

## Kawai S-100F / Teisco S-100F - "Terra Incognita"?

Hardly believable: A few of those "little giants" (monophonic synthesizers from the late 70s) seem to have disappeared completely from our memory. Take, for instance, the Kawai/Teisco Synthesizer-100F. Like reminiscences of experimental bygone days, some examples of the S-100F can still be found on the used market. Amazingly low priced, by the way, considering the fantastic (powerful!) sound of this flexible analog synthesizer.



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Indeed: Our Synthesizer S-100F (our quasi "Terra Incognita") isn't of impressive size. It's not completely unknown, but the exploration of the S-100F has by no means been extensive. Details available on the instrument are few and far between. Research on WorldWideWeb quickly pulls you back in time to long-forgotten web sites.

Things aren't much better on the technical literature front. **Peter Forrest** (["The A-Z Of Analogue Synthesizers"](#)) includes a small entry on the Teisco S-100F, at least. But **Julian Colbeck** (["Keyfax"](#)) takes no note of the instrument at all. Generally speaking, not only do few articles exist, but there are relatively few quality pictures of the Kawai/Teisco S-100F available. Not even the Kawai/Teisco catalogs (!) make mention of the instrument, as far as we know. To be sure, Teisco S-60F and S-110F can be found. Teisco S-100P (preset-synthesizer) just as well. But nothing whatsoever about Teisco S-100F.

Still, to be honest, the S-100F is not a "completely rare" rarity. The instrument turns up again (and again and again) on the used market. Whereby, Kawai S-100F is more certain to be seen than the identically built Teisco S-100F.



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## Synthesizer-100F ... when did it all start?

The prize goes to the reader who knows the answer to that. When did the S-100F come onto the market? Peter Forrest assumes the "early 80s". Possibly. But in the catalogs of those days there is no S-100F to be found. [Vintage Synths](#) proposes 1977, [Polynomial](#) 1976. Both possible. The hardware - partly in the style of early Roland synthesizers - would seem to substantiate that. But neither the rare Teisco Synthesizer-100F "Owner's Manual" nor the S-100F circuit diagram (available on the internet) divulges that first year of manufacture.

Let's agree on "late 70s" and sing a quick "Happy Birthday" to the 40+th anniversary of the S-100F!

## The S-100F in detail

Simplicity and ingenuity are often closely related. As with the S-100F. The simplicity of the instrument goes hand in hand with its supreme musical productivity.



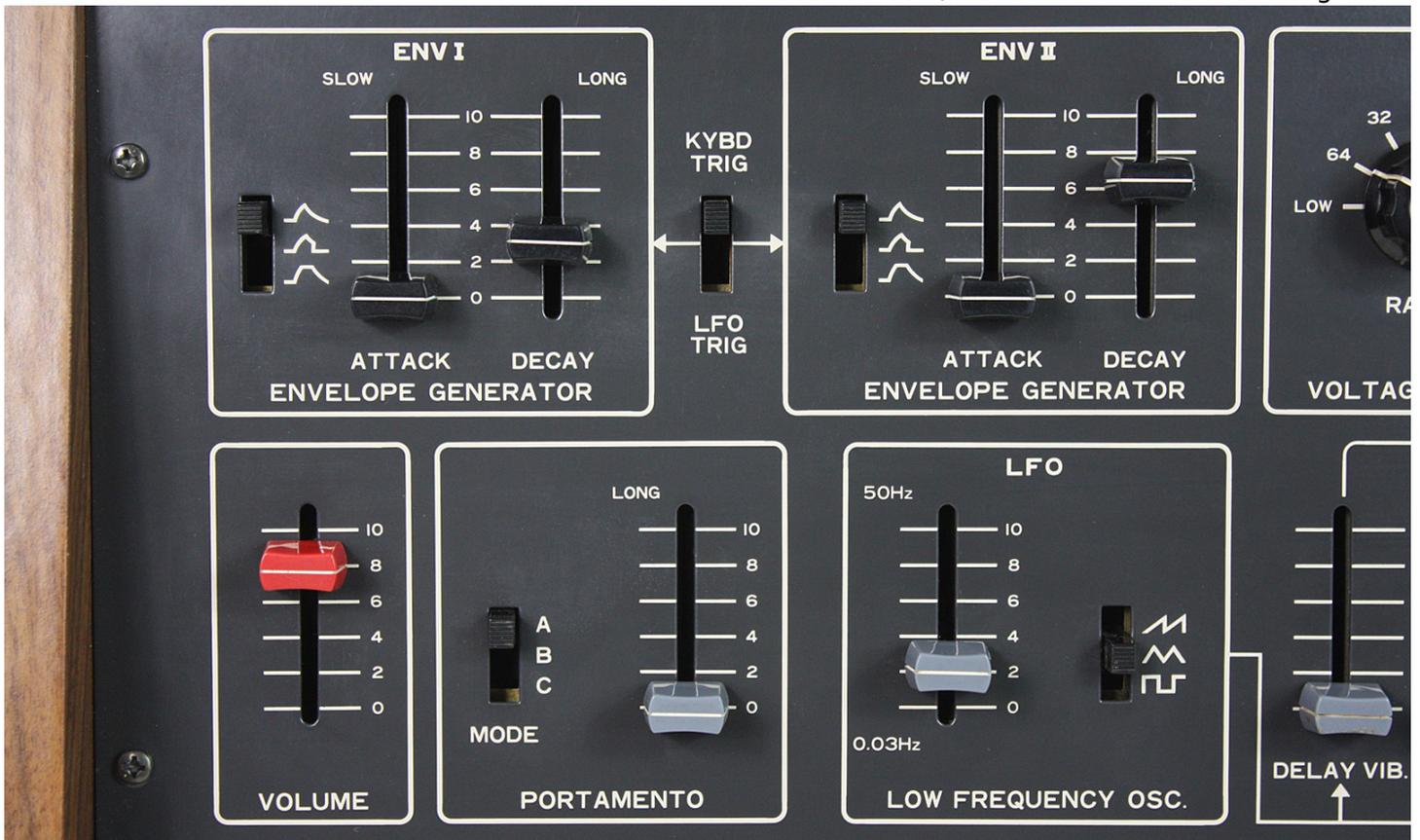
Soundwise, the Synthesizer-100F is sort of a „poor man's ARP 2600“. Although there are no patch points, its variety of bass / sequencing / percussion / noise / effect tones is amazing.

