SIEMENS

Installation Instructions
Model NCC-2F
Network Interface Card
For PCI Application with Windows

OPERATION

The Model NCC-2F from Siemens Industry, Inc. (as shown in Figure 1) is a PCI-compliant network card used with the NCC, NCC WAN and Desigo CC systems. The NCC-2F allows the user to interface networked MXL and/or XLS fire panels to Desigo CCs and/or NCCs on XNET. The NCC-2F can also provide an interface to NCC WAN components, including the HUB-4 over HNET. An NCC-2F can provide connectivity to either XNET or HNET, or both XNET and HNET using 2 cards. The NCC-2F may also be used in an FVNET setup inside the VNT. This allows for interfacing HNET and XNET between multiple XLS systems.

The NCC-2F provides the NCC and Desigo CC with a supervised RS-485 network connection. The NCC-2F operates in both Style 4 (Class B) and Style 7 (Class A) modes.

The module fits in any available PCI 5V compliant slot. The card is keyed so that it will only fit in an appropriate PCI slot. The module comes preinstalled in NCC and Desigo CC computers. Hardware installation instructions for the NCC-2F, when it is not factory installed, can be found in the *Physical Installation* section of this document.

Controls and Indicators

The NCC-2F provides one reset switch and four LEDs that are accessible through the back of the PC it is mounted in. The reset switch (S2) is located just below TB1. Pushing the reset switch initializes the NCC-2F operation.

The LEDs are located above TB1 and are, in top to bottom order:

LED	Color	Description
NET OK (DS2)	Green	Blinks to indicate network is receiving data.
HOST OK (DS1)	Green	Blinks to indicate data to transmit.
CH A (DS4)	Yellow	Blinks* to indicate individual Channel A select.
CH B (DS5)	Yellow	Blinks* to indicate individual Channel B select.

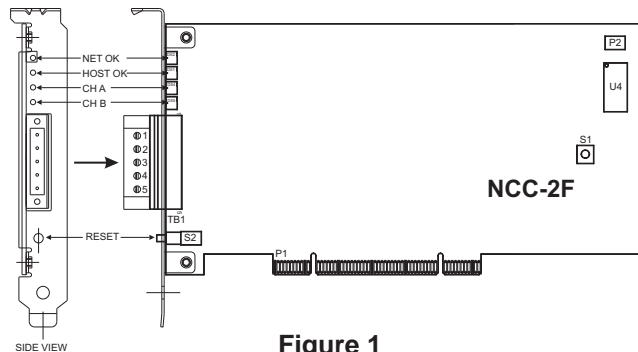* If LED is steady, indicates a Style 7 fault on that channel.

Figure 1
NCC-2F Module Board

CONFIGURATION

The NCC-2F is assigned to a standard COM port by Windows when the drivers are installed. The drivers come pre-installed in NCC and Desigo CC computers. The NCC-2F driver installations are covered in the *Driver Installation* section of this document.

The COM port assigned to the NCC-2F can be viewed in the Windows Device Manager. One NCC-2F card occupies two consecutive COM ports, but only one will be available for use by the NCC-2F. On Windows XP systems, the used COM port will be the first (or lower) numbered port assigned for the NCC-2F card. On Windows 7 systems, the used COM port is the NCC-2F Enhanced Communications Port assigned as Port0 (seen via Properties) - and may be the lower or higher port number, depending on the computer.

The Device Manager is accessible in Windows as follows:

WINDOWS XP

Click Start >Settings >Control Panel >Administrative Tools >Computer Management >Device Manager.

Another way is to right click My Computer icon, then select Properties >Hardware >Device Manager.

Figure 2 shows a sample Windows XP Device Manager view and a typical assignment of COM ports on a PC with (2) NCC-2F boards installed. The port assignments for the NCC-2F are labeled *PCI Communications Port*.
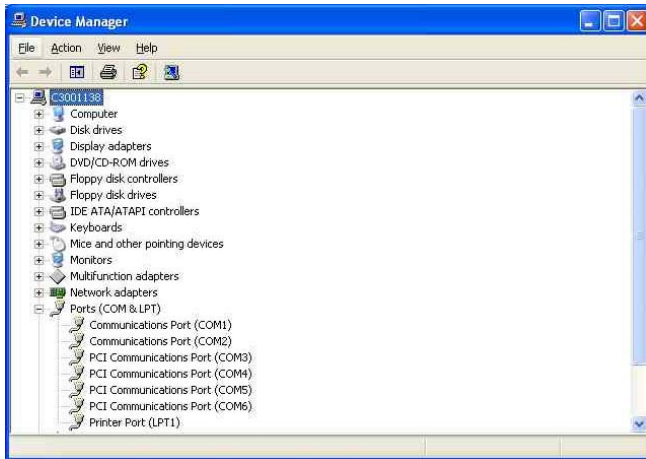

