

Supervisory circuit monitors modem connection

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In telemetry or security applications in which a modem connection automatically establishes itself between two systems, a failure in one of the systems can interrupt the data exchange while the connection remains established until someone physically breaks the line or restarts the failed system. This situation can also happen if your PC crashes during a long-lasting Internet download. To prevent this problem, the circuit in **Figure 1** continuously supervises the RS-232C data lines (TxD and RxD) and automatically hangs up the connection when the circuit detects a long period without transmitted or received data.

The TxD and RxD inputs to the circuit (pins 2 and 3 on the D-type RS-232C connector) first drive line receiver IC_1 , whose outputs then drive the two inputs of IC_2 's dual retriggerable monostable multivibrator (one shot). When the system establishes a new connection, the first exchange of data triggers IC_2 , and positive pulses of duration $T_X = 0.45 \times R_X \times C_X$ appear at the 1Q and 2Q outputs. Each new transition on the

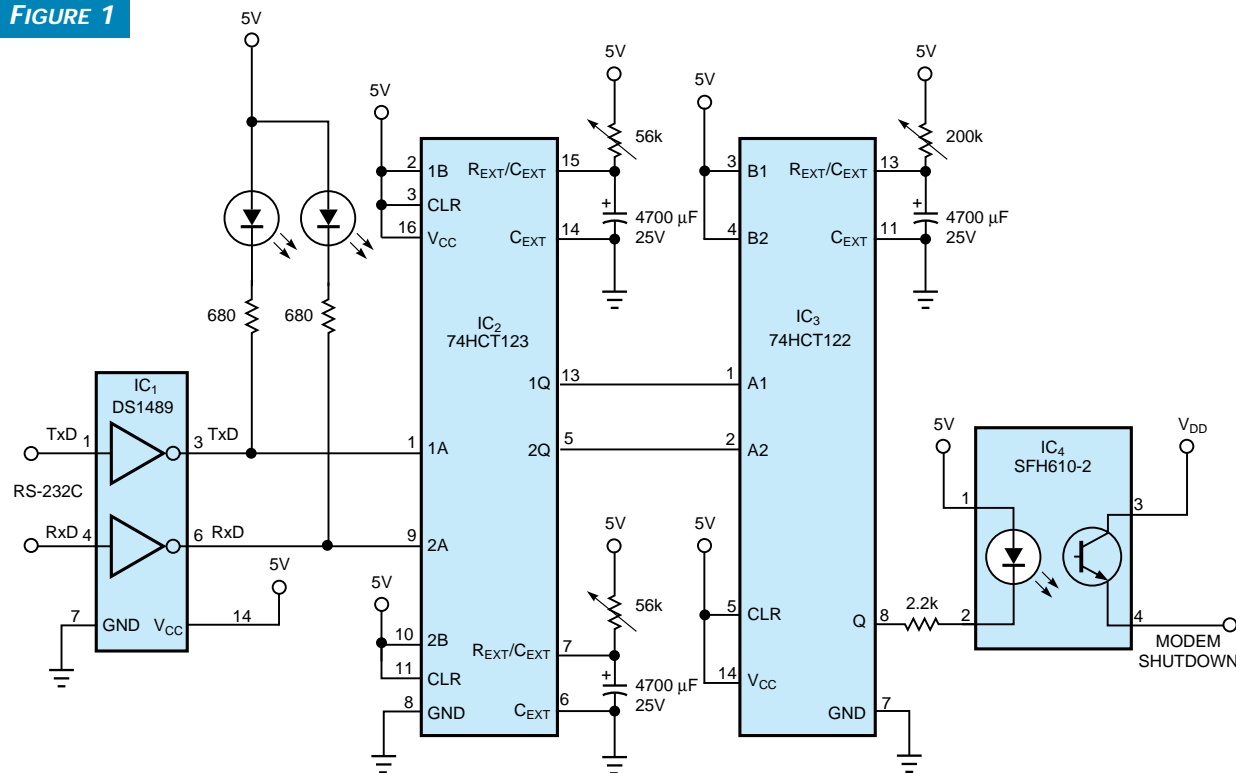
data lines retriggers the associated one shot, which extends the output pulse for a new period, T_X . In this application, $R_X = 56 \text{ k}\Omega$, and $C_X = 4700 \mu\text{F}$ corresponds to a period of about 2 minutes.

If a problem arises with one of the systems and it stops transmitting data for a period longer than T_X , the corresponding one shot's output pulse goes low, indicating that the system should hang up the connection. To allow for the self-restarting of the system, another one shot, IC_3 , shuts down the modem for a period T_Y , determined by the associated timing resistor and capacitor.

The conditioning circuit for the output signal uses an optocoupler, IC_4 , to drive the shutdown input of the modem. If your modem has no shutdown input, you can solve the problem by powering the modem through a relay driven by IC_4 . (DI #2186) EDN

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FIGURE 1



A lack of activity on the TxD or RxD lines fails to retrigger IC_2 , which causes the circuit to hang up the modem connection.