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Der S-100F contains:

- **1 VCO** (waveforms: saw, rectangle, noise)
- **1 LP VCF** (VC 24db LowPass with resonance)
- **1 HP VCF** (manually adjustable only)
- **1 VCA** (with Gain function = HOLD)
- **2 AD/AR** (for VCF/VCA/VCO)
- **1 LFO** (0.03 - 50 Hz)
- **Portamento**

The features are not really that impressive. The 3-octave keyboard just makes it into the category of "big enough", but performance options such as pitch-bender or modulation-wheel can nowhere be found. Still - the Kawai / Teisco S-100F tops many Roland Synthesizers and many Moog- and ARP-Synthesizers when it comes to sound flexibility and musical expression. Without even trying.



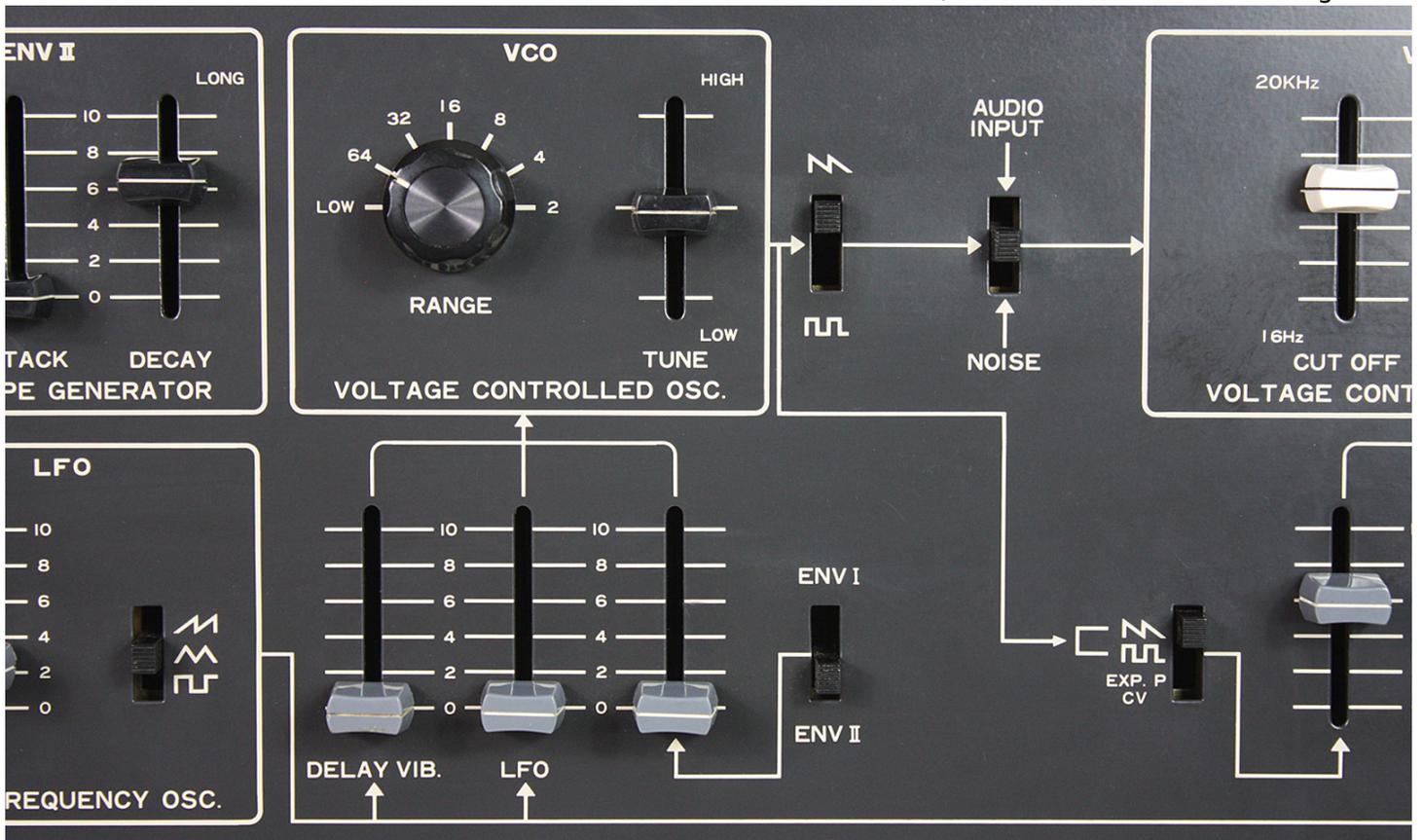
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### TWO Envelopes - snappiness is the thing

The S-100F envelopes feature "presets" that are strongly reminiscent of various Korg synthesizers (800DV, PS-Series). Despite the fact that only Attack and Decay/Release can be adjusted, the few sliders available suffice in combination with the "presets" for nearly all musical performance situations. Both KYBD trigger and auto-trigger via LFO are available. One of the fine qualities of the envelopes is their extraordinary snappiness. Ideal for percussiveness and sequencing.

Then there is Portamento, which again is partly related to the envelopes. Mode A activates a general glide effect (Portamento!), whereas in Mode B the effect only pertains to notes played legato. In the latter mode, the envelopes are triggered just at the outset and the volume level of the sound is gradually reducing. Thus, the longer you play legato, the less sound you have. Mode C is similar, but the envelopes retrigger (despite legato playing) with every single note, so that the sound volume is not reduced.

