

Installation Instructions

Model Scalance X204-2 Multimode and X204-2LD Single Mode Ethernet Fiber Switch

Fiber Switch Ethernet Connections

INTRODUCTION

The Model Scalance X204-2 Multimode and X204-2LD Single Mode Ethernet Fiber Switch (as shown in Figure 1) from Siemens Building Technologies, Inc. is used to maintain a Style 7 ring or Style 4 (Class B) wiring for communications between all buildings and Siemens Building Management Systems (Fire Command Centers within a GCNET campus, Designo CC, Cerberus DMS). Both Style 7 and Style 4 perform all required monitoring of the health of the network. Style 7 wiring will automatically 'heal' the ring when a break or other failure is encountered. The failure is reported via SNMP (Simple Network Management Protocol).

The fiber switch obtains its power from a 24V UL Listed for Fire Application, Power Limited - Regulated Power Supply. It provides connectors for the fiber cable and four RJ45 100BaseT network connections.

In Style 7, the fiber switch that is connected to the primary Management Station is designated as the ring master. There is no difference in installation, configuration, and operation of single mode or multimode fiber optic switches except the type of fiber used.

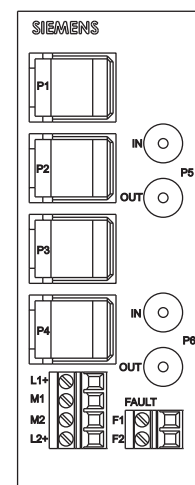


Figure 1
Scalance X204-2/
X204-2LD Ethernet
Multimode
Fiber Switch

INSTALLATION



Mounting on VNT-MP

Remove all system power before installation, first battery then AC. (To power up, connect the AC first, then the battery.)

The fiber switch mounts on a bracket in the lower left corner of the VNT-MP mounting plate as shown in Figure 2. To mount the fiber switch on the bracket, place the bottom edge of the fiber switch cutout on the bottom edge of the rail between the VNT-MP and the standoff and then snap the top edge of the fiber switch cutout on to the top edge of the rail. Refer to Figure 3 for the mounting detail.

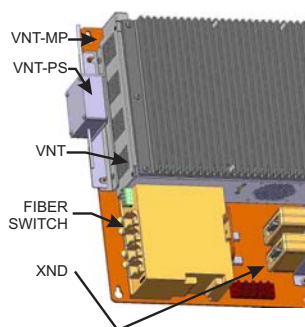


Figure 2
Fiber Switch Mounting on VNT-MP

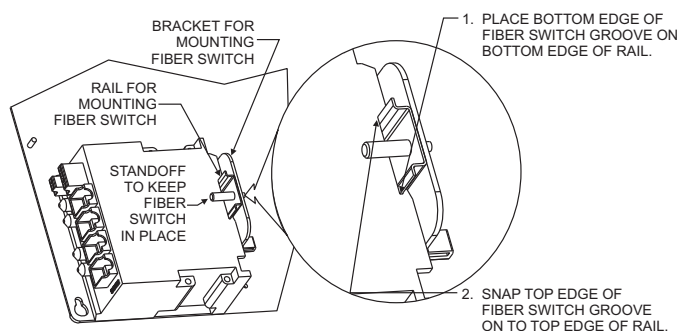
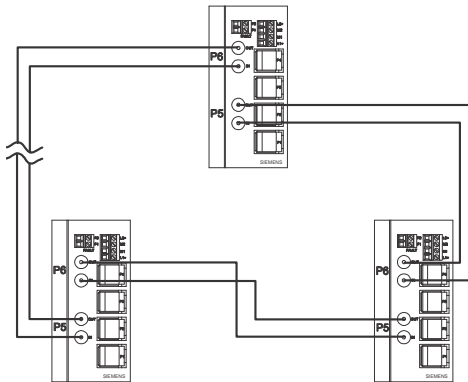


Figure 3
Fiber Switch Mounting Detail

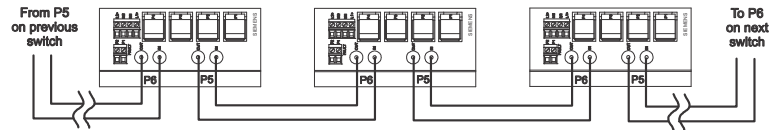
Figure 4 shows the fiber switch module block wiring diagrams for both Style 7 (Class X) and Style 4 (Class B). Figure 5 shows the wiring for the Fiber Switch connections in Style 7 and Style 4 (Class B).

NOTE

All connections are supervised and power limited unless stated otherwise.



Style 7 Block Wiring Diagram



Style 4 (Class B) Block Wiring Diagram

Figure 4
Style 7 and Style 4 (Class B) Block Wiring of Fiber Switch Module

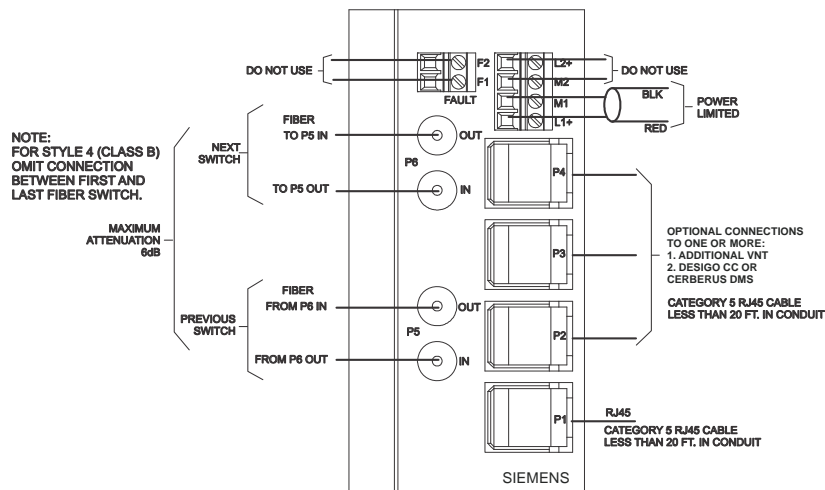


Figure 5
Fiber Switch Style 7 and Style 4 (Class B) Wiring Connections

Refer to Figure 6 for the wiring of the fiber switch in a VNT-Building configuration. Figure 7 shows the wiring of the fiber switch in a VNT-FCC (Fire Command Center) configuration. Refer to Figures 10 and 11 for the wiring of the fiber switch to PAD-3 and PAD-4 and Siemens Building Management System.

Fiber Connections

Two fiber optic cables are required between each pair of fiber switch modules. Use a high quality duplex fiber optic cable containing 62.5/125 or 50/125 multimode fiber or g/125 for single mode fiber. Duplex fiber optic cable has two cables in a single shield similar to electrical *zip cord*. Use ST style fiber connectors.

NOTE

Please contact the fiber cable manufacturer regarding instructions for terminating the fiber. Refer to Scalance X-200 Operating Instructions, C79000-G8976-C284-05, for additional information on fiber optic switches

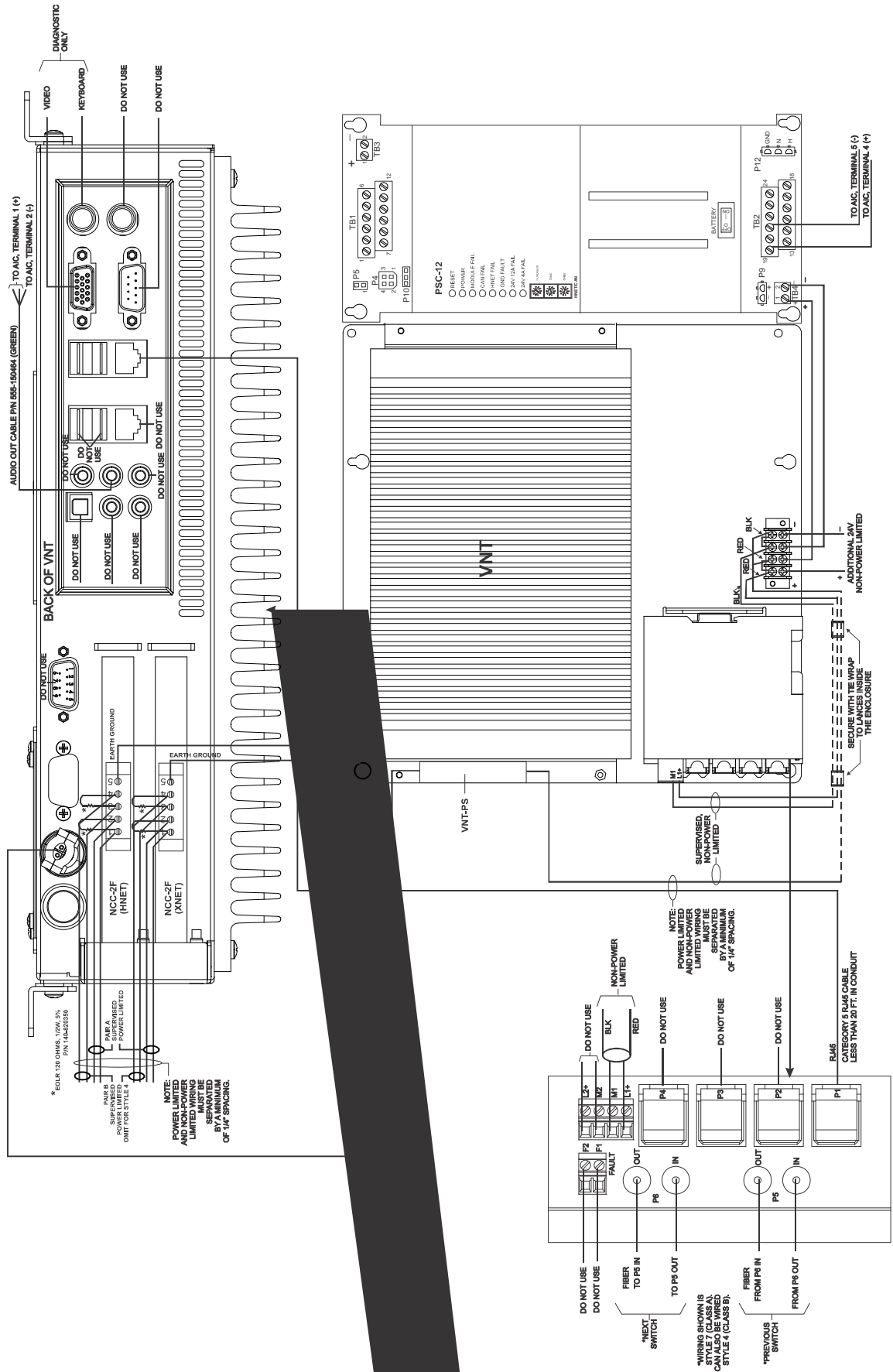


Figure 6
Fiber Switch Connection Diagram for VNT-Building

[illegible]

Figure 7

ELECTRICAL RATINGS



All connections are supervised and power limited unless stated otherwise. The fiber switch may be connected to a PSC-12 (P/N 315-033060), or PAD-3 (P/N 315-099082) or PAD-4 (P/N 315-050217) for power.

