

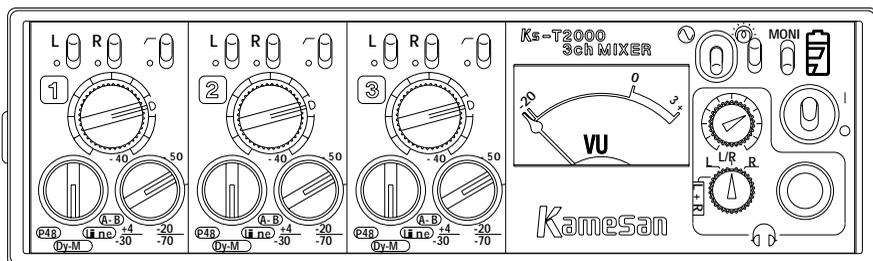
Kamesan



KS-T2000

Compact Audio Mixer

Operating Manual





Warnings and notices

Treat your Kamesan KS-T2000 in the same way that you would treat any piece of precision equipment. Although it is designed for rugged location use in a wide range of extreme conditions:

- Avoid spilling liquid over the unit or exposing it to extremely humid environments.
- Do not subject the unit to extreme temperature changes, as this may cause internal condensation, affecting the operation of the unit.
- Avoid operating the unit in extreme temperature conditions wherever possible.
- Avoid using the unit in dusty or smoky locations wherever possible
- When cleaning the unit, never use solvents or thinner to clean the outside of the case. Only use a soft damp cloth to wipe off any dirt or stains.
- Only use power supplies (batteries and external power supplies) as recommended in this manual.

Connection of microphones



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-T2000.

After-sales service

In the event of encountering problems with the Kamesan KS-T2000, you should contact your local after-sales representative.



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Notes

General notes

Before operating the Kamesan KS-T2000, you should be aware of the following points:

- All XLR 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 an AC adaptor authorized by Kamesan.
- Always remove any dead batteries immediately from the Kamesan KS-T2000, 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.

General notes

About this manual

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

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



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



Accessories, etc.

The Kamesan KS-T2000 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.

About the case

The Kamesan KS-T2000 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.

If you remove the mixer from the case, and then replace it, always make sure the case clip fits 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 side 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.

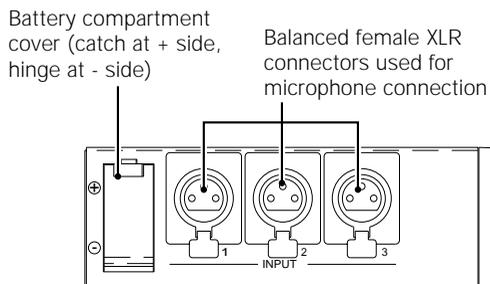


The Kamesan KS-T2000

The Kamesan KS-T2000 controls and connections can be divided conveniently into three sections: the input section, the output section, and the front panel.

Input section

The input side of the unit (on the left as you look at the front) is as follows):



The Kamesan KS-T2000



Always make and break connections to and from the Kamesan KS-T2000 with the power to the mixer and to all other equipment turned OFF.

Input connections

The mixer can accept a number of different sources at the three XLR input jacks. The type of input for each channel is selected using the channel input mode selector:

Channel input mode selector



| Setting | Meaning |
|---------|---|
| P48 | Condenser microphones requiring a +48 V phantom power supply |
| Dy-M | Dynamic or electret condenser microphones (no external power supply needed) — typically -70 dBs to -30 dBs levels |
| LINE | Line-level input (typically -20 dBm to +4 dBm levels) |
| A-B | A-B (12V)-type microphone |