Portamento in legato mode (Mode B / Mode C) is a funky and tremendously useful substitute for the (missing) pitchbender, by the way. That's merely a small aspect, but further evidence of the well thought-out S-100F concept.



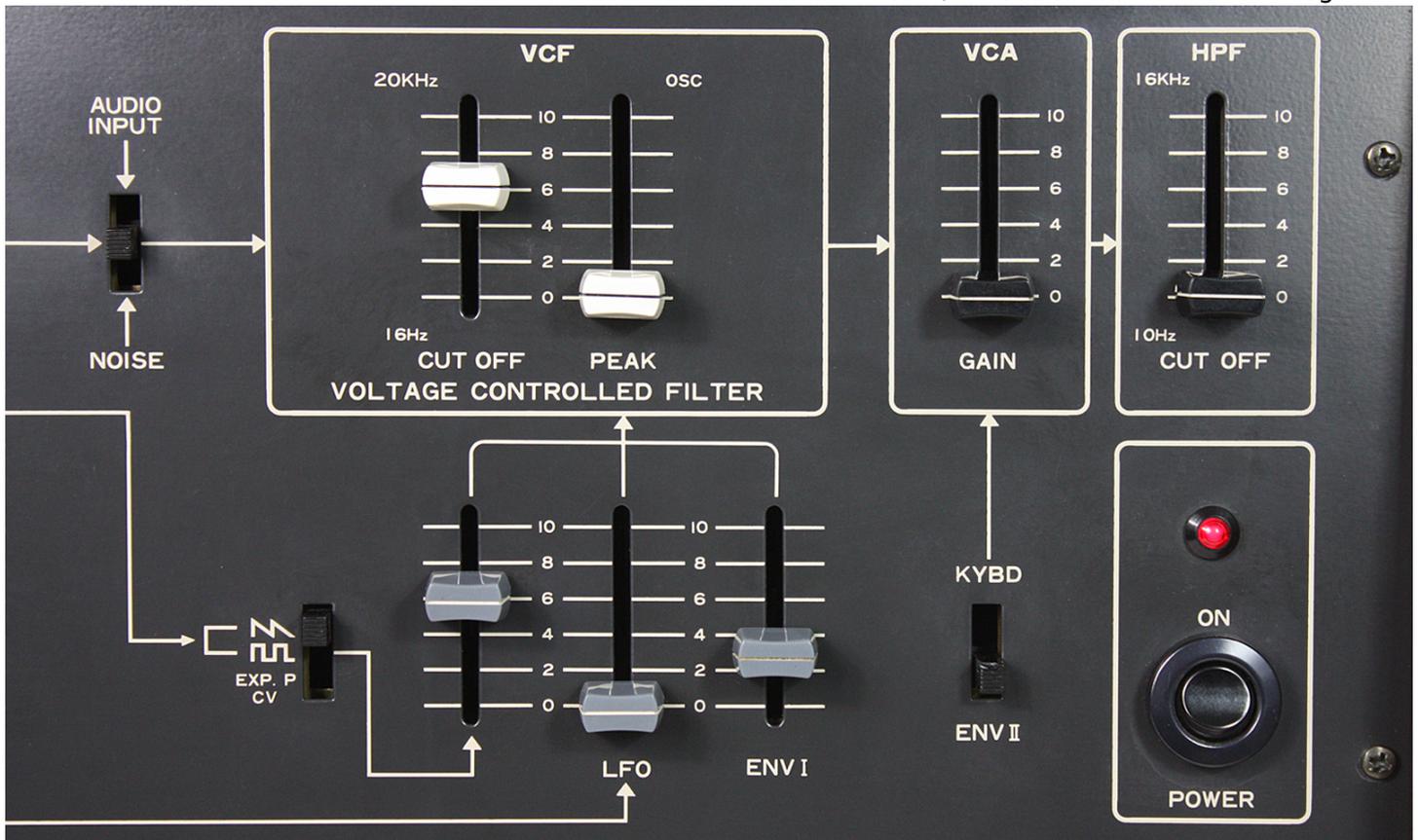
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### ONE Oscillator - frequency range is the thing

There's only *one* VCO, but this one is a cracker. Switchable through 7 steps, it ranges from 2' to 64', and comes with a separate LOW mode. It has two waveforms: SAW and RECTANGLE. There is no PWM, though, which is a pity. The VCO can be modulated by ENV I / ENV II, LFO or DELAY VIB. That latter is again the aforementioned LFO, but with a fixed triangle wave and - *nomen est omen* - delay.

The uniqueness of the VCO is characterized by four aspects. First, its **voluminous sound** (a *beefy* oscillator is musically sufficient in a large number of cases). Second, its LOW mode, which turns the audio oscillator into a **voltage controlled (!) Low Frequency Oscillator**. Third, its usefulness as a **modulation source for the filter** (VCO-to-VCF FM). And fourth, its TUNE slide, enabling the user to continuously **surf through the entire audio range**.

Let us explain. As soon as the octave range (2' to 64') is selected, TUNE acts as a Fine-Tune slider, with a range of approximately +/- 7 semitones. Thus, it can be used for - well - fine tuning, but can also serve as a kind of pitch bender (which - admittedly - needs some practise to get used to). In LOW mode, however, the TUNE range changes dramatically. It allows you to sweep through the entire (!) frequency spectrum, from 0.03 Hz up to high audio frequencies (... a feature you might recognize from the Moog Multimoog, by the way). One snag: Fader range is a bit short - you only have a few centimeters at your disposal to control a few thousand Hertz, so it's a bit fiddly to operate. But it's still a great option - useful, expressive and rarely to be seen on a non-modular mono-synth.

