CTCSS Installation
Maxon SD-125 RF Link Module

Installation Procedures

1) Changes to the SD-125 digital board

The links LK7 and LK8 on the digital board of the SD-125 need to be linked to direct connections from pins 11 and 4 of CON404 to pins 3 and 13 of CON401. Refer to the attached drawing.

No other digital board changes are required.

2) Changes to CON401 and DB-9

Changes to the connector CON401 and the DB-9 connector are required to supply the output signals from the CTCSS option board to the DB-9 connector for user application.

The wire from pin 10 of CON401 is moved to pin 3 of CON401. (Pin 3 of CON401 is assigned as the CTCSS decode detect, and can either be a TTL signal, going low when a valid CTCSS tone is detected or as an open collector output, e.g. to operate a relay.)

The CTCSS decode detect signal will now be available on pin 9 of the DB-9 connector.

Pin 13 of CON401 is assigned as the filtered demodulated audio from the CTCSS option board. **The wire from pin 5 of CON401 may be moved to pin 13 of CON401 if filtered demodulated audio is required.**

3) **Fitting the CTCSS option board**

The CTCSS option board is hard-wire soldered to the SD-125 digital board by installing and soldering wire from the CTCSS board to the pads where option connector CON404 would be installed. Only 7 wires need be fitted; they are pins 1, 2, 3, 4, 8, 11 and 14. The other pins are unused.

4) Configuring CTCSS option board

The CTCSS option board is configured by adding the required link (1 to 6) on the CTCSS board to setup the tone frequency. If open collector output of the tone detect level is required, the resistor R1 is not fitted. The potentiometer VR1 is adjusted for the desired CTCSS tone deviation.

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P/N: 680-085-0026 Rev A

NO.	CODE	FREQ	LK1	LK2	LK3	LK4	LK5	LK6
1	XZ	67.0	0	0	0	0	0	0
2	XA	71.9	1	0	0	0	0	0
3	WA	74.4	0	0	0	0	0	1
4	XB	77.0	1	1	0	0	0	0
5	SP	79.7	0	0	0	0	1	0
6	YZ	82.5	1	0	0	0	0	1
7	YA	85.4	0	0	0	0	1	1
8	YB	88.5	1	1	0	0	0	1
9	ZZ	91.5	0	0	0	1	0	0
10	ZA	94.8	1	0	0	0	1	0
*11	ZB	97.4	0	0	0	1	0	1
12	1Z	100.0	1	1	0	0	1	0
13	1A	103.5	1	0	0	0	1	1
14	1B	107.2	1	1	0	0	1	1
15	2X	110.9	1	0	0	1	0	0
16	2A	114.8	1	1	0	1	0	0
17	2B	118.8	1	0	0	1	0	1
18	3Z	123.0	1	1	0	1	0	1
19	3A	127.3	1	0	0	1	1	0
20	3B	131.8	1	1	0	1	1	0
21	4Z	136.5	1	0	0	1	1	1
22	4A	141.3	1	1	0	1	1	1
23	4B	146.2	1	0	1	0	0	0
24	5Z	151.4	1	1	1	0	0	0
25	5A	156.7	1	0	1	0	0	1
26	5B	162.2	1	1	1	0	0	1
27	6Z	167.9	1	0	1	0	1	0
28	6A	173.8	1	1	1	0	1	0
29	6B	179.9	1	0	1	0	1	1
30	7Z	186.2	1	1	1	0	1	1
31	7A	192.8	1	0	1	1	0	0
32	M1	203.5	1	1	1	1	0	0
33	M2	210.7	1	0	1	1	0	1
34	M3	218.1	1	1	1	1	0	1
35	M4	225.7	1	0	1	1	1	0
36	- -	233.6	1	1	1	1	1	0
37	- -	241.8	1	0	1	1	1	1
38	- -	250.3	1	1	1	1	1	1

N.B. * Non-Standard Tone

Link Settings:- "1" = Link Closed
"0" = Link Open

For open Collector Output, DO NOT Install R1.

The Output from Q1 is at TTL Level with R1 Installed. It has an active LOW status. I.E. When a valid CTCSS Tone is received this output will go LOW. It will sink approx. 30mA continuous in Open collector operation.

The AF Output is the Audio Output from the CTCSS Decoder IC. The Audio is Filtered i.e. The CTCSS tone has been removed. The Output Level is approx. 550mV The Audio will only be present when a valid CTCSS tone is decoded.

