NOTIFIER®
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High-Speed Network Communications Module Product Installation Document

PN 54014:C3 5/4/2022 ECN: 00016475

WARNING

Adhere to the following To Avoid Permanent Damage:

When installing a HS-NCM (High-Speed Network Communications Module) on high-speed networks and workstations, adhere to the following to avoid permanent damage:

- Do not attempt to upgrade HS-NCM to software v30.x (or higher) on a network that utilizes v20 HS-NCMs using v20.4 (or lower) software. This will result in permanent damage to all v20 HS-NCMs on the network
- Attempting to individually upgrade any v20 HS-NCM with software V30.x (or higher) will result in permanent damage
- When using v30 HS-NCM, VeriFire Tools v8.20 (or higher) is required for all HS-NCM software upgrades
- When using an Ethernet cable (RJ45) to bridge a VDSL network with a BoradR-Reach network use VeriFire Tools version 10.80 (or higher)
- When a HS-NCM-W-2, HS-NCM-WMF-2 or HS-NCM-WSF-2 is used in a network use VeriFire Tools version 10.80 (or higher)

1 Product Overview

NOTES:
References to V20 HS-NCM indicate hardware assembly HS-NCM-PCA.
References to V30.x and V31.x (or higher) HS-NCM indicate hardware assembly HS-NCM-PCB.
References to V31.x (or higher) indicate hardware assembly HS-NCM-W-2, HS-NCM-WMF-2, HS-NCM-WSF-2 (HS-NCM-PCC)

The High-Speed Network Communications Module (HS-NCM) provides a means for connecting specific Notifier fire alarm control products to High-Speed NOTI•FIRE•NET™. There are six types of HS-NCMs available: HS-NCM-W/W-2 for connecting nodes with twisted-pair wire; HS-NCM-MF and HS-NCM-SF are used for connecting nodes with fiber-optic cable; HS-NCM-WMF/WMF-2 and HS-NCM-WSF/WSF-2 are used for connecting nodes with fiber-optic cables to nodes with twisted-pair wire; HS-NCM-MFSF for connecting nodes with multi-mode fiber cable to nodes with single-mode fiber cable. The following equipment may be used with the HS-NCM:

UL 10th Edition[1]
- NFS2-3030
- NFS2-640
- NFS-320
- NCA-2/C
- DVC-EM
- ONYXWorks
- NCD
- N16E/N16X

UL 8th Edition[2]
- NFS-3030
- NFS-640
- NCA

1 Power for the HS-NCM for use with 10th Edition panels is provided via the NUP connection on the FACP itself or an external UL/ULC listed power supply.
2 Power for the HS-NCM for use with UL 8th Edition panels must be provided by a 24 VDC UL/ULC listed power supply.

The following revisions[1] of the UL 10th edition panels require a 24 VDC UL/ULC listed power source to power the HS-NCM and cannot be powered via the panel's NUP port[2]:

• NFS-320	CPU2-640PCB (Revision E or older)
• NFS2-640	CPU2-640PCB (Revision E or older)
• NFS2-3030	CPU2-3030PCC (Revision I or older)
• N16E/N16X	Core/PMB PCB[3]
• DVC-EM	DVC-EMPCB (Revision F or older)
• DVC	DVC-PCA (All Revisions)
• NCA-2/C	NCA-2/CPCC (Revision I or older)

1 The revision and assembly name can be found on the fire panel's circuit board.
2 NUP Port connections are still required for communication between the HS-NCM and the fire panel. TX, RX, and GND connections must be used for NUP connections.
3 A UL-listed, regulated, power-limited 24VDC power source is required if TB1 is used to power the HS-NCM.

One HS-NCM can provide network communication for up to two nodes (including fire alarm control panels and network annunciators).

Per UL 864 10th Edition, the HS-NCM uses Active Multiplex Type 3 Communication.

The HS-NCM can also be configured as a high-speed repeater for applications requiring distances beyond the specified limits between two nodes. For configuration and setup information, refer to "HS-NCM Configuration" on page 4. For limitations and network wiring information for the HS-NCM, refer to the *High-Speed Noti•Fire•Net Manual*.

For instructions on the additional capabilities available with the DVC-EM, refer to the *DVC and DAA Series Installation Manual*.

Input power requirements: 17-28 VDC, 0.450 A, regulated, power-limited compatible power supply UL/ULC listed for fire protective signaling use.

All wiring connections are supervised and power limited. Wiring methods used shall be done in accordance with the Standard for Installation and Classification of Burglar and Holdup Alarm Systems, UL 681.

Communications circuit requirements: Refer to the High-Speed Noti•Fire•Net Manual for segment length limitations.

Communication Circuit	Voltage and Current Rating/Protocol
TB4 (Ch A - Wire Only)	10 VDC, 25mA
TB5 (Ch B - Wire Only)	10 VDC, 25mA
J6 (NUP)	232 Protocol
J7 (NUP)	232 Protocol
J8 (Ethernet Connection)[1]	Standard Ethernet Physical Protocol
J13 (USBA)	Standard Protocol
J14 (USBB)	Standard Protocol

Table 1 Voltage and Current Ratings for Communication Circuits

1 Refer to Section 7, "Diagnostic Indicators" for details on the use of this connection.

NOTE: The HS-NCM *must* be connected via the NUP Ports when used with the NFS-640, NFS2-640, NFS-320, NFS-3030, NFS2-3030, N16/E, N16/X, DVC-EM, NCA-2/C, NCA, and NCD.

