on female XLRs with a male XLR loop out. Digital output fixed at 48 kHz and available as AES3, S/PDIF, and TOSLINK. Mains powered with locking IEC socket.

CLODIS 11
AES CLOCK FREQUENCY GENERATOR & DISTRIBUTION AMPLIFIER

CLODIS 11 FEATURES
- A front panel push button scrolls through digital clock generation options of 32, 44.1, 48, 88.2, 96, 176.4, 192 kHz
- Word clock input on BNC
- Three operational modes allow clock frequency to be locked by user, to follow the reference input, or to follow nearest clock frequency even if external input lost. Operational mode is remembered even when power cycled.
- Eleven independent outputs of the clock frequency selected on 75 ohm BNC connections
- World clock output on BNC
- DARS (digital audio reference signal)input on XLR
- Low jitter with twin generators at 44.1 and 48kHz. 48kHz generator jitter better than -0.7 parts per million.

DTMF EQUIPMENT

GS-DTMF001, 002, 003, 004 & 005 Switching with DTMF

This is a 2 part system originally designed for switching cue lights using DTMF.
It was designed for use in outside broadcast situations and is therefore very robust and can be either mains or battery powered.

GS-DTMF002 Front & Rear

GS-DTMF001
The GS-DTMF001 is powered by mains or battery (1 x PP3).
It generates 3 x DTMF tones and sends them to a single audio output (on both male & female XLR). The DTMF tones are generated individually when an associated loop is closed. The input for the loop closure is on a 3 pin XLR.
GS-DTMF005
As the GS-DTMF001 with the addition of switches as well as loop closures for sending DTMF.
GS-DTMF002
The GS-DTMF002 is powered by mains or battery (1 x PP3).
It has 3 DTMF detector circuits. Each of these detector circuits can be switched to recognize any of the 3 tones generated by the GS-DTMF001. The audio input (DTMF tone input) for the 3 detector circuits is on both a male & female XLR. On recognizing the correct DTMF tones the detector circuit lights an LED and also operates a mains relay sending mains to an IEC fixed socket for connecting to external cue lights. If the unit is only being powered from its internal battery, then it will not operate external mains devices.
GS-DTMF003
The GS-DTMF003 is just a single channel version of the GS-DTMF002, where it only has 1 DTMF detector circuit and therefore only switches 1 LED or 1 external main light.
GS-DTMF004
As the GS-DTMF-002 but with relay contact closures instead of mains switching.
SEE ALSO GS-DTMF006 & GS-DTMF007 BELOW

GS-DTMF006 & 007 DTMF CUE LIGHTS

This cue light system operates on the same DTMF frequencies as our GS-DTMF001 to 005 units. The 2 systems can therefore be mixed and matched if required.

GS-DTMF006

GS-DTMF007 Front & Rear

GS-DTMF006
The GS-DTMF006 is powered by battery (1 x PP3) or an external plug top psu. It is a desktop box with sloping front panel for ease of use.
It generates a DTMF tone and sends it to a single audio output (on male XLR). The DTMF tone generated can be internally set to be any of the 3 same DTMF tones used by our GS-DTMF001 to 005 system.
The DTMF tone is generated and sent to the output when an illuminated front panel push switch is operated.

GS-DTMF007
This is battery powered (1 x PP3) and also has an external DC input. It is a small robust box (165 x 108 x 50mm w x d x h) and features a 3/8" BSW threaded hole in its base allowing it to be fixed to mic stands.
It features 3 large very high brightness LEDs all of which illuminate when the unit receives a suitable DTMF signal.
The DTMF signal that the unit responds to can be internally set from 1 of 3.

SEE ALSO GS-DTMF001 to GS-DTMF005 ABOVE

GS1U-034 DTMF Detector Subrack

The GS1U-034 is a 1U mains powered 10 channel DTMF detector sub rack. It has 10 independent DTMF detectors. Each channel closes a relay on detection of a user defined DTMF sequence (of up to 4 tones). Another user defined DTMF sequence then opens the relay. The relays may also be set to automatically open after a set length of time (between 1 second and 24 hours). A simple to use front panel controller with easy to follow instructions (pictured below) makes programming the GS1U-034 easy. As well as these controls there are 10 front panel LEDs that indicate when a relay is closed. Audio inputs are zero level balanced on 2 rear panel 'D' connectors. Loops from the relays are also on 2 rear panel 'D' connectors.

GS1U-034 Control Panel

- Relays can be set to close automatically from 1 sec to 24hrs
- Easy to programme
- Security code required to change settings
- LEDs indicate when relays are closed
- 10 Independent DTMF Detectors
- User defined DTMF sequence for closing relay
- User defined DTMF sequence for opening relay

See also GSGC10 DTMF dialler in ISDN section

DIRECT OFF AIR RECEIVER

Direct Off Air Receiver GS2U-009

This is a 2U mains powered sub rack. It takes a standard car radio (any make and model can be fitted to meet your requirement) and provides power for the car radio and also 3 audio outputs. All outputs are zero level transformers balanced. The 3 outputs are A, B (Stereo left & right) and M (A + B –3 mono).

GS2U-009

DISTRIBUTION AMPLIFIER

Distribution Amplifier GS-DA001 3 x 1 Input 2 Output

FRONT & REAR VIEWS OF GS-DA001

SPECIFICATION
- Power Input: 100 – 240V AC
- Power Consumption: 2.4W
- Inputs & Outputs: Electronically Balanced
- Input Gain: -9dB to + 3dB
- Max input level: +24dB
- Frequency Response: 25Hz to 25kHz (-2dB)
- Distortion measured with +10dB input <0.01% @ 100Hz, 1kHz & 10kHz
- Noise > -82dB (22Hz to 22kHz RMS)

GS-DA001 FEATURES
- Mains Powered (100 to 240V)
- 19 Inch 1RU
- 3 separate distribution amplifiers
- Each distribution amp has 1 analogue input & 2 analogue outputs
- Can be supplied fitted with 1, 2 or 3 distribution amps
- Level adjustment per input

EURO MODULES

GENERAL Glensound has been making euro modules for many years. These have usually been either for use in house or made to customer's specification. Some of these modules may be of more general interest and so we have decided to make these more readily available and from time to time, add new modules to the collection.

MECHANICS All modules are designed to fit Euro standard 3U sub racks. They all have individual front panels usually with some controls. The standard module width is a multiple of HP units. Each HP = 0.2 inches = 5.08mm. A standard 19inch sub-rack has space for 84HP units.

CONNECTORS Each module has a multiway connector on its rear edge so that it can be removed from the sub-rack. There are several DIN standards for these connectors under the generic type of DIN 41612. We use type B bodies that offer 2 rows of pins and can accommodate up to 64 pins. The modules have fixed plugs and therefore the sub rack must have a fixed socket.

SUPPLIES This range of modules is designed to operate from symmetrical rails. Most have on card stabilizers to provide +/-15volt rails. We usually operate these modules from regulated +/-18volt rails. Because the on card regulators usually only require 1volt headroom supplies as low as +/16volts are adequate.

Glensound can supply, to special order, most of these Euro modules with +/-12volt on card regulators. Then supplies of +/-13 or more volts are enough. The specifications for the modules will then be effected particularly as far as maximum output levels are concerned.

SUBRACKS Glensound can supply custom wired sub racks to suit any combination of our modules. These can be made with mother boards are wired individually. They would normally have a custom-made rear panel with connectors of your choice.

SPECIALS We are always pleased to quote for custom modules that provide the exact functions you require. Because of our design techniques these will usually cost less than you might imagine.

EMC All of our modules are individually EMC tested. EMC regulations and CE marking always apply to the system and not the individual modules. When Glensound supply a sub-rack with modules, we EMC test the whole sub-rack and CE mark it as an entity.

GSC76 Twin LED PPM

Rails: +/- 18
Width (HP): 6
Transformer balanced inputs, zero dB in for PPM4

GSF72 Mains Linear PSU

Rails: +/- 18 & 48
Width (HP): 10
Standard Euro Module PSU

GSJ62 Line Send Amp

Rails: +/- 18
Width (HP): 5
Electronic balanced inputs. Preset gain & lightning protected.

GSJ32 General Purpose Amp

Rails: +/- 18
Width (HP): 6
General purpose amplifier. Transformer balanced inputs. +10 to –30 in 5dB steps. Electronic balanced outputs.

GSJ64 Compressor

Rails: +/- 18
Width (HP): 7
Unbalanced inputs, Transformer balanced outputs. Variable – gain, threshold, compression ratio & times.

GSK37 4 Input Mixer

Rails: +/- 18
Width (HP): 6
Electronic balanced inputs & outputs. Individual channel gain controls.

GSK38 2 Input Mixer

Rails: +/- 18
Width (HP): 5
Electronic balanced inputs & outputs. Individual channel preset gain controls.

GSK84 Mic Amp

Rails: +/- 18 & 48
Width (HP): 6
Transformer balanced input & electronic balanced output. 48v phantom power (switchable). Gain 40 to 75 dB in 5dB steps.

GSL35 Twin Distribution Amp

Rails: +/- 18
Width (HP): 6
2 Transformer balanced inputs each to 2 electronic balanced outputs. Listen jack for each pair of outputs.

GSN28 Voice Operated Relay

Rails: +/- 18
Width (HP): 5
On detection of an audio signal on the input, a relay loop is closed (which can be switched to 1 of 5 places). Controls for the threshold & release times.

GSP19 Mic Distribution Amp

Rails: +/- 18 & 48
Width (HP): 6
Transformer balanced input to 8 x electronic balanced outputs. 48v phantom power (switchable).

FOUR WIRE / IFB EQUIPMENT

GENERAL
Glensound have been manufacturing 4 wire equipment for many years and on these pages are some items that do not appear anywhere else in this catalogue. For instance all of our commentator's equipment is designed for interfacing with 4 wire systems for program and co ordination circuits, even our very popular portable ISDN unit GSGC5 can be used as a 4 wire commentary box when no ISDN line is available.

4 WIRE

GS-FW003 Single Channel 4 Wire Subrack

GSFW-003
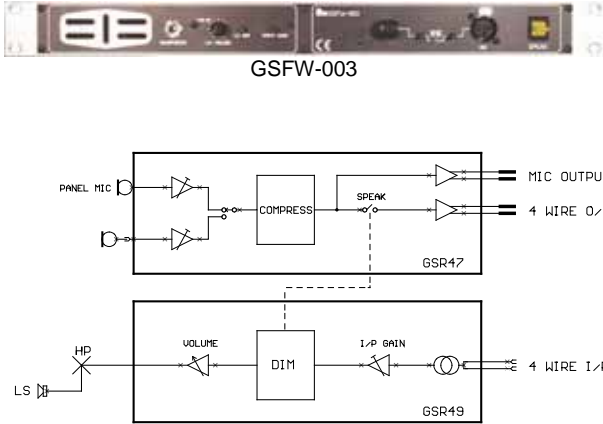
FEATURES
- Mains Powered
- 19 Inch 1RU
- Single 4 wire circuit
- Front Panel Mic or External Mic
- Mic gain control
- Compressor/ limiter circuit for mic
- Lazy Mic output
- Front panel lever key for switched output
- 4 wire input transformer balanced
- Input gain control
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)

4 WIRE

GS-FW018 Versatile Single Channel 4 Wire Subrack with IFB

GSFW-018
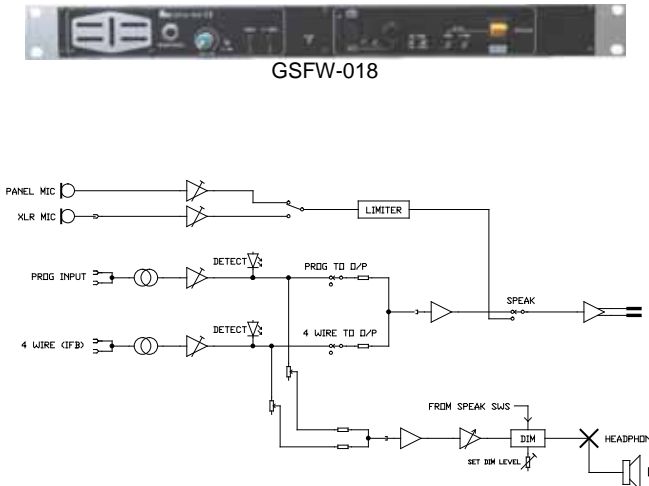
FEATURES
- Mains Powered
- 19 Inch 1RU
- Single 4 wire circuit
- Program audio input
- Front Panel Mic or External Mic
- Mic gain control
- Compressor/ limiter circuit for mic
- Front panel lever key for switched output
- 4 wire input transformer balanced
- Program input transformer balanced
- Input gain controls for 4 wire & program
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)
- Audio presence LEDs indicate incoming audio
- 4 wire input can be switched to 4 wire output
- Program input can be switched to 4 wire output

GS-FW002 Single Channel 4 Wire ⅔3RU Subrack

The GS-FW002 has identical audio facilities to the GS-FW003 (above) and the difference between the 2 units is just the physical housing. The GS-FW002 is housed in 3RU deep unit that only takes up half of a standard 19inch rack. The rack ears are removable and can be rotated in 90 degree steps to allow for fixing underneath or on top of work surfaces.

GSFW-002

GS1U-036 Two Channel 4 Wire Subrack

GS1U-036
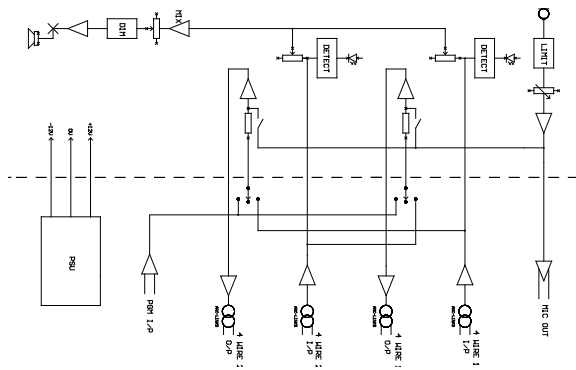
FEATURES
- Mains Powered
- 19 Inch 1RU
- Two 4 wire circuits
- Front panel Mic with gain control
- Compressor/ limiter circuit for mic
- Lazy Mic output
- Individual front panel lever keys for switched output to either 4 wire circuit
- 4 wire inputs & outputs transformer balanced
- Input level controls & signal present LEDs
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)
- Separate program input
- Program input can be routed to either 4 wire output
- 4 wire input 1 can be routed to 4 wire output 2
- 4 wire input 2 can be routed to 4 wire output 1

GS1U-047 Two Channel 4 Wire Subrack

GS1U-047
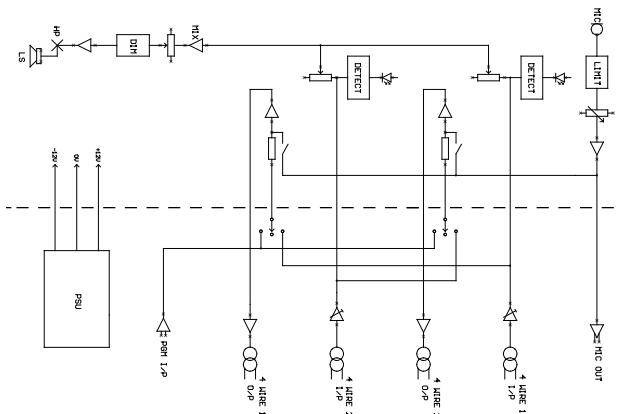
FEATURES
- Mains Powered
- 19 Inch 1RU
- Two 4 wire circuits
- Front panel Mic with gain control
- Compressor/ limiter circuit for mic
- Lazy Mic output
- Individual front panel lever keys for switched output to either 4 wire circuit
- 4 wire inputs & outputs transformer balanced
- 4 wire Input gain controls
- Input level controls & signal present LEDs
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)
- Separate program input
- Program input can be routed to either 4 wire output
- IFB (switchable) on both 4 wire circuits

GS-FW024 Versatile Four Channel 4 Wire Subrack

FEATURES

- 4 x 4 wire circuits
- 1 x program audio input
- Audio inputs are transformer balanced
- Inputs & outputs on rear panel XLRs
- 4 wire inputs and program input have course gain controls
- Signal present LEDs indicate incoming audio present on 4 wire inputs and program input
- Front panel loudspeaker
- Headphone output (cuts LS)
- Variable LS dim
- Loudspeaker/ headphones volume control

- Program input can be switched to any of the 4 wire outputs and interrupted when speak key pressed
- 4 wire inputs can be switched to their own outputs and interrupted when speak key pressed
- Program and 4 wire interrupts can be set to either cut or mix with the talkback mic
- Front panel mic or external mic input
- Separate gain controls for the 2 mic inputs
- Speak keys are latching/ off/ momentary
- LEDs indicate when speak keys are on
- Relay loop closure outputs from speak keys
- Mains powered with internal switch mode PSU (100 to 240 VAC input range)

GS-FW014 Six Channel 4 Wire Subrack

GS-FW014
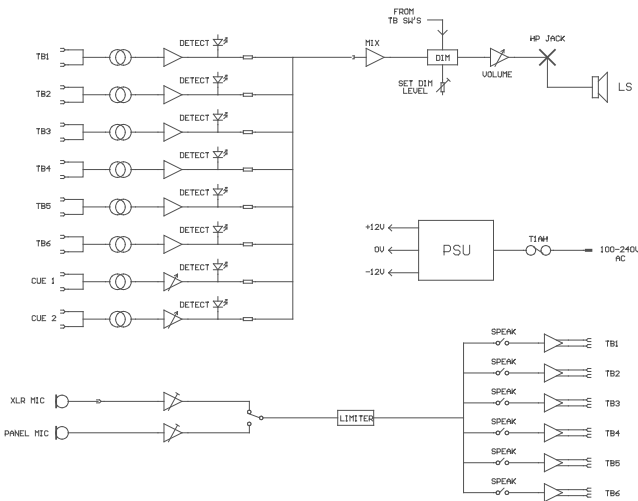
FEATURES

- Mains Powered (100 to 250V)
- 19 Inch 1RU
- Six 4 wire circuits
- Two 'Cue' inputs
- Front panel Mic with gain control
- External Mic input with gain control
- Compressor/ limiter circuit for mic
- Talk to 4 wire switches are latching/off/momentary
- 4 wire inputs transformer balanced
- Cue input gain controls
- Input signal present LEDs
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)
- 4 wire circuits are on rear panel 5 pin XLRs

GS-FW007A and GS-FW013 Single Channel 4 Wire Desktop Unit

GSFW-007A

FEATURES

- GS-FW007A External Mains PSU (Supplied)
- GS-FW013 Internal Mains PSU
- GS-FW007A 170 x 98 x 180 mm
- GS-FW013 170 x 98 x 192 mm
- Single 4 wire circuits
- Front panel or external Mic with gain control
- Compressor/ limiter circuit for mic
- Lever key for switched output
- 4 wire inputs transformer balanced
- 4 wire Input gain control
- Input gain & level controls
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)
- Audio connector on both XLRs and 20 way varicon.

