

LSI-12 AND LSI-24 LINE
STATUS INDICATOR
IDENTIFICATION AND INSTALLATION

1. GENERAL

1.01 This Section furnishes the identification, ordering, installation and maintenance information for the Associated Instrument Manufacturing Corporation Line Status Indicators LSI-12 and LSI-24.

2. IDENTIFICATION

2.01 The LSI indicator (Exhibit 1) is available with capacities for monitoring 12 lines on the LSI-12 and 24 lines on the LSI-24. Both line sizes use the same size cabinet.

2.02 Overall dimensions: approximate measurements of the Line Status Indicators are as follows:

Approximately 5 inches wide by 5 inches high by 5 inches deep at the base tapered to 3 inches deep at the top.

2.03 Application: the LSI-12 and LSI-24 models of the Line Status Indicator, are intended for non-key systems which are capable of offering call pick-up service. It provides a means of visually determining line status - off hook or ringing - as well as providing common-audible without the use of key equipment or incandescent lamps. These Line Status Indicators are compatible with all types of PBX equipment except the Dimension Custom Telephone Set.

2.04 Power: power is furnished using a 2012B-50 transformer and a customer provided 117V/60Hz outlet not under control of a switch.

2.05 Line Status Indicator operation: the LSI-12 and LSI-24 indicator connects in series with the T and R leads of lines to be monitored and indicates the status of these lines. There is a Light Emitting Diode (LED) associated with each of the monitored lines. This LED is off when the line is idle, on when the line is off-hook and flashes at 20Hz rate when the line is ringing. In addition, a common audible tone inside the LSI will sound when any line being monitored is ringing. The 20Hz lamp rate and audible signal are activated only when ringing voltage is actually being applied; they are not activated during the silent intervals. Therefore, the LSI-12 and LSI-24 indicators will provide the same distinctive ringing patterns provided to stations in the DIMENSION PBX (CSS201).

2.06 When a ringing station is to be answered by someone other than the station user, the answering location can dial a call pick-up code. When the pick-up code is dialed, the call will be transferred to the attendants phone and the lamp associated with the attendants line will light but the other lamp will go out. In the case where more than one phone is being rung, the determination of which call is answered is made by seeing which LED stops flashing. If there are dial pulse phones in the group, the pulse will be indicated by the lamp but will be brighter and much faster than the ringing pulse.

2.07 These items may be ordered thru Western Electric Company via the Order Invoice Plan.

(Qty) Indicator, Line Status LSI-12 (Color)

(Qty) Indicator, Line Status LSI-24 (Color)

Order from:

The available colors are: beige (60), black (03), green (51), yellow (56), white (58), blue (62), red (53) and ivory (50).

Associated Instrument Mfg. Corp.
2313 Brun Street
Houston, Texas 77019

(Qty) Transformer, 2012B-50

3. INSTALLATION

3.01 Terminate A25B connector cables on connector blocks as shown in Exhibits 2 and 3. Tip and ring polarity must be maintained when terminating line status indicator leads to incoming CO tips and rings. Lead assignments for LSI-12 unit are shown in Exhibit 4 on Connector -1. Connections for LSI-24 unit are shown in Exhibit 4 on Connections 1 and 2.

3.02 Connect the transformer leads to connecting block as shown in Exhibit 4 using D station wire.

3.03 The audible tone is adjusted by turning the potentiometer that is mounted on the metal base of the LSI unit.

NOTE: Avoid locating Line Status Indicator in direct sunlight or areas of high illumination.

4. MAINTENANCE

4.01 Maintenance of the LSI-12 and LSI-24 Line Status Indicator is limited to the replacement of defective LED units and adjustment of the volume of the audible tone. The audible tone can be adjusted by turning the potentiometer that is mounted on the metal base of the LSI. The indicator lamps (LEDs) are mounted in sockets that permit replacement in the field. Replacement lamps can be ordered as follows:

(10) Indicator Lamp, LED

4.02 Do not attempt any maintenance other than described in 4.01. If Line Status Indicator becomes defective, replace it with one known to be working properly and return defective indicator to the Western Electric Service Center for repair.

