



HAL COMMUNICATIONS CORP.

ST-6 DEMOMULATOR



GENERAL

The ST-6 RTTY Demodulator provides outstanding performance for reception of FSK radioteletype signals. Features such as autostart operation, antispace circuitry, 850 and 170 Hz shifts, and a self-contained loop supply make the ST-6 the value it is. Bandpass input filters and linear discriminators for each shift allow the reception of signals having incorrect or non-standard shifts as well as those having correct shifts. The addition of an optional 425 Hz discriminator, and either of the two AFSK tone keyers makes a complete terminal unit for reception and transmission of FSK RTTY. The ST-6 is compatible with the HAL TTY video display equipment and keyboards as well as conventional mechanical equipment.

SPECIFICATIONS

Electrical

Input Data Rate: Up to 75 Baud (100 WPM) standard.
Input Signal: Audio Tones in the range of 2000-3000 Hz.
Input Impedance: 600 ohms, unbalanced.
Output Signals—Loop or Low Level.
Loop: TTY current loop, 60 ma at 175 VDC.
Low Level: Bipolar voltage compatible with RS-232B.
-15 VDC Mark (1K ohm load)
+15 VDC Space (1K ohm load)
Bandpass Filter Bandwidth (-3 db points)
Shift: 850 Hz 170 Hz
Bandwidth: 1100 Hz 260 Hz

Limiter Threshold: "FM" Mode, 1.0 mv RMS (-57 dbm)
"AM" Mode, 50 mv RMS (-24 dbm)
Maximum Input: 3.5 v RMS (+13 dbm)
Discriminator Frequencies (± 5 Hz)
Shift: 850 Hz 170 Hz 425 Hz (optional)
Mark: 2125 Hz 2125 Hz 2125 Hz
Space: 2975 Hz 2295 Hz 2550 Hz
Automatic Threshold Control: Permits copy on mark-only or space-only
Autostart Response Time: "Slow" - 3.5 sec.
"Fast" - 1.5 sec.

Motor Control Dropout Time: 30 sec. \pm 10 sec. AC connector on rear panel for motor connection.
Tuning Indicator: Front panel meter. Filter output available on rear panel for use with scope tuning aid.
CW ID Key Input: Provides key input for narrow shift CW ID in FSK systems, or control of CW ID portion of optional tone keyers.

Physical

Cabinet Finish: Light gray front and rear panels;
Textured dark gray top, bottom, and sides.
Cabinet Style: Table or Rack Mount.
Size: Table: 3.50 H x 12 D x 17 W (inches)
8,9 H x 30,5 D x 43,2 W (cm)
Rack: 3.50 H x 12 D x 19 W (inches)
8,9 H x 30,5 D x 48,3 W (cm)
Weight: 12.0 lbs. (5.45 kg) net, 15 lbs. (6.82 kg) shipping.
Power: 105-125 VAC (210-250 VAC optional), 50-60 Hz,
100 ma. maximum.
Construction: Seven plug-in glass epoxy printed circuit boards.

OPTIONAL EQUIPMENT

ST-6 425 Hz Discriminator

The 425 Hz Discriminator provides optimum performance for reception of commercial stations using 425 or 400 Hz shift and improved performance down to 200 Hz shift. It is used with the 850 Hz input bandpass filter, and is automatically switched by the ST-6 front panel shift switch. The discriminator is constructed on a plug-in glass epoxy printed circuit board.

AK-1 AFSK Oscillator (Tone Keyer)

The AK-1 keyer provides mark, space, and CW ID audio tones compatible with the ST-6 for the AFSK method of transmission with SSB transmitters. Constructed on a glass epoxy printed circuit board, the AK-1 plugs into a connector provided in the ST-6 chassis and is automatically keyed by the low level data output of the ST-6. Refer to ST-5 data sheet.