Input Voltage: Regulated 24VDC

Input Current: 265mA @ 24VDC

Connecting to Siemens Power Supply and Building Management System

Remove all system power before installation, first battery and then AC. (To power up, connect the AC first and then the battery.) Figures 8 and 9 show the general layout of the PAD-3 and PAD-4 main board, respectively. This section also provides specific wiring details to the Siemens UL approved power supply. Consult your control unit manual for specific wiring information on the control unit being used.

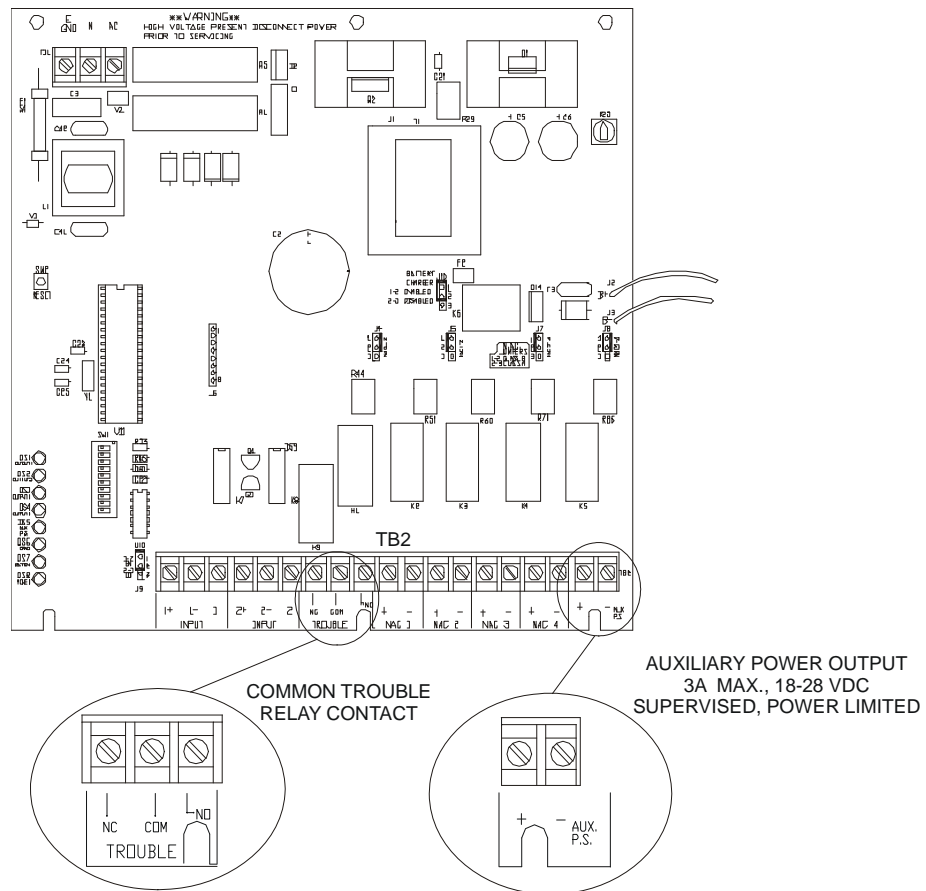


Figure 8
PAD-3-MB Layout

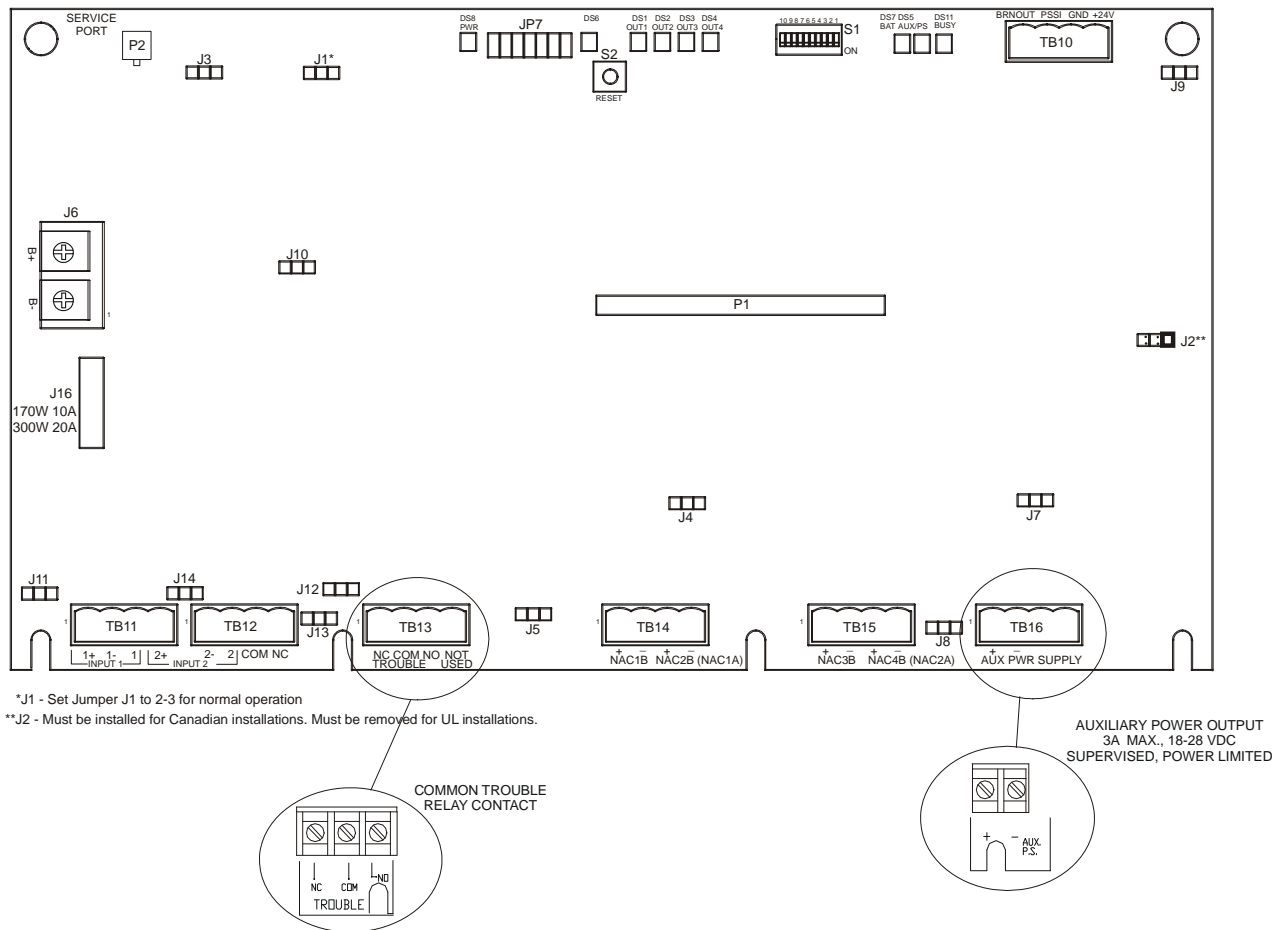


Figure 9
PAD-4-MB Layout

Auxiliary Power Supply Output

The auxiliary power supply output provides a 24VDC power source. It is supervised for ground fault and short and is power limited. For applications where the battery charger circuit charges batteries of 7.0 A.H. or less, or if the battery charger is disabled, this output is limited to 3.0 amps maximum. For batteries between 15 A.H. and 7.0 A.H., this output is limited to 1.5 amps maximum.

Common Trouble Relay

The UL approved power supply has a built-in Form C trouble relay. The trouble relay will de-energize under a trouble condition. A typical application of the trouble relay is to connect the UL approved power supply normally closed (N.C.) contacts in series with an EOL of a spare IDC or NAC or monitor input from a fire alarm control unit. This will cause a trouble on the fire alarm control unit when the UL approved power supply opens its trouble contacts. The common trouble relay will be de-energized after selectable delay (60-180 minutes) if AC is low or lost.

Note: The N.C. contact is the relay contact that is closed when the PAD-4 has power and there are no trouble conditions.

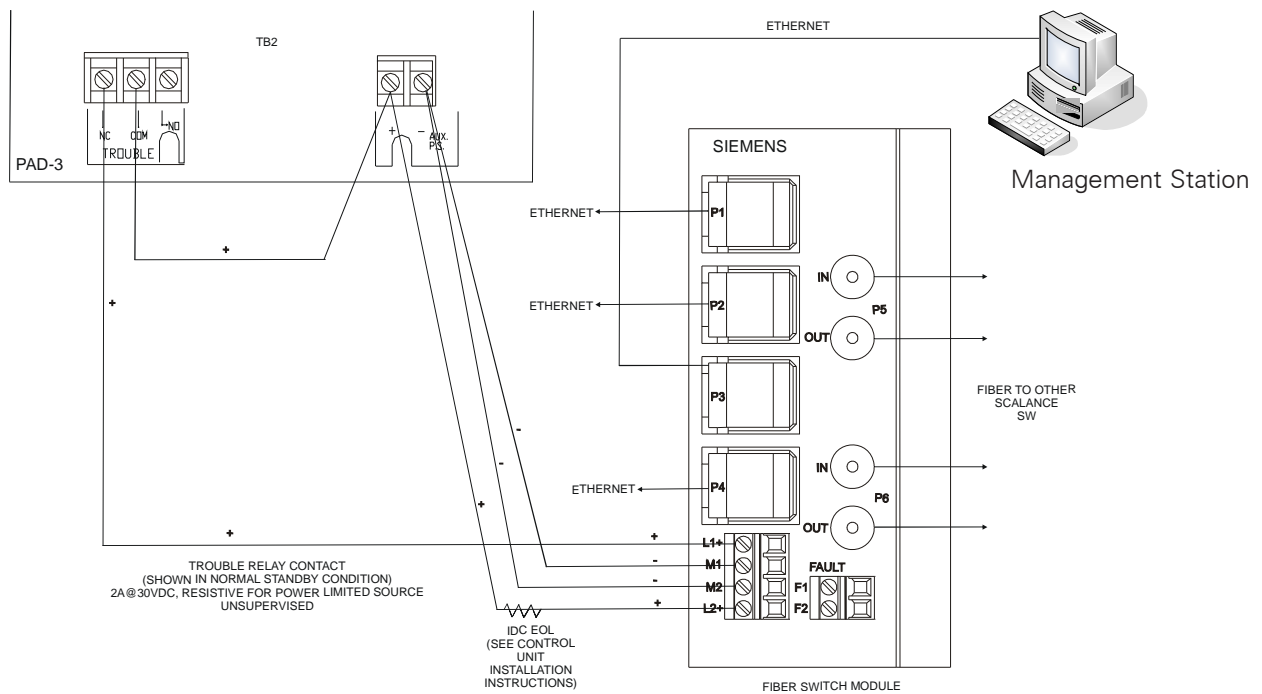


Figure 10
Scalance X204-2 Multimode or X204-2LD Single Mode Ethernet Fiber Switch Connection to PAD-3