Figure 2
Windows XP Device Manager View

WINDOWS 7

Open the Start menu, then click on Control Panel; this will open a new window on the Desktop, showing the Control Panel options.
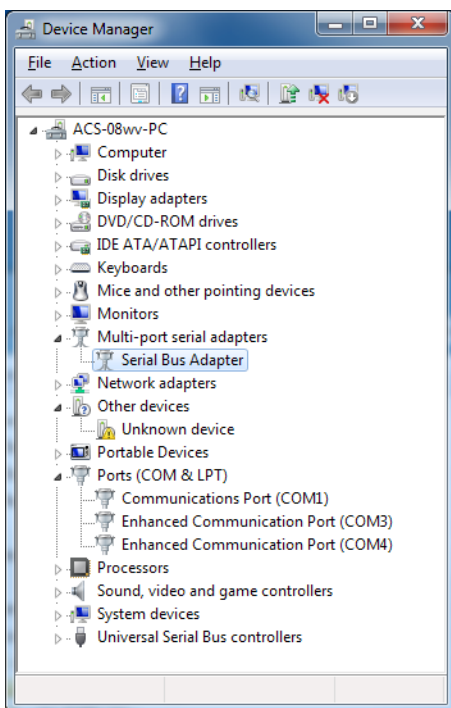

Figure 3
Windows 7 Device Manager View

The Address bar of the Control Panel window should end with the "Control Panel" location, followed by a "right-arrow".

Click on the "right-arrow" to display the available additional locations, then select All Control Panel Items, and click on it. On the updated screen, select Device Manager and click on it.

Figure 3 shows a sample Windows 7 Device Manager view and a typical assignment of COM ports on a PC with (1) NCC-2F board installed. The port assignments for the NCC-2F are labeled Enhanced Communication Port, once installed.

In these examples above, the first NCC-2F is assigned to ports COM3 and COM4, and the second NCC-2F is assigned to ports COM5 and COM6. This is the default setup, with XNET on COM3 (the first port of the first board) and HNET on COM5 (the first port of the second board).

The NCC or Desigo CC XNET (and HNET) port assignment can be changed to agree with any port assignment at the time of install or update. Either board can handle XNET and either board can handle HNET. There is no difference in the boards. However, XNET and HNET are different protocols, so HNET wiring should go to the board with the COM port assigned to HNET and, likewise, XNET wiring should go to the board with the COM port assigned to XNET.

PHYSICAL INSTALLATION

Remove all Windows PC power before installation.

To install the NCC-2F in a computer in which it is not factory installed, follow the steps listed below:

1. Unscrew the two knurled knobs on the rear of the NCC or Desigo CC computer (computer enclosure may have different physical characteristics.).
2. Slide the cover back an inch or so and lift it off.
3. The NCC-2F installs into any free PCI 5V compliant slot in the computer. Select a slot and remove the blank cover, keeping the screw.
4. Remove the terminal block from the NCC-2F by removing the two screws that hold it to the bracket.
5. Place the NCC-2F into the open slot so that the NCC-2F card edge extends through the opening in the back of the PC.
6. Align the NCC-2F with the card edge connector in the computer and press it firmly into place.
7. Secure the NCC-2F by installing the screw that held the blank cover. (Refer to Step 3.)
8. Replace the computer cover and tighten the knurled knobs (or equivalent).

9. Reattach the terminal block by sliding it onto the NCC-2F card edge and install the two screws. This is a keyed connection and will only install one way.

10. After the NCC-2F is installed, install the NCC-2F drivers following the instructions in the *Driver Installation* section of this document.

ELECTRICAL CONNECTIONS

Network (XNET)

The XNET connections are made on terminals 1-4 of the terminal block on the rear of the NCC-2F. The primary pair (or network A) is on terminals 1 and 2. The secondary pair (or network B) is on terminals 3 and 4.

For Style 4 networks, install a 120 ohm EOLR on terminals 3 and 4. See Figure 4 for wiring details.

For Style 7 networks, connect to both the primary and secondary pairs. See Figure 4 for wiring details.

Network (HNET)

The HNET connections are made on terminals 1-4 of the terminal block on the rear of the second NCC-2F. The primary pair (or network A) is on terminals 1 and 2. The secondary pair (or network B) is on terminals 3 and 4. Install a 120 ohm EOLR on terminals 1 and 2, and on terminals 3 and 4.

For Style 4 networks, connect only the primary pairs. See Figure 5 for wiring details.

For Style 7 networks, connect to both the primary and secondary pairs. See Figure 5 for wiring details.

Network (HNET-VNT)

For Style 4 networks, connect only the primary pairs. See Figure 6 for NCC-2F HNET-VNT connections.

For Style 7 networks, connect to both the primary and secondary pairs. See Figure 6 for wiring details.
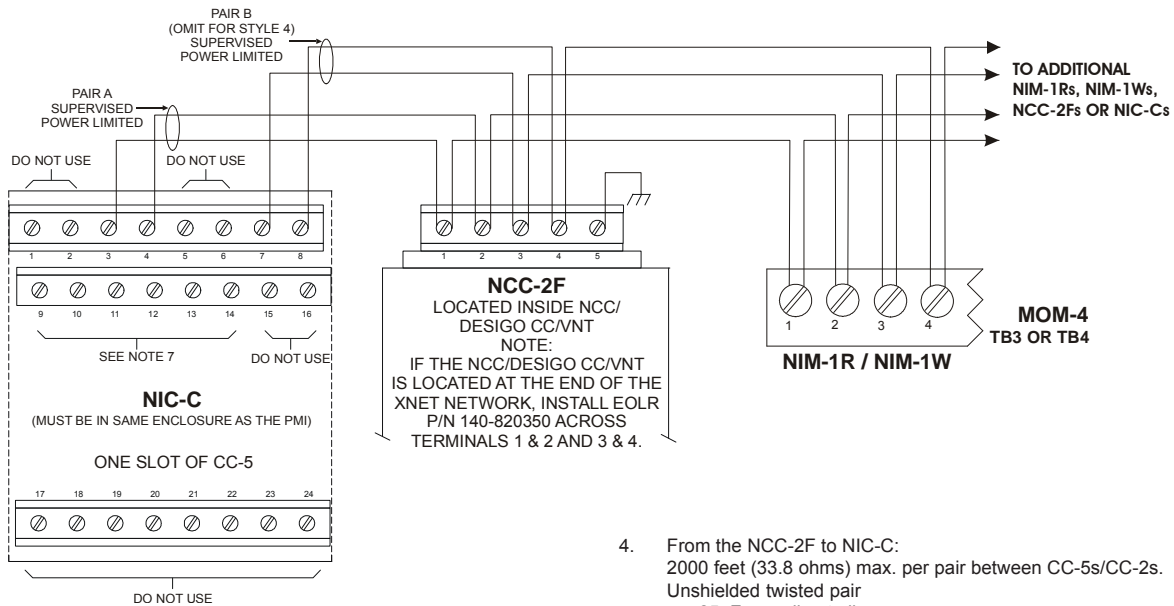
Refer to Wiring Specification for MXL, MXL-IQ and MXLV Systems, P/N 315-092772 revision 6 or higher, for additional wiring information.

