VT-MODEM with Giddings & Lewis Controls dialing-up to PLC's

Abstract: This document explains the procedure for dialing and establishing communications with a Giddings & Lewis Controls MMC (Machine Motion Control) PLC using a SIXNET industrial modem (VT-MODEM-#).

MMC from Giddings & Lewis Controls can be controlled remotely via telephone wiring using a SIXNET industrial modem. The MMC can be programmed to perform its poll of I\O modules or other devices through the phone connection.

Software Used:

- Giddings & Lewis Controls PiCPro v11.0 Professional Edition
- SIXNET VT-MODEM Setup Wizard v1.15
- Windows 2000 OS

Hardware Used:

- (1) PC with a serial port connection to a VT-MODEM-1 via the VT-CABLE-MDM
- (1) Giddings and Lewis Controls MMC PLC 4-Axis Analog Unit
- (1) VT-MODEM-2 connected to the Giddings and Lewis Controls MMC PLC 4-Axis Analog Unit via the VT-CABLE-MDM
- (1) cross-wired serial Cable (PiC to PC connection)
- (2) VT-CABLE-MDM (modem cables)
- (2) RJ11 telephone cables

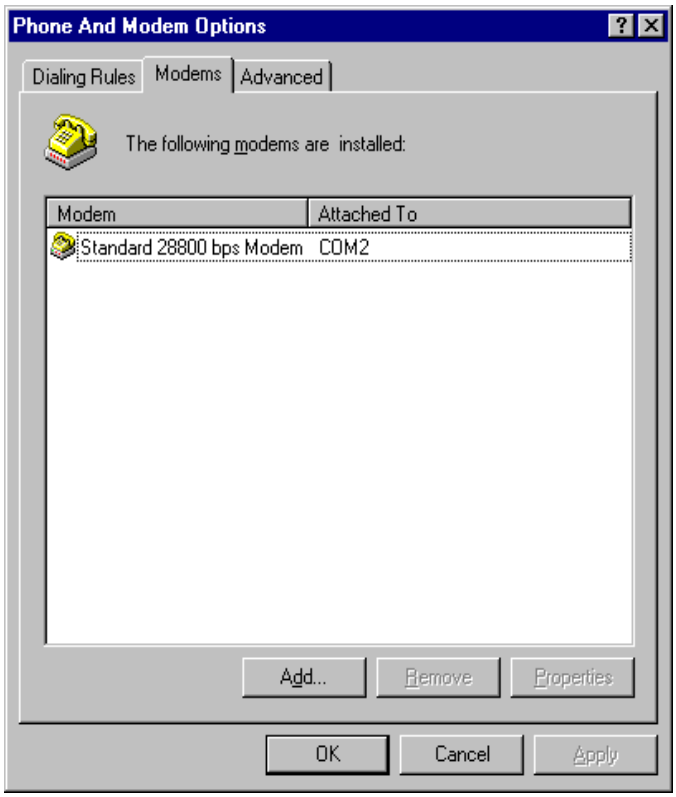
Cable Pin-outs:

cross-wired serial cable					**VT-CABLE-MDM**			
DB9 Female to PC (DTE)		DB9 Female to MMC			DB9 Female to PC (DTE)		DB9 Male to modem (DCE)	
1					1	←	1	DCD out
2	→	4	RD out		2	←	2	RD out
3	→	3	TD out		3	→	3	TD in
4	←	2	RD in		4	→	4	DTR in
5	←	6	RTS out		5	–	5	GND
6	–	5	GND		6	←	6	DSR out
7	→	8	CTS out		7	→	7	RTS in
8	←	7	RTS in		8	←	8	CTS out
					9	←	9	RI out