GS-FW016 and GS-FW017 Single Channel 4 Wire Desktop Unit

GSFW-016

FEATURES

- GS-FW0017 External Mains PSU (Supplied)
- GS-FW016 Internal Mains PSU
- GS-FW0017 170 x 98 x 180 mm
- GS-FW016 190 x 98 x 180 mm
- Single 4 wire circuits
- Front panel or external Mic with gain control
- Compressor/ limiter circuit for mic
- Lever key for switched output
- 4 wire inputs transformer balanced
- 4 wire Input gain control
- Input gain & level controls
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Variable LS dim (when lever key switched)
- GS-FW017 Audio connector on both XLRs and 20 way varicon.
- 4 wire input can be switched to 4 wire output (IFB)
- When mic is operated if 4 wire input is selected to output the unit can be set to either mix or cut the incoming 4 wire feed with the mic

GS-FW023 Versatile Single Channel 4 Wire Desktop Unit

FEATURES

- Internal switch mode power supply (100 to 250 VAC)
- Size 190 x 98 x 180 mm
- Single 4 wire circuit
- Program audio input
- Front panel or external Mic with gain control
- Compressor/ limiter circuit for mic
- Lever key for mic operation
- Relay output when mic live
- 4 wire & program inputs transformer balanced
- 4 wire & program Inputs have gain controls
- Audio present LED indication for 4 wire and program inputs
- Front panel Loudspeaker
- Headphone Jack (breaks LS)
- Overall LS/ Headphone volume control
- Variable LS dim (when lever key switched)
- 4 wire input can be switched to 4 wire output (IFB)
- Program input can be switched to 4 wire output
- When mic is operated if 4 wire or program inputs are selected to output the unit can be set to either mix or cut the incoming 4 wire/ program feed with the mic
- Audio connections on rear panel XLRs

GS-FW005 Two Channel 4 Wire Desktop Unit with 1 x 2 wire to 4 wire converter

GSFW-005

FEATURES

- Internal Mains PSU
- Desktop 196 x 117 x 180 mm
- Two 4 wire circuits
- Mic input (for gooseneck) with gain control
- Compressor/ limiter circuit for mic
- Momentary pushbuttons for switched outputs
- Pushbutton for 4 wire circuit no 1 is 'lockable' on
- 4 wire inputs & outputs transformer balanced
- Individual 4 wire input gain controls
- Front panel loudspeaker
- Variable LS dim
- Inbuilt 4 wire to 2 wire converter for 1 off 4 wire circuit

GS-FW009 Two Channel 4 Wire Desktop Unit with 1 x Mic level 4 wire input

GSFW-009

FEATURES
- External Mains PSU (supplied)
- Desktop 196 x 98 x 170 mm
- Two 4 wire circuits
- Mic input (for gooseneck) with gain control
- Compressor/ limiter circuit for mic
- Leverkeys for switched outputs
- 1 x 4 wire input transformer balanced
- 1 x 4 wire input is Mic level
- The Mic level 4 wire input has a direct line level output
- Individual 4 wire input gain & level controls
- Front panel loudspeaker
- Headphone socket (breaks LS)
- Variable LS dim for each 4 wire input

GS-FW022 Versatile Two Channel 4 Wire Desktop Unit

- 2 x 4 wire circuits
- 1 x program audio input
- Audio inputs are transformer balanced
- Inputs & outputs on rear panel XLRs
- 4 wire inputs and program input have level controls
- Signal present LEDs indicate incoming audio present on 4 wire inputs and program input
- Front panel loudspeaker
- Headphone output (cuts LS)
- Variable LS dim
- Loudspeaker/ headphones volume control
- Program input can be switched to any of the 4 wire outputs and interrupted when speak key pressed
- 4 wire inputs can be switched to their own outputs and interrupted when speak key pressed
- Program and 4 wire interrupts can be set to either cut or mix with the talkback mic
- Front panel mic or external mic input
- Separate gain controls for the 2 mic inputs
- Speak keys are latching/ off/ momentary
- LEDs indicate when speak keys are on
- Relay loop closure outputs from speak keys
- Mains powered with internal PSU 240 VAC (110 Volts available on request)

GS-FW012 Four Channel 4 Wire Box

GSFW-0012

FEATURES
- Internal mains PSU
- Four x 4 wire circuits
- 1 x Program input
- All inputs transformer balanced
- Front panel mic
- External mic input
- Limiter compressor circuit for mic
- Individual mic gain controls for panel & external
- Front panel loudspeaker
- Headphone jack (break jack (turns off loudspeaker))
- Variable LS dim for when talkback keys are pressed
- Talkback keys are latching/off/momentary
- Each 4 wire circuit can be switched Prog/Loop/Off
- Audio present LEDs on all inputs
- Individual gain controls for all 5 inputs
- LS/ Headphone volume control

GSVC2 Four Channel 4 Wire Box

GSVC2

FEATURES
- Externally powered from +10v to +30v
- Rugged & Portable 170 x 84 x 128 mm
- 4 wire inputs & outputs on 5 pin XLR
- 4 Wire inputs each have gain control
- Each input can be switched to left/ right or both sides of headphone amp
- Headset connector for listening to inputs & connection of mic for talkback
- Headphone volume control
- Compressor/ Limiter circuit on mic amp
- 12 volt phantom power available
- Talkback to each 4 wire circuit via 'Push To Talk' switch or via Voice operated switch
- Size 170 x 84 x 128mm

GS-FW010 & GS-FW011 4 wire units with Buzz circuits & CAT5 wiring
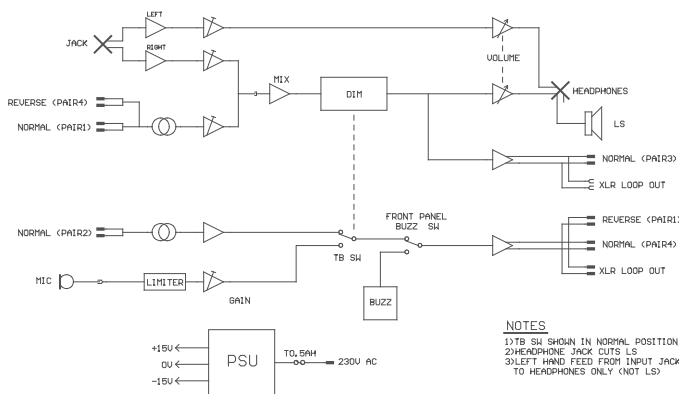
GSFW-011

These are 2 four wire units, both offering the same facilities. The GS-FW010 is 19 inch 1RU and the GS-FW011 is desktop. They are mains powered and offer 1 x 4 wire circuit with extra audio loop through circuits and a headphone input. A 'buzz' can be sent to the output of the 4 wire circuit. Audio connections are on XLR and CAT5 connectors.

FEATURES
- GS-FW011 is desktop
- GS-FW010 is 19inch 1RU
- Mains powered 230 volts
- 4 wire input sent to loudspeaker/ headphones and 'loop through' output
- Unbalanced stereo input sent to loudspeaker/ headphones and its left channel to 'loop through circuit'
- Pre set gain controls on the above inputs
- IFB input sent to 4 wire output
- Front panel XLR input for mic
- Gain control for mic
- 'Buzz' circuit on momentary switch sent to 4 wire output
- Transformer balanced inputs
- Audio connectors on both XLR and CAT5
- 2 CAT5 connectors on each unit 1 'Normal' and 1 'Reverse' wiring

GS-FW026 Three Position Four Wire Unit For Wall Mounting In Electrical Back Boxes

FEATURES
- 3 zone four wire box
- Wall mounts in standard electrical back boxes
- Main unit powers 2 slave systems
- Each unit has an adjustable front panel speaker and microphone
- Speak to each zone individually or together

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GS-FW001 Four x 4 wire circuits down single CAT5 cable

GSFW-001

FEATURES

- Internal mains PSU
- 2 part system, 4 wire connection unit & talkback control panel
- Single cat5 cable connects both parts together
- Control panel is powered from connection unit
- 4 off 4 wire circuits
- 4 extra IFB inputs
- 4 wire connectors are A/B gauge jacks
- Loudspeaker & headphone jacks for monitoring incoming 4 wires
- Cut LS switch
- Incoming 4 wires can be switched to left/ right or both sides of headphone amp
- Individual 4 wire input level controls
- Audio present LEDs by 4 wire level controls
- Lever key talkback to 4 wire circuits
- Front panel Mic XLR for gooseneck mic
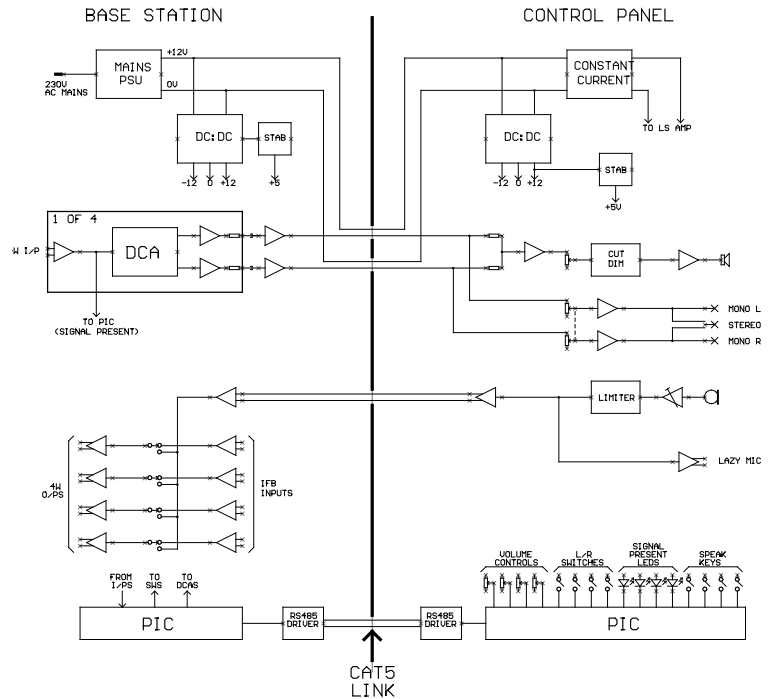
NEW 1RU BASE STATION NOW AVAILABLE

FEATURES

- 19 Inch 1RU
- Mains powered
- Connects to existing control panels
- Provides same facilities as existing GS-FW001 base station
- 3 Pin XLR connectors for audio inputs & outputs
- Ideal for permanent installation
- Neutrik locking RJ45 cat5 connector
- GS ordering code: GS-FW001A

GS-FW008 Four Wire Talkback + Talkback into Headphone Circuit

The GS-FW008 is a versatile small beltpack unit. It provides a traditional 4 wire circuit (with IFB facility) and also allows for the insertion of talkback over a headphone circuit.
A headphone amp is incorporated for listening to the incoming audio circuits and a mic/ line input is provided for sending audio to the outputs. A front panel latching/ momentary lever key switch is switches the mic/ line input to the outputs.
See beltpack section of this catalogue for full details.

GS-FW021 Four Wire Box For Use With Headsets

The Glensound GS-FW021 is a very small and useful headset interface to 4 wire circuits. It is ideal for talkback and intercom in studios, theatres or outside broadcast environments.
As well as providing a traditional 4 wire interface it also has a loop through interrupt mode (IFB) and a 2 wire conference mode.

See beltpack section of this catalogue for full details.

GS-FW004   4 WIRE to 2 WIRE CONVERTER

GSFW-004

This is a passive 2 wire to 4 wire converter. It is designed to work with other Glensound equipment. The 4 wire equipment that it is connected to must have a low impedance (50 Ohms) output and a high impedance (10K + Ohms) input. The 2 wire connection must be terminated in 600 Ohms (i.e. a GS-FW004).
The unit is housed in rugged die cast aluminium box measuring 120 x 65 x 36mm (LxDxH)

GS-FW006 3 OFF 4 WIRE to 2 WIRE CONVERTERS
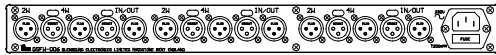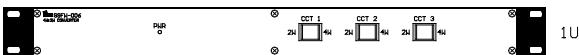
GSFW-006

FEATURES

- 19 Inch 1RU
- Internal mains PSU
- 3 x Identical circuits
- Each circuit has 4 wire in, 4 wire out & 2 wire connection
- Front panel switches switch audio between 4 wire out & 2 wire circuits.
- All audio connections on rear panel XLRs

FREQUENCY SHIFTER

(FEEDBACK SUPPRESSOR) type GSWL-SR28

The GSWL-SR28 is a frequency shifter originally designed to eliminate feedback. It utilises the very latest DSP technology to very efficiently frequency shift the audio signal.

GSWL-SR28

FEATURES

- A/D & D/A converters sample at 32kHz
- Very low noise
- Maximum input before clipping is +18dBu
- Input & output on rear panel XLRs
- Mains operated & 1U Rack mounted
- Audio output is 'down shifted' by 5Hz from the input
- Front panel 'normal' or 'bypass' switch
- Front panel 'listen' bantam jack at –10dBu for monitoring
- Electronically balanced inputs & outputs

ATOMI C HELI UM O2 Feedback Destroyer

A more advanced feedback destroyer than the GSWL-SR28 and as such its performance figures justifies its position within the Atomic range.

FEATURES

- A/D & D/A converters sample at 48kHz
- Very low noise
- Maximum input before clipping is +18dBu
- Stereo operation with input & output on rear panel XLRs
- Mains operated & 1U Rack mounted
- Audio output is 'down shifted' by 4Hz from the input
- Front panel on and off switches
- Electronically balanced inputs & outputs

HEADPHONE AMPLIFIERS

HEADPHONE AMPLIFIERS

GS-HA001 Battery Powered Single Headphone Amp

FEATURES
- Powered from 1 x PP3 Long battery life
- External DC power input
- On/Off switch
- Blue power on LED
- Compact size with beltclip
- 2 balanced inputs on rear panel XLRs
- 1 input switchable to unbalanced stereo
- Input gain controls
- Separate left/ right headphone volume controls
- Phase reverse right ear switch
- 2 x Headphone jacks 6.35mm (A/B gauge)
- 1 x Headphone jack 3.5mm
- Headphone impedances of 100 to 2000 Ohms

GSGH2 Battery Powered Twin Headphone Amp

GSGH2

FEATURES
- Powered from 2 x PP3 Long battery life
- External DC power input
- DC 'loop through' output
- On/Off switch with power save if no headphones connected
- 2 x individual headphone amps fed from 1 source
- 2 balanced inputs on XLRs
- 2 balanced 'loop through' outputs on XLRs
- 1 input (& output) switchable to unbalanced stereo
- Input gain controls
- Both headphone amps have separate left/ right volume controls
- Phase reverse right ear (internal link)
- Headphone jacks A/B gauge
- Headphone impedances of 100 to 2000 Ohms (will drive 8 Ohms)
- Low battery indicator
- Size: 178 x 103 x 42mm
- Weight 650g (excluding batteries)

AVAILABLE ACCESORIES
- Plug top PSU
- 2 metre 'DC' loop through cable
- Polypropylene case for 2 x GSGH2, 1 x PSU & DC cable

GS-HA006 Battery Powered Twin Headphone Amp

GS-HA006

The GS-HA006 is very similar to the popular GSGH2 but it provides a few extra useful features such as L/R/ Both switching of sources to ears and phase reverse B switches rather than internal links.

FEATURES

- Powered from 2 x PP3 cells
- External DC power input (12 - 18volts)
- Size just 176 x 127 x 41 mm (W x D x H)
- 2 independent stereo headphone amplifiers
- 2 x audio inputs
- Input gain controls on rear panel preset pots
- Front panel headphone volume controls
- Loop through audio connectors
- Electronically balanced inputs and outputs
- Inputs can be user selected to be either balanced on 2 x XLRs or unbalanced stereo on 1 x XLR
- Inputs can be switched to left/ right or both sides of each of the headphone amplifiers
- Headphone jacks are A/B gauge
- Designed for 200 to 2K Ohm headphone impedances
- Phase reverse B switch on each amplifier
- Can run lower impedance (80 Ohm headphones) with reduced battery life
- Power on switch
- Automatically turns off if no headphones are connected
- Low battery indication

GS-HA009 Ear Piece Driver/ Headphone Amp

This unit has been designed by popular request to provide the same facilities as the industry standard (but now no longer available) Prospect C1MB IFB amplifier.
The GS-HA009 is suitable for driving a wide range of impedance headphones and earpieces from 8 to 2000 Ohms.
It has a small inbuilt loudspeaker which can be used for simple monitoring and is disconnected when a headphone jack is inserted.
The GS-HA009 is a mono headphone amplifier capable of driving both mono & stereo headphones & earpieces. A limiter is built in to protect the user from a sudden loud input level. The limiter can be switched into & out of the circuit.
The audio input is balanced on an XLR (a loop through XLR is provided for daisy chaining several devices together). A 20dB gain switch is provided to boost the input level if required.
The design of the GS-HA009 is very low current and as such it provides a very long battery life.

GS-HA010 Single Input Headphone Amp

A portable, belt pack style single channel headphone amplifier.

Audio input is via XLR with a loop through XLR output. Two headphone sockets are offered, 1 on 6.35mm and the other on 3.5mm. These are wired tip & ring to allow connection of regular stereo headphones (with audio on both ears) or a single ear piece. There is a volume control for adjusting level to 32-1000ohm impedance headphones.

Power is via a 9v PP3 battery (>18 hours use) or via external DC power. There is an on/off switch and a low power LED light.

Glensound belt pack cases are very rugged to withstand the rigours of portable use. There are loop anchor points on each of the front corners for shoulder straps or tying down, and there is a belt clip.

SPECIFICATIONS
- Portable single channel headphone amplifier
- Battery(PP3) or DC power
- Adjustable headphone level control
- 6.35mm and 3.5mm headphone sockets
- Audio input on XLR with loop through
- On/off switch
- Low battery light
- Belt clip

GS-HA011 Single Input Headphone Amplifier
With Input Gain Adjust & Transformer Balanced Inputs

A portable, belt pack style single channel headphone amplifier.

Audio input is transformer balanced with recessed adjustable gain control. Input connection is via XLR with a loop through XLR output. Two headphone sockets are offered, 1 on 6.35mm and the other on 3.5mm. These are wired tip & ring to allow connection of regular stereo headphones (with audio on both ears) or a single ear piece. There is a volume control for adjusting level to 32-1000ohm impedance headphones.

Power is via a 9v PP3 battery (>18 hours use) or via external DC power. There is an on/off switch and a low power LED light.

Glensound belt pack cases are very rugged to withstand the rigours of portable use. There are loop anchor points on each of the front corners for shoulder straps or tying down, and there is a belt clip.

