

Roger Cooke G3LDI takes a look at a practical commercially made linear amplifier – the first to be reviewed in *PW* for many years.

The BLA 350 Linear Amplifier

output power can be adjusted to 12W. It would be a nice addition for a portable station, making it capable of running a reasonable amount of power. It comes with mains lead and an adequate manual, presented in both Italian and English.

Real Advantage

One real advantage of the solid state linear is the instant use after switch-on. My valved-type linear takes three minutes to warm up before being ready for use. The old adage of “a watched pot never boils” does apply here if you need to use it to work a DX station!

The other advantage of course is the broad-band tuning, so there is no need to play with variable capacitors or C1 or 2 to worry about. Other built-in features include s.w.r. sensing, variable speed cooling fan together with a large heat-sink to protect the two m.o.s.f.e.t.s.

The outer case is black and the front panel is a pleasing shade of blue. The rear panel **Fig. 1**, has just r.f. input and antenna connectors, both PL-259, and push to talk (p.t.t.) and ALC phono sockets, together with an adjustable potentiometer near the ALC socket.

The front panel (**Figs. 2**) has a bandswitch and provision for either auto or manual band changing, on/off switch and a standby switch. This is essentially linear in or out, and two momentary-make switches. One selects a menu item and the other writes it into memory. There's also a light emitting diode (l.e.d.) read-out and a power meter.

There's one main printed circuit board (p.c.b.) housing the two m.o.s.f.e.t.s and a very large heat sink underneath. (See **Fig. 3**). The mains transformer is to the left and the 50V smoothing capacitors to the right of the two m.o.s.f.e.t.s. Mounted vertically on the rear panel is the processor board providing the menu selections, metering and antenna connections. The filters can be seen on the main board.

Menu Driven

Yes, the linear is menu driven! And setting up should be carried out before operating it on-air. Menu items are accessed with the amplifier switched on but in the stand-by position. This will be indicated on the l.e.d. panel display,

The BLA 350 linear amplifier seems to be very popular at the moment and all imports are quickly sold out, so I was very pleased to have one to review. Even this one has to be returned to **Nevada Radio** in Portsmouth (the UK importers) as quickly as possible – so I had to make maximum use of the time I had it with me here in Norfolk.

To a G3 first licenced in 1956, a linear amplifier conjures up a picture in my mind of a large box, a hefty mains transformer, one or more large brightly glowing valves and a standard type of Pi-network for the output tuning. Indeed, I still have a linear just like that, but those days seem to be history. Most modern linear amplifiers nowadays are solid state and bear no resemblance to



Fig. 1: The rear panel has just r.f. input and antenna connectors, both PL-259, and push to talk (p.t.t.) and ALC phono sockets, together with an adjustable potentiometer near the ALC socket.

the picture I've just described and the BLA 350 comes into the new 'modern' category.

Amplifier Description

The physical dimensions are 355mm wide, 155mm high and 270mm deep. It weighs approximately 13kg (28.7lb) and runs from the 230V a.c. mains. It requires a drive level no greater than 12W for its maximum output.

Care must be taken not to run more than 14W into this linear. I think it's best suited to somebody with a lower power transceiver, such as the Yaesu FT-817 or a higher power rig where the



Fig. 2: The front panel has a bandswitch and provision for either auto or manual band changing, on/off switch and a standby switch.



Fig. 3: There's one main printed circuit board (p.c.b.) housing the two m.o.s.f.e.t.s and a very large heat sink underneath.

along with the temperature of the heat sink and the filter selection.

The menu items cycle around with continual pressing of the 'OK' button. Pressing the 'SET' key will enter sub-menus. When a modification has been made to that menu, pressing the OK button will write it into memory. In practice, it's quite intuitive and after a few attempts I found it was quite easy to find my way round the menus.

