

DATA SET 114A TRANSMITTER IDENTIFICATION AND CONNECTIONS

1. GENERAL

1.01 This section contains a physical and functional description of the Data Set 114A. Information on installing and testing of the data set is also provided.

1.02 The physical dimensions of Data Set 114A are given in Fig. 1.

1.03 The Data Set 114A is an automatic answering line powered contact monitoring transmitter. When the data set is called, it will answer and return a steady tone to the caller if the monitored contact is closed. If the monitored contact is open, an interrupted tone will be returned by the data set.

2. OPERATIONAL AND FUNCTIONAL DESCRIPTION

2.01 The Data Set 114A transmitter is activated by placing a call to the data set. The data set detects the ringing signal for about 6 seconds or 3 full ringing cycles, closes the telephone loop to trip the ringing, holds the loop for about 7 seconds, transmits the audible signal indicating the contact condition for about 10 seconds, and opens the telephone loop.

2.02 The signal tone supplied by the data set is approximately 1900 Hz but is not adjusted to any particular value. This steady tone is supplied when the monitored contacts are closed. The 1900 Hz tone is interrupted at a 1 to 5 times per second rate when the contacts are open.

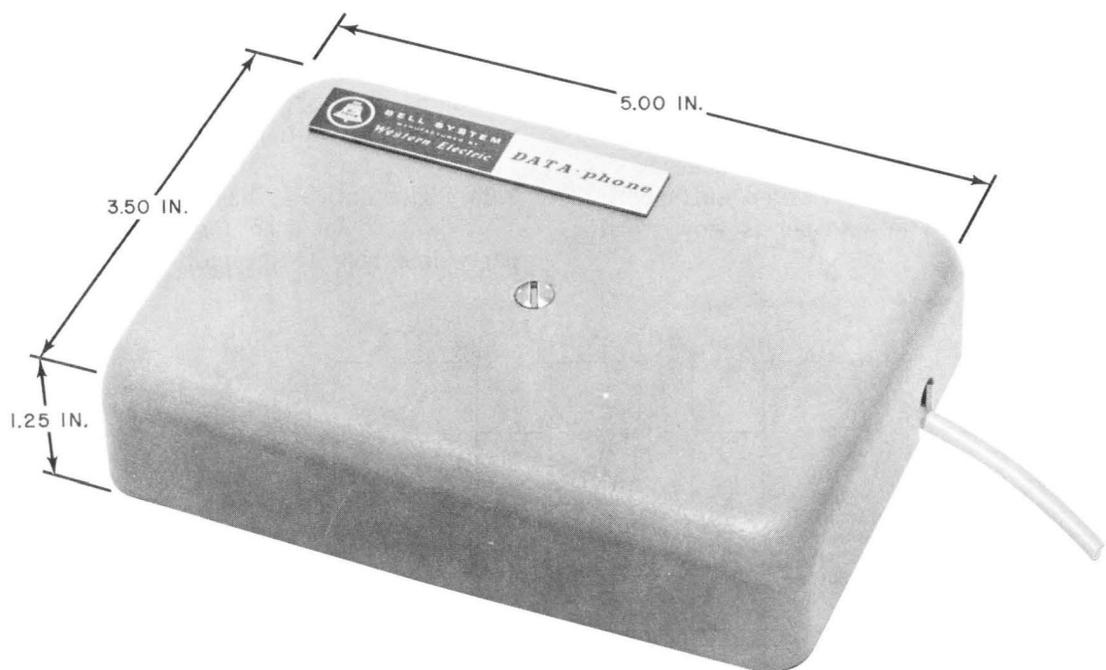


Fig. 1--Data Set 114A—Front View

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2.03 From the time ringing is tripped a typical data set will hang up in 15 to 30 seconds. An occasional unit will hold a call for as long as 45 seconds.

2.04 Refer to Fig. 2 and the following text for a brief description of the operation of the data set.

2.05 The data set detects and rectifies the ringing current. A capacitor is charged by the rectified current and when a threshold is reached the line control relay is operated and the oscillator is turned on.

2.06 Operation of the relay provides an off hook condition at the station.

2.07 The data set contains a squegging oscillator transmitter, ie, the oscillator is turned on and off by a resistor and capacitor in the base emitter circuit. When a low resistance is placed across terminals A and B of the data set (refer to Fig. 3 for terminal locations), the amplitude of the oscillation is limited and squegging does not occur. This provides a steady tone when the customer contacts are closed and an interrupted tone when the customer contacts are open.

