

GENERAL

The ST-140 is a miniature surface-mount version of our popular ST-100 CTCSS Encoder. It is small enough to be mounted in most mobile or portable radios where space is a factor. Cost of purchase and installation have been primary design considerations. Our extensive applications experience has provided insight for design to simplify field installation.

Like all SELECTONE CTCSS products, the ST-140 is fully compatible with all major CTCSS systems, including Motorola "Private Line", General Electric "Channel Guard", and E.F. Johnson "Call Guard".

Because of surface-mount construction and our comprehensive warranty policy, field repair is usually not cost effective. Complete technical documentation is available through our applications department for customers with special requirements.

Application notes are available or can be developed for most radio models. If you would like applications details for a specific radio, please call us. Together, we may be able to save you some time and money.

OPERATING SPECIFICATIONS

Operating Voltage:	5.5Vdc to 16Vdc
Operating Current:	Less than 5mA _{dc}
Frequency Range:	67 to 250.3 Hz, continuously tunable
Temperature Range:	-30°C to +60°C
Frequency Stability:	Exceeds EIA RS220A (less than ±0.5%, typically less than ±0.2%)
Encode Output Level:	Adjustable 0 to greater than 1V _{rms} with 8V _{dc} to 16V _{dc} supply
Encode Distortion:	Less than 1% THD
Interface:	18" flying leads terminated at PCB solder contacts
Size:	.8" L x .75" W x .17" H (2.03cm X 1.9cm X .43cm)

INSTALLATION

We have configured the ST-140 to require minimum installation effort for most radios. We recommend that you take advantage of the radio manufacturer's CTCSS connection points whenever possible. Frequency Adjustment is done with a 20 turn pot. Output impedance for the ST-140 may be varied by removal of one or two jumpers across closely spaced solder jumper pads. Both jumpers are in place as shipped from the factory.

NEGATIVE (-) SUPPLY (BLACK): Connect to system negative (-) Supply.

POSITIVE (+) SUPPLY (RED): Connect to system positive (+) Supply.

TONE OUTPUT (WHT/GRN): Most F.M. two-way radios make provisions for CTCSS modulation. This point is near the voice deviation control. The impedance at this point varies from radio to radio. Three parallel resistors (1K, 51K, & 150K) are in series with the ST-140 output circuit, and the 1K and 51K resistors may be eliminated from the circuit by removal of JU1 and JU2. Remove JU1 or JU1 and JU2 to provide a correct tone output level without loading the radio modulator circuit and reducing voice modulation. CTCSS deviation is adjusted with R11. A CTCSS deviation level of ±750 Hz is recommended.

