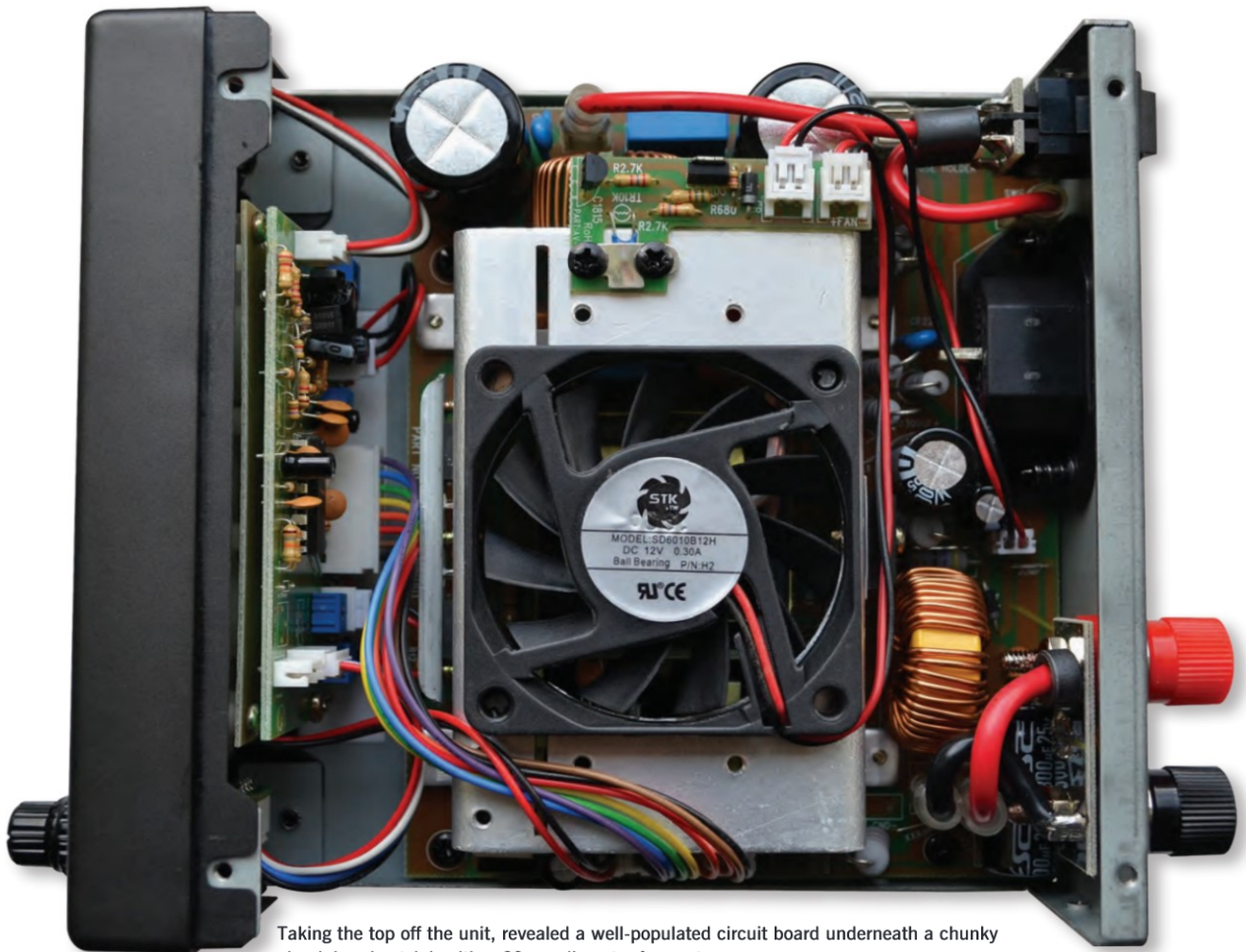


Watson Power-Mite-NF power supply



Taking the top off the unit, revealed a well-populated circuit board underneath a chunky aluminium heatsink with a 60mm diameter fan on top.

The Watson Power-Mite-NF is a compact 13.8V 25A switch mode power supply, weighing just 1.2kg and small enough to fit in a briefcase or suitcase.

Power supplies have come a long way since the days of older, linear models, with switch mode technology meaning they can be made smaller and lighter. As an example, the 1980s Kenwood PS-50 13.8V 20A PSU was 173mm (w) x 107mm (h) x 296mm (d) and weighed 7.2kg.

The Power-Mite-NF comes in at 165mm (depth) x 147mm (width) x 55mm (height). To put that in perspective, this means the Power-Mite weighs only 16.6% of the venerable PS-50 and has a total volume of less than a quarter. And there are other advantages too.

Out of the box

The Power-Mite-NF's output is continuously adjustable from 4.0-16V via a knob on the fascia. It also has a back-lit voltmeter and an ammeter on the front.

