Some might consider the Korg PS-3100 synthesizer as an oversized MS-20. But this polyphonic instrument is – like its monophonic colleague – in a class of its own. Korg's PS-series might include the best and most creative polyphonic analog instruments ever made (along with Yamaha's big CS-synthesizers, of course). No other machines offer such characteristic and distinctive sounds …



Of course, it's always a question of personal taste and what sort of music you yourself tend to produce. But by comparing analog instruments you might come to recognize the difference between the mass of "nice" but rather ordinary synths, and the few absolutely "top" machines that set themselves apart.

It's easy to explain the special status of a PS- or polyphonic CS-synth. On the one hand (PS-synthesizers), it's fully polyphonic – 48-note polyphony, to be exact. As to the CS-instruments, the vast tone control via keyboard (not to be found on any other polyphonic synth of that time) is what makes them unique.

But now, let's have a closer look at the PS-3100 …



Polyphonic Synthesizer 3100 – basis of the Korg PS-family

Korg designed *one* instrument as the basis for the PS-series: the PS-3100. The essence of the wonderful PS-3300 is in fact three PS-3100 (well, more or less).

In 1978 – one year after release of the “original” series – the PS-3200 joined the family. This instrument represents some major changes in concept. Its disadvantages: there are **no** resonators, the env- philosophy has been changed and, somewhere along the line, the vivid character of the PS-3100 has gotten lost. Its advantages: the polyphony is still 48-notes with *two* independant VCOs per voice, and there’s the nice PS-3010 keyboard which puts it in a class of its own compared to the rather ordinary keyboard of the PS-3100, and, in addition, the PS-3200 has 16 programmable memories!



Some people (even those who have the complete PS-series) think the PS-3200 is the best of the bunch. But in my opinion, it's the PS-3100 (ok, ok – the PS-3300, too). There is no substitute for those resonators, and the envelopes in particular have a characteristic class. Sometimes, of course, one VCO per note is not enough, but you simply (nice joke) have to link two PS-3100s … in stereo, to get a sound that will bowl you over!

The PS-3300 might be the king of modular polyphonics, but in my opinion its smaller brother is easier to handle and still has most of that sonic power (without a loss of that distinctive character). Need some other "small is beautiful" examples from synth history? The Roland Juno-60 is a serious substitute for the Jupiter-8, the CS-60 yields a lot of what we like in the CS-80, … !

What makes the PS-3100 so special?

Well, nearly everything about this instrument is extraordinary. But still there is a "mainly", and that is it's …



Polyphony: there are very few fully-polyphonic instruments other than the Polymoog. This is one of them! A 48-note polyphonic, patchable synthesizer! No danger of harmonies being cut off when you play long pads. Harmonic pile-ups of 12, 14 or more notes are no problem and give you a powerful, unique sound. Clusters of up to 48 tones are really no problem!

And by the way: the single VCO per note doesn’t mean the PS-3100 is a toy! I know few synths that sound that rich, organic and earthy.

Resonators: 3 bandpass filters (with resonance) that produce a phaser-like sound. This module is the heart of the beautiful PS-3100. What a shame the resonators got lost in the process of developing the PS-3200.



Envelopes: there's genious behind this! You have ADS (knobs) and R elease (switch, sort of a "preset"-function). Release is either DAMPED (very short, many of Vangelis' soli sound that vivid and aggressive thanks to these extremely short PS-envelopes), or HALF or FULL. Sadly, these presets were also left behind with the PS-3200. Instead, you find a complete ADSR (all knobs), but the attack-time is different, and release is not that aggressive and snappy.

Well, attack … I need to say something about it: attack-time on the PS-3100 is somewhat over 2 minutes! (That's a guess. I really should clock that one day …). I know no other synth offering this XXL feature. We always believe fast attack is the most important quality aspect of an envelope. Well, sometimes that's true – nice basses need some short noise at the beginning (hello, ARP-2600) …



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But whenever you hear the extraordinarily long PS-3100-attack, other musical possibilities come to mind – different, but no less dramatic. Combined with its HOLD-option, the small PS-3100 brings up some extremely lush pads.

So this is how it works: turn up attack-time higher than 7, select HOLD, play some notes across the whole keyboard, sit down in front of the speakers (you might even sip some coffee), and … wait. First: … there’s nothing! Total silence. But the genious PS-3100 is in the midst of producing that nice harmony that you just can’t hear yet. (John Cage would have loved one of these for his studio!).



Then, after half a minute of “nothing”, you hear a mixture of tones, quiet at first and growing slowly. As if someone were turning up the mixer-volume in slow motion … And the sound grows, and grows, and gro… Finally, it’s overpowering, making you turn back the PS-volume (or filter frequency, whatever you do to reduce the volume again). But it still grows, and doesn’t want to stop … it’s fascinating, really. A polyphonic Tyrannosaurus!

These endless attack-times are a wonderful musical feature, at least as important as fast attack-times (forgot to mention that they can be quite fast on the PS-3100 too, so you’ve got both worlds). It simply shows that Korg tried to make the best out of each single module (as with the wide range LFO that can even produce ringmodulator-like effects).

