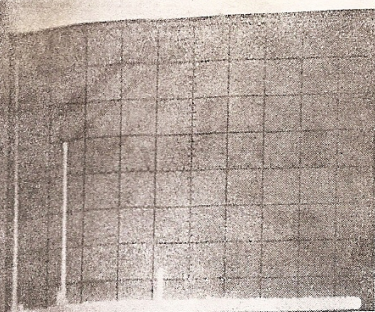


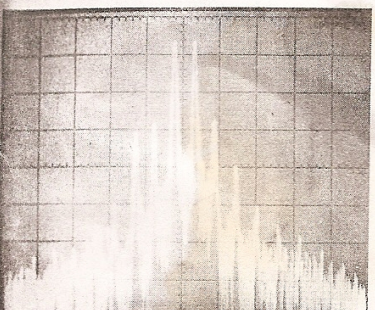
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Spectral display of the IC-211 transmitted signal at 15 watts output on 146.52 MHz. The vertical axis is calibrated in steps of 10 dB per division; horizontal scale is 100 MHz per division. The large pip at the far left edge of the display is generated internally by the analyzer. The fundamental shown here was attenuated approximately 30 dB by a two-cavity notch filter to prevent overload distortion in the analyzer. The most significant spurious output, at 439 MHz, is down approximately 66 dB with respect to the unnotched fundamental. Other spurious outputs are all down at least 75 dB. The IC-211 complies with the FCC regulations regarding spurious emissions.



The IC-211 output during a two-tone IMD test. The horizontal scale is 2 kHz per division; vertical scale is 10 dB per division. Third-order distortion products are down approximately 28 dB from the PEP output. Individual tone outputs are down 6 dB from the PEP output.

Investing this much money in a 2-meter rig you intend to do something more than just key up local repeaters. Operation on cw and ssb with the IC-211 is very much like what it would be on hf with a similar transceiver. The 100-Hz step tuning is not too difficult to get used to, and the receiver incremental tuning (RIT) can be used for fine adjustments of the receive frequency. (Incidentally, the RIT goes off automatically whenever the main tuning knob is turned.) For cw and ssb operation, a transceiver such as the IC-211 has a couple of disadvantages when compared with an hf transceiver and transverter. For one, there is no provision for a cw filter. For another, receiver noise figure (sensitivity) likely will not be as good as can be obtained with a high-quality converter. Finally, there is no provision for actuating an external amplifier; if you want to boost your power, you will have to use an additional switch or an rf-sensing circuit. On the other hand, for many operators these disadvantages are more than outweighed by the

desirability of having a complete station in one small, independent, attractive package. This reviewer caught his first-ever 2-meter Es opening because the IC-211 happened to be tuned to the new ssb calling frequency of 144.2 MHz on a Saturday morning. The main station was tuned up on hf at the time, since everybody knows nothing is happening on 2 meters at that hour. Four stations in Florida were worked as a result, including one who was using a barefoot IC-211 and an indoor antenna! — David Sumner, K1ZZ

ALDA 103 HF TRANSCEIVER AND PS-130 POWER SUPPLY

There is a trend today toward solid-state hf-band transceivers. In general, they're smaller, lighter and easier to operate than their tubed counterparts, the most obvious convenience being no-tuneup operation. The Alda 103 is a fully solid-state newcomer to this area.

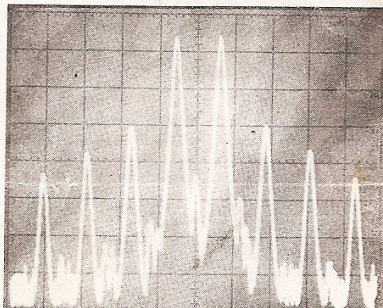
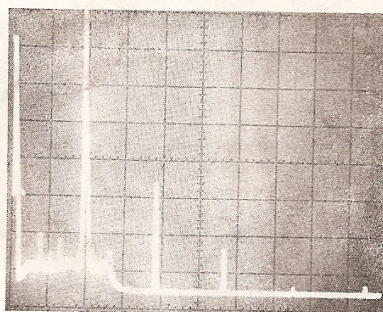
The '103 offers up to 250 watts input on cw or ssb with a power requirement of 13.8 V dc at 15 A. Cw operation is semi break-in. The power level is adjustable from the front panel; the operator can have any level he wishes, from QRP to full output.

