Marshall Funkey W6BMK
404 Alvord Street
Ridgecrest CA 93555

2 kW from Heath

The first amateur kilowatt transmitter I ever saw was 6 ft tall and weighed over a quarter of a ton. The SB-220 is 8 in. high and weighs less than 50 lb. The first kilowatt rig I ever built, around 1947, was 5 ft across and took four of us to lift onto the operating table. The SB-220 is only 15 in. wide and can be carried under one arm. We've gone a long way, guys, to get where we are today.

In the last few years, I've looked over all the popular linear amplifiers on the market and have wished many times that one was sitting on my desk. Until recently they were all out of reach; shoes and food for my five have first priority. I even made plans to build my own, but getting parts and finding time to build crossed that idea off my list. Then I saw the Heathkit linear and couldn't resist.

It took the truck lines over two weeks to get the SB-220 kit from Michigan to my location out here in the Mojave Desert in California. All this time they did their best to bust up the two cartons. They didn't get the job done, due to good Heath packing.

It sure was a happy day when my kit arrived. I canceled all plans for the weekend and spent the evening checking the parts list.

The electrical design follows what has almost become an amateur standard: broadband input, grounded grid, and pi-tuned output. You can get all the specifications and other good information from the Heathkit advertisements.

The mechanical design of this kit has been well planned. To get the power supply (which takes up one-third of the space) and the rf section in one little cabinet took a lot of careful planning. But they did it.

The assembly manual lives up to the Heathkit reputation of being the best in the business. One section in the manual that is very helpful consists of chassis photographs. I only wish a person could get real glossy prints so the details could be seen much clearer.

Safety is not left out. This high voltage could prove fatal. Not only do they provide a warning decal, but they designed an automatic discharge interlock that operates when the inside top panel is removed.

Bands: 80, 40, 20, 10m
Driving power: 100W
Duty cycle: Continuous
3rd order distortion: -30 dB
Output impedance: 50-75Ω unbal.
Power required: 120V at 20A or
240V at 10A, 50–60Hz
Cabinet size: 14 7/8 x 8 1/4 x 14 1/2 in.
Net weight: 47 lbs.
Heath Model Number: SB-220

Basic specifications

Construction was started on a folding card table and was all the space needed. Three muffin pans and a couple of cigar boxes, plus the packing boxes the kit came in held all the parts for easy accessibility. All the chassis photographs were removed from the manual and hung up for easy and quick reference. This helps in understanding the layout and detail drawings. No special tools are needed; I did use a pencil-type soldering iron with a small and large tip.

Carefully following the step-by-step assembly section of the manual, it took just under 20 hours to complete. Along with coffee and rest breaks, the weekend went by very fast. The "test and final assembly" section took another three hours. I ran into a few problems and made a list of things I would do differently next time. I had a chance to use this list when a doctor friend of mine asked me to put his together. It sure helped. I gave this list to a retired friend, and it saved him time and trouble the first time. (The list is available on receipt of SASE.)

Now came the problem that many of us have, and one of the reasons many amateurs feel a linear of this size is out of the question: ac power. The SB-220 will work on 120V, but requires a maximum of 20A. This is the most a 12-gage wired circuit can handle. What could be done is to operate the linear on one house circuit and bring an extension cord in from another house circuit to run the rest of the station. I live in a rented house, and this is what I did at first. I later ran a special extension cord to the clothes dryer outlet in the kitchen and picked up my 240V from there. We don't use a dryer here in the desert, so this made a good source of power. Keeping the cord out of the way required a few holes in the walls. Maybe an article on ac house wiring for amateurs would be a good thing to write about next.