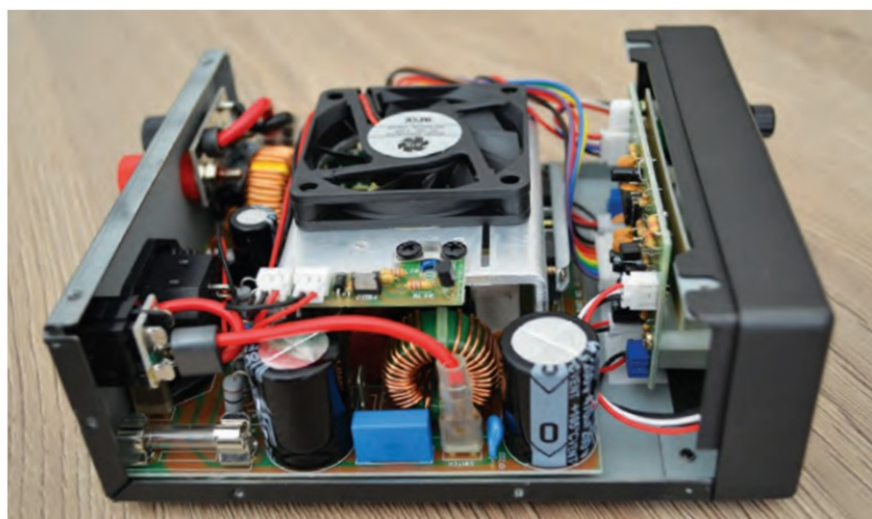
The voltage knob has a detent or click position for 13.8V, so it is relatively easy to set it for an average amateur radio.

Also on the front panel is a noise offset knob, which adjusts the switching frequency of the power supply from 19kHz to 31kHz. If you do find noise breaking through on a particular HF frequency it is, therefore, an easy job to just tweak the noise offset until it goes away.

On the back are an On/Off switch and two large threaded connectors for the DC output and I was pleased to see that you can completely unscrew these. I generally use ring connectors



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There is a user-replaceable fuse on the board that was revealed when the lid was removed.

on all my radios and it is frustrating to find some power supplies do not allow you to completely remove the positive and negative connectors to allow you to put them on – so well done Watson!

Also on the back is an AC input socket that uses a standard DIN connector (the unit comes with a suitable power lead with a 13A plug fitted). This measured 175cm long, which should be enough for most applications. Incidentally, the plug was found to be fitted with a 13A fuse. This could easily be reduced to 5A with no effect on the power supply's performance I would have thought. In fact, on the side was a sticker that said it was fused at 220V/4A, which was odd.

The unit is said to be user-switchable to 90-125V AC on the inside so it could be suitable for holiday use in the USA or similar.

Returning to the front of the unit, on the left are two small LEDs. The top one is green and indicates that the unit is operating. The bottom LED is red and acts as a warning that something isn't quite right, such as a short circuit.

The Power-Mite-NF reportedly has short circuit protection. It also has overload, over-voltage, and over-temperature protection. According to the supplied graphs, the unit can supply up to 25A continuously until the heatsink reaches 80°C. Power will then be reduced. Another graph suggests that the heat sink could take 8.5 minutes to reach 80°C with a load of 23.2A. To be honest, if you think you are likely to need in excess of 25A continuously I would recommend buying a PSU capable of, say, 45A.

A look inside

Taking the top off the unit, which involves removing eight cross-head screws, revealed a well-populated circuit board underneath a chunky aluminium heatsink with a 60mm diameter fan on top.

There is also a user-replaceable fuse on the board, but no mention of it in the instructions – worth bearing in mind if you own one of these PSUs.

In use

I connected the PSU up to my Yaesu FT-991A and noted that the fan was on as I powered it up. With a current draw of about 2A on receive I wasn't surprised. The fan volume isn't too obtrusive – about the same as a personal computer's fan.

After an hour of operation on receive the case temperature at its hottest point was measured as 29.8°C. So, warm to the touch, but nothing too serious.

I did some noise tests and I could detect noise on Top Band (1.8MHz), where I found an S9 noise signal. A quick turn of the front panel knob and it was gone. It was the same story on 80m (3.5MHz).

I could detect no noise at all on the higher bands, that is 40m (7MHz) through to 10m (28MHz), despite turning the noise offset knob through its entire range.

On VHF and UHF no noise could be detected from the Power-Mite either.

Turning to power tests, I found that when operating CW at 100W, the fan speed did not increase at all on a typical QSO and the case temperature remained at less than 30°C.

On SSB, a five-minute 100W QSO with Pia at school station DLOGGH near Frankfurt resulted in no further temperature increase at all.

Switching to FM and using the 10m band with the FT-991A set at 50W output, the rig was drawing about 11A and the case of the Watson Power-Mite-NF remained under 30°C after a two-minute over.

As the PSU had worked so well I thought it was time for some FT8 activity, so setting the power output of the radio to 50W I stayed on 10 metres and worked a few stations, with no change in the PSU's fan speed. At the end of the session, my infrared thermometer still read around 31°C. In fact, my FT-991A's fan was more likely to increase in speed than the Power-Mite's.

A DecibelMeter app for my iPhone, which was laid next to the PSU's fan, clocked the Power-Mite at 85dB, which was the same as my FT-991A's fan in normal use.

Conclusion

I used the Power-Mite-NF for four days and came away quite impressed. It is really a fit-and-forget addition to the shack and it just got on with its job. The Watson Power-Mite-NF costs £84.95 and is available from Waters and Stanton in Portsmouth, <https://hamradiostore.co.uk/>.

My thanks to Peter Waters, G3OJV for the loan of the unit for review.

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