NOTES:
1. No EOLR required for NIC-C.
2. The screw terminals can accommodate one 12-24AWG or two 16-24AWG.
3. From the NCC-2F to NIM-1R, NIM-1W or NCC-2F:
   80 Ohms max. per pair.
   Unshielded twisted pair - .5µF line to line
   Shielded twisted pair - .3µF line to line, .4µF line to shield
4. From the NCC-2F to NIC-C:
   2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
     .25µF max. line to line
   Shielded twisted pair
     .15µF max. line to line
     .2µF max. line to shield
5. Use twisted pair or twisted shielded pair.
6. Terminate shields at one end only.
7. Power limited to NFPA 70 per NEC 760.
8. CC-5 terminals 9 - 14 are not connected and can be used to tie shields together.
9. Positive or negative ground fault detected at ≤10K ohms on pins 3-4, 7-8 of the NIC-C.
10. Each pair independently supervised.
11. Maximum voltage 8V P-P.
12. Maximum current 75mA during message transmission.

Figure 4
NCC-2F XNET Connections

NOTES:

1. The screw terminals can accommodate one 12-24AWG or two16-24AWG.
2. From the NCC-2F to NIC-C:
   2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
      .25µF max. line to line
   Shielded twisted pair
      .15µF max. line to line
      .2µF max. line to shield
3. Use twisted pair or twisted shielded pair.
4. Terminate shields at one and only one NIC-C.
5. Power limited to NFPA 70 per NEC 760.
6. Maximum voltage 8V P-P.
7. Maximum current 75mA during message transmission.
8. Each pair independently supervised.
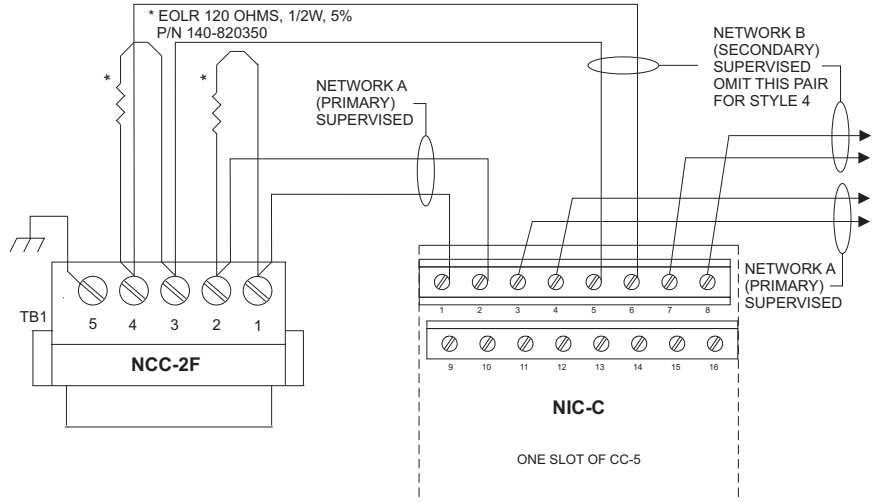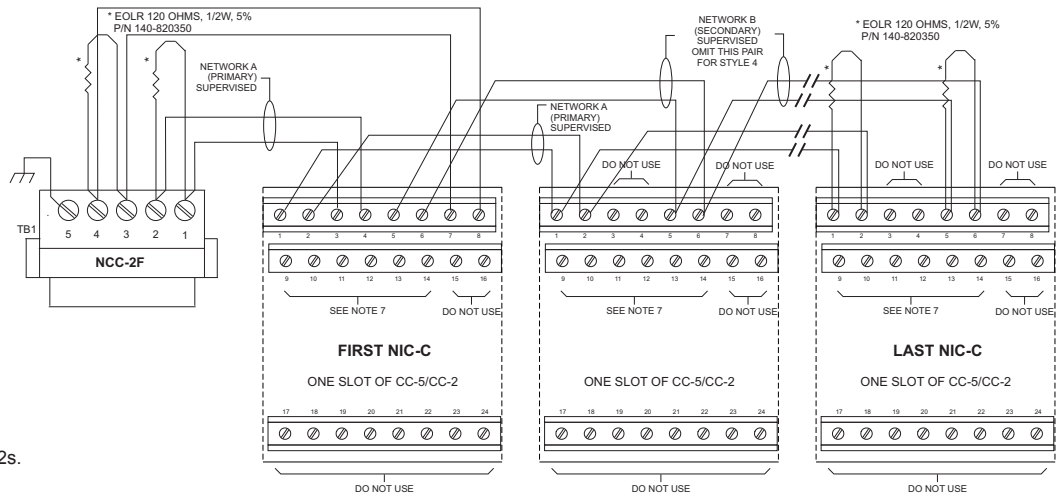9. Positive or negative ground fault detected at ≤10K ohms on pins 1-2, 3-4, 5-6, 7-8 of the NIC-C.