2.08 After the capacitor that was charged by ringing current has discharged sufficiently, the relay is released. The data set is now ready for the next call.

3. OPERATIONAL AND LOOP CONSIDERATIONS

3.01 The Data Set 114A is designed to operate on all switched network facilities. The line resistance limit is 1500 ohms.

3.02 The allowable ambient temperature range for the data set is from 20 to 120°F.

3.03 The customer should provide a normally closed circuit for the data set to monitor. This circuit should have no more than 400 ohms resistance for a closed contact condition. An open contact condition should provide a resistance that is greater than 100,000 ohms.

Note: The customer may have a ground on the customer contacts; however, no source of external power may be connected to or across terminals A and B.

3.04 The Data Set 114A has two options which allow the set to be used for party line ring to ground signaling or loop signaling. Refer to Table A for the option designation and the connections required.

3.05 Short telephone loops, ie, less than 450 ohms or more than 50 ma short circuit current should be "built out" by using the X option indicated in Table A. Long telephone loops, ie, more than 450 ohms or less than 50 ma short circuit current require the W option installed.

3.06 The data set has two options to allow the set to be used for either loop signaling or party line ring to ground. The Z option is used

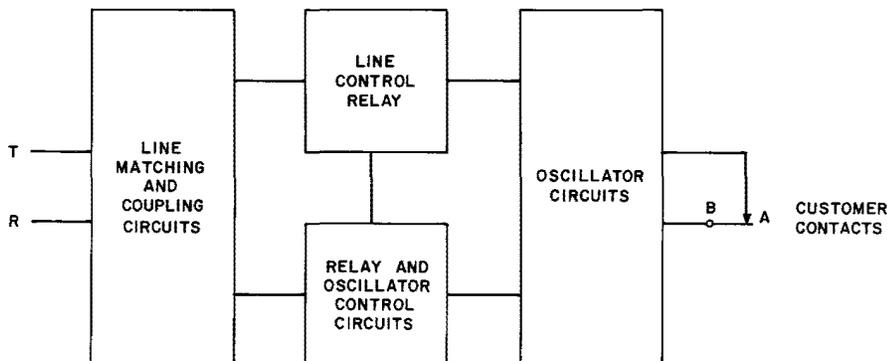


Fig. 2—Data Set 114A—Block Diagram

for loop signaling and the Y option for ring to ground party line signaling. Refer to Table A for the connections required to install the desired option.

3.07 Figure 4 shows the Data Set 114A with the covers removed to show the component placement. When a malfunction of the data set occurs, a visual inspection of the data set can be made to determine if physical damage to the data set has occurred. The set should be checked for loose or broken components or damage to the phenolic board.

4. INSTALLATION TESTING

4.01 Install the options indicated on the service order when connecting the data set for service. Refer to Table A for the connections to be made when installing the specified options. Refer to Fig. 3 for the location of the terminals mentioned in Table A.

4.02 Check the operation of the data set by connecting a 400-ohm resistor across terminals A and B of the data set (refer to Fig. 3). Place a call to the data set from a nearby or adjacent telephone. The data set should give a closed contact indication, ie, a steady tone.

4.03 Remove the resistor from terminals A and B, then place a second call to the data set. An open contact indication should be given, ie, an interrupted tone.

4.04 The following alternate test procedure can be used when a second telephone is not readily available for performing the above test. The following steps provide an adequate test of the data set. The test to be used is left to the discretion of the telephone company employee.

1. Connect a 400-ohm resistor across terminals A and B of the data set (refer to Fig. 3).
2. Bridge the line to the data set using the 1011 Handset.
3. Set the switch on the handset to the MON position.
4. Dial the ring-back number and hang up.
5. Monitor the ring-back and answer sequence using the 1011 Handset. The data set should give a closed contact indication.

Caution: Due to high audio levels that may be encountered due to ringing and

TABLE A

FEATURE OR OPTION	DESIG	CONNECTIONS
Short loop operation (less than 450 ohms or more than 50 ma short circuit current)	X	Connect ring side of line to terminal RS.
Long loop operation (more than 450 ohms or less than 50 ma short circuit current)	W	Connect ring side of line to terminal RL.
Loop signaling	Z	Strap terminal T to terminal RT and check to assure terminal RT is not grounded.
Signaling on party line (ring to ground)	Y	Ground terminal RT and make sure terminal RT and T are not strapped.

