



MODEL CD-1

Communications Decoder Unit

THE CD-1 IS A POWERFUL CODE BUSTER!



DECODES AND DISPLAYS:

50 CTCSS TONES
104 DCS CODES
16 DTMF DIGITS

- Quickly test radios for proper DCS, CTCSS and DTMF encoding
- Use to monitor shared systems
- Identify the clowns
- Displays ANI codes and phone numbers dialed
- Determine the codes your competitor is using
- Adds important features to your service monitors

DESCRIPTION

The CD-1 normally displays the current DCS or CTCSS code being received. However when a DTMF code is received, the CD-1 temporarily suspends displaying DCS or CTCSS and instead displays the DTMF code. This allows you to observe ANI or access codes and the phone number that has been dialed on interconnected systems. DTMF sequences are automatically replayed slowly, four digits at a time just in case you missed something or if the original code was sent too fast for you to observe. The CD-1 can store and replay DTMF strings of up to 128 digits in length.

PURPOSE

When connected to any receiver, scanner or service monitor, the CD-1 displays the DCS, CTCSS or DTMF codes contained on the signal being received.

COMMERCIAL APPLICATIONS

Use the CD-1 to add time saving features to your service monitor. Or save money by purchasing a low end service monitor and adding a CD-1. This approach could save you thousands of dollars. A CD-1 should be on every service monitor and in every service van.

Also, put a CD-1 on a scanner and monitor your shared systems. You will always know who is using the system and the CD-1 will bust the clowns.

AMATEUR APPLICATIONS

Use the supplied gimbal bracket to mount the CD-1 in your car. As you roam about, the CD-1 will show you what codes to use to operate any open repeater or autopatch. Or, connect the CD-1 to your scanner and learn the various codes used to control both amateur and commercial systems such as police and fire.

INSTALLATION

Only one connection to your receiver is required. Simply connect to the Center Meter test point, to a TNC output or directly to the detector. The CD-1 will also need 10-15 VDC at 50 MA to operate.

An internal level control allows the CD-1 to operate with input levels anywhere from 10 millivolts to 4 volts. A pushclip allows selection of either polarity for proper DCS decoding.

MECHANICAL

Height: 1.8 inch
Width: 4.9 inch
Depth: 4.6 inch
Weight: .8 lb.

THE CD-1 DECODES AND DISPLAYS THE FOLLOWING CODES:

50 CTCSS CODES

67.0	94.8	131.8	171.3	203.5
69.4	97.4	136.5	173.8	206.5
71.9	100.0	141.3	177.3	210.7
74.4	103.5	146.2	179.9	218.1
77.0	107.2	151.4	183.5	225.7
79.7	110.9	156.7	186.2	229.1
82.5	114.8	159.8	189.9	233.6
85.4	118.8	162.2	192.8	241.8
88.5	123.0	165.5	196.6	250.3
91.5	127.3	167.9	199.5	254.1

104 DCS CODES

023	131	251	371	532
025	132	252	411	546
026	134	255	412	565
031	143	261	413	606
032	145	263	423	612
036	152	265	431	624
043	155	266	432	627
047	156	271	445	631
051	162	274	446	632
053	165	306	452	654
054	172	311	454	662
065	174	315	455	664
071	205	325	462	703
072	212	331	464	712
073	223	332	465	723
074	225	343	466	731
114	226	346	503	732
115	243	351	506	734
116	244	356	516	743
122	245	364	523	754
125	246	365	526	

16 DTMF DIGITS

1	2	3	A
4	5	6	B
7	8	9	C
*	0	#	D



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INSTALLING, ADJUSTING AND OPERATING YOUR CD-1

INSTALLATION

The CD-1 must be connected to a source of clean 10-15 VDC power (the CD-1 is reverse polarity protected) and to the receiver (see AUDIO TAKEOFF POINT below for details). The connection to the receiver should be made with shielded wire. Connect as follows:

GND: Power supply return (-) lead.
+12V: Positive side of the 10-15 VDC supply
GND: Shield of cable to receiver
INPUT: From receiver (see discussion below)

NOTE: Take the power from a point that is turned off when the equipment is out of service.

AUDIO TAKEOFF POINT

The CD-1 can be connected to a variety of places in the receiver depending upon what you wish to decode.

To decode CTCSS, DCS and DTMF you must be connected directly to the detector (before de-emphasis). In many receivers connecting to the Center Meter test point or to a TNC Packet output port may work satisfactory.