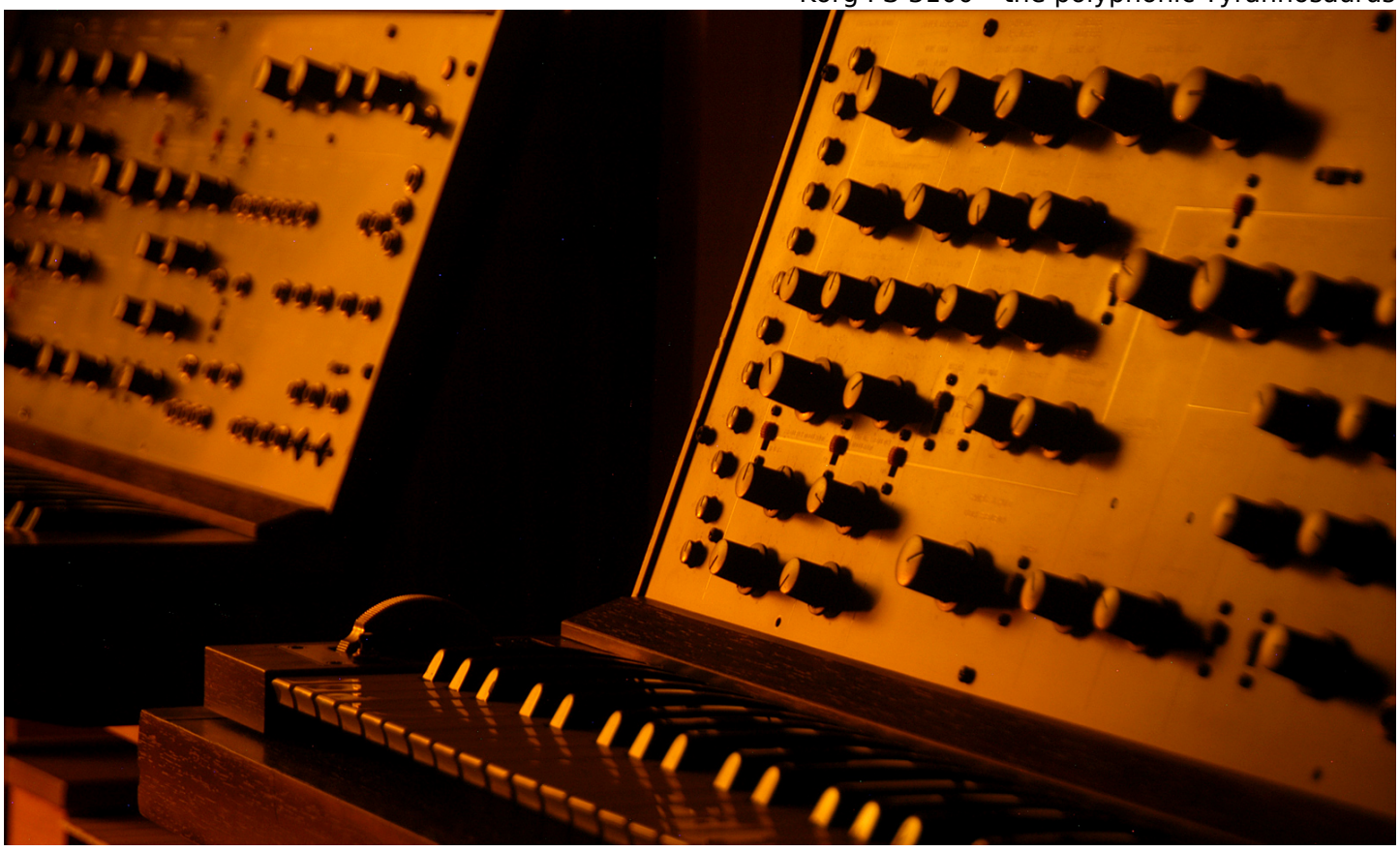
Sadly, the long attack-time is not to be found on the PS-3200. There, it’s rather ordinary, with a maximum of 20 seconds …



By the way: attack and release can be voltage-controlled externally! Play a nice solo, control the attack-time with the help of that massive aluminium wheel and modulate the resonators by one of the LFOs (and the regular filter frequency by the other) … Welcome to the world of the PS-3100!

Patch field: it's one huge block, as with the MS-20. Therefore, patching is far easier than on the PS-3200/3300 (a slightly confusing layout there is not the perfect set-up for creative musicians). Another reason why the small PS-3100 can be the best choice for you …

LFO 1 (and LFO 2 and Sample&Hold): as mentioned above, LFO 1 is a cracker: ranging from 0,01 Hz up to 2 kHz, it gives you wide sonic power … A simple vibrato? Ringmodulator-like effect-sounds? A noise-modulated bass? This LFO is very versatile. It puts 6 waveforms at your disposal (sine, positive saw, negative saw, pulse, white noise, pink noise) and has a frequency modulation CV input! LFO 2 is an ordinary triangle low-frequency oscillator (for standard vibrato / wah wah effects, but internally it's also routed to the resonator's frequency input, which is great). And Sample & Hold is there, too. It has its own clock, but can also be synchronized to LFO 1.



In terms of musical results, using noise as a source of modulation is not that effective. But still, it’s nice to have this option. What a shame that noise is not offered as an independent sound source!

There are many other fascinating aspects about the PS-3100, but now … let’s go ahead … and talk … about …

The Sound

Sound character and musical power are the final arguments (the pros and cons) of an instrument. I’m quite sure not many synths out there have the deep earthiness characteristic of a PS-3100. Its sonical potential is impressive: nice basses (no Moog, but still powerful and aggressive), perfect pads (thanks to full polyphony and lovely resonators), extreme effect-sounds (due to LFO1, S/H, voltage processors, vast patch options), and much, much more.



The hightlights of this instrument:

- Warm polyphonic clusters with resonator- and (VCF) filter-sweeps
- Futuristic effects with weird LFO modulation routings
- Snappy solo lines (with some VC attack- and release-movements)
- All kinds of pleasant sequencer- and arpeggio-sounds

Some of the “cons”

Five small detriments:

First of all, with the PS-3100 you’re limited to one VCO per note. Usually, that’s enough (considering its power and musical results). But you may sometimes wish for floatings (beats, you know what I mean?) … in which case you might need a second PS-3100 (or a PS-3200 or a PS-3300).



Second, the filter resonance is weak. No self-oscillation here. Which is surprising, thinking of the diabolic MS-20 filters.

Third, there are no proper CV/Gate connections. Well, this is a full polyphonic instrument, so how should that work? But we can suggest a very clever solution: Kenton Electronics offers a full-blown MIDI kit. It's not really cheap, but considering the huge sound potential of a PS-3100 in your studio-setup, it might be worth the money!

Fourth, the PS-3100 needs – at least once – a complete overhaul. This is a monster (!) of an instrument, with thousands of electronic parts inside. It's certainly not unreliable (not at all) – but well, it's nearly 50 years old!