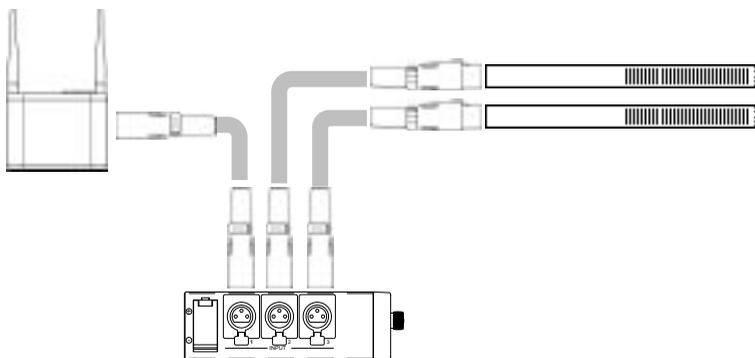
Kamesan KS-T2000

Connect balanced cables from microphones to the XLR inputs, and set the switches appropriately:



Always make sure that the input mode selected for each channel matches the device connected to the channel BEFORE turning on the power. Selecting the wrong type of device could result in damage to equipment. If you have to change the input mode with the power connector, turn down both the input level faders and the monitoring level before changing the input mode.

For full details of the levels, impedances, etc. of these jacks, see the section on “Specifications” on page 19.



The illustration above shows the Kamesan KS-T2000 connected to a pair of microphones as well as to a wireless receiver.

Note that there is one more input connection (the external monitoring input) which may be made to the Kamesan KS-T2000, as explained below:

External monitoring input

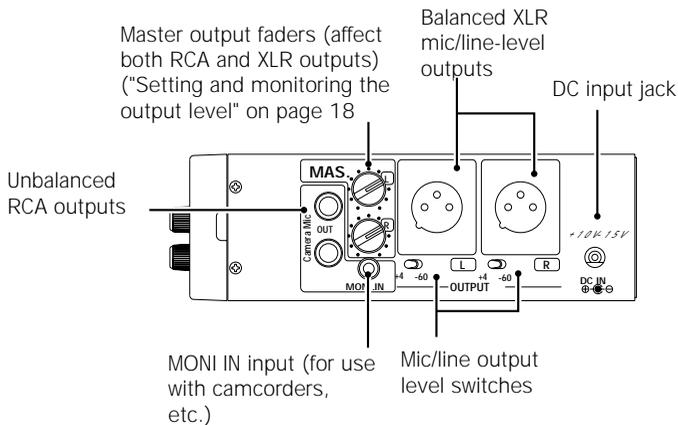
The Kamesan KS-T2000 allows you to input a stereo signal via a mini 3.5 mm jack to the MONI IN input. This signal should be at a nominal -10 dBV level.

The front panel switch controls whether this output is monitored or not through the headphones. The level cannot be changed.



Output section

The output section of the unit (on the right as you look at the front) is as follows:



Output section

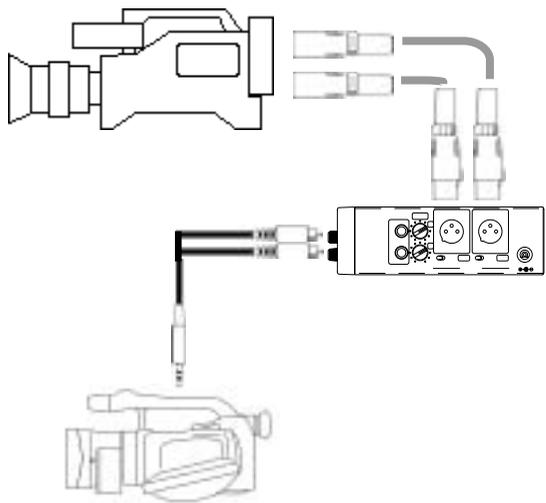
For full details of the levels, impedances, etc. of these jacks, see the section on “Specifications” on page 19.

See below for details of connections.