If you only wish to decode CTCSS and DTMF a connection to the high side of the volume control may work (CTCSS may not decode at this point depending upon how the receiver is configured).

If you only care about decoding DTMF, a connection to the speaker leads will probably suffice (amateur receivers and scanners may even decode CTCSS at this point).

If in doubt about where your detector output is, simply contact a technical representative at the company who produced the radio. Alternatively send us a schematic diagram, and we will attempt to assist you.

ADJUSTMENTS

DTMF will not reliably decode unless the audio is properly de-emphasized. Strap JP-1 must be left installed if you have connected directly to the detector or to the Center Meter test point. If you have taken audio past the receivers' built-in de-emphasis then remove the JP-1 shorting clip.

While receiving a transmission containing CTCSS, adjust the GAIN potentiometer P1 for one volt AC RMS at TP-1 (located adjacent to the large capacitor C4 at the rear of the unit). If using an oscilloscope, the reading should be about 2.8 volts peak to peak. Or, simply adjust P1 into the center of a range where the front panel display indicates proper decoding.

If you wish to decode DCS, you must select the correct polarity. Each DCS code has an incorrect inverse code if the polarity is

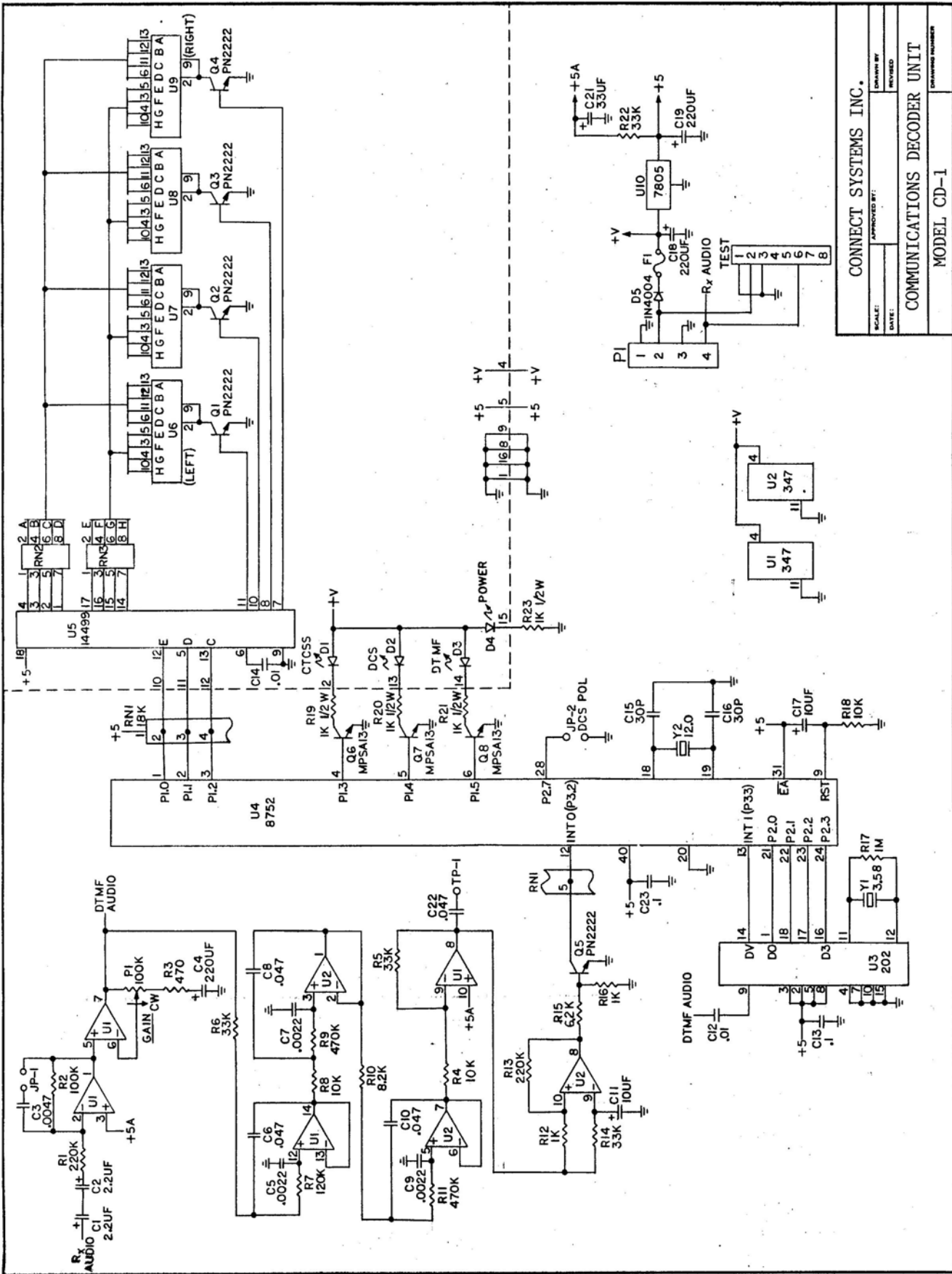
wrong. Remove or install the DCS polarity select strap JP-2 until the display indicates the correct code while receiving a known DCS code.

