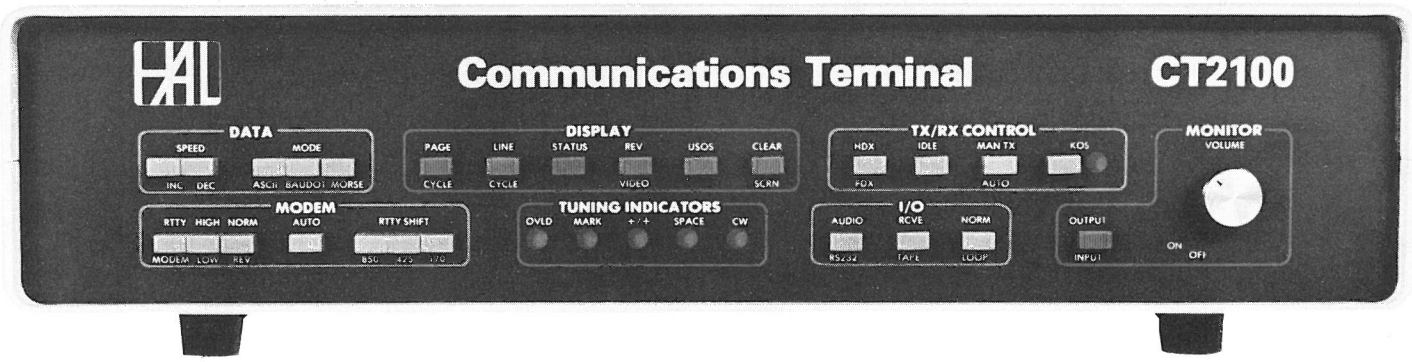
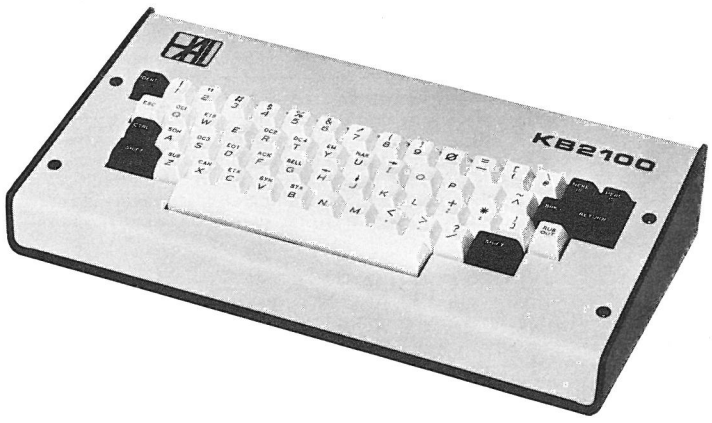
HAL COMMUNICATIONS CORP.
BOX 365
URBANA, IL 61801
217-367-7373

CT2100



COMMUNICATIONS TERMINAL

The CT 2100 is an electronic communications terminal designed for reception of Baudot and ASCII Radio Teleprinter (RTTY) signals as well as Morse code signals. With its companion keyboard, the KB2100, and a video monitor, the CT2100 becomes a complete transmit and receive data terminal. A total of *five* data demodulator combinations are available in the CT2100 including a CW demodulator, both high and low tone RTTY demodulators, and two standard modem tone sets for ASCII and computer use. All demodulator sections use the high-performance circuitry for which HAL demodulators are well known. The display of the CT2100 is organized in 24-line pages that can be either 48 - 72-character lines or 96 - 36-character lines for extra large characters. The display features "Smooth Scroll" of the lines rather than a vertical jump when lines of text are moved on the screen. This is a new HAL development, being introduced in the CT2100. The video display is normally white characters on a dark screen background, but may be reversed with a front panel switch to present black characters on a screen background. The CT2100 has been specifically designed so that it may be used either as a receive-only device or as a no-compromise KSR terminal with the KB2100 keyboard. All CT2100 controls are push buttons on the front panel. There are no confusing keyboard multi-key combinations to remember. The KB2100 keyboard is small and light and attaches to the CT2100 with a flexible coil cord, making it ideal for comfortable, lap-held use. Since the CT2100 is separate, it may be placed on a shelf or rack mounted, and only the keyboard need take up limited operating table surface. With the addition of the KB2100 keyboard, split screen transmit-receive operation is available so that transmit text may be composed while receiving. The CT2100 transmits in word mode if half duplex is selected or continuous mode if full duplex is selected. Split-screen operation may be defeated so that all lines are devoted to receiving. A status line may be front-panel selected to show current terminal operating conditions on the top line of the display. The CT2100 will also interface to a wide variety of external equipment through transmit and receive audio connections, tape recorder audio connections, and loop or RS232 data connections. Tuning is facilitated through 6 LEDs on the front panel and a video tuning indicator on the status line. The CT2100 rear panel is set up for fast and simple installation. All connectors except the KB2100 connection are standard phono connectors and are clearly labeled as to function. From its attractive appearance to its extreme versatility, the CT2100 is clearly the new wave in communications terminals.