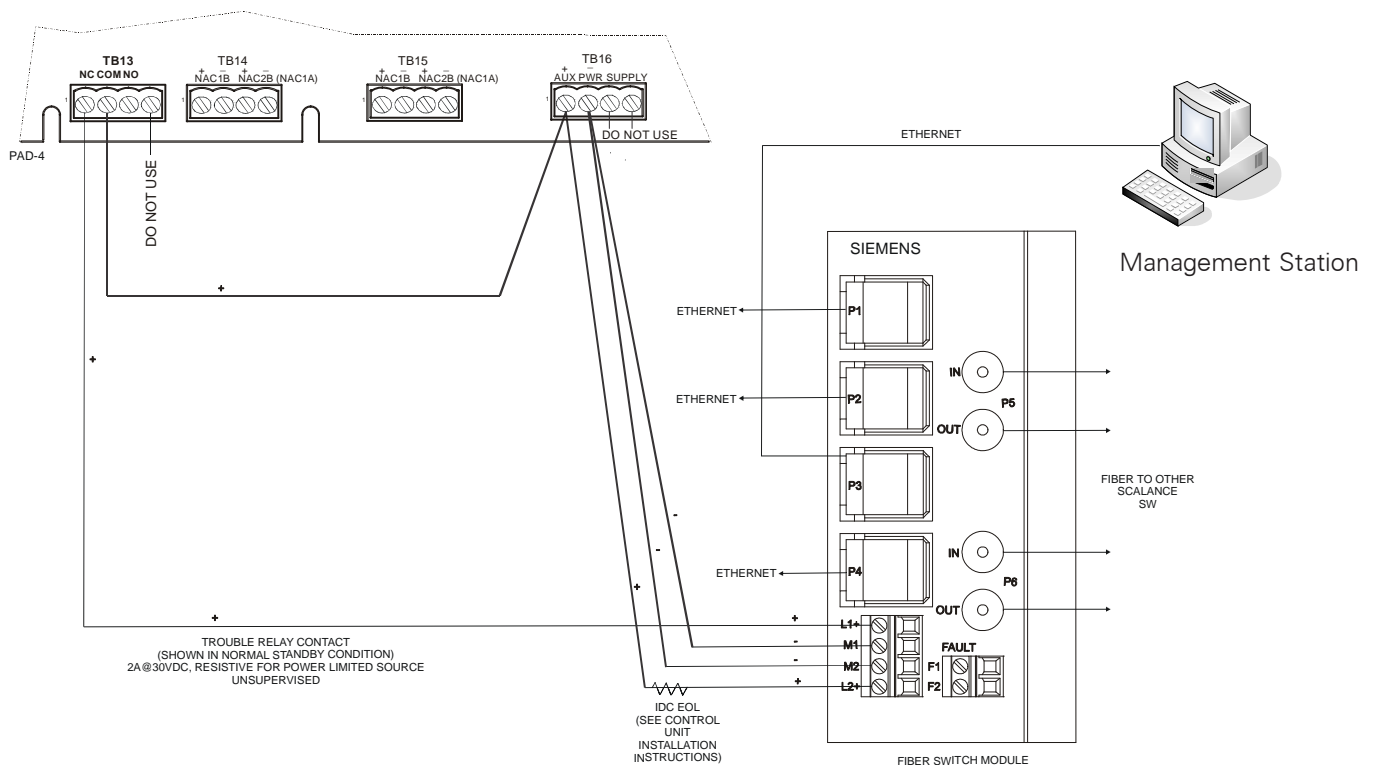


Figure 11
Scalance X204-2 Multimode or X204-2LD Single Mode Ethernet Fiber Switch Connection to PAD-4

CONFIGURING THE SCALANCE X204-2 MULTIMODE OR X204-2LD SINGLE MODE ETHERNET FIBER SWITCH

This section describes how to assign an IP address to the Scalance X204-2 Multimode or X204-2LD Single Mode Ethernet Fiber Switch and the methods used for determining IP addresses to assign to the switches. It also describes how to configure one of the switches as the ring master.

FIBER SWITCH

The fiber switch can be configured independently or in the network. The initial configuration of the fiber switch must be made before connecting it to the system. The fiber switch has four RJ-45 jacks (P1-P4) for Ethernet connections and two pair of fiber optic connection ports (P5-P6).

Each fiber switch must be programmed with a unique IP address. The recommended range of IP addresses is from 192.168.1.201 to 192.168.1.250.

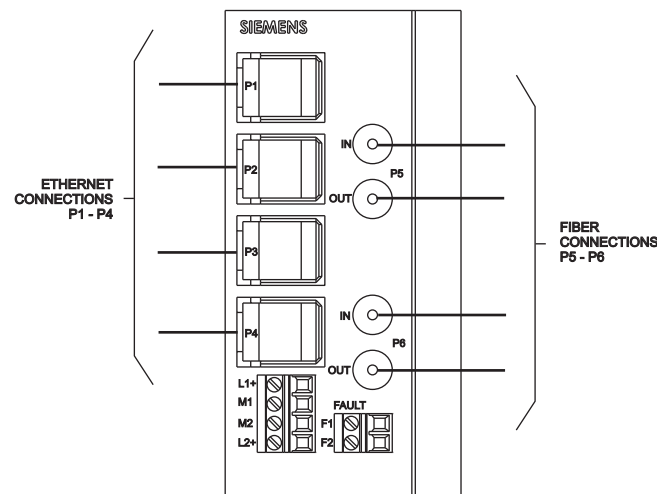



Figure 12
Scalance X204-2 Multimode/X204-2LD Single Mode Ethernet Fiber Switch Connections

The fiber switch is powered from the battery backed up local 24V power supply. It is monitored by the Management Station. Configuration is made using a Primary Setup Tool (PST) and a web browser.

Primary Setup Tool

The Primary Setup Tool (PST) is used to assign an IP address to an *unconfigured* fiber switch. If a fiber switch is already initially configured with an IP address then the Primary Setup tool is not needed

- Install the Primary Setup Tool using the setup executable from the CD provided.

- Open the CD drive and browse to the SW directory. Double click Setup.exe.
- Follow instructions until installation is complete.
- Once completed, a Primary Setup Tool icon  appears on the desktop.
- A DLC (Data Link Control) Protokoll and Profinet IO RT-Protocol need to be installed on the laptop/PC being used to configure the fiber switch.
- To check that these protocols are installed, click Start->Network Connections->Local Area Connection.

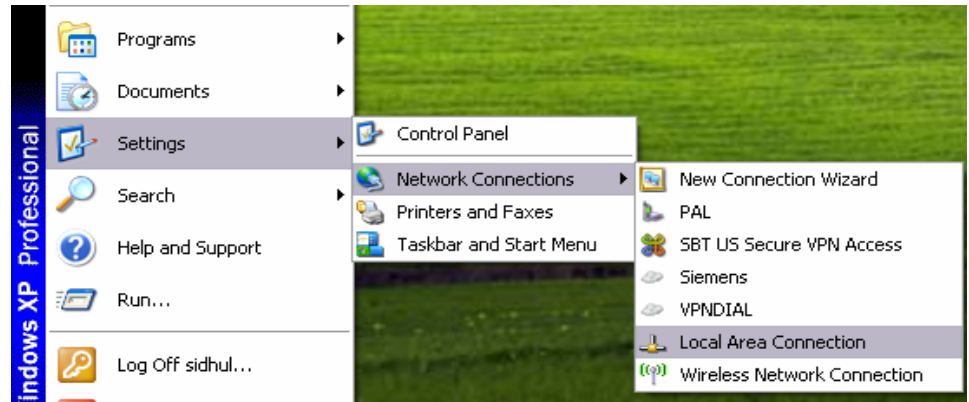


Figure 13
Checking Local Area Connection

- Verify that the DLC Protokoll and Profinet IO RT-Protocol are installed.

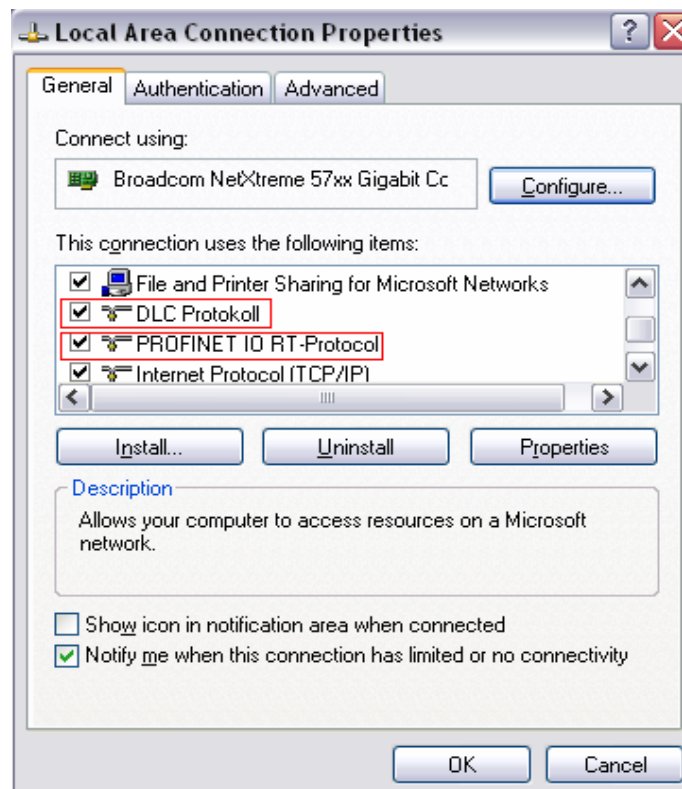


Figure 14
Verify Local Area Connection Items

- If the DLC Protokoll and/or Profinet IO RT-Protocol are not installed:
 - * From the Local Area Connections Properties, click Install.
 - * Select Network Component Type "Protocol" and click Add.
 - * From the Select Network Protocol window, click "Have Disk."
 - * Select the DLC Protokoll from Network Protocol column, then click OK.

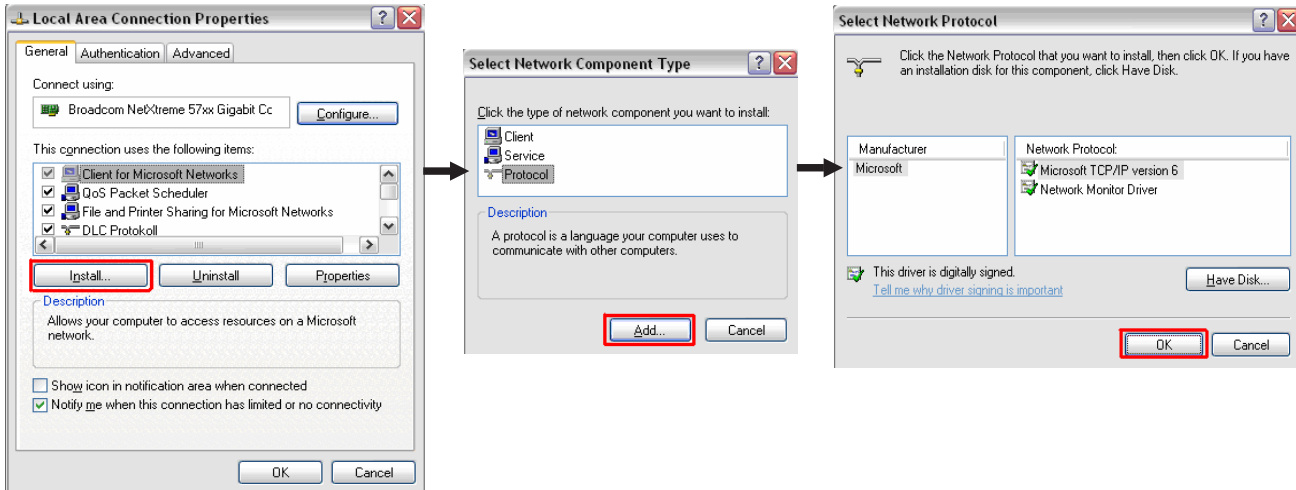


Figure 15
DLC Protokoll and/or Profinet IO RT-Protocol Installation

- The laptop/PC being used to configure a switch needs to be on the same network as the fiber switches. To do this temporarily change the IP address of the laptop/PC.
 - * From Local Area Connection Properties dialog window select "Internet Protocol (TCP/IP)" and click Properties.
 - * Choose "Use the following IP address" and pick an address in the same network as the fiber switch.
 - * Use a subnet mask of 255.255.255.0.

