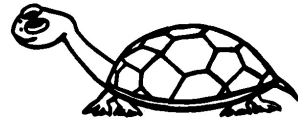


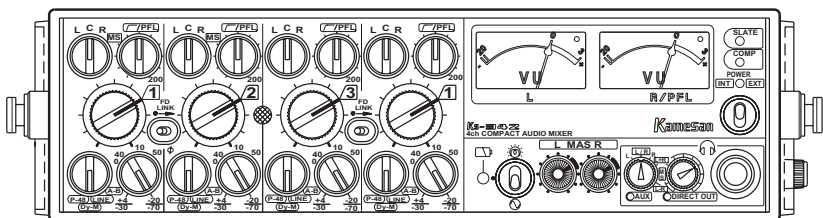
Kamesan



KS-342

4-channel mixer

Operating manual





Introduction

Thank you for the purchase of the Kamesan KS-342 4-channel portable mixer. This mixer is designed to provide you with the most flexible and powerful features available in a small, easily portable package.

Key points include:

- A wide range of input options, including +48V phantom powering

- Switchable support for MS operation

- AES/EBU digital output, together with a wide range of balanced and unbalanced analog outputs with compression

- Flexible monitoring

- Further expansion possible through the Kamesan range of modular audio components

Notes and warnings

The KS-6001 may be used with a dry-cell battery pack or with a NiCd NP-1 pack or with an external power source, as described elsewhere in this manual. If the unit is used under different conditions, there is a risk of fire, damage to the unit, or personal injury.

Note the following with regard to external power supplies:

- Make sure the polarity of the external powering device is correct.

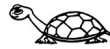
- Make sure it is properly connected to the KS-342. Damage to units may result if connectors are not properly fitted and the power is turned on.

Also, follow the common-sense precautions below:

- Do not allow liquids to come into contact with the unit or be spilled inside. Should this occur, fire, damage or malfunction may result.

- Make sure that no metal objects or easily inflammable substances inadvertently get inside the unit through holes or slots. Should this occur, fire, the unit may become damaged or start to behave erratically.

- Do not attempt to disassemble the unit as damage or malfunction may result.



Notes on the Operating Environment

Avoid using this unit in places with high heat or high humidity as damage or malfunction may result. When using in an exceptionally cold environment, battery service life may be shortened, and there may be a drop in performance. If at all possible, use this unit in the temperature range as indicated in the specifications.

When connecting this unit to external devices, be sure to read all related operation manuals and connect the devices correctly to each other. If there are mistakes in the connections, it is possible that either the KS-342 or the other unit(s) will be damaged.

In the event that smoke or odors come from the unit, turn off the power and remove all batteries and external power supply sources at once. Contact your dealer or service representative.

In the event of damage or injury caused by accidents, improper operation or functioning, the proper course of action shall be determined according to our service regulations. Please note that we cannot be responsible in any way for any loss of pre-recorded material.



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Connection of Microphones

WARNING

Connection of microphone cables and microphones: to prevent hazard or damage, ensure that only microphone cables and microphones designed to the IEC 268-15A standard are connected.

Connexions des microphones et de leurs câbles: pour éviter tout endommagement, s'assurer de brancher uniquement des microphones et des câbles de microphones conçus selon la norme IEC 268-15A.

When using microphones, make sure that the phantom power is set appropriately for the microphones. Use of +48 V phantom power with microphones not designed for this may result in damage to the microphones, and to the Kamesan KS-342.

In the event of encountering problems with the Kamesan KS-342, you should contact your local after-sales representative.



Before operating the Kamesan KS-342, you should be aware of the following points:

All XLR-3 connectors (male and female) are wired with the following pinouts: 1=ground, 2=hot, 3=cold.

The AC adaptor jack is a tip-negative connection. DO NOT attempt to make any connection to this jack except using AC adaptors authorized by Kamesan.

Always remove any dead batteries immediately from the Kamesan KS-342, and remove any batteries from the unit if it will not be used for some time. Corroded and leaking batteries can cause severe damage to the unit.