CT2100

SPECIFICATIONS

Input/Output:

Audio: 0.5v. p-p, 600 ohm audio
Morse: 800 Hz ± 300 Hz
RTTY: 1000-3000 Hz, depends on tones chosen.
Tape: Input and output audio.
Monitor: Monitor output jack paralleling internal monitor speaker. May be used for headphones.

RS232: Full RS232C data levels for RTTY.

Loop: 18-120ma/200v maximum current loop.
External loop supply required to use external loop devices.
External loop transmit devices will key transmit tones and activate KOS.

Morse: Separate transistor switches to key both positive and negative voltage transmitter circuits.

Data Codes and Rates:

RTTY: Baudot (5 unit code) or ASCII (8 unit code): 45, 50, 57, 74, 110, 150, 300, 600, or 1200 baud.

Morse: 5 to 100 wpm, with weight control.

Modem:

Morse: Phase-lock loop; 800 Hz nominal center frequency; may be adjusted over 400 - 1200 Hz range; tracks a drifting signal ± 250 Hz of center frequency.

RTTY:

US Standard	Mark =	2125 Hz
"High Tones":	Space =	2295 Hz (170 Shift)
	=	2550 Hz (425 Shift)
	=	2975 Hz (850 Shift)
	CW ID =	2025 Hz (all shifts)
IARU Standard	Mark =	1275 Hz
"Low Tones":	Space =	1445 Hz (170 Shift)
	=	1700 Hz (425 Shift)
	=	2125 Hz (850 Shift)
	CW ID =	1175 Hz (all shifts)
"103 Modem"	Mark =	1270 Hz
Standard	Space =	1070 Hz
"202 Modem"	Mark =	1200 Hz
Standard	Space	2200 Hz

Transmit audio tone frequencies are automatically set with demodulator switches to correspond to receive tones to assure true transceive frequency matching.

Display:

Video: Standard RS170, 1.0 v. p-p, 72 ohm video output, 6 or 3 MHz BW

Screen: 24 Lines of 72 or 36 characters per line

Page Memory: 48 lines of 72 characters or 96 lines of 36 characters.

Polarity: Normal = white characters on dark screen background
Reverse = dark characters on white screen background

Split Screen: WITH KB2100 ONLY - bottom 12 lines of page 2 may be chosen for display of transmit pretype text. Text may be typed, displayed, and edited while receiving. In split screen mode, transmit text is in reverse video when normal video is selected for receive text and vice versa.

Status: Top line of display may be used to indicate CT2100 and KB2100 status; tuning indicator bar, code, rate (speed), USOS, and TX buffer condition are included in status line.

Scroll: HAL "Smooth Scroll" of line feeds; inactive when split screen is selected.

TX/RX Control: Select transmission in full or half duplex (FDX/HDX) modes, synchronous idle (SYNC), and manual or auto control of transmit/receive status of transceiver, keyboard operated switch (KOS).

Monitor: Internal audio monitoring system allows monitoring of either input or output audio signals on the internal monitor speaker (or rear panel headphone jack) with front panel volume control. Input audio switch position allows listening direct to receiver or tape signal. Output audio switch position allows listening to 800 Hz sidetone in Morse or to RTTY tones to be transmitted in Baudot or ASCII.