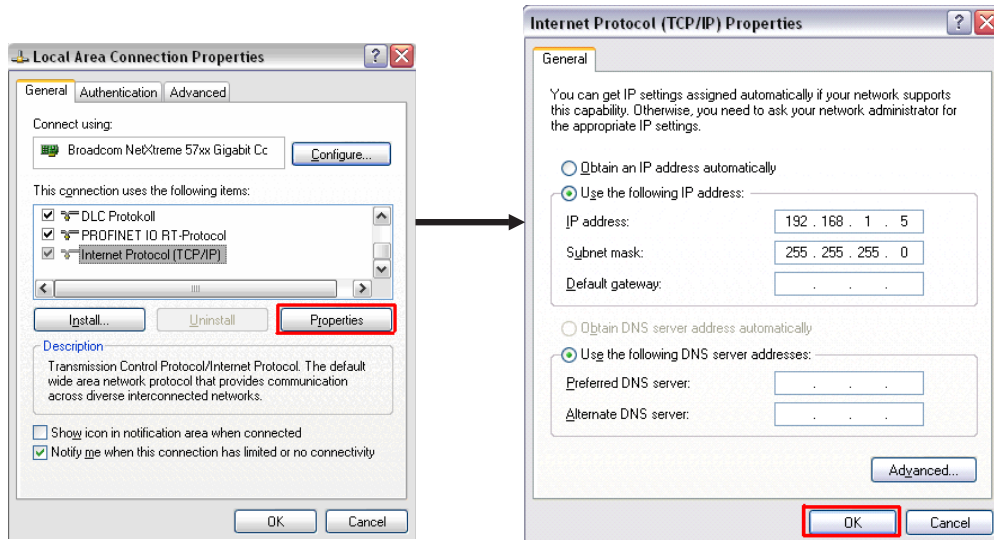




Figure 16
Changing the IP Address of the Laptop/PC

Assign IP Address

Make sure the Fiber Optic Switch is powered on and connected to the laptop/PC via Ethernet.

- Launch Primary Setup Tool by clicking on the  (Primary Setup Tool) icon from the desktop.
- From the PST click Network->Browse or the  icon.

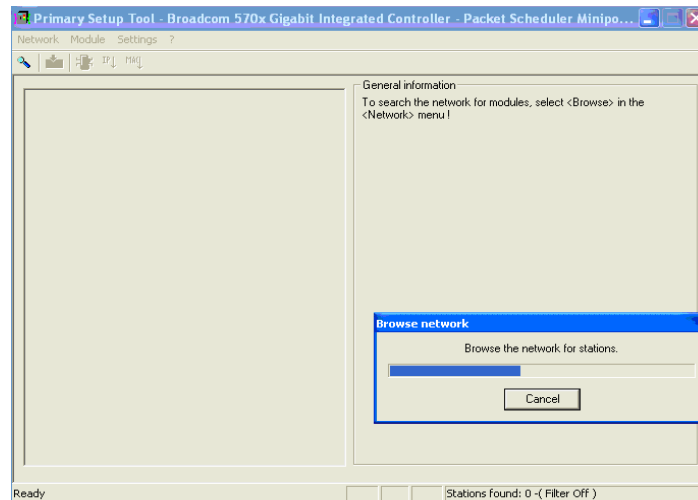


Figure 17
Launching the Primary Setup Tool

- A list of all found devices displays on the left-hand side of the PST.
- Expand the device by clicking on the plus symbol (+) before the device name.
- Click on "Ethernet Interface." The PST displays the input dialog for the configuration data in the right-hand pane of the program window.
- Select the "Assign IP Parameters" option button and enter the IP address for the device in the IP address box.
- In the Subnet mask box enter 255.255.255.0 as the Subnet mask.

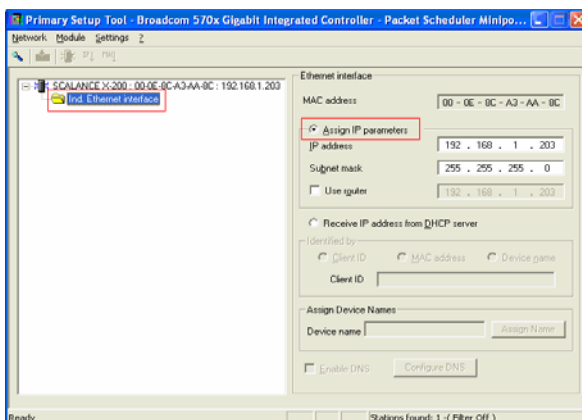


Figure 18
Enter Primary Setup Tool Data

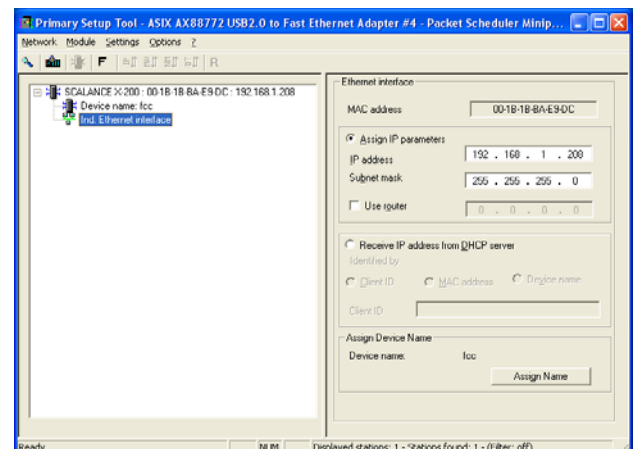
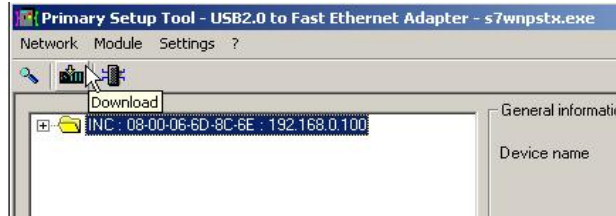


Figure 18a

- Download the configuration data to the switch
 - * Select the device you want to configure in the left half of the program window.
 - * Click on the Download button (the second button from the left in the toolbar).
 - * The IP Address is downloaded to the fiber switch.



*Figure 19
Download IP Address Configuration to Switch*

To configure either single or multimode fiber optic switch via WEB interface.

Fiber Optic Switch Settings XNET over Ethernet **Style 7** uses ring topology to connect the switches on the network. The two ends of the bus are closed to form a ring by the fiber switch operating as a redundancy manager. The redundancy function is enabled and disabled with the WEB interface.

In contrast to the ring ports of the other switches, the ring ports of the redundancy manager are disconnected when the network is operating problem-free. The fiber switch operating in the redundancy manager mode monitors the connected bus over its ring ports. It switches the ring ports through if there is an interruption on the connected bus. In other words, it restores a functioning bus over this substitute path. Reconfiguration takes place within 0.3 seconds. As soon as the problem has been eliminated, the original topology is restored—the ring ports in the redundancy manager are once again disconnected from each other.

After the RM (Redundancy Manager) function has been enabled or after the RM has been switched through, this is indicated by the RM LED on the housing.

Only one switch can be configured as a redundancy manager (Master) in a ring. Follow the steps listed below to enable the redundancy manager.

1. Start Explorer and type the switch IP address in the URL field. For example: <http://192.168.1.101>
2. Type "admin" as user ID and "admin" as password. (The user is advised to change the password.)
3. Select the X204-2 icon if connected to multimode or the X204-2LD icon if connected to single mode fiber optic switch.

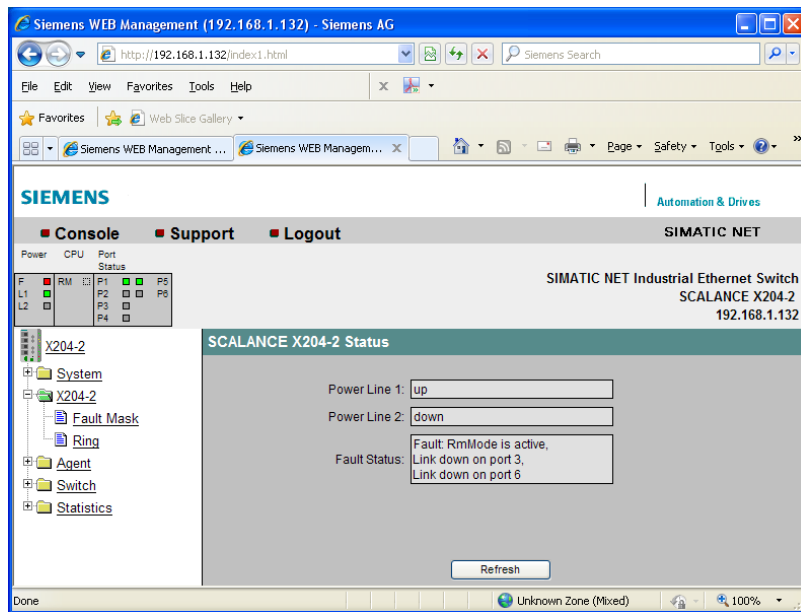


Figure 19a
Status of Fiber Optic Switch

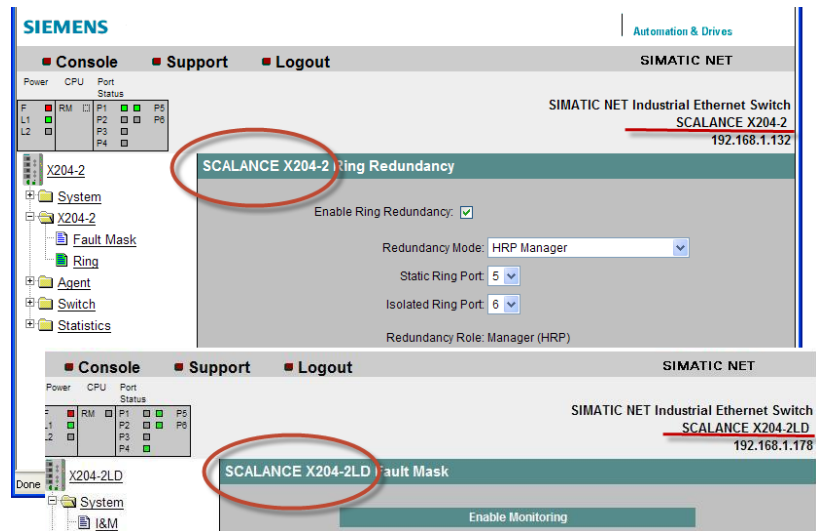


Figure 19b
Difference in connection between Single Mode X204-2LD and Multimode

There is only notification of identity of the scalance switch of single or multimode on the window title. There are no differences in configuration, operation, or status diagnostics.