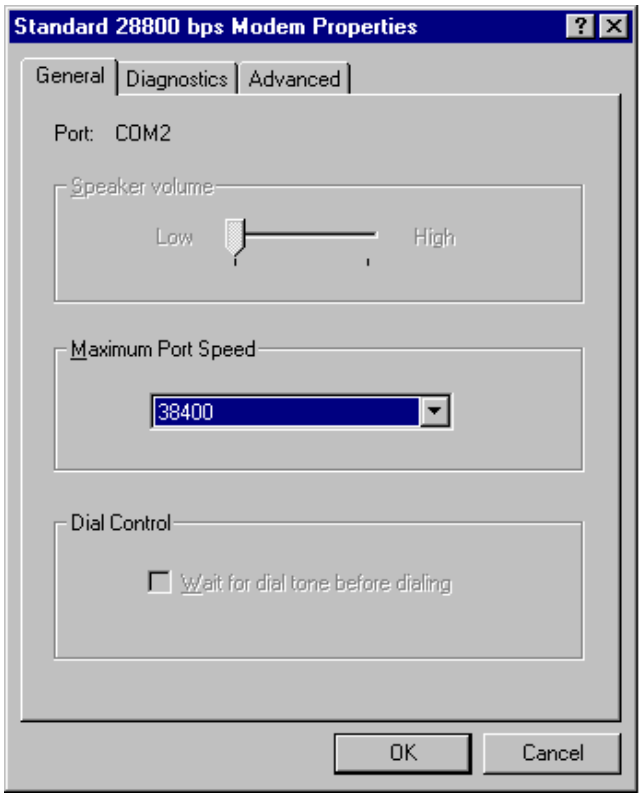
PC and VT-MODEM-1 Windows Setup:

Note: A SIXNET VT-MODEM-1 was used during testing. However, most internal PC modem cards will function properly as the dialing modem in this application.

To configure windows to recognize the VT-MODEM-1, go to Start → Settings → Control Panel → Phone and Modem options. Next, go to the Modems tab in the Phone and Modem options window, and then click on Add… Next, check the "Don't detect my modem; I will select it from list" box and manually select "Standard 28800 bps Modem" from the modem type list. Refer to screen shots 4 and 5 below for details of how the modems were configured.



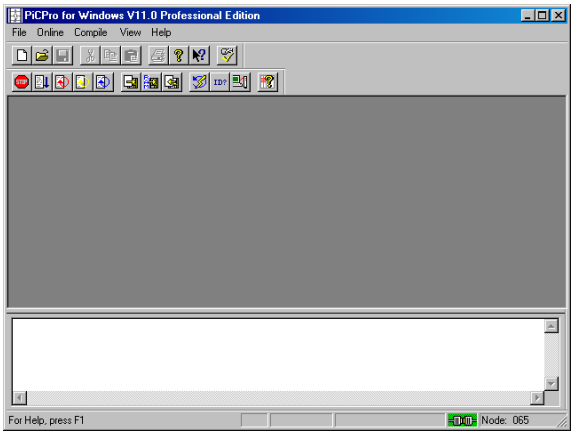
Screen Shot 1



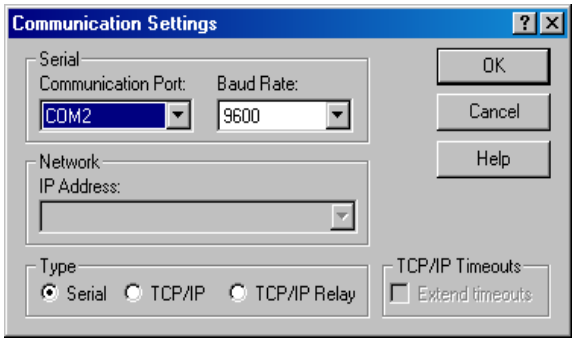
Screen Shot 2

Configuring the Hardware:

- **MMC PLC-** Connect the MMC directly to the PC via the cross-wired serial cable to the PC's serial port (COM 2 was used in this case) and the MMC's PiCPro port. Using PiCPro Professional Edition, the green connection light on the bottom right-hand corner of the window will turn green to verify a valid connection. Next, select Online → Comm settings… and access the Communications Settings window. Select the appropriate Com port (COM 2 in this test) and 9600 baud. (See Screen Shot 3 and 4).