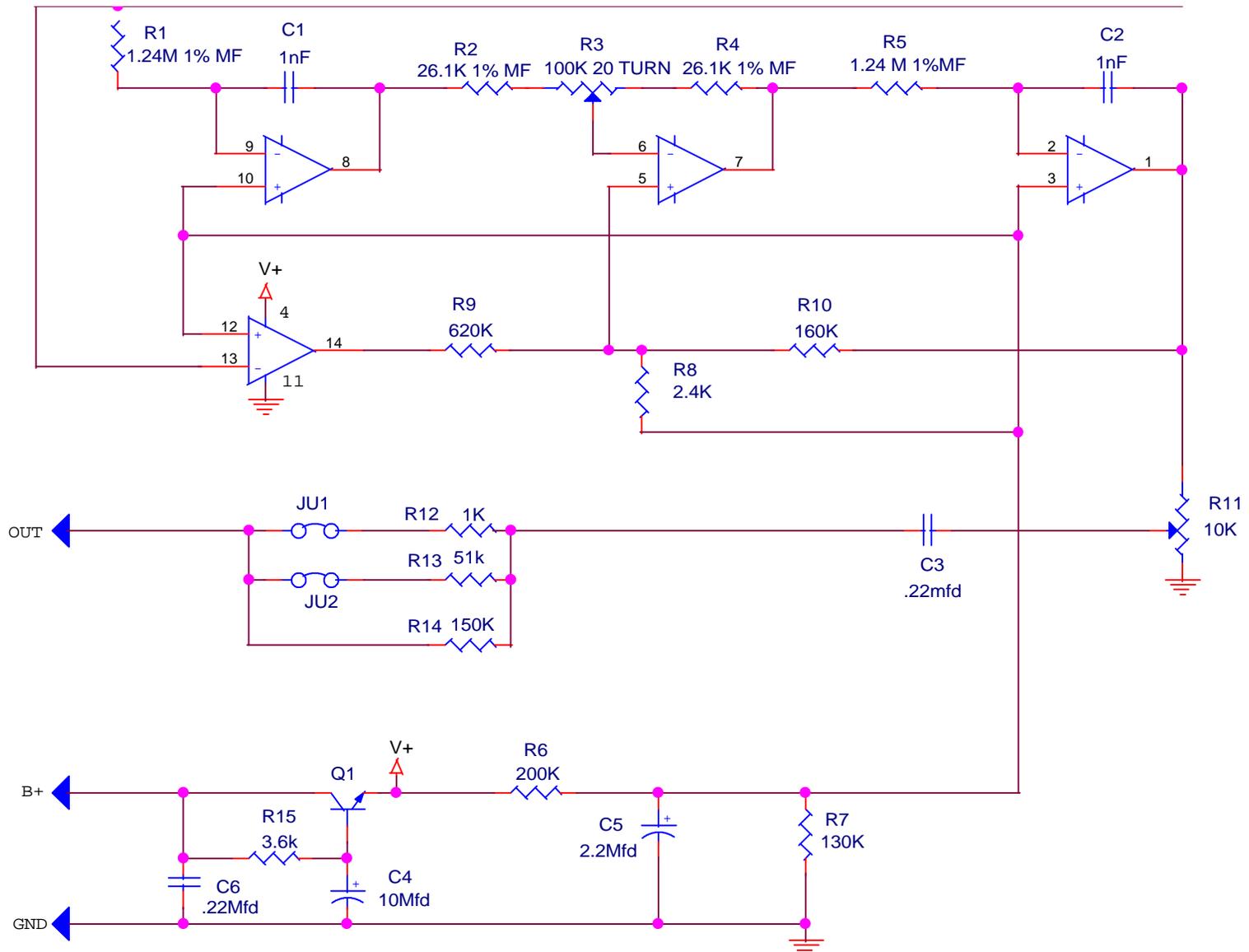
MOUNTING

Use of a double-sided adhesive pad eliminates hardware requirements. Mount the ST-140 on a clean, dry surface oriented to allow future adjustments, should they be necessary. Press firmly after mounting to ensure good contact of the adhesive. Do not touch the adhesive or attempt to re-position the unit after mounting.