Fiber Switch Ring Settings

1. Expand the X204-2/X204-2LD icon and click on Ring.
2. Select "Enable ring redundancy."
3. Select the redundancy mode as either HRP Redundancy Manager or HRP Redundancy Client.

NOTE 

Redundancy Manager should be selected for only one switch in the network.

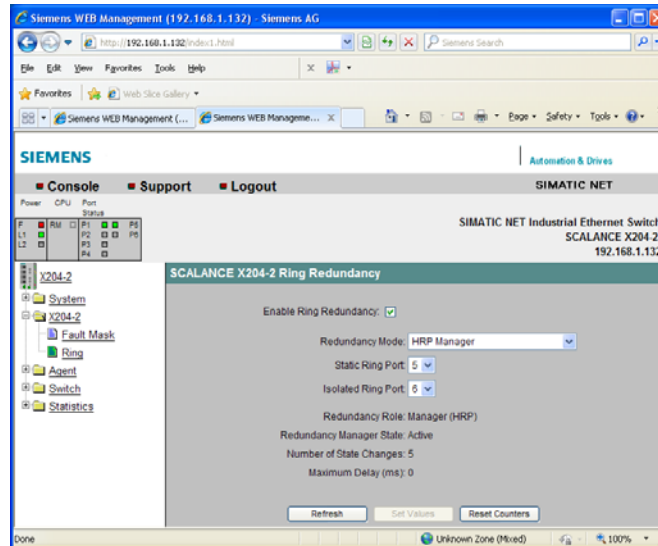


Figure 20
Ring Redundancy Manager Configuration

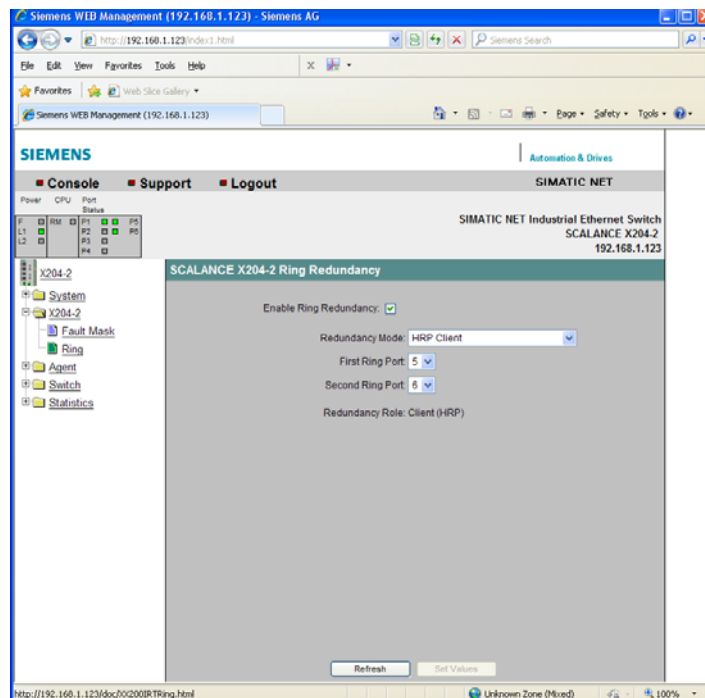


Figure 20a

XNET over Ethernet Class B (**Style 4**) if the “Style 4 Fiber Optic Connections” option is enabled in NCC System Settings. The Ring Redundancy should be unchecked in the Fiber Optic Switch Web Interface.

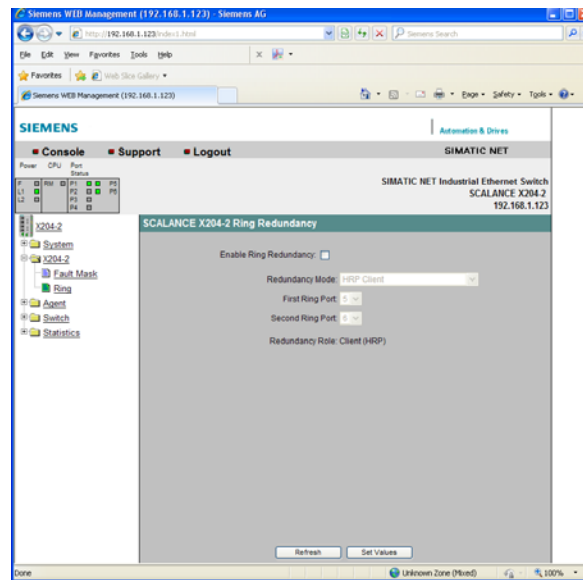


Figure 21
Style 4 Settings

Fiber Switch Fault Settings

The Management Station requires fault mask, agent configuration, agent event configuration and agent traps configuration settings to supervise the fiber optic switch using Simple Network Management Protocol (SNMP). Web Based Management (WBM) is the tool used for these settings.

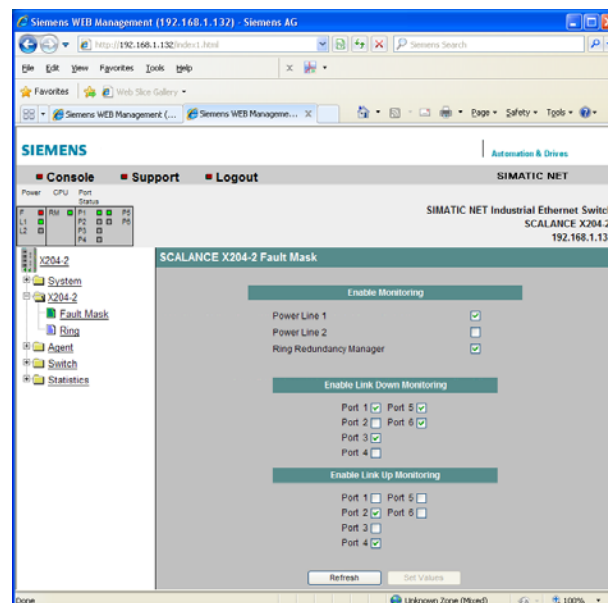


Figure 22
Fault Mask

For example, only one power line on the fiber switch, then Redundant power supply should be unchecked and the fiber optic switch wired to M1 L1 power line.

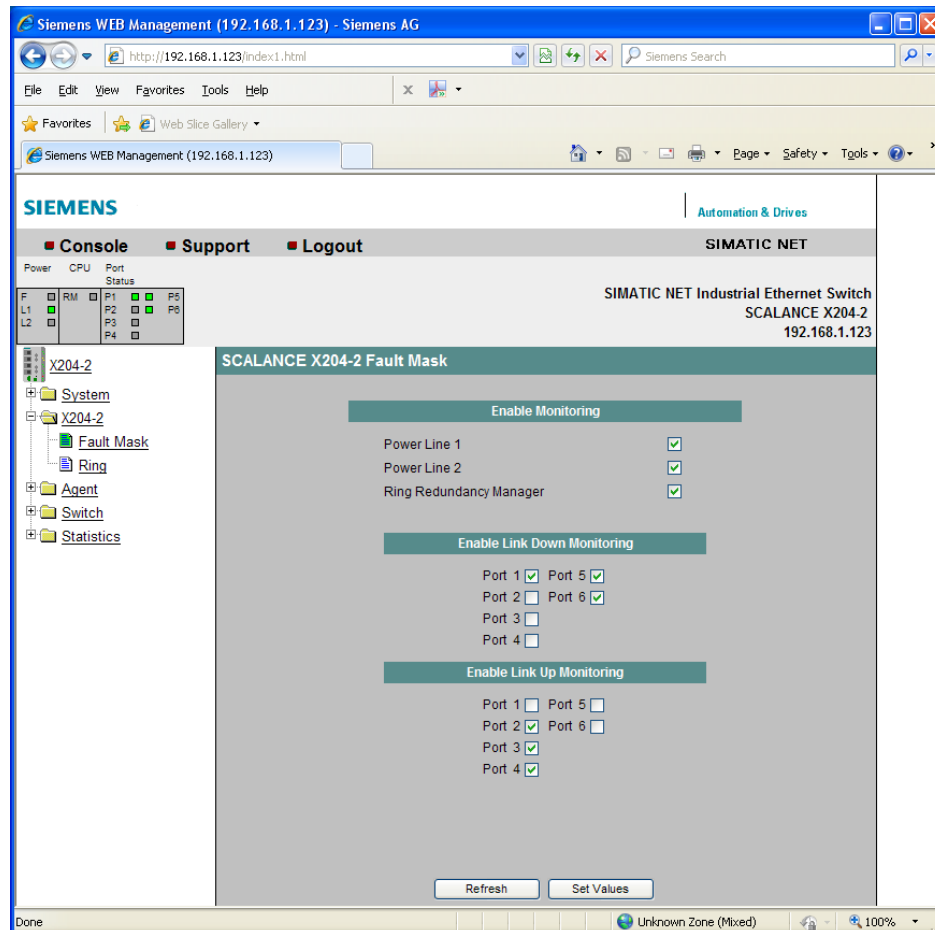


Figure 23
Fault Mask Settings

Redundant Power Lines and Ring Redundancy enabled.

If PAD-3 or PAD-4 is used, then Redundant power supply must be checked at Fault Mask and should be wired to M2 L2 on the switch. Power Line 1 and Power Line 2 should be checked for monitoring.

Fault Mask

The settings in the Fault Mask dialog allow you to monitor the link status and the ring redundancy manager.

1. Expand the X204-2 icon and click on Fault Mask.
2. Under Enable Monitoring, select “Ring redundancy manager.”
3. Select Enable Link Down Monitoring for Port 5 and Port 6.
4. Select Enable Link Down Monitoring for the used Ethernet ports that have an Ethernet connection on the fiber ring.
5. Select “Link Up Monitoring” for unused ports to supervise unauthorized connection to the fiber ring.
6. Click on the “Set Values” button.

Agent Configuration

This dialog allows you to select which agents are to be enabled.

1. Click on the Agent icon.
2. Select the following Agent Enabled Features:
 - a. SNMP
 - b. Traps
 - c. TELNET (Optional)
3. Confirm that the IP address is the same as the switch IP address.
4. Click on the “Set Values” button.