Figure 5
NCC-2F HNET Connections

NOTES:

1. The screw terminals can accommodate one 12-24AWG or two16-24AWG.
2. From the NCC-2F to NIC-C:
   2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
      .25µF max. line to line
   Shielded twisted pair
      .15µF max. line to line
      .2µF max. line to shield
3. Use twisted pair or twisted shielded pair.
4. Terminate shields at one and only one NIC-C.
5. Power limited to NFPA 70 per NEC 760.
6. Maximum voltage 8V P-P.
7. Maximum current 75mA during message transmission.
8. Each pair independently supervised.
9. Positive or negative ground fault detected at ≤10K ohms on pins 1-2, 3-4, 5-6, 7-8 of the NIC-C.
10. For Style 4, remove jumper P2 on all NIC-Cs except on the NIC-C that is connected to the NCC-2F card. For Style 7, remove jumpers P2 and P4 on all NIC-Cs except on the NIC-C that is connected to the NCC-2F card.

Figure 6
NCC-2F-HNET-VNT Wiring on FCC Only

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Shields

Shields for the XNET/HNET must be connected at ONE and ONLY ONE end of the network.

Earth Ground

A good earth ground must be provided for proper transient protection of the NCC-2F and the NCC or Desigo CC computer. Connect a separate ground to terminal 5 on the NCC-2F. See Figure 4, 5 or 6 as applicable.

Ground Fault Detection

The NCC-2F provides electrical isolation between the NCC or Desigo CC computer and the XNET. This allows for ground fault detection to be enabled on the XNET. Ground fault detection is only possible if ALL NCC or Desigo CC computers in the system are connected to XNET with an NCC-2F (or NCC-1Fs for existing NCC systems).

Ground fault detection must be enabled at a NIM-1R/-1W or NIC-C. Select one and only one NIM-1R/-1W or NIC-C in the system where the ground fault is to be detected. You must locate the NIM-1R/-1W in a cabinet with either an MMB, SMB or a PSR-1. See Figure 7 for the wiring diagram.

If the XNET is divided into multiple sections of copper wire using fiber optic segments, ground fault detection can be enabled at one NIM-1R/-1W or NIC-C for each section of copper wire. Refer to the NIC-C Installation Instructions, P/N 315-033240 if you wish to use the NIC-C to provide ground fault detection.
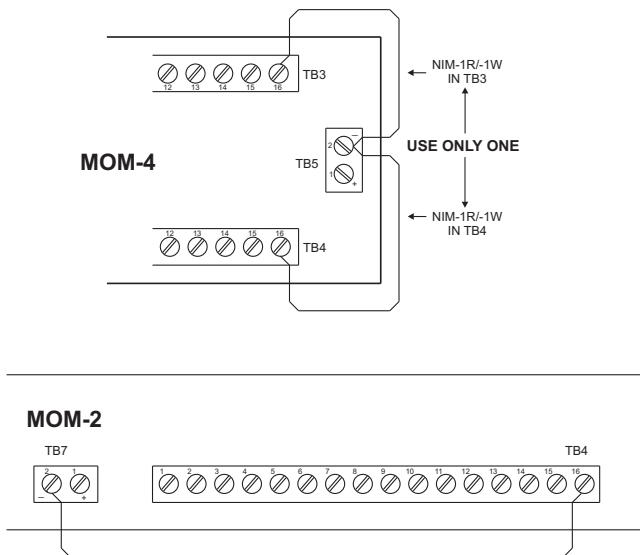

Figure 7
Wiring for Ground Fault Detection (XNET)

For ground fault detection on HNET systems, refer to the NIC-C Installation Instructions, P/N 315-033240.

DRIVER INSTALLATION

The products which utilize the NCC-2F cards run on MicroSoft Windows NT, XP and Windows7 operating systems (OS). The Windows OS type used must be in accordance with the product to be used (i.e. NCC or Desigo CC). The drivers are distributed with the installation disks for the product software.

In the following procedures, there is a reference to a "driver folder". For both types of installation disks, use the folder with the Oxford UART drivers. The exact (drive) path for this folder is identified in the steps below, and the drive letter that begins the path should reflect the designation for the CD/DVD drive being used for software installation.

When a PC with an NCC-2F card is first started, the card is detected by Windows. Depending on the Windows operating system type, a different user-interaction is required to install the drivers.

Windows XP (NCC)

Driver folder:
D:\drivers\NCC2F_DRIVERS\OXUART_v512_Drivers

Load the disk in the CD-ROM drive, and use the following instructions for installing the drivers. For each NCC-2F card in the computer, Windows automatically prompts the user for drivers. There are three drivers to install: one for the PCI card UART and two for the PCI communication ports. You will repeat the outlined installation steps a total of three times.

