

The Alinco DM-330MW Switch-Mode Power Supply

In the past few months I've discussed switch-mode power supplies on a number of occasions. Mostly, I've commented on the many domestic types that seem to cause so much interference with their switching harmonics on the Amateur Bands. With this in mind I thought it was time I looked at a switch-mode supply that has been designed for use in Amateur Radio workshop or shack.

The unit I eventually chose for reviewing was the Alinco DM-330MW 30A switch-mode unit. However, at this stage I must admit to readers that I have a great admiration for Alinco equipment as it usually provides excellent value for money equipment that's also well finished and durable. I'm pleased to say that after using the DM-330MW it's certainly up to the standard I expect from Alinco.

Neat & Substantial

The photographs, **Fig. 1** (the heading picture) and **Fig. 2** give a good impression of the neat and substantial Alinco DM-330MW. It's an attractive little



unit and is eminently practical looking with all the main controls at the front with a clearly displayed voltage and current supply indication via the built-in moving coil meter. One of the coaxial shaft type controls enables the user to vary (shift) the switching mode frequency away from any incoming communications signal. Quaintly, Alinco refer to it as the **Noise Offset Volume Control** and I'll be referring to this again later in the article.

When I opened the box after it had arrived overnight from **Nevada Radio** in Portsmouth in Hampshire, I was immediately impressed at the engineering involved with the power supply. There's a substantial ribbed heat sink formed from cast aluminium alloy in a wrap-around type of casing. Indeed, the whole unit looked, robust and attractive at the same time. Indeed, I'll go as far to say that it was beautifully finished.

Along with the main controls at the front, the power supply has a good number of quick-connect sockets (maximum 5A) at the front, along with the ubiquitous cigar lighter (maximum 10A) type of socket. The main – substantial – output terminals are at the rear, **Fig. 3**, along with the voltage pre-set adjustable control and the separate 'set' switch.

The rear mounted mains input socket has the necessary fast-blow type ceramic tube 4A fuse mounted above it. The separate grounding post is above the fuse socket.

The miniature cooling fan (it switches in automatically as soon as the temperature reaches 45°C) is mounted on the left of the rear of the unit. Although it's only a small unit – as I was to find out later – it's extremely efficient.

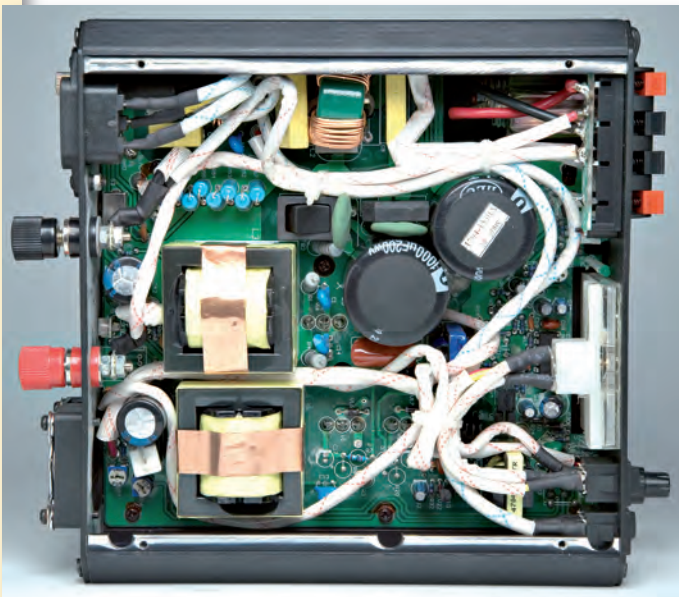


Fig. 2: The insides are well engineered from high quality components and materials.

Rob Mannion G3XFD takes a look at a switch-mode power supply that could prove very useful in your shack.

Instructions & Specifications

The folded leaflet that acts as the instruction manual is simple, easy-to-understand and provides much of the information that's required. The only information that's missing in the leaflet is a circuit and a description of how the unit works – switching frequency, etc., which personally, I would like to know. The more we know about our equipment the better we can use it!

