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T.M.

How You Can Join
The Network Nation

Assembling
The Complete
Data System

Built with parts gathering dust in the basement.

Modem Auto-Answer

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My greatest brainstorms always happen late Saturday; Sunday finds me searching electronic stores for parts not yet invented. I decided my next project would use the parts gathering dust in the basement.

My new Radio Shack direct couple modem let me run up quite a large telephone bill calling bulletin boards. I decided to build an auto answering device for the Radio Shack direct couple modem. The parts are not critical: Use almost any relay, SCR, or bridge diode. The capacitor in the circuit detecting the ring must be rated high enough (100WV dc).

Answering

After playing with my meter on the phone line I discovered it had 50 V across the lines until it rang, when about 90 V came across. The computer answers the phone when a relay signals a voltage greater than 60 or 70 across the line. Since I wanted the current traveling in the same direction I put in a diode bridge (see Fig. 1). Bingo! Every time the phone rang, the relay latched on.

To connect the modem to the phone line I

latched another relay to the first circuit. I kept the modem on constantly. The circuit in Fig. 2 keeps the relay latched after the ringing stops by locking the SCR after a voltage is applied to its gate.

I found the perfect power pack in an old calculator. I attached this circuit across the contacts of the answering circuit's relay. I added a relay along the circuit to reset the SCR and hang up the phone. I used the cassette port on/off switch to control the last relay, wired to be in the closed position until the cassette port switch closed the circuit to the coil. This opened the circuit across the relay contacts. By sending "Out 255,4"

several times in a loop, the circuits reset themselves and hang up the phone. The computer is then ready for the next caller.

By examining the value at the modem status register the computer could determine if someone is on the line and if a carrier signal is coming over. That port is 0E8H(232). Use the interrupts to check this port frequently for carrier signals; if one is not found the computer will hang up the phone. I hope a talented reader will address this problem. In the meantime have your program check this address occasionally and take the proper action, or make sure that your friends log off by calling a pro-
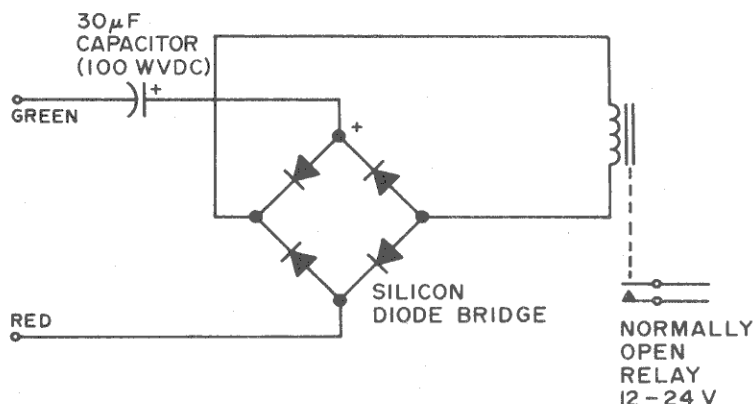

Fig. 1. Diode bridge answering circuit

Resistors:
  R1 1000 Ohms
  R2 380 Ohms
Capacitors:
  C1 30 μf (100WV dc)
Diode Bridge:
  100 PIV
Relays:
  RY1 12-24V N.O.
  RY2 12V N.O. DPST Reed relay. RS#275-229
  RY3 9-12V N.C. relay
Switch:
  SW1 N.C. push to open switch
Silicon Controlled Rectifier:
  SCR 100 PIV RS#(276-1152)
Subminiature jack
9V power source
Modular telephone jack
Modular telephone plug if desired

Table 1. Parts List

```
0 SAMPLE INKEY$ ROUTINE FOR CHECKING PORT
   (0E8H) FOR SIGNALS
1
2
3 10 a$ = inkey$:gosub1000:ifa$ = ""'then 10
4
5 1000if inp(232) = 191 then 1005 else return '191 = NO
   CARRIER
6 1005 c = 0      'set counter
7 1010 for T = 1 TO 30
8 1020 if inp(232) = 191 then c = c + 1   '191 is no carrier
9 1030 next
10 1040 if c>10 then 1050 else return   'buffer out a glitch
11 1050 for t = 1 to 100
12 1060 out 255,4   'RESET ANSWER CIRCUIT
13 1070 next
14 1080 return
```

Program Listing

"Sunday finds me searching electronics stores for parts not yet invented."

gram or subroutine with the proper "Out 255,4" loop. I found it best to repeat this about 100 times in the loop.