Environmental restrictions: This system meets NFPA requirements for operation at 32-120º F (0-49º C) and at a relative humidity 93% ± 2% RH (non-condensing) at 90°F ± 3°F (32°C ± 2°C). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 60-80º F (15-27º C).

2 Network Communications Module for Wire (HS-NCM-W/W-2)

- Supports twisted-pair wire medium
- NFPA Class B operation or NFPA Class X operation
- Transformer coupling provides electrical DC isolation between nodes
- Pluggable terminal wiring with strain relief
- Pluggable service connector (feeds signal directly through) in the event that power must be removed from a node (HS-NBB)
- Data is regenerated at each node
- Two NUP ports to allow simultaneous connection of up to two fire alarm control panels and a programming computer
- Enables software and database upload/download over High-Speed Noti•Fire•Net

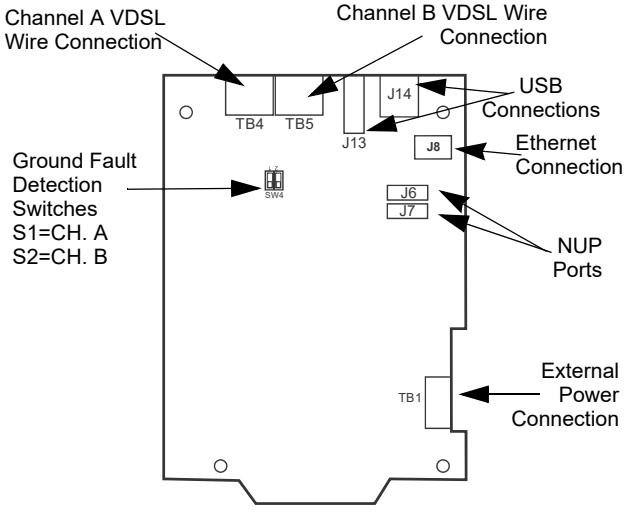


Figure 1 HS-NCM-W

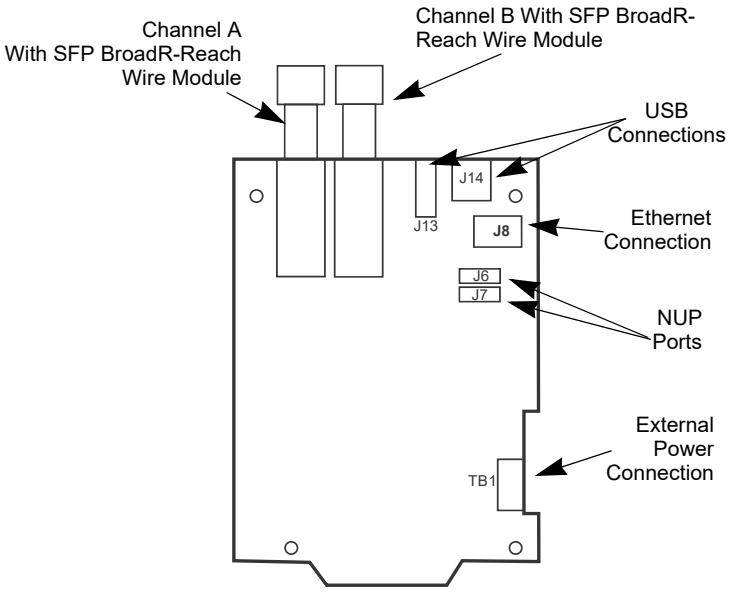
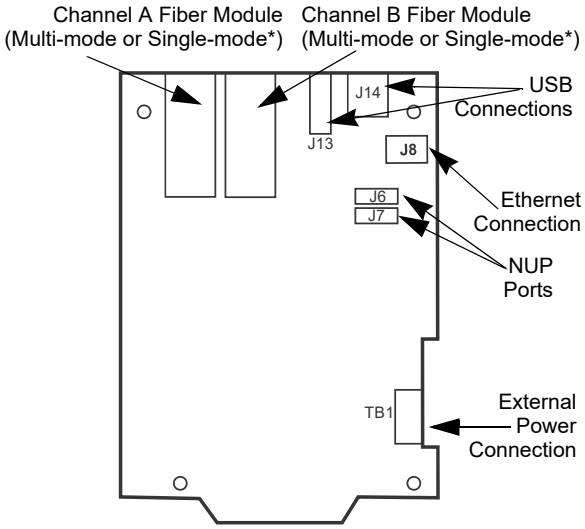


Figure 2 HS-NCM-W-2

2.1 Network Communications Module for Fiber (HS-NCM-MF, HS-NCM-SF, HS-NCM-MFSF)

- Supports fiber-optic medium
- NFPA Class B or Class X operation
- Data is immune to all environmental noise
- Optical isolation prevents ground loops
- High-Speed Noti•Fire•Net fiber-optic medium
- Fiber type:
  - 62.5/125 micrometers (multi-mode, 10 dB limit)
  - 50/125 micrometers (multi-mode, 6.5 dB limit)
  - 9/125 micrometers (single-mode, 30 dB limit)
- Wavelength (1): 1310 nanometers
- Fiber Connectors: LC style
- Data is regenerated at each node
- Two network ports to allow simultaneous connection of up to two fire alarm control panels and a programming computer
- Enables software and database upload/download over High-Speed Noti•Fire•Net

NOTE: When referring to fiber-optic cables, the term “MF” indicates a multi-mode fiber and the term “SF” indicates a single-mode fiber.