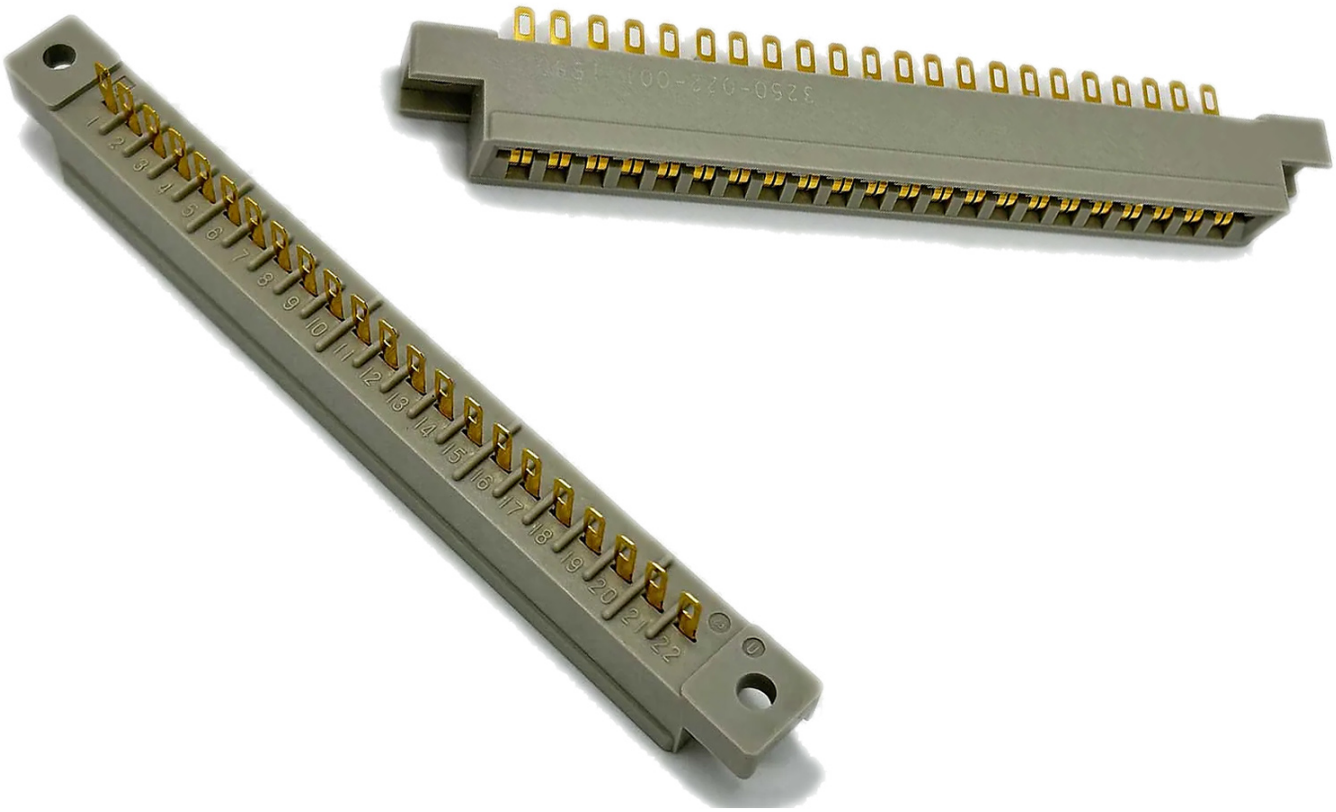


Every PS-owner should have **octave dividers** in stock, for example. They are not too expensive (45 USD a piece?) and the PS-3100 has 12 of them. There are 24 in the PS-3200, and 36 in the PS-3300. Their appearance might differ (our picture shows a replica of the divider), but they all fulfill the same purpose. As of 2024, Syntaur.com has NOS – *new old stock* – octave divider in stock.



And keep an eye on the **condensers** of your PS-synthesizer! They are filled with fluid that might possibly leak (as with a battery). Don't wait until it happens – that's too late. Another reason for a service-check every 3 or 4 years!

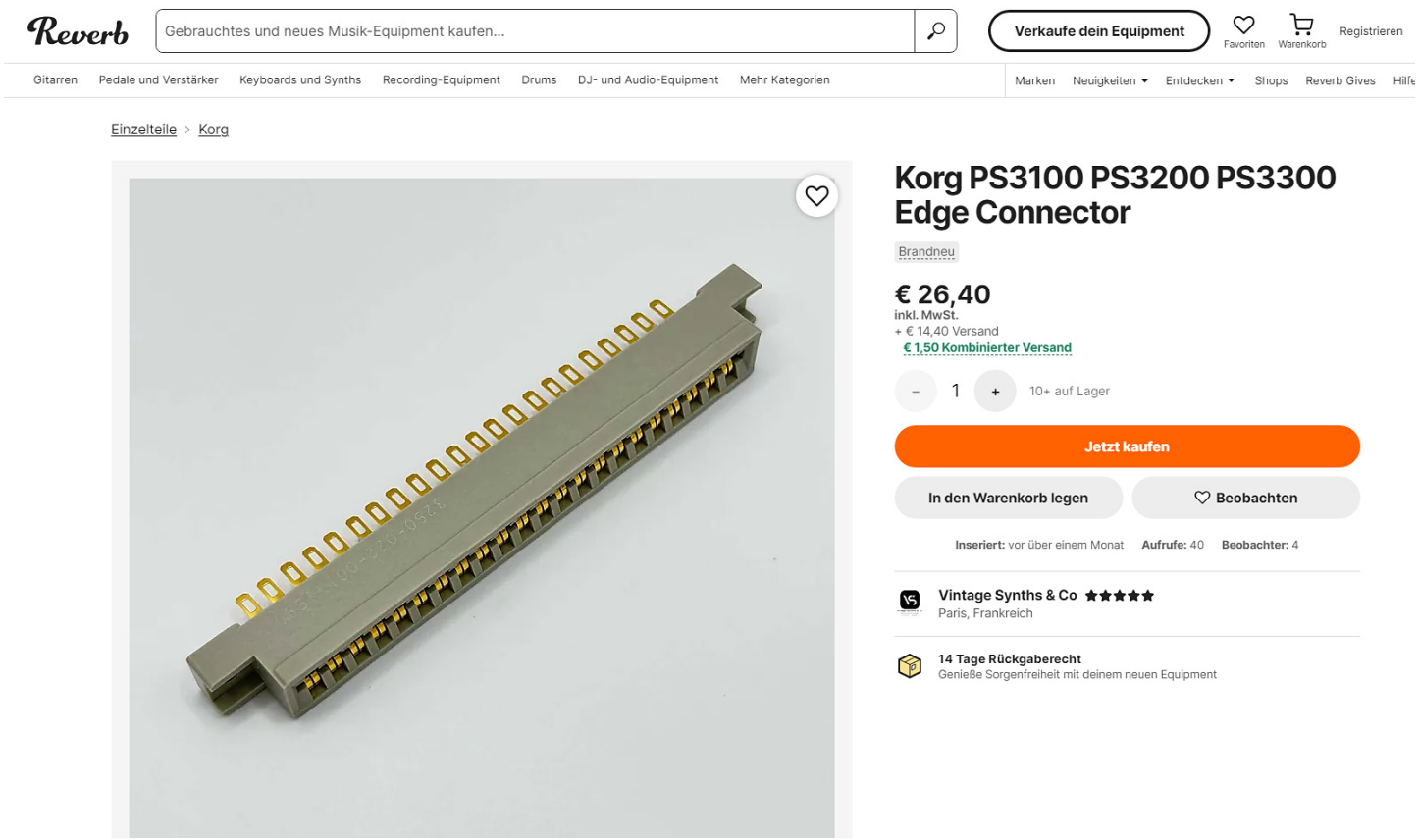
Another phenomenon can be observed in 2023 and 2024: The card connections on many PS-3100s are starting to break. Each of the 9 boards has two connectors (each with over 20 solder points), so there are 18 of these **edge connectors** in the PS-3100. As with the capacitors, replacing them in full is not cheap, but it is a must.



Korg PS edge connector auction (c) https://reverb.com

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On the positive side, the edge connectors can still be purchased (original size or – a bit cheaper – slightly too large, in which case they need to be adjusted by a technician). Once replaced, the contacts of the PS-3100 cards should be fine for another 20 or 30 years.



