

Sonic Farm Berliner

Dual-channel Hybrid Mic Preamp

On testing a vintage Telefunken preamp, Sonic Farm were so impressed they decided to recreate it — adding their own twist along the way...

HUGH ROBJOHNS

first discovered the intriguing products of Canadian manufacturers Sonic Farm a few years ago, and was both impressed and fascinated by the refreshing design approach adopted by their two founders, Zoran Todorovic and Boris Drazic (if they don't sound like traditional Canadian names, it's because both hail originally from the former Yugoslavia). The Sonic Farm philosophy is to employ any and every technology - transformers, valves, transistors or op-amps — to create a product which is "subjectively remarkable". That's a very good policy in my book! They also enjoy building on the strengths and successes of pedigree vintage equipment, but without going down the clichéd 'cloning' route, using what came before to help move the technology and artistry forward, rather than wallowing in nostalgia.

With that in mind, one of the latest of Sonic Farm's offerings is this two-channel preamp called the Berliner. It is inspired by the Telefunken V76, a self-contained pentode valve-based

gain 'brick' introduced in 1958 — the V-series preamps were designed primarily as standard modular studio components for the German broadcast industry (see box). Apparently, an opportunity arose for the Sonic Farm team to play with an original pristine V76 module, which they compared with their own Creamer pentode preamp (reviewed in SOS May 2013: www.soundonsound.com/sos/may13/articles/sonic-farm-creamer.htm).

The auditioning quickly revealed the V76 to be far more polite-sounding and less coloured than the Creamer, with a huge, open and very detailed character. So impressed were they that they immediately wanted to build something with similar talents and charm.

A large part of any preamp's sound character comes directly from its circuit topology (see box), so the Berliner's front-end gain stage has been fashioned to be pretty similar to that of the original Telefunken V-series design. Specifically, it employs a pair of pentode valves, the second with a large inductor choke-loading the anode supply circuit, and a switched negative feedback path

to control the gain. However, since the EF804S valve used in the original design has long since been discontinued, the Berliner employs current production JJ Electronics EF86/EF806 valves instead (or the equivalent Russian 6J32P valves, which are also used in the Creamer). A more significant change from the original design is that the biasing arrangements have been completely revised to remove all the high-voltage electrolytic coupling capacitors, lowering build cost and improving the distortion performance.

Of the three input options, the mic and line inputs each have Cinemag transformers, while the instrument input feeds the first valve stage directly (and sees a $3.9 \mathrm{M}\Omega$ input impedance!). The line transformer has a 1:1 ratio, while the mic transformer is a 1:20 type instead of the V76's 1:30. The idea here was to move more of the voltage gain into the valve circuit (instead of the transformer), and the consequent reduction in negative feedback around the valve amplifier results in slightly 'sparklier' transients and



a fraction more colour than the original V76 (but still way less than the Creamer!).

In its output stage, the original V76 employed a second pair of valves in a similar arrangement to the first pair, providing a fixed amount of additional gain. The Berliner has dispensed with these completely, and a hybrid output section, taken directly from the Creamer, is used. The solid-state mode uses a standard balanced line-driver IC to generate a transformerless output, while the alternative mode uses a discrete complementary transistor buffer feeding a Cinemag output transformer for some extra colour. The Berliner can be ordered with two different transformer types: the standard 'A' transformer has a 50/50 Ni-Fe core, while the 'B' option has a 100-percent iron core. The latter provides more rounded transients and a slightly softer top end for an even more 'vintage' tonal character.

Ich Bin Ein Berliner!

Using the Berliner preamp is very straightforward, despite the plethora of controls. Everything is clearly labelled and the two channel sections are laid out identically, the whole thing bearing a strong family resemblance to the Creamer. Starting at the bottom left-hand corner, two white buttons select phantom power (with red warning LED), and a 10dB mic input pad, which acts before the transformer.

Above these buttons, a pair of three-way toggle switches labelled Fat

and Air introduce 6dB/octave shelving boosts. The middle positions give a flat response while the outside positions engage different turnover frequencies, and internal trimmers are provided to allow the user to fine-tune the amount of boost introduced. This EQ facility is integrated into the feedback loop of the valve gain stage, and so the precise turnover frequencies interact with the amount of gain being applied. In general, a low-gain setting causes the HF shelf to start lower and the LF shelf to start higher, resulting in more treble and bass boost, a bit like an old-school hi-fi loudness control. High gain settings have the opposite effect, pushing the shelf turnover frequencies out towards the extremes of the spectrum and subjectively reducing the amount of boost.

A third toggle switch adjusts the microphone input impedance, with a nominal $2.4k\Omega$ as the default, and 900Ω and $10k\Omega$ as the low and high options. A white button selects the line input instead of the mic input, and this is routed through the front-panel quarter-inch unbalanced instrument socket, so that the latter takes priority if an instrument is plugged in.

The preamp gain is adjusted with a white chicken-head knob, its control range being about 37dB. With the output control fully open, the maximum microphone gain is 76dB and the minimum 39dB (28dB with the mic pad engaged). For the line and instrument inputs the maximum gain is 48dB, and the minimum 12dB. These minimum gain figures can be reduced further using the second chicken-head knob, which adjusts the output level from the valve

stage feeding into the output section. This control allows the input stage to be overdriven, if desired, without passing ultra-high levels on to the following device. A dual-colour LED indicates signal level through brightness (green, changing to red when the front-end stage is overloaded), while a separate blue LED indicates the presence of the valve heater supply voltage (around 285V), acting as the 'on' lamp.