***Channel A/B-Mode Operations:**
HS-NCM-MF: Both Channel A and B are Multi-mode fiber.
HS-NCM-SF: both channel A and B are Single-mode fiber.
HS-NCM-MFSF, Channel A is Multi-mode and Channel B is Single-mode.

Figure 3 HS-NCM-SF/MF/MFSF

3 The Network Communications Module for Wire/Fiber (HS-NCM-WMF, HS-NCM-WSF, HS-NCM-WMF-2 and HS-NCM-WSF-2)

- Supports twisted-pair wire and fiber-optic medium NFPA Class B or Class X operation
- Allows wire and fiber-optic nodes to communicate as one network
- Fiber type:
  - 62.5/125 micrometers (multi-mode, 10 dB limit)
  - 50/125 micrometers (multi-mode, 6.5 dB limit)
  - 9/125 micrometers (single-mode, 30 dB limit)
- Wavelength (1): 1310 nanometers
- Fiber Connectors: LC style
- Wire Connectors: Pluggable terminal wiring with strain relief
- Data is regenerated at each node
- Two network ports to allow simultaneous connection of up to two fire alarm control panels and a programming computer
- Enables software and database upload/download over High-Speed Noti•Fire•Net
- Port A and Port B assignment for the wire and fiber connections are set through VeriFire Tools. Refer to the *VeriFire® Tools on-line help file*.

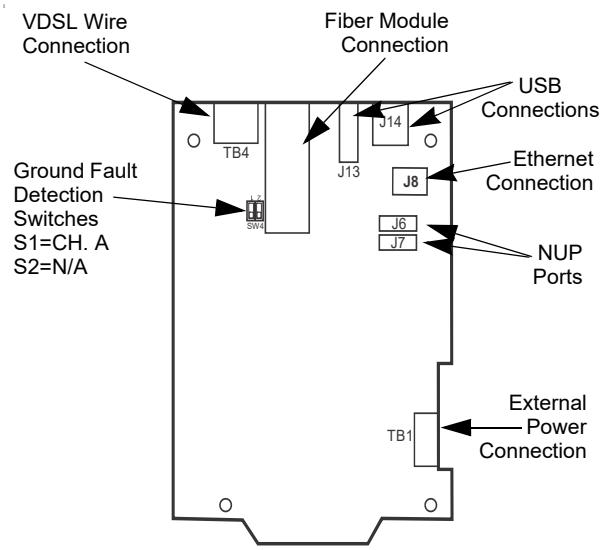


Figure 4 HS-NCM-WSF/WMF

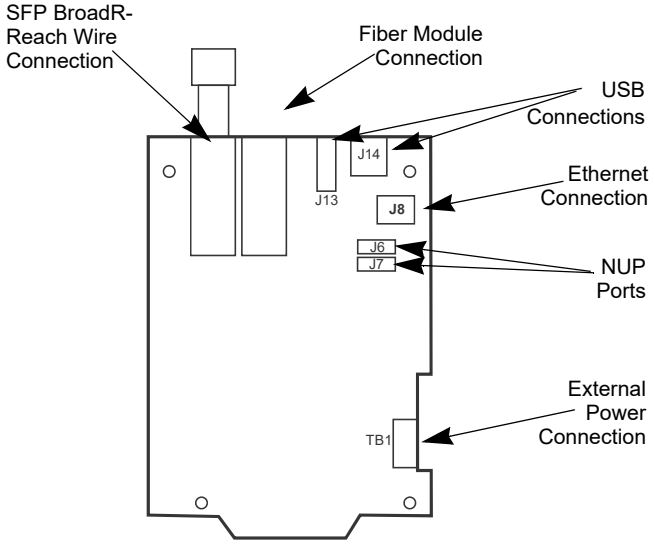


Figure 5 HS-NCM-WSF-2/WMF-2

NOTE: When referring to fiber-optic cables, the term “MF” indicates a multi-mode fiber and the term “SF” indicates a single-mode fiber.