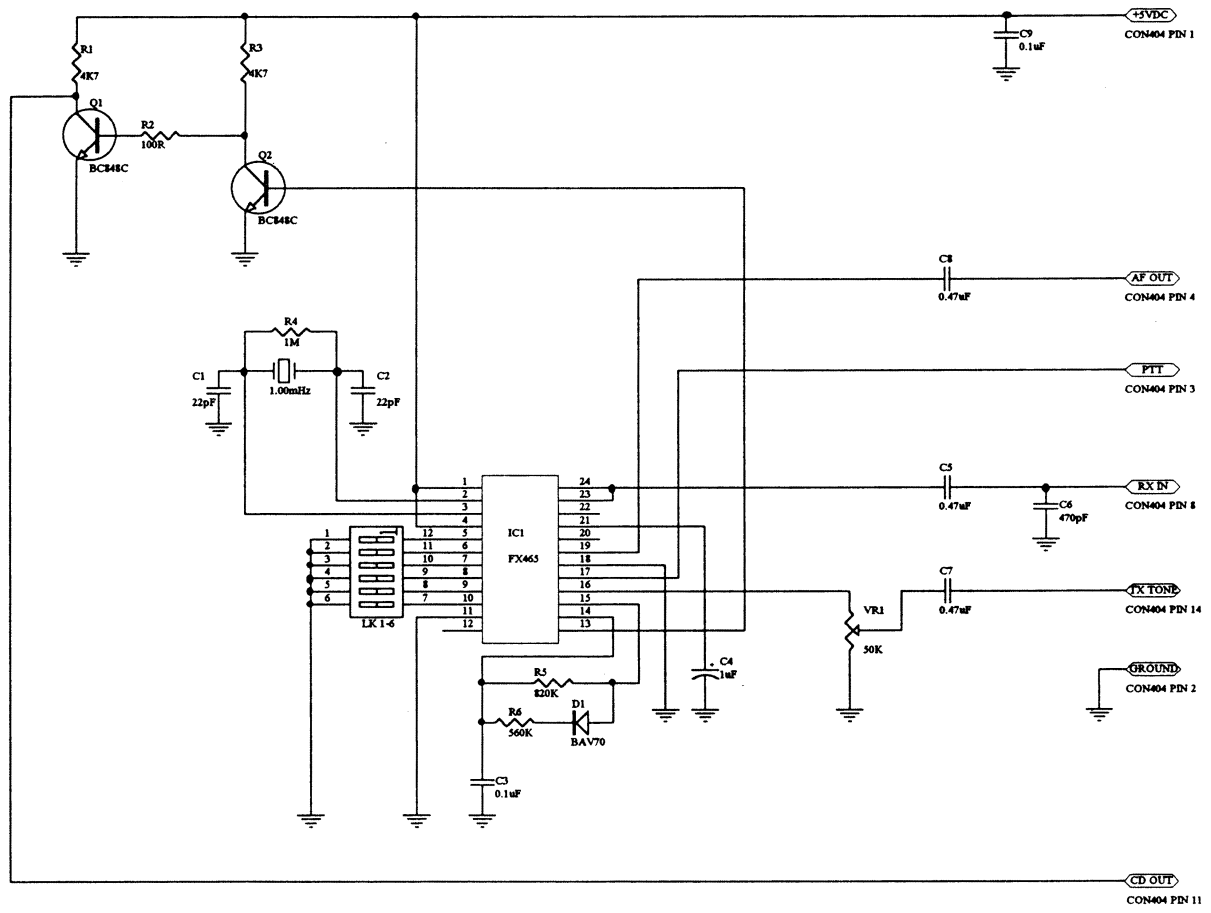
The Variable Resistor VR1 is adjusted to give the correct CTCSS deviation.

CTCSS Tone Frequency is obtained by linking the Link Pads on the PCB underside.