<u>If two NCC-2F cards are physically installed</u>: After the first card is installed, the presence of the second NCC-2F card will cause Windows to prompt the user for the drivers. For the second NCC-2F card, follow the same steps as practiced for the driver installation of the first NCC-2F card.

When all is complete, refer to the Device Manager to check the COM port designations, and view any installation issues.

The following steps take you through the process:

1. When the NCC-2F is first installed, Windows detects the new hardware. Refer to Figure 8.

At this point select the "No, not this time" option and click on Next>.

Figure 8
Found New Hardware Wizard

Figure 10
Choosing Search and Installation Options

2. Select "Install from a list or specific location (Advanced)" and then click Next>. Refer to Figure 9.
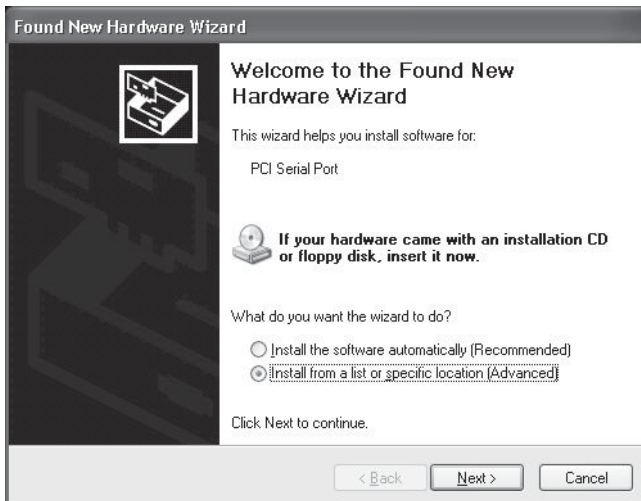

Figure 9
Install From A List Or Specific Location

3. Select Next> and search for the CD-ROM drive where the OXUART_v512_DRIVERS folder is located (exercised via the Browse button). Refer to Figure 10.

4. After you highlight the folder (when in Browse), click "OK" to proceed. Now that the path is set, click Next>. Windows XP will install the appropriate drivers. When you see the following Hardware Installation warning, click "Continue Anyway." Refer to Figure 11.

Figure 11
Hardware Installation Warning

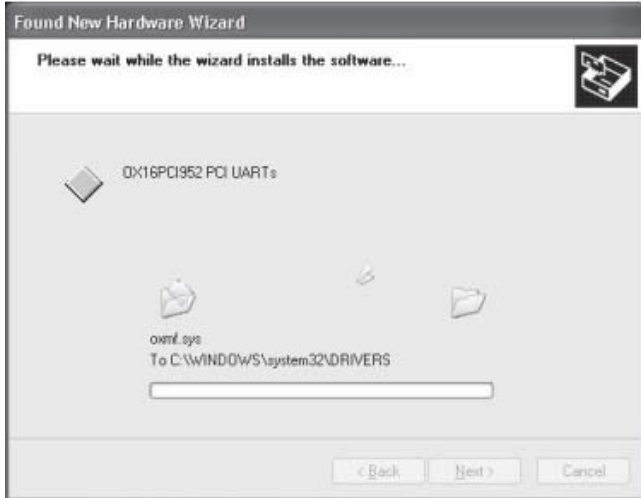5. The Windows XP Hardware Wizard then installs the drivers as shown in Figure 12.

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Figure 12
Installing Drivers Window

Figure 14
Install From A List Or Specific Location

6. If the drivers were successfully installed, a message as shown in Figure 13 is displayed.

8. Select "Next>" and search for the folder where the *OXUART_v512_DRIVERS* are located. Refer to Figure 15.

Figure 13
Successful Driver Installation
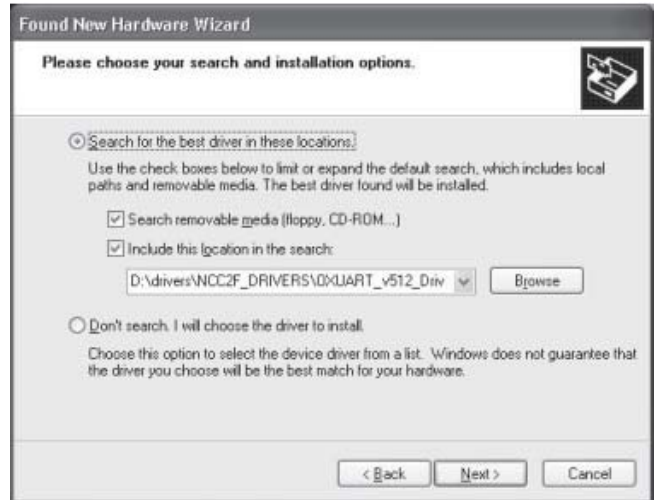
Figure 15
Choosing Search and Installation Options

7. Click "Finish". Windows then prompts the user to install the drivers for the serial port. Refer to Figure 14.

Note: Windows XP will use the first available COM port for communication.

9. After you highlight the folder, click "OK" to proceed. Now that the path is set, click Next>. Windows XP then installs the appropriate drivers. When you see the Hardware Installation warning, click "Continue Anyway." Refer to Figure 16.

Figure 16
Hardware Installation Warning

10. If the drivers were successfully installed, a message as shown in Figure 17 is displayed.

Figure 17
Successful Driver Installation

11. Click "Finish". Windows XP then prompts the user to install the drivers for the additional PCI Communications Port. Refer to Figure 18.