4 SFP Adapter Module

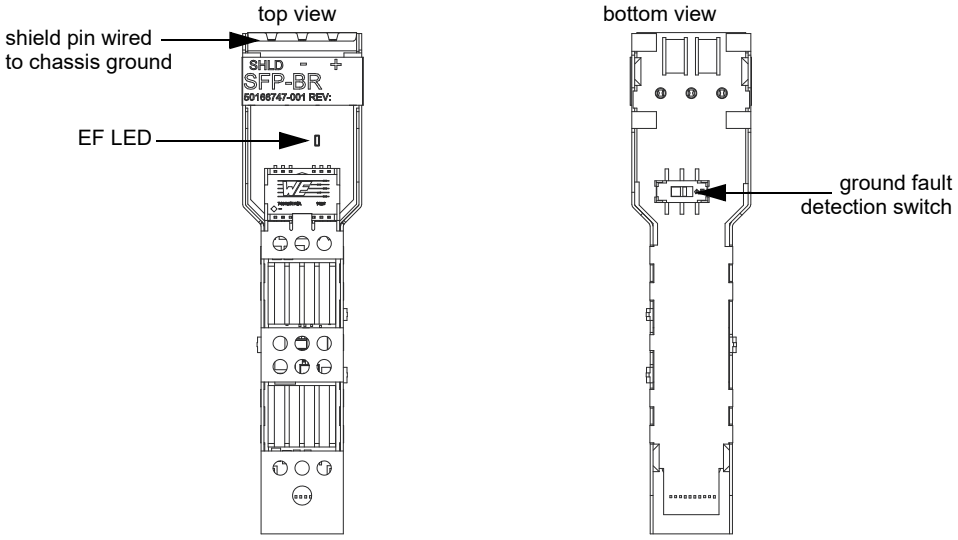


Figure 6 SFP Adapter Module

The SFP Adapter ground fault detection switch located on the bottom of the module. Slide the switch to the right to enable ground fault detection. When the ground fault detection switch is in the ON position, the EF LED on the top of the module will be illuminated. Slide the switch to the left to disable ground fault detection. See Figure 6, “SFP Adapter Module”.

NOTE: Connect pin marked “SHIELD” on the HS-NCM-W-2 to the FACP Chassis

CAUTION: GROUND FAULT DETECTION

DO NOT ENABLE THE GROUND FAULT DETECTION ON THE SFP ADAPTER MODULE ON MORE THAN ONE SIDE OF THE BORADR-REACH/VDSL CABLE. EXAMPLE: PORT A NODE ONE ENABLED. PORT B NODE TWO DISABLED.

5 HS-NCM Configuration

HS-NCM configuration changes are made via the VeriFire Tools Programming Utility, version 8.2 or higher.

VeriFire Tools can be connected to the HS-NCM via two different methods:

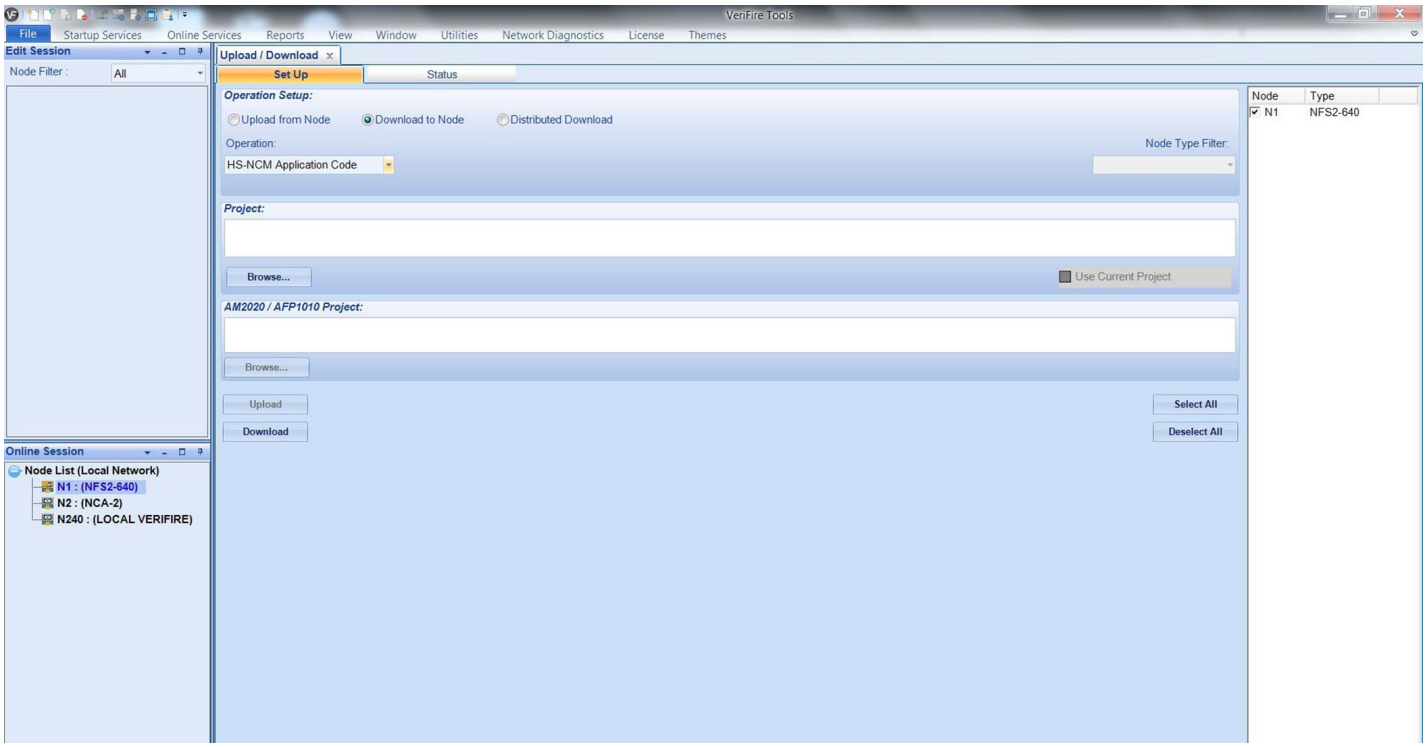
- VeriFire Tools connected to any node on a network using the HS-NCM for network communication
- HS-NCM directly connected to VeriFire Tools

NOTE: When directly connecting VeriFire Tools to the HS-NCM, if power is not being provided via the NUP connection at the fire panel, external power is needed. Refer to “HS-NCM-W-2 Applications” on page 13.