SPECIFICATIONS
- Transformer balanced inputs
- Input gain control
- Battery(PP3) or DC power
- Adjustable headphone level control
- 6.35mm and 3.5mm headphone sockets
- Audio input on XLR with loop through
- On/off switch
- Low battery light
- Belt clip

GS-HA005 Battery Powered 4 Input Twin Headphone Amp & Mixer

GS-HA005

FEATURES
- Capable of producing very high levels into headphones
- Battery powered (2 x 'D' cells)
- External DC input
- 4 x balanced inputs on rear panel XLRs
- Inputs have loop through XLR connectors
- Inputs are transformer balanced
- 2 separate headphone amplifiers
- Separate headphone volume controls for each input
- Each input can be switched to left/ right or both channels of each headphone amp
- Stereo headphone jacks
- 2 x Headphone jacks (A/B gauge) for each headphone amp
- Headphone impedances of 200 to 2000 Ohms
- 2 x balanced mix outputs
- Mix outputs are line level feeds from the headphone mix
- Compact size: 158 x 165 x 105mm (w x d x h)

GS-HA002 Battery Powered 4 x Headphone Amps

GS-HA002

FEATURES
- Battery powered from 2 x 'D' Cells
- External DC input
- Power On switch
- Low battery warning
- Long battery life
- 2 x balanced inputs on XLRs
- 2 x balanced loop through outputs on XLRs
- Mono switch to feed both left & right from 1 balanced input
- Input gain controls
- 4 x headphone amplifiers
- Each amplifier has left/ right volume control
- Headphone jacks A/B gauge
- Headphone impedances of 100 to 2000 Ohms
- Size: 247 x 192 x 64mm

GS-HA003 Battery Powered 4 x Headphone Amps

GS-HA003

FEATURES
- **IDENTICAL AS GS-HA002 (above) EXCEPT**
- Headphone outputs are XLRs
- Separate XLR output for each left & right headphone amp
- Size: 247 x 192 x 76mm

GS1U-052 Two Input 2 x Headphone Amps

GS1U-052

FEATURES
- 19 Inch 1RU
- Mains Powered
- 1 x Unbalanced stereo input (on XLR)
- 1 x balanced mono input
- Input gain controls
- Stereo input can be straight from headphone output of another device
- 2 x headphone amplifiers
- Stereo input is 'monod' and sent to left channel of headphone amps
- Mono input is sent to right channel of headphone amps
- Each headphone amp has own volume control
- Headphone jacks are A/B gauge
- Headphone impedances 100 to 2000 Ohms

GS1U-054 Five Input Headphone Amp

GS1U-054

FEATURES
- 19 Inch 1RU
- Mains Powered
- 5 x balanced mono inputs (zero level)
- 1 x balanced stereo input (zero level)
- All inputs can be switched to left/ right channel of headphone amp
- All inputs have level controls
- All inputs are rear panel XLRs
- 1 x headphone amplifier
- Headphone volume control
- Headphone output on front panel jack & rear panel XLR
- Headphone jack is A/B gauge
- Headphone impedances 100 to 2000 Ohms

GSJ73 Twin Headphone Amp

GSJ73

FEATURES
- Mains powered
- 2 x zero level balanced inputs
- Inputs mixed together
- 2 separate headphone amplifiers
- Individual headphone level controls
- Stereo headphone jacks
- 2 x Headphone jacks (A/B gauge)
- Headphone impedances of 200 to 2000 Ohms

GS-HA004 Twin Mono Headphone Amp

FEATURES
- Versatile box can be mounted on top or underneath work surface
- External DC power supply
- 1 x transformer balanced mono input
- Input gain control (screwdriver preset)
- 2 x Mono Headphone amplifiers
- Each headphone amp has its own volume control
- Headphone outputs on rear panel XLRs and front panel jacks
- Power on LED

Top Hat M4 Four Input 4 x Headphone Amps with Talkback

GS1U-045 & Talback boxes

FEATURES
- 19 Inch 1RU subrack & 2 talkback boxes
- Mains Powered
- 8 x balanced mono inputs (4 with gain controls)
- 4 x Headphone amplifiers
- Each headphone amplifier can be fed from 2 off the 4 inputs with gain controls
- Each headphone amplifier has 1 unique input fed to it
- Each talkback box can talk to any of the 4 headphone amps
- Engineering talkback on subrack front panel
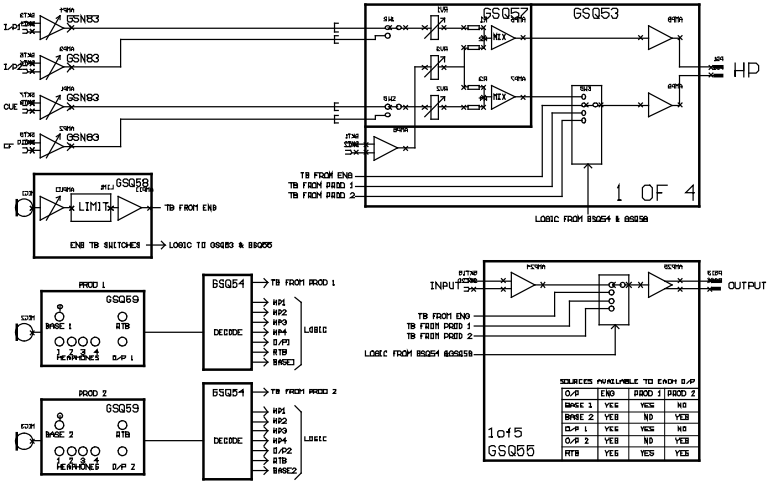
- Engineer can talk to any of the 4 headphone amps
- 4 x balanced mono loop through circuits
- Talkback boxes & engineer can add talkback to loop through circuits
- Talkback boxes connect to subrack with just 1 x standard mic cable
- Headphone outputs on rear panel connectors
- Talkback boxes & engineer can talk to a balanced output on subrack
- Limiter/ compressor circuits on mic amps

Top Hat M3 Compact Headphone Amp With Monitoring Loops

- Two compact mixing headphone amplifiers
- Three outputs on each headphone amplifier
- Four inputs produce an individual mix per headphone amp
- Single talkback circuit
- Mic input has compressor/limiter and is controlled via a sturdy front panel lever switch
- RJ45 connections for looping multiple Top Hat M3's
- 2x C cell battery or external DC power

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HEADPHONE TALKBACK

GS-TB001 For Adding Talkback into a Headphone Feed

GS-TB001

FEATURES
- Small desktop unit
- External power supply
- Power on LED
- Front panel gooseneck mic
- Mic gain control
- Front panel Lever key for talkback
- Headphone input on rear panel jack socket
- Headphone output on rear panel jack socket
- Front panel 'listen' jack
- Talkback is inserted on left channel of headphone circuit

SEE ALSO GS-FW008 IN OUR BELTPACK RANGE

HEADPHONE LIMITERS & EXPOSURE METERS

GSXH2 & GS1U-044 HEADPHONE LIMITERS

This unit was developed in conjunction with the Capital Radio group to provide a way of controlling headphone levels. The aim is to enable the user to achieve adequately high listening levels without hearing damage.

GSXH2

Hearing damage is caused by noise exposure. This means it is safe to listen at a higher level for a short period or a lower level for a long period. Typical possibilities of reaching the maximum permitted exposure are as follows:

A full 8 hours at 85dB(A)

1 hour at 94dB(A) and 7hours at 75dB(A)

12 mins at 100dB(A) plus 48 mins at 85dB(A) plus 7 hours at 75dB(A)

FEATURES
- GSXH2…Single stereo limiter ideal for attaching underneath workstation
- GS1U-044…19 Inch 1RU subrack with 2 stereo limiters
- Mains powered
- Balanced stereo input
- Front panel level control
- 2 large front panel LEDs
- Yellow LED indicates 85dBa (or 90dBa)
- Red LED indicates 90dBa (or 95dBa)
- Front panel 'Key' switch to allow 5dB higher headphone levels
- Headphone connector is 5 pin XLR (3 pins for normal audio connection & 2 pins for level setting resistor)
- High quality compressor with large compression ratio controlled by side chains containing 'A' weighting filters and special rectifiers
- For further information regarding noise exposure see www.tonywoolf.co.uk

GS-HL005 WORKPLACE HEADPHONE EXPOSURE METER AND ATTENUATOR

The GS-HL005 has been designed to ensure organisations meet their obligations under the Control Of Noise At Work Regulations with staff that have to wear headphones in the course of their work.

An operators headphones are plugged into the GS-HL005 and it then monitors the volume levels being used, comparing them against the daily dosage reserve. If the user listens louder, the reserve empties quickly, if they listen more quietly it empties slower. This usage is calculated against the exact requirements as stipulated by the latest Control Of Noise At Work Regulations 2005.

Connection to the PC software shows usage statistics over different periods of time and logs all listening levels.
http://www.hse.gov.uk/noise/regulations.htm

Dimensions: 65mm x 83mm x 26mm

FEATURES
- Monitors audio dosage and provides user with spoken warnings
- USB connection for uploading dosage profile to PC software and displaying information
- User can accept their own responsibility and reset dosage
- Calibration available for most headphones and headsets
- Power via 3.55mm jack, USB, or internal li-ion battery

HEARING AID LOOP AMPLIFIERS

GSWL-SR31 Twin Loop Amplifier

GSWL-SR31

GENERAL

This is a 1U sub rack that contains two separate loop amplifiers fed from a common source. Each amplifier is capable of driving a maximum output current of 16amps peak to peak. Also each amplifier is capable of swinging up to 42volts peak to peak. Both limits apply so the actual maximum loop current is a function of the loop impedance.

COMMON INPUT STAGES

The input is electronically balanced and feeds a switched gain input stage. This lines up, in 3dB steps from –9dBu with the control fully clockwise to +6dBu with the control fully anticlockwise. This input stage is followed by a 12dB per octave band pass filter 100Hz to 5kHz. After the filter there is a compressor with four LEDs showing the degree of compression.

PHASE SHIFTER

To drive complex loops two amplifiers in quadrature are sometimes required. A +45 degree and –45 degree phase shift pair are therefore provided and can be switched on the front panel.

POWER OUTPUT STAGES

The power output stages have a high defined output impedance of 1kOhm. Therefore the loop current does not depend on the loop inductance. Each amplifier has a switch to control the peak loop current. It is practical to parallel the two amplifiers if a larger current swing is required.

POWER SUPPLIES

Each amplifier has its own independent power supply, but the input stages are supplied by either/or power supply.

Portable Outside Broadcast Loop Amplifier

GS-OBLA1

FEATURES
- Portable & Robust
- Mains powered
- Zero level balanced input
- Input gain control
- Inbuilt compressor to ensure correct level to loop
- Listen socket for monitoring loop from headphones
- Loop can be standard mic cable (XLR connectors) or any cable connected to screw terminals
- Loop sizes up to 200 square metres
- Rotary switch for setting correct current for loop size

GSS45/2 Screen/ Monitor Loop & Loudspeaker Amplifier

GSS45/2

FEATURES
- Designed for customer mounting in other equipment
- Provides deaf aid loop output & Loudspeaker output
- +12 volt power supply required (350 mA)
- Audio input approx zero level with preset adjustable gain
- Loop output suitable for driving a loop around a monitor/ TV
- Tapped mounting holes on heatsink for easy installation
- Plug in connectors for outputs/inputs & power

As with a lot of our equipment this item designed to meet a particular customers requirement we are always happy to discuss designing bespoke equipment to meet your specifications

HYBRIDS

GS-1U050B ISDN Codec Hybrid

An extension of the GS1U050 ISDN codec now offering additional ISDN hybrid facilities.

FEATURES
- Hold function for each ISDN B channel
- Includes Interquartz handset
- TALK TO YOU instructions feature
- Two independent G711/G722 codecs
- Multiple remote options
- 1U 19" rack

ATOMI C COPPER 29 Telephone Hybrid

FEATURES
- The highest quality telephone balancing unit available
- Digital control of all systems with twin DSP processing
- Dedicated echo cancellation
- Automatic gain control and compression
- Remote control options
- Available in rackmount or desktop styles

The design brief was to create one of the finest audio hybrids available. Our engineers developed the Copper 29. Three models available:
Copper 29/S   Single hybrid in a 1u subrack.
Copper 29/SD   Single unit in a desktop case
Copper 29/T   Twin unit in a 1u subrack (pictured)

GS-CU012 Desktop Hybrid & Mixer

A digital hybrid and mixer desktop unit for producing two way programme audio for recording or live use. Intended for small studio, newsroom type use where phone recordings need to be made with a small, simple to use box.

HYBRID
- High specification digital hybrid
- Excellent separation
- Digital signal processing with echo canceller
- Multi country select for worldwide phone network compatibility
- Line on/off hook switching
- LED flashes on incoming call
- Standard phone connection for off air talking and dialing

MIXER
- Headphone connection with side tone and hybrid return monitoring
- Microphone input for on air communication with telephone call
- Mixer for caller audio, mic input, plus a spare input
- Main output, spare output, cue output
- Internal PSU 100-240v

RECCE Battery Powered Portable Reporters Units With POTS Hybrid

A reporters unit based on the popular GS-GC24 ISDN codec, but with a digital POTS hybrid rather than ISDN.

- High quality digital POTS telephone hybrid with twin DSP processing and a dedicated echo canceller.
- Three input mixer with mic, mic +12v phantom, or line input.
- Two headphone outputs
- Three input headphone mixer (including external monitor input)
- Integral dialler
- Battery or external DC powered

GS-CUT101 – TELEPHONE LINE COUPLER

- Provides a balanced audio output from a normal POTS line
- Audilble ringer (defeatable)
- LED ring indicator
- External phone connection (RJ11)
- XLR audio output
- Line connection selectable between pairs 3/4 or 2/5 (RJ11)
- Passive operation
- Tough case with optional belt pack clip

The GS-CUT101 is a heavy duty analogue telephone line coupler. Simply connect a POTS line to the line connection, and the audio is output on a rear panel XLR.

Front panel features a heavy duty on hook/off hook switch, and an external handset can be connected for dialing. With a parallel handset connection, both sides of the phone call will be output.

There is an audible ring when receiving an incoming call which can be turned off. An LED also indicates an incoming call.

GS-PASTE201 – TELEPHONE BALANCING UNIT

The GS-PASTE 201 is a heavy duty analogue telephone balancing unit. It allows professional audio equipment such as mixers, talkback systems or headphone circuits to be connected to a traditional analogue telephone line. A 19 inch rack mount version is also available.

- Provides balanced audio input and output from a normal POTS (Plain Old Telephone System) line
- Line powered
- Audio Input is line level
- Audio I/O balanced on Neutrik XLRs
- Input and output level controls
- Input compressor (prevents overloading of telephone line)
- Multicoloured LED indicates level sent to the line
- R/C & line balance controls
- Internal tone generator
- Internal tone generator makes balancing the line easy
- Instructions on how to balance the line printed on the side
- Internal sounder/ ringer indicates incoming call
- Sounder/ Ringer can be turned off for 'Live Mic' situations
- Front Panel LED indicates incoming call
- RJ-11 connector for external handset to allow dialling of outgoing calls
- On/Off Hook switch (with indicator) allows answering of calls without external telephone
- RJ-11 connector for connection to telephone line
- Recessed switch switches RJ-11 telephone line pairs (there are 2 different standards used Worldwide)
- Tested & complies with ETSI ES203021
- Maximum Dimensions (excluding belt clip): 153 mm x 103 mm x 45mm
- Weight 415g

GALAXY Intercom System

FEATURES
- Ten intercom positions possible
- Rackmount, desktop, or mixer mounted stations
- Base station also supplies power to main 'Star' positions
- Star positions have inbuilt speaker and microphone
- Push buttons illuminate when used to show source
- External mic option
- Headphone socket
- Extended Star positions includes extra headphone amps
- All wiring via Cat5
- Switch mode power supply

BS-19 Base Station

FEATURES
- Manages audio switching and routing of 10 separate Star or Monitor intercom positions
- Supplies power to 10 intercom positions (ex SDT+)
- Switch mode power supply
- 1U 19" subrack

S-19 Star 2 Way Position 1U Subrack

FEATURES
- 10 position intercom with Individual push buttons for each position (inc labelling point)
- Incoming audio illuminates source LED
- Inbuilt speaker with volume control, LS cut button and remote muting input
- Front panel headphone mutes speaker
- Front panel mic or XLR for external mic
- CAT 5 connections back to BS19
- Powered from BS19
- 1U 19" subrack

M-19 1 Way Monitor Position 1U Subrack

FEATURES
- Will monitor 2 positions of the intercom system
- Front panel LEDs with labelling positions
- Full DC loop controls
- 1u 19" subrack

SDT Star 2 Way Position Desk Top

FEATURES
- 10 position intercom with individual push buttons for each position (inc labelling point)
- Incoming audio illuminates source LED
- Inbuilt speaker with volume control, LS cut button and remote muting input
- Front panel headphone mutes speaker
- Front panel mic or XLR for external mic
- CAT 5 connections back to BS19
- Powered from BS19

SDT+ Star 2 Way Position Desk Top With Extra Monitoring Features

FEATURES
- As SDT plus:
- Two Front panel headphone sockets with independent level control
- Both headphone outputs have local inputs
- Guest headphone output also available on back of unit
- Front panel mic or XLR for external mic
- External power supply

SB Intercom Switching Position for T3 Console

FEATURES
- 9 switching controls
- LEDs on each pushbutton that illuminates on incoming source
- Labelling position on each switch
- Designed for the meter bridge POD of the T3 broadcast console

INTERFACE UNITS

GS-AIM001 Analogue & Digital Interface Unit

The GS-AIM-001 is mains powered & constructed in a standard 1U subrack. It offers a highly flexible audio interface and routing unit with both local and remote control.

GS-AIM001

FEATURES

- Remote control over Ethernet
- Windows control software included
- One AES3 input
- Four AES3 outputs
- One Digital to Analogue Converter
- Two Analogue to Digital Converter inputs
- Panel mounted microphone for talkback to AES3 outputs
- Each AES3 output can select it's input source individually or all outputs can have their sources switched together

- Support for standard AES3 sample rates between 32KHz and 192KHz
- Automatic sample rate selection
- Automatic switching to ADC input on AES3 failure
- Full control from front panel
- Control by DC loops
- Highly economical

REMOTE CONTROL OVER ETHERNET
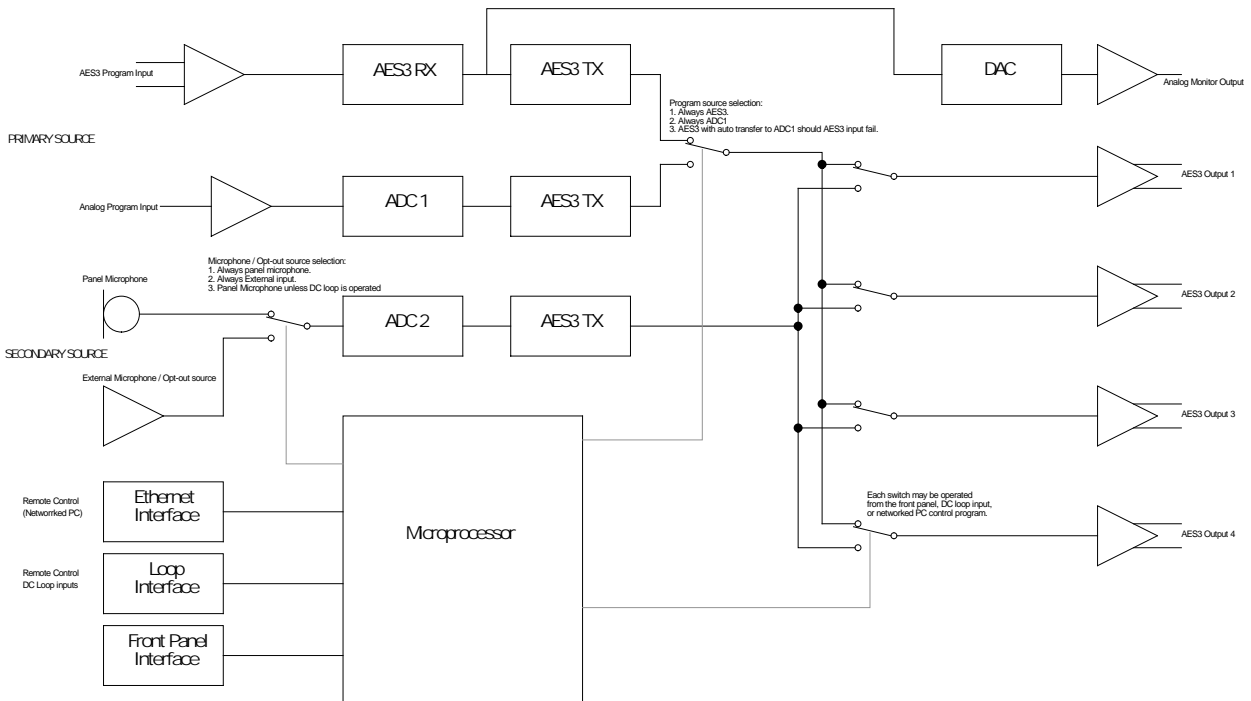
GS-AIM001A Automatic Changeover Unit

The GS-AIM001A is a simpler version of the GS-AIM001 above, with no Ethernet control.

FEATURES

- Front switch selects inputs - analogue/digital/auto

- Detects AES clock, not silence

- 4 x AES3 outputs

- 1 x stereo analogue output

- Digital inputs up to 192 kHz

- Frequency of digital outputs same as digital inputs. If no clock is present then it is user selectable

- Relay out showing if analogue or digital input is being used

- Relay out for loss of power

GS-MIX006 Three Stereo Input Interface

The GS-MIX006 was designed to allow easy connectivity of ancillary equipment to a professional installation by non technical users. It is constructed in a 19 inch 1RU subrack and provides 3 pairs of stereo audio inputs on the front panel all mixed together to 1 stereo balanced output pair on the rear panel. It is ideal to install in a studio to allow non technical staff to connect for example an ipod or minidisk recorder to the studios main desk.