The broadband final amplifier stage, cooled by a large heat sink, gives reasonable power output even with a mismatched load. Approximately 80 watts output has been measured at this writer's QTH with an SWR level of approximately 3:1. Also, the PA is completely protected against transistor failure due to excessive SWR. I encountered an open-circuit condition temporarily with full output applied: No damage occurred! It was discovered that the manufacturer regularly demonstrates this feature at conventions by operating the '103 on, and then off a dummy load! The unit has a sidetone that is adjustable for a comfortable level via the audio-gain control. Ssb operation is by means of push-to-talk only, as no VOX is available on this transceiver. Alc is built-in, so the microphone gain is not particularly critical except under conditions of high background noise. Band coverage on 80/75 meters goes up to 4050 kHz, making the '103 suitable for MARS use, and additional coverage is provided up to 7500 and 14,500 kHz.

Cw operation is afforded by tone modulation of the ssb transmitter, using audio from the sidetone oscillator — approximately a 1000-Hz note. The initial tests with the spectrum analyzer showed a pair of discrete spurs (related to this oscillator) about 35 dB down with respect to the carrier. The manufacturer was informed of this, and adjustment instructions were promptly sent to correct the difficulty. There have been no further problems, and the unit meets current FCC requirements for spectral purity of emissions.

The receiver section of the Alda 103 is impressive for such a small rig. RIT, often standard on more elaborate hf transceivers, is also incorporated in the Alda. It is effective for minimizing QRM in crowded bands. Frequency readout resolution is to 5 kHz on 80 meters, and to 10 kHz on 40 and 20. The dial drive is a two-speed device: The user tunes past the desired signal at a 6:1 ratio, then can back up at a much slower 30:1 ratio — more than adequate for careful tuning, even during mobile use.

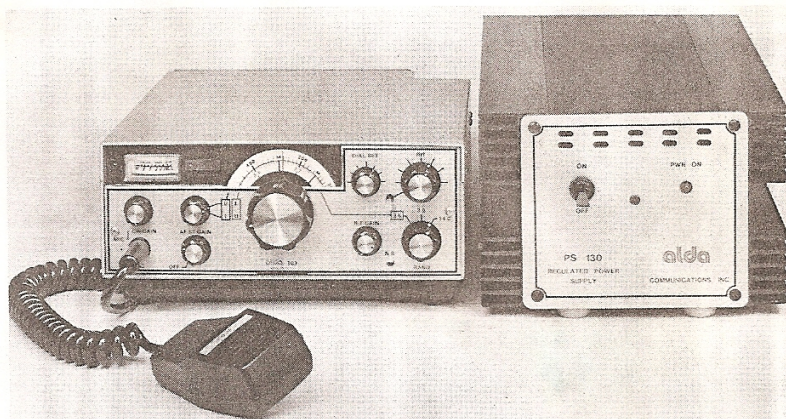
Two options worth noting were included in the review unit: a noise blanker and a two-position crystal calibrator. The blanker has



The Alda 103 transmitter output as displayed on a spectrum analyzer. The photos were both taken with the '103 operating at full rated input power. In the top picture, the operating frequency was 3.9 MHz. The vertical axis is calibrated in steps of 10 dB per division; the horizontal scale is 2 MHz per division. The large pip at the far left edge of the display is generated internally by the analyzer. The fundamental is shown here full scale, and the most significant spurious output, at 7.8 MHz, is down approximately 48 dB with respect to the fundamental. All other spurious outputs are down at least 60 dB. The Alda 103 complies with FCC regulations regarding spurious emissions. For the bottom photo, the Alda was operated at 7 MHz during a two-tone IMD test. The vertical scale is 10 dB per division; the horizontal scale is 1 kHz per division. Third-order distortion products are down approximately 30 dB from the PEP output. Individual tone outputs are down 6 dB from the PEP output.

Alda 103 Transceiver

Frequency range: 3.5- to 14.35-MHz amateur bands.
Modes: Cw, lsb and usb.
Maximum power input: 250 W PEP, ssb; 250 W, cw.
VFO stability: Less than 100 Hz/hour drift from cold start to approx. one hour later, at 25°F to 65°F (3°C to 18°C).
Sensitivity: Approx. 0.5 watt audio output for 0.5-μV input.
Selectivity at — 6 dB: 2.5 kHz, ssb or cw.
Audio output: Approx. 3 watts at 8 ohms.
Power requirement: 13.8 V dc at 15 A, nominal, negative ground.
Dimensions (HWD): 3.25 x 9 x 12.5 inches (83 x 229 x 317 mm). Weight, 8-1/4 pounds (3.66 kg).
Color: Two-tone gray with brushed aluminum front panel.
Price class: \$500, transceiver only. 30-A supply, \$150.
Available options: Noise blanker; 100/25 kHz crystal calibrator; 15-A unregulated power supply; 30-A regulated supply.
Manufacturer: Alda Communications, Inc., 215 Via El Centro, Oceanside, CA 92054.