Figure 18
Install From A List Or Specific Location

12. Select Next> and search for the CD-ROM drive where the OXUART_v512_DRIVERS folder is located.

13. After you highlight the folder, click "OK" to proceed. Now that the path is set, click Next>. Windows XP will install the appropriate drivers. When you see the following Hardware Installation warning, click "Continue Anyway." Refer to Figure 19.

Figure 19
Software Installation Warning

14. If the drivers were successfully installed, a message as shown in Figure 20 is displayed.

Figure 20
Successful Driver Installation

15. To verify which COM ports were installed and to check that there are no issues, access the Device Manager. The Device Manager can be accessed as described in the *CONFIGURATION* section, or equivalent methods available in Windows XP (i.e. via "My Computer" on the Desktop, selecting "Properties, then clicking the "Hardware" tab).

16. Once in "Device Manager", click the "+" sign next to Ports (COM & LPT) as well as Multifunction adapters. One should then see a screen similar to that shown in Figure 2. That example displays two NCC-2F cards installed. They are configured in pairs, i.e., COM 3 and COM 4 are the first NCC-2F and COM 5 and COM 6 are the second NCC-2F. The NCC uses COM 3 for the first card and COM 5 for the second card.

Windows 7 (Desigo CC)

Driver folder:
D:\drivers\NCC2F_DRIVERS\OX95x_Windows\Windows 7\UART\amd64

Load the disk in the CD-ROM drive, and adhere to the following instructions for installing the drivers.

When all is complete, refer to the Device Manager to check the COM port designations, and view any installation issues.

The following steps take you through the process:

1.   When the NCC-2F card is first installed, Windows 7 detects the new hardware. To verify the detected hardware, access the Device Manager, as described in the CONFIGURATION section, or equivalent methods available in Windows 7 (i.e. via ControlPanel/ System AndSecurity/System address, where a Device Manager link can be found in top left of window). The screen in Figure 21 represents an addition of a single NCC-2F card.
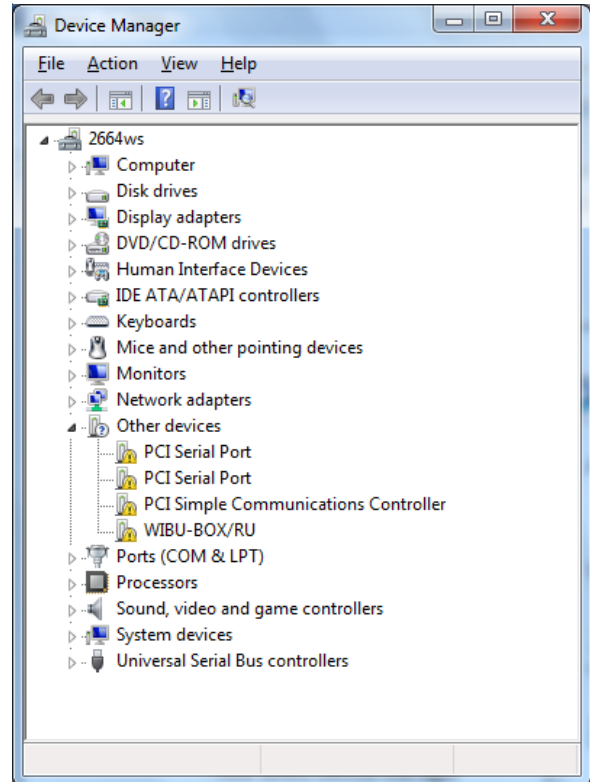

Figure 21
Device Manager Displaying One NCC-2F Card

Notes:
1. *Windows 7 groups improperly configured hardware under Other Devices*
2. *The NCC-2F has added a 2nd PCI Serial Port entry (other entries correspond to unconfigured hardware, previously in the PC)*

2.   Select one of the PCI Serial Port entries in Other Devices, and right-click on it. A menu (attached to the selection) appears, where an "Update Driver Software…" entry appears - click on this entry. A screen as shown in Figure 22 displays.
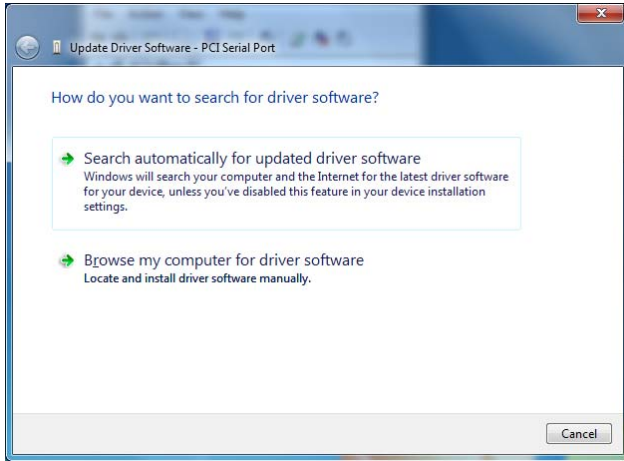
Figure 22
How To Search For Driver Software

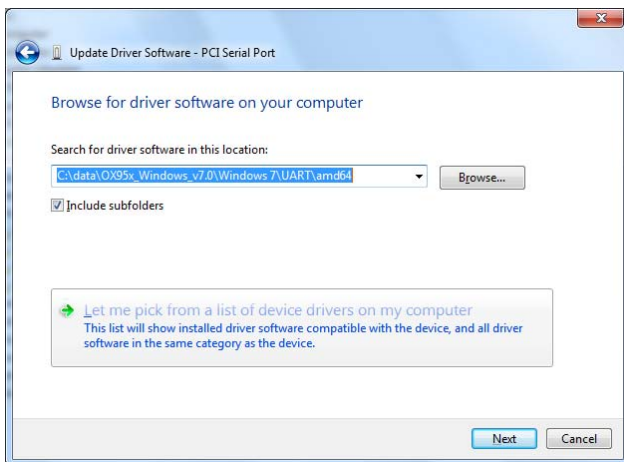3. Click on the "Browse my computer for driver software" selection. A screen as shown in Figure 23 displays.