GS-MIX006 Front & Rear
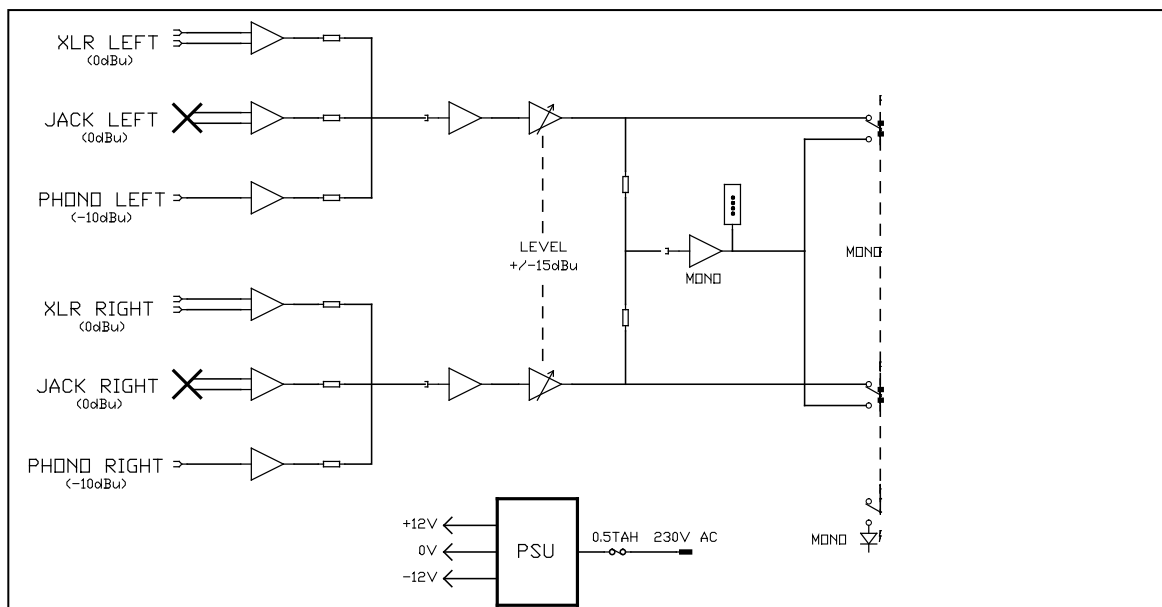
FEATURES

- Mains Powered
- 19 inch 1RU rack
- Simple to use
- 3 stereo audio inputs
- 1 stereo input pair unbalanced on phono connectors
- 1 stereo input pair balanced on 6.35mm jack sockets (A or B gauge)
- 1 stereo input pair balanced on 3 pin XLR sockets
- +/- 15dB level control
- Simple 4 LED PPM meter for easy level adjustment
- Illuminated output mono switch for either routing single channel mono sources to both outputs or for acting a stereo to mono converter
- All 3 inputs permanently mixed together (no channel on/off switches and no faders to confuse non technical staff)

INTERFACE UNITS

Atomic Voiceover 08+ Reporters PC Audio Interface

The Atomic Voiceover 08+ was designed as an interface for a soundcard on a PC. It allows a non technical reporter to connect a broadcast spec microphone and headphones, and provide 2 way input and output. Input from the microphone or external input is sent to the PC, with a simple single button automatic gain level select. This allows reporters to file their reports and ingest their audio.

A playback mode switches the loudspeaker and headphone monitors to the incoming audio from the PC.

A stereo LED PPM meter (BBC 1-7) is selectable from a 2 channel A/B or M/S mid and side mode.

FEATURES

- Mains Powered
- 19 inch 1RU rack
- Simple to use
- 3 stereo audio inputs
- 1 stereo input pair unbalanced on phono connectors
- 1 stereo input pair balanced on 6.35mm jack sockets (A or B gauge)
- 1 stereo input pair balanced on 3 pin XLR sockets
- +/- 15dB level control
- Simple 4 LED PPM meter for easy level adjustment
- Illuminated output mono switch for either routing single channel mono sources to both outputs or for acting a stereo to mono converter
- All 3 inputs permanently mixed together (no channel on/off switches and no faders to confuse non technical staff)

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ATOMI C VOI CEOVER O8 VO Artists Audio Interface

The Voiceover provides a high quality microphone interface to any device that needs a voice to be recorded, including a PC. The key functions are of headphone amp and microphone pre-amp. There is a highly sophisticated auto mic levelling system to allow the novice user to achieve perfect input gain levels using dynamic or condenser microphones. This mic audio is output on the rear as balanced analogue audio on XLR, un-balanced on phono, and digital on AES3. The headphone monitoring section allows monitoring of the incoming microphone audio as well as an external audio input, which would be the cue audio or music for example. This monitoring audio is not presented on the output – only on the headphone monitor.

FEATURES
- Microphone pre-amp with 48v phantom power
- Sophisticated auto gain system for the perfect input level
- Microphone audio available as balanced analogue and AES3 audio.
- Headphone monitoring of microphone audio and external source.

ISDN & AUDIO CODECS

Glensound Electronics Ltd have been specialist designers & manufacturers of broadcast ISDN equipment for many years. With about 10,000 of our ISDN units currently in use World wide you can be certain of their compatibility & reliability.

PORTABLE ISDN CODECS

GSGC5 Journalist's Codec

GSGC5

FEATURES
- Simple to set up & operate
- Robust & portable
- Battery powered (up to 10 hours battery life)
- External power supply supplied
- Plugs straight into ISDN line (ISDN2E)
- Uses just half of ISDN line allowing 2 units to be connected to 1 line simultaneously
- Front panel keypad for controlling ISDN
- Large LEDs indicate ISDN line & Codec OK
- Available with G722 Codec, or APTX Codec, or MPEG Layer2/ G722 Codec or DUAL (G722/APTX) Codec
- RS232 Data transfer on MPEG Codecs
- 4 channel audio mixer (3 mic & 1 line input)
- Inbuilt compressor limiter
- Individual channel gain controls & large on/off switches
- Small LED PPM to indicate outgoing audio level
- 2 separate headphone amplifiers
- Separate headphone level controls for mix output & return audio from studio
- Headphone sockets accept A/B gauge jacks
- X21 connector for using codec independently of ISDN line
- Local mix output (transformer balanced)
- Local Cue output (transformer balanced)
- Cue output is also input to headphone amps if no ISDN connection is made
- Supplied with Polypropylene carrying case

GSGC5 VARIATIONS

GSGC5G

GSGC4
- As GSGC5 but with only 2 channel mixer (1 x mic & 1 x line) & only 1 x headphone amplifier

GSGC5A
- As GSGC5 but with PFL on 2nd headphone amp

GSGC5D
- As GSGC5 but with front panel instructions in Spanish serigraphy

GSGC5F
- As GSGC5 but with 4 channel mixer (2 x mic and 2 x mic/line)

GSGC5G
- As GSGC5F but with an extra local input to the headphone amps & 2 x headphone sockets (in parallel) for each headphone amp

GSGC5K Four Commentator System With Twin Dialers

- Mic and headphone controls for 4 commentators
- Single ISDN connection
- Twin dialers for each B channel
- Each dialler has an LCD display
- ISDN card options:G722/APTX, G722/MPEG2
- Talkback circuit
- Battery back up

GSGC25 Engineer Operated Twin ISDN Codec

GSGC25

FEATURES
- Very small & portable
- Battery powered (up to 5 hours battery life)
- External power supply supplied
- Plugs straight into ISDN line
- Can be used with other variations of ISDN lines as well as 'EURO' ISDN
- Front panel keypad for controlling ISDN
- Large LEDs indicate ISDN line & Codec OK
- Vocal instructions in headphone feed
- Fitted with 2 x G722/G711 CODECS
- 3 channel audio mixer (all mic/line switchable)
- 12 volt phantom power available
- Inbuilt compressor limiter
- Individual channel gain controls & large on/off switches
- Small LED PPM to indicate outgoing audio level
- 1 headphone amplifier wired to 3 jack sockets (1 wired normal stereo,1 wired just left channel & 1 wired just right channel)
- Separate headphone level controls for mix output, return audio from Codec 1, return audio from Codec 2 & local external input
- Each headphone source can be switched to left/ right or both channels of headphone amp
- Headphone sockets accept A/B gauge jacks
- Local outputs (on rear panel bantam jacks): Mix, Codec 1, Codec 2 & Talkback
- Local inputs (on rear panel bantam jacks): External (fed to headphone amp) & Talkback (fed directly to Codec 2 input)
- Front panel talkback switch (with lazy) to switch 1 channel of mixer to the 2nd Codec
- Supplied with Polypropylene carrying case

GSGC25J With Full Talkback Facilities

GSGC25J

FEATURES
- Modified version of GSGC25
- Allows all 3 input channels to access either Program Codec or Talkback Codec
- Physically longer than the normal GSGC25 to allow for the extra talkback switches

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GSGC24A Journalist Operated Codec

FEATURES
- Simpler version of GSGC25
- Just 1 x G722/G711 Codec
- Headphone amplifier is fed from just mixer output & return audio from studio
- Just 2 x headphone sockets both wired normal stereo
- Mix out & Cue out on rear panel Phono connectors
- Record out on rear panel phono connector

GSU2S Network Terminator

GSU2S

FEATURES
- Converts 'U' interface ISDN lines to 'S' Interface
- Battery operated (10+ hours life)
- External PSU available
- RJ45, RJ11 & bare wire terminations for connecting to U bus
- Front panel LEDs show power on & status of lines
- 2 x RJ45 sockets for 'S' bus outputs
- Small/ lightweight & highly portable
- When used with the GSGC25 or GSGC24A provides ISDN connectivity in just about 100% of the World

GSGC8 8 Channel Engineer Operated ISDN Mixer

GSGC8

FEATURES
- 8 audio channel ISDN mixer
- Mains powered, DC input available
- Plugs straight into ISDN line (ISDN2E)
- Uses just half of ISDN line allowing 2 units to be connected to 1 line simultaneously
- Front panel keypad for controlling ISDN
- Large LEDs indicate ISDN line & Codec OK
- Available with G722 Codec, or APTX Codec, or MPEG Layer2/ G722 Codec or DUAL (G722/APTX) Codec
- Each channel has mic/ line switch, 48volt phantom power, coarse gain control, Presence control, LF cut, PFL, Aux send and can be switched to A/B or both outputs
- 100mm faders
- 2 compressors (user controllable)
- Master output fader
- LED PPMs for A/B & Aux outputs
- Inbuilt line identification
- 3 headphone amplifiers each with separate level controls from 4 sources
- Operator talkback into headphone feeds
- Designed for sport & news events

GSGC9-SOLO-BRICK 2 x Codecs in Rugged Case

GSGC9-SOLO-BRICK

FEATURES
- Highly rugged & small format
- Fitted with 1 x GSGC9 module (see later in ISDN section)
- Mains powered
- 2 x Independent G722/G711 Codecs
- Plugs straight into ISDN line
- Can be used with other variations of ISDN lines as well as 'EURO' ISDN
- Balanced zero level inputs & outputs to/ from each Codec
- Audio connections on XLRs and Bantam jacks
- LEDs indicate ISDN line, Codec OK & DTMF received
- Setup is done by inband DTMF signals on the audio path
- User information is provided by voice announcements on the audio output
- Version available with 1 x inbuilt mic amp

GSGC26 Receive Only Twin ISDN Codec

GSGC26

FEATURES
- Based on GSGC25
- Receive only Codec (no inputs for sending return audio down ISDN line)
- Mains powered (internal PSU)
- 2 separate G722/G711 Codecs
- The output of each codec is fed through it's own headphone amplifier
- Each headphone amp has own volume control
- Headphone outputs on A/B gauge jacks plus 5 pin XLR socket
- Ideal for station manager/ engineer to remote monitor stations output

19INCH RACK MOUNTING ISDN CODECS

GS1U-050 Twin G722/G711 Codec

GS1U-050

FEATURES
- Possible the Worlds most economical 19inch ISDN Codec
- 19 Inch 1RU
- Mains Powered
- Two x G722/G711 Codecs
- Plugs straight into ISDN line
- Can be used with other variations of ISDN lines as well as 'EURO' ISDN
- Front panel keypad for controlling ISDN
- Large LEDs indicate ISDN line & Codec OK
- Vocal instructions on Front Panel loudspeaker
- Zero level audio inputs & outputs on balanced rear panel XLRs
- Relay loop closure indicating Codecs framing status

GSGC6 Twin Multi Format Codec

FEATURES
- 19 Inch 1RU
- Mains Powered
- Can be fitted with 2 x Codecs
- Each Codec can be: G722 Codec, or APTX Codec, or MPEG Layer2/ G722 Codec or DUAL (G722/APTX) Codec
- Plugs straight into ISDN line (ISDN2E)
- Zero level audio inputs & outputs on rear panel XLRs
- RS232 data transfer on MPEG Codecs
- Each Codec controlled from Remote Keypads (see below)
- Loop closures for: ISDN Line OK, Codec OK, DTMF received
- Loop closures for: Dialling pre stored number & sending DTMF tone 1

GSGC7 Remote Controller For GSGC6

GSGC7

FEATURES
- Small desktop controller
- 1 required fro each Codec fitted in GSGC6
- Powered from GSGC6
- Can be positioned up to 200 metres away
- LCD display with clear indication of status
- Large LEDs indicate ISDN line & Codec OK
- Easy to use

GSGC14/ GSGC15 Remote Controller For GSGC6

GSGC14 Display & GSGC15 Controller

FEATURES
- Available as 2RU or desktop unit
- External PSU (supplied)
- Connect to 4 x Codecs in GSGC6
- LCD display for each Codec
- ISDN OK & Codec OK large indication LEDS for each Codec
- 1 Remote Keypad controls all 4 codecs
- Remote keypad can be infa red or hard wired
- Easy to use

GSGC9 Twin G722/G711 3RU Module

GSGC9

FEATURES
- 3RU Module Various rack options available (see below)
- Contains 2 x G722/G711 Codecs & Twin terminal adaptor
- Plugs straight into ISDN line
- Can be used with other variations of ISDN lines as well as 'EURO' ISDN
- Controlled by inband DTMF in audio circuits, therefore no control cable required just an audio input
- Status indication is done by voice announcements on audio output
- Full setup configuration & memory recalls
- Power & audio connections on rear Din connector
- Front panel Bantam jacks also provided for audio in/ out of each Codec
- LEDs indicate status of ISDN line, Codec Framed & DTMF received
- RS232 port with basic control protocol

Rack Options for GSGC9

GS3U-ISDN-X
- 3RU 19 Inch Subrack
- Mains Powered (internal switch mode PSU)
- Houses up to 10 x GSGC9 Modules & 1 x GSGC13 Dialler
- Audio inputs & outputs on rear panel XLRs

GS3U-ISDN-V
- 3RU 19 Inch Subrack
- Mains Powered (internal switch mode PSU)
- Houses up to 10 x GSGC9 Modules & 1 x GSGC13 Dialler
- Audio inputs & outputs on rear panel Varicons

GS3U-ISDN-N
- 3RU 19 Inch Subrack
- Mains Powered (internal switch mode PSU)
- Houses up to 10 x GSGC9 Modules & 1 x GSGC13 Dialler
- No rear panel audio inputs & outputs

GS3U-ISDN-X2
- 3RU 19 Inch Subrack
- Mains Powered (internal switch mode PSU)
- Houses up to 4 x GSGC9 Modules & up to 4 x GSGC16 Dialler
- Audio inputs & outputs on rear panel XLRs

GS1U-ISDN-1N
- 1RU 19 Inch Subrack
- Mains Powered internal PSU
- Houses 1 x GSGC9 Modules
- Audio inputs & outputs on rear panel XLRs

GS1U-ISDN-1,2,3 or 4
- 1RU 19 Inch Subrack
- Mains Powered internal PSU
- Houses up to 4 x GSGC9 Modules
- Audio inputs & outputs on rear panel Varicons

GSGC10 DTMF Generator/ Dialler for GSGC9

GSGC10

FEATURES
- General Purpose Dialler
- Generates all 16 DTMF tones
- Compact hand held unit
- Battery operated from single PP9
- Long Battery life
- Zero level output on bantam jack
- Mic level output on bantam jack
- Acoustical output for direct feed to microphone

GSGC12 Dialler for GSGC9

GSGC12

FEATURES
- Designed for use with our coaxial commentators units
- Same cross section as our GSOC24 & GSOC4A
- Plugs directly into our GSOC24 or GSOC4A
- Powered from our GSOC24 or GSOC4A
- Use with programme & co-ord circuits
- Indicates when circuit is in use
- Very easy to use
- GSGC12 is installed with commentary position
- GSGC9 is installed at base station
- Control of GGSC9 is done through the standard coaxial cable
- No extra control cables to install

GSGC13 & GSGC16 Dialler for GSGC9

GSGC13

FEATURES
- 3U Module
- Fits our 3U ISDN Subracks
- Powered from the subrack's PSU
- Input & output on bantam jacks
- Includes subminature LS for monitoring
- Speak to ISDN Line with front panel mic
- 14E wide module

GSGC16
- As GSGC13 but with inputs and outputs on the 3U Din connector and simple channel select switches on front panel.

CODEC ONLY SUBRACKS

CODEC ONLY SUBRACKS

For the times when you already have a Terminal adaptor, or wish only to connect via satellite equipment then we can offer a choice of 2 Codec only sub racks.

GSGC17 1U Twin X21 Codec Subrack

FEATURES
- 1RU 19 Inch Subrack
- Mains Powered
- Houses 1 or 2 independent Codecs
- Each Codec can be: G722 Codec, or APTX Codec, or MPEG Layer2/ G722 Codec or DUAL (G722/APTX) Codec
- Codec input / output output is via X21 connector on rear panel
- RS232 circuit for MPEG Codecs
- Audio inputs & outputs on rear panel XLRs
- Front panel controls for Codec control
- Large LED for Codec OK indication

CODEC ONLY SUBRACKS

GS3U-057 Multiple G722 X21 Codec Subrack

GS3U-057

FEATURES
- 3RU 19 Inch Modular Subrack
- Mains Powered
- Houses up to 12 Independent G722 Codecs
- Each Codec can work at 64 or 56K
- Large front panel LEDs indicate Codec framed
- X21 input/output on rear panel 'D' connectors
- Audio inputs/ outputs on rear panel XLRs
- Loop closure outputs indicate Codec framed status

LEVEL CONTROLS

These useful subracks are ideal for level adjustment of audio signals as they enter an outside broadcast truck or studio. They are generally used when incoming audio is being fed directly to equipment such as talkback systems/ codecs/ hybrids or processing equipment that do not have their own level controls.

GS-ILC001 4 or 8 off Level Controls

FRONT VIEW OF 8 CHANNEL GS-ILC001

FEATURES
- Available with 8 channels (GS-ILC001) or 4 channels (GS-ILC001A)
- Mains powered 1RU subrack
- Audio inputs & outputs on rear panel XLRs
- Individual level controls for each audio circuit.
- Accurate front panel scale for exact level settings.