5. CIRCUIT DESCRIPTION

5.01 Each line entering the Line Status Indicator has its own isolated circuit to indicate the status. Each circuit consists of a light emitting diode and an optoelectronic photocoupler plus several other components that have a supportive role. (See Exhibit 5.)

5.02 The LED is used to provide the indicating light for each line. The LED chosen by Associated Instrument Mfg. Corp. for use in the Line Status Indicator is red and has a typical forward voltage drop of 1.8 volts D.C. at 25 mA thus providing an average power dissipation of .045 watt.

5.03 The optoelectronic photocoupler is the main component in the ring detector portion of each circuit. It consists of a neon lamp coupled to a photoconductor. The neon lamp is connected across the tip and ring sides of the line. The talk signal, being either twenty-four or forty-eight volts, has no effect at all on the neon lamp. However, when the ringing signal is applied, the neon ionizes and light shines on the photoconductor changing the resistance from approximately two megohms to approximately two thousand ohms.

5.04 The photoconductors from each line, either twelve or twenty-four, are placed in parallel with each other, thus providing electrical isolation of the individual lines but still furnishing a common audible.

5.05 The tone itself is achieved by using a 555 clock as an astable multivibrator and using this to drive a small speaker. The photoconductive elements of the photocoupler are then connected between Vcc and the reset pin of the 555. (See Exhibit 6.)

5.06 The talk signal lights the LED but has no affect on the neon lamp. The ringing machine provides a high enough voltage across the neon lamp to induce breakdown and the lamp lights. When any of the lamps light, the photoconductor will decrease to about two thousand ohms thus putting a positive input on the rest pin of the 555 clock causing it to oscillate.