Place the circuits on a small perfboard no bigger than a cassette. A modular phone jack plugs the modem right into the circuit.

A modular plug makes the answering device easy to place and remove from the phone jack. ■
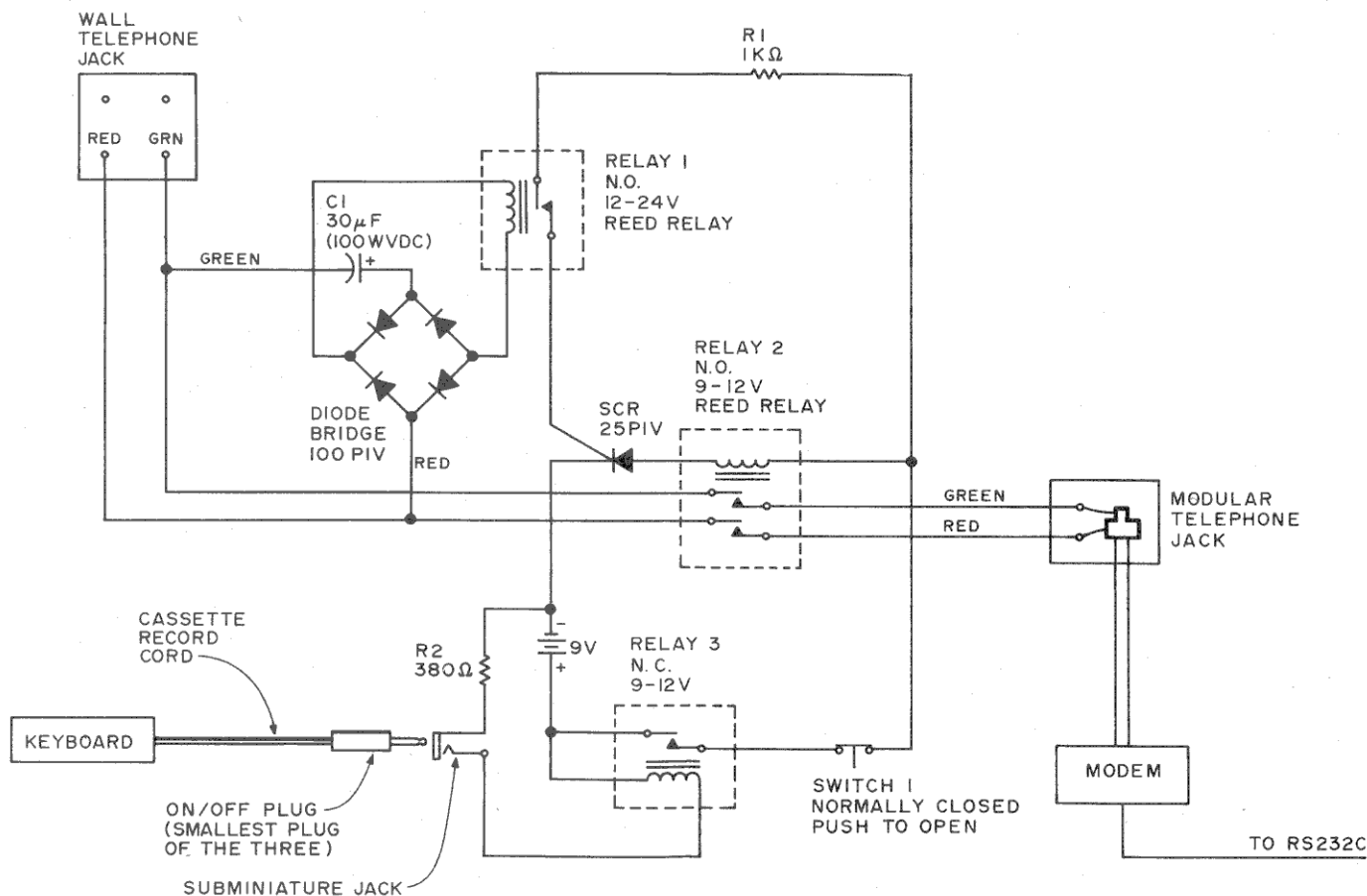

Fig. 2. Modem connect circuit