Korg PS edge connector auction (c) https://reverb.com

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Often, the **wooden housing** needs a replacement, too. We had two such cases made by a local carpenter (beech wood, light-colored, very hard, very heavy), even the KORG sticker on the back could be reproduced. If you want to retain the original condition as much as possible, you should opt for dark wood. We'd like to refer you to Mintcase.co.uk. Although sold out in 2024, wooden PS-3100 cabinets can usually be ordered there.

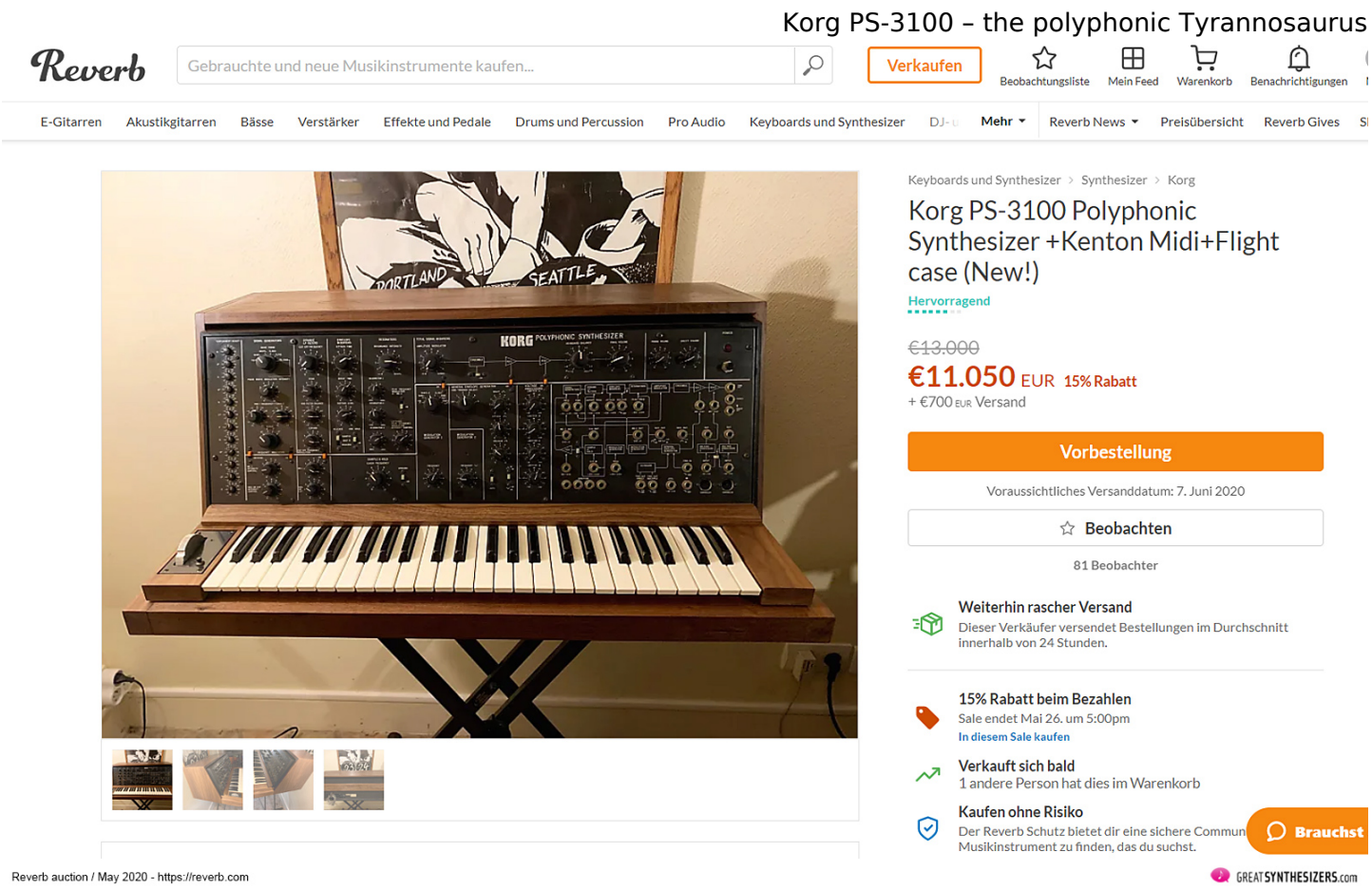


Fifth, the **price**. Today, you can hardly afford a Korg PS-3100 … vintage synth prices have gone through the roof!

What's it worth nowadays?

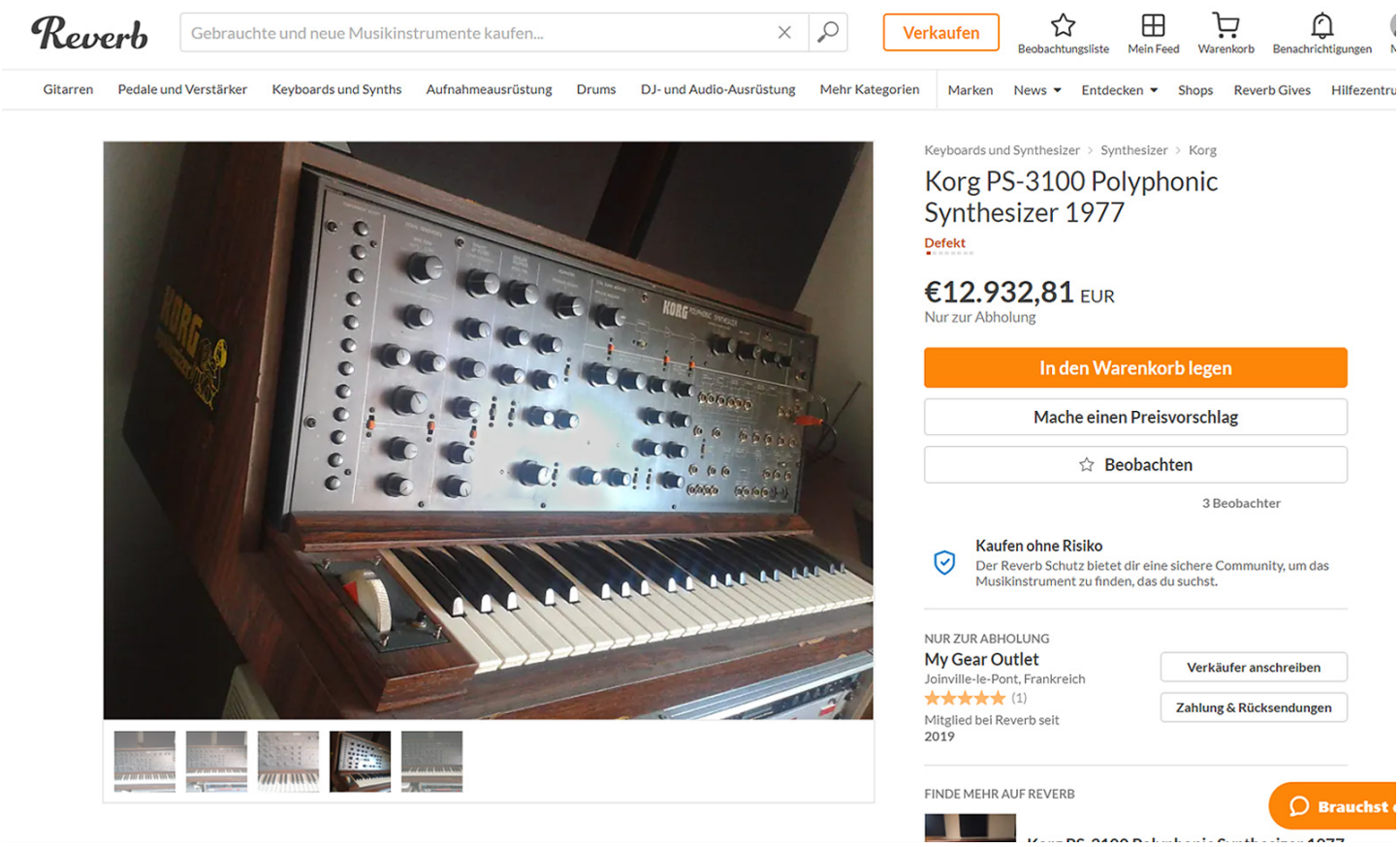
Well, in 1977/78 a PS-3100 cost 6,500 DM … in USD … (?). Be it as it may, it was a lot of money for a non-programmable synth with ONE oscillator per voice. No wonder most musicians concentrated on the Prophet-5 and on Oberheim synthesizers. Only 600 PS-3100 were made …