Perform the following steps to modify the HS-NCM’s configuration parameters using VeriFire Tools. Refer to the *VeriFire Tools online help file*.

1. Connect the HS-NCM to the FACP via either NUP port or provide power from an external UL/ULC listed power source.
2. Connect VeriFire Tools to the network or directly connected to the HS-NCM.

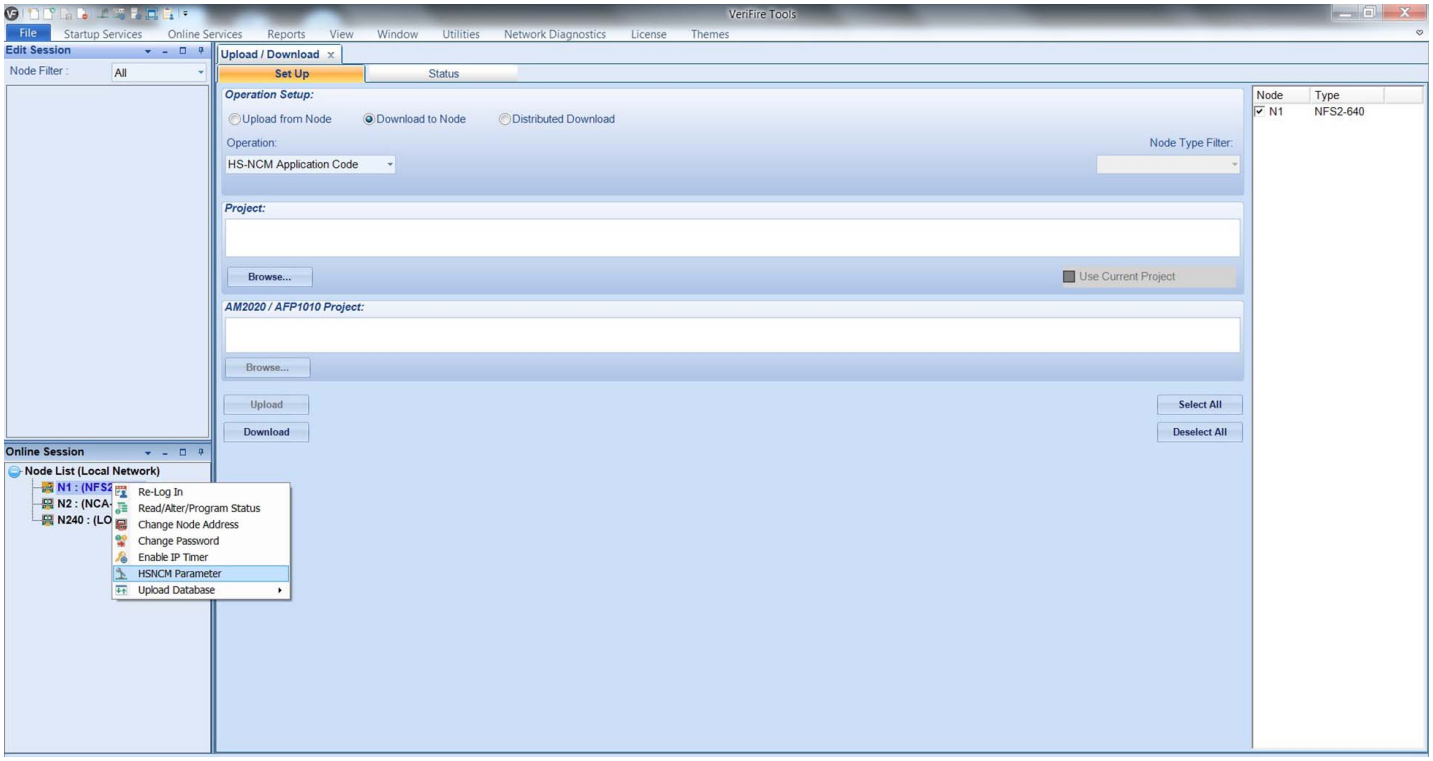
3. In VeriFire Tools, access the Upload/Download Screen.