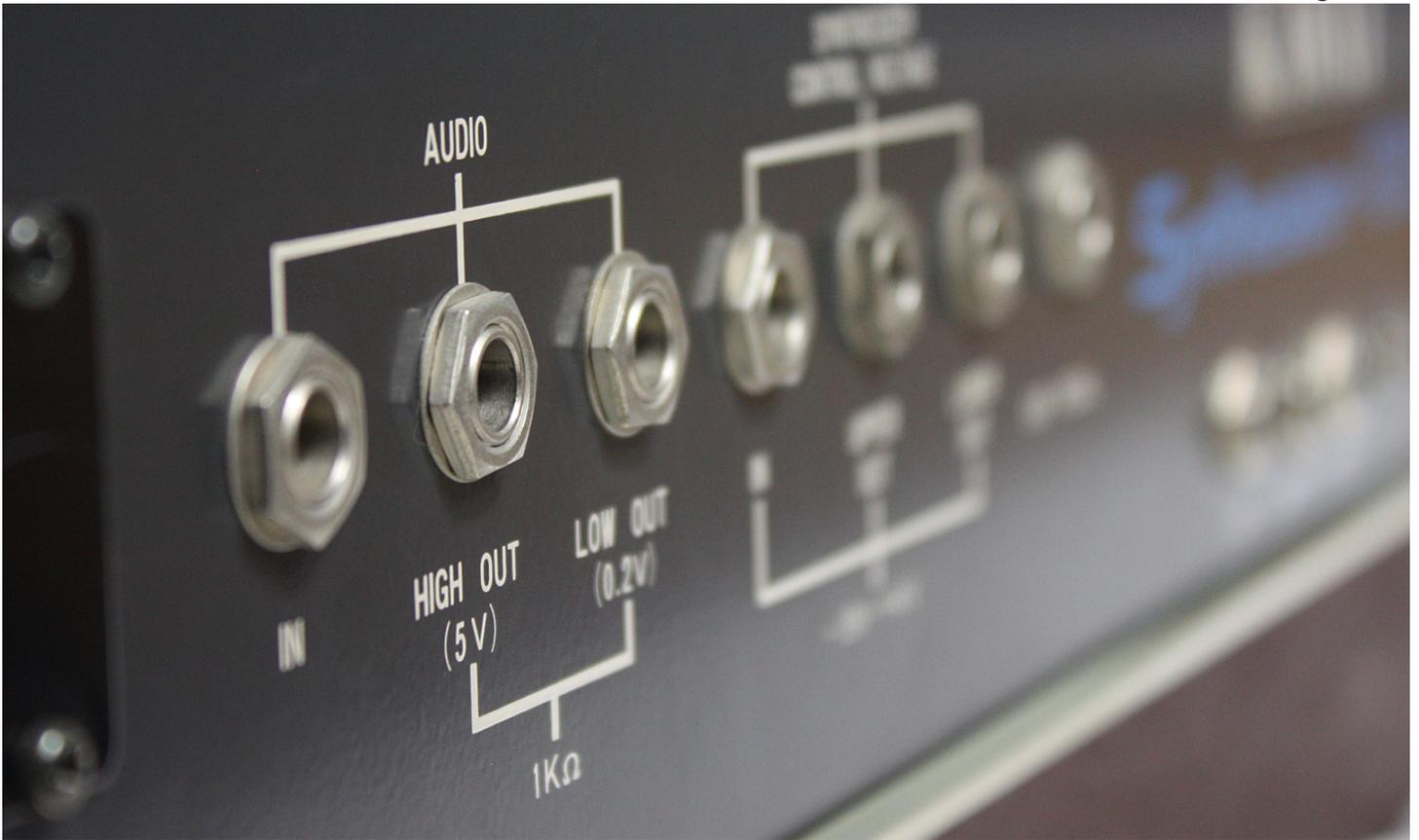


### ONE Filter - dynamic behaviour is the thing

The S-100F filter is a strong 24dB LowPass VCF with resonance (called "Peak"). A wide range of dynamics is at your fingertips, since the VCF works efficiently throughout its entire range from 16Hz to 20kHz. And a wide range of timbres is at your fingertips, too, since the filter resonance has such beautiful characteristics. At maximum PEAK values (and minimum CUT OFF values), the VCF self-oscillates, which enables (in combination with the ultra-fast envelopes) all kinds of exciting electro-percussion sounds.

VCF modulation takes place either via ENV I, the LFO (which - let us remind you - goes up to 50 Hz), the VCO (sawtooth or rectangle wave, with different sonic results) or via an external EXP pedal. Unfortunately, the external modulation source can only be switched on as an option, which means that VCO modulation *and* external modulation are not simultaneously possible \*. However, the Kenton CV / Gate Kit listed below offers an additional FILTER CV socket, which, thankfully, solves the problem. More later.

[\* If EXP PEDAL CV is *not* activated in the VCF department, the pedal voltage automatically goes straight to the VCA (> external volume control). Another aspect of the cleverly designed S-100F.]



Kawai S-100F: Audio IN and HIGH / LOW Audio OUT

## Connections

Its lack of connectivity may have been one of the issues that contributed to the inexplicably low popularity of the S-100F (and maybe still does today). The fact is: The connections of the Synthesizer-100F are - to say the least - unusually arranged.

### AUDIO:

- **Audio IN** (ext. audio signal "optional" to the oscillator - not both in parallel)
- **Audio OUT** (High / Low - two audio channels can be used simultaneously)

### SYNTHESIZER CONTROL VOLTAGE:

- **IN** (combined CV / gate signal input "from" another S-100F)
- **UPPER OUT** (combined CV / gate signal output "to" another S-100F)
- **LOWER OUT** (combined CV / gate signal output "to" another S-100F)

Pertaining to the control voltage connections: IN and OUT can be used to control an additional (or a third, a fourth ...) S-100F in parallel. Either for layered sounds (monophonic) via the UPPER OUT socket, or for two-part playing (duophonic) via the LOWER OUT jack. Master S-100F OUT > Slave S-100F IN - a single cable is sufficient (it works perfectly), both instruments operate in parallel.