In October 2003 a PS-3100 was sold for 400 Euros in Germany. A bargain, that one, we have to admit. Italy – February 2004: 1,600 Euros for a PS-3100. In September 2005, a PS-3100 with Kenton MIDI (!) was sold for 1,800 Euros in France. Street-price for this lovely synth ranged from 1,500 up to 2,000 Euros. Those were the days …

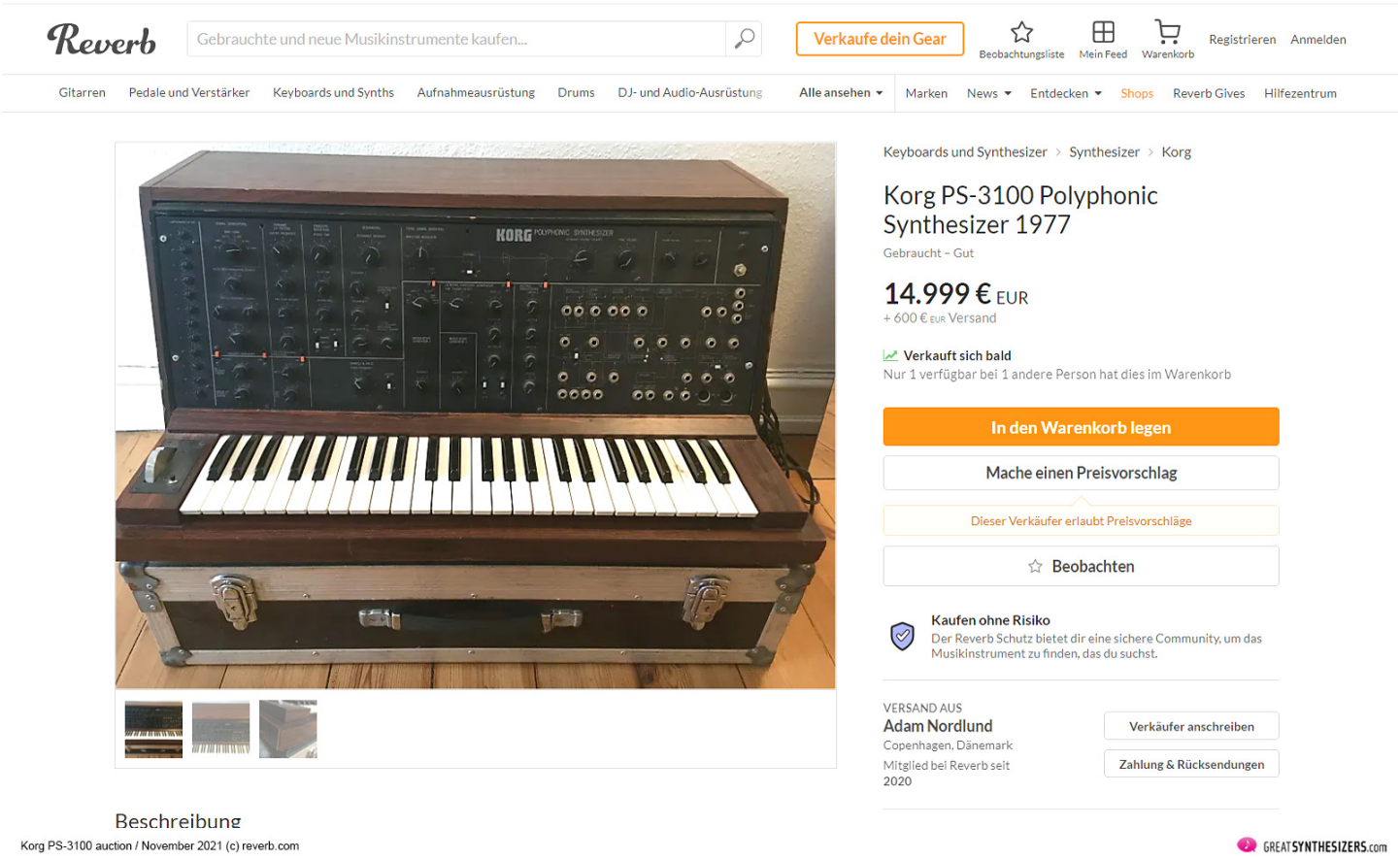


Reverb auction / May 2020 - https://reverb.com

In 2014 you had to pay a bit more ... 5,000 Euros ... 6,000 USD. And now, in 2021, PS-prices are up in the sky ... 8,000 to 10,000 Euros / USD for a Korg PS-3100 in average condition. Up to 15,000 Euros / USD for serviced unit with MIDI (and – for example – new wooden housing) ... and up to 20,000 Euros as of July 2022. The picture below shows a *broken* (!) PS-3100 for sale ... for a mere 12,900 Euros.