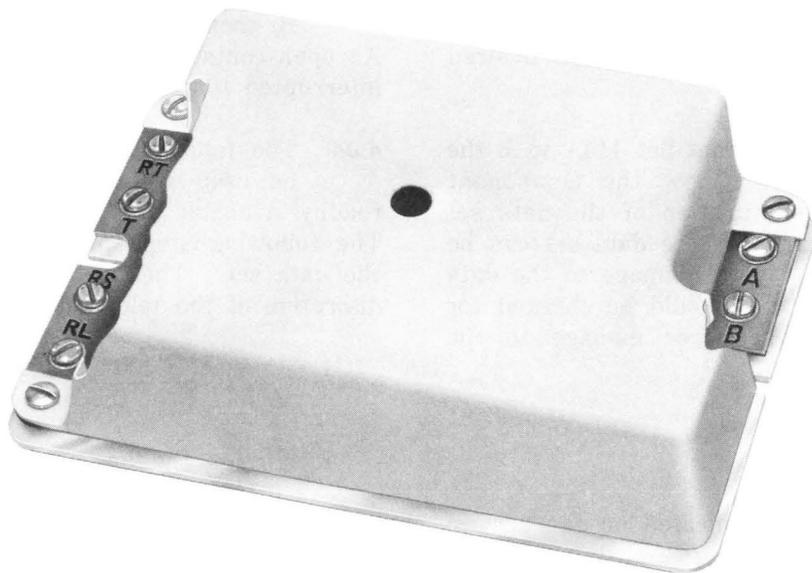


Fig. 3—Data Set 114A—Terminal Locations

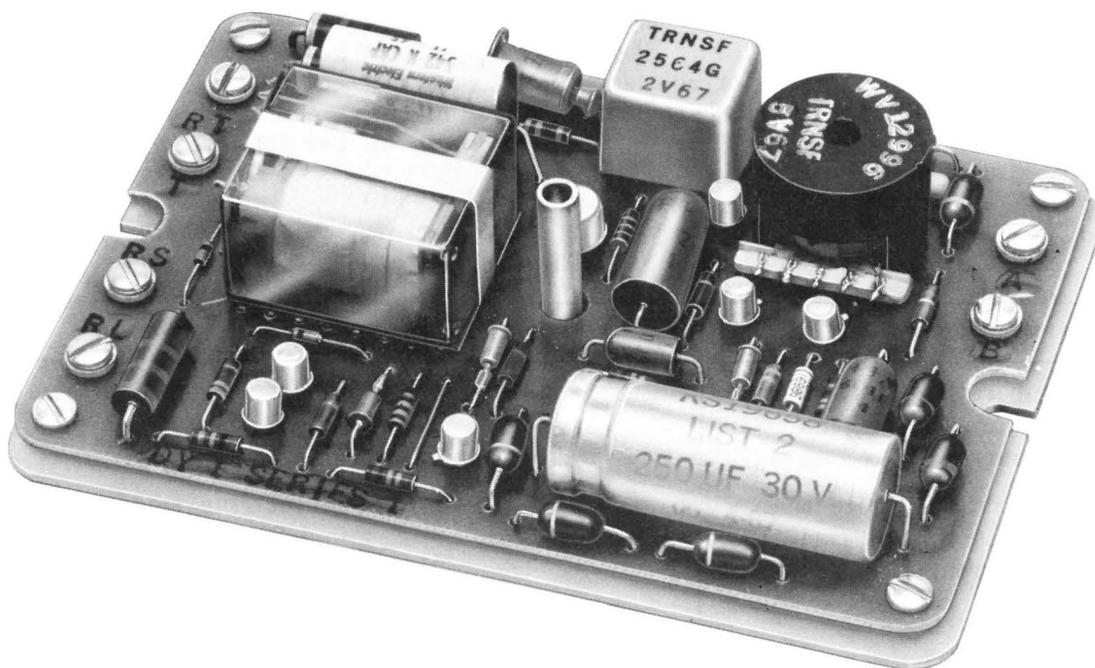


Fig. 4—Data Set 114A—Component Placement

other tones generated by the data set, care should be taken to avoid ear damage. Do not hold the handset directly to the ear during this test.

6. Remove the resistor from terminals A and B.
7. Place a second call to the ring-back number.

8. Monitor the ring-back and answer sequence using the 1011 Handset. The data set should give an open contact indication.

4.05 If the data set performs as indicated above, it is operating properly and the customer contacts can be connected to terminals A and B. This completes the installation and testing of the data set.