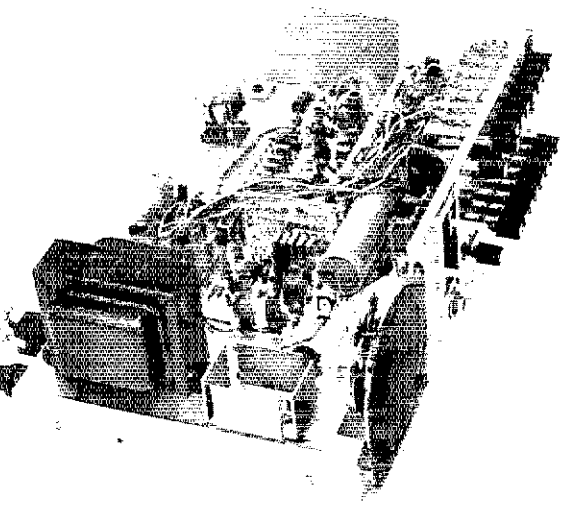


The HR2S out of its case. The two white shafts are vertical sliders operating the volume and squelch controls. In the foreground is the ac power supply; just behind it, the receiver section; and in the "northwest corner," the transmitter. The scanning circuits are beneath the scan selector switches in the upper right corner.

to talk to appears on channel 7, push button 7 in the TX row. The receiver locks on that channel, the red light stays on, and the transmitter will operate as soon as the push-to-talk microphone is activated.

What are some of the practical advantages of a scanning rig? If you're using the HR2MS (in your car) away from your home territory, you can let it scan, and stop where the activity is. You can listen a bit, and if the group sounds congenial, give them a shout; if the conversation makes it appear a stranger wouldn't be welcome, or if those in QSO are too long-winded, simply pop out that channel's button and the rig will go back to scanning the remainder of the channels.

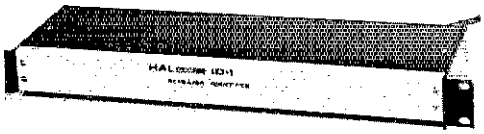
Concerning the home rig (HM2S), you can provide a great monitoring function for all the local channels while you tinker with your hf gear; just let the Regency sit there and scan. If a mobile comes up looking for assistance, the flashing light will stop at the proper channel; you can go over, push the corresponding TX button and answer.

In summing up, both of these rigs are quite "sanitary," to steal W1CER's term, with mar-resistant vinyl finish. – *W1UED*

Regency HR2MS and HR2S FM Transceivers

Transmitter power output: 16 watts.*
Transmitter deviation: Factory set at seven kHz.*
Transmitter crystal frequency: Operating frequency divided by 24.
Channel capability: six pairs of crystals may be installed, two of which may be jumpered for additional combinations.
Receiver sensitivity: 0.35 μV for 20 dB of quieting.*
Squelch sensitivity: Opens at 0.2 μV-input signal levels.
Receiver crystal frequency: Operating frequency minus 10.7 MHz divided by three.
Power requirements: HR2S, 117-V ac, 90 watts transmit; HR2MS, 13.6 V typically for 2.9 amperes at the rated power output.*
Dimensions (HWD) and Weight: HR2S, 3-3/4 × 13 × 8-1/2 inches, 9 pounds; HR2MS, 3-3/4 × 13 × 8-1/2 inches, 5.8 pounds.*
Price class: $350, each unit. Both models come with microphone and mounting bracket.
Manufacturer: Regency Electronics, Inc., 7900 Pendleton Pike, Indianapolis, IN 46226.
* Measured in the ARRL lab.

QST —— QST —— QST



The HAL ID-1A Repeater Identifier

NO ONE KNOWS better the difficulty of producing an operational repeater than those amateurs who have had the opportunity of building a machine from the "ground floor." For many installations, the most complex portion of the system is the control circuitry. The myriad of wires and relays astounds the uninitiated amateur and even confuses the builder once in a while. A portion of this control system is usually responsible for the correct delivery of station identification at the proper interval to meet federal regulations. Hal Communications Corp. has developed a product, called the ID-1A, which can be used to "decomplicate" the control section of a

repeater by providing the proper i-d at prescribed times. All the repeater committee need do is attach a few leads to the rear apron, make a simple adjustment or two, and the "identifier" portion of the repeater complex is operational.

Functional Operation

Identification will be initiated on closure of the repeater COR (carrier-operated relay) at any time the repeater has been idle (not transmitting) for the previous three-minute period. If the repeater is activated by someone transmitting a carrier momentarily (to assure the repeater is functioning correctly) i-d will occur at the beginning of the repeater transmission. If the operator then decides to attempt communication by making a transmission shortly after the test, i-d will take place 2 minutes, 50 seconds after the beginning of the test transmission. If, however, the operator decides not to follow up his initial test, (within 2 minutes 50.7 seconds) the ID-1A will revert to a timing point of zero and will i-d upon *any* activation of the repeater. Should the transmitter be off the air when it comes time for i-d, the ID-1A will key-up the transmitter, provide the proper i-d message, and then allow the repeater to unkey. This automatic keyup happens only when the repeater has been used within the previous three-minute period.

A PAGE-CONTROL input is provided to inhibit identification when the ID-1A control line is grounded. This feature holds the identification sequence until the repeater is released, thereby preventing an i-d "on top" of someone's transmission. The page control is intended for use with a commercial type of repeater, but can be put to good use with an amateur installation. The timing duration must be adjusted, however, to assure that no two transmissions can encompass a period of more than five minutes, which might allow the page control to hold the i-d beyond the five-minute maximum time allowed under FCC requirements.