Output connections

There are two sets of connections available from the Kamesan KS-T2000: the main balanced connectors and the unbalanced RCA connectors.:



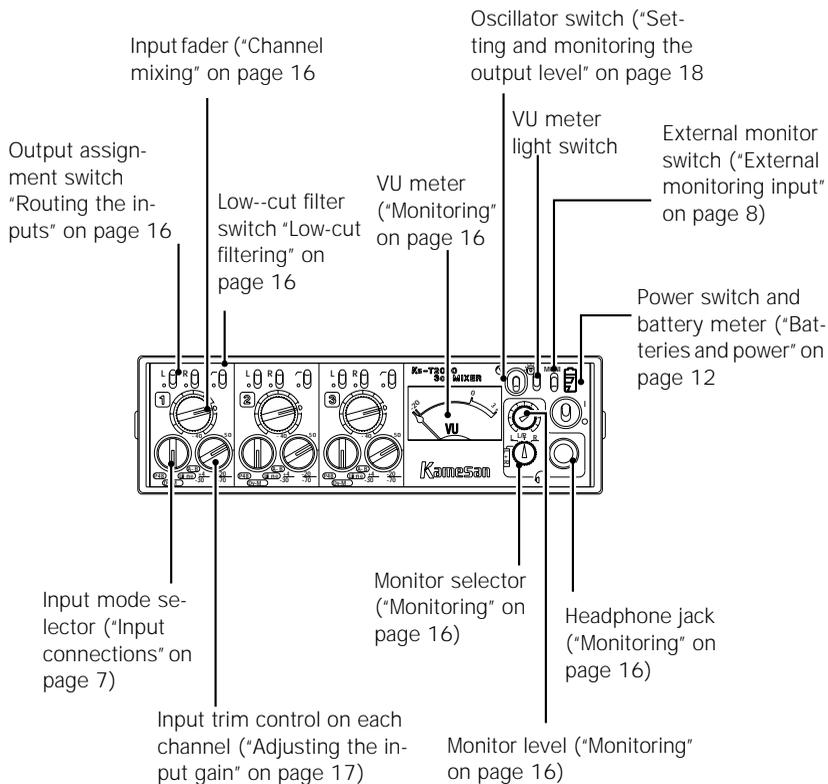
You can use these different connectors for professional and semi-professional video equipment

When you make the connections to the balanced connectors, note that there are two switch positions for the level of these outputs: +4 and -60. Make sure that you make the appropriate level setting for the device connected to the Kamesan KS-T2000.



Front panel

The front panel contains the individual channel controls, as well as some master controls, etc.



Front panel

For details of the operation of these controls, see the appropriate sections of this manual.



Batteries and power

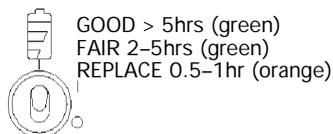
The Kamesan KS-T2000 can use any standard type of battery: manganese, alkaline, nickel-cadmium, nickel-hydrate or lithium-ion. Four type 3 (AA) size batteries are required.

In normal use and temperature conditions, a set of alkaline batteries will provide between five and six hours of operation.

In addition, the Kamesan KS-T2000 can accept power from a suitable power adaptor (described in “Using an AC adaptor” on page 14).

Checking the batteries

The three-segment LED display by the power switch (top right of the front panel) gives the battery status as shown in the illustration here.



The number of LEDs lit shows the battery status. When only the bottom orange LED is lit, it is time to replace the batteries with a new set (30 minutes to 1 hour’s battery life remains).

If there is no battery life at all, none of the LEDs are lit, and the batteries should be replaced immediately.



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.

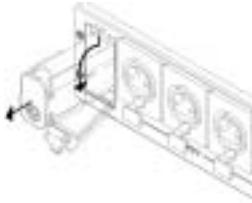
Replacing the batteries

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

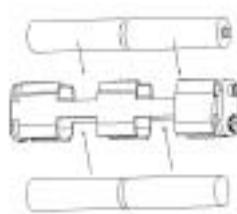
Kamesan KS-T2000



1. Remove the cover on the left (INPUT) side of the unit. You may need to remove the touch fastener case strap to access the holder door.



2. Open the door using the catch located by the red (+) mark, and remove the battery holder as shown above.
3. Remove any old batteries in the holder and place new batteries in the holder.



