Application Note
Calling Home with the PCD
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Introduction
Using the advanced capability of the PCD, users can connect to a phone line using a Sixnet SixTrack Self dialing Modem and dial out to a SCADA system or pager, and report one of several specific events on the distribution line. This application note describes the interface to a Sixnet modem.

Required Components
The Sixnet Self Dialing Modem is a Hayes compatible industrial grade modem that is recommended for the severe duty of outdoor power distribution application. The modem has an easy-to-use configuration tool, removing trial and error out of typical modem setups. For more information on the Sixnet Modem, visit www.sixnetio.com on the internet.

The self-dialing function requires the following components:
   2 - SixNet Self Dialing Modems, model VT-Modem-2, one for transmitting and one for receiving
   1 - Surge
   1 - 48 V to 12 VDC converter for powering the Sixnet modem with the VR 48 V battery system, available from ABB
   1 - 9 pin male to 9 pin male RS-232 cable for connecting the PCD to the modem
   1 - 9 pin female to 9 pin male connector for connection to a laptop
   WinPCDT2 for configuring programmable contacts on the PCD.
   A surge suppression device for additional protection of the Sixnet modem (recommended)

Making Connections
Figure 1 below shows a typical setup for the PCD and Sixnet Modem with the self-dialing feature. First, a connection must be made to power up the unit. On VR-3Ss that have a 48 VDC power supply, a voltage converter (48 VDC – 12 VDC), which can be supplied by ABB (S#12A00630G02), is needed. The 48 VDC supply can be obtained from the control. The power can be obtained from the P1 and N1 terminals on the DIN rail connector supplied on most designs. **Important:** Do not attempt to pull 48 VCD or 12 VDC off of the battery. This will affect the charging of the battery and can lead to a fully discharged battery even though AC is applied.

After this connection is made, connect the RS-232 cable and the output contact of the PCD as shown. Which contact on the PCD to use is optional. As indicated in Figure 1, the contact must be "wetted" with the DC voltage.

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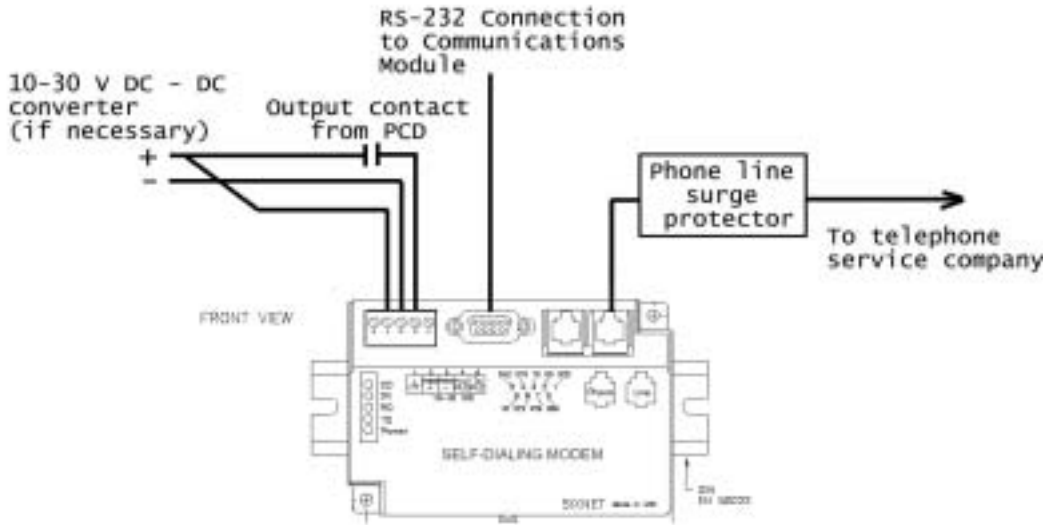Figure 1: Typical Setup – Connections to Control

Figure 2 below shows the connections for the PC or SCADA side. Other modems may work, but compatibility is assured with using the same brand sending and receiving modem. Connect a standard RS-232 cable from the modem to the PC Com port.