Figure 23
Browse For Driver Software

Notes:
1. The screen shows a folder in the C: drive, which will differ based on the PC being installed.

3. Search for the Oxford UART folder on the installation CD/DVD, using the Browse button. Once found - select it, and the correct path for the driver location is shown as in the previous screen.

4. Click on "Next>", which prompts Windows 7 to attempt the installation of the driver based on the selected folder. After a driver install, one of two screens, as shown in Figures 24 or 25 displays.
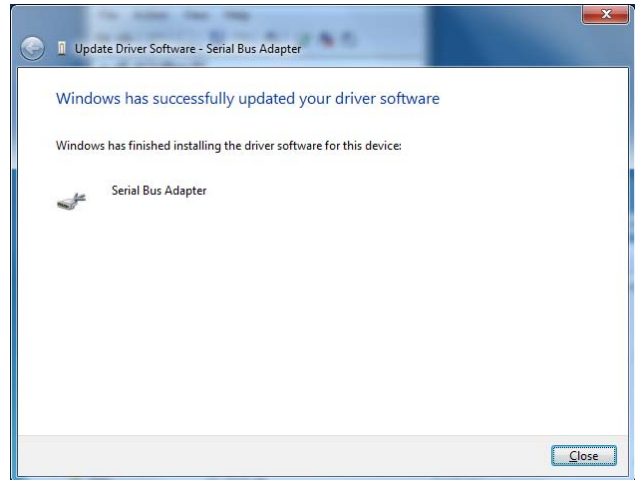

Figure 24
Successful Driver Installation

Notes:
1. The screen above reflects a good install, where the correct PCI Serial Port entry was selected from the Device Manager's entry under Other Devices.
2. The screen below reflects an incorrect Device Manager (PCI Serial Port) entry is selected (i.e. does not correspond to the NCC-2F hardware).
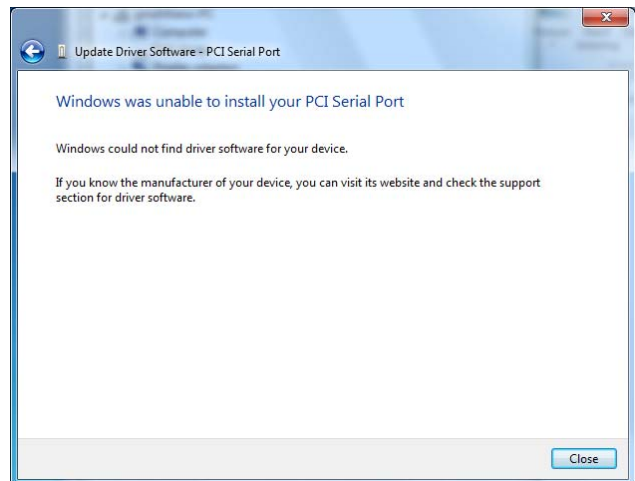

Figure 25
Unsuccessful Driver Installation

5. To verify which COM ports were installed and to check that there are no issues, verify the Device Manager entries. Clicking on the Close button in the "Update Driver Software", returns to the Device Manager and displays a screen as shown in Figure 26, for a successful install.
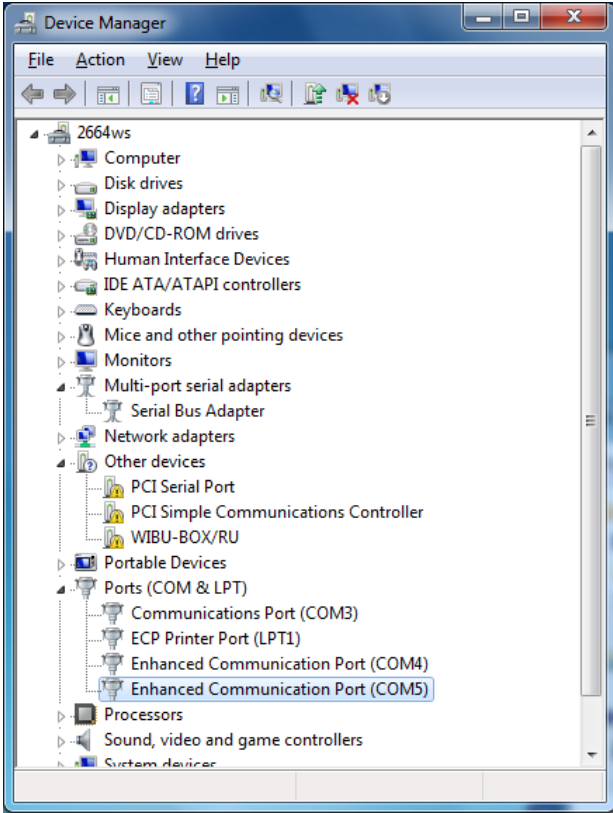
Figure 26
Verify Device Manager Entries

Notes:
1. *A "Multi-port serial adapters" entry now appears, which shows a "Serial Bus Adapter" entry (can be accessed by clicking on the arrow symbol to the left of the entry) represents the NCC-2F hardware.*
2. *The "Ports (COM & LPT)" entry now shows (when expanded) the COM ports associated with the two NCC-2F card ports, Enhanced Communication Port (COM4 and COM5).*
3. *Under Other Devices, other detected hardware not handled by this install may still appear (as shown above, including a non-NCC-2F PCI Serial Port).*

The driver installation procedure should now be complete and any installation media in the CD/DVD-ROM drive can be removed.