Two more toggles control a 6dB/octave high-pass filter turning over at 80 or 160 Hz, and attenuate the output of the valve stage by 0, 6, or 12 dB. This attenuation takes place just before the output level control, and avoids the potential problem of having to operate the output volume near the inherently imprecise minimum end of the range when deliberately running the front end very hot. Two more white buttons introduce a polarity inversion at the output and select the output-stage configuration between solid-state (SS) and output transformer (OT) modes, as previously discussed.

The only remaining front-panel control is a large rocker switch for the mains power on/off. A smaller rocker switch on the rear provides a ground-lift facility. Mains power is connected via the usual IEC inlet, with adjacent 115V/230V selector and fuse holder. The mic and line inputs, and the line outputs, are all on XLR connectors.

According to the published specifications, the Berliner has

Sonic Farm Berliner \$2850 CAD

PROS

- Wonderfully refined sound character.
- Output configuration options.
- Line and instrument inputs expand usability.
- Very high maximum gain on offer.
- · Good build quality.

CONS

• Fat and Air EQ somewhat less effective than expected.

SUMMARY

This is a versatile two-channel valve preamp, with transformer-coupled mic and line inputs, an instrument input, and both transformer and solid-state output modes. The front-end circuitry is derived from the classic Telefunken V76, and it delivers a similarly refined sound character.



>>



a frequency response extending between 10Hz and 50kHz (-3dB), and a maximum output level of a whopping +32dBu. Power consumption is a room-warming 50W, and harmonic distortion is given as less than one percent, and very much less when used prudently! For an output level of +24dBu, the minimum line input is -24dBu, and it will accommodate signals of +24dBu without complaint. On the microphone side, the minimum input for +24dBu out is -51dBu, and the maximum is around +18dBu (with the mic pad engaged). With all those transformers, the Berliner is unusually heavy!

In Use

In comparison with my recollections of the Creamer, the Berliner comes across as its more graceful and demure younger sister. It has a lovely sound character: immediately larger than life, full and warm, yet still crystal clear, detailed and involving. It's clearly valve-based, but it doesn't force stereotypical 'tubey-ness' on you. It's far more subtle and refined, which is the hallmark of classic vintage preamps.

The Berliner offers plenty of gain for any practical application, and the internal gain structuring means line and DI inputs typically drive the front end relatively hard, benefitting from some nicely judged musical coloration. A little drive is always welcome for bass and guitar DI duties, but it also makes the Berliner ideal as a characterful stereo-bus or mix-processing tool.

Rather than introducing obvious shelving boosts, the main effect of the Fat and Air EQ options seemed to be The Berliner features separate inputs on each channel for the mic and line signals, both of which are on XLR connectors.

to make everything generally louder by four or five decibels at low and medium gain settings, although the Air mode did alter the high-end balance very slightly. Sonic Farm tell me that they generally ship the unit with the EQ's gain trimmers set very conservatively, because the EQ, due to its design and position in the circuit, is more radical than that on their Creamer. Changing the trim settings makes the effects much more noticeable. The effect of the high-pass filter is quite dramatic, with the first position reducing the low end by 3dB at 200Hz (higher than the claimed 160Hz), and the second reached -3dB at 100Hz (higher than the claimed 80Hz). Being able to switch between the ultra-clean solid-state output and the more characterful transistor-driven transformer output brings more tonal options, the former sounding tighter and crisper, the latter slightly softer and with rounder transients.

Telefunken V76: A Technical Overview

The Telefunken V76 was in essence an upgrade of the earlier and smaller V72 gain stage — a design which was widely adopted for use in the earliest sound desks of many pioneering record companies across Europe, and most notably in the early EMI REDD consoles.

Internally, the V76 contained the circuitry of two V72 modules connected in series, to provide up to 76dB of gain (the standard V72 only managed 34dB), and whereas the V72's gain was fixed, the V76 featured a rotary gain switch with 12 steps of 6dB. There were also options for a switchable low-cut shelf filter. Interestingly, the bandwidth of the standard V76 module was deliberately restricted to 40Hz-15kHz, as required in the broadcast world at that time. As a result, the V76 was perceived as sounding a tad duller than the V72 modules, but the practical benefit of a wide user-adjustable gain range outweighed that minor inconvenience. In fact, the unrestricted V76 circuitry is actually capable of a very respectable bandwidth between

10Hz and 35kHz ±0.5dB, and the necessary modification is not complicated.

The original Telefunken circuitry employs an input transformer and two EF804S pentode valves to perform the first stage of amplification. A four-layer rotary switch adjusts an input attenuator for the four lowest gain settings, and the negative feedback between the first two valves for the eight higher gain settings. A switchable filter section connects the first pair of valves to the second gain stage comprising a third EF804S and an E83F to drive the output transformer. As with all the V-series amplifiers, the output stage is a choke-loaded configuration in which a large air-cored inductor carries the power supply to the output valve, instead of passing it through the output transformer. This arrangement, sometimes known as 'parafeed', enables the output valve to perform with much better headroom and linearity, as well as allowing a smaller and lighter output transformer to be used, with much improved bandwidth and overall sound quality.

Conclusion

The Berliner is a very classy sounding preamp, combining the classic Telefunken V-series sonic footprint with a lot of modern flexibility, providing a range of tonal characteristics. It is a fabulous-sounding valve mic preamp, but it's also a wonderful instrument DI, and I could easily use it every day as a line processor to add some body and life to stereo mixes. This is Sonic Farm's most impressive product yet.

- £ \$2850 CAD (about £1500) plus taxes & shipping.
- T Sonic Farm +1 310 402 2390.
- W www.sonicfarm.com