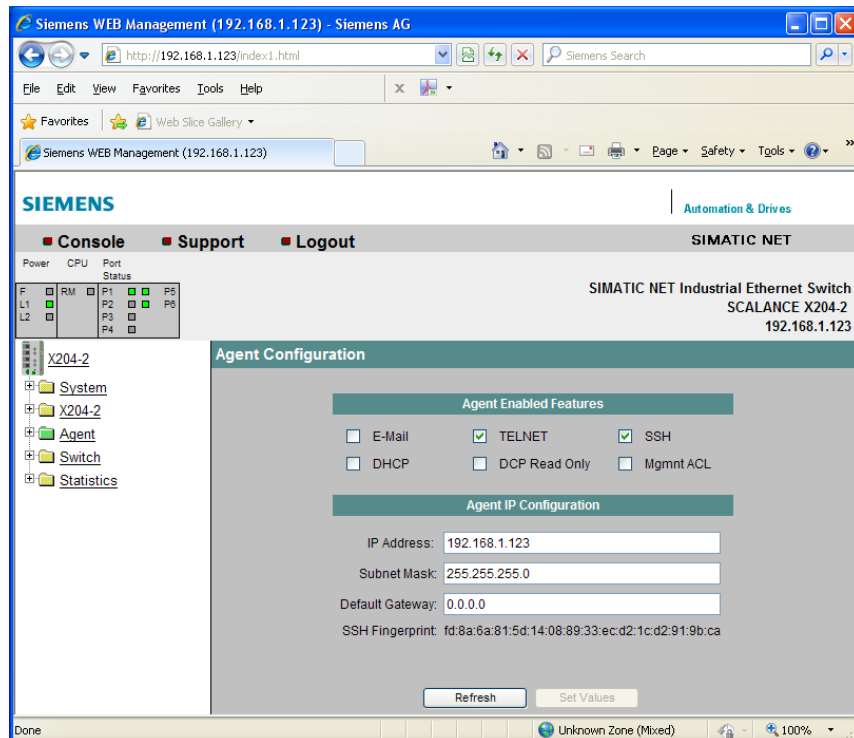


Figure 24
Agent Configuration

The settings in this dialog allow you to specify how the fiber switch reacts to system events. By selecting the corresponding check boxes, you specify how the switch reacts to the various events.

- 1. Expand the Agent icon and select Event Config.
- 2. Uncheck all events for E-mail agent. (The E-mail agent settings are optional.)
- 3. Check the events for Trap agent and Log agent as shown in the Agent Event Settings table.

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below:

AGENT EVENT SETTINGS				
Program Feature or Option	Permitted in UL 864? (Y/N)	Possible Settings	"Trap Agent" Settings permitted in UL 864	"Log Agent" Settings permitted in UL 864
Cold/Warm Start	Y	checked/unchecked	checked	checked
Link Change	Y	checked/unchecked	checked	checked
Authentication Failure	N	checked/unchecked	unchecked	checked
Power Change	N	checked/unchecked	unchecked	checked
Fault State Change	Y	checked/unchecked	checked	checked

- 4. Click on the "Set Values" button.

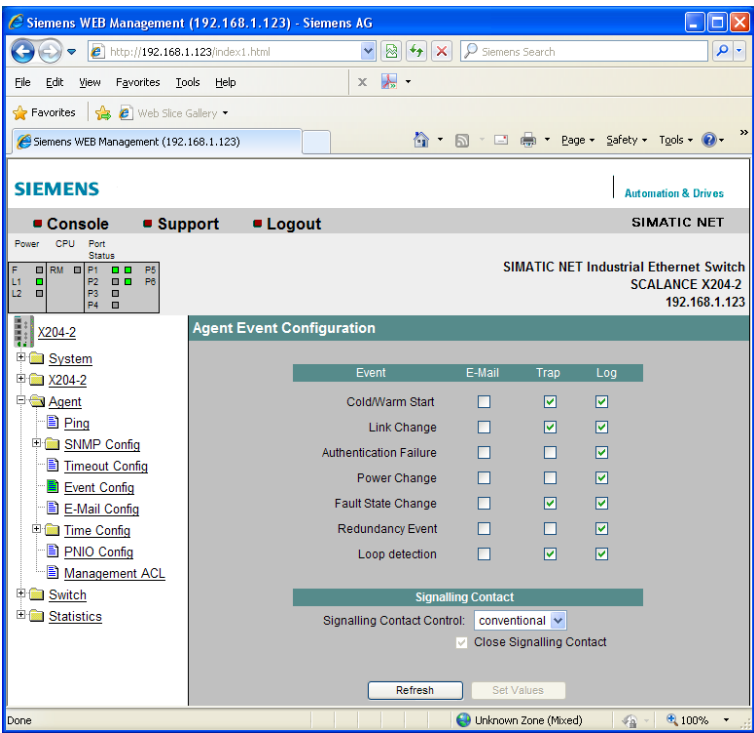


Figure 25
Agent Event Configuration



The settings shown in Figure 23 are the only permitted settings for UL 864.

If an event occurs, the fiber switch can send traps to up to two different NCCs at the same time. Traps are sent only for events specified in the Agent Configuration Menu.

1. Expand the Agent icon and select Trap Config
2. In the first IP Address field enter the Management Station IP address for the PCC (Primary Command Center).
3. Check Enable trap for the first item.
4. In the second IP Address field enter the Management Station IP address for the SCC (Secondary Command Center).
5. Check Enable trap for the second item.
6. Click on the "Set Values" button.

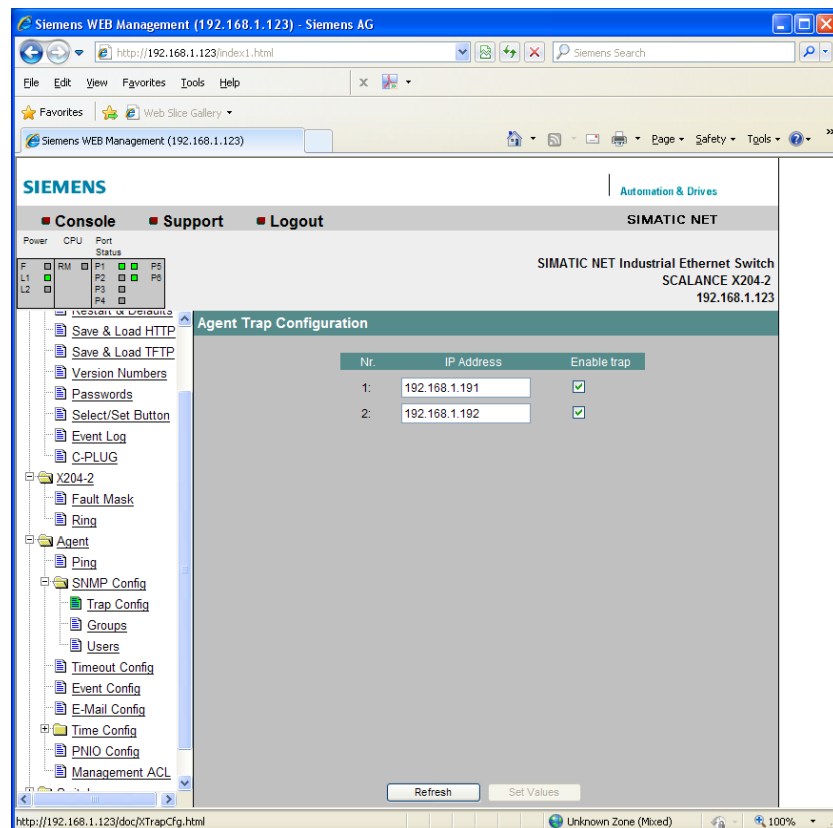


Figure 26
Agent Trap Configuration

FIRMWARE UPDATE

System Version Numbers To get to the following dialog box, click on system, then Version Numbers.

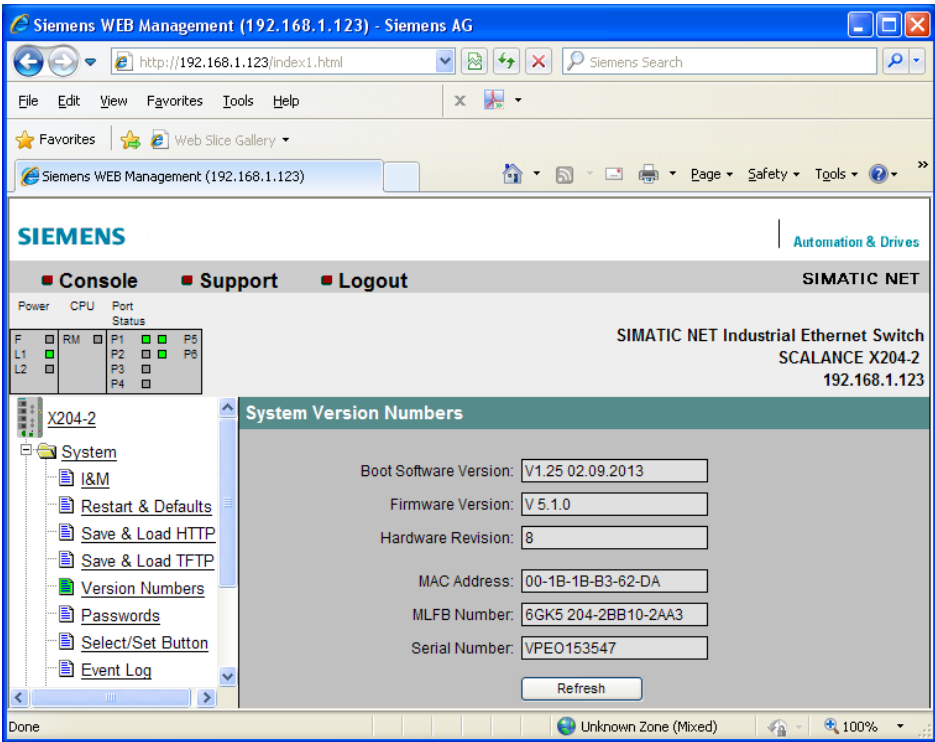


Figure 27
System Version Numbers: Multimode Fiber Optic System Version

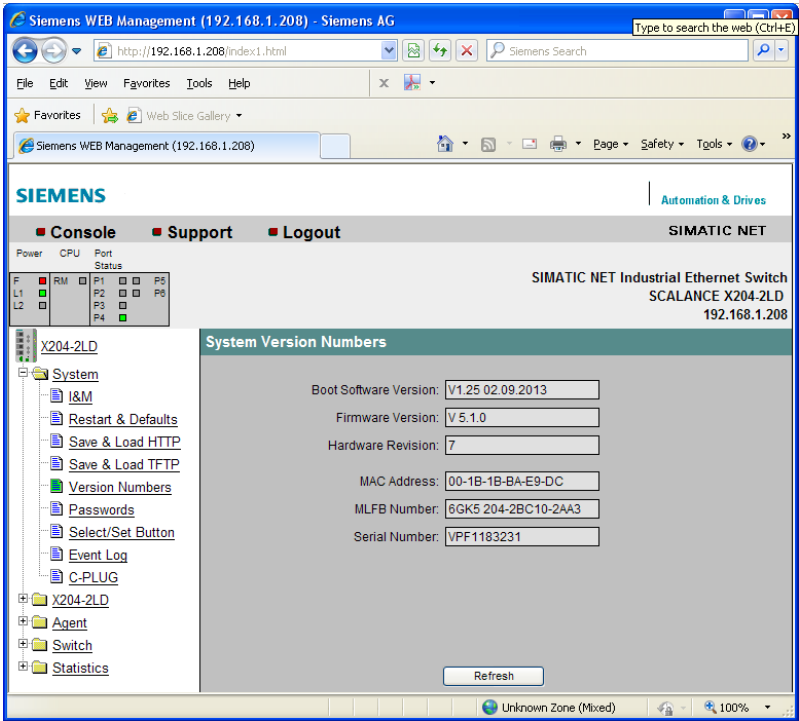


Figure 27a: Single Mode Fiber Optic System Version

The System Version Numbers screen displays the current versions of the boot software, firmware and hardware.