Indicators:

LEDs: Six LED indicators show Mark, Space, and center RTTY tuning; Morse center tuning, and KOS on-off status.

Screen: Top line of screen may be used for status indicator to show tuning bar for RTTY, code, rate (speed), USOS, and TX buffer condition.

Scope: Rear panel connections to vertical and horizontal amplifiers of X-Y RTTY oscilloscope for conventional crossed-loop indication (Oscilloscope NOT included with CT2100).

Keyboard: 58 keys plus space bar, ASCII keyboard arrangement. Special CW ID (IDENT), two HERE IS, RUB OUT, and BREAK keys included. The HERE IS messages are user programmable and 32 characters long. BREAK key sends key-down in Morse and Space condition in RTTY modes. RUB OUT allows error corrections. Highest quality commercial grade keyswitches are used for comfortable and reliable operation.

Message Storage (WITH KB2100 ONLY):
Two user-programmable HERE IS messages, each 32 characters long, automatically loaded on start-up with MSG2100 option.
2040 character, non-volatile EPROM storage may be divided in up to 7 255 character and on 191 character user-specified messages. EPROMs are factory or dealer programmed and are socketed so that several different EPROMs may be interchanged by the user.

Printer Output: All received data may be printed on an external printer (available as an option). The printer output is serial ASCII, RS232C standard, at a data rate of 110 to 1200 baud (normally set for 300 baud). Printer operates regardless of received data code (Morse, Baudot, or ASCII).

Front Panel Controls:

Data: Speed Increase, Speed Decrease, Mode selection (ASCII, Baudot, or Morse)

Display: Page cycle (to change pages), Line length cycle, Status line control, Normal or Reverse video, Unshift on Space, Clear Screen.

TX/RX Control: Full or Half Duplex, Synchronous Idle, Auto or Manual Transmit, KOS control.

Modem: RTTY or Modem tone select, High or Low tone select, Autostart control, RTTY shift select (170, 425, or 850 Hz).

I/O: RS232 or Audio Source select, Receiver or Tape Audio Source select, Normal or Loop control of transmit tones.

Monitor: Output or Input audio tone monitoring selection, Volume of monitoring tone, Power on-off switch.

Rear Panel Connectors:
Audio Input from Receiver, Audio Input from Tape, Audio Output to Transmitter, Audio Output to Tape, Monitor Audio Output, Mark and Space Scope Outputs, RS232 Input, RS232 Output, Loop Keyer Output, KOS Output, Negative and Positive CW Key Outputs, Printer Output, Video Output, KB2100 Keyboard connector, AC Power cord connector.

Mechanical Specifications:

CT2100 Cabinet: 16.75" x 3.625" x 10.375"
(17.00" wide with rack mounts)
42.55cm x 9.21cm x 26.35cm
(43.18cm wide with rack mounts)
16.0 lbs net; 19.0 lbs shipping
7.3 kg net; 8.6 kg shipping
Color: Light gray top and bottom with black front panel; red and blue push-buttons and front panel trim.

KB2100 Cabinet: 14.00" x 2.375" x 7.00"
35.56cm x 6.03cm x 17.78cm
4.5 lbs net; 7.0 lbs shipping
2.0 kg net; 3.2 kg shipping
Colors: Light gray top, dark gray bottom with black and white keytops.

Power Requirements: 110-130vac 50/60HZ; 220-260vac 50/60Hz; 30 watts

OPTIONS

CT2100 —Standard receive-only communications terminal.
KB2100 —Accessory keyboard to allow typing of transmitted text.
ESM914 —Recommended 9" Electrohome Monitor—available 120 or 220 VAC. Dimensions: 8.5" W x 10.25" D x 9" H, 14 lbs. net, 20 lbs. shipping.
MSG2100—Accessory non-volatile storage ROM for up to 2000 characters.
RM2100 —Rack mounting kit for CT2100. 1.5 lbs. net, 3 lbs. shipping.