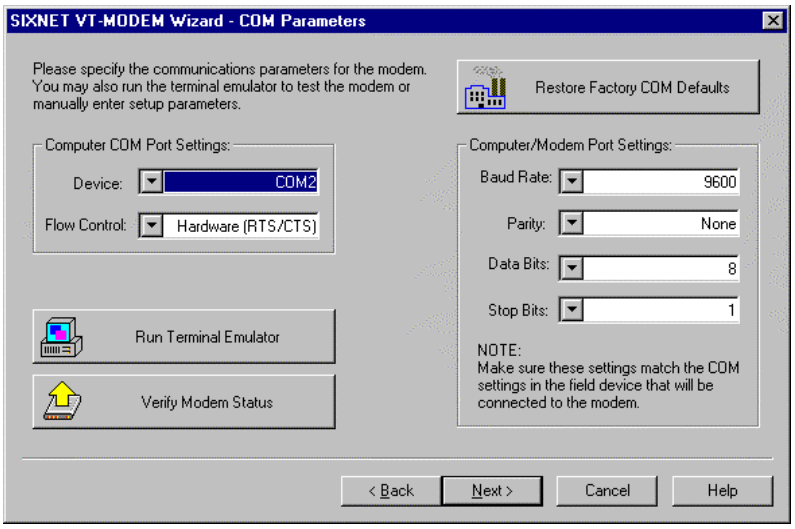


Screen Shot 3



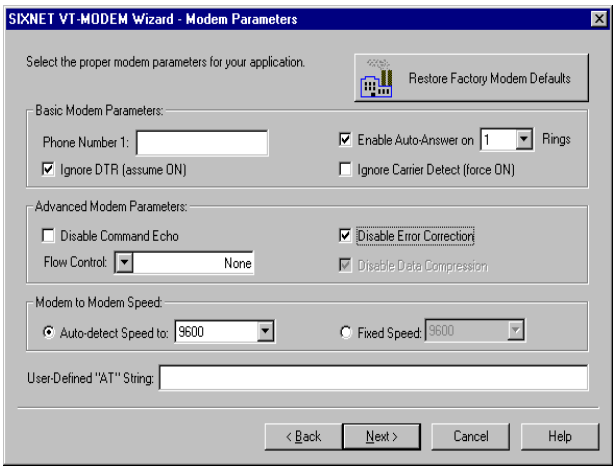
Screen Shot 4

- **VT-MODEM-1 –** Connect the VT-MODEM-1 to the PC via the VT-CABLE-MDM. Using the SIXNET VT-Modem Setup Wizard chose VT-MODEM-1 in the first window. Select the appropriate communications port (in this case COM 2) with flow control. Configure the Baud Rate for 9600 with 8 data bits, no Parity, and 1 stop bits (See Screen Shot 5).

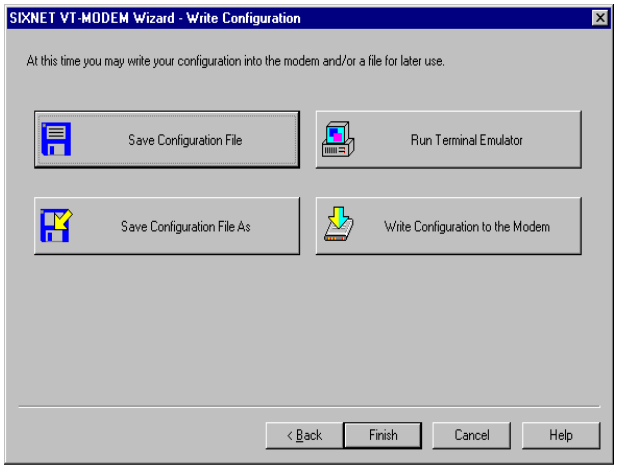


Screen Shot 5

In the Modem Parameters setup window, disable error correction, and data compression, and then select “None” in the Flow Control drop down list. Finally, write the configuration to the modem by clicking on the “Write Configuration to the Modem” button (See Screen Shots 6 and 7).

