

The HAL DS3100 ASR Video Display Terminal

The HAL DS3100 ASR is a tri-mode terminal capable of sending and receiving Morse, Baudot RTTY (with an optional demodulator) and ASCII. It's the latest addition to HAL's lineup and is their "big gun." Unlike a big gun, however, this terminal is q-u-i-e-t. Hardly a sound comes from the neat-looking brown and tan unit as it quickly goes through its paces; just the soft rattle of the keyboard and the sound of the built-in monitor (active during Morse and for certain line indications), which may be hushed to a low-level mewling. During RTTY operation, there are no whirring motors, slamming carriages, clunking line feeds or the whack of type faces on ribbon and paper. Instead, a restful and easy-to-read green phosphor display silently greets the eye, telling you not only what you're receiving but what you're transmitting, as well as a multitude of terminal status reports including the date and time.

The DS3100 arrived for a review complete with the ST-6000¹ RTTY demodulator and a set of cables prepared for connection to my transceiver. (The customized cabling is an extra-cost option.) A loose-leaf binder contains the instruction manual, and a handy pocket reference highlights the important phases of system operation. Thus, one need not consult the instruction manual for its detailed information when one simply desires to know a key function, for instance. The system interfaces with the outside world by means of RS232C levels as well as the standard high-voltage RTTY current loops. Transistor switches are also provided to key either negative or positive circuits simultaneously.

The 12-inch diagonal measure screen of the monitor (which mounts atop the keyboard assembly) displays a total of 24 lines of 72 characters each in a split-screen format. Generally, the upper 12 lines show received characters and the lower 12 are assigned to text that is to be transmitted. The received text is presented with a brighter intensity than the keyboard-generated text. The display may be altered to devote the entire 24 lines to received text or view operator-selected portions of either the receive or transmit buffers. All data passes through the buffers. Received data is stored in a 150-line buffer, and transmit text in a 50-line buffer. The screen is merely a "window" used to view either storage area. Each displayed line of text is numbered at the left-hand margin of the screen. The right-hand side of the screen keeps the operator informed of the terminal status by means of 13 status indicators. Two transmit buffer cursors show the transmit-output location and the keyboard-entry location. A third cursor indicates where the next received character will be placed.

At the keyboard, you may choose: Morse at speeds from 1 wpm to 175 wpm; Baudot RTTY at 45 to 100 baud; ASCII at 110 to 9600 baud, all both send and receive. With the KOS



The HAL DS3100 ASR Video Display Terminal. This completely buffered terminal offers a multitude of features for completely automated transmission and reception of Morse, Baudot and ASCII RTTY.

(Keyboard Operated Switch) and the KY (KeY switch) features, receive/transmit and auxiliary-function switching is done automatically; no need for external PTT or foot switches.

If you're not a good typist, the '3100 will make you appear to be a "pro." You need never make an error again — that is, at least so that anyone would notice! Hit the wrong key? Simply go back and correct the error before it is transmitted. You can prepare a complete transmission while receiving then simply sit back and watch it "roll off your fingertips." If typing in real-time, SYNCHRONOUS IDLE will make it appear as though you're thinking of something profound to say while all the while you're looking for the right key! SYNC IDLE works not only in ASCII and Baudot modes, but Morse as well appearing as $\overline{BT}$ (- · · · -).

QBF (Quick Brown Fox/1 - 0) and RY test messages are available at the touch of a key.

Selectable USOS (UnShift On Space), automatic generation of CR (Carriage Return) and LF (Line Feed) and the non-overprint features help eliminate garbled messages. WORD WRAP-AROUND is a non-overprint feature which transfers all characters following the last space to the following line to prevent splitting of a word.

There is a total of 10 different 32-character messages which may be programmed and used as desired by the operator. Two of these messages may be saved even during power-off periods since they are part of the systems EAROM (Electrically Alterable Read Only Memory). Another EAROM function is a WRU (Who aRe yoU) message which may contain up to 10 characters. SEL CAL (SElective CALling) and IDENT (IDENTification) are available too. The IDENT feature will allow Morse only transmission of one of the EAROM messages regardless of the existing terminal mode. The IDENT status indicator in-

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forms the operator that a 10-minute transmission period has elapsed but it does not insert the Morse identification by itself.

The '3100 operator may transmit chosen portions of received text. The information is selectively switched from the receive buffer to the transmit buffer to prepare it for transmission. Editing, too, is easy. Not only may one correct "typos" as they happen, but the operator may return to any line, word or letter (prior to its transmission), and alter it to suit his taste. Half-duplex (normal) or full-duplex operation is possible with the system. Full-duplex operation allows *simultaneous* active receive and transmit functions to be operative. CONTinuous, LINE and WORD transmit modes refer to the manner in which transmitted text is handled. In the CONTinuous mode, characters are transmitted as they are released from the buffer without stopping until the end of the text is reached. LINE mode transmits one line at a time; information within a line not being transmitted until after a new line has been typed. WORD mode outputs one word at a time. A word will not be transmitted until the system recognizes the first character of a new word following a space between words.

There is an internal real-time, 24-hour clock within the '3100. This clock may be programmed with the time, zone and date, and the information may be transmitted at the touch of a button. The clock has to be reprogrammed each time the power is removed from the system.

Operating the '3100 proved to be the most fun I've experienced in a while. ASCII operation was not attempted since it hadn't been approved at the time of review, but Morse and Baudot RTTY proved delightful. I first tried the unit on cw. Having used a keyboard cw generator before, I felt somewhat secure. No matter which mode of operation is chosen, the secret to being an errorless emitter of information and rf is to set the speed of the HAL to somewhat less than your typing speed and prepare some transmit text during the receive period. (Now my secret's out!) The only transmitting "hang-up" I had was my inability to use the space bar effectively. I had never "sent spaces" on a key before! The cure for that turned out to be spending a couple of weeks at the keyboard running RTTY. When I went back to cw, the space-bar malady had disappeared.

Receiving cw with the '3100 was interesting. I never could quite break myself of the habit of copying along by ear; I also wouldn't recommend it be done. While the '3100 does a pretty good job of copying cw, it cannot equal the human brain when it comes to copying a really tough "swing" or copying under conditions of heavy QRM and/or QSB. Occasionally, the unit would get "stuck" (usually because of a station tuning up close to the frequency) but a depression of the CLR (CLear) key would get it going again. It's also surprising to watch the screen and see the print-out displayed one letter behind the received information. The system does lag to ensure that the transmitting operator is maintaining the same sending speed, and it will attempt to compensate for timing errors. If the received signal speed changes, the system copying speed changes automatically. It isn't necessary to set a received-speed control for cw; the unit clocks the incoming signal and figures this out all by itself.

Although I'd had some limited exposure to transmitting RTTY many years ago, I'd done

nothing but copy RTTY in the recent past. I did quite a bit of practicing with the '3100 (while using a dummy load) to get the "feel" of the operation. My first QSO was a success, and from then on I was "hooked." Cw, my favorite mode of operation, fell by the wayside, and the '3100 (coupled with the ST-6000) kept me occupied for the next few weekends on RTTY. My "better half" was all in favor of such noiseless operation as was I. However, I did miss having an occasional "hard copy" for certain situations, such as RTTY picture reception. A mechanical printer can easily be accommodated by the '3100 for use in such circumstances.

Video-terminal RTTY and cw are quite commonplace today: ASCII is sure to follow soon. With the HAL DS3100 ASR, you'll have it all at your fingertips — silently. The HAL DS3100 ASR is available from HAL Communications Corp., Box 365, Urbana, IL 61801. Price class: \$2000. — *Paul K. Pagel, N1FB*
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