SYSTEM VERSION NUMBERS	
Boot Software	The version of the boot software is displayed here. The boot software is stored permanently on the Scalance fiber switch X204-2 and is used to load new firmware.
Firmware	The version of the firmware running on the Scalance fiber switch X204-2.
Hardware Revision	Displays the version of the device.
MAC Address	Displays the MAC address of the device.
MLFB Number	Displays the order number of the device.
Serial Number	Displays the serial number of the device.

System Save & Load HTTP The Web Management Tool (WBM) allows you to store configuration information in an external file on your client PC or to load such data from an external file from the PC to the Scalance fiber switch. You can also load new firmware from a file located on your client PC. You can make the entries required for this on the page of the System Save & Load HTTP menu.

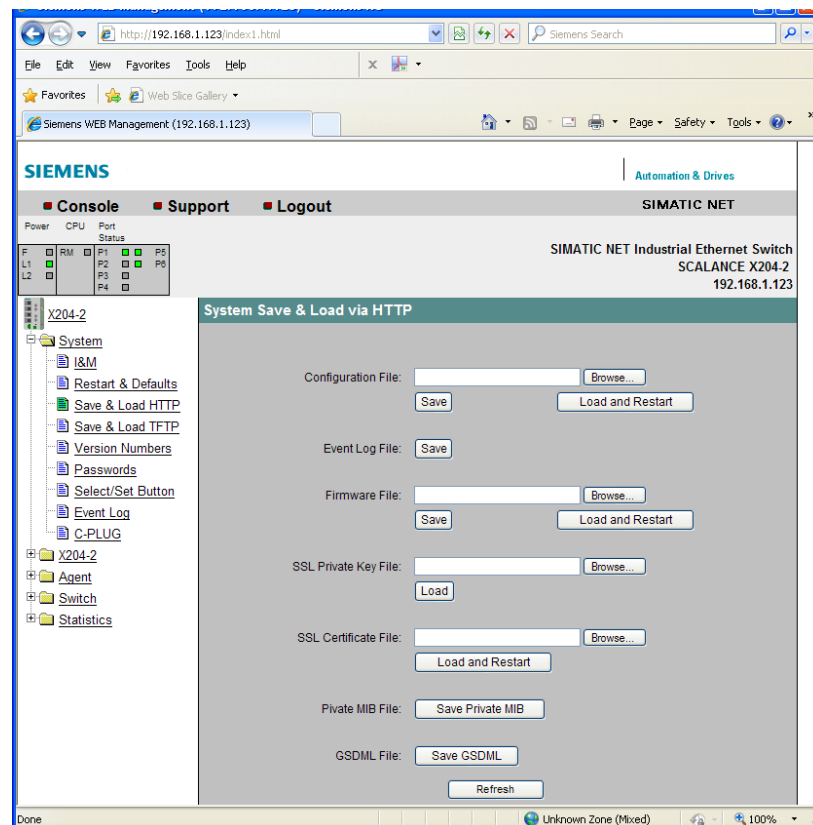


Figure 28
System Save & Load Via HTTP

The following table describes the possible entries in the System Save & Load via HTTP feature.

SYSTEM SAVE & LOAD VIA HTTP	
Configuration file	Name and possibly also folder path of the configuration file (maximum 32 characters) that you want to load on the Scalance fiber switch or where you want to store the current configuration information.
Event Log File (relevant only for IRT switches)	By clicking "Save," you can save the event table (event log file) to your PC.
Firmware File	Full path name from which you wish to load the new firmware.

DIAGNOSTICS

Diagnostics of the fiber switch can be done remotely, as explained below:

- Launch web browser and type in URL of the fiber switch on which diagnostics will be run
- The LEDs status on the top left of the screen are the exact same as that shown on the fiber switches.

Red indicates an error.

Green LEDs indicate that the switch is running properly.

Green also indicates ports that have an Ethernet connection to them.

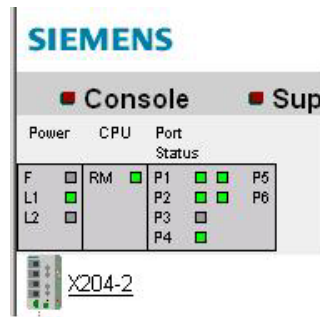


Figure 29
Fiber Switch Diagnostic Indicators

Refer to the Desigo CC Getting Started document, Document ID A6V11349526, for details on Desigo CC Programming.

NCC PROGRAMMING

This section briefly describes special programming considerations for the NCC associated with the Ethernet fiber switches. Please refer to the NCC Manual, P/N 315-049679, for more detailed information.

There are a maximum of four NCCs in the entire complex.

- Example of IP address range is 192.168.1.1 – 192.168.1.64
- XNET Address Node ID range is 1-64
- NCC database requires Node IDs from all nodes in all XLS systems
- NCC requires Node IDs and IP address information from:
 - NCC
 - Fiber Optic Switch

Initial Setup

To setup the IP address of the NCC execute the following steps:

- From the desktop click Start->Network Connections->Local Area Connection.
- From the Local Area Connections Status window click Properties.
- From Local Area Connections Properties window click on Internet Protocol then properties.
- From Internet Protocol Properties window choose Use the following IP address and choose an IP address in the range 192.168.1.60 - 192.168.1.63 with the subnet mask of 255.255.255.0.

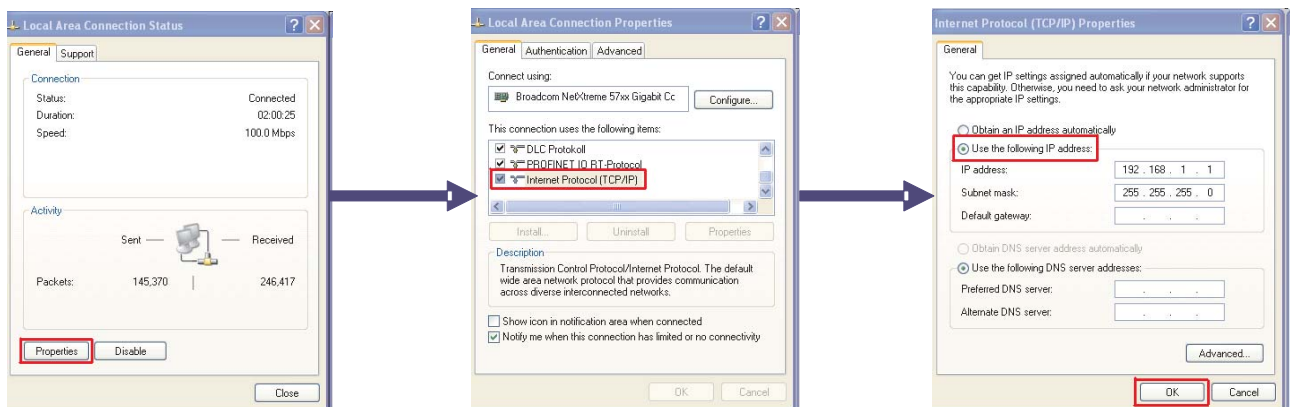


Figure 30
IP Address Setup

- Configure Windows XP or Windows 7 on NCC machine with Firewall set to OFF.
- Setup SNMP protocol as follows:
 1. From the Control Panel click on Add or Remove Programs.
 2. From Add or Remove Programs click on Add or Remove Windows Components
 3. From Windows Component Wizard window scroll down to Management Monitoring Tools and click Details.

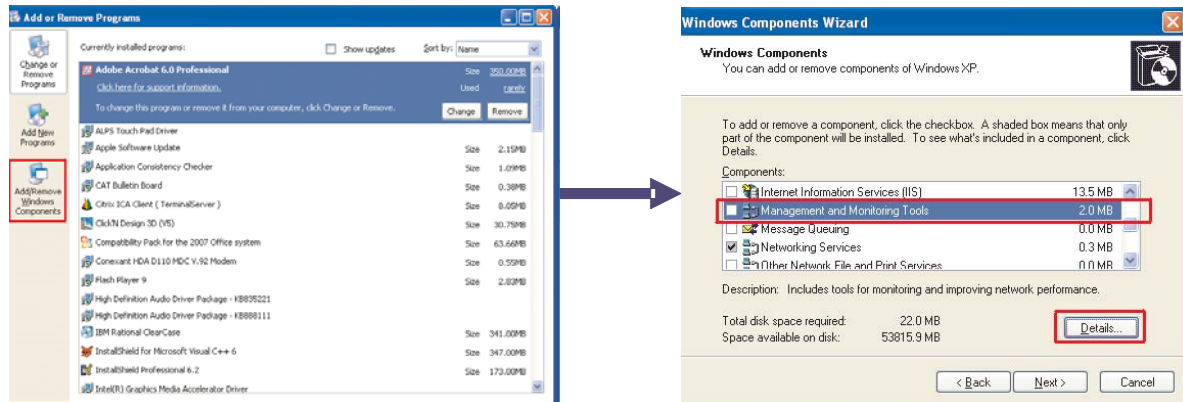


Figure 31
SNMP Protocol Setup - Add Or Remove Program

4. From the Management and Monitoring Tools window select Simple Network Management Protocol and click OK.
5. From the Windows Components Wizard window click Next and follow instructions until installation is complete.

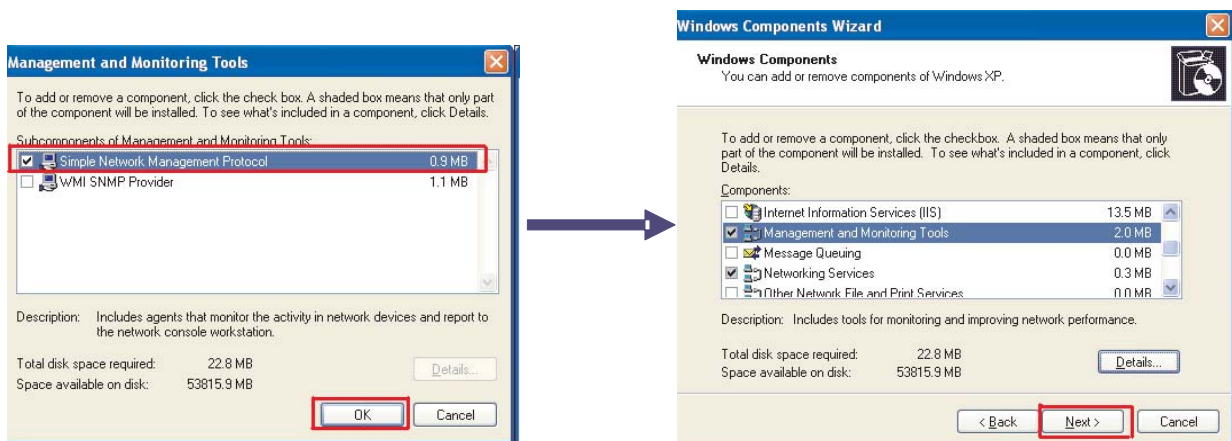


Figure 32
SNMP Protocol Setup - Management and Monitoring Tools

NCC Setup

First, launch the NCC. Once the NCC is launched, click on More->Setup->System->Options to launch NCC System Settings. At the Multiple NCC Configuration Options make sure that the following are checked:

- Control Vectoring
- TCP/IP used for NCC link
- Inhibit automatic data base exchange

Click Done when finished.