SPECIFICATION
- Mains power: 100 – 240v AC
- Power consumption: 3 Watts
- Channel gain: +/- 12dB
- Frequency Response: 40Hz to 20kHz >-1dB
- Distortion: < 0.004% @ 1kHz
- Noise: < -82dB (2Hz to 100kHz)

GS-ILC002 4 or 8 off Level Controls with PPM

FEATURES
- Available with 8 channels (GS-ILC002) or 4 channels (GS-ILC002A)
- Mains powered 1RU subrack
- Audio inputs & outputs on rear panel XLRs
- Individual level controls for each audio circuit.
- Accurate front panel scale for exact level settings.
- 28 LED PPM
- Each channel can be switched to PPM individually

SPECIFICATION
- Mains power: 100 – 240v AC
- Power consumption: 3 Watts
- Channel gain: +/- 12dB
- Frequency Response: 40Hz to 20kHz >-1dB
- Distortion: < 0.004% @ 1kHz
- Noise: < -82dB (2Hz to 100kHz)

GS-WLSR37 3 Level Controls with Twin Outputs

FEATURES
- Mains powered 1RU subrack
- Audio inputs on rear panel XLRs
- Audio outputs on rear panel D9 connectors
- 3 audio inputs
- Front panel screwdriver preset level control for each input
- Each input is distributed to 2 identical outputs
- Inputs & outputs are electronically balanced
- Level controls provide +10dB to -30dB

LINE IDENTIFICATION EQUIPMENT

GS1U-027 & GS1U-028A 5 & 10 Channel Idents

GS1U-028A

See www.glensound.co.uk for many more variations of line identification units

FEATURES
- 1RU 19 Inch Subrack
- GS1U-027 has 5 channels of line identification
- GS1U-028 has 10 channels of line identification
- Mains Powered
- Up to 16 seconds of line identification (per channel) can be recorded
- If less than 16 seconds is recorded then on playback 1kHz tone is inserted
- Playback continuously repeats recorded message & tone
- Front panel Microphone for recording messages
- External input also available for recording messages
- Audio inputs/outputs on rear panel Varicons
- Audio outputs duplicated on front panel bantam jacks
- Outputs are transformer balanced and approximately zero dBu

GS2U-007 High Quality Ident

GS2U-007

FEATURES
- 2RU 19 Inch Modular Subrack
- Mains powered (switch mode PSU)
- 1 x 2RU subrack houses 1 x PSU, 1 x Master Module & up to 12 x Ident modules
- Digital recording of messages
- 16K sampling gives 7.5kHz bandwidth (other sampling frequencies could be factory set)
- Low noise
- Master modules has listen facility, mic input & zero level input XLRs
- Inputs have small preset gain controls
- The output of each channel can be switched individually to the listen circuit
- 3 continuously repeated playback modes: 1) Just Message 2) Message followed by 3 seconds of tone 3) Message followed by: 1½ seconds of tone at -21dBu then 1 second of tone at -9dBu then ¾ second of tone at 0dBu
- 25 or 50 second versions of recorded message available (@ 16k sampling)
- Audio outputs transformer balanced on rear panel XLRs & 'D' connector
- PPMs on each ident to indicate output level

GS1U-042 High Quality Ident

GS1U-042

FEATURES
- 1RU 19 Inch Subrack
- 1 or 2 line idents
- Mains Powered
- Mono recording duplicated on both left & right channel outputs
- Utilizes same recording technology as GS2U-007
- 3 continuously repeated playback modes: 1) Just Message 2) Message followed by 3 seconds of tone 3) Message followed by stereo Glitz tone
- Stereo loop through audio input (for each of the 2 channels)
- Either the loop through or the identification message can be switched to channel output
- Inbuilt headphone amp for monitoring
- Channels have PPMs
- Front panel mic and external line level source for recording messages

GS1U-046 Glitz Tone Generator

Close Up of GS1U-046 Front Panel

FEATURES
- 1RU 19 Inch Subrack
- Mains Powered
- Generates Either Glitz or Steady Tone @ 1kHz
- Front panel switch selects type of tone for output
- Output on balanced rear panel XLRs
- Zero level output
- Front panel trim pots vary output level by +/-5dB

GSL84 Portable Ident

GSL84

FEATURES
- Small battery powered unit
- Battery life better than 10 hours
- Provides 1 line identification
- Message length up to 16 seconds
- On replay message is continuously repeated followed by 1kHz tone
- Output nominal zero level
- Front panel mic for recording message
- Output on jack socket (A/B gauge)
- Message stored in non-volatile memory
- Size: 150 x 79 x 28mm
- Weight 200g

GS-PLI001 Portable Ident

GS-PLI001

FEATURES
- Small battery powered unit
- Battery life better than 10 hours
- Provides 1 line identification
- Message length up to 16 seconds
- On replay message is continuously repeated followed by 1kHz tone
- Output nominal zero level
- Front panel mic for recording message
- Output on front panel balanced XLR
- Message stored in non-volatile memory

GSOZ2 5 Channel Portable Ident

GSOZ2

FEATURES
- Robust battery powered unit (2 x 'D' cell)
- External Power input available
- Provides 5 line identification channels
- Message length up to 16 seconds
- On replay message is continuously repeated followed by 1kHz tone
- Output nominal zero level
- Front panel mic for recording message
- External line level input for recording messages
- Output on front panel transformer balanced XLR
- Message stored in non-volatile memory
- Size: 245 x 215 x 70 mm
- Weight 2½Kg

MOBILE (GSM) PHONE INTERFACES

GS-MPI004 Broadcasters Mobile Phone

The GS-MPI004 has been designed to finally solve once and for all the problems of using mobile phones for audio broadcast purposes. Our engineers have excelled themselves with this design to make your life as a broadcaster easy, so if you want a reporter to do a quick interview in the high street, or need to use the phone network for 4 wire communications, or want a reliable back up circuit for a codec, or would like to connect a mixer to a phone or indeed for hundreds of other uses then the GS-MPI004 is for you.

To make broadcasting from anywhere in the World easy the GS-MPI004 has a QUAD BAND GSM interface allowing connectivity with most of the Worlds mobile phone networks and a SIM card holder accessible via the front panel to allow different network SIMs or roaming SIM cards to be quickly and easily fitted or changed.

Obviously a portable mobile phone like the GS-MPI004 is battery powered, to prevent it not being charged when you need to use it in a hurry it does not have internal rechargeable batteries but instead is powered from standard readily available AA cells.

What about quality? Because the GS-MPI004 has a digital GSM module the audio quality is the best you will ever get from a phone network. With the audio being in the digital domain separation between the go and return channels is 100% which far outperforms even the very best standard wired telephone hybrids. Our chief engineer has spent a long time perfecting the compressor/ limiter circuit and the audio input circuits to the phone network for you, the result means that you only need to roughly set the input level and the high quality electronics will make sure that your signal is sent without distortion to the studio. As you would expect from Glensound mechanically it is housed in a robust custom made aluminium case that is lightweight but extremely strong, so you don't need to worry if you drop it or bash it, it will keep working.

FEATURES
- Simple & easy to use
- Mic & Line input
- Headphone output with volume control
- Line level output
- Front panel sim card holder
- Quad band GSM interface
- Aerial attached by SMA connector
- Input & output level controls
- High quality compressor/ limiter circuit prevents overloading of outgoing signals
- Battery operated (4 x AAA cells)
- Low battery indication
- External DC input
- Front panel indicators show line status
- Simple to use phone book for 9 frequently used numbers
- Single button redial facility
- Sounder to indicate incoming call
- Call sounder can be turned off

GS-MPI005 19 Inch Rackmount Broadcasters Mobile Phone

Based on the GS-MPI004, this unit is a mains powered (switch mode) 1RU 19 inch rack. It can be supplied with up to 3 mobile phones. Each phone has its own front panel keypad and level controls & a headphone listen jack. On the rear of the subrack are balanced XLR line level inputs & outputs for each mobile phone module and also an SMA standard aerial connector (a 'T' Bar aerial is supplied with each phone).

Front view of GS-MPI005 fitted with 3 x phone,
And rear view of GS-MPI005 fitted with 1 x phone.

FEATURES
- Simple & easy to use
- Ideal for use in outside broadcast trucks
- Can be supplied fitted with 1, 2 or 3 mobile phones
- Balanced line level audio inputs / outputs on rear panel
- Internal mains power supply (100 to 250 VAC)
- Each phone has it's own dialling keypad
- Each phone has it's own aerial connection
- Aerial connection on rear panel SMA
- T Bar aerials supplied with each phone
- Front panel headphone output for each phone
- Incoming ring sounders can be turned off

GS-MPI006 Rackmount Broadcasters' Mobile Phone With ISDN

- Contains 2 x GSM mobile phones (specifications as detailed on GS-MPI005)
- Contains Two ISDN G711/G722 Codecs via a standard S bus (our GS-GC9 module)
- Make ordinary telephone calls (G711) to/from normal POTS lines
- Use existing audio circuits for dialling and control using DTMF or external remote
- 'Talk To You' Function. ISDN status & instruction via on line spoken messages

GS-MPIFW Rackmount Broadcasters' Mobile Phone With Twin Four Wire

A useful version on our rack mount mobile phone. The addition of a twin four wire system allows two circuit communication from front panel. Four wire output operates in four modes:

- *An external programme input can be switched onto either four wire output*
- *The incoming audio from the GSM call can be switched onto either four wire output.*
- *One circuit's four wire input can be switched to its output.*

FEATURES
- Features a single Broadcasters' Mobile Phone
- Includes a versatile 4 wire system for communication from the front panel
- 2 four wire circuits
- IFB option on each talkback circuit
- 'Push to talk' or 'lock' on each speak switch
- Internal or external microphone
- Front panel speaker

GS-MPITBU001 and 004 Broadcasters' Mobile Phone and Digital TBU

The GS-MPITBU features a digital TBU and a Glensound Broadcasters' Mobile Phone. Both lines can be connected simultaneously so that when there is a need for a quick change, a simple flick of the routing switch changes from TBU to mobile or vice versa

- 1U 19inch rackmount Digital TBU and GS-MPI005 (or GS-MPI005HD option)
- Incoming/Outgoing audio switchable between TBU and mobile phone
- RJ11 connector for fixed POTs line
- Audio inputs/output on common electronically balanced XLR's
- 6.35mm headphone jack for mobile phone monitoring
- 100-240V mains power (powers all features in subrack)
- 12V PSU option
- GS-MPITBU004 upgrades mobile phone to a 3G (UMTS) HD Voice module

GS-MPITBU002 2G Broadcasters' Mobile Phone and TBU

The GS-MPITBU002 houses a GS-MPI005 2G Broadcasters' Mobile Phone and a GS-PASTE201 in a 1U 19" rackmount. The GS-MPI005 is powered from a 12V PSU and the GS-PASTE201 is passive. Both units operate independently from each other

GS-MPI005 Broadcasters' Mobile Phone
- QUAD band GSM works in most of the World
- SIM card holder accessible from front panel
- Use any networks SIM card
- Balanced Line input on XLR
  Easy to set input level control
- Headphone output on 6.35mm Jack socket
- Headphone volume control
  Balanced Line output on XLR (this is the return feed from the studio)
- Output level adjustment

GS-PASTE201
- Provides balanced audio input and output from a normal POTS (Plain Old telephone System) line
- No batteries or mains required
- Input compressor (prevents overloading of telephone line)
- R/C & line balance controls
- Internal tone generator for line balancing

GS-MPITBU003
- Upgrade mobile phone to a 3G (UMTS) HD Voice module.

GS-MPI004 HD Broadcasters' Mobile Phone

The GS-MPI004 HD is the HD VOICE enabled version of the standard unit. The HD VOICE Broadcasters Mobile Phone features 7kHz of audio bandwidth on the 3G network. As a quick and cost effective upgrade, this unit allows high quality remote broadcasting using mobile phone networks that support HD VOICE.

FEATURES
- Features a single HD Voice Broadcasters' Mobile Phone
- 7kHz of audio bandwidth on the 3G network
- Uses AMR-WB (Adaptive Multirate Wideband) also known as G.722.2
- Doubles bandwidth (50-7000Hz) (current narrowband speech codec 300-3400Hz.
- Can accommodate a broader range of audio frequencies of the human voice.
- Aids better hearing in noisy environments.
- No extra call cost as the unit connects as a 3G GSM call rather than a data call.
- Once connected the call quality will not be lost for the duration of the call.
- Defults to call as a 3G GSM call and will automatically switch to 2G when 3G is unavailable.

GS-MPI005HD 19Inch Rackmount Broadcasters Mobile Phone

Based on the GS-MPI005, this 1U 19 inch rackmount is mains powered (switch mode) and can hold up to 3 HD Voice broadcasters' mobile phones. Each phone has its own front panel keypad and level controls & a headphone listen jack. On the rear of the subrack are balanced XLR line level inputs & outputs for each mobile phone module and an upgraded N-Type connector to replace the SMA connector found on the GS-MPI005. Encorporating all the HD Voice features of the GS-MPI004 HD, the GS-MPI005 HD this unit is ideal for use in outside broadcast trucks and studio's alike.

FEATURES
- 7kHz audio bandwidth on the 3G network
- Studio quality reporting
- Simple & easy to use
- Ideal for use in outside broadcast trucks
- Can be supplied fitted with 1, 2 or 3 mobile phones
- Balanced line level audio inputs / outputs on rear panel
- Internal mains power supply (100 to 250 VAC)
- Each phone has it's own dialling keypad
- Each phone has it's own aerial connection
- Aerial connection on rear panel N-Type or SMA
- Front panel headphone output for each phone
- Incoming ring sounders can be turned off
- Each phone has a USB or RS422 for remote control connection

GS-MPI007HD

The GS-MPI007HD is based on the GS-MPI005HD but features a back-lit graphical display. This is 1U 19" rackmount and can hold up to 2 x GS-MPI007HD mobile phones.

GS-MPI005HD/REMD

The GS-MPI005HD/REMD is remote that can be used with the GS-MPI005HD and the GSMPI007HD. This allows each mobile phone module to controlled remotely enabling the subrack to be installed in the rack room and operated by a user in the studio.

FEATURES
- Back-lit graphical display
- Data between the remote and the rack is via RS422 and terminated on RJ45 connectors
- Power for the unit is available on the RJ45 connectors supplied by the subrack
- Alternative power supply is via a local 5V DC input using a USB connector.
- One remote per phone

GS-MPI005HD/REMS

The Glensound Broadcasters' Mobile Phone 1U 19inch rackmount (GS-MPI005HD) is now available with a software remote option for Windows machines. For applications requiring the rackmount to be stored away from the user such as in a rackroom, the module can be operated and configured via the software

FEATURES
- Make and receive phone calls via software
- Set configuration via selectable tick boxes
- 600 entry phone book
- 100 entry call history
- Suitable for Windows machines
- Easy on screen application
- Direct USB link from phone to computer

RECCE HD

The Glensound GS-MPI-RECCE HD is a portable three input mixer supporting HD Voice. It is designed for reporters and commentators that need to connect remotely via the 3G network. It has headphone monitoring and microphone interfaces for 2 commentators. A report can be simply mixed, monitored and transmitted at the highest possible quality available over a 3G network.

FEATURES
- 7kHz of audio bandwidth on the 3G network
- Uses AMR-WB (Adaptive Multirate Wideband) also known as G.722.2
- Doubles bandwidth (50-7000Hz) (current narrowband speech codec 300-3400Hz.
- No extra call cost as the unit connects as a 3G GSM call rather than a data call.
- Defults to call as a 3G GSM call and will automatically switch to 2G when 3G is unavailable.
- All input s available as line or mic
- Two headphone outputs
- Three input headphone mixer
- External monitor input
- Battery Powered or external DC powered

GS-MPITBU003 HD Voice Broadcasters' Mobile Phone and TBU

The GS-MPITBU003 houses a GS-MPI005HD Glensound HD Voice Broadcasters' Mobile Phone and a GS-PASTE201 in a 1U 19" rackmount. The GS-MPI005HD is powered from a 12V PSU and the GS-PASTE201 is passive. Both units operate independently from each other

GS-MPI005HD
- 7kHz and 3.5kHz audio bandwidth
- Operates in 7kHz 3G (UMTS) mode and standard GSM 2G mode
- Use any networks SIM card (Needs a 3G (UMTS) network for Glensound HD Voice)
- Balanced line input on XLR
- Easy to set input level control
- Balanced line output on XLR (this is the return feed froom the studio)
- Output level adjustment
- Aerial upgrade from SMA to N-Type available
- Available with remote (GS-MPI005HD/REMD or GS-MPI005HD/Software

GS-PASTE201
- Provides balanced audio input and output from a normal POTS (Plain Old Telephone System) line
- No batteries or mains required
- Input compressor (prevents overloading of telephone line)
- R/C & line balance controls
- Internal tone generator for line balancing

AUDIO MIXERS

Glensound Electronics have been manufacturing dedicated custom made mixers for many years. Shown here are a selection that have proved popular, more mixers can be seen on our web site www.glensound.co.uk we would always be happy to provide a quotation for a custom mixer to meet your exact requirements.

CONCEPT

The new T3 analogue audio mixing console has been designed to provide all the facilities required for a modern small to medium studios. Care has been taken with the aesthetics to create a mixer that will compliment the high quality ambience of modern studios, while the audio circuit designs have been produced utilizing Glensound's 45+ years of experience in designing and manufacturing radio broadcast mixers. Such features as balanced mixing circuits and audio transformers on mic input channels make this mixer perform exceptionally well.

- 3-32 channels
- Transformer balanced inputs
- Five year warranty
- Redundant power supply
- UK Design & manufacture Upgrade or change configuration at any time
- Digital inputs and outputs
- Split frame option
- Basic or advanced configurations
- Customise modules to your specific requirements
- Clear, uncluttered layout
- A favourite with the non technical
- Hot swap cards
- Simple to service with lifetime parts support

T3. The broadcast console developed from 42 years of broadcast industry experience, manufacturing products for the world's largest broadcast organisations. This experience has seen Glensound evolve from manufacturing simple 'must work' products to evolved solutions that now lead the market and integrate into a digital world.

The simplicity, cost effectiveness, digital integration and ultimate reliability of the Glensound T3 ticks all of the boxes required for the modern broadcast console.

The T3 is available from 3 to 32 channels, in a single console or a split frame. There are 24 module options, and 11 bridge options. The flexible upgrade path results in a console that can start small and grow with you as your needs evolve.

If you require additional features as part of the console, the capacity has been allowed for developing custom functionality.

SEE SEPARATE BROCHURE FOR FULL DETAILS OF THE T3

GSGX3 PORTABLE OUTSIDE BROADCAST MODULAR MIXER

A 10 channel GSGX3 MKII

MAIN FEATURES
- Modular format, 4 - 16 channel frame sizes
- Main & Aux mixes
- Lots of insert & break points
- Portable & robust
- Internal mains psu/ external DC powering
- Highly compact
- Penny & Giles and 60mm or 100mm fader options
- Easy access to all audio connectors
- External producers talkback box

AVAILABLE MODULES
- Mono channel (mic/ line) with presenters headphone feed
- Stereo channel
- Compressor/ limiter and mono output
- Main monitoring & stereo output
- Aux monitoring & aux output
- Operators headphone & talkback
- ISDN 2 off G722/ G711 Codecs

MONO CHANNEL FEATURES
- Mic/ Line input
- 48 volt phantom power
- Gain control
- LF cut (80Hz or 160Hz)
- Presence Control (1k6 or 3k2)
- Send via pan control
- PFL
- Aux send (pre or post fade)
- Channel out
- Clean feed out
- Operator speak to outside source
- Insert point
- 60 or 100mm faders
- Penny & Giles fader upgrade option
- Faders hold 10dB
  #### HEADPHONE AMPLIFIER:
- Switchcraft A/B Gauge jack sockets
- Phase reverse B (by internal link)
- 6 sources including program
- Each channel has internal switches for setting loudspeaker output operation between cubicle or studio LS

COMPRESSOR & MONO OUTPUT FEATURES
- Mono output on XLR
- Transformer balanced suitable for line driving
- Operator can talk to mono output
- Line identification can be sent to mono output
  #### COMPRESSORS
- 2 x compressors individual or linked
- Selectable compression ratio, 1:1, 5:1 or 10:1
- Selectable threshold
- Selectable Recovery time, Fast, Auto or Slow
- Each compressor can be switched to compress one channel of the mixers main output or a local insert point.