The Alda 103 and its optional 30-A supply, the PS-130. The dial on the '103 is available in Braille for the blind ham.

been quite effective in reducing ignition-pulse interference, and this writer's car has a particularly noisy ignition system! I'm fairly sure that the pulse noise could have been eliminated if some basic ignition shielding had been employed. However, an effective noise blanker makes one lax about taking care of this type of problem at its source. The optional calibrator has ample output; it is heard easily amongst the outside signals. The 10-kHz setting is particularly convenient. The "dial set," used in conjunction with the calibrator, rather than the usual mechanical type, is a variable capacitor in the VFO circuit. Reducing the rf gain was particularly effective in helping to separate strong stations from weaker ones, indicating some tendency toward strong-signal overloading. This was especially noticeable when the '103 was used with the audio gain "up full" under noisy mobile operating conditions.

A six-pole crystal filter provides good selectivity, and the 3 watts of audio output are more than enough for home or car use. VFO stability is good, appearing to have less drift than the 100 Hz per hour claimed by the manufacturer — even from a cold (25°F/-4°C) start in a car. The S/rf meter, although not damped for smooth readings during ssb operation, nevertheless gives adequate relative signal-strength readings.

Operating Impressions

This writer has found the Alda 103 to be a versatile and easy rig to operate. Having been used to tube-type rigs, I found that this solid-state, broadband, "no-tune" unit to be convenient, indeed. Excellent audio reports have been received from all stations contacted on ssb, and cw QSOs have yielded reports of clean, crisp keying. Mobile operation, which requires little space with this rig, has been an enjoyable experience; the combination of noise blanker, slow tuning feature, and rf-gain control make signal reception fairly simple. The Alda has more than adequate power to drive modern linear amplifiers: The writer's SB-220 mated very well with the '103 during the evaluation test period. There is one area that might distress some who are used to 1-kHz readouts: The Alda has, as mentioned previously, 5-kHz readout at best. It seems to be adequate, though, and really is a convenience in mobile operation, especially the wide dial pointer, which is very readable. Impor-

tant! Alda has available at no charge a full Braille dial for the '103. Hats off to the manufacturer! This is just the sort of step we'd like to see other amateur-gear manufacturers take.

The power supply, model PS-130, is a husky piece of gear, indeed. It is rated at 12 volts at up to 30 A continuous duty. It has a 20 percent overload safety factor, so there's plenty of power to run the Alda 103, with room to spare! A smaller, unregulated 15-A supply is available as well. Zener-diode regulation is built into the transceiver, so a fully regulated power supply is not a necessity.

The Alda 103 transceiver is manufactured by Alda Communications, Inc., 215 Via El Centro, Oceanside, CA 92054. Price class for the '103 is \$500, and for the PS-130 is \$150. — *Sandy Gerli, AC1Y*

DAYTRONICS MIMIC PROGRAMMABLE MEMORY KEYS

If the prices of some commercial memory keyers have kept you from trying this nifty type of sending device, maybe you should consider a kit version. The MIMIC, by Daytronics, is a four-memory, programmable keyer that sells for about \$80 in kit form, and can be assembled easily in one evening by most hams who have building experience.

The low price is aided through the elimination of a few controls. The MIMIC contains no volume or pitch control for its built-in sidetone oscillator. Also deleted is a weighting control. A repeat feature can be added to the keyer, however, by connecting a switch and two wires to the terminals provided on the printed circuit board.

Construction

All components for the MIMIC — except for the voltage regulator, speed adjustment potentiometer, a couple of jacks, eight push buttons and two LEDs — are mounted on one double-sided, plated-through, G-10 epoxy pc board. Soldering the 18 ICs and various other parts on the board doesn't take much time, but the finished board must then be connected to the switches, jacks and other controls. This requires soldering both ends of about a dozen 24-gauge wires. It takes a while, but when all the leads are dressed neatly against the board, the insides of the MIMIC look uncluttered.