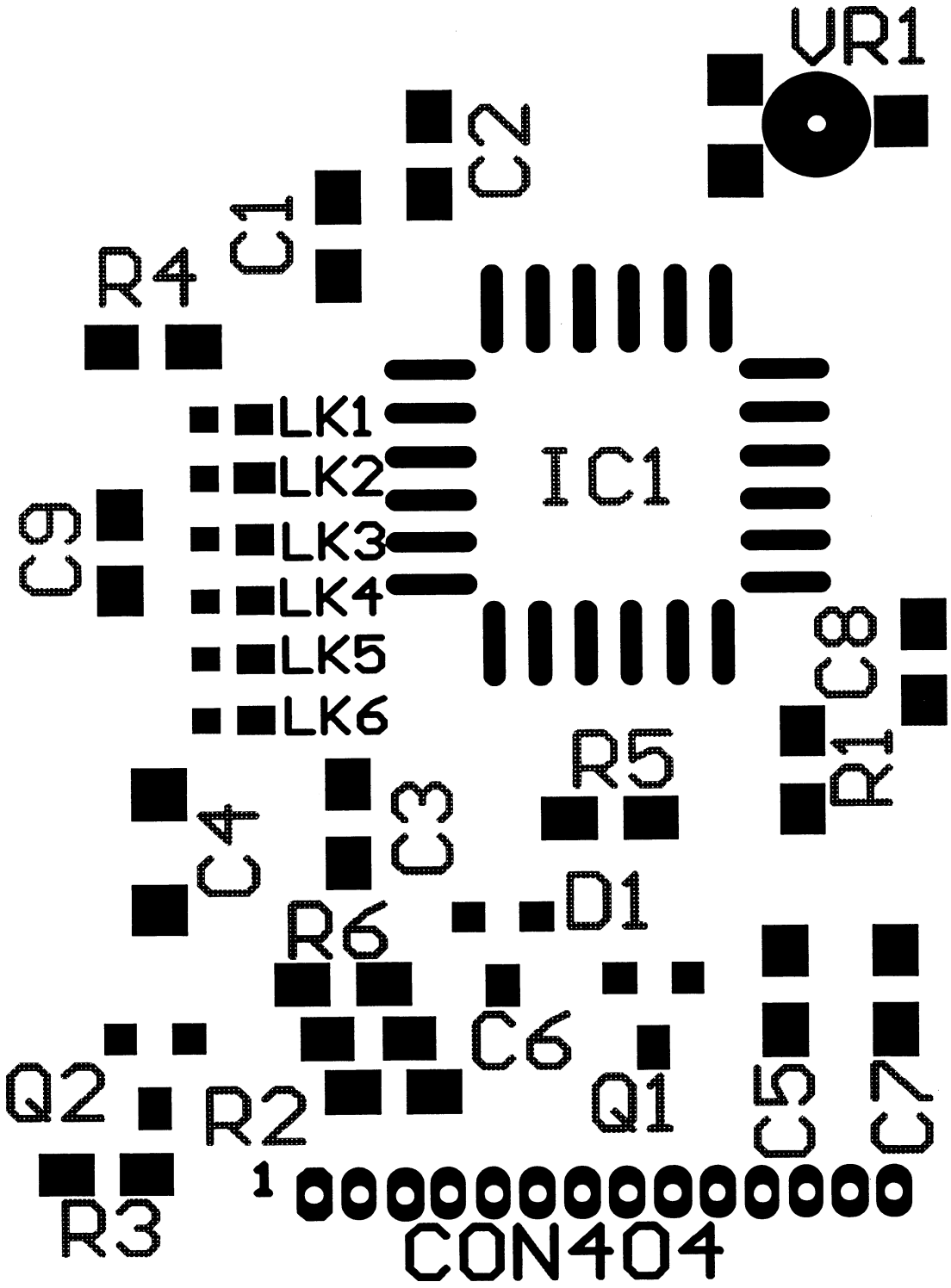
Resistor R1 is located on the PCB underside.

The underside will become the topside when PCB is installed in radio. The Variable resistor VR1 is mounted with the wiper adjustment fitted through a 3mm hole on the PCB. This is so deviation can be made once the PCB is installed in radio.