- Take care that the batteries are inserted correctly as shown above, with the polarity correct.
 - Never mix batteries of different types, or discarded (or partially-discharged) and new (or freshly-charged) batteries.
 - Always follow the battery manufacturer's instructions for charging rechargeable batteries. Never attempt to recharge batteries which are not designed for this purpose.
4. Replace the battery holder into the Kamesan KS-T2000 and close the battery door. Replace the case strap in its original position.



The battery holder should be inserted with the end with two battery contacts entering the compartment first, and with the single metal rivet towards the hinge of the holder door (as shown in the illustration above).

5. Test the battery power and polarity with the power switch (see “Checking the batteries” on page 12).



Note that when new batteries are inserted, the indicators may show the middle or low battery condition. This is because the power LEDs monitor the actual real-time battery usage, and when the unit is actually in use (phantom power, headphone amp, etc.), the true battery status will be shown.

Extending battery life

- Do not use the VU meter light more than necessary (this can result in considerable savings).
- Turn off the power to the Kamesan KS-T2000 when it is not in use (“resting” the batteries can increase the battery life very significantly).
- Setting the XLR output level switch to the +4 setting can reduce battery consumption.
- Cold batteries have a shorter life than warm ones. In winter or other cold conditions, you may want to keep the batteries warm when they are not in use. At 0°C (32°F), battery life is about 60% less than at 20°C (68°F).

Using an external battery

- As long as the connector conforms to the polarity of the Kamesan KS-T2000 connector (tip negative), a BP-90-type battery can be used for external power of the mixer.

Using an AC adapter

The Kamesan KS-T2000 can use one of two optional external adapters:

- PS-M12 mini power supply
- SS-40611 MkII low noise power supply

Alternatively, any other power supply may be used (although this is not recommended), provided that it conforms to the following specifications:

Connector: BP-90 type with tip negative

Voltage: >9.0 V and <16.0 V

Power: >0.5 A

- Any non-Kamesan AC adapter should also incorporate ripple reduction circuitry.



The use of any adapter other than the type specified here may result in damage to the Kamesan KS-T2000, other equipment, or even result in overheating and fire. For this reason, it is essential that only those adapters recommended and sold by Kamesan are used.

Connect the adapter connector to the DC IN connector of the Kamesan KS-T2000, making sure that the polarity of the adapter connector matches that of the Kamesan KS-T2000.

- **When DC power is supplied to the Kamesan KS-T2000, this takes priority over any internal batteries (which are not used when the adapter is connected and power is supplied). When the adapter is disconnected, the batteries are used again.**



Operations

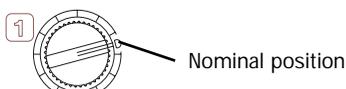
The following explains some of the principles of operating the Kamesan KS-T2000 when all the connections have been made:

Channel mixing

Adjust the relative levels of the inputs by using the level controls (faders).

Turning these controls fully counterclockwise attenuates the signals, and turning them fully clockwise boosts them.

The nominal position (neither cut nor boost) is marked as shown here.



To make the best use of the Kamesan KS-T2000's gain structure, we recommend setting the channel fader control to this nominal position, and adjusting the trim level to obtain the appropriate reading on the VU meter (as described in "Adjusting the input gain" on page 17).

Routing the inputs

Each input can be assigned to either the left master output, the right master output, or both.



Use the L and R switches to send the input signals to the left and right outputs:

When these switches are in the up position, the input is assigned to the appropriate output bus.

Low-cut filtering



The Kamesan KS-T2000 provides three low-cut (high-pass) filters at 160 Hz with a slope of -12 dB/octave.

Use these independently-switchable filters (one on each channel) to counteract the effects of wind noise, rumble, etc.

Set the switch to the up position to engage the filter.

Monitoring

Use the headphone jack to monitor the outputs.

The volume output from the headphones is adjusted with the (yellow) control.



The signal or signals being monitored and metered are set using the (green) monitor selection control.