Kawai S-100F: Kenton CV/Gate/Filter CV retrofit sockets (with bigger jacks instead of the original 3,5mm sockets).

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A *global* external CV control is also possible via the IN jack - at least to some degree. For example: Octave jumps and limited sequences work well when connected to a Doepfer A-155 sequencer. The the S-100F receives both the CV value *and* a sort of GATE, but the CV values are inverted (we don't know why) and GATE operates rather in the sense of HOLD - the tone is maintained, but the envelopes are not retriggered during the sequence.

In sum, the SYNTHESIZER CONTROL VOLTAGE interface can be seen as an emergency solution for simple (external) pitch control of the S-100F. However, it is no substitute for a proper CV/Gate interface. And this is where the previously mentioned Kenton interface comes into play ...

## Kenton CV / GATE / FILTER CV interface

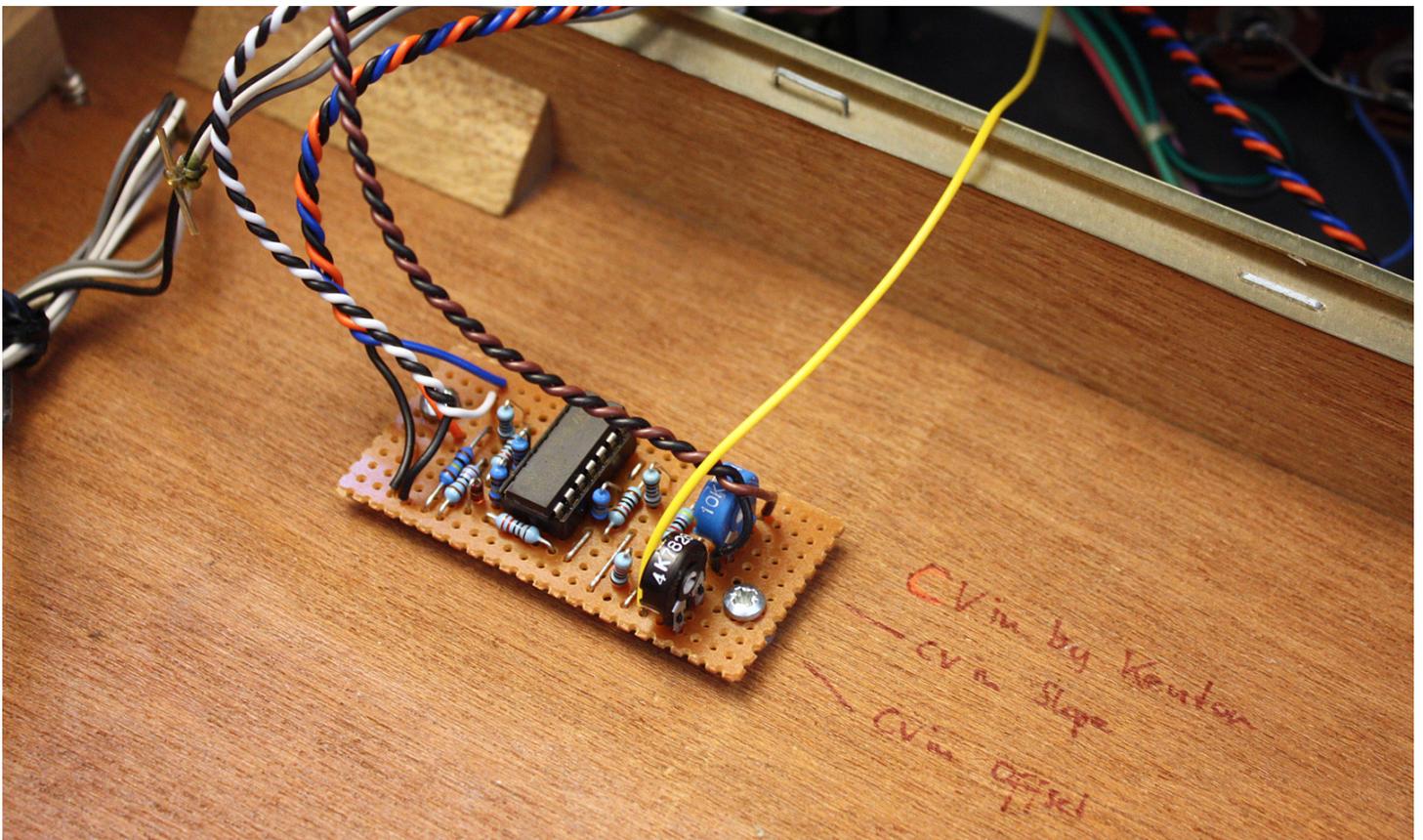
Not quite cheap at 92,40 GBP plus shipping (*and* installation), the Kenton interface does allow the Kawai / Teisco S-100F to be correctly integrated into a modern studio setup / into a modern modular environment with regular 1 Volt/Octave standard.

The Kenton kit comes with 3 small sockets - 3.5 mm - with cables, a switch (which must be in the correct position for external control), a small circuit board and the necessary circuit diagram for installation.



Teisco S-100F: Another variation of the Kenton upgrade theme - small „and“ big jacks in parallel - for more flexibility in the modern modular-synth studio.

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Part of the Kenton socket kit...