A step-by-step set of directions is provided

by Daytronics. Most builders' questions have been anticipated and answered in the literature. When the keyer kit was completed and the unit was turned on, it "played" the first time.

However, two problems were observed. First, the keyer sidetone seemed to "pull," decreasing just slightly in pitch as a string of dits was sent, and would then return to its normal pitch on the last bit after the paddle lever was released. A number of paddles were tried and the problem remained. A quick call to the manufacturer revealed that the problem was due to a poor ground path on the keyer board. A wire was added in the location indicated by Daytronics, and the problem disappeared. The manufacturer informed us that this "hint" would be included in the instructions provided with future MIMIC kits.

The second problem involves the MIMIC's tendency to make a leading dit (when first starting to send a character) longer in length than those following it. The difference in length is slight, and in fact was not noticed at first until pointed out by a good friend, W1JA. According to the manufacturer, this is because the MIMIC's triggered clock does not run continuously, thus running only when characters are being sent. This makes the first dit slightly longer. There seems no way to correct this except to replace a 7413 IC — Daytronics provides these free of charge when necessary. This problem doesn't seriously affect operation of the keyer, however, and is difficult to notice unless you are listening for it.

Operation

Operation of the MIMIC is similar to that of most other memory keyers in many respects although a number of differences do exist. The MIMIC is an iambic keyer providing either negative (for grid-block keyed rigs) or positive (for cathode-keyed or solid-state final rig keying). It has both dit and dah paddles, memories, self-completing character automatic letter and word spacing, and automatic weighing.

Four 512-bit memories can be programmed, played back, erased, and so on, all from the front panel. (Each can contain 256 dits or dahs.) Eight push-button switches control the functions associated with the memory operation except for REPEAT, which is turned on by an optional switch located on the rear panel if desired. The buttons on the front panel select the desired memory, access the memory for "writing" or storing information, and SEND or play back the contents in a particular memory.

To record a message, press the memo number you wish to use. After the "write" button is pressed, an LED lights telling you the memory is set for recording. The message is then keyed in with a paddle, just as if you were sending "live." The triggered clock helps here because it allows much more margin for operator error without causing a mistake to be recorded.

When the halfway mark is approached in each memory, the sidetone shifts lower in pitch to let you know you've used half of the memory space or 256 bits. Although this is a nice feature, it takes a little getting used to. The first few times the sidetone jumped pitch made errors and had to start over, especially I was going pretty fast to begin with. The dual pitch sidetone functions in the playback mode also, letting you know how much message is to be sent.

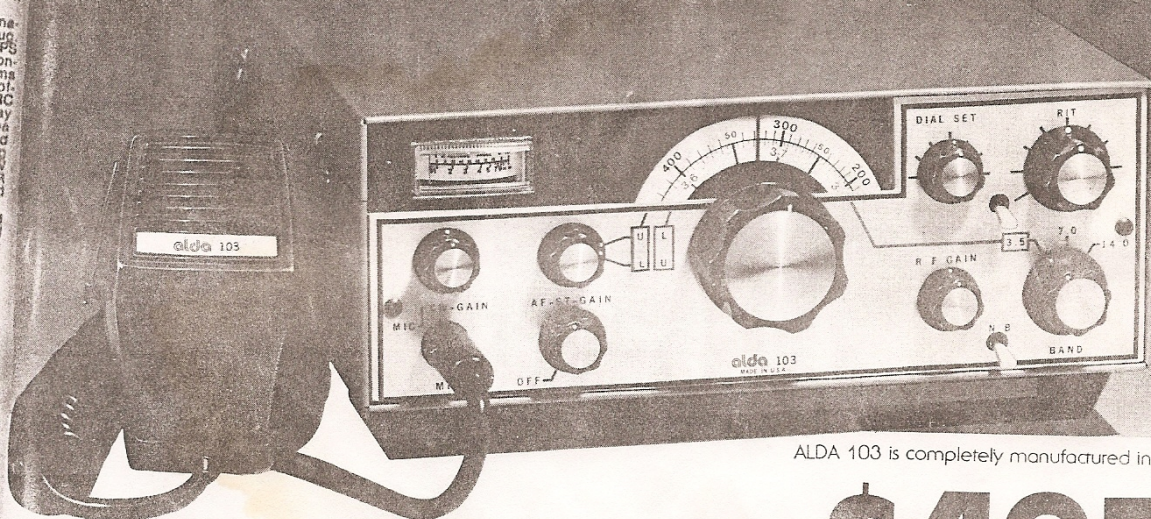
the super-compact alda 103

only 3 1/4" high x 9" wide x 12 1/2" deep • less than 8 1/4 pounds

ALDA 103, the trim little powerhouse with incredible performance for the price! ALDA 103 provides a full 250 watts PEP for SSB operation, and 250 watts DC input for CW. And it comes to performance, ALDA 103 is the hottest little ham radio ever going — all solid state, totally broadband and stable VFO.