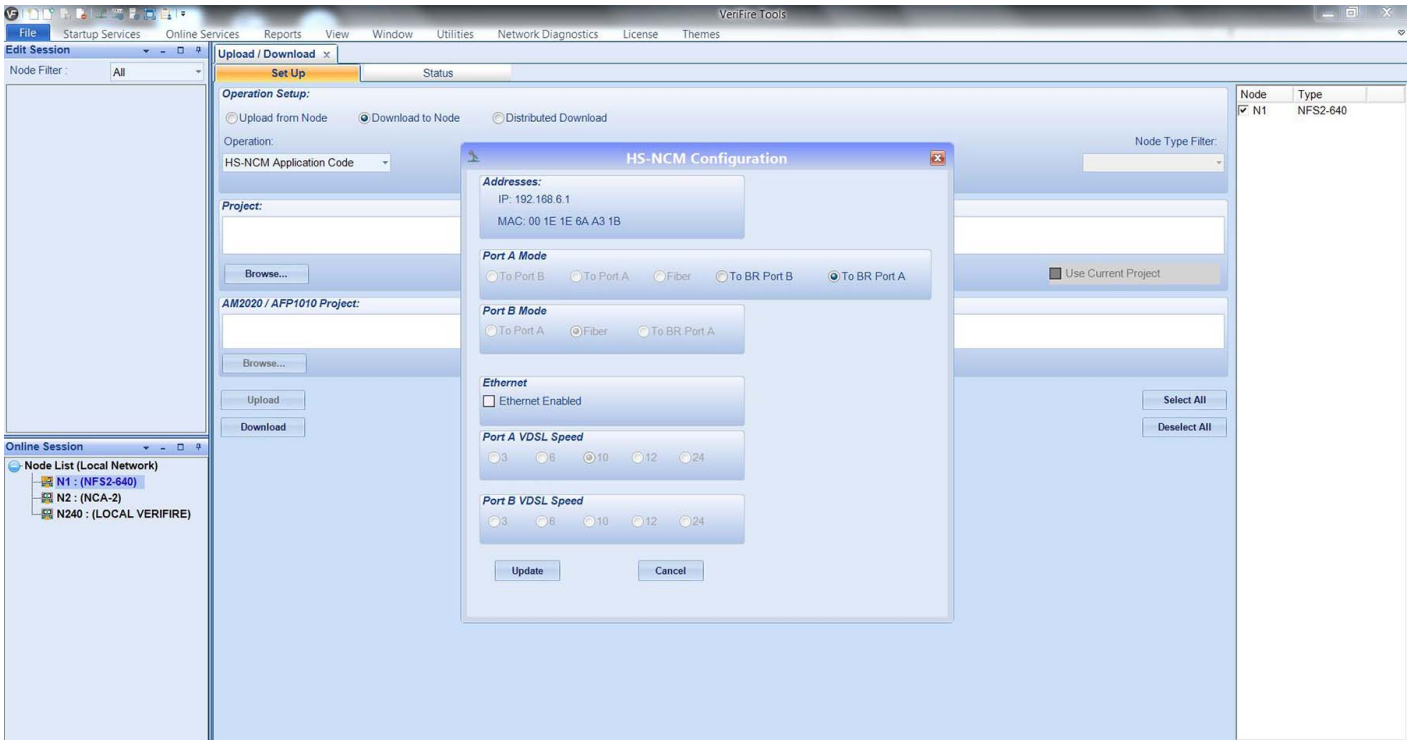
4. In the “Network Node Session” of the Upload/Download screen, find the node connected to the HS-NCM being configured.

NOTE: When the HS-NCM is directly connected to the VeriFire Tools, the node listed in the “Network Node Session” of the VeriFire Tools Upload/Download screen is shown as “Local VeriFire”

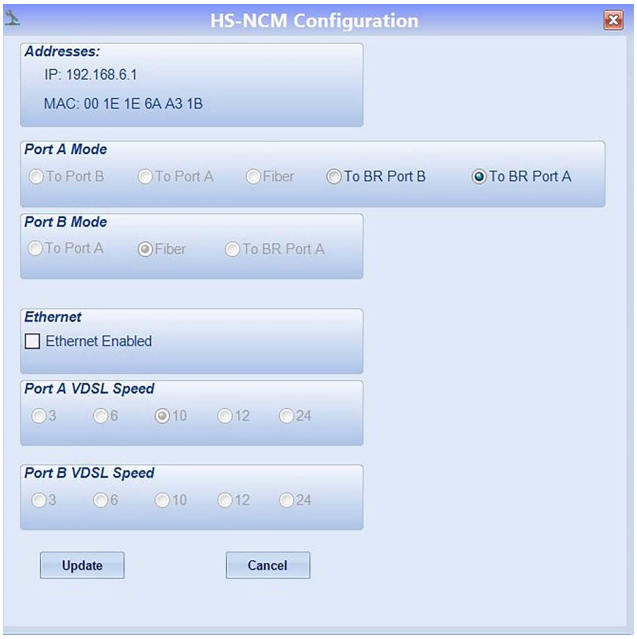
5. Double click the node to log in to the panel.
6. Right click on the node connected to the HS-NCM being configured. A menu of available options is displayed.
7. Select “HS-NCM Parameters”.