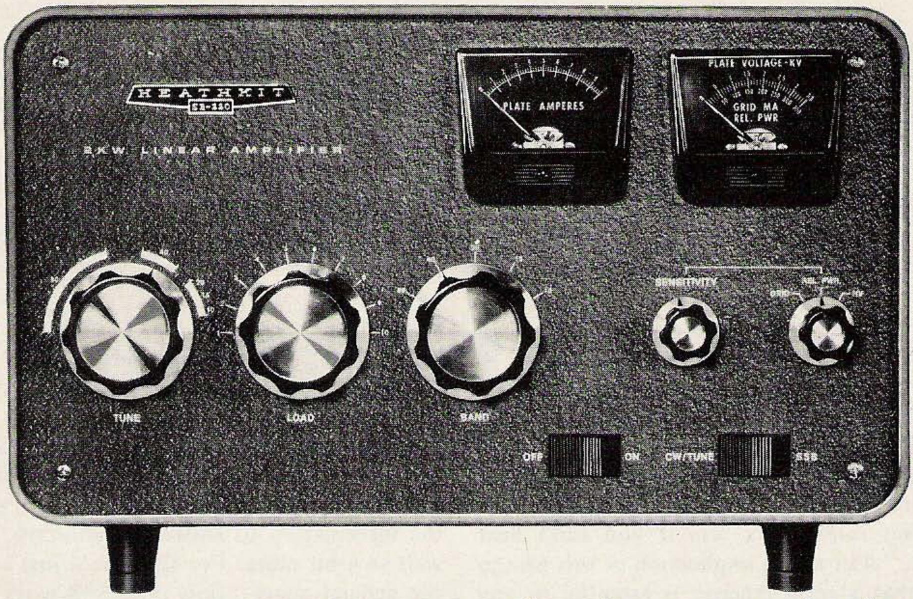
We moved to a new house since constructing the SB-220, and this time we had to wire in a new 240V line to the operating position. That cost over 40 bucks just in materials. The SB-220 runs best on 240V, and you fellows that have it in your shack or can have it wired in have no problem. If you wire it yourself, make sure the local electrical code is followed to the letter, for your own protection. My 80 and 40 meter inverted-V antennas worked fine on low power; but for this high power, I added insulators at the ends where the high voltage could cause trouble. This proved to be a good move, and it didn't change the loading a bit. The loading control knob on the SB-220 seems to be very broad, no matter which antenna is being used. Guess I'll have to get a Heath scope to make my tuning more precise. The only real trouble I've had in using the linear has been of my own making. I sometimes forget to change the bandswitch when I go from band to band. This hasn't hurt the linear, but it sure makes the output meter pointer swing wild.

I enjoy working barefoot, but there come times during net operations or running a phone patch that a linear makes operating pure pleasure. I don't go looking for DX, but when a distant station answers the first time, man that's living! I've had no trouble running it on reduced power for RTTY 15–20 minutes at a time – this beats their specs by 100%.

The only dislikes that I have are purely personal. To ship the SB-220, it must be packed in a special shipping box. The other is the size; in this area, it doesn't match the other SB pieces of equipment.

All in all, this unit is a wonderful buy, at 17½ cents a watt! Heath sells many of these kits. Buy yours now, before the price of materials make the kit price go up. I like my SB-220 – I'm sure you'll like yours.

. . .W6BMK■



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Kit SB-220, 55 lbs. **$349.95***

SB-220 SPECIFICATIONS — Band coverage: 80, 40, 20, 15 and 10 meter amateur bands. **Driving power required:** 100 watts. **Maximum power input:** SSB: 2000 watts P.E.P. CW: 1000 watts. RTTY: 1000 watts. **Duty cycle:** SSB: Continuous voice modulation. CW: Continuous (maximum key-down 10 minutes). RTTY: 50% (maximum transmit time 10 minutes). **Third order distortion:** —30 dB or better. **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm to 75 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity, Meter switch, Power CW/Tune — SSB, Plate meter, Multi-meter (Grid mA, Relative Power, and High Voltage). **Rear Panel:** Line cord, Circuit breakers (two 10 A). Antenna Relay (phono), ALC (phono), RF Input (SO-239). Ground post. RF output (SO-239). **Tubes:** Two Eimac 3-500Z. **Power required:** 120 VAC, 50/60 cycles, at 20 amperes maximum. 240 VAC, 50/60 cycles at 10 amperes. **Cabinet size:** 14⅞" W x 8¼" H x 14½" D. **Net weight:** 48 lbs.

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