EXHIBIT 1

LSI-12 and LSI-24 Line Status Indicators

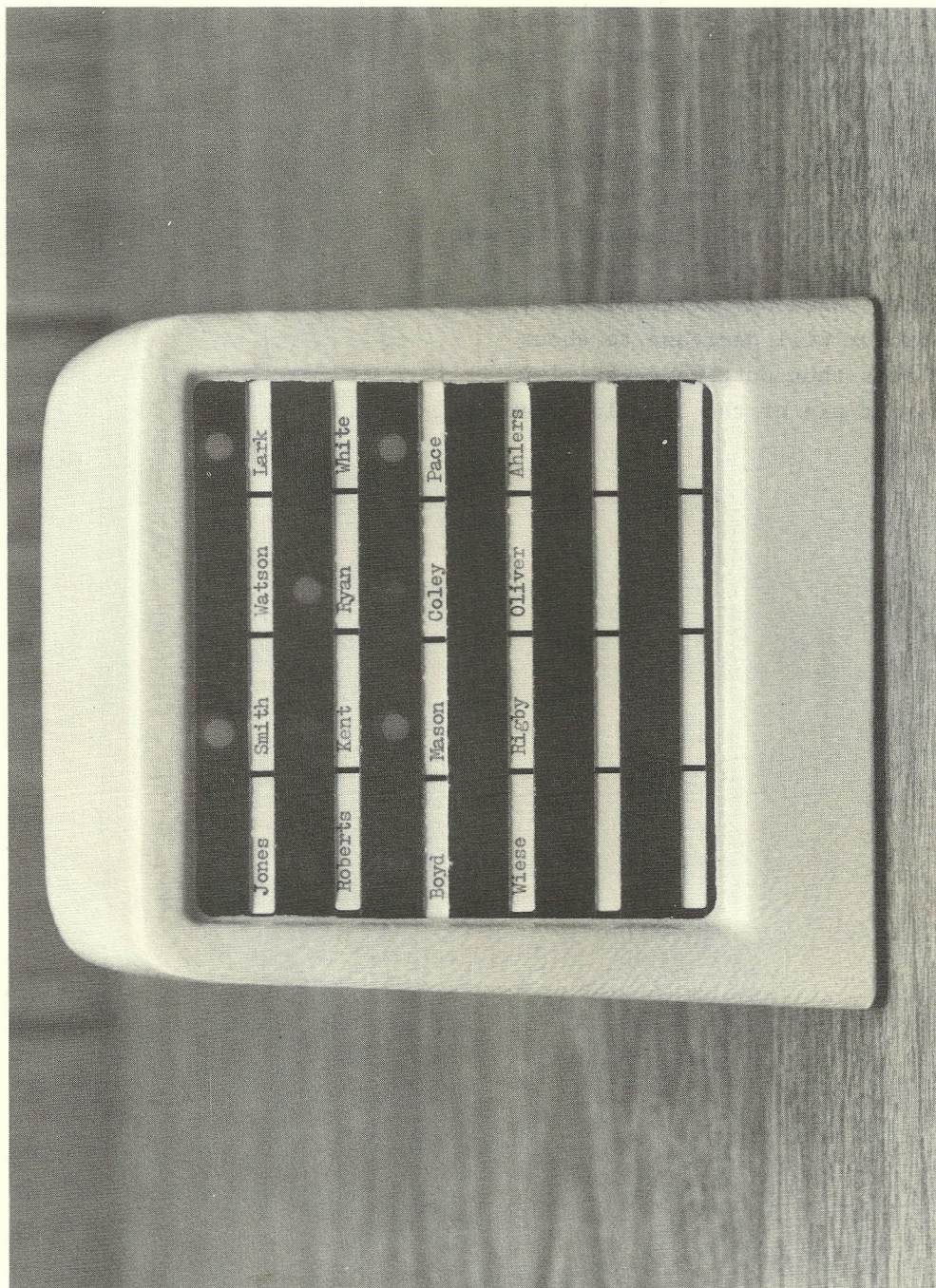
*W. L. Landon / photography*

EXHIBIT 2

Method of Connecting Line Status Indicator Using 66-Type Blocks

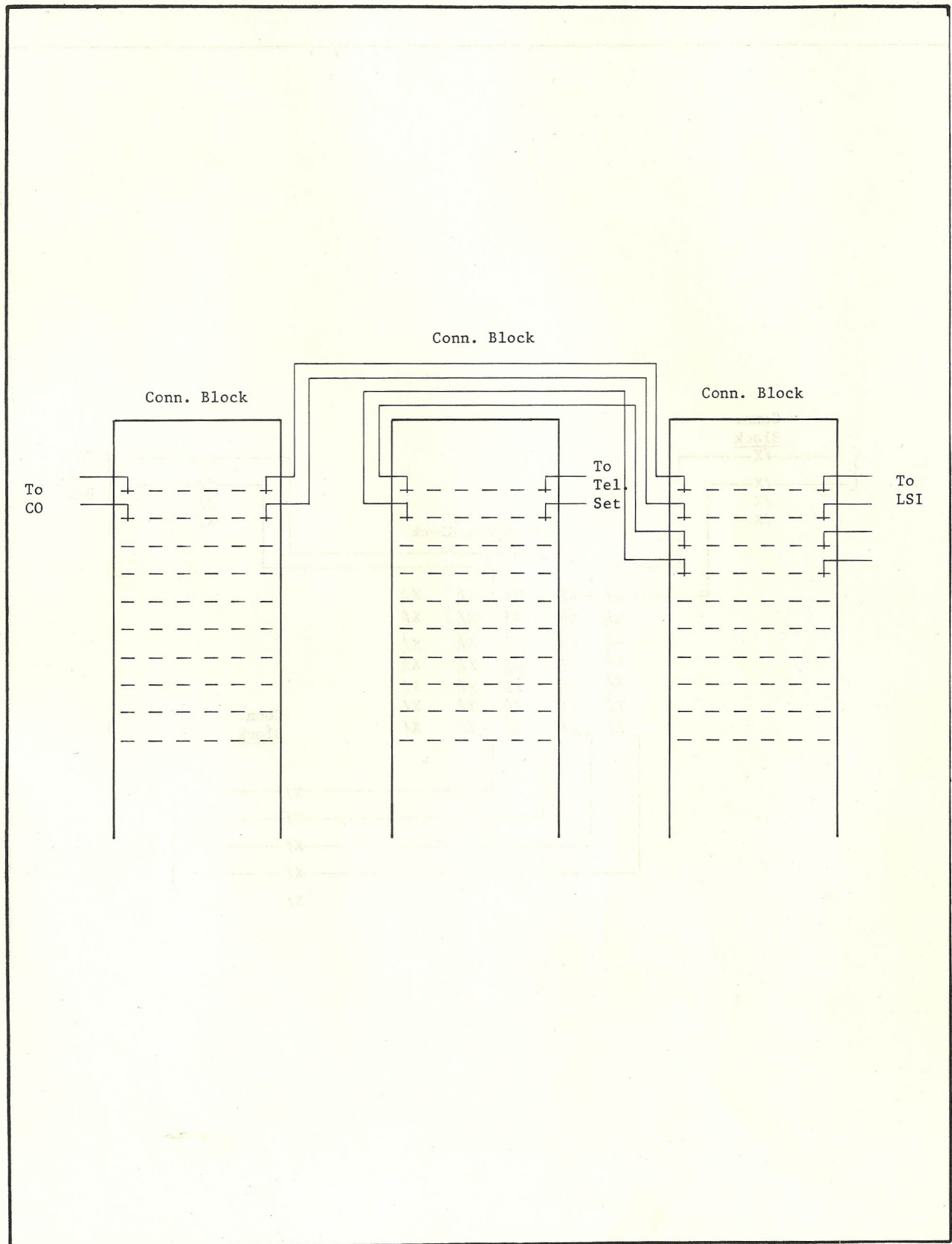


EXHIBIT 3

Method of Connecting Line Status Indicator Using 88-Type Blocks

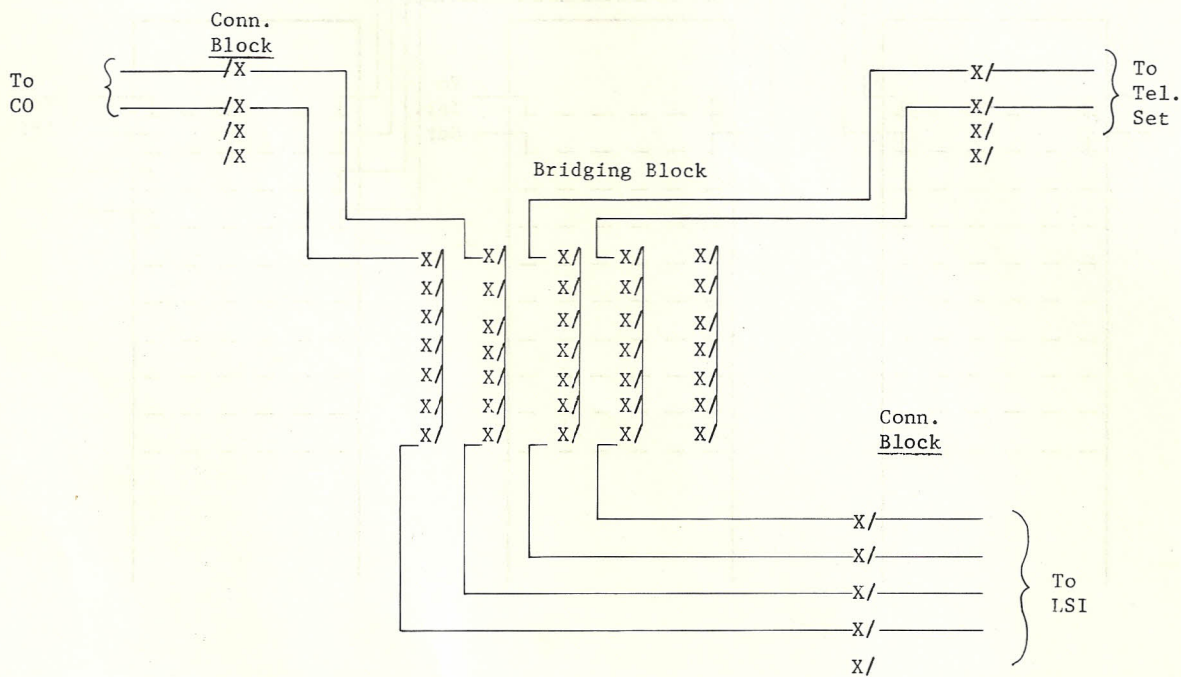


EXHIBIT 4

CONNECTIONS FOR LSI-12 AND LSI-24 LINE STATUS INDICATORS

26	_____	T	}	Line 1
1	_____	R		
27	_____	Tl	}	Line 2
2	_____	Rl		
28	_____	T	}	Line 3
3	_____	R		
29	_____	Tl	}	Line 4
4	_____	Rl		
30	_____	T	}	Line 5
5	_____	R		
31	_____	Tl	}	Line 6
6	_____	Rl		
32	_____	T	}	Line 7
7	_____	R		