Monitoring switch settings

| Switch setting | Meter displays | Channel | | Comment |
|----------------|----------------|-----------|-------|----------------------------|
| | | L | R | |
| [L+R] | L & R sum | L & R sum | | summed busses for checking |
| L | left | left | | monitor left bus only |
| L/R | left | left | right | Normal stereo operation |
| R | right | right | | Monitor right bus only |



The **[L+R]** setting is also used for the external monitoring source (see "External monitoring input" on page 8).

Adjusting the input gain

Before adjusting the inputs:

1. Make sure that the correct input mode has been selected ("Input connections" on page 7).
2. If the low-cut filter is to be used on the input channel, make sure that it is enabled ("Low-cut filtering" on page 16).
3. Ensure that the input is routed appropriately ("Routing the inputs" on page 16).
4. Ensure that an appropriate monitoring mode is selected ("Monitoring" on page 16).
5. Turn down all input faders, *except* the one which is to be adjusted, which should be set to the nominal position.
6. While the input sound is being input through the microphone, etc., turn the channel's input gain control so that the VU meter indicates a healthy level (not into the red, but "kicking" the 0 mark is fine).
7. When the level has been set up to your satisfaction, turn the channel's input fader all the way down, and repeat the process for all the other channels in turn.



The gain level for all types of microphone ranges from -30 to -70 dBs (marked in white; the -40 and -50 points are marked for convenience), and the gain level for line-level sources ranges from -20 to $+4$ dBm (marked in blue).

The head and mixer amps of the Kamesan KS-T2000 allow considerable leeway. On the input stage, there is about 28 dB available, and on the output stage, about 17 dB is available

Setting and monitoring the output level

To help you match the levels of the Kamesan KS-T2000 with the recorder connected to the outputs, the mixer is fitted with an integral 1 kHz line-up oscillator.

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 (up).
3. To monitor both channels together, set the monitoring selection switch to the L/R setting (see “Monitoring” on page 16 for an explanation of the monitoring switch settings).
4. Adjust the level of the outputs so that the VU meter reads 0 dB.
5. Remember to turn the oscillator off when the adjustment has been made.



Specifications

Inputs

| | |
|-------------------------------|-------------------------------------|
| Input levels | |
| MIC | -70 to -30 dBs (balanced inputs) |
| LINE | -20 to +4 dBm (balanced inputs) |
| External monitor input | 0 dBs |
| Input impedance | |
| MIC | 3.0 k Ω (dynamic microphone) |
| LINE | 600 Ω |
| External monitor input | 600 Ω |
| Input headroom | |
| | > 30 dB (pre-fader input) |

Outputs

| | |
|-----------------------------|--|
| Output levels | |
| MAIN L/R | +4/-60 dBm switchable (transformer balanced) Cannon 3-pin |
| Unbalanced outputs | -60 dBm (compatible with impedance 600 Ω to 10 k Ω (RCA pin jacks) |
| Monitor outputs | +10 dBs/50 Ω (maximum 8 W stereo) |
| Maximum output ^a | |
| MAIN L/R | +23 dBm (600 Ω @ +4 setting) |
| Unbalanced outputs | -40 dBs (10 k Ω) |
| Monitor outputs | -10 dBs (50 Ω), stereo jack |

a. The above measurements are all made with the battery voltage at 6.0 V

Audio performance figures

| | |
|---------------------------------|---|
| Frequency response | 50 Hz to 15 kHz (\pm 0.5 dB) |
| Noise level | |
| MIC (-70) | <-55 dB (with 30 kHz LPF/RMS) |
| LINE (+4) | <-69 dB (with 30 kHz LPF/RMS) |
| MONI | -65 dB (30 kHz LPF/RMS) |
| Total Harmonic Distortion (THD) | <0.1% (50 Hz to 15 kHz at nominal levels) |



Other parameters

| | |
|--------------------------------------|------------------------------|
| Microphone power | |
| P-48 (+48 V phantom powering) | Maximum power: 10 mA |
| A-B (12 V) | Maximum power: 30 mA |
| LCF (low-cut filter) | 160 Hz (-12 dB/octave slope) |
| Oscillator | 1 kHz (±5%) |