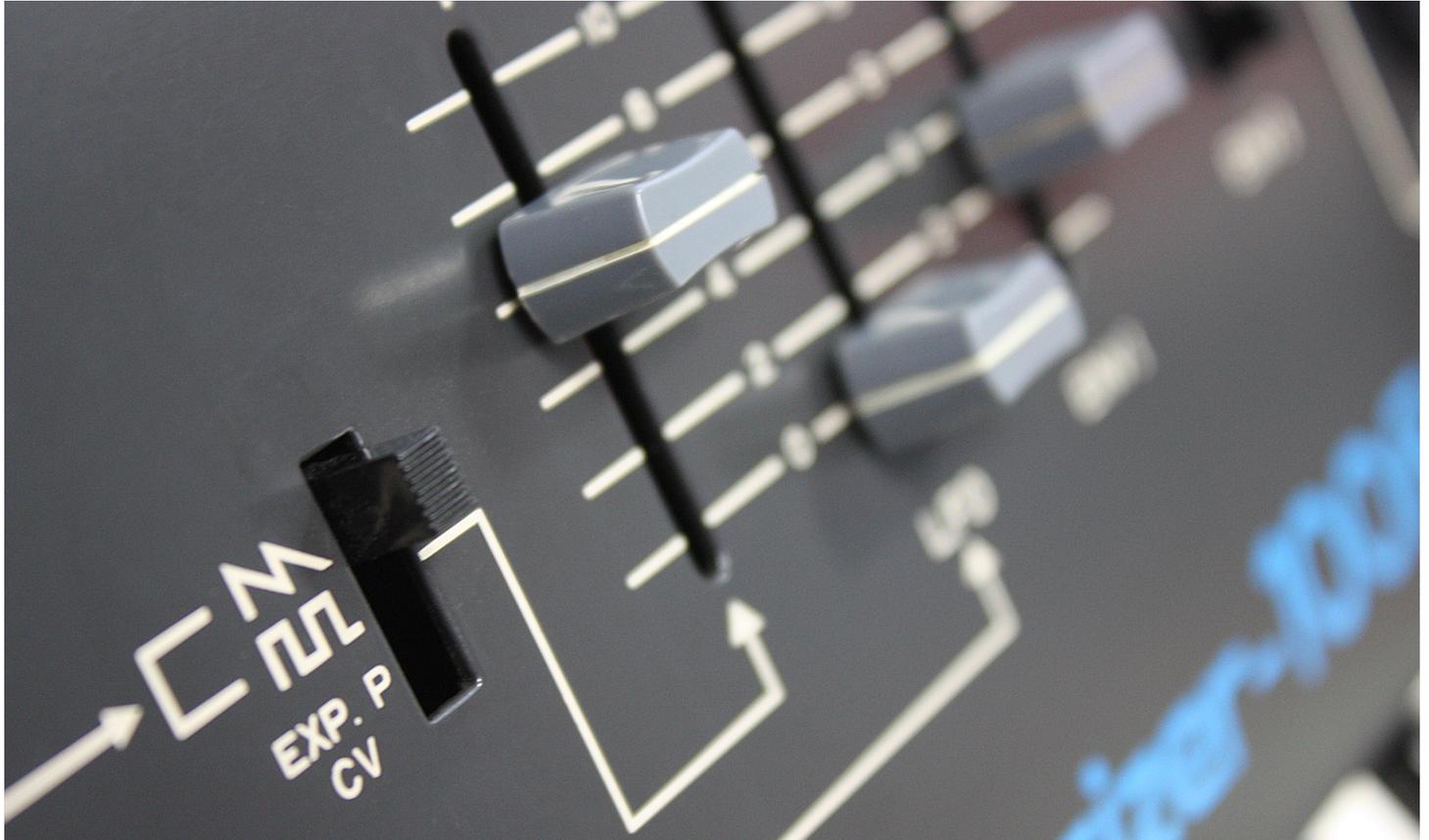
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If you find the mini jack sockets (common with Kenton) unsuitable, you can replace them with large sockets. As everywhere in life, there are arguments for both sides. Kenton's MIDI-CV interfaces (Pro-2000, etc.) have those mini jack outputs, taking into account the issue of MIDI integration *and* the uniform use of small patch cables for the interfaces as well. In addition, 3.5 mm corresponds to the Eurorack standard. In

this respect, it is the ideal size for many modern studios / for modular systems.

On the other hand, if you want to optically adapt the interface to the S-100F, you may prefer large jack sockets. This leads to a clever idea, by the way: The SYNTHESIZER CONTROL VOLTAGE Interface sockets of the S-100F, which are of limited use anyway, can be disconnected internally and used instead as inputs for the Kenton Kit.

Thus, the S-100F remains unchanged (!) on the outside - and still has those Kenton 1V/Octave CV/Gate inputs (including the separate filter CV socket). There's a picture of this solution further below ...



Kawai S-100F: VCO-to-VCF Modulation

## S-100F - a sound similar to the ARP 2600?

We nod ruefully ... yes, yes, yes, yes - those comparisons are being overused around the world: [ARP 2600](#) here and Minimoog there. Only these two instruments seem to play an important role in synth history. The [Korg MS-20](#) is affectionately known as the "poor man's ARP 2600". This may be correct conceptually, but not in the sense of musical potential and power. The reverse is true of the Kawai/Teisco S-100F: Conceptually far away from the ARP 2600, the instrument is musically surprisingly close indeed.

Meaning ...? Dry, ultra-deep basses are at their best with the S-100F, especially in combination with the sharp "Zapp!" of the ultra-fast envelopes. Effect sounds come in countless, unheard-of variations. Just dare to think a little outside of normal parameters: Oscillator-to-filter-modulation, alright.

Don't forget high filter resonance settings for those extra-experimental timbres - timbres not unlike those coming from a ring modulator. Now, modulate the VCO via ENV I or ENV II, while - at the same time - changing the VCF frequency drastically via external control voltage (Kenton's interface waves as we go by). Crazy and cheeky: This is the S-100F.