OPERATION

The CD-1 is fully automatic. When a tone or code is decoded it appears in the digital display and one of the front panel LED's illuminates to indicate which type of tone or code is being decoded.

The displays used in the CD-1 are not capable of directly displaying the *, #, A, B, C or D. The * and # are displayed using - and ||. A, B, C and D are displayed using the numbers 1, 2, 3, and 4. Note that these are distinguishable from 1 2 3 and 4 because the decimals accompany the digits. The Table below shows all the DTMF digits and how they appear on your CD-1.

1 = 1	5 = 5	9 = 9	A = 1.
2 = 2	6 = 6	0 = 0	B = 2.
3 = 3	7 = 7	* = -	C = 3.
4 = 4	8 = 8	# =	D = 4.



CONNECT SYSTEMS INC.
 SCALE: _____ APPROVED BY: _____ DRAWN BY: _____
 DATE: _____ REVISED: _____
 COMMUNICATIONS DECODER UNIT
 MODEL CD-1
 DRAWING NUMBER

LIMITED WARRANTY

Connect Systems Inc. (CSI) hereby warrants our products to be free from defective workmanship for a period of one year and defective parts for a period of five years from date of sale to the initial end user. This warranty applies only to the original consumer / end user purchaser of each CSI product. During the first year of warranty, CSI will repair any of its products at no charge providing the defective unit is returned prepaid to Connect Systems Inc. During the years 2-5, there shall be no charge for replacement parts providing that the defective unit is shipped prepaid and service is performed by CSI. Conventional prevailing labor and shipping charges will apply following the end of the first year. CSI, at its sole discretion, will replace defective parts on an exchange basis for the first five years of ownership by the original purchaser. All shipping costs are the responsibility of the customer.

What is not covered by this limited warranty:

This warranty shall not apply if, in our judgement the defects are caused by misuse, lightning strikes, customer modification, water damage, negligent use, improper installation, overloads caused by external voltage fluctuations, use of unregulated power supply, damage caused in transit or handling or any abusive treatment not in accordance with ordinary product use or the product serial number has been removed, altered or defaced.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, STATEMENTS OR REPRESENTATIONS, AND UNLESS STATED HEREIN, ALL SUCH WARRANTIES, STATEMENTS OR REPRESENTATIONS MADE BY ANY OTHER PERSON OR FIRM ARE VOID. ALL IMPLIED WARRANTIES IN CONNECTION WITH THE SALE OF THIS EQUIPMENT, INCLUDING THE WARRANTY OF MERCHANTABILITY, SHALL BE OF THE SAME DURATION AS THE WARRANTY PERIOD STATED ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. IN THE EVENT OF PRODUCT FAILURE WHICH PROVES TO BE CAUSED BY A DEFECT IN WORKMANSHIP OR MATERIALS, YOUR SOLE REMEDY SHALL BE THE REPAIR OF THE DEFECT BY CSI OR ITS APPOINTED REPAIR STATION AS STATED IN THIS WARRANTY, AND UNDER NO CIRCUMSTANCES SHALL CSI BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF THE USE, OR INABILITY TO USE, THIS CSI PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

If your new CSI product should ever fail, contact Connect Systems Inc. Customer Service Dept. for repair and warranty information at (805) 642-7184.

Note: Connect Systems Inc. reserves the right to render a modest service charge when returned units are found to be free of parts or workmanship defect(s) (i.e. operating to factory specifications) within the first year of the warranty. Such units will be returned freight collect to the sender, including the appropriate service charge.