AUX MONITORING & OUTPUT FEATURES
- Aux outputs on XLR
- Aux output level control (rotary pot)
- 14 LED PPM
- PPM follows 5 sources
- Switch to select operation of pre fade…either momentary or on (latching)
  #### CUE in OUT
- Cue input for distributing to headphone feeds of channels
- Cue output (If ISDN module fitted)

MAIN MONITORING & OUTPUT FEATURES
- A and B main outputs on XLR
- Master fader for output level
- 2 x 14 Led PPM
- PPMs follow main output or switch to follow PFL
- Switch to select operation of pre fade…either momentary or on (latching
  #### LOUDSPEAKER OUTPUTS
- A and B outputs (0dB)
- Loudspeaker output level control
- Loudspeaker can follow PPM or main outputs
- CLS & SLS set in channels

STEREO CHANNEL FEATURES
- Zero dB balanced inputs on XLRs
- -10 dB unbalanced input on phono connectors
- Gain control (+/- 10dB)
- PFL
- Aux Send (Pre or Post Fader)
- 60 or 100mm Faders
- Penny & Giles Fader Option
- Faders hold 10dB
- Send A to A or A to A & B Switch
- Send B to B or B to A & B Switch

OPERATORS HEADPHONE & TALKBACK FEATURES
- All sources have level controls
- All sources can be switched to left/ right or both ears
- Local input
- 5 sources
- Any source can be soloed
  #### TALKBACK
- Internal or external mic
- 48 Volt phantom power
- Speak to external output
- Speak to outside sources & headphone amps of channels (switch on channels)
- Inbuilt 16 second line ident recorder

■ New features

GSGX3 ISDN Module & Producer's Box

ISDN MODULE

- 2 x independent G722/ G711 Codecs
- Multi format terminal adaptor
- Voice announcements for easy control
- Operator can talk to either codec
- 1st Codec is normally 'M' out of mixer
- 2nd Codecs inputs & outputs are on Bantam jack connectors
- 1st Codec can be overplugged on bantam jacks
- Small front panel speaker for codec monitoring
- LS input to this speaker for external monitoring
- Module provides 2nd 'M' output on bantam jack

PRODUCER'S BOX

- Connects to mixer on 25 way 'D' cable
- Producer can listen to up 10 channel inputs
- Listen channels are the 1st 10 channels of the mixer
- Each listen channel can be individually switched on/ off
- Producer can talk into the headphone channel of any of the first 10 channels of the mixer
- Producer can also listen to mixers program out & return cue from ISDN module

GSVX4 Three Channel Portable Battery Operated Mixer

GSVX4

This ultra portable 3 channel mixer offers useful facilities in a very practical format designed for the hardships of outside broadcast use. It is battery operated (from 3 x D cells) and has over a 10 hour battery life. For a professional piece of broadcast equipment it is also highly economical

INPUT CHANNELS
3 off Electronically Balanced, ALL are mic / line selectable, ALL have selectable LF Roll off at 80Hz and 160Hz
MAIN OUTPUT CHANNELS
2 off Similar Electronically Balanced outputs
Output Connectors are 3 pin male XLR
HEADPHONE OUTPUT CHANNEL
1 off headphone output with level control
Headphone Connector is jack socket (A/B Gauge)
INPUT LEVELS
MIC INPUT -70 to −30 dBu with gain control.
LINE INPUT -30 to +10 dBu with gain control
OUTPUT LEVELS
Normal Output : 0 dBu, Maximum Output : 16 dBu
INPUT IMPEDENCES
Mic Channel > 2K Ohms, Line Channel >= 10K Ohms
OUTPUT IMPEDENCE
<= 50 Ohms
FREQUENCY RESPONSE
+/- 2.0 dBu 50 Hz to 20 kHz
TOTAL HARMONIC DISTORTION
At normal output level for 1 kHz with all settings at normal position <=0.3%
At maximum output level 50 Hz – 20 kHz <=0.5%
HEAD ROOM
Head room at normal settings at fader points >10 dB
SIGNAL TO NOISE RATIO – ALL NOISE MEASURED AT 22Hz – 22kHz RMS
MICROPHONES Equivalent input noise > -120 dBu
LINE Normal input & output levels >= 70 dB
FADER TYPE
65 mm Penny & Giles sealed conductive faders rated at > 50,000 operations free off scratch noise.
PPM
14 LED PPM for indication of output level.
POWER INDICATOR
A front panel LED indicating power on flashes when batteries are low.
POWER SUPPLY
External 9 to 18 volt DC supply, Internal Battery compartment for 3 x D cells
Battery life @ 20 ^{o}C > 10 Hours

GSVX2 & GSVX3 Portable Location Editing Mixing

These simple to operate location mixers were originally designed for use with popular vision editing packages, but their rugged style and simple but comprehensive features make it ideal for many uses.

MAIN FEATURES
- 4 Channels with full length faders
- Two Outputs
- Each Output has high quality PPM for monitoring
- External Power Supply (7-15 Volts)
- Switch mode PSU supplied
- Lightweight & Rugged construction

CHANNEL FEATURES
- Can be switched to either or both outputs
- Mic/ Line switchable
- Full Length Faders
- Gain Control (-10 to +30dB)
- LF cut switch (either 80Hz or 160Hz or Flat)
- Presence Control switching in at 1k6 or 3k2 or flat

Two versions of this mixer are available. The GSVX2 (pictured left) has 2 single needle PPM units for monitoring; the GSVX3 (pictured right) has 2 LED column meters that can be switched to indicate either VU or PPM readings.

GSNX6 ECONOMICAL & SIMPLE MIXER RANGE

Five different input modules are available for the GSNX6 mixer range. Any combination of the following channels can be built into a mixer to your requirements. All of the input modules use full length faders and have PFL.

A no obligation quote is easy to obtain. Just let us know how many of each type of channel and what optional extras you would like and we will offer you a surprisingly economic price!

Microphone Channel
A high quality electronically balanced microphone channel with switchable 48v phantom power. A course gain control gives a microphone input range from approximately -70dB to -30dB for zero level out.

Stereo Line Channel
Quality electronically balanced inputs with a coarse gain control of +/- 10dB. A & B inputs can be switched to L & R outputs for stereo to mono & mono to stereo.

Mono Line Channel
Quality electronically balanced input with a coarse gain control of +/- 10dB.

Outside Source Channel
As the Stereo line channel but with a clean feed mix minus output. A front panel microphone with compressor can be switched for talk back to the outside source.

TCBU Channel
As the outside source channel but mono and designed to interface with an off board TCBU.
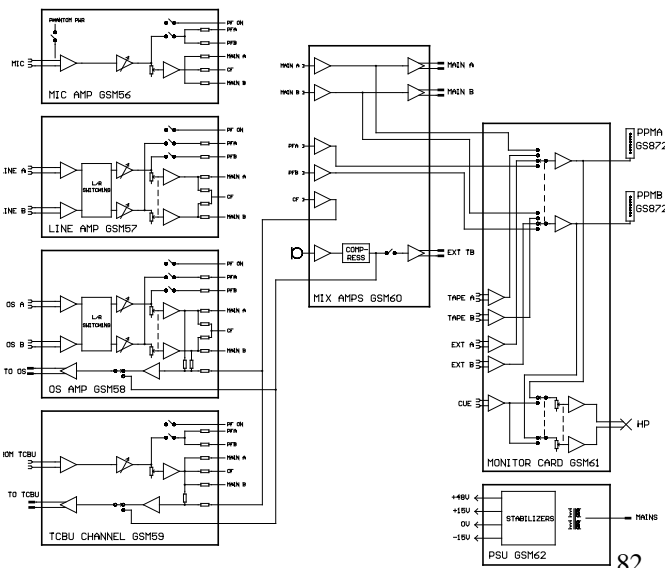
Facilities As Standard
Twin LED ppms can be switched to monitor the output of the desk, a tape or an external input. Operator's headphones can be switched to either follow the PPMs or to an external cue input. Front panel talkback mic connects to an external TB output.

Optional Extra Facilities
1) Tape starts (from line input channels)
2) Loop closures when mic channel faders open
3) LS feed (cut when mic channel fader open)
Any combination of the above can be ordered together

SIZE
135mm High, 385mm Deep, 105mm + 35mm (per channel) Wide.

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"Ditto" Multiple Rack Line Mixers

The Ditto units are a range of line mixers offering multiple separate mixers in 1 or 2u subracks. The range includes:

"Ditto" Four Inputs Per Mixer **Ditto 414** – Four separate mixers (1u)
            Ditto 414J – Four separate mixers with extra jack inputs(1u)
            Ditto 418 – Eight separate mixers(2u)
            Ditto 418J – Eight separate mixers with extra jack inputs(2u)

"Ditto" Six Inputs Per Mixer **Ditto 613** – Three separate mixers(1u)
            Ditto 613J – Three separate mixers with extra jack inputs(1u)
            Ditto 616 – Six separate mixers(2u)
            Ditto 616J – Six separate mixers with extra jack inputs(2u)

"Ditto" 414J Front Panel

"Ditto" 613 Front Panel

"Ditto" Rear Panel (all rears similar)

- Multiple mixers in 1 or 2u subracks
- Four or six input mixers with adjustable gain control per input
- Master output level to adjust overall mix level
- PPM meter per individual mixer
- EDAC rear panel connectors for audio input.output connections. 'J' versions have additional front panel 6.35mm jack socket inputs

'J' Version Front Panel Jack socket – Options
- Inputs are in parallel with rear inputs (standard)
- Inputs are break jacks and replace the rear panel inputs (add B suffix)

GS1U-040 5 off 4 Channel Mixers in a 1U Subrack

GS1U-040

FEATURES

- 19 Inch 1RU Subrack
- 100 to 250 volt mains powered
- It houses 5 individual simple 4 channel line level mixers.
- All the inputs and outputs are on front panel bantam jack sockets.
- Each input has a level control from - infinity to +10dB
- Each output has a 20Hz to 20kHz band pass filter.
- All inputs and outputs are electronically balanced
- 2 versions available GS1U-040 as above and GS1U-040V as above with inputs/outputs ion rear panel Varicons

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GS-MIX004 4RU 6 Channel Mixer

GS-MIX004

FEATURES

- 19 Inch 4RU Subrack
- Mains powered
- 2 Mic Channels
- 4 Stereo Line Channels
- Gain controls on all channels
- Main Stereo output
- Mono output of main output
- 2 x Mono Aux outputs
- Aux 1 & 2 can be pre fade or after fade (set on internal link)
- Stereo Pre fade bus
- Stereo LS outputs (with external cut input)
- Stereo LED PPM
- PPM monitors main out or PF
- Headphone amplifier
- 2 external stereo inputs to headphone amp
- External inputs to headphone A mix and headphone B mix
- Channel inputs can be sent directly to headphone bus (set on internal link)
- Variable headphone Dim
- Variable Dim/ Cut on LS outputs
- Fader start relay outputs on line channels
- Mic open relay output
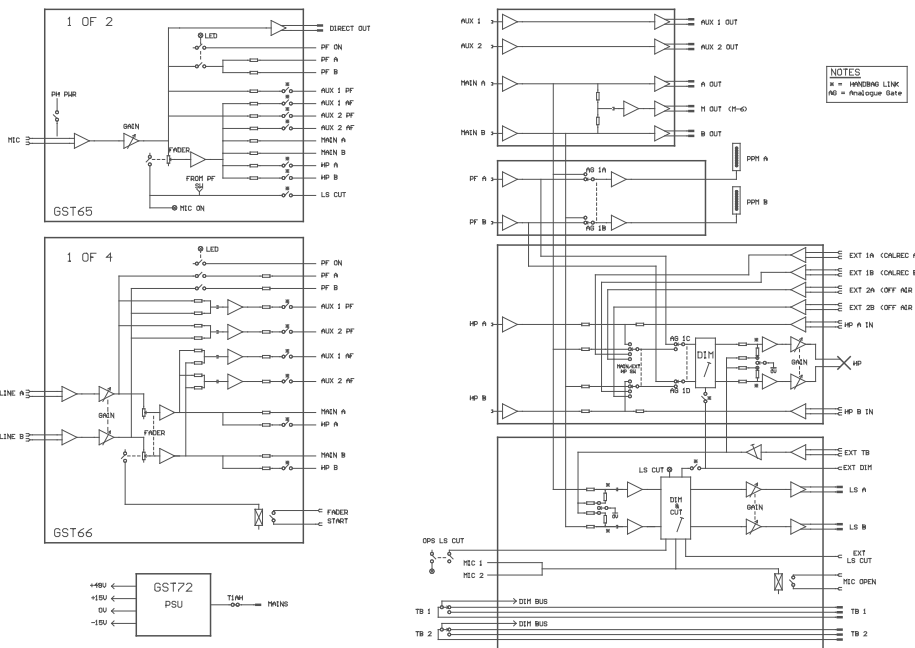
MICROPHONE AMPLIFIERS

MICROPHONE AMPLIFIERS

GS1U-048 Single Mic Amp in a 1U Subrack

REAR VIEW

FRONT VIEW
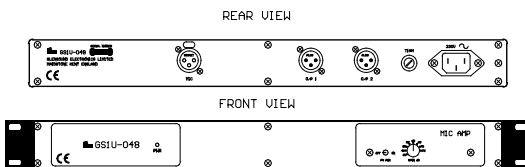
GS1U-048

FEATURES
- 19 Inch 1RU
- Mains powered
- Transformer balanced mic input
- 2 x identical electronically balanced outputs
- 48 Volt phantom power available
- Front panel gain control 75 to 40 dB in 5 dB steps

GS1U-049 Twin Mic Amps in a 1U Subrack

FEATURES
- 19 Inch 1RU
- Mains powered
- 2 Independent Mic amps with identical features
- Transformer balanced mic input
- Electronically balanced outputs
- 48 Volt phantom power available
- Front panel gain control 75 to 40 dB in 5 dB steps

GS-MCA001 Battery Powered Mic Amp

FEATURES
- Small & Robust Portable Mic amp
- Battery powered (1 x PP3) long battery life
- Front panel gain control in 5dB steps
- Inbuilt limiter (with bypass)
- Dual frequency LF cut (with bypass)
- Low battery indication
- Excellent specification see beltpack section of catalogue for full details

GS-MCA001

3RU Module Mic Amp

FEATURES
- 3RU Module
- Transformer balanced mic input
- Electronically balanced outputs
- 48 Volt phantom power available
- Front panel gain control 75 to 40 dB in 5 dB steps

GSK84

GS-MCA002 Twin Mic & Headphone Amplifier

FEATURES
- Mains powered
- Can be screwed under or on top of a desk
- Two mic amplifiers
- Two headphone amplifiers
- Mic outputs electronically balance on rear panel XLRs
- Limiter/ Compressor on mic circuits
- Screwdriver adjustable mic gain
- Suitable for use with electret or dynamic microphones
- Mic inputs & headphone outputs on front panel 3.5mm jack sockets
- Headphone amplifier designed to run low impedance (domestic) headphones
- Front panel headphone volume controls
- Screwdriver adjustable headphone gain

GS-MCA002

GS-TB003 Talkback Mic Amp

FEATURES
- Small desktop unit
- External power supply
- Power on LED
- Front panel gooseneck mic
- Mic gain/ level control
- Front panel Lever key for talkback
- Balanced output on rear panel XLR
- Output level nominal zero level

GS-TB003

MULTIPLE MIX MINUS CLEAN FEED

The GS3U-033 is a 3U sub-rack designed to provide up to 24 clean feed outputs from a stereo desk.
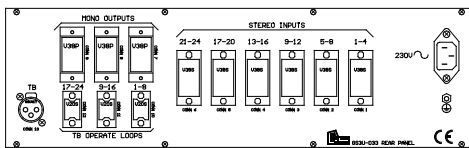
- Interconnects with up to 24 stereo channels
- Provides 24 mono clean feed outputs
- Excellent separation of unwanted channel
- Talkback can be individually fed to the mono clean feed outputs
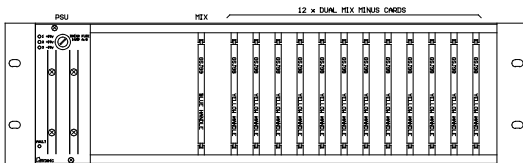
Rear Panel Connections
Inputs and outputs to this unit are as follows:-
Stereo inputs are wired to 6 off Varicon. These are 38pin Varicon fixed sockets with 4 stereo pairs (i.e. 8 pairs) on each connector.
Mono outputs are wired to 3 off 38pin Varicon fixed plugs. A further 3 off 20pin Varicon fixed plugs are provided to control the TB.
TB audio input is connected on a 3pin XLR fixed socket. The mains connector is a fixed IEC plug.
Modules & Cards
The GS3U-033 is usually supplied fully wired and fitted with a power supply module and a main mixer card (GSJ99).
Up to 12 dual mix minus cards type GSG98 can be fitted to provide from 2 to 24 channels.
Performance
Mix minus separation is better than 40dB from 40Hz to 15KHz   Through path audio is within 1dB from 40Hz to 15KHz
All inputs are variable -15 to +2dBu electronically balanced and bridging
All outputs are 0dBu 50ohm electronically balanced

AUDIO METERING (PPMs)

GS-PPM003 WITH REMOTE (RS232 or ETHERNET) PC DISPLAY

GS-PPM003 Rear View

NEEDLE PPM (A & B)

NEEDLE PPM (M-6 & S)

'LED' PPM

FEATURES
- This new system provides an easy to use way of remotely monitoring audio levels.
  It is a 2 part system having a hardware audio input subrack where you connect the audio that you wish to monitor, this subrack also connects to your IP network. Elsewhere on your IP network you have the 2nd part which is pc software that receives the audio level data from your IP network and turns it into a graphical interface of a needle or LED PPM.
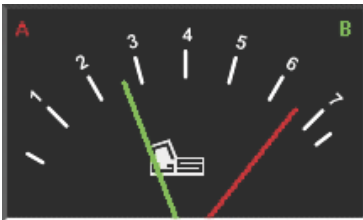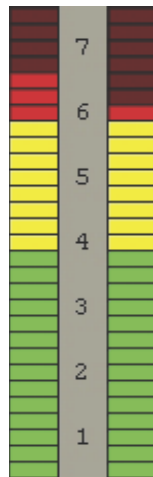
HARDWARE
- Mains powered (100 – 250 Volts) 19Inch 1RU subrack
- Up to 6 Stereo audio input cards (can be split to dual mono in the software)
- Input cards can be either analogue or digital (please specify when ordering (a mixture of both is OK))
- Digital inputs are AES3 and can work between 16 & 108K sampling.
- Audio input cards can be fitted individually (i.e. a rack can be supplied with 1,2,3,4,5 or 6 stereo input cards)
- LEDs indicates correct operation of each input card
- RS232 & ETHERNET outputs
- IP address can be set by a DHCP server (default), or it can be fixed to a static address
- 64 Users can connect to the Ethernet interface at the same time
- 6 stereo inputs produce a payload of 320 bytes per second per user connected across the network

SOFTWARE
- NO LICENCE FEE! Software can be installed and used on as many computers as you want.
- 2 Programs supplied
- 1 Program allows set up of the hardware, i.e. naming of the rack itself this is called the NETWORK PPM MANAGER
- 2nd Program allows users to open meters on their screen NETWORK PPM DISPLAY
- Up to 64 computers can connect at any one time to the same hardware (via Ethernet)
- Complete simple to use PC software package
- Active X modules for individual meters & system components are included for use in customers own bespoke software
- PC software allows naming, sizing & positioning of meters on desktop
- Meters can display A/B, M & S, S +20
- Description, Location and Contact details can be set for each sub-rack.
- New sub-racks added to the network are automatically found and added to the list of available sub-racks by the software.
- Channels can be individually named and re-ordered in software.
- Logging of audio level by time
- Alarms that can be user set for audio level & time

FURTHER DETAILS & MANY MORE SCREEN SHOTS ON WWW.GLENSOUND.CO.UK

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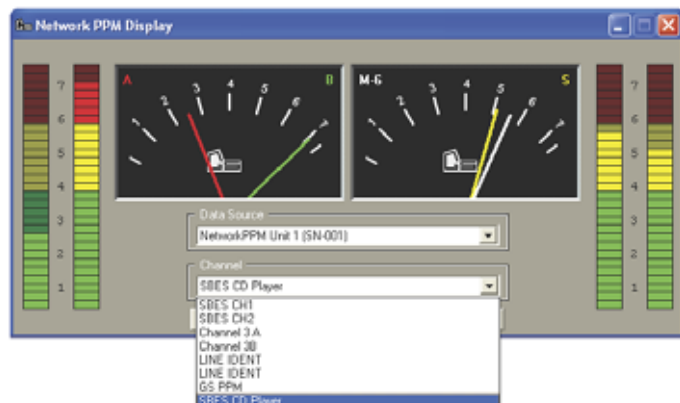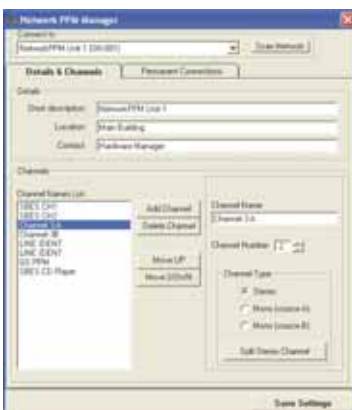
GSOM11 Single LED PPM