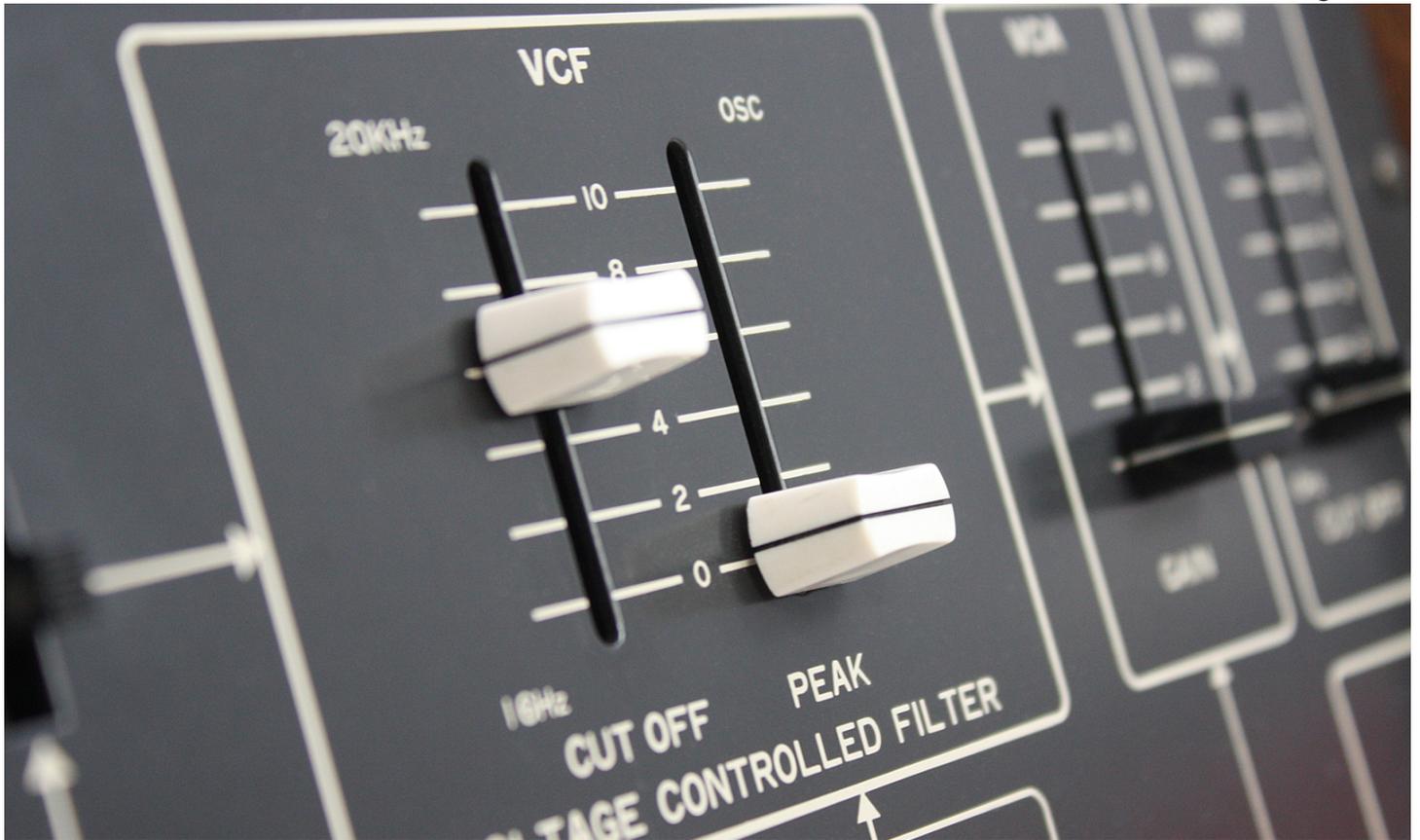
Kawai S-100F: VCO scaling - LOW Mode and 64' up to 2'

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Quickly switch the VCO to LOW mode and slide from sub-audio to 4000 Hertz (or more) with that grandiose TUNE fader, revelling in the impressiveness of the audio frequency (and modulation!) range. Here, the S-100F sounds ... incredible!

A few simple tweaks - four or five adjustments - bring you back into "normal" realms. Select a different ENV preset, increase the VCF envelope attack and achieve a powerful solo sound (with a hint of vibrato LFO) in a matter of seconds. Then adjust the ENV again - attack and decay / release to "very short", change VCO from sawtooth to rectangle, set 64' and return to the outcome of this small exercise with an ultra-deep bass. Voilà!

Of course, the S-100F has its conceptual limitations. Just *one* oscillator, just *one* LFO, slimmed-down envelopes, no PWM. And its size! Almost a midget! 55 cm wide, weighing just 6.7 kg, and with a power consumption of only 6 W, the synthesizer falls into the "little whipper-snapper" category. Which indeed it is: Acoustically rebellious, loud, cheeky and never boring. Shrill and out of control. Occasionally inexplicably mystical and subtle.



Kawai S-100F: VCF - CutOff and Peak (Resonance)

The S-100F sound is always strong and succinct (a second important parallel to the ARP 2600, besides the tonal flexibility). Its sound sits at the very edge of the speaker, it doesn't hide, it doesn't weaken, it's convincingly "present", it rushes from one acoustic happening to the next.

To sum it up: Enormous tonal flexibility and sound presence - this is what makes the Synthesizer-100F special among specialities.

Why the S-100F is still a "Terra Incognita" to many musicians is beyond us. It may be its name: "Kawai" ... "Teisco" (if it were "Roland" or "Moog", the story would probably have developed completely differently). Again, it may be that the lack of a proper CV/Gate port has deterred musicians from using it (*today*, however, this shortcoming can be solved quite easily). Or, it may be its unspectacular exterior. Essentially, this is a small synthesizer, not particularly "hip", somewhat boring to look at, with no pitch-bender / mod-wheel and without arpeggiator / sequencer. But still ... who cares?



Kawai S-100F and Teisco S-100F only differ in nuances; The Kawai comes with „Synthesizer-100F“ written in BLUE, while it's YELLOW on the Teisco version.

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From today's perspective, this lack of reknown surprises. The S-100F is not just a "good", it is an "excellent" instrument. Inconspicuous to look at, the Kawai S-100F / Teisco S-100F is nonetheless a goldmine for any synth-enthusiast. An instrument with high-end audio values, tonal flexibility and a thoroughly honest, powerful analog sound.