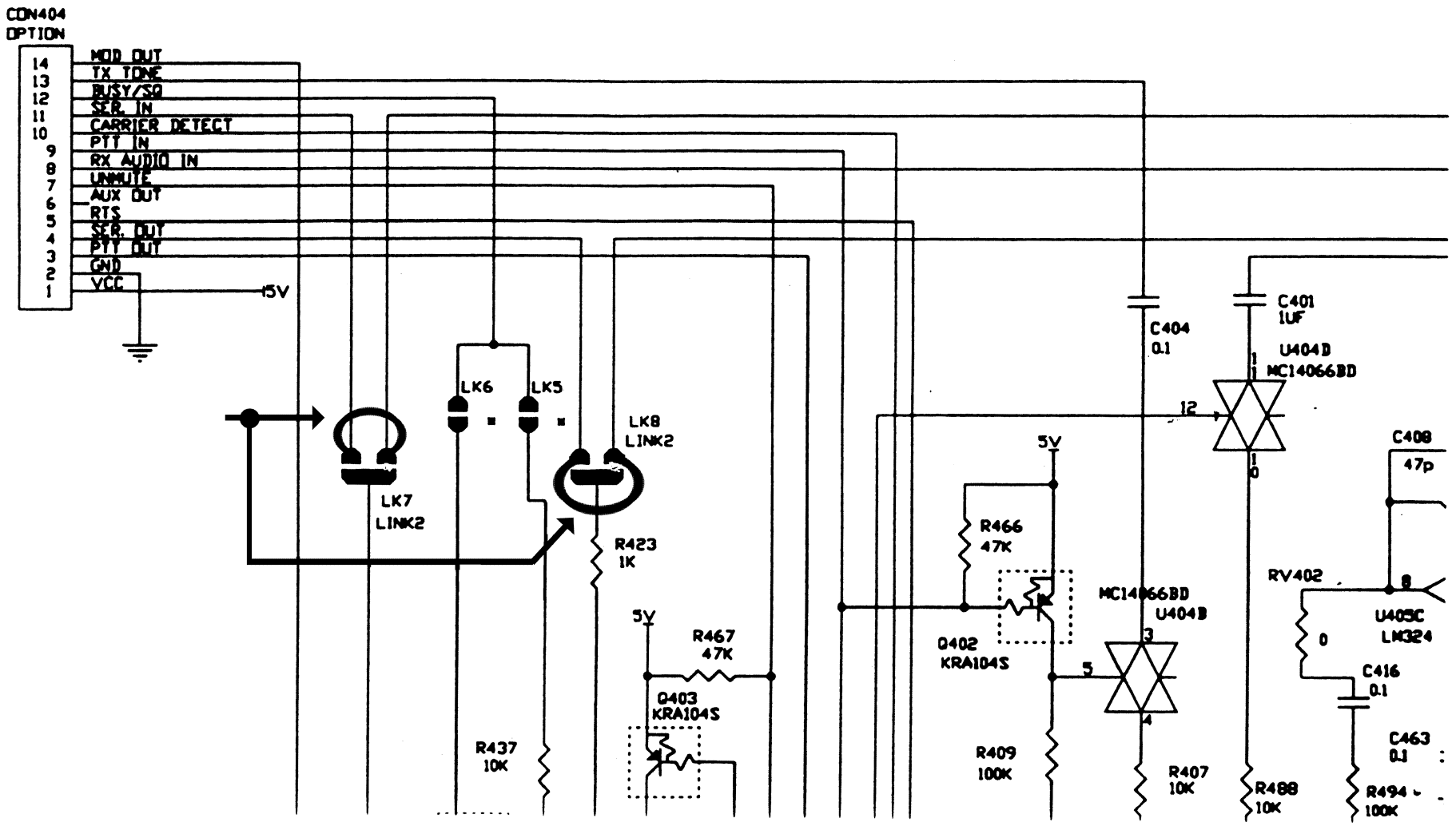
Two Links MUST be made on the SD-125 digital PCB. They are LK7 and LK8, bridged such that the pin connections from CON404 can be redirected to CON401, then to the DB9 connector. These can use Pins 2 and 9 of the DB9, as they are not required for programming the SD-125.



Title	SD125 CTCSS Encode/Decode Option		
Size: B	Number:		Revision: 1.0
Date: 17-May-2000	Sheet of: 1		
File: D:\AFSK SD125 MDM\...\CTCSS Option SD125.ddb	Drawn by: Patrick Keogh		


VR1
C2
C1
R4
LK1
LK2
LK3
LK4
LK5
LK6
IC1
C9
C8
R1
R5
C4
C3
D1
R6
C6
Q2
R2
Q1
C5
C7
R3
1
CON404

Link Connections -
SD-125 Digital PCB (CTCSS Option)



Placement of Components -
SD-125 with CTCSS Option

DESIGNATION	TYPE - VALUE	PART No.	PACKAGE
U1	CTCSS IC	FX365CLS	PLCC-24
Q1	BC848C (1G)	TRANSISTOR	SOT-23
Q2	BC848C (1G)	TRANSISTOR	SOT-23
X1	1.00mHz	CRYSTAL	
D1	BAV70	DIODE	SOT-23
R1	4K7	CHIP RESISTOR	805
R2	100R	CHIP RESISTOR	805
R3	4K7	CHIP RESISTOR	805
R4	1M	CHIP RESISTOR	805
R5	820K	CHIP RESISTOR	805
R6	560K	CHIP RESISTOR	805
VR1	20K	TRIM POT	
C1	22pF	CHIP CAP	805
C2	22pF	CHIP CAP	805
C3	0.1uF	CHIP CAP	1206
C4	1uF	TANT CAP	1206
C5	0.47uF	CHIP CAP	1206
C7	0.47uF	CHIP CAP	1206
C8	0.47uF	CHIP CAP	1206
C9	0.1uF	CHIP CAP	1206
CTCSS LINKS	0R0 (LINK)	CHIP RESISTOR	805
PCB			