One item that must be set is the automatic level control (ALC) voltage. This is described in the handbook, but basically is accomplished by adjusting the potentiometer on the rear panel. The setting is displayed on the I.e.d. panel and should be set to 12W. This will then automatically limit the power output of the transceiver.

Other menu items include:

- Temperature toggling between Celsius and Fahrenheit.
- Internal VOX enable or disable.
- Delay timer for s.s.b. with settings of 0-100-250-500-750 and 1000ms.
- Fan speed. This can be adjusted in 9 different levels, applicable only when the temperature reaches 55°C. There is also a five second burst at high speed to clear dust, etc., when invoked.
- Two levels of backlight display.
- Default settings

Operation Simple

Using the amplifier could not be simpler. **Making sure you have no more than 12W of drive** (14W maximum) and that all connections have been made properly. Set up the amplifier according to the instructions in the manual and then make sure that it's 'looking' into a 50Ω load with minimum s.w.r. It's good practice to do this at all times anyway. If you accidentally overdrive or do have

a high s.w.r., the protection circuits in the linear will let you know with either an audible tone warning or a warning display on the I.e.d. readout.

The operator should located the problem, rectify it and start again. Don't try to run with an apparent fault!

If the temperature of the heat sink reaches 80°C the amplifier will shut down and the fan will increase to full speed. It will then not operate again until the temperature drops below 60°C. There will be a warning on the I.e.d. readout that the temperature is over 80°C.

The amplifier doesn't 'like' an s.w.r. of more than 3:1 and a warning of that will appear if that's the case. So, do try to ensure that all your antennas have an s.w.r. better than 1.5:1.

On-Air Tests

For my on-air tests I conducted evaluations on several bands with local stations whose views I value and found that with 12W of drive I was getting around 330W output and producing

around 13-14 dB gain. This is consistent with the specifications and it ran quite happily at that level for some time with the temperature increasing to only 35°C.

The cooling fan stayed at the one level all the time and I found that to be very quiet indeed. In fact it was not much more than the level of the fan in my desk-top computer. The case – after being on-air – wasn't unduly hot either.

Looking for inter modulation distortion (IMD) products or 'whiskers' on the other sideband at that power level, they were found to be at least 30dB down – so they were quite acceptable. On c.w. it performed equally as well, with no clicks or thumps, etc. I also used it on the Ex-G net on 14MHz (20m) and 21MHz (15m) when it performed flawlessly.

Minor Criticism

There was only one minor criticism I had and that was on c.w. There's no QSK or even semi break-in provided on the linear amplifier. This is due to the switching times of the change-over relays. So, it's necessary to put the transceiver into transmit before sending c.w., enabling the linear's relay time to switch.

Other than that, it does exactly what it says on the box! I think it's an ideal linear for those with lower power transceivers if they wish to use more power at times. There are no tuning controls to adjust and in the Auto mode, selection of the filters for each band is automatic – so there's no need to use the band switch.

I would say it is good value for money and with a price tag of around £600 including the Government's Vodka And Tonic increase (VAT) plus the free p&p from Nevada, it represents around £2 per Watt, which isn't bad at all. My thanks to Nevada for the loan of the linear for review. 73 de Roger, G3LDI

Manufacturer's Specifications

- Frequency range: 1.5 - 30 MHz in six switchable ranges.
- Supply 110 or 230/240 V.
- Input power 1 - 12W.
- Output power: 250-300W.
- All modes (a.m., c.w., s.s.b., f.m. and RTTY).
- 300W Output using a pair of SD2941-10 m.o.s.f.e.t.s., producing efficient, low distortion and linear r.f. power, using a 50V drain voltage.
- Over 300W key-down. No tuning, no warm-up, s.w.r. protected.
- Quiet variable-speed cooling system.
- Front panel I.e.d.s and I.c.d. display.
- Manual or automatic band selection.
- Possibility to customise many options.
- Fan speed is regulated by temperature sensors, together with a large heat-sink assuring a minimum of noise for maximum cooling.