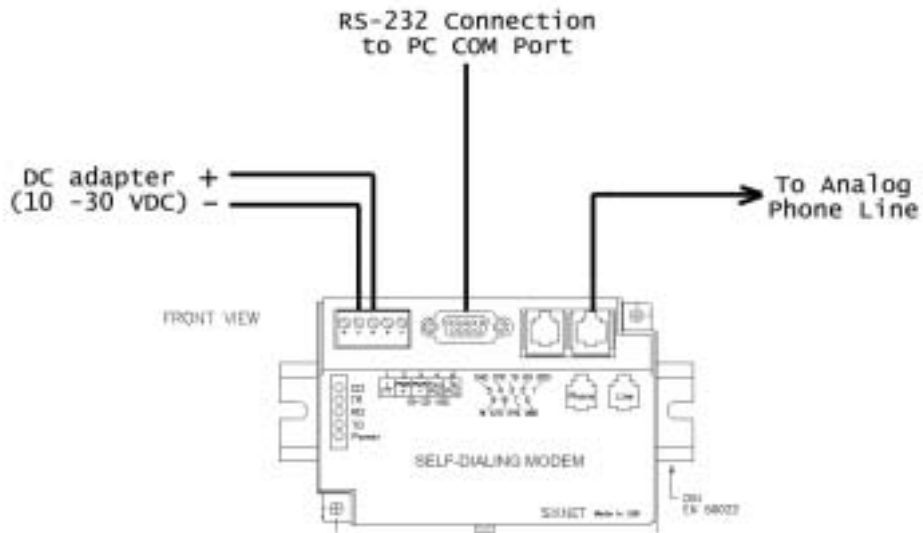Figure 2: Typical Setup – Connections to PC

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Communicating to the Sixnet Modem

Before using the self-dial feature of the Sixnet modem, establish the dial out connection from the PC to the PCD control to ensure the communication line is good. Follow the following steps to configure the Sixnet modems.

For the modem connected to the PCD:

1. Connect the receive modem (temporarily) to your PC for programming with a straight null modem cable.
2. Open up the Sixnet VT Modem setup Wizard, choose VT-Modem-2 and click Next.

3. Set the COM Parameters as required. Typically the PCD and Modems will be set to 9600 baud. When finished, click Next.
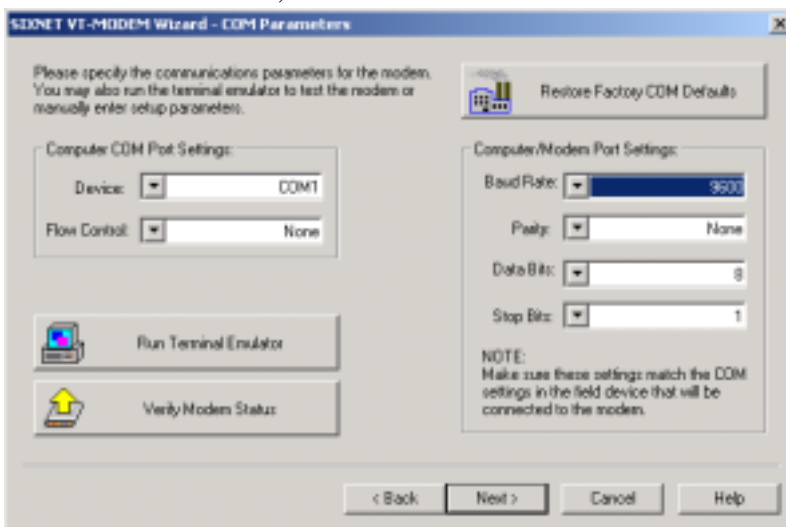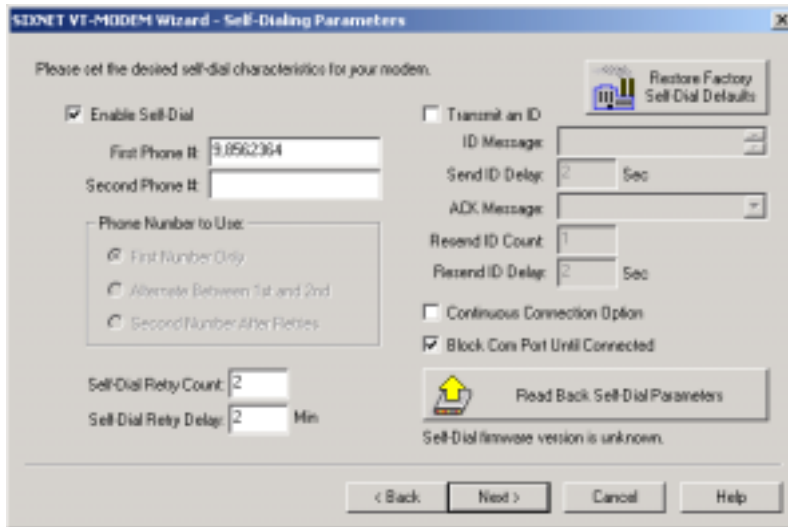

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4. On the Self Dial Parameters screen, enter the phone number for the SCADA system or pager. For dialing into a SCADA system, you can enter one or two phone numbers. If paging, reference the Sixnet Technical Note # 627 available on the Sixnet website for further details.