About the manual

Keep this manual in a convenient location for handy reference. Any labels on the unit mentioned in the manual are shown this typeface: **OUTPUT**.

Sometimes you will see a note—important information which you should note.

NOTE

Failure to read and observe notes and warnings may result in personal injury and/or possible damage to the unit.

Batteries and power

The Kamesan KS-342 can use any standard type of battery: manganese, alkaline, nickel-cadmium, nickel-hydrate cells fitted in a BP-3/8 battery holder (supplied with the KS-342) or a special NP-1 NiCd battery pack.

Eight type 3 (AA) size batteries are required.

In normal use and temperature conditions, a set of alkaline batteries provides about six hours of operation. See the specifications at the end of this manual for more detailed information.

In addition, the Kamesan KS-342 can accept power from a suitable power adaptor connected to the DC power input. This power should be between 10V and 15V DC, with a maximum current of 500mA. The connector is tip negative.



NOTE

If the unit is not to be used for an extended period of time, remove the batteries from the unit. Do not leave dead batteries in the unit.

The batteries are contained in a standard battery holder, which slides out for easy replacement. Additional battery holders can be purchased and “pre-loaded” with spare batteries for easy and speedy replacement.

Accessories, etc.

The Kamesan KS-342 is supplied with everything you need to start work.

However, you can purchase the following, in order to increase the capabilities and the functionality of the unit:

Power adaptors: you can use the Kamesan PS-M12 mini power supply.

Spare battery holders, allowing you to slip in a new power source at a moment’s notice. Use the BP-3/8 battery holder for dry cell batteries, and the BH-1 for the NiCd NP-1 battery.

To expand the capabilities of the unit further, it is possible to fit a KS-6001 4-channel sub-mixer, and/or a KS-6002 4-channel EQ/compressor unit, both of which integrate neatly into the KS-342 system without the use of cables.

Consult your Kamesan supplier for details.

About the case

The Kamesan KS-342 case is designed to hold and protect the unit against any wear and tear under the standard conditions of use for which the mixer is designed. In addition, the mixer itself has been designed to be rugged and to stand up to the demands that will be made of it in its expected life.

Even so, you should not drop the mixer, or subject it to violent shocks or vibration. Always keep the mixer in its case to avoid any possible damage.

You can loosen the straps on the case in order to expand the case size and allow the side strap holders on the mixer to be freed from the retaining panels in the case.

If you remove the mixer from the case, and then replace it, always make sure the case clips (four in all) fit over the lip at the top of the mixer front panel.



The touch fasteners at either side may be used to tidy cables, as well as to restrain the mixer in its case.

You can use the pocket in the case to store spare batteries, adaptors, etc.

You can secure the top flap using the touch fastener when it is folded back to allow operation of the front panel. In addition, it can form a convenient rain hood, allowing easy access to the front panel controls while protecting them from the elements.

Also note that if the KS-6001 sub-mixer or the KS-6002 EQ/compressor is fitted, cushioning material is supplied, allowing the extra units to fit snugly, and minimizing any possible damage caused by shock or vibration.

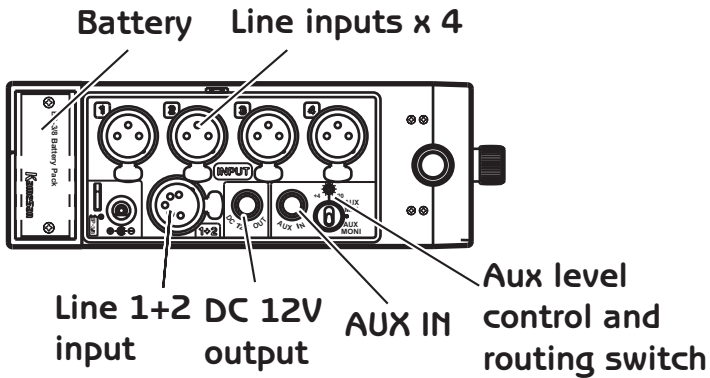


Features and panel items

For the most part, the explanations given for the individual parts of the KS-342 will allow you to operate the mixer effectively. You should therefore read this part of the manual carefully in order to understand the many features and operations possible with the unit.