FEATURES
- Transformer Balanced Input
- Zero level input for PPM4 (internal adjustment possible)
- Only 154 x 39 x 90 mm
- 28 LEDs
- Powered From external +/- 12v psu (supplied)
- Economical professional PPM

GSOM11

GSOM14 Twin LED PPM

FEATURES
- Transformer Balanced Inputs
- Zero level input for PPM4 (internal adjustment possible)
- Only 154 x 39 x 90 mm
- 2 x 28 LED PPMs
- Powered From external +/- 12v psu (supplied)
- Economical professional PPM
- Audio input on Din socket

GSOM14

GS-PPM007 Twin Needle PPM

FEATURES
- Rugged unit suitable for portable or studio use
- White LED illuminations
- Transformer balanced inputs
- PPMs can be switched to A/B or M/S or M/S +20
- PPM6 Indicated by large LEDs
- Powered from external PSU (supplied)
- Balanced (XLR) inputs & Unbalanced (phono) inputs
- Gain switching between +40 and -10 in 10dB steps
- Gain switching between +8 and -2 in 2dB steps

GS-PPM007

GS-PPM002 Twin LED 'BENDY' PPM

FEATURES
- Rugged unit suitable for portable or studio use
- 2 x 28 LED PPMs
- Transformer balanced inputs
- PPM6 Indicated by large RED LED
- Powered from external PSU (supplied)
- Size: 156 x 82 x 125 mm

GS-PPM002

GSOM9 Single Needle Portable PPM

GSOM9

FEATURES
- Rugged unit suitable for portable use
- Battery Powered (4 x 'D' cell) inbuilt battery meter
- Single needle PPM
- Transformer balanced input (can be switched to 600 Ohm impedance)
- Gain control with range from -12 to +70dB
- Listen jack for headphones
- Input on front panel jack
- Size: 172 x 120 x 145 mm

GSNI1 8 Channel LED PPM

GSNI1

FEATURES
- 8 x 14 LED PPM in compact case
- Electronically balanced inputs on rear panel Varicon
- Zero level input for PPM4
- External switch mode PSU (supplied)
- Size: 90 x 230 x 150 mm

GS-PPM004 TWIN LED PPM WITH A/B, M/S & S+20

GS-PPM004

FEATURES
- 19 Inch 1RU Subrack
- Mains powered (Large Front panel on LED)
- 2 x 28 LED PPMs
- Electronically balanced inputs on rear panel XLRs
- 'Loop through' outputs
- Front panel switch for setting PPM to: A/B or M/S or S+20

GS-PPM005 TWIN LED PPM FOR MOUNTING UNDER MONITOR

FEATURES
- Robust case designed to take the weight of CRT monitors
- Size: 303 x 303 x 52mm
- Mains powered (Large Front panel on LED)
- 2 x 28 LED PPMs
- Electronically balanced inputs on rear panel XLRs
- 'Loop through' outputs
- Front panel switch for setting PPM to: A/B or M/S or S+20

GS-PPM008 COMPACT TWIN INPUT PPM METER

FEATURES
- Uses small versions of true Sifam moving coil PPM meters
- Keeps accurate monitoring small and portable
- Twin stereo inputs selectable
- Pass through outputs
- Peak LEDs
- All connections on XLRs
- Internal switch mode power supply with IEC socket
- Externally accessible fuse

GS-PPM009 COMPACT SINGLE INPUT PPM METER

FEATURES
- Uses the smallest available Sifam moving coil PPM meters
- Keeps accurate monitoring small and portable
- Single stereo input
- Pass through outputs
- Peak LEDs
- Connections on XLRs
- Internal switch mode power supply with IEC socket
- Externally accessible fuse

AUDIO MONITORING (Monitor & Output Units)

GS2U-011 Monitor & Output Unit

GS2U-011

FEATURES
- 2RU 19 inch subrack
- Mains Powered
- 2 audio inputs both selectable -10 or 0dB
- Inputs electronically balanced on XLRs
- 2 easy to use compressors
- Compressors have variable threshold (between -10 & +10dB), choice of recovery times & choice of compression ratios (1:1, 5:1 & 10:1)
- Individual single needle PPM for each input
- 2 identical outputs for each input
- Outputs have +4dB switch
- Inbuilt line identification for each output
- Up to 16 seconds of ident message
- 1kHz tone added to ident on replay
- Front panel mic & external input for recording ident & talkback
- Individual talkback to the 2 outputs
- Rack ears can be removed and rotated to allow fixing underneath/ on top desks

Mini MOP MkII Monitor & Output Unit

- Two twin needle sifam PPMs with m/s and +20
- Four external analogue and four external digital inputs
- Versatile internal loudspeaker and headphone monitoring with reverse phase
- DTMF cue send
- Integrated presenter system for 3 presenters with talkback circuits for producer and engineer
- Presenter headphone monitoring features A/B switching
- Front panel connection for talkback mic
- Ident recorder

The Mini MOP MkII is the production centre of an outside broadcast. It allows an engineer to monitor signal levels from various sources via two twin moving coil PPM meters, and audio via an internal speaker or headphones. There are external audio inputs for 4 analogue and 4 digital signal.

There is also a 3 presenter headphone monitoring system with 2 talkback circuits, and left/right headphone switching on the presenters mix inputs.

There is also a line ident, phase reversing, and DTMF cue.

AUDIO MONITORING (Monitoring Mixing)

GS-MON001 10 INPUT MONITOR MIXER

The GS-MON001 is a 1RU 19 inch subrack. It is ideal for use in outside broadcast vans or studios where a number of incoming audio sources need to be monitored.

FEATURES
- Transformer balanced audio inputs
- Switch mode power supply (90 to 250 VAC)
- 10 inputs
- Input level controls
- Signal present LEDs for each input
- Input level controls provide +10dB gain
- 0dB Mix output
- Headphone output
- Powered loudspeaker output
- Internal loudspeaker
- Rear panel switch selects between internal or external loudspeaker
- Output volume control (common to all 3 outputs)
- Front panel cut switch for loudspeakers
- External loops for dim or cut of loudspeakers

SPECIFICATION
- Mains powered 90 to 250 Volts
- 0dB input gives 0dB output (mix out) (unity gain)
- Channel levels controls: -infinity to +10dB
- Signal present LEDs indicate at -20dB
- Frequency response 40Hz to 20kHz
- Distortion > 0.05% (100Hz, 1kHz & 10kHz)
- Noise > -80dB (22Hz – 20kHz RMS)
- Headphone/ LS output levels -20 to +10dB
- Loudspeaker power output: 3 watts

GS-MM83 8 MONO 3 STERO INPUT MONITOR WITH DSP

A 1u subrack with 8 mono inputs and 3 stero inputs. DSP of audio path allows for 3 presets on the rear panel to allow for speech/music/flat EQ/dynamics for example. A 1u 19" subrack with inputs on full size XLRs.

SPECIFICATION
- 8 mono inputs, 3 stereo inputs
- Left/right/both headphone switching on all inputs
- Stereo inputs can select left/right or stereo input
- DSP processing giving compressor/limiter and EQ across 3 presets (factory set)
- Front panel speaker and powered speaker output (internal amp)
- 6.35mm and 3.5mm headphone sockets
- LS cut and dim

MEETING ROOM AUDIO
MR-AUDIO128 NETWORK AUDIO SYSTEM

The Glensound MR-AUDIO128 Meeting Room Audio System was developed for high end applications. It is a hardware and software system for meeting rooms that offers several key functions – 1) Enables participants to easily hear and speak to each other even in the largest of board rooms, 2) Mixes and routes all audio feeds via a central matrix, 3) Automatically manages difficult audio situations such as speaker and microphone volume level and feedback, 4) Offers integration into other elements of the broadcast chain

The MR-AUDIO128 is self configuring once commissioned and all audio, data and power is passed over CAT5 network cables, using a 'network safe' system should any other units be incorrectly connected. The system is designed to make installation and commissioning simple. Redundancy is available throughout the system as the recording of important discussions is often a legal requirement. The system includes meeting room based desktop hardware, local connection boxes and rack mount central processing devices.

The digital processing of the system allows very high gain levels without feedback due to a built in frequency shifter. The management algorithms control mic and speaker levels dynamically to ensure all members can hear each other with a transparent background process. The user experience is one of a clear and open discussion, even with members on the other side of the board room in a noisy meeting environment.

This is a bespoke product and as such will be adapted to meet any specific requirements, Please contact us for further information for any large, high quality requirement in government or business environments.

PHONE IN SYSTEMS
CALL CLASSIC

The Call Classic is a 4 line phone system with an individual digital hybrid/codec on each line. This ensures clear and balanced audio levels when all four callers are on air together. There are two versions 1) with ISDN G711 and G722, 2) with POTS. In the POTS version the new Glensound digital hybrid is employed for a very high quality audio signal and consistent caller audio levels.

The system has a main 1u 19" base station, and up to two phone controllers, allowing use with one controller in self op mode, or with two controllers with one as a call screener. The Call Classic can be configured as a 4 line system or 2 x two line systems.

Each phone line has on air, screen, hold and drop buttons, and the system features intelligent 'next' priority. The ISDN version features caller ID.

POWER & LOUDSPEAKER AMPLIFIERS

GS-PA001 POWER AMP WITH COMPRESSOR

GS-PA001

FEATURES

- Mains Powered
- Compact rugged size: 224 x 104 x 64 mm (w x d x h)
- 15 Watt power output into 8 Ohms
- Transformer balanced audio input
- Inbuilt Compressor
- Nominal input level 0dB
- Input before clipping +26dB
- Optional internal Custom designed filter/ eq
- Input on XLR and CAT5 connector
- Loudspeaker output on large screw terminals
- Front panel level control
- Power on LED

GS-PA002 POWER AMPLIFIER

The GS-PA002 is a high quality two channel power amplifier originally designed for use in small studios. It is just 1RU high and with passive cooling and switch mode power supplies is also ideal for use in outside broadcast trucks. The amplifier does not have a volume control as studio mixers have their own loudspeaker volume controls.

It has high quality balanced input circuits on XLRs and the outputs are provided on both 2 pole neutrik speakon connectors and large screw terminals. The passive cooling is provided by both front panel cooling fins and internal aluminium heatsinks.

FEATURES

- Mains Powered
- 19 Inch 1RU
- 30 Watt power output per channel into 8 Ohms
- Balanced audio inputs
- Soft start
- Nominal input level 0dB (others available on request)
- Loudspeaker output on large screw terminals & neutrik 2 pole speakon connectors
- Power on LED
- Passive cooling
- Switch mode power supply (90 to 250 VAC)
- High quality low noise class AB amplifiers
- Perfect for driving monitors in small studios

AUDIO SWITCHES

GS-SW002 Eight of 2 into 1 switches

FEATURES
- 19 Inch 1RU Subrack
- Mains powered
- 8 switches
- Each switch has 1 output derived from 2 sources
- All 8 switches switch at the same time
- Switch controlled by external logic
- Power on LED
- Front panel LED indication of relays switched

GS-SW003 8 Way Musicians Safety Announcment Switch

GS-SW003

FEATURES
- 19 Inch 2RU Subrack
- Mains powered
- Designed to auto cut 'band' PA systems when a safety announcement is made
- 8 off relay operated switches (30A relays)
- Each switch has an input & output on ¼" jack sockets
- Auto detection of audio input from safety announcement system (can be 100 Volt line down to 200uV)
- On detection of audio from safety announcement all 8 relays are switched to cut the audio through the jacks

GS1U-057 Automatic audio switch

REAR VIEW

FRONT VIEW
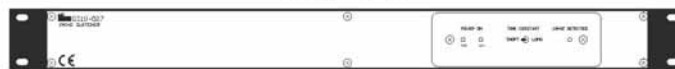
GS1U-057

This is a mains powered 1RU subrack. It is designed to automatically switch in an external audio device (e.g. optimod processor).
It is a 2 part system, 1 part being a 19kHz generator and fixed mixer and the 2nd part being a 19kHz detector, filter & switch.

A stereo audio input has the 19kHz tone mixed with it and sent to an output.
This output is fed to an external mixer.
The output of the external mixer is fed back into the GS1U-057.
When the external mixer mixes in its input from the GS1U-057 to its output the GS1U-057 will detect the 19kHz tone.
If no 19kHz tone is detected then the output of the GS1U-057 is fed straight from the input from the external mixer.
If 19kHz tone is detected then an external stereo audio device is switched into circuit.
A 19kHz notch filter is provided to remove the 19kHz tone from the units audio output.

GS-COUGH001 Cough Switch

This is a very simple passive beltpack box. It is robust and lightweight.
It houses a high quality switch capable of silently switching mic signals (and line levels) on and off.
The switch (a lever key) is a momentary action and in its normal state allows audio to pass from the input to the output.
Two XLRs for audio input and output are provided.

MAINS SWITCHER

GS-WLSR27 MAINS SWITCHER

These mains switchers differ from most others on the market as they are designed for use in very large systems with multiple mains switching racks providing power distribution to multiple pieces of equipment. To do this each GSWL-SR27 mains switcher is set to turn on/off all of its connected devices at the same time and multiple GS-WLSR27 mains switchers would be set to turn on and off at different times.

GENERAL
This is a 1U sub rack designed to feed six IEC mains outputs. The outputs will not be switched on instantly but at a pre-set time after being instructed to turn on. Similarly the turn off is after a second pre-set time. These delay times are set in ¼ second steps using the rear panel DIP switches.

POWER SUPPLY
A small internal power supply is permanently on and supplies 5 volts for the PIC circuits that provide the timing as well as providing a low power external 12 volt output for other units. This output is current limited to 100mAs by a stabiliser and protected against reverse powering by means of a diode in series with its output.

CONTROL
These units are designed to communicate with each other and be switched on and off in one of three ways:-
    1) Use the front panel switch marked permanently on
    2) A momentary loop between pins 5 and X of the RJ45 connector will toggle the unit on and off.
    3) An earth on pin 4 of the RJ45 connector will force the unit on

STEREO TO MONO CONVERTER

STEREO TO MONO CONVERTER

## GSWL-SR33 Five Way Unbalanced Stereo to Balanced Mono

GSWL-SR33

FEATURES
- 19 Inch 1RU Subrack
- Mains powered
- 5 separate stereo to mono converters
- Unbalanced stereo input on phono connectors
- Unbalanced input nominal -10dB
- Multi turn gain control on input
- Output electronically balanced on XLR
- Output level 0dB

TALKBACK/ INTERCOM

GS-TBMM001 6 x 6 TALKBACK MATRIX MIXER

The GS-TBMM001 is a 1RU subrack designed to allow easy setup and alteration of talkback circuits from simple to use front panel controls. Features such as switch mode power supply & audio transformers on both inputs & outputs make it ideal for use in demanding environments such as OB trucks.
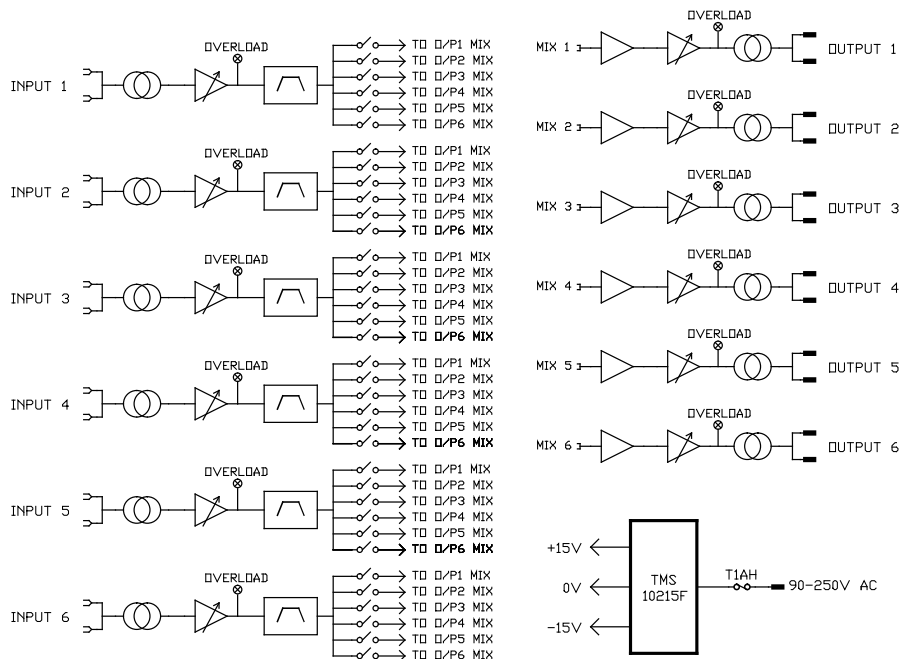
FEATURES
- Transformer balanced audio inputs
- Transformer balanced audio outputs
- Switch mode power supply (90 to 250 VAC)
- 6 inputs
- 6 outputs
- Front panel switches route any input to any output
- Individual input level controls
- Individual output level controls
- Input level controls provide +/- 20dB adjustment
- Input & output overload indication for easy level setup
- Band pass filters on each input

SPECIFICATION
- 0dB input for 0dB output (unity gain)
- Input gain: +/-20dB
- Output gain +/-10dB
- Output overload led indicates 3dB before output distorts
- Input overload led indicates 3dB before input distorts
- Frequency response –1dB 40 Hz to 16kHz
- Distrortion > 0.05% (100Hz, 1kHz & 10kHz)
- Noise > -80dB (22Hz to 20kHz RMS)
- Crosstalk > -70dB (20Hz to 20kHz)

GS-TB001 For Adding Talkack into a Headphone Feed

GS-TB001

FEATURES
- Small desktop unit
- External power supply
- Power on LED
- Front panel gooseneck mic
- Mic gain control
- Front panel Lever key for talkback
- Headphone input on rear panel jack socket
- Headphone output on rear panel jack socket
- Front panel 'listen' jack
- Talkback is inserted on left channel of headphone circuit

GSLC1A, GSLC2A & GSLC3A MULTIWIRE INTERCOMS

GSLC1A

GSLC2A

FEATURES
- BACKWARDS COMPATIBLE WITH ORIGINAL GSLC RANGE
- 16 WAY INTERCOM
- Multi wire connections between intercoms
- Front panel mounted gooseneck microphone
- Front panel mounted loudspeaker
- External power supply (20 – 70 volts)
- External LS dim
- External LS cut
- Audio input is transformer balanced

- GSLC2A adds lever key switches connected to rear panel varicon & 2 front panel mounted headphone jacks connected to a 20 way rear panel varicon
- GSLC3A provides relay outputs & indication LEDs as per the original GSLC3

GS2U-004 & GS2U-003 Vehicle Talkback System

GS2U003 & 004

FEATURES
- 2 x 2RU 19 Inch subracks
- 1 subrack has loudspeakers, talkback buttons & talkback switches
- 1 subrack houses talkback matrix & power supply
- 4 talkback outputs with small PPMs
- 8 inputs to matrix
- 3 off the talkback outputs derived from 6 inputs & talkback mic
- 4th talkback output derived from 3 inputs & talkback mic
- Each matrix point has level control
- All inputs & outputs electronically balanced

OTHER VERSIONS OF THIS TALKBACK SYSTEM ARE AVAILABLE PLEASE CHECK www.glensound.co.uk for details
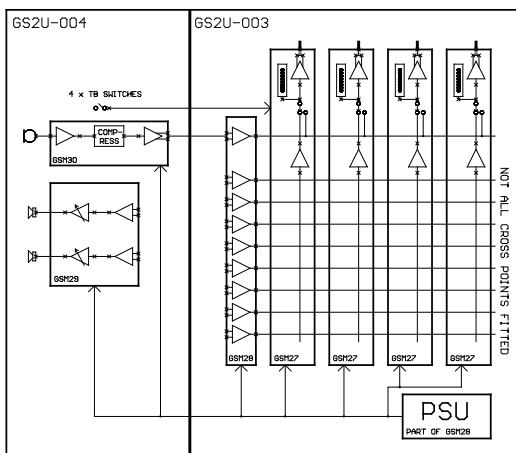
GS-TB003 Talkback Mic Amp

GS-TB003

FEATURES
- Small desktop unit
- External power supply
- Power on LED
- Front panel gooseneck mic
- Mic gain/ level control
- Front panel Lever key for talkback
- Balanced output on rear panel XLR
- Output level nominal zero level

TRANSMITTER RESERVE FEED

GS1U-030 & GS1U-031

GENERAL
This system has been designed specially to provide a mono reserve feed to transmitter stations. The reserve feed is provided using an ISDN dial up system with the audio encoded using the G722 algorithm.
.