5. On the Modem Parameter screen, select Ignore DTR, Enable Auto-Answer on 1 ring, and Disable Data Compression, as shown below and click Next.
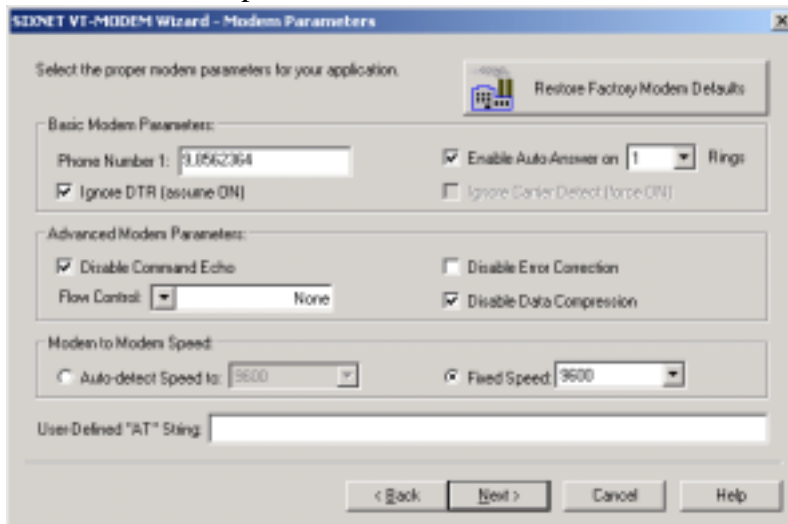

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6. On the Write Configuration screen, select Write Configuration to the modem, as well as Save Configuration File. This completes the PCD modem setup.

For the modem connected to the PC:
1. Follow Steps 1, 2 above
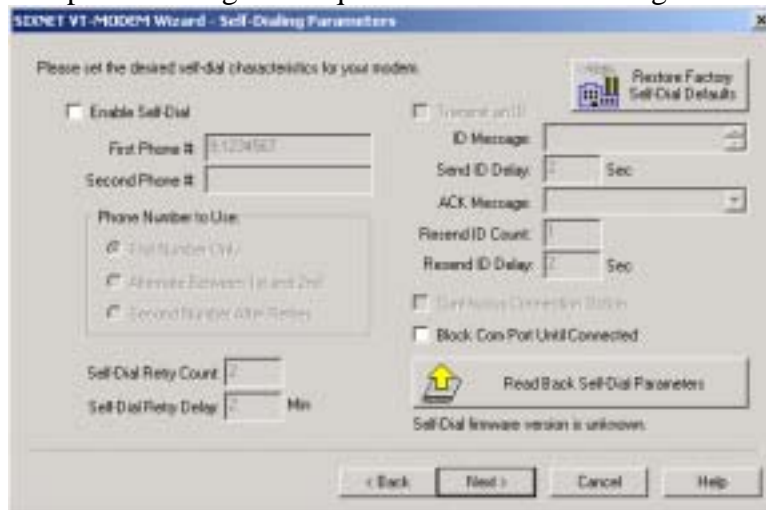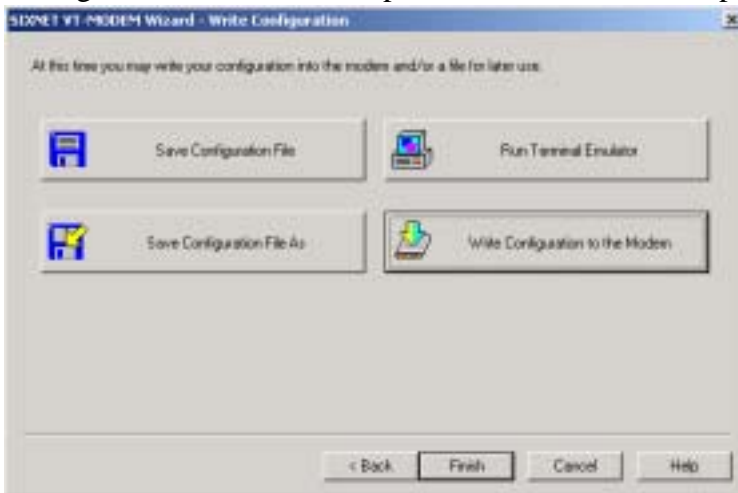2. No special settings are required for the Self Dialing. Select Next to continue.