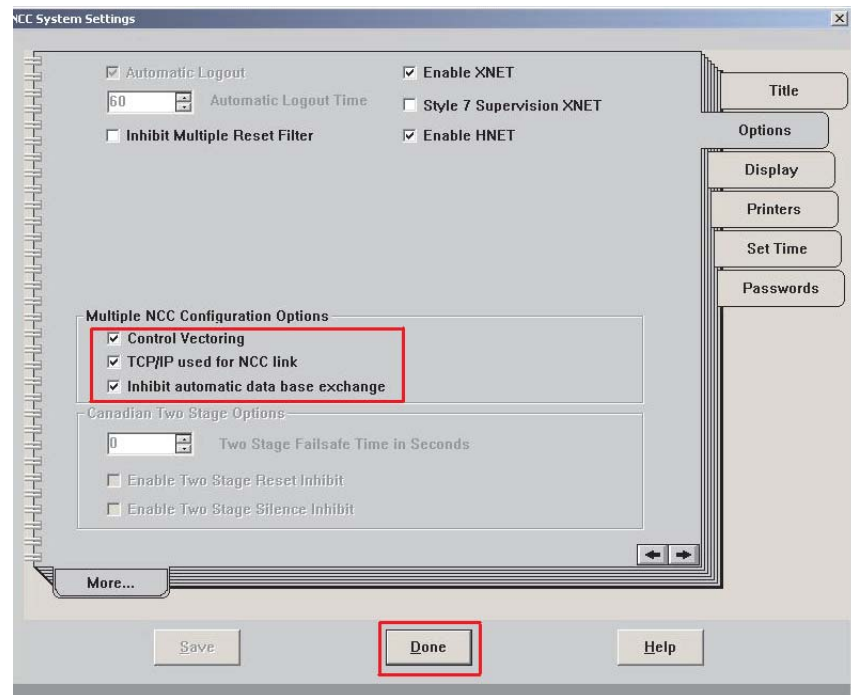


Figure 33
NCC System Settings

- At the NCC, launch the Network Node Map to view the current configuration by clicking More->Setup->Network from the NCC interface.
- This is a list of all XLS/MXL nodes and NCCs in an entire complex that are communicating with the NCC.
- To add a new NCC, XLS or MXL Node into the NCC, click the Add button.

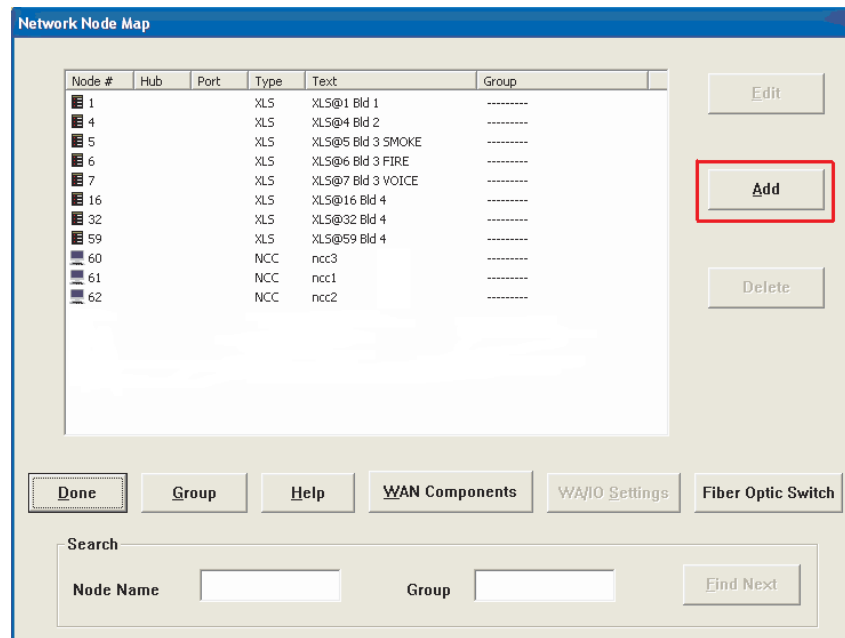


Figure 34
NCC Network Node Map

Adding An NCC

To add an NCC node, complete the following steps (refer to Figure 35):

- Click on the Add button.
- Next, type in the Node number to match the Node number from the Zeus configuration (1-64).
- Add a Node Name.
- Choose "NCC-G" as the Node Type.
- Choose the Type of NCC-G Node as either "This Unit" or "Remote Unit."
- Type the TCP/IP Network Address as the IP address of the NCC PC.
- Click the Save button.

Editing Node 61

Node # Node Name

Control Group

Node Type

☐ XL3 ☐ MXL ☐ XLS ☐ WA-10 ☒ NCC-G

Type Of NCC-G Node

☒ This Unit ☐ Remote Unit

Priority of NCCG for attached COM-1[s]
☒ Primary ☐ Secondary Hnet #

Message From MXL Configuration

No Mxl Message Available

Default NCC-G Control Setting

Primary: Secondary: Tertiary:

Location

☒ MXL/XLS Network [XNET] ☐ COM-1 [HNET] ☐ Remote COM-1

Address

HUB-4 Port Redundant HUB-4

Type

☐ CMI-300 ☐ FSI ☐ Global FSI-XNETNode

Modem

☐ None ☒ Modem ☐ RS 485

TCP/IP Network Address

Displays the group assignment for this node. This is not an editable field, see group setup.

Figure 35
Adding An NCC Node

Adding An XLS

To add an XLS node, complete the following steps (refer to Figure 36):

- Type in the Node number to match the Node number from the Zeus configuration.
- Add a Node Name.
- Choose "XLS" as the Node Type.
- Choose the Node numbers of the NCC as the Default NCC-G Control Setting.
- Click the Save button.

Figure 36
Adding An XLS Node

Fiber Optic Switch Setup

A new button is added in the NCC's Network Node Map window for the Ethernet Multimode Fiber Switch as shown in Figure 37. Click on "Fiber Optic Switch" button to open the Fiber Optic Switch List window to add, delete or update a Fiber Optic Switch.

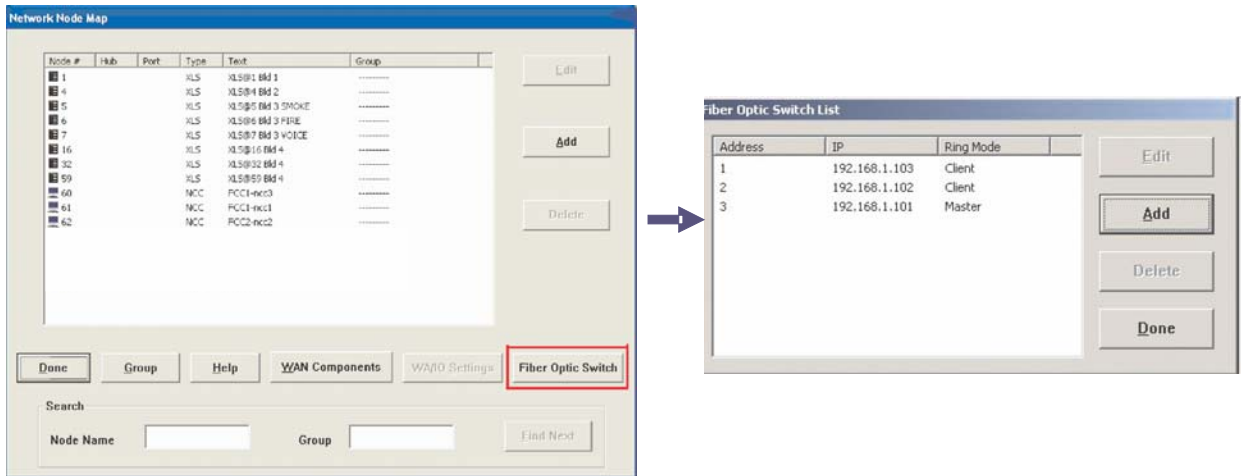


Figure 37
NCC Fiber Optic Switch Node List

Add A Switch

To add a new Fiber Optic Switch, complete the following steps:

1. Click on the Add button in the Fiber Optic Switch List dialog.
2. Assign an address ID to the switch in the range of 1-49. If an address is selected that is already used, a warning message will pop-up to notify the user that the address is not a valid address.
3. Add the IP address of the switch as the assigned IP address. Assign IP Address.
4. For the Ring Redundant Manager, select either Master or Client to agree with the setting, Ring Redundancy Manager.
5. Click the Add button to complete the changes or on Cancel to leave the settings as they were.

Figure 38
Adding A Fiber Optic Switch

Delete A Switch

To delete a Fiber Optic Switch, complete the following steps:

1. Select the switch you want to delete from the Fiber Optic Switch List window.
2. Click on the Delete button.

3. A message box displays as shown in Figure 39 to confirm the deletion.
4. Click OK to delete the selected switch or on Cancel to leave the settings as they were.

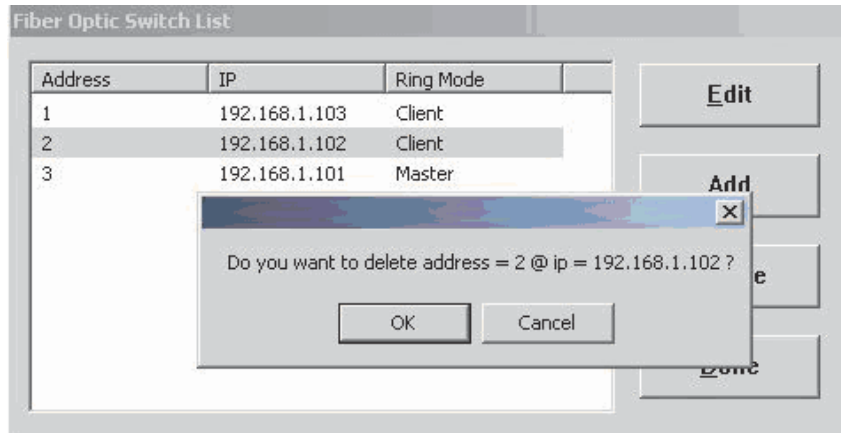


Figure 39
Deleting A Fiber Optic Switch

Update a Switch

To update a switch follow these steps:

1. Select the switch you want to update from the Fiber Optic Switch List window.
2. Click on the Edit button or double click on the selected switch on the list.
3. An update window displays as shown in Figure 40 except that the address field is disabled.
4. You can update the IP address and /or the Ring Redundant Manager setting.
5. Click on the update button to complete the changes or on Cancel to leave the settings as they were.

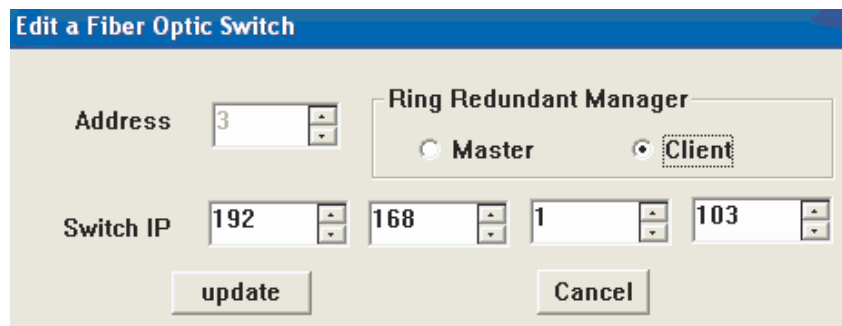


Figure 40
Updating A Fiber Optic Switch

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