The timing-cycle duration is determined by a counting circuit which operates from 10,240 pulses derived from the 60-Hz ac line powering the equipment. The timer keys the identifier every 2 minutes, 50.7 seconds.

When the ID-1A is operated from 12 volts dc, an internally mounted oscillator may be used to control the timing clock. Since the oscillator frequency is adjustable, it can be used to develop a timer rate other than listed above. It may also be used with 117-volt operation; the manufacturer should be contacted for hook-up information.

Operation from 12 Volts

The ID-1A may be operated from a dc supply, should this be a requirement at the transmitter site. A 15-ohm, five-watt resistor at the input (marked 1.5 ohms on the schematic diagram which came with the unit) provides equipment isolation from the dc supply. The power source should be capable of providing the rated voltage at a current of approximately 500 mA. During our lab tests on the ID-1A, we discovered the logic circuitry would not operate when connected to an external dc supply. The trouble was traced to an incorrectly installed diode within the ID-1A. Reversing the diode allowed the unit to function normally in all respects.

TABLE I —
CODING THE MEMORY FOR WA1LVI

Memory Location	*Letter*	*Space Matrix**	*Dash Matrix**	*Element*
1		1	0	space
2		0	0	dot
3	W	0	1	dash
4		0	1	dash
5		1	0	space
6		0	0	dot
7	A	0	1	dash
8		1	0	space
9		0	0	dot
10		0	1	dash
11		0	1	dash
12	1	0	1	dash
13		0	1	dash
14		1	0	space
15		0	0	dot
16		0	1	dash
17	L	0	0	dot
18		0	0	dot
19		1	0	space
20		0	0	dot
21		0	0	dot
22	V	0	0	dot
23		0	1	dash
24		1	0	space
25		0	0	dot
26	1	0	0	dot
27		1	0	space
28		0	1	dash
29		0	0	dot
30		0	0	dot
31	/	0	1	dash
32		0	0	dot
33		1	0	space
34		0	0	dot
35		0	1	dash
36		0	1	dash
37	1	0	1	dash
38		0	1	dash
39		1	1	end
40				

*A "1" indicates the presence of a diode, a "0" indicates the absence of a diode.

Controls and Adjustments

The few controls mounted on the rear apron of the ID-1A are adjusted at the time of installation and should not need to be readjusted unless the technical committee determines that they want to change the operational characteristics of the machine. Two test switches are provided; one allows the initiation of an i-d sequence each time it is depressed, and the other starts the 2-minute, 50.7-second timing sequence.

Internally mounted adjustments are provided for setting the voltage-regulator output, the

Inside view of the Hal Identifier. Most of the components are mounted on a single circuit board. The power supply is located at the right.

message keying speed, the oscillator timing frequency (as mentioned earlier), the tone pitch, and the level of the tone output. A built-in speaker is provided with the ID-1A to give aural indication of the i-d operation at the repeater site without the necessity of monitoring the repeater.

The Memory

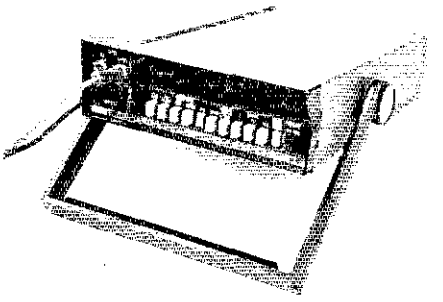
The memory is capable of storing forty elements consisting of dots, dashes and spaces. Two separate matrices are used, one for spaces and one for dashes. As the message is transmitted, each portion of the memory is read out sequentially, one element at a time. The output information is used to operate the keyer circuitry, which in turn "plays out" the message. The keyer automatically produces a short space, equal in length to a dot, after each code element is generated. The only time a space element need be programmed into the memory is when a space duration longer than this is desired.

Coding the memory is easy. Table I gives a sample call sign developed at Hq. as a test message. If a diode is placed at the location number one of the space-matrix printed-circuit board, a space will "appear" after the normal element space. When a diode is placed in the dash matrix, location number one, a dash will follow the normal element space. Without a diode at either location, a dot will be generated. A diode in each position signifies the message is completed. It's as simple as that! — *WIFBY*

Hal Communications
ID-1A Identifier

Dimensions (HWD) and Weight:
1-3/4 × 19 × 5 inches, 3-1/2 pounds.
Power requirements: 117 V ac or 12 V dc.
Colors: Two-tone gray.
Price class: Wired circuit board, $75. Completely assembled in 1-3/4-inch rack, $115.
Manufacturer: Hal Communications Corp., Box 365 A, Urbana, IL 61801.

QST —— QST —— QST



The Fluke Model 8000A
3½-Digit Multimeter

IT IS BECOMING increasingly apparent that "digital" is in. One does not have to read very far in current electronic literature to find that almost anything from A to Z can be supplied in a digital readout of one style or another (except oscilloscopes, and someone is probably working on that).

Digital multimeters are not exceptional to this change to a readout technique that provides clear, easy-to-interpret numbers, visible at a distance far greater than that at which the pointer of most VOMs can be seen. There is nothing startingly new about having digital multimeters (DMM) available. Many of the better laboratories and test facilities have had them for years. However, the more recent versions are lighter in weight, faster in resolution time, and more reasonable in cost.

The Fluke 8000A is certainly a modern DMM. It is light, portable, easy to use and read, and embodies all of the functions that a multimeter should have for the laboratory, workshop, or service shop. The plastic case of the 8000A is handsome as well as tough. According to the manufacturer, the case (and the instrument) will withstand the 8-foot drop test. This writer just could not get up enough nerve to make that test in the ARRL laboratory, but then that is not the primary purpose of DMMs.

LED readouts provide a clear display while requiring only small amounts of power, com-