Cutler-Hammer Logic and I/O Products
D50/D300 Series Application Note

D50/D300 Remote Communications

This application note describes in detail the necessary procedure and connections to follow to establish remote programming and monitoring capability for the D50 and D300 series PLC's.

As D50 and D300 PLC's are used in industrial environments on installed equipment and machinery, it is often desirable to communicate to these PLC's from a remote location, such as an engineer's office within the same building, or even at a separate site located miles away. Program loading, modification, and monitoring are commonly necessary without the added burden of travelling to the installed site. The Cutler-Hammer D50 and D300 PLC's can communicate over standard telephone lines using the procedures outlined in this application note.

Bill of Materials

Figure 1 shows the example layout for remote communications. For purposes of this application note, it is assumed that the user is running Windows 95 on a desktop or laptop computer, and that they are attempting to program, modify, or monitor the PLC using the Cutler-Hammer GPC5 programming software.

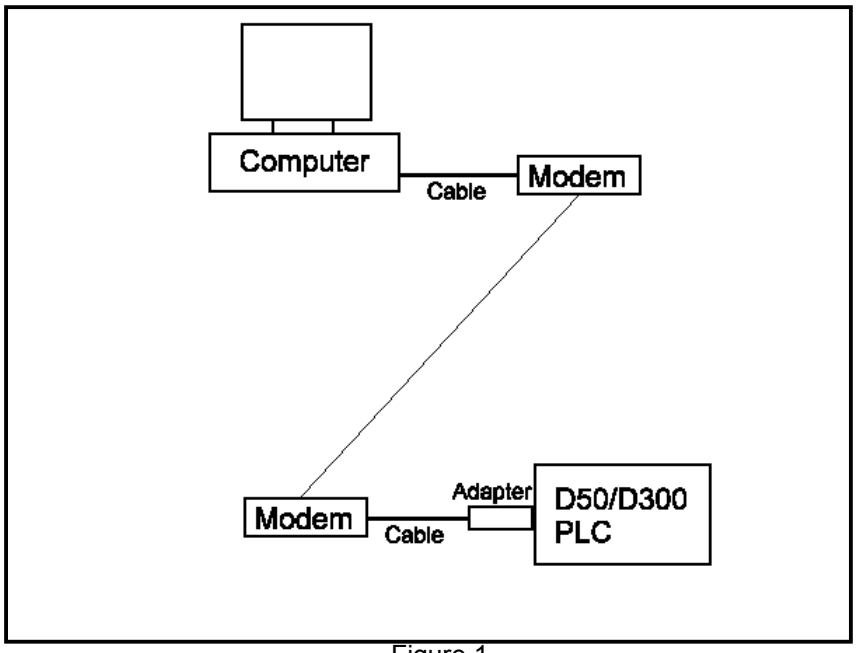

Figure 1

In addition to the computer and the PLC, two standard telephone modes, two cables, and an RS232/RS485 adapter are required.

Cabling

As can be seen from Figure 1, two cables are required to connect the computer and the PLC to the modems. Figure 2 below shows the pin-out and connections for the cable connecting the computer to its modem.

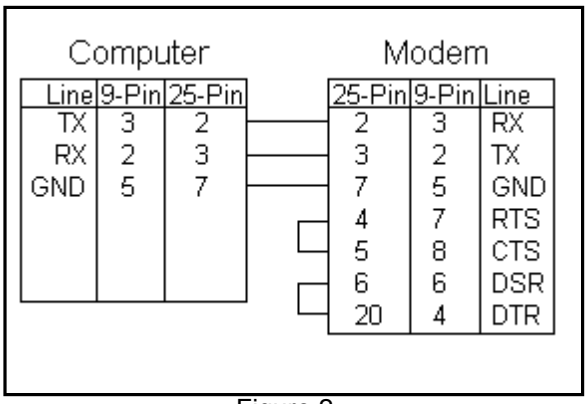

Figure 2

On the PLC side, the D50 and D300 PLC's monitor not only the TX and RX lines, but also the RTS handshaking line. By adding a jumper from the RTS line to the RX line, it is possible to satisfy the handshaking requirements of the PLC. The custom cable connects the modem to the RS232/485 adapter (D50CPM485), which is connected to the PLC. See Figure 3 below.

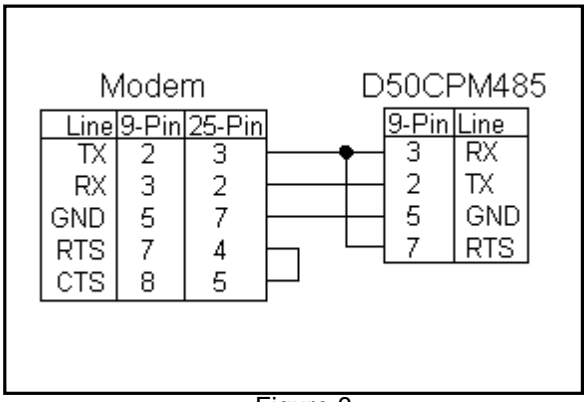

Figure 3

Link Procedure

Once the hardware and cabling have been connected, all that remains is to set up the modems for proper communications. The setup for each modem is slightly different. To configure each modem, connect a computer to that modem with a standard straight-through serial cable. On the computer, run a communications program that allows you to send commands out the computer's serial port. For example, Windows 95 provides the terminal program HyperTerminal. To use it to configure the modem, run HyperTerminal, and create a new session that communicates via "Direct to Com1" (or whichever port the modem is connected to). To verify that you are properly connected to the modem, type "AT" and hit enter in the HyperTerminal window. The response "OK" should be displayed from the modem. If this is not the case, then the modem is not a standard Hayes-compatible modem, or the computer is not properly connected to the modem.

Once properly connected, issue the following commands to the modem at the computer end of the connection:

```
AT
AT&K0
AT&D0
ATS37=9
AT&W0
```

Once completed, connect the computer to the modem to be used at the PLC side. On the PLC side, the setup is only slightly different:

```
AT
AT&K0
AT&D0
ATS37=9
ATS0=1
AT&W0
```

At this point, the configuration is ready to perform remote communications. Following this procedure to run the GPC5 program loader software over the phone link:

1.) Use a DOS or Windows-based communications program (such as HyperTerminal) to dial the local modem, to call the remote modem at 9600 baud.
2.) Once connection is made, exit the communications program, and run the GPC5 programming software.
3.) Use the Online or Monitor functions to upload, download, modify, configure, or monitor the D50 or D300 PLC.