The manufacturer's specifications are straightforward: The input voltage is 230V a.c. with the output voltage variable between 5 and 15V d.c with less than 15mV ripple peak-to-peak at the rated load. The output voltage regulation is stated to be "less than 2%", which I took to mean that it varies less than 2%, and in fact, the regulation (as measured by my test meter) as I operated on the air, seemed better than Alinco claim.

The DM-330MW is rated at 30A maximum and 25A continuous. The unit has built-in short circuit protection (very quick acting indeed – as I proved on accidental test!) and automatic current limiting at currents of over 30A.

On The Air

I decided to use the Alinco DM-330MW with my own Alinco DX-70TH transceiver for the on the air tests using c.w. and s.s.b. and spent a Saturday using both modes on 3.5, 7 and 14MHz. I also listened on 1.8MHz 'Top Band' for r.f. noise comparison purposes (more on this later).

In use the DM-330MW was superbly efficient. Even when I was operating at 100W on c.w. for long periods the heat sink only became slightly warm to touch. The fan proved to be extremely quiet and efficient it was very difficult to detect that it was on! In fact, I had to turn off the main rig (as its own fan was working quite hard) to detect the sound of the power supply fan working.

Having had some unpleasant results from domestic switch-mode power supplies, I took some time listening for harmonics from the switch-mode circuitry. I hadn't been able to detect many of the switching harmonics with the supply on and with the rig's antenna disconnected – but I knew that the 1.8 and 3.5MHz bands would be a real challenge!

However, listening on Top Band in the afternoon until mid-evening I was very pleased to discover that the received noise level using both the Alinco switch-mode power supply and my own 30A transformer bench supply was basically the same. I really could not tell the difference as I listened to my old friend **Ian Keyser G3ROO** chasing the Top Band DX at RST599+10 on c.w. from his QTH along the coast in Kent. In fact, listening on Top Band was no problem at all, even though there were some low level harmonics from the the DM-330MW as I tuned over the band.

Up on 3.5MHz I was again delighted that the difference in the general background noise between my

transformer power supply and the switch-mode unit was barely detectable. Tuning over the band I did, as expected, encounter some harmonics from the switching circuitry but none seemed troublesome. Listening into several QSOs I only encountered low level harmonics and I was able to tune these off the frequency by using the **Noise offset volume control**.

I had 20 or so c.w. QSOs during the day on 3.5MHz c.w. on various frequencies although I didn't have to use the offset control once. It was the same when I was using s.s.b. up on the top end of 80 metres – I again didn't have to use the off set control.

Comparing Power Supplies

However, when I plugged in a 12V 4A switch-mode power supply (from a miniature



Fig. 3: The back of the unit has the main output terminals as well as two lesser used controls.

l.c.d. type TV), to power the DX-70TH on receive only – the harmonics were so many and so strong that reception of all Amateur signals on all bands from 1.8 to 10MHz were overwhelmed, although broadcast stations on 30 and 41 metres were of reasonable quality but accompanied by various burbling noises!

The difference is what I expected between a correctly filtered switch-mode supply in a metal casing to provide screening and a plastic cased unit. It's very unfortunate that manufacturers of domestic type switch-mode power supplies seemingly aren't required to ensure that harmonics from their units don't cause problems between 1.8 and 30MHz, whereas no doubt they place more importance to attenuation on v.h.f. and u.h.f!

Altogether, I was very impressed by the Alinco DM-330MW and I wouldn't hesitate to recommend it to readers. But on this occasion – as he summed up his opinion on the unit so well – I'll let **Tex Swan G1TEX** (who came to collect the unit for photography) have the last word.

Tex said that the DM-330MW, "is quietly capable!" ●

Product

The Alinco DM-330MW 30A switch-mode power supply.

Company

Nevada Radio (UK Importers and Distributors).

Contact

Sales at 023-9231-3090

Pros

Well made and easy-to-operate. Quiet and efficient in operation and well equipped with output sockets.

Cons

None that the reviewer can think of!

Price

£99.95 including free delivery.

Supplier. My thanks for the loan of the review unit go to **Nevada Radio, Unit 1, Fitzherbert Spur, Farlington, Portsmouth, Hampshire PO6 1TT. Tel: 023-9231-3090, Fax: 023-9231-3091. E-mail sales@nevada.co.uk**