8. The HS-NCM Parameters screen will be displayed listing HS-NCM defaults.



9. Set the HS-NCM parameters as needed and click “Update”



- Addresses
  - IP - Network address associated with the HS-NCM. Default to all zeros when in repeater mode. Not user-modifiable.
  - MAC - Factory-set identification code for the HS-NCM. Not user-modifiable.
- Port A Mode
  - **For HS-NCM-MF, HS-NCM-SFand HS-NCM-MFSF**: Port A Mode is not applicable for Fiber ports. Port A Mode will automatically be configured as “Fiber” and can not be user modified.
  - **For HS-NCM-W:** Port A Mode will be automatically configured to the “To Port B” setting and must be connected to a wire port on the next HS-NCM that is configured in “To Port A” mode.
  - **For HS-NCM-W-2**: Port A Mode is defaulted to the “To BR Port B” setting. It must be connected to a wire port on the next HS-NCM that is configured for “To BR Port A” mode.
  - **For HS-NCM-WMF/WMF-2 and HS-NCM-WSF/WSF-2:** Port A Mode is automatically configured to the “To Port B” mode, but can be user modified to the “To Port A” setting if the connection must be made to a wire port that is already set in the “To Port B” mode.
- Port B Mode:
  - **For HS-NCM-MF, HS-NCM-SF and HS-NCM-MFSF**: Port B Mode is not applicable for Fiber ports. Port B Mode will automatically be configured as “Fiber” and can not be user modified.
  - **For HS-NCM-W:** Port B Mode will be automatically configured to the “To Port A” setting and must be connected to a wire port on the next HS-NCM that is configured in “To Port B” mode.
  - **For HS-NCM-W-2**: Port B Mode is defaulted to the “To BR Port A” setting and must be connected to a wire port on the next HS-NCM that is configured for “To BR Port B Mode.
  - **For HS-NCM-WMF/WMF-2 and HS-NCM-WSF/WSF-2:** Port B Mode is not applicable for Fiber ports. Port B Mode will automatically be configured as “Fiber” and can not be user modified.
- Ethernet: The Ethernet port (RJ45) default setting is disabled. You must select “Ethernet Enabled” if you are bridging a different network, such as VDSL to BR.
- Port A VDSL Speed: (Wire Only) Bandwidth speed for voice transmissions for port A. This applies for wire ports only. Available options are **3 Mb, 6 Mb, 12 Mb (default)**, or **24 Mb.** Not user-modifiable.
- Port B VDSL Speed: (Wire Only) Bandwidth speed for voice transmissions for port B. This applies for wire ports only. Available options are **3 Mb, 6 Mb, 12 Mb (default),** or **24 Mb.** Not user-modifiable.

5.1 HS-NCM Configured as a High-Speed Repeater

The HS-NCM can be configured as a repeater to boost data signals between network nodes, to extend communication distances or to pass data transmissions between two differently configured network segments when wire and fiber co-exist on a network. Once connected to an FACP, the HS-NCM will evaluate the network programming of the fire panel and set it's node address accordingly. When power is applied to the HS-NCM without connection via the NUP port to an FACP, the HS-NCM will automatically configure itself as a repeater and it's node address will be defaulted to zero. Refer to Figure 7, "HS-NCM Repeater Installation Limitations" on page 7 when using the HS-NCM as a repeater.

NOTE: Once configured as a high-speed repeater, network monitoring equipment such as ONYXWorks, NCA-2/C, or NCD can not monitor any events that occur on the HS-NCM.

NOTE: If the HS-NCM is connected to an external power source and then disconnected from an FACP, it may take up to 30 seconds for the HS-NCM to reconfigure itself as a repeater.

When using a HS-NCM as a repeater, refer to the following for installation limitations