Left side (viewed from front)

This section is chiefly the inputs to the mixer:



INPUTS 1 through 4 Connect the microphones or line level sources to these XLR jacks.

INPUTS 1+2 This XLR-5 jack is used to connect a stereo microphone to the 1 and 2 inputs. The wiring is: 1= ground, 2=L+, 3=L-, 4=R+, 5=R-.

Battery locking lever Pull down to release the battery pack

Coaxial power supply Connect a suitable power supply (tip negative, between 10V and 15V, approximately 0.5 A).

DC 12V OUT This connector is used to supply external power to other equipment.

AUX IN This connector is used to connect an auxiliary input, such as a camera's audio signal, etc.

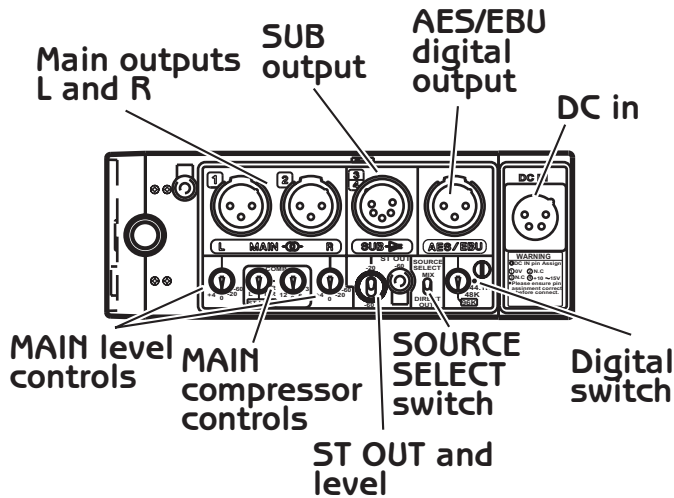
Aux level control and routing switch The level control is used to set the level of the input aux signal when it is routed to the output busses.



The routing switch sends the aux signal to the L and R main output busses (**AUX MIX**) or to the monitor bus only (**AUX MONI**) or completely off (center position).

Right side (viewed from front)

This section is chiefly the outputs from the mixer:



MAIN outputs L and R Balanced XLR-3 connectors providing the main analog output signals from the KS-342. They can also be used to provide the outputs from input channels 1 and 2, for example when these are used in MS mode.

MAIN level controls Use these rotary controls to adjust the level of the signals sent from the main outputs.

MAIN compressor controls The main output busses can be compressed using the onboard compressor (this applies to all outputs fed by the output busses. The triggering of the compressor can be done by either the **L** or the **R** bus, or **ST LINK** setting, in which either bus can be above the trigger level, or **L•R** in which both busses must be above the trigger level (the off position is represented by the • symbol). The trigger level itself can be set to +3 dB (**3**), +6 dB (**6**), +9 dB (**9**) or +12 dB (**12**).

SUB output This XLR-5 connector provides the main output busses as balanced sub outputs (or this connector can also be



used as direct outputs from channels 3 and 4). The wiring is: 1 =ground, 2=L+, 3 = L-, 4=R+, 5=R-. There is a choice of output levels: -20 dB or -60 dB, selectable by the switch immediately below this connector.

ST OUT This unbalanced 3.5 mm stereo jack output provides another stereo output for feeding unbalanced inputs (on a camera, for example). The level is -60 dB.

SOURCE SELECT switch This allows the choice of whether the MAIN and SUB connectors above output the mixed left and right output busses (**MIX**), or whether they output the individual channels in pairs (**DIRECT OUT**).

AES/EBU The KS-342 is capable of outputting the stereo output in AES/EBU format. The sampling frequency is selectable with the rotary switch beside the XLR-3 outputs at either **44.1K**, **48K** or **96K** (all Hz). The • position represents the off position (no digital signal is output).