EQUIPMENT
Equipment is provided for both the transmitter site and at the studio site.
At the transmitter site the equipment is housed in two 1U subracks. These are coded GS1U-030 and GS1U-031. The GS1U-030 contains most of the electronics while the GS1U-031 contains basically just the relays that perform the actual switching.

At the studio site the equipment is housed in a single 1U subrack code GS1U-032. Some studios may feed several transmitter sites. The GS1U-032 can be equipped to feed up to six different transmitters with, if necessary, six different programmes.

The design for both the studio and transmitter equipment is based on our GSGC9 ISDN Module. This is a Eurocard size unit that contains a dual terminal adapter and two codecs each of which can automatically use the G722 ("data" for music line) or the G711 ("voice" for telephone) algorithms. It is controlled by using DTMF (i.e. the "touch tones" generated by all modern phones) and provides information to the user with recorded messages.
(We have substantially re engineered this module for use at the transmitter site. It is now built on a larger PCB that fits directly into the 1U subrack and has many hardware and software changes)

At the studio end , the standard GSGC9 is used with only minor hardware modifications (e.g. omission of the break jacks) and with no software modifications.

OPERATION IF MAIN TRANSMITTER FEED FAILS
The GS1U-030 continuously monitors the main transmitter feeds. If programme level on either stereo leg is lower than a defined level for longer than a defined period, the unit will dial up the studio and feed the transmitter with the reserve mono feed*. A number of safeguards are built into this procedure.
(* unless automatic reserve has been manually disabled)

EMERGENCY OPERATION
It is possible to force the GS1U-030 to dial a particular studio and to replace the main transmitter feed (whether failed or not) with an alternative mono feed. This operation is performed using a normal DTMF telephone. For security reasons there are several levels of safeguards built into this operation including CLI and PIN number protection. The user is warned that "Automatic Reserve will be disabled", when attempting manual control. Having made a manual control action the system will remain as commanded until a further command places it back into Automatic mode.

SETTING UP THE SYSTEM
For initial set-ups on installation an RS232 port is provided on the front panel of the GS1U-030 to interface with a PC. Most parameters, CLI and PIN numbers can then be set.

So that it is not necessary to visit the transmitter site in order to change parameters, provision has been made to permit nearly all of them to be changed by calling the unit using a standard DTMF telephone. Again security safeguards are provided.

BALANCE CONVERTERS
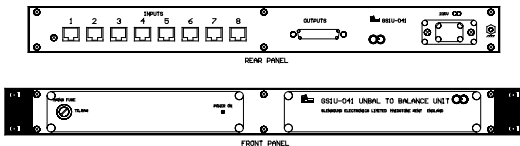
GS-U2B003 Stereo Unbalanced to Balanced Converter

The GS-U2B003 is a battery powered device for connected unbalanced 'domestic' audio sources to balanced 'professional' equipment.

FEATURES
- Battery powered from 1 x PP3 cell
- External DC power input
- Low battery LED indication
- Stereo converter
- Unbalanced inputs on phono connectors
- Balanced outputs on XLR plugs
- Single +/- 10dB gain control for both channels
- @ unity gain -15dB input provides 0dB output

GS1U-041 Eight Way Unbalanced to Balanced Converter

FEATURES
- 19 Inch 1RU
- Mains Powered
- 8 x individual unbalanced to balanced converters
- Designed for permanent installation
- Unbalanced inputs on individual RJ45 sockets
- Balanced outputs on 1 x 25 way 'D' plug
- Outputs electronically balanced
- Internal channel gain pots provided

GS1U-024 Four Way Stereo Unbalanced to Balanced Converter

GS1U-024 Front & Rear

FEATURES
- 19 Inch 1RU
- Mains Powered
- Can be fitted with 1, 2, 3 or 4 stereo converter cards
- Each card has stereo input & 3 outputs (A,B & M)
- Unbalanced input range from -20dB to 0dB (for 0dB output)
- Individual left & right channel gain controls
- Electronically balanced outputs
- Inputs & outputs on Varicon connectors

GS1U-056 Twelve Way Unbalanced to Balanced Converter
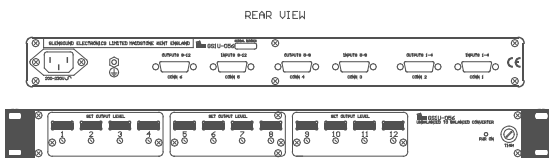
FEATURES
- 19 Inch 1RU
- Mains Powered
- Can be supplied as 4, 8 or 12 channels of conversion
- Inputs & outputs on 'D' connectors
- -20dB input for 0dB output
- Front panel +/- 10dB gain control for each channel
- Electronically balanced output

GS-U2B002 Twenty Way Stereo Unbalanced to Balanced Converter

GS-U2B002

FEATURES
- 19 Inch 2RU
- Mains Powered
- 20 x Stereo unbalanced to balanced converters
- Inputs & outputs on 'D' connectors
- -20dB input for 0dB output
- Front panel stereo +/- 10dB gain control for each channel
- Electronically balanced output

GSU2B001 Fifty Six Way Unbalanced to Balanced Converter

FEATURES
- 19 Inch 3RU
- Mains Powered
- 56 x unbalanced to balanced converters
- Inputs & outputs on 'D' connectors
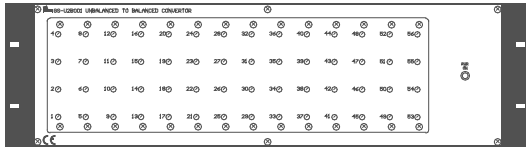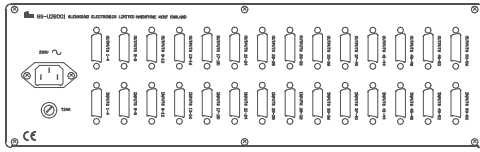- -20dB input for 0dB output
- Front panel +/- 10dB gain control for each channel
- Electronically balanced output

GS1U-043 Twelve Way Balanced to Unbalanced Converter

FEATURES
- 19 Inch 1RU
- Passive Subrack
- 12 x balanced to unbalanced converters
- Inputs & outputs on varicon connectors
- Transformer balanced inputs
- Front panel pre set level control

GS1U-055 Twelve Way Balanced to Unbalanced Converter
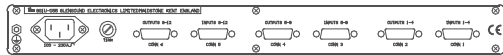
FEATURES
- 19 Inch 1RU
- Mains Powered Subrack
- Can be supplied as 4, 8 or 12 channels of balanced to unbalanced converters
- Audio inputs & outputs on 'D' connectors
- 0dB input gives -20dB output
- Front panel gain controls give +/-10dB gain

Many of our balance converters use multipole connectors to facilitate large quantities of audio circuits in a small rack space. These connectors are generally 'D' type although other types are also used. It is quite common for us to provide custom cables to connect the inputs/ outputs from the multipole connectors to connectors that match customers equipment. Please email sales@glensound.co.uk with details of your connectors for a quotation.

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Zoning Products

GS-LSA001 (SEATTLE) & GS-LSA002 (STOCKTON)
8 and 4 OUTPUT ZONE INTELLIGENT POWER AMPLIFIERS

These are high quality power amplifiers designed for use in shops/ banks/ offices etc etc. They differ from all other amplifiers on the market in 2 main ways. Firstly they are controlled via an IP network, there are no front panel knobs or buttons for untrained staff to fiddle with. Secondly each loudspeaker output has an infra red remote control volume receiver associated with it. This allows individual speakers to have their volumes adjusted by one common remote control (the amount of level adjustment is of course fully configurable by software via the network).

The amplifier has a total of 4 audio inputs. These are 3 'line level' and 1 mic. Being designed for background music applications the output of the amplifier is mono. There are 8 individual power amplifiers in the GS-LSA001 (4 in the GS-LSA002), each has its own output and own infra red receiver for independent remote control of its volume. All amplifiers share the same audio inputs.

For reliability heat dissipation from the amplifiers is done entirely by large heatsinks. Unreliable/ noisy fans are NOT used.

AUDIO INPUTS

There are 4 audio inputs. 3 line level and 1 mic level. One of the line level inputs is a stereo input that has both left & right inputs mixed together inside the amp to form a mono feed. The other 2 line inputs are just mono.

Switching between the audio inputs is done automatically (although it can be forced by the control software if required). The order of input switching is: Stereo Line, Mic, Mono Line 1, Mono Line 2. It was designed in the assumption that the normal background music source would be connected to the stereo line, if a mic was attached and used for instore announcements this would take priority over the music source. The 2 mono line inputs can be used for such things as local adverts or fire alarm/ safety announcements. These 2 mono input shave the highest priority and audio present on either input will turn off the music source and mic.

A highly sophisticated automatic level control system is used to correctly set the gains of the audio inputs.

LOUDSPEAKER OUTPUTS

There are 8 loudspeaker outputs (4 in the GS-LSA002). Each fed from its own amplifier. For ease of installation the outputs are on RJ45 connectors (cat5). To allow enough power to be supplied to the loudspeakers an audio transformer is required at the loudspeaker (see loudspeakers/ volume remote control). Each output can be set to have its own standard level. This level is set in software during initial installation (it can of course be easily changed via the network later if required). At the start of each day the loudspeakers output is returned to this standard level.

Not all the wires in the cat5 cable connecting the amplifier to the speaker are used for output from the amplifier. Some wires are used for return information from the loudspeaker, such as information from the loudspeakers remote control receiver if a user is trying to change the loudness of a speaker. Other information sent to the amplifier is the type of loudspeaker connected. This allows the amplifier to automatically apply correct equalization curves for the type of loudspeaker connected to an output. There are no issues with connecting several different types of loudspeaker to the same amplifier.

LOUDSPEAKER REMOTE VOLUME CONTROL

Fitted to each loudspeaker is a remote control receiver. One handheld infrared remote control is supplied with each amplifier. using the remote control it is possible for the loudness of a speaker to be adjusted. The amount that a loudspeaker can be adjusted can be set by the network control software. Each morning the level of each loudspeaker is returned to the original standard set level.

LOCAL BRANCH CONTROL PANEL

A simple to use branch control panel is also supplied with each amplifier. It connects to the amplifier by a single cat5 cable. It has three buttons on it and is usually fitted either at the tills or in the managers office. The three buttons are marked 'BRANCH BUSY', 'BRANCH QUITE' and 'BRANCH NORMAL'. When one of these buttons is pressed the overall volume of the system is altered. The amount the level is changed between normal, busy & quite is of course set via the network control interface. It is possible to have the branch busy volume set either quieter or louder than the branch quite volume.

EXPANSION

It is possible to connect several amplifiers together. This is done by a single cat5 cable between 2 amplifiers. All the audio inputs from the master amplifier are sent digitally down the cat5 cable to the slave amplifier. Also information from the branch control panel is shared between the master and slave amplifiers.

NETWORK CONTROL SOFTWARE

A full suite of easy to use controls software is supplied with each amplifier. Just plug the amplifier into your network and assuming that you use DHCP it will be automatically found by the pc running the control software. If you used fixed IP addresses it is easy to fix one.

Once the remote pc is connected to the amplifier it is possible to control levels of all the inputs and individual speakers.

Levels that can be adjusted using the loudspeaker remote controls and branch control panel can also be set.

To save energy it is possible to set the amplifier to automatically turn itself off at a pre set time and then turn itself back on at another preset time.

MZP-16 Multi Zone Paging Mic System

FEATURES
- A network safe multi-zone public address
- DSP system with compressor/limiter, dynamics filters and frequency shifter
- High quality components resulting in exceptional audio reproduction
- Page 16 zones
- The loudest PA mic system without howl

The Glensound MZP-16 is probably the finest system available for multi-zone microphone paging. The system comprises of a Zone Controller with 16 paging zones and mic connection, and a 19" 3U multi card subrack controller. It has been designed to perform 24/7 in the most demanding environments, at an unrivalled sonic quality.

Network Safe
A key element of the system is that all audio is managed as AES3. Utilising a version of the power over Ethernet protocol (POE) we can transparently pass our signal over existing structured networks, making the whole system integration easier and more cost effective. At the relevant paging zone, simply plug the front end unit into a suitably assigned network socket, and that's it! As the audio is digital AES3 it will not affect other network traffic, and other network traffic will not affect it. All connections are transformer isolated and Ethernet safe. Any cross connections with other network equipment will not cause any damage to either unit.

Zone Controller
The Zone Controller is connected via CAT5 on a normal structured network. This connection passes audio, data and powers the controller. It also allows connection of the microphone (12v phantom) and the selection of the paging zone. The system is available as standard with our pre-selected Audio Technica condenser microphone. After extensive testing this mic is found to offer the best performance verses cost results. This mic also impressed as it was particularly resistant to GSM interference. If you would like to use an alternative mic the system can be ordered without microphones.

The Zone Controller is available as a single unit, or as a 2 part system, separating the zone selection, from the mic and paging button. This is particularly useful if desk space requires a smaller foot print for the mic paging unit.

The sixteen paging zones can be selected in any combination, indicated via a green LED. Once selected, the paging button will send the audio to all selected zones. There are four preset buttons to set up pre-selected zones for paging with a single button press. There is an 'arm' button that must be selected before paging to avoid accidental use. If a zone is already being used it will indicate with a red LED. The operator then has the option to continue the page and mix their audio with the audio already present, or wait for the other announcement to finish.

Glensound Digital Control
The onboard DSP devices allow control over the audio. There is digital compressing and limiting, parametric EQ, and other filters. The Glensound engineers have also developed a purpose built PA frequency shifter technology called, 'PG-Shift'. This constantly monitors audio input for signs of howl round and phase shifts the audio signal by 90 degrees and takes it up 4 dB. This automatic process operates in the background and is continuously making adjustments. The result is the ability to have gain levels significantly higher than a normal system, resulting in higher output levels before the onset of feedback. In use the system is therefore clearer for all people listening and more pleasing to listen to due to the lack of howl round.

3U Subrack

The subrack accommodates one of four system cards:
1. Mic link. This is the interface card to the front end. Connection is via standard network structured wiring. This link powers the Zone Controller and transfers the audio signals.
2. Mix. This zone output card carries out the zone switching or mixing and passes the 16 x AES3 audio outputs on 4 x RJ45 sockets.
3. Ethernet. This provides management information. Any faults on the system are emailed to alert a selected address. It also contains DC loops for further control options.
4. Power Supply. The rear panel can have a second optional redundant power supply added.

Applications
The MZP-16 is for multi zone paging applications where the audio quality needs to be loud and clear, and of the highest possible standard. This could be to be in keeping with the environment for which it is used (high quality hotels, government buildings, broadcast centres, etc) or where the clarity and quality of the audio is paramount (city trading floors, for security announcements at airports, the local bingo hall!)

On Site Optimisation
The GS-MZP16 can further be optimised by a site visit from an acoustician. This allows specific tuning to the acoustics of the room. This was carried out when this system was installed at the HSBC trading floor in Canary Wharf, and resulted in a system that over performed!

Customisation
Due to the way we manufacture our products, there are options on the system. This could be the physical unit, for instance in different size boxes to fit into particular spaces, or top panel only to fit into existing hardware. The nature of the zone control, number of zones, button layout, etc. can all be considered. Please talk to us about your specific requirement.

HIRE RANGE

Whether you require 1 headphone amplifier for 1 day or 50 channels of co axial commentator's equipment for 2 months we will be pleased to provide you with a quote. We are always happy to discuss your specific requirements for equipment and with well over 30 years of broadcast experience we can always recommend the correct equipment for your needs. As the manufacturer of all our own hire equipment you can always be sure that the equipment you are hiring from us will be in good condition.
Same day dispatch can normally be arranged (although advanced booking is always advised), and in the UK same day delivery can normally be arranged!

ISDN HIRE PRICES

EQUIPMENT	Total for 1st Four Days	Subsequent Days
GSGC4	£95	£19
GSGC5	£100	£20
GSGC24	£80	£17
Headsets for above	£10	£2.50
GSGC6 c/w 1 codec & 1 off GSGC7	£100	£20
GSGC6 c/w 2 codecs & 2 off GSGC7	£145	£29
GSGC8	£160	£32
GSGC9 Solo "Brick" (inc. Dialler)	£65	£12
GS3U-ISDN-X (inc. Dialler)	£40	£8
GSGC9 Modules (Fitted in above)	£55	£10

All above units except GSGC9 & GSGC24 available fitted with any of the following codecs:

G722

APTX

MPEG Layer II (Also operates in G722 mode)

DUAL (G722 & APTX)

Please let us know when ordering which codec you require.

Discounts can usually be arranged for hire periods longer than one week.
The above prices do not include delivery costs and are exclusive of VAT.
The client is fully responsible for the equipment whilst on hire.

COMMENTATORS & OTHER HIRE PRICES

EQUIPMENT	Total for 1st Four Days	Subsequent Days
GSGC2 (c/w 3 metre lead)	£27	£4.50
GSGC3	£49	£8
GSGC11	£55	£10
Headsets for above	£10	£2.50
GSOC34 c/w 2 x Headsets	£100	£10
GSOC33-5 c/w 1 x Headset	£620	£62
GSBC2	£90	£9
GS-CU001	£100	£20
GSOZ2	£50	£5
GS1U-028	£65	£8
GSGH2	£15	£3
GDC 6432	£250	£45

Discounts can usually be arranged for hire periods longer than one week.
The above prices do not include delivery costs and are exclusive of VAT.
The client is fully responsible for the equipment whilst on hire.

PICTURED IS SOME OF OUR COAXIAL COMMENTATORS HIRE STOCK

Glensound Electronics Ltd

CONDITIONS OF SALE

These conditions form an integral part of any contract to supply goods by GLENSOUND ELECTRONICS LIMITED (hereafter known as the Company). In the event of any difference between these conditions and those of the Customer, these conditions shall prevail.

1) ACCEPTANCE OF ORDER
No order shall be deemed accepted by the Company until the Company has given confirmation.

2) CANCELLATION
Orders placed and accepted cannot be cancelled except with the Company's consent and on the terms that will indemnify the Company against loss.

3) PRICES
All prices quoted are ex-works and in Pounds Sterling. All prices quoted are fixed and binding on acceptance of order

4) TERMS OF PAYMENT
The terms of payment are specified in the Company's quotation.

5) DELIVERY
Delivery dates are approximate and delay in delivery shall not give the Customer the right to cancel any order. In no event shall the Company be liable for any delay or failure to deliver due to strikes, lock-outs, trade disputes other force majeure or any other causes whatsoever beyond the Company's reasonable control.

6) DAMAGE IN TRANSIT
The Company shall not be responsible for loss or damage to goods in transit unless the Company on the instructions and at the expense of the Customer has insured against loss or risk when the Company will, on receipt of the Customer's indemnity take all reasonable steps to recover from the underwriters any loss or damage for which they may be liable.

7) RISK
The goods shall be at the Customers sole risk as soon as they have been delivered to the Customer or a carrier on behalf of the Customer.

8) TITLE
Until the Company has been paid in full, the goods shall remain the property of the Company.

9) WARRANTY
For a period of one year after the goods have been despatched the Company will guarantee the goods against any defect developing after proper use providing such defects arise solely from faulty materials or workmanship and that the Customer shall return the goods to the Company's works.

10) DRAWINGS
Drawings, other documents and information are supplied by the Company in confidence and must not be disclosed to any third party.

11) LAW
These conditions and any order placed under them shall in all respects be construed and operated in accordance with English Law.

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