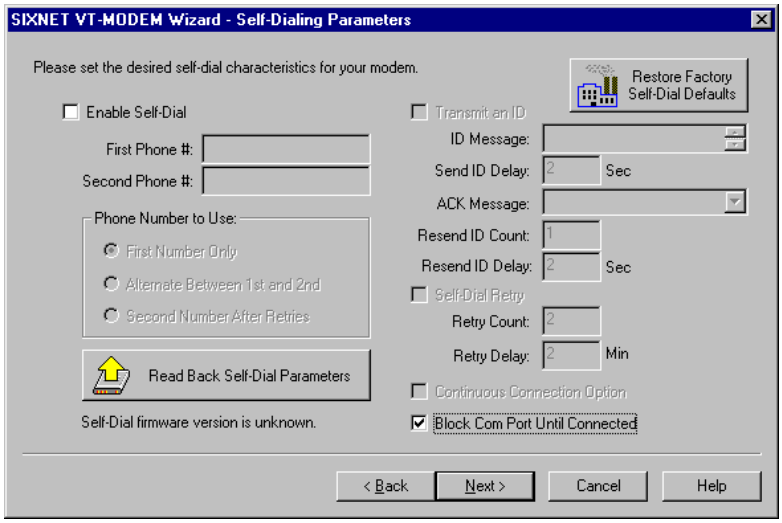


Screen Shot 6



Screen Shot 7

- **VT-MODEM-2** – Now connect the VT-MODEM-2's RS232 port to the PC's serial port via the VT-CABLE-MDM cable. Using the VT-Modem Setup Wizard enter all the same parameters as the VT-MODEM-1, and check the "Block Com Port Until Connected" box in the Self Dialing Parameters window (See Screen Shot 8). Write this configuration into the VT-MODEM-2. The power LED should emit a half blink, indicating that the Block "Com Port Until Connected" feature is enabled. (Note: This modem configuration will be on the SIXNET CD under the file name GLpic_mdm2.6ms.)



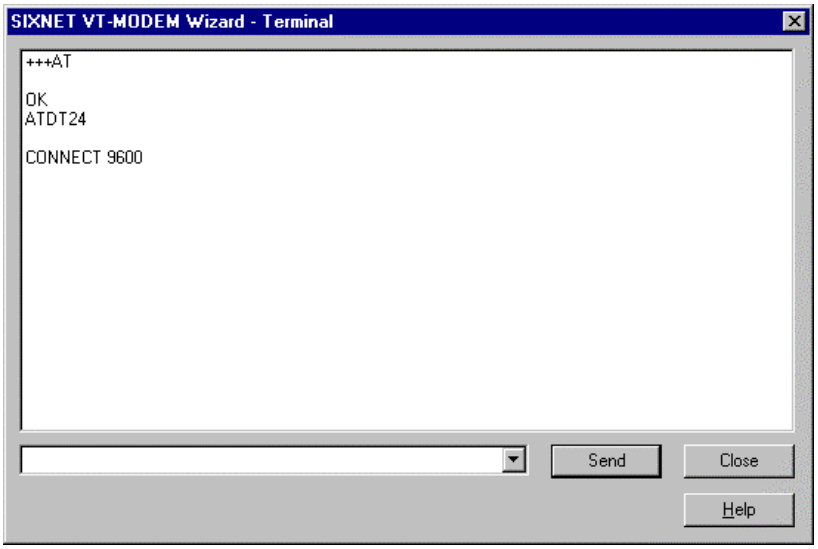
Screen Shot 8

Connecting the Hardware:

- **Phone Connections-** The two modems were connected to an internal analog phone system through their Line RJ11 jacks using standard RJ11 telephone cable.

- **Connecting the modems to the devices**- Connect the VT-MODEM-1 to the computer's communications port 2 via the VT-CABLE-MDM. Connect the MMC to the VT-MODEM-2 via the VT-CABLE-MDM.

Establishing the connection:
PiCPro software doesn't provide a dial feature. However, a connection can be established using the Terminal Emulator in the VT-MODEM Setup Wizard. (Note: To perform this step successfully the PiCPro software must be completely closed.) In the VT-MODEM Setup Wizard, enter the Terminal Emulator window by pressing the "Terminal Emulator" button. Type AT and click (Send) to verify that the modem responds with an "OK". Next, use the ATDT command to dial the number. (In this case the number used is 24.) When the modems connect, a CONNECT 9600 message will result (See Screen Shot 9). Now close out of the VT-MODEM setup Wizard and start the PiCPro software. In the Main window the green connection light should come on, indicating that a valid connection is established (See Screen Shot 3).



Screen Shot 9

Conclusion:
This test successfully established communications between a PC and MMC via SIXNET industrial modems.