NOTE

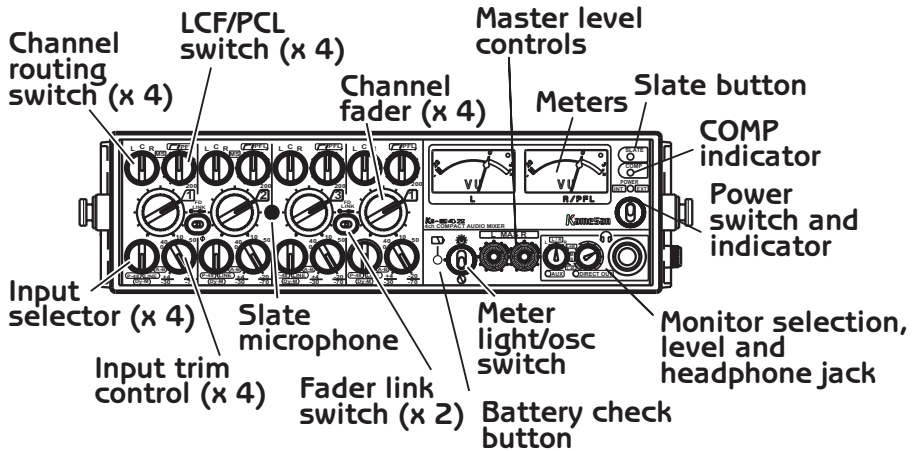
When this digital output is enabled, it uses battery power. If you are not using it, make sure that the switch is in the off position, to extend the life of the batteries.

DC IN Use this to connect a DC power supply, providing between +10V and +15V at no more than 600 mA. Wire the connector as marked on the panel.



Front panel

The front panel is where you will make the majority of the settings while you are using the KS-342.



Channel routing switch (x 4) Each channel has a switch that allows the channel's output to be routed to either the left (L), right (R) or both (C) output busses.

In addition, channels 1 and 2 have another setting: **MS**, which allows these channels to be operated in MS mode (with a stereo microphone, for example). Both the 1 and 2 channels must be set to **MS**, and various other features of the mixer also change. These are detailed in the section later referring to the MS mode.

LCF/PFL switch (x 4) Use this control to sweep the low-cut filter frequency (-12dB/octave) between 20 Hz and 200Hz.

Though there is no way to turn this filter off, in practice, setting the cutoff frequency to 20 Hz has the same effect as turning it off, as most microphone systems are not sensitive to sounds in that frequency range.

Press this control (it is non-latching) to perform a pre-fade listen (**PFL**) on the channel (the level is shown on the right meter). More than one of these PFL controls can be pressed at the same



time, but in this case, the level and right VU meter indication will be lower than the actual values.

Channel faders The nominal position is at about the 2 o'clock position, when the fader is pointing to the channel number.

NOTE

In MS mode, faders 1 and 2 have a slightly different meaning, as explained in the appropriate section.

Slate microphone This built-in microphone allows the operator to make comments, or clapperboard, etc. signals to be added to the main mix.

Input selector (x 4) Use this to select between the following:

P48 Condenser microphones requiring +48V phantom powering

Dy-M Dynamic microphones

LINE Line-level sources

A-B - A-B type microphones

NOTE

Ensure that only microphones corresponding to the selection are connected to the appropriate inputs, otherwise damage may occur to the KS-6001 and to the microphones.

Input trim control (x 4) Used to adjust the level of the signal fed to each channel. The amount of trim depends on the input setting: the blue figures indicate line-level settings, and the white figures indicate microphone levels.

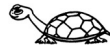
Fader link (FD LINK) switch (x 2) When these switches are on (pushed to the right position), the even-numbered faders control the levels of the two linked channels (not in MS mode).

Battery check button When the unit is turned on, pressing this momentary non-latching button allows you to check the battery health using the left meter. The further the meter is deflected, the more life there is in the batteries.