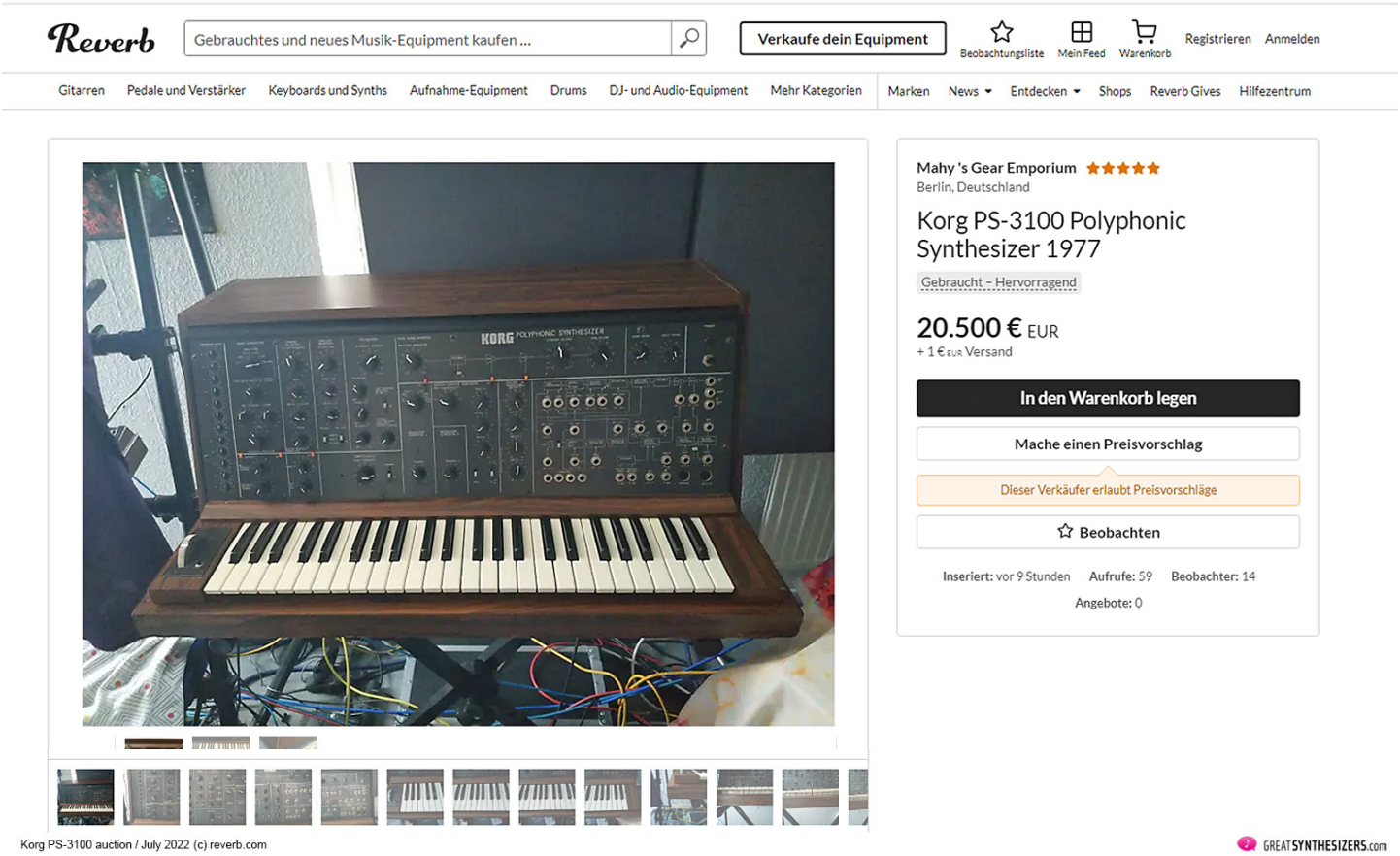
Reverb Auction / February 2021 - https://reverb.com [The auction item is a non-working PS-3100, by the way ...]



Korg PS-3100 auction / November 2021 (c) reverb.com

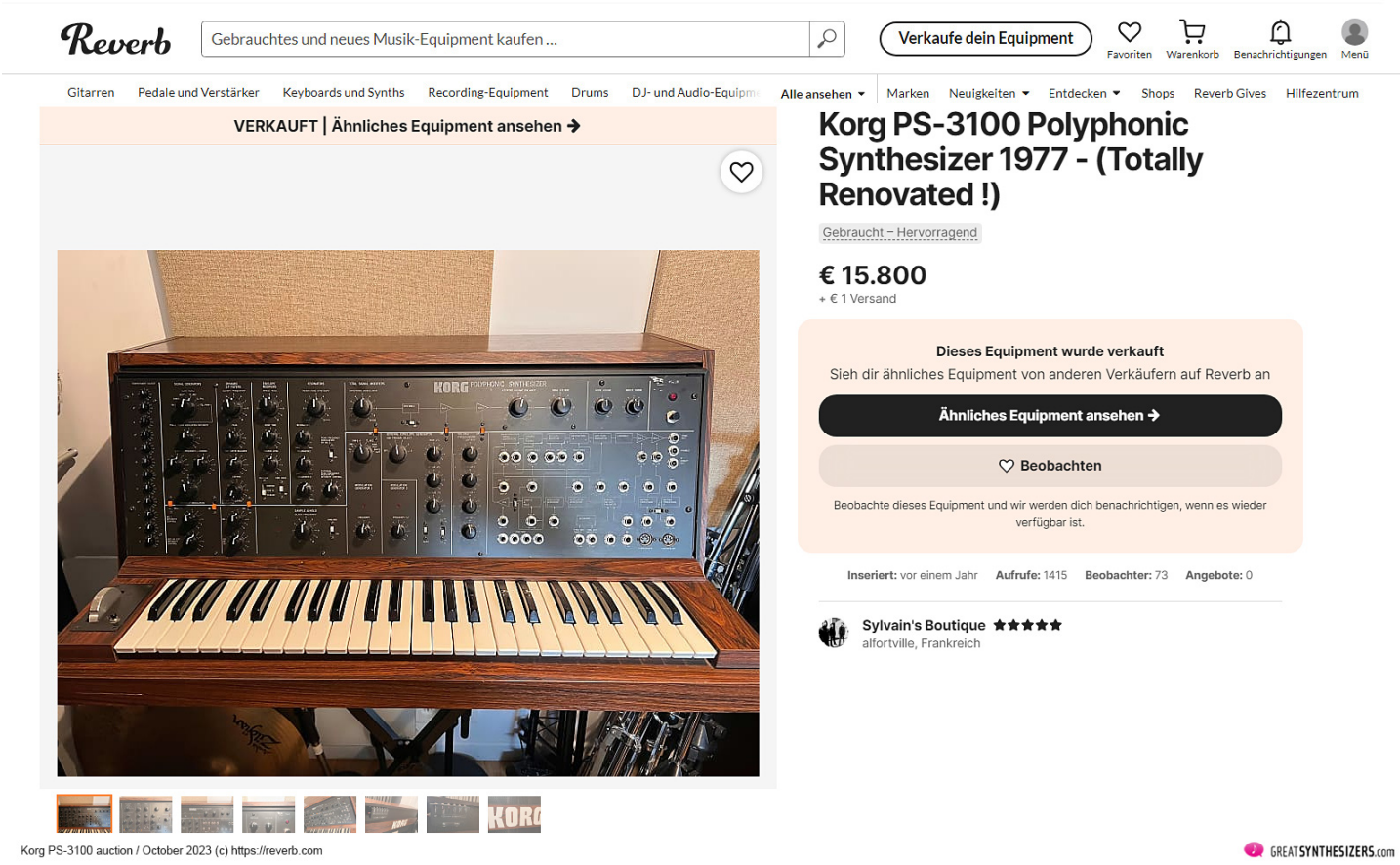
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As of 2023, 2024 and 2025, however, there's a slight stabilization on the second-hand market. Although top prices are still being asked, these prices are not being paid.