33	_____	Tl	}	Line 8
8	_____	Rl		
34	_____	T	}	Line 9
9	_____	R		
35	_____	Tl	}	Line 10
10	_____	Rl		
36	_____	T	}	Line 11
11	_____	R		
37	_____	Tl	}	Line 12
12	_____	Rl		
38	_____	T	}	To 2012B-50
13	_____	R		
39	_____	Tl	}	Transformer
14	_____	Rl		
40	_____	T	}	
15	_____	R		
41	_____	Tl	}	
16	_____	Rl		
42	_____	T	}	
17	_____	R		
43	_____	Tl	}	
18	_____	Rl		
44	_____	T	}	
19	_____	R		
45	_____	Tl	}	
20	_____	Rl		
46	_____	T	}	
21	_____	R		
47	_____	Tl	}	
22	_____	Rl		
48	_____	T	}	
23	_____	R		
49	_____	Tl	}	
24	_____	Rl		
50	_____	AC1	}	
25	_____	AC2		

CONNECTOR - 1

26	_____	T	}	Line 13
1	_____	R		
27	_____	Tl	}	Line 14
2	_____	Rl		
28	_____	T	}	Line 15
3	_____	R		
29	_____	Tl	}	Line 16
4	_____	Rl		
30	_____	T	}	Line 17
5	_____	R		
31	_____	Tl	}	Line 18
6	_____	Rl		
32	_____	T	}	Line 19
7	_____	R		
33	_____	Tl	}	Line 20
8	_____	Rl		
34	_____	T	}	Line 21
9	_____	R		
35	_____	Tl	}	Line 22
10	_____	Rl		
36	_____	T	}	Line 23
11	_____	R		
37	_____	Tl	}	Line 24
12	_____	Rl		
38	_____	T	}	
13	_____	R		
39	_____	Tl	}	
14	_____	Rl		
40	_____	T	}	
15	_____	R		
41	_____	Tl	}	
16	_____	Rl		
42	_____	T	}	
17	_____	R		
43	_____	Tl	}	
18	_____	Rl		
44	_____	T	}	
19	_____	R		
45	_____	Tl	}	
20	_____	Rl		
46	_____	T	}	
21	_____	R		
47	_____	Tl	}	
22	_____	Rl		
48	_____	T	}	
23	_____	R		
49	_____	Tl	}	
24	_____	Rl		
50	_____		}	
25	_____			