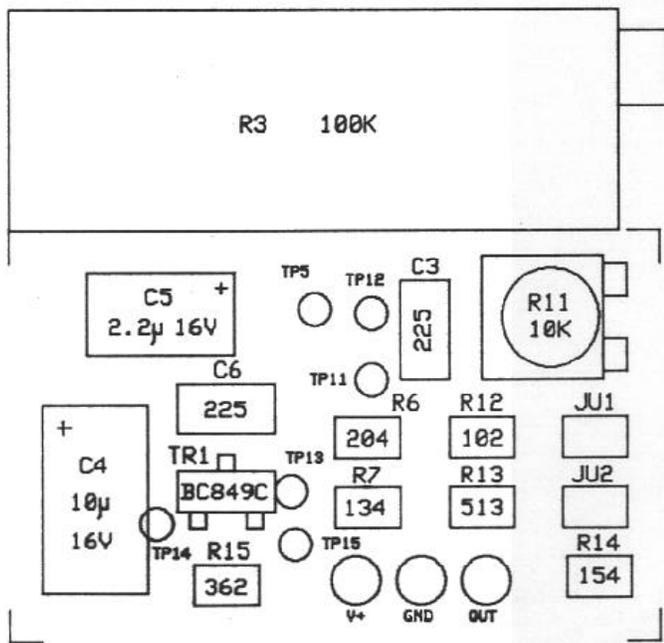
ADJUSTMENTS

Frequency: The ST-140 is continuously tunable over the standard CTCSS frequency range from 67 to 250.3 Hz. To set the frequency, apply power, set R11 fully clockwise and connect the Tone Output lead (WHT/GRN) to your frequency measuring equipment. Adjust R3 for the desired CTCSS frequency. You may find the use of a lissajous figure with a known on-frequency reference the quickest set-up procedure, or as an alternate if a frequency counter is not available.

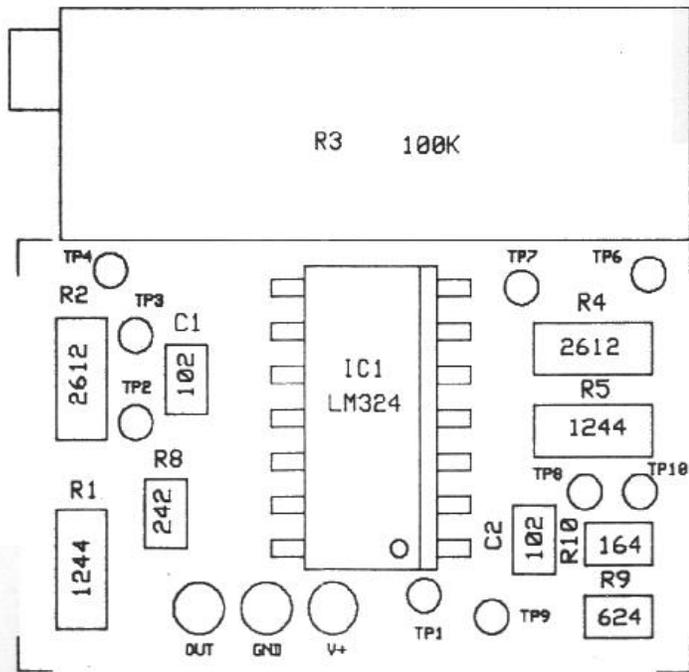
Level: Set R11 to the desired CTCSS deviation level.



Schematic of ST-140



Top Side



Bottom Side

WARRANTY POLICY

All standard Selectone products are guaranteed to meet or exceed published performance specifications and are warranted against defects in material and workmanship for a period of five years from the date of purchase. Special configurations and non-standard systems are warranted for a period of one year.

If any standard Selectone product fails to operate within the first 90 days from the date of purchase, Selectone will immediately send out a replacement unit and will issue full credit, including freight, upon the return of the defective unit(s). All prepay/C.O.D. customers must return the defective equipment prior to exchange, otherwise the customer will be required to prepay for the new unit(s) with credit issued only on the return of the defective equipment.

After 90 days, this warranty is specifically limited to correction of the defects by factory or replacement of faulty equipment or parts.

All warranty repairs must be performed at the Selectone factory in Hayward, California. No credit will be given for unauthorized repair work attempted by the customer. Any unauthorized alterations or modification of the equipment, damage caused by external sources, or removal or alteration of the serial number label or date code, will void the warranty. Specifically excluded from this warranty are batteries, fuses, lamps, and damage caused by lightning, power surges, or mechanical abuse.

For equipment to be returned to the factory for repair, you must first call and get an RMA# from Customer Service. The RMA# must be written on the outside of the package, otherwise receiving will reject the shipment. In addition, a note must be sent with the packing list briefly describing the nature of the defect.

For special warranty replacement service, contact Selectone Customer Service Department at (800) 227-0376, fax (510) 781-5454 or E-Mail us at techsupport@selectone.com.

All repairs and returns are to be sent to:
 Selectone, Inc.
 3501 Breakwater Ave.
 Hayward, Ca. 94545-3610
 ATTN: Warranty Repair