Korg PS-3100 auction / July 2022 (c) reverb.com

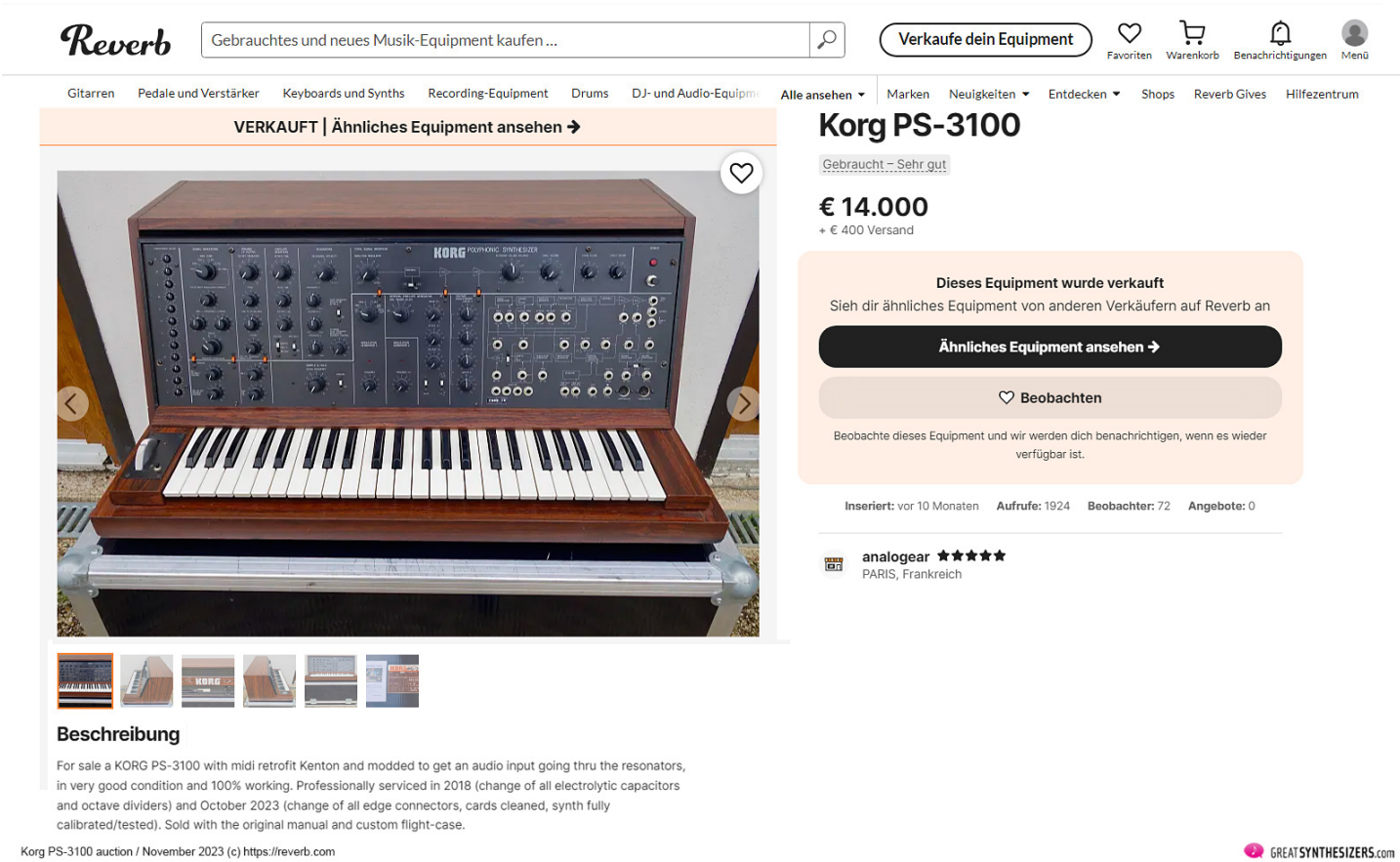
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Korg PS-3100 auction / October 2023 (c) https://reverb.com