XTK-100 Crystal AFSK Oscillator (Tone Keyer)

The XTK-100 generates the tones required for the AFSK method of RTTY, and provides the superior stability of crystal controlled tones for those applications where needed. The XTK-100 is designed to be a plug-in accessory for the ST-6 terminal unit, and it can be used in place of the AK-1 AFSK oscillator in existing ST-6 terminal units, or in new assembled units or kits.

The XTK-100 may also be used on a stand alone basis with the addition of a power supply, the appropriate input interface, if needed, and a cabinet, for any application where it is desired to convert serial digital data to audio FSK data.

XTK-100 Specifications

Input Data Form: Serial Data

Input Data Level

RS232-C: -3 to -15 VDC Mark
+3 to +15 VDC Space

Compatible with ST-6 FSK line.

Dry Contacts: Closed Mark
Open Space

Optional: Current Sensing 18-80 ma Mark
0- 1 ma Space

Requires HAL FL-1 Floating Loop Interface.

Output Data Signal—Phase Coherent Audio Tones

Output Impedance: 600 ohm nominal unbalanced

Output Level (high): 0 dbm \pm 2 db (775 mv nominal)

Output Level (low): -32 dbm \pm 4 db (20 mv nominal)

Variation between tones: less than \pm .5 db at 0 dbm

Harmonic Distortion: All harmonics below the 9th harmonic of the fundamental frequency are 40 db below the fundamental.

Frequency Shift: Determined by crystals anywhere in the range 1000 Hz to 3300 Hz.

High tone frequencies (Standard)

Shift	170 Hz	850 Hz	CW ID
Mark	2125 Hz	2125 Hz	2125 Hz
Space	2295 Hz	2975 Hz	2225 Hz

Low tone frequencies (Option)

Shift	170 Hz	850 Hz	CW ID
Mark	1275 Hz	1275 Hz	1275 Hz
Space	1445 Hz	2125 Hz	1375 Hz

Optionally, other tone pairs between 1200-3000 Hz may be specified at extra cost. Mark frequency must be common to all tone pairs.

Frequency Accuracy: \pm .05%

Printed Circuit Board: 2 $\frac{7}{8}$ " x 5 $\frac{7}{8}$ " (7.3 cm x 15 cm)

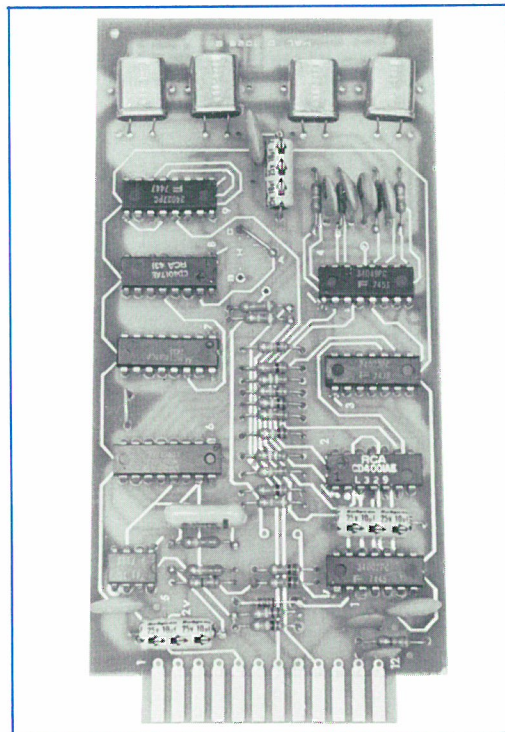
Plugs into 12 pin edge connector

Pinout identical with HAL AK-1

Power Requirement: 12 VDC \pm 1 v @ 40 ma

XTK-100 Options

HAL FL-1 Floating Loop Interface—for current loop data input when the XTK-100 is used as a stand alone unit.



ORDERING INFORMATION

When ordering the ST-6 Demodulator, specify table or rack mount cabinet, power mains voltage, and options desired (425 Hz Discriminator and/or AK-1 or XTK-100 tone keyer).

Specify high or low tones for the XTK-100, or special frequency requirements (consult factory). Specify the optional FL-1 Floating Loop Interface if needed.

Manufactured by:



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