Meter light/Oscillator switch This switch serves two functions. In its up position, the meters are illuminated.

In the down position, the built-in 1 kHz line-up oscillator is activated (together with the meter light). In order to see the output level using the oscillator:

1. Make sure that both the **OUTPUT** level switches are set to the correct value (usually +4).



2. Turn the power on (up), and then turn the oscillator switch on (down).
3. To monitor both channels together, set the monitoring selection switch to the **L/R** setting (for an explanation of the monitoring switch settings).
4. Adjust the level of the outputs so that the meter reads 0 dB (or the equivalent, depending on the meter).
5. Remember to turn the oscillator off when the adjustment has been made.

The center position is off.

Master level controls Adjust the output level with these controls. These are recessed to avoid accidental changes to the output level in normal operation.

Monitor selection, level and headphone jack Select the signals monitored through the headphones using the monitor selection control. **AUX** selects the auxiliary signals, **L** selects the left, and **R** selects the right output bus, **L/R** is stereo and **L+R** is a mono combination of the left and right busses. Note that these assignments change in MS mode, as explained below.

Use the level control to set the monitoring level as heard through the headphones, plugged into the standard 1/4" stereo jack.

Power switch and indicator Turn the unit on by pushing the switch up. The indicator lights green when the internal batteries are used, and orange when an external power supply is used. It flashes when the battery level becomes low. When it flashes, you should replace the batteries.

COMP indicator Lights when the compressor is in operation, as switched from the side panel.

NOTE

The compressors use battery power. Turn the compressors off when you do not need them to extend the life of your batteries.

SLATE button Push to activate the slate function with the internal microphone.

Meters There are three different types of meter available with the KS-342. These are factory-fitted and are not user-replaceable, depending on the model of your KS-342, you may have one of the following types of meter fitted:



VU scale These meters conform to the VU standard, providing an averaged level reading. 0 VU marks the reference position.

BBC scale Developed by the British Broadcasting Corporation, this peak meter standard goes from 1 to 7 (each step represents 4 dB) with a fast rise and slow fall time. The reference level is "6".

Nordic scale Another peak meter type, with 0 again being the reference level, but the readings are from -42 to +12 dBu.

In each case, a peak LED is provided as part of the metering system, which lights at 6 dB below maximum level.

MS operation

MS operation is usually carried out using a specialized microphone designed for this kind of recording.

To use the MS facility with channels 1 and 2, make sure that both channels 1 and 2 have their output destination selected as **MS**.

Note that the dedicated XLR-5 connector can be used with appropriately-wired microphones in this mode. It provides phantom power, etc. in exactly the same way as the XLR-3 connectors, and the line selector switches, etc. should be set appropriately.

The AUX inputs cannot be used for cascading in this mode.

The fader for channel 1 becomes the width control for the MS signal, and the fader for channel 2 is the level control.

The fader gang switch (1-2) obviously cannot gang the faders in MS mode—instead, it inverts the phase of the signal fed to channel 2.

When monitoring, the **L+R** mode takes a new meaning, with the decoded left and right signals being decoded.

AES/EBU output

The AES/EBU jack provides digital output in AES/EBU format, at the selectable sampling frequencies of 44.1, 48 or 96 kHz.

The resolution is 20 bits.



Expansion

The KS-342 may be used together with the KS-6001 sub mixer, which provides a further four channels of input feeding the AUX bus, and/or the KS-6002 compressor/EQ module, which provides sweepable 2-band EQ and compression facilities for each channel. The KS-342 can act as the power source for these units, which integrate neatly with the built-in connector on the top panel of the unit.

These modular connectors allow you to build up a portable Kamesan system in a similar way to a child's building block set, without the need for other connectors or cables, as all audio signals and power are carried by these built-in connectors.

There is no need to make any switch assignments on any of the units—for example, when the KS-6002 is connected, the compressors and EQ circuits are automatically inserted into the channels, etc.

You should note that since these expansion units do not have their own power supplies, there will be an additional drain on the KS-342 batteries, and the battery life will be shortened.