Electrical characteristics

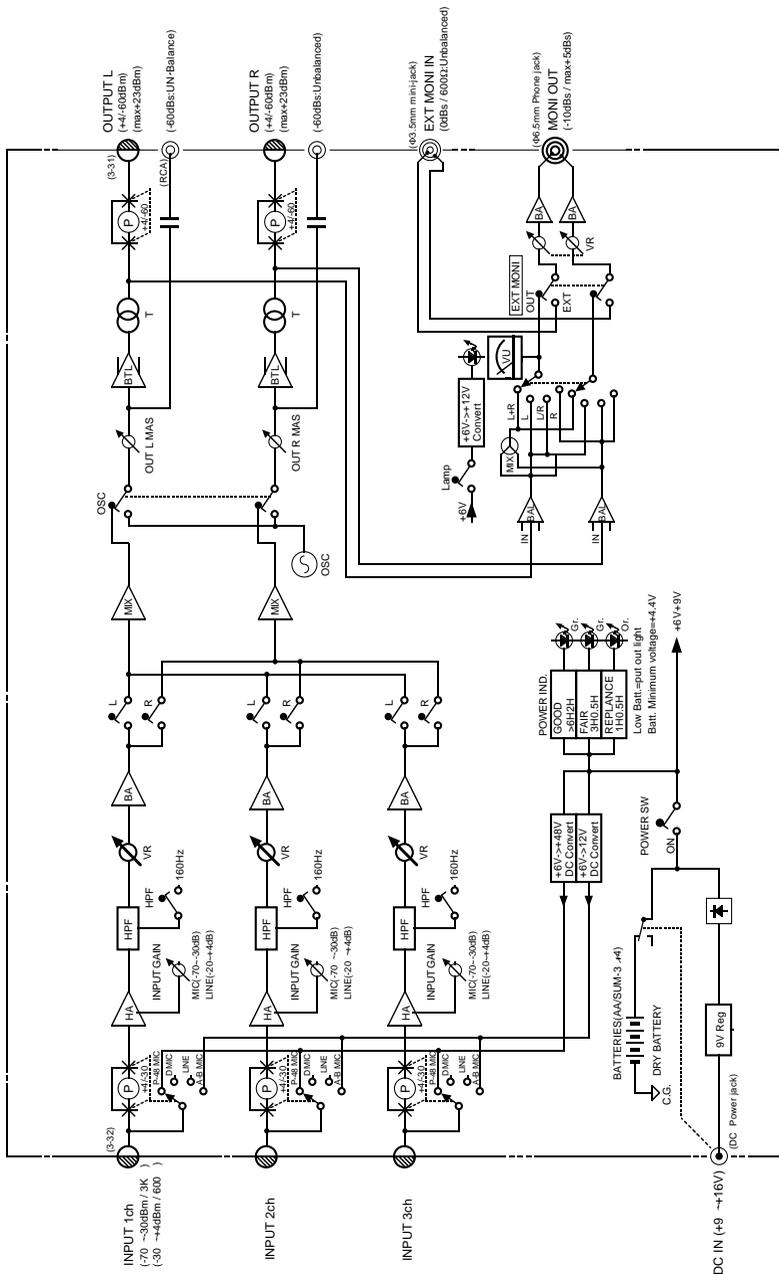
| | |
|-----------------------|---|
| Internal power supply | 4 x type 3 (AA) dry-cell batteries, mounted in supplied standard battery holder |
| Battery life | Better than 6 hours with alkaline batteries at normal temperature conditions |
| External power | |
| Voltage | +9.0 V to 16.0 V |
| Current | Nominal 0.15 A, Maximum 0.5 A |

Physical characteristics

| | |
|---|---------------------------------------|
| Dimensions (w x d x h excluding controls) | 201 x 140 x 47 (mm) 8 x 4 x 2 (in) |
| Weight (main unit only, excluding case and batteries) | 1 kg (2.2 lb.) |



Block diagram



Specifications



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 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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