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Lake Mary, FL 32746	+1-407-732-2000	407-732-2161		1VAL264202-AP
				Rev. A
				December 30, 2002

3. Select Modem Parameters per the following screen. Be sure to select Ignore DTR, Enable Auto-Answer on 1 ring, Disable Command Echo, and Disable Data Compression. Click Next when completed.
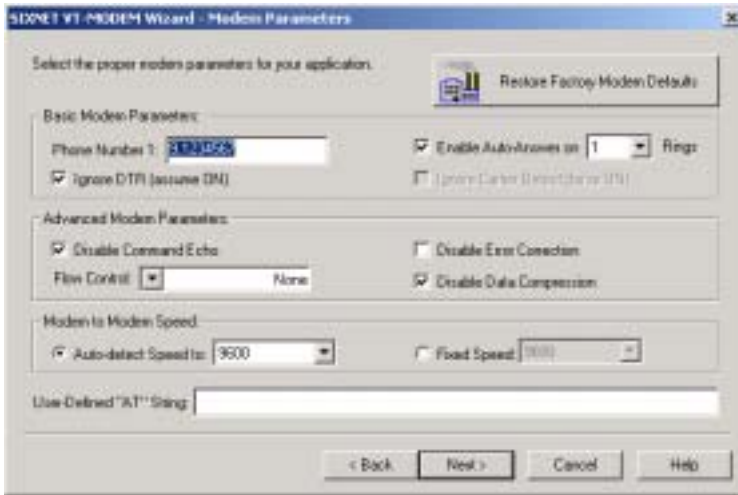
4. On the Write Configuration screen, select Write Configuration to the modem, as well as Save Configuration File. This completes the PC modem setup.

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Setting Up Triggering Events

Choose Out3c to initiate the Sixnet self dial function to dial out to SCADA on any of the following events: Lockout Alarm (LOA), Loss of AC Alarm (LOAC), or Breaker Failure Alarm (BFA). Set up the programmable outputs in the PCD as follows (reference the PCD instruction book for more information on using programmable logic):

Programmable Outputs - Source: Local (Changed)

	Out1b	Out2b	Out1c	Out2c	Out3c	Out4c	N/A	N/A	FB8	FB7	FB6	FB5	FB4	FB3	FB2	FB1
Timers:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Names:					Slf Dial										rem tag	tag btn
Logic:	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR
TRIP	✔															
CLOSE		✔														
TAGBTN																✔
TAGOPN															✔	

79LOA					✔											
BFA					✔											
LOAC					✔											

Receive Data from Database | Receive Data from Unit | Edit Timer...

Send Data to Unit | Send Data to Database | Print... | Back

PCD Protocol Setup

Depending on how you will use the Self Dialing modem, either DNP or Modbus Protocol will be utilized. To page, and then call back to the unit, Modbus is the preferred choice. To call back to SCADA and issue unsolicited data, DNP is necessary. The SCADA system can also dial out to the unit.

To use the call back feature with DNP protocol, set **Mode Parameter # 5** to "Disable", which allows a "forced mode" for unsolicited mode, bypassing the need for the PCD to verify that the master can accept unsolicited data. This is necessary for a dial-up system to work successfully, because with a dial up connection, each time the unit is disconnected, the verification that the PCD can send unsolicited commands is reset. The forced mode overrides this requirement.

Engineer Call Out to the PCD

The engineer can call out to the PCD to download fault and operation records, set protection parameters, and observe metering data when it is set to either Modbus or DNP. In order to use WinPCD when the PCD is in DNP mode, you must set Parameter 24 to "Enable" to enable protocol Autodetect function. This feature allows the unit to communicate in DNP as the default mode, but switch over to Modbus ASCII when it detects a Modbus command. To dial out with WinPCD after adding the unit, choose Edit – Configure – Communication and set the protocol to Modbus ASCII (standard), and enter the phone number for the PCD on the Miscellaneous Tab. When you double-

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click on the unit you want to communicate with, WinPCD automatically dials out with the entered phone number.

The latest information on the PCD control can be found at our website at www.abb.com/mediumvoltage. (Select PCD from the dropdown Shortcuts menu.)

For additional support or information please call ABB Inc. at 1-800-929-7947 Ext. 5 or +1-407-732-2000 Ext. 5.

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