Attaching and detaching units

When attaching units to the KS-342, you should remove the rectangular connector cover on the top panel, keeping it and the screws in a safe place before fitting the other unit, so that its male connector on the bottom plate mates with the female connector on the top of the KS 342. The locating pins situated on the bottom of the other unit should match the locating holes on the top panel of the KS-342.

To detach a sub-unit from the KS-342, move both locking levers on the top center sides of the KS-342 forwards and lift.

See the documentation supplied with the KS-6001 and KS-6002 for full details regarding the fitting and the use of these units.



Specifications

Audio specifications

| | | |
|--|--------------|---|
| Input levels (all continuously variable and electronically balanced) | MIC | -70 to -30 dBs |
| | LINE | -20 to +4 dBm |
| | AUX | -20 to +4 dBm |
| Input impedance | MIC | 3.0 k Ω |
| | LINE | 600 Ω |
| | AUX | 10 k Ω |
| Headroom | | 32 dB (pre-fader input) |
| Analog output levels | MAIN | +4/0/-20/-60 dBm switchable (600 Ω load) transformer balanced XLR-3 type |
| | SUB | -20/-60 dBm switchable (600 Ω load) electronically balanced XLR-5 type |
| | UNBAL | -60 dBs (10 k Ω load) 3.5 mm unbalanced stereo jack |
| | MONI | 0 dBs/50 Ω (max load 8 Ω) |
| Maximum output levels | MAIN | +24 dBm (600 Ω load, +4 selected @ 12V) +20 dBm (600 Ω load, +4 selected @ 8V) |
| | SUB | -+8 dBm (600 Ω load, -20 selected @ 12V) |
| | UNBAL | -60 dBs (10 k Ω load) @ 12V |
| | MONI | +6 dBs (50 Ω load, @ 12V) |
| Digital output | | AES/EBU format, XLR-3 type connector. FS: 44.1/48/96 (selectable), resolution, 20 bits |



Other parameters

| | | |
|----------------------|--|-----------------|
| Microphone power | P-48V (maximum power 10mA) | |
| | A-B 12V (maximum power 30mA) | |
| LCF (low-cut filter) | 20Hz — 200Hz, continuously variable, -12 dB/octave | |
| Oscillator | 1 kHz (±10%) | |
| Compressor | Threshold level | +3/+6/+9/+12 dB |
| | Attack time | 2 ms (approx) |
| | Release time | 300ms (approx) |
| | Ratio | 2:1 (approx) |

Audio performance

| | | |
|---------------------------------|-----------------------------|----------------------------|
| Frequency response | MAINOUT & SUBOUT | 30Hz — 40kHz (within 1 dB) |
| Noise level | MIC (-70) | < -54 dB (22 kHz LPF/RMS) |
| | LINE (+4) | < -70 dB (22 kHz LPF/RMS) |
| | MONI | < -65 dB (22 kHz LPF/RMS) |
| Total Harmonic Distortion (THD) | <0.1% (50Hz — 15kHz +4 dBm) | |

