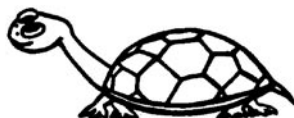


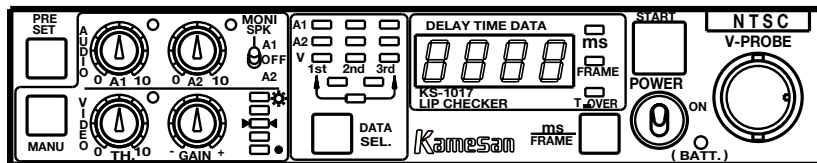
Kamesan



KS-1017

Kachinko System (lip checker)

Operating manual

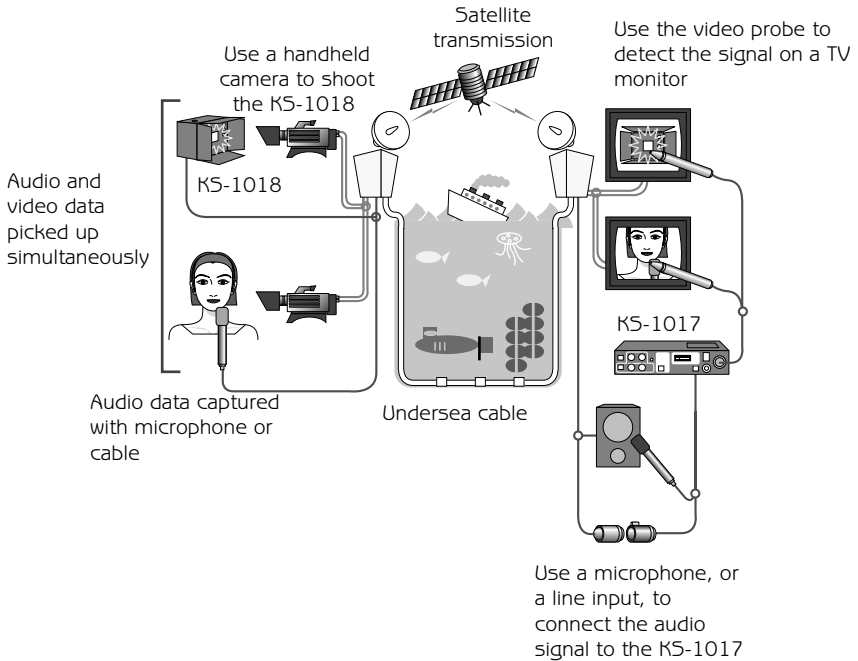




The KS-1017 is used together with the KS-1018 “clapperboard” or with other synchronization sources to synchronize video and audio which may arrive via different feeds or be otherwise delayed relative to each other.

For example, if the video portion of a live international broadcast is transmitted via satellite, and the audio portion via submarine cable, there will be a noticeable lag between the two signals when they arrive at the local broadcast center. In this case, the audio should be delayed by a certain fixed amount before broadcast so that the audio and video are in sync.

The Kamesan Kachinko System helps you to work out exactly how many milliseconds (or frames) the audio signal must be delayed in order to achieve proper sync.





The KS-1018 is used to produce a synchronized video and audio signal. See the separate manual for details of operation of this unit.

Next, at the other end, the KS-1017 is connected to one or two audio feeds (typically the main and sub audio channels), and its video probe is used to read the screen showing the “clapper-board” so that the audio and video signals can be detected.

The KS-1017 then computes the delay between the audio and the video signals.

The time in milliseconds or frames between these signals is then read out and the delay adjusted appropriately. Note that the frame rate (NTSC or PAL/SECAM) is set at the factory and cannot be changed. The frame rate for the unit is shown on the front panel.