NRC BASED XNET CONNECTION

When an NCC or Desigo CC connects to a NRC-based XNET network of FireFinder-XLS products, the NCC-2F card requires additional interface hardware. In such an installation, the NCC-2F card connects to a NIC-C module – which in turn is connected to a dedicated NRC module.

Connect an NCC or Desigo CC to an XLS network system (rev. PMI07.00 or higher) using NRC network cards instead of a NIC-C as described in the following information.

Add a separate CC-2 or CC-5 card cage to one node on the XLS network system.

Connect this cage to the XLS network system node using a 60 pin ribbon cable (BCL). At the added CC-2 or CC-5 card cage, add and secure into connector P1 an Interface Isolation Card (IIC). (Refer to Installation Instructions, P/N 315-050328.) Plug the other end of the 60 pin cable into the male ribbon cable receptacle on the IIC.

Insert another NRC and a NIC-C into this isolated card cage. Do not enter these cards into the Zeus configuration for this node or for the network system. Only the NCC or Desigo CC is added to the Zeus configuration as a network node. Note that this NRC is another (second NRC) card required for communicating with the NCC or Desigo CC.

Wire the NRC so that it is inserted into the XLS network ring. Refer to Figures 27 and 28 as well as the NRC Installation Instructions, P/N 315-050337. Connect the NCC-2F to the NIC-C as shown in Figure 28. Connect Pair A for Style 4 and Pairs A and B for Style 7. Address the NIC-C at address 003.
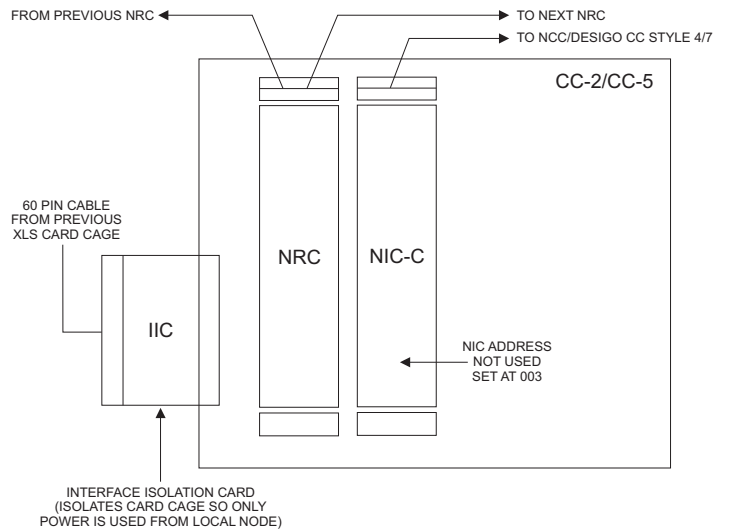

Figure 27
NRC To NCC/Desigo CC Card Cage Connections

NOTES:
1. For this configuration, only one NCC-2F card can be connected to the NIC-C card.
2. For an NRC-based XNET network, each NCC or Desigo CC node requires a dedicated NRC/NIC-C in a CC-2 or CC-5 card cage.
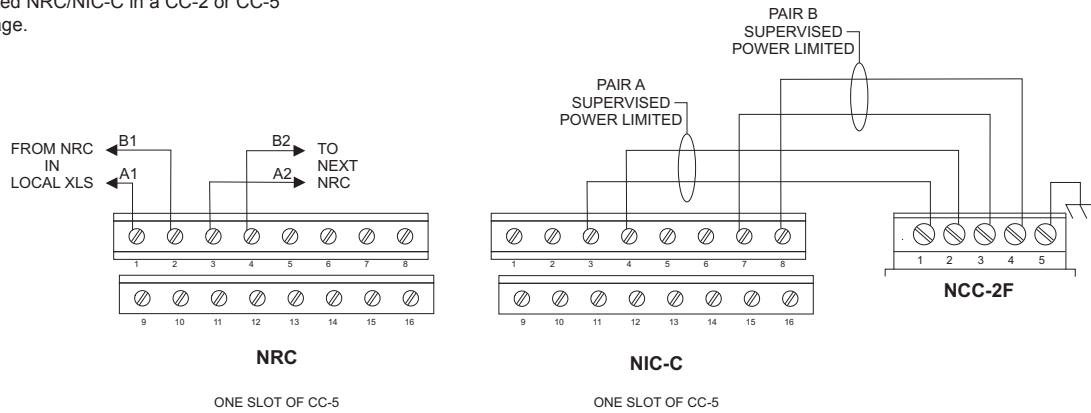

Figure 28
NRC XNET To NCC-2F Connections

ELECTRICAL RATINGS

Input Power	
NCC-2F	5 VDC @ 250mA
Output Power	
Each HNET/XNET	8V peak to peak max.
	75mA max. (during msg transmission)