CONNECTOR - 2

EXHIBIT 5

LINE CIRCUIT

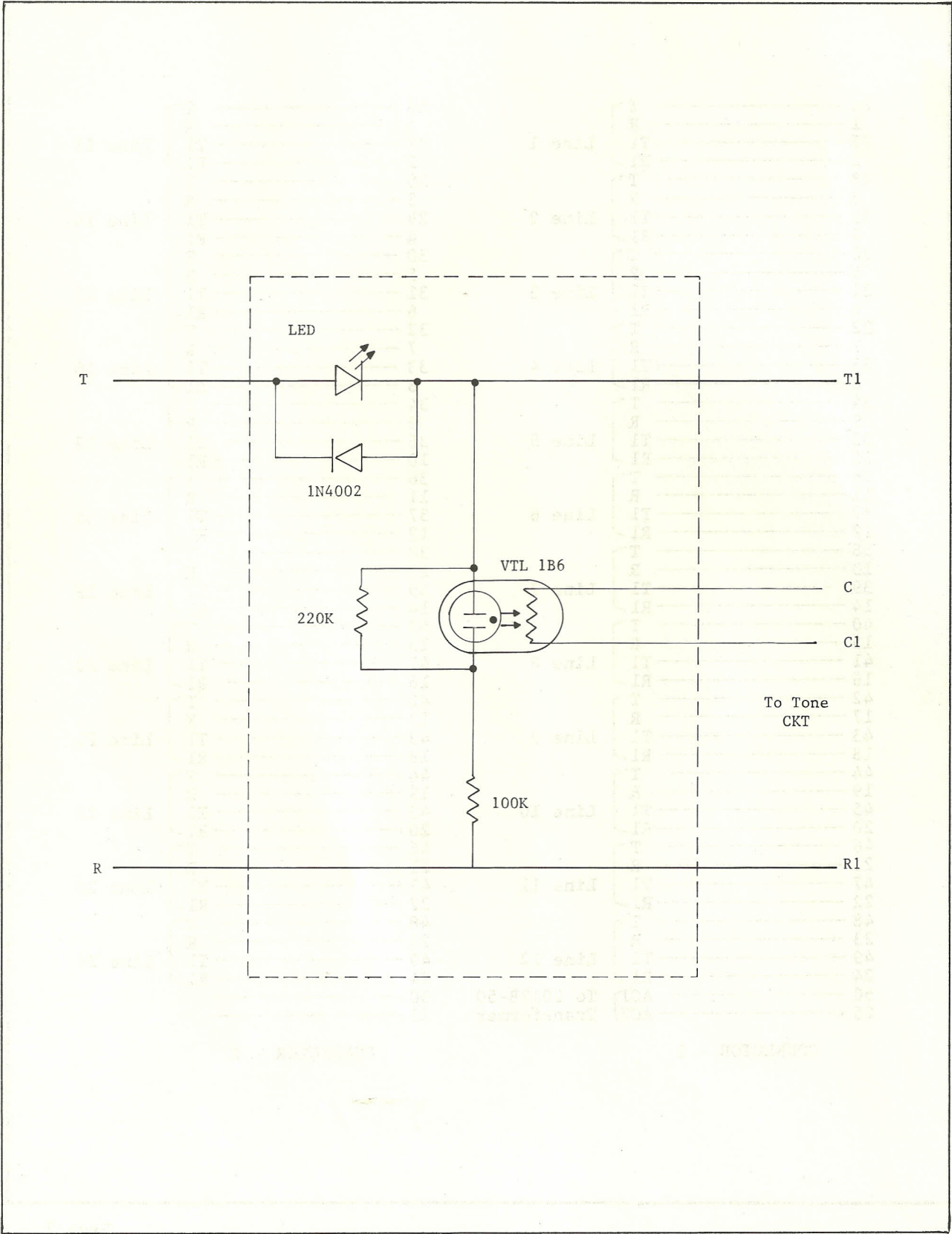


EXHIBIT 6

TONE CIRCUIT