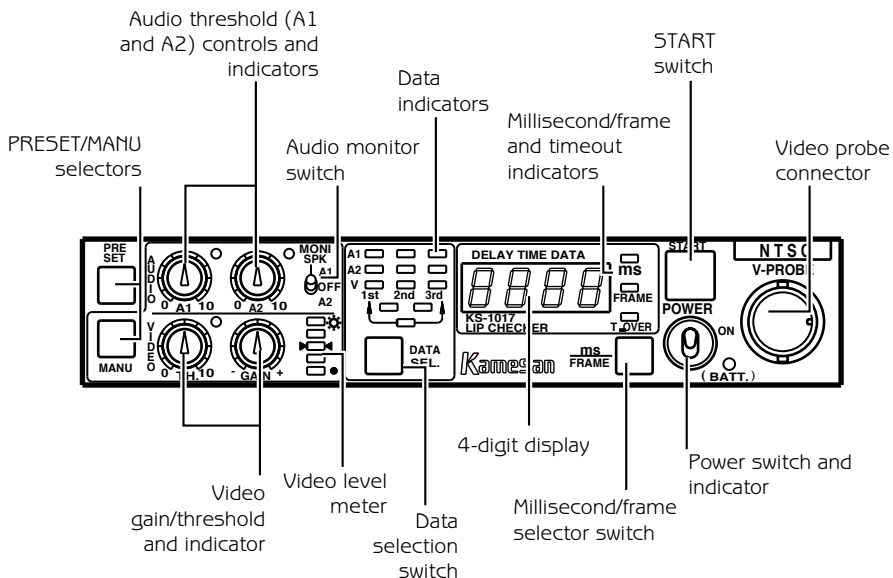


Parts of the KS-1018

The layout of the KS-1018 is quite straightforward, but here are some brief notes about the features and controls, which will help you when operating the unit.

Front panel

The front panel contains the following:



PRESET/MANU switches Only one of these switches can be on (lit) at one time. They determine whether the video threshold and gain controls will determine the threshold and gain of the signals (**MANU**) or whether the KS-1017's preset values will be used (**PRESET**).

Typically, you can use the **PRESET** value whenever you use the KS-1018 "clapperboard", but you may need to use the **MANU** setting when you are using other synchronization sources.

Audio threshold (A1) and (A2)) controls These two controls are push-in/push-out controls. In other words, when they are recessed, pushing them allows them to pop out for easy setting. Push them again to recess them.



They control the threshold level at which a signal received at either the **A1** or **A2** jack triggers the unit (as shown by the orange indicators).

MONI SPK (Audio monitor switch) The KS-1017 contains a small amplifier and speaker that you can use to monitor the audio signals received at the **A1** and **A2** jacks. Set this switch to monitor either **A1**, **A2** or neither (**OFF**). The volume is adjustable using a recessed trimmer pot accessible from the side panel.

Data indicators (1st, 2nd, 3rd) This 3 x 3 matrix shows the order in which the audio and video signals have been received. Each column represents a signal and they are labeled **1st**, **2nd**, **3rd**.

The top row (yellow) shows whether the signal was received at the analog 1 input (**A1**), the second row (green) shows whether the signal was received at the analog 2 input (**A2**), and the third row (orange) shows whether the video signal was received (**V**).

Millisecond, frame and timeout indicators Depending on the setting made using the millisecond/frame selector switch, either the millisecond **ms** (green) or frame **FRAME** (yellow) indicator lights.

The red timeout **T.OVER** indicator lights if the time interval between the video and the audio signals is too long to be measured accurately by the KS-1017.

START switch Use this switch to start the measurement process. The switch on the video probe has the same effect.

Video probe connector (V-PROBE) Connect the supplied video probe using this bayonet-type connector. The twist-ring locking lugs are at the top and bottom and the keying notch/lug section is at the left of the connector. Push the probe connector into place and twist the locking ring clockwise to secure it. Reverse the process to disconnect the video probe.

Video gain/threshold controls and indicator Like the audio controls, these are push-in/push-out controls. Similar to an audio compressor, these allow you to select the gain of the video



input (**GAIN**), and the level above which detection will be triggered (**TH.**).

When a video signal goes over the trigger level set here, the orange indicator beside the threshold control lights (as does the probe's **Detect** indicator). Use the video level meter to help make the setting so that the KS-1018 "clapperboard" light (or the signal you are using as the clapperboard) triggers the video detection.

Video level meter This shows the light level currently being received. We suggest that you use the gain and threshold controls when you are using a synchronization signal other than the KS-1018, so that the "clapperboard" pushes the level to the third segment of the meter (the nominal trigger level).

Data selection switch (DATA SEL.) and data selection indicators Use this switch to rotate between up to three measurements (the time lag between the different signals). The green indicators below the audio/video data indicators show which measurement is currently selected, and the display shows the value of the delay of that measurement (or a timeout).