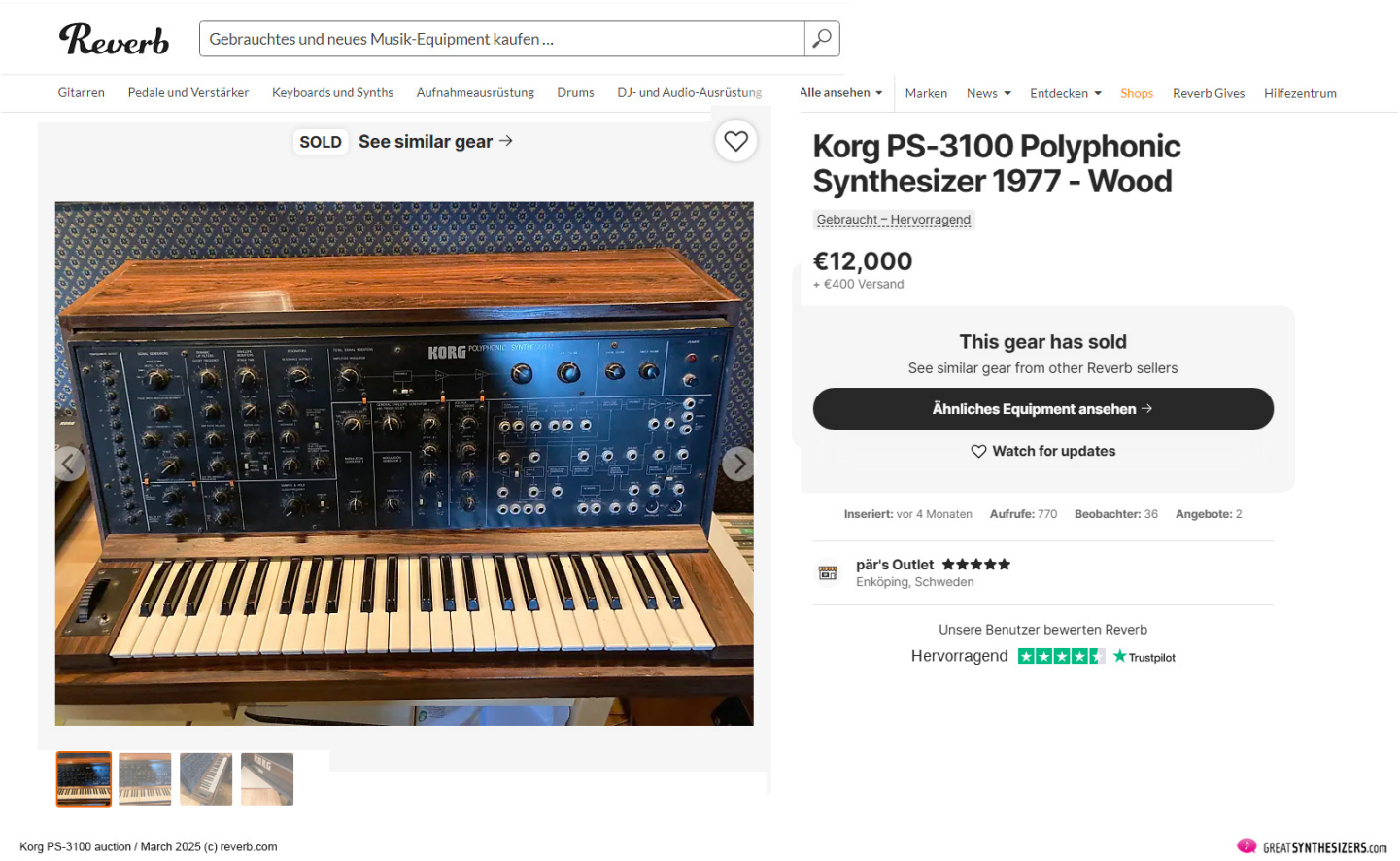
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The following screenshots show two closed auctions (both ending late 2023) and their achieved prices. It's important to note that the PS-3100s were completely serviced. The slightly cheaper unit even had an external audio input for the resonators, Kenton-MIDI, a flightcase and the original user manual included.



Korg PS-3100 auction / November 2023 (c) https://reverb.com

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Being enamoured of all the PS sonical glamour, I can imagine there is no PS-3100 price limit at all (… that's my very personal opinion, of course). If you're looking for this synth, try to find a unit with MIDI … Kenton MIDI is the chocolate on the PS-3100 Sundae.

FB-3100 Software Synthesizer (free VST plug-in)

FBM (Full Bucket Music) offers a free VST plug-in for the PS-3100 (and also for the PS-3200 and PS-3300) by Björn Arlt.

> "The FB-3100 is a software synthesizer plug-in for Microsoft Windows (VST) and Apple macOS (VST/AU) simulating the classic KORG PS-3100 polyphonic analog synthesizer from 1977. It is written in native C++ code for high performance even on "lighter" systems.
>
> The main features are:
>
> - Close emulation of behavior and all controls of the original hardware
> - Band-limited oscillators, classic two-pole lowpass filters
> - Resonators section
> - Two Modulation Generators, Sample & Hold
> - Additional paraphonic Envelope Generator
> - Semi-modular patch panel
> - Micro-tuning option
> - Additional tweaks
> - Plug-in supports Windows and macOS (32 bit and 64 bit)"
>
> (Source: FB-3100 Manual)



All in all

From the standpoint of uniqueness, there will never be an alternative to the Korg PS-series. At least not without the same constructural extravagance. And in all probability no synth company will ever again produce anything similar to these wonderfully complex and intuitive instruments.

Here you have it: the PS-3100 is a massive 48-voice analog synth with resonators (triple resonance bandpass filters), a flexible patchbay and with a uniqueness all its own.

Addendum 2024: Sometimes it’s surprising how long it takes to really get to know an instrument. After 25 years (!) we just discovered the **beauty of the Korg PS-3100 in stereo mode**. In other words: MAIN and DIRECT output in common (R/L) use. Since the “effects” of the synthesizer – resonators, amplitude modulation by LFO 1 and the chorus unit – are output in the MAIN signal path only, stereophonic use of the PS-3100 results in fabulous spatial signals. Two sound examples (2024) have been added …



We have put 40 minutes of audio material at your disposal. Besides PS-3100 solo soundfiles, there are quite a few mixed audio files. The instruments used along with the Polyphonic Synthesizer 3100 are Oberheim OB-8, Yamaha CS-60, Yamaha CS-80, PPG Wave 2.2, Elka Synthex, Roland JD-800 and Roland's TR-808 drum machine.

1. DEMO (with various synthesizers)
2. Two PS-3100 (stereo) LIVE
3. Two PS-3100 (stereo) 4 Track Sequ (with Oberheim OB-8)
4. High Frequ LFO / Roland TR-808
5. Two Sequencer Lines
6. Long Harmonies
7. Mix 1
8. Mix 2
9. Mix 3
10. Mix 4
11. Yamaha CS-80
12. Korg PS-3100 - Tri Reso + Amplifier Modulation
13. LFO Amplifier Modulation
14. Elka Synthex

15. FX 1
16. FX 2
17. FX 3
18. Yamaha CS-60
19. Ennio Morricone
20. String Harmonies
21. Stereo Out (MAIN and DIR) 2024 - 1
22. Stereo Out (MAIN and DIR) 2024 - 2
23. Mix 1 (Bit 99 and Korg PS-3100)
24. Mix 2 (Bit 99 and Korg PS-3100)

Korg PS-3100 Synthesizer

1977 – approx. 1980

Part of the PLS (Polyphonic Laboratoy Systems)
Polyphonic Synthesizer Group
48 Voices

12 Master-VCOs
48 Envelopes
48 Filter

Dimension / Weight:
82 x 52,8 x 36 cm (L/W/H)
30 kg

Links:
Kenton MIDI PS-3100 Retrofit Kit
Mintcase.co.uk – new solid wooden case
Korg PS-3100: The Emperor's New Clothes
Full Bucket Music FB-3100 free VST software synthesizer
History: Korg PS Series Polyphonic Modular Synthesizers (Perfect Circuit)

Open / Download:
Korg PS-3100 synthesizer photo 1 (3800 x 2500 px)
Korg PS-3100 Synthesizer photo 2 (3000 x 2200 px)

Compare with / Test report
Moog Polymoog Synthesizer – an auralesque miracle

Youtube Video (by sorvolator):
Korg PS-3100 and Expressive E Touché

Youtube Video (by ZiGouji):
Korg PS-3100 with external effects

Youtube Video (by ToneTweakers):
Crazy Korg PS-3100 modulations