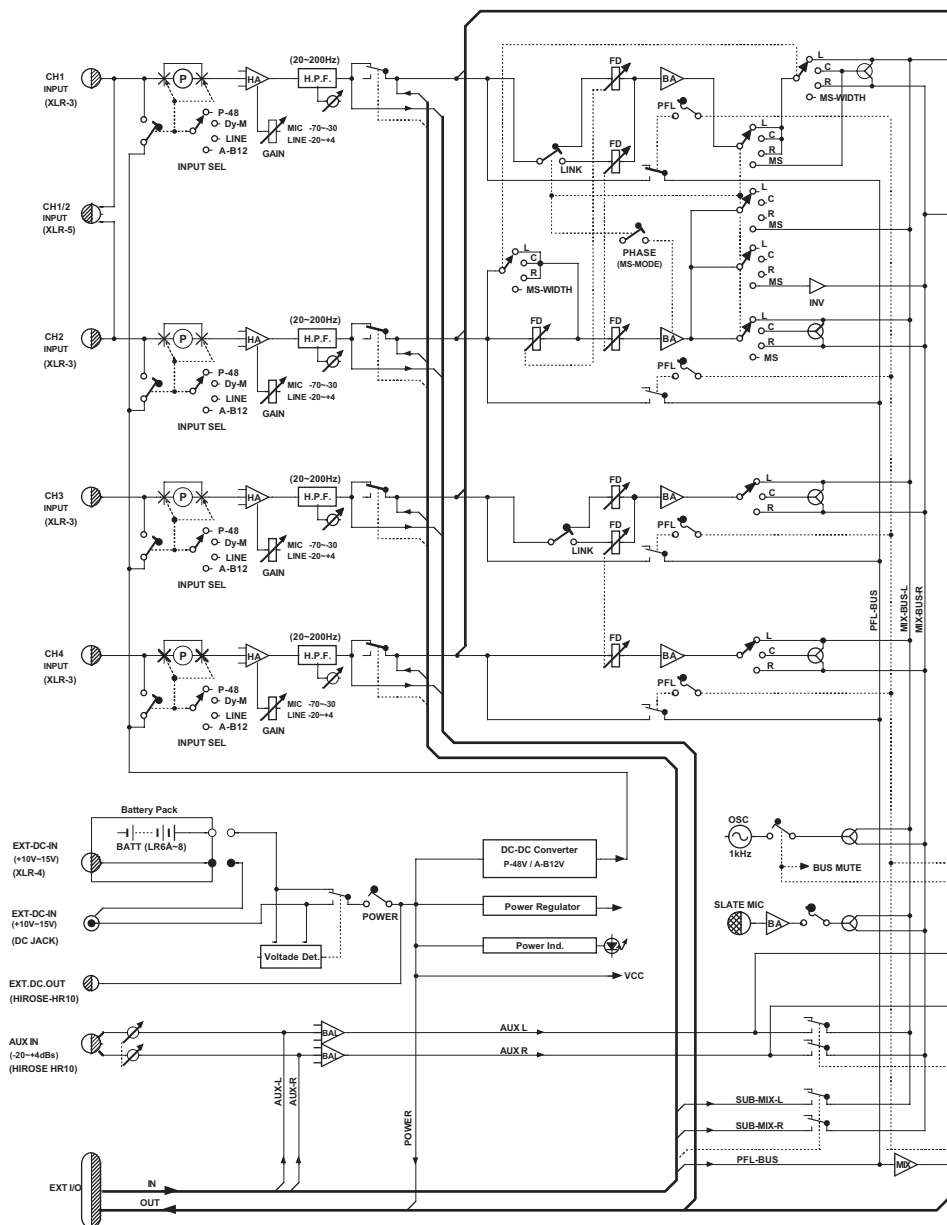


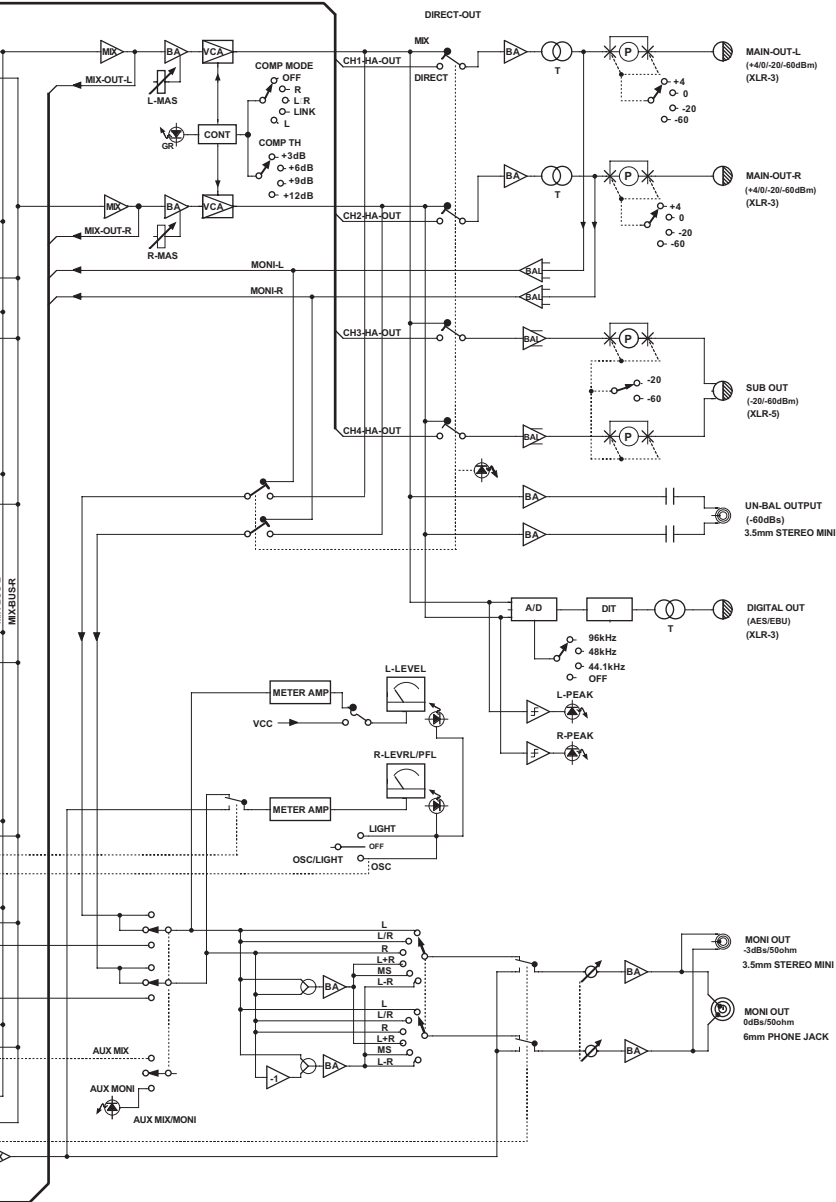
Power and general specifications

| | | |
|--|-------------------|--|
| Internal power supply | | 8 x type 3 (AA) dry-cell batteries, carried in standard battery holder |
| | | 1 x NP-1 NiCd battery, carried in optional battery holder |
| External power supply | | +10V to +15V (maximum current 0.5A) |
| Current | Nominal | 160mA |
| | Digital output on | 240mA |
| Battery life (normal temperature, no additional modules, digital output off) | Manganese cells | > 4 hours |
| | Alkaline cells | > 8 hours |
| | NP-1 NiCd | > 12 hours |
| Dimensions (excl. protrusions) | w x d x h | 215 x 170 x 60 (mm) |
| | | 8.5 x 6.7 x 2.4 (in) |
| Weight (approx) | inc. batteries | 2.4 kg (5.3lbs) |
| | excl. batteries | 2.0kg (4.4lbs) |



Block diagram







About Kamesan

Sigma Systems Engineering was started in 1972 to develop and design professional mixers for studio and remote broadcast applications.

Today, following the "slow and steady" principle of the tortoise, we have built up our sales and our reputation to the extent that we now enjoy 95% of the Japanese portable mixer market.

We have concentrated on two or three main areas in our design philosophy: compactness, in an industry which was traditionally dominated by large, heavy equipment; ease of use, since time is always of the essence in the environments where our products are used; and quality, to match the needs that today's broadcasters require.

Our head office is in Shinjuku, Tokyo, and as a small company, we are happy to listen to the ideas for product improvement suggested by you, the customers and users of our equipment.

Making steady progress (like a tortoise, but maybe a little faster!), we hope to meet your requirements, now and in the future.

Visit both of our Web sites at <http://www.kamesan.co.jp> and <http://www.kamesan.info> in order to find out more about what we're doing, and to let us know what you are doing with Kamesan products.

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