4-digit display This shows either the time in milliseconds or frames.

If the delay is too long to be measured, the display shows all dashes, and the red **T.OVER** indicator lights.

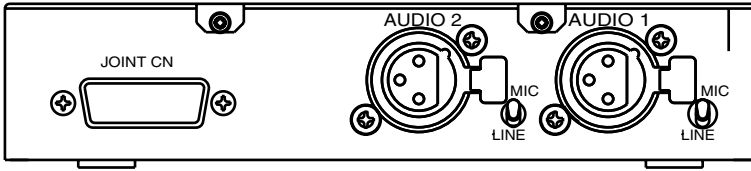
Millisecond/frame selector switch Use this to choose between displaying the delay in milliseconds or in frames, as shown by the indicators to the right of the display.

POWER ON and battery indicator Turn unit on and off with the **POWER** switch.

The indicator lights red and flashes when the battery power is becoming low.



Rear panel

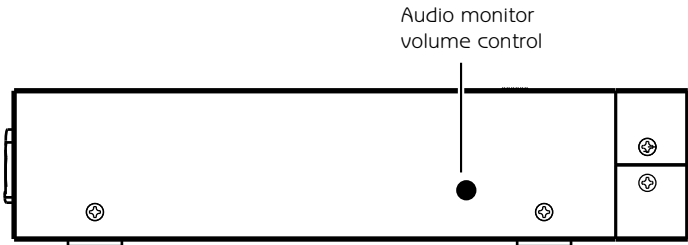


There are two identical balanced female XLR-type connectors used for the input of audio signals to the KS-1018, marked **AUDIO 1** and **AUDIO 2**. These are wired 1=ground, 2=hot, 3=cold.

Each connector has a mic/line level switch (**MIC/LINE**), used to match the input level with the level of the audio sync signal.

There is also a female 15-pin D-sub connector, allowing the connection of the two balanced audio signals as well as a power supply. See the specifications for details of how to wire this connector.

Side view



There is only one control on the left side (as you look from the front). This is a recessed volume control for the internal speaker. Use a small Phillips screwdriver to adjust the volume (clockwise to increase the volume, counterclockwise to decrease it).

About the case

The carrying case for the KS1018 may hold a few surprises! The rear flap can be folded back for access to the XLR connectors for the analog inputs, as well as the **MIC/LINE** switches.



The KS-1017 must be removed from the case if the combined connector is to be used.

The top flap covering the control panel and the video probe pocket can be folded back on itself, and used as a stand to prop the KS-1017 up at a convenient angle on a working surface. Note that you must disconnect the video probe before closing the flap.

Batteries

The KS-1017 uses 4 AA dry-cell or rechargeable batteries.

These are located in the battery compartment accessed using the hinged cover at the top of the unit.

Take care that the batteries are inserted correctly 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.

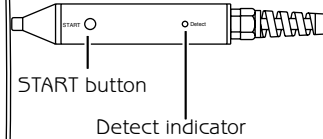


Using the KS-1018 with the KS-1017

This procedure should take place in the rehearsal stage of the broadcast.

1. Connect the audio signals to signals split off from the main and sub feeds. Ensure that the correct signal level (mic or line) is selected.
2. Arrange for the remote source to turn on the light and sound using the **MANU** setting and the on/off button on the top of the KS-1018. Set the KS-1017 to the **PRESET** setting.

You should hold the probe near the screen so that the video should trigger (the indicator by the video **TH.** control should light) only when the KS-1018 light is on. Note that the status of the **DETECT** indicator on the probe mirrors the status of this indicator. Make sure you are holding the probe very close to the part of the screen where the KS-1018 is displayed, and at right angles to the surface of the screen. If you hold the probe at the wrong angle, or too far from the screen, stray light can leak in, making it difficult to obtain an accurate reading.

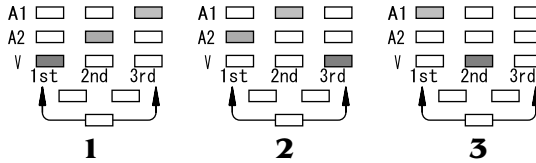


Making the measurement

3. When you are satisfied, ask the remote site to start an automatic "clap". This will start a countdown, shown by the red countdown LED indicators beside the main clapperboard light. As these LEDs count down, press either the **START** key on the main unit, or the start button on the probe.
The **START** key is lit while the unit is seeking and timing the signals.