*"Well, an ARP Odyssey can do all that (and more), too ..."* attentive readers might argue. Sure, that's correct. But ... ARP made a mistake, a big one. With the exception of ARP 2500 and ARP 2600, it used inferior hardware on all of its synthesizers. Main weak point: The faders. Thus, playing an original ARP Odyssey can be a rather joyless musical experience on stage or in the studio, mostly because of jagged faders. And then there are those rickety keyboards. Clunky hardware kills creativity within seconds ...

Playing the Kawai S-100F / Teisco S-100F, on the other hand, is almost *always* a source of great joy. The faders - good quality - feel excellent and the keyboard is a pleasure to play, with no clattery noises on the side. Knob tweaking and sound research on the S-100F is a joy!

# Kawai S-100F / Teisco S-100F - "Terra Incognita"?

The screenshot shows a Reverb auction page for a Kawai/Teisco 100f synthesizer. The main image is a top-down view of the instrument, which has a black control panel with various knobs and switches, and a keyboard. The price is listed as €625 EUR, a 35% discount from the original price of €950. A button labeled "In den Warenkorb legen" is visible. Below the main image is a smaller image showing the rear panel of the synthesizer with various jacks and a CV Gate Filter interface. The description mentions that the synthesizer is fully cleaned and serviced, and includes a Kenton CV Gate interface.

Smart solution: Rewiring of the original SYNTHESIZER CONTROL VOLTAGE jacks, now serving as Kenton interface sockets. Photos (c) Reverb Auction.

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The screenshot shows a Reverb auction page for a Teisco 100F 1977 synthesizer. The main image is a front view of the instrument, which has a dark wood-grain case and a black control panel. The price is listed as €906,96 EUR. A button labeled "Anzeige verkauft" is visible. Below the main image is a smaller image showing the rear panel of the synthesizer. The description mentions that the synthesizer is in very good condition and includes a Kenton CV Gate interface.

Teisco S-100F: Photos (c) Reverb Auction.

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Nevertheless, the S-100F hardware has a weak point, too: Its "fake" wood. The synth has one of those cheap wood laminate cases often found in Japanese synthesizers. Well, it is THERE, so you'll have to accept it.

## Secondhand market

Clever synth enthusiasts are on the fast lane. If they're smart, they'll grab a Kawai S-100F / Teisco S-100F as long as those instruments are still cheap on the secondhand market. Currently, the Synthesizer-100F goes for a mere 900 to 1.200 Euros / USD. Regarding its flexibility, power and musical potential, it is worth at least twice as much. But times will definitely change, demands will rise, and with them prices will go up.

And should the occasional question arise: Teisco S-60F and S-110F are - by comparison - of *completely* different quality. Good and strong sounding instruments for sure, but somehow "mainstream" and a little boring. No VCO-to-VCF FM here, no pedal (VCF) input, no super-duper-fast envelopes, no weird modulation stuff. Well-built and good designed synthesizers of average musical quality, not more. And soundwise not "half" the power of the S-100F.



Teisco S-100F: Slightly different color scheme than the Kawai version; Photo (c) Reverb Auction.

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## All in all ...

The Kawai/Teisco Synthesizer-100F is still an insider tip among the analog classics. This rather boring-looking but grand-sounding experimental synthesizer can still be found on the used market on a regular basis - and at humane prices. Its harmless, unassuming appearance and its smallness may lead to the assumption that this is an instrument of no importance ...

... which is not even close to the truth. In terms of sound, the S-100F reminds us of the grandiose ARP 2600. It convinces with ultra-dry basses, razor-sharp envelopes, an extreme range of audio frequencies, excellent effect sounds and much, much more.

The Kawai S-100F / Teisco S-100F, one of the last white spots on the "Terra Incognita" of synthesizer

Kawai S-100F / Teisco S-100F - "Terra Incognita"? history, has no noteworthy cult status and is not particularly popular at present. We prophesize that this will change in the very near future.



Kawai S-100F: A compact, but surprisingly powerful monosynth.

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30 minutes of sound samples are included. All sounds are from the Kawai/Teisco S-100F (sometimes two of them - stereo!), with the following exceptions: in "Mix 1" [Studiologic Sledge](#) provides some soft pad sounds, and in "Mix 2", full of other synthesizers, there's a clearly audible scratchy Roland TR-808 volume pot (we apologize) and a short, but great piano solo by Wolfi H. That sub-audio-bass: Kawai S-100F.

1. [DEMO \(pure S-100F\)](#)
2. [Mix 1 \(Studiologic Sledge\)](#)
3. [Mix 2 \(various Synthesizers\)](#)
4. [Strange FX 1](#)
5. [Strange FX 2](#)
6. [Strange FX 3](#)
7. [Strange FX 4](#)
8. [Filter Sweeps 1](#)
9. [Filter Sweeps 2](#)
10. [Portamento "Mode B" 1](#)
11. [Portamento "Mode B" 2](#)
12. [Demo Variation](#)
13. [Deep Pulse](#)
14. [Bass 1](#)

15. [Bass 2](#)
16. [Bass 3](#)
17. [Solo 1](#)
18. [Solo 2](#)
19. [Solo 3](#)
20. [Pacific 232](#)
21. [Simple Sequ 1](#)
22. [Simple Sequ 2](#)

## **Kawai S-100F / Teisco S-100F**

### **Monophonic Analog Synthesizer**

**1 VCO / 1 VCF / 1 LFO / 2 ENVs**

Links:

[Kenton Electronics - CV/Gate/Filter-CV Interface](#)

[Vintage Synthe Explorer - Kawai S-100F](#)

Open / Download:

[Photo Kawai S-100F Front 1 \(4200 x 2800 px\)](#)

[Photo Kawai S-100F Front 2 \(4200 x 2800 px\)](#)

[Photo Kawai S-100F Back \(4200 x 2800 px\)](#)

Youtube:

Kawai S-100F Demo by [DigitaleAnalogue](#)