ALDA 103 is the first transceiver for brand new novices! You'll want a capability CW/USB/LSB unit with all the power and performance you can use. ALDA 103 gives you 250 watts DC input for CW, the maximum allowable power for your novice license. When you upgrade to technician, you've got 2 bands

for CW operation. And with your general license, just plug in your mic and use the ALDA 103's full 250 watts PEP on SSB! Perfect second or mobile unit for seasoned hams! If you're looking for a super-sharp, compact unit to use in your car or boat, ALDA 103 will live up to your expectations. Absolute worst case sensitivity 0.5 μ V for 10 dB S+N/N — a must for mobile operation. Receiver audio output of 3 watts minimum — another must. Also, very low receiver power drain of only 5.5 watts — that's 0.4 amps at nominal 13.8 VDC including power for dial and meter lamps!



ALDA 103 is completely manufactured in the U.S.A.

\$495

GENERAL SPECIFICATIONS

Inductors:	39 diodes, 23 transistors, 11 integrated circuits
Power Requirements:	Nominal 13.8 VDC input at 15 amps, negative ground only
Power Consumption:	Receive — 5.5 watts (includes dial and meter lamps); Transmit — 260 watts
Dimensions:	3-1/4" high x 9" wide x 12-1/2" deep (82.55 mm x 228.6 mm x 317.5 mm)
Weight:	8-1/4 lbs. (3.66 kg)

PERFORMANCE SPECIFICATIONS

Frequency Range:	80 meter band — 3.5 to 4.0 MHz 40 meter band — 7.0 to 7.5 MHz 20 meter band — 14.0 to 14.5 MHz
Modes:	CW; USB; LSB
Input Power:	SSB — 250 watts PEP nominal CW — 250 watts DC maximum (adjustable)
Transmitter:	
Antenna Impedance:	50 ohm, unbalanced
Carrier Suppression:	Better than -45 dB
Side-Band Suppression:	Better than -55 dB at 1000 Hz

Distortion Products:	Better than -26 dB
AF Response:	500 to 2500 Hz
Spurious Radiation:	Harmonics better than -45 dB below 30 MHz; better than -60 dB above 30 MHz
Frequency Stability:	Less than 100 Hz drift per hour (from a cold start at room temperature)
Microphone:	High impedance 3000 ohm
Receiver:	
Sensitivity:	Better than 0.5 watts audio output for 0.5 μ V input
Signal-to-Noise Ratio:	Better than 10 dB S+N/N for 0.5 μ V input
Image Ratio:	Better than -60 dB (typical with respect to 0.5 μ V input: 80 meters — -130 dB; 40 meters — -100 dB; 20 meters — -75 dB)
IF Rejection:	Better than -70 dB (typical with respect to 0.5 μ V input: 80 meters — 110 dB; 40 meters — 80 dB; 20 meters — 75 dB)
Intermodulation Intercept Point:	Better than 10 dBm
Selectivity:	2.5 kHz — 6 dB; 5.0 kHz — 60 dB
Audio Output Power:	More than 3 watts
Audio Distortion:	Less than 5% at 3 watts

OPTIONS & ACCESSORIES

Noise Blanker — Model No. PC 701	\$39.95
100 kHz and 25 kHz Dual Crystal Calibrator — Model No. PC 801	\$19.95
Portable Power Supply — Model No. ALDA PS 115: average duty 15 amp unregulated; input — 115/230 VAC, 50/60 Hz; output — 13.8 V nominal at 15 amps	\$84.95
Heavy Duty Power Supply — Model No. ALDA PS 130: output — regulated 30 amp at 13.8 VDC; input — 115/230 VAC, 50/60 Hz	\$149.95

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EUROPE: Contact Datacom, Box 442, S-19404 Upplands Vasby, Sweden
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