4. As the signals are received, they light in the 1st, 2nd and 3rd columns. There will only be one indicator at most in a column, and the columns fill up from the left. The illustrations here show different possible results: in **1**, the video signal is received first, followed by A2, which is then followed by A1. In **2**, A2 and A1 arrive (in that order) followed by the video signal. In **3**, A1 arrives first, followed by the video. There is no A2.



5. If no signal is received with six seconds of the start being pressed, or if more than six seconds elapse between receiving the signals, the **START** key goes out, the red **T.OVER** indicator lights, and the display shows all dashes.

Using the KS-1017 without the KS-1018

This is very similar to using the two Kamesan Kachinko System units together, but because the light source from the synchronization signal may not be at the preset level, it may well necessary to adjust the input gain and trigger level of the video input (and maybe the audio input as well, if this is a non-standard level) so that the signals trigger the video detection, and the **Detect** indicator on the probe, as well as the detection indicator on the main unit.

Make sure that the **MANU** switch is lit, otherwise the video threshold (**TH.**) and gain controls will have no effect.

Adjust the gain so that the light trigger lights the bottom three or four segments of the input level meter. The threshold control is turned counterclockwise to make it more sensitive (that is, a lower light level will trigger the video detection and light the indicators on the main unit and the probe).



Interpreting the results

1. To read the figures, press the **DATA SEL.** key to cycle through the three different readings (between **1st** and **2nd**, and **2nd** and **3rd** on the top row of the three selection indicators, and between **1st** and **3rd** on the bottom).
2. The gap between the signals is shown in either milliseconds or in frames, depending on the setting made with the **mS/FRAME** switch.
If an interval is too long to be displayed (over 6 seconds), the **T.OVER** indicator lights when the reading is selected and the display shows all dashes.
3. Use your audio or video delay to slip the signals by the appropriate amount so that the audio and video are properly synchronized.



Specifications

Inputs (AUDIO 1, AUDIO 2)

Input levels	
MIC	-60dBs (balanced inputs)
LINE	-10dBm (balanced inputs)
Input impedance	
MIC	30k Ω (dynamic microphone)
LINE	600 Ω
Frequency response	400Hz (-12 dB) to 6 kHz (-6 dB)
Detectable input level	From $-\infty$ to +16 dB (controllable)
Monitoring (internal speaker)	Off, AUDIO 1, AUDIO 2

Input (VIDEO)

Connection	Through dedicated video probe
Sensitivity	To light with 350 nm to 800nm wavelength; peak sensitivity at 560nm

Measurement

Timing	Up to 5999ms to 1 ms accuracy
Timeout	Over 6s
Units	Milliseconds or frames
Accuracy	< ± 1 frame (NTSC)

Other characteristics

Internal power supply	4 x type 3 (AA) batteries
Battery life	Better than 6 hours with alkaline batteries at normal temperature conditions (20°C, 68°F)
External power	Through "joint" connector
Voltage	+9.0V to +15.0V
Current	> 0.5A
Dimensions (w x h x d)	159 x 33 x 150 (mm) 6.25 x 1.3 x 5.9 (in)
Weight (main unit)	950g (approx 2lb) without batteries
Weight (probe)	180g (including 2m (>6ft) cord) (6.5oz)



Pinouts

Joint connector			
1	Ground	9	A1 in (cold)
2	A1 in (hot)	10	ground
3	Ground	11	A2 in (cold)
4	A2 in (hot)	12	0V
5	0V	13	DC IN (+9V to +15V)
6	DC IN (+9V to +15V)	14	Output (-30dBs)
7	NC	15	NC
8	NC	—	

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.

About Kachinko

“Kachinko” is the Japanese word for “clapperboard” (so called because of the sound of the word). We think that this word deserves to be better-known throughout the world, and so we’re happy to introduce you to our Kachinko System.

Sigma Systems Engineering Co. Ltd.
3-5-2 Okubo
Shinjuku-ku
Tokyo 169-0072
JAPAN

Tel: +81 3 3204 2611
Fax: +81 3 3204 2250
e-mail: sales@kamesan.co.jp