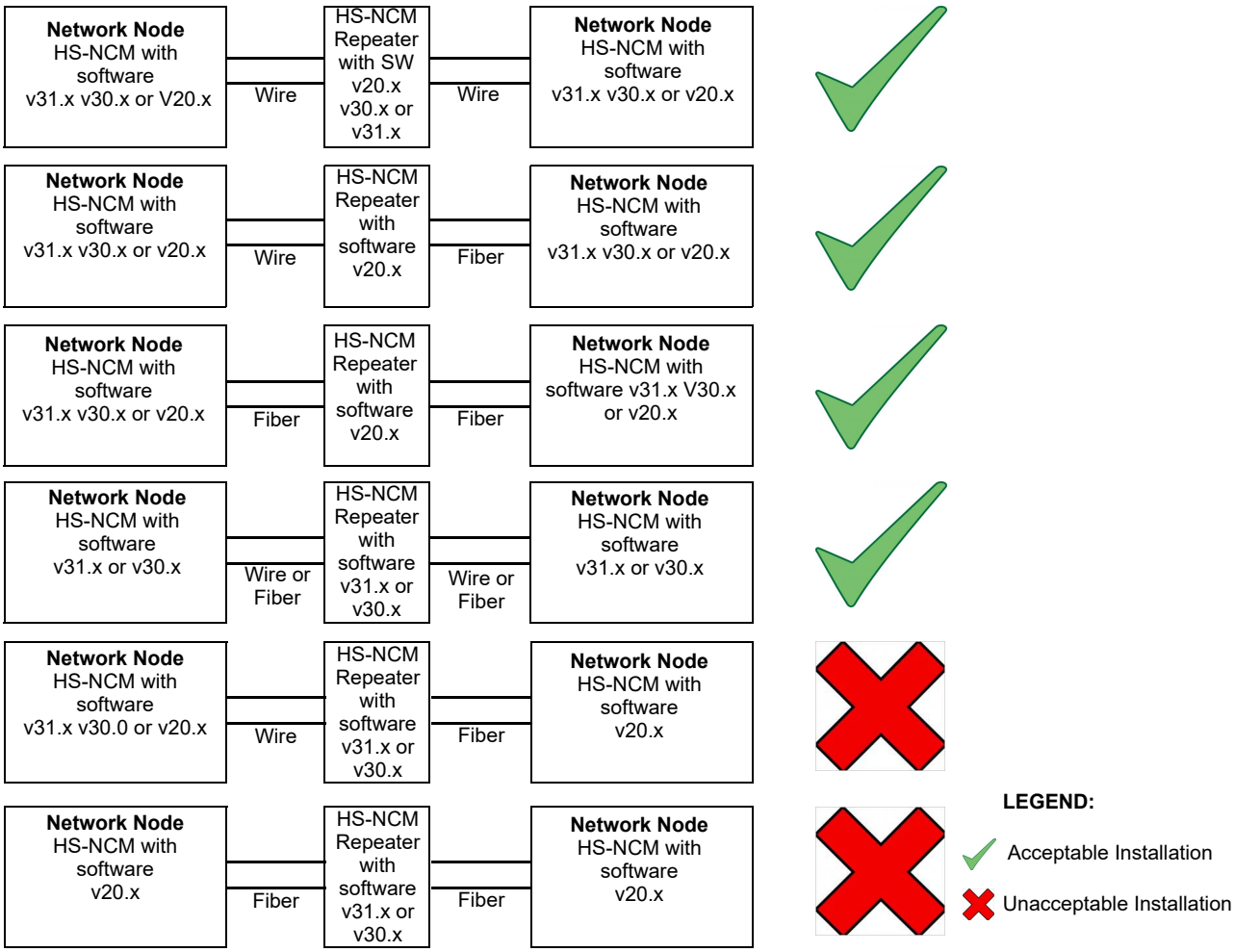


Figure 7 HS-NCM Repeater Installation Limitations

Refer to the *High-Speed Noti•Fire•Net Instruction Manual* for network configurations using the HS-NCM as a repeater.

6 Installation

Installation must be done in accordance with ANSI/NFPA 70.

6.1 Mounting Options

The HS-NCM is designed to mount in a variety of CAB-3/CAB-4 and CAB-5 compatible chassis, in the NFS-320 and the N16E enclosure, on a BMP-1 blank plate for dress panel mounting, or behind the DVC-EM in the CA-1 or CA-2 audio chassis. HS-NCM-W can be door-mounted; HS-NCM-MF, HS-NCM-SF, HS-NCM-WMF, HS-NCM-WSF, or HS-NCM-MFSF must be installed in a stationary location. Recommended location is in the top row under the back-box's knockout, so as to avoid over-bending fiber-optic cable. Avoid mounting other option boards in front of HS-NCM so that its LEDs are visible. Attach the HS-NCM using the four screws that ship with it.

NOTE: When mounting wire or fiber versions of the HS-NCM using the CHS-RL-MP chassis, refer to the *CHS-RL-MP Product Installation Document*.

Cabinet-mounting HS-NCM-W/HS-NCM-MF/HS-NCM-SF/HS-NCM-WMF/HS-NCM-WSF/HS-NCM-MFSF:

- CHS-4L/4N, CHS2-M3, CHS-M3, the NFS2-640 chassis or NFS-320 enclosure: Mount the HS-NCM in standard option module positions as described in your control panel installation manual. Figure 8 shows CHS-4L as an example.

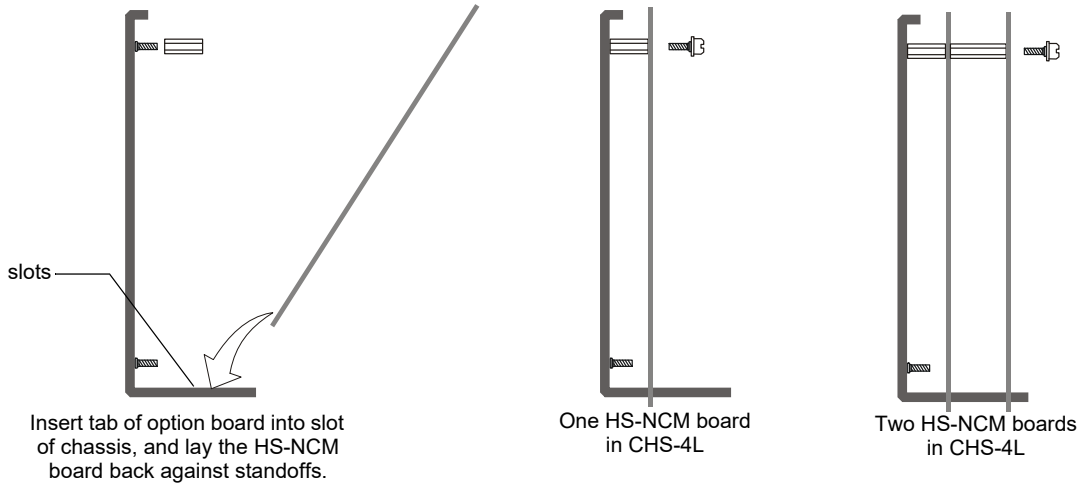


Figure 8 Mounting HS-NCM in a Chassis (CHS-4L Shown)

NOTE: The installation position of the HS-NCM with SFP Fiber Module must be installed in the top position of the CHS-4L only.

- CA-1, CA-2: Mount the HS-NCM-W/MF/SF behind a DVC-EM in either the CA-1 or CA-2 audio chassis. Figure 9 illustrates how to install it in a CA-1. Mounting is the same behind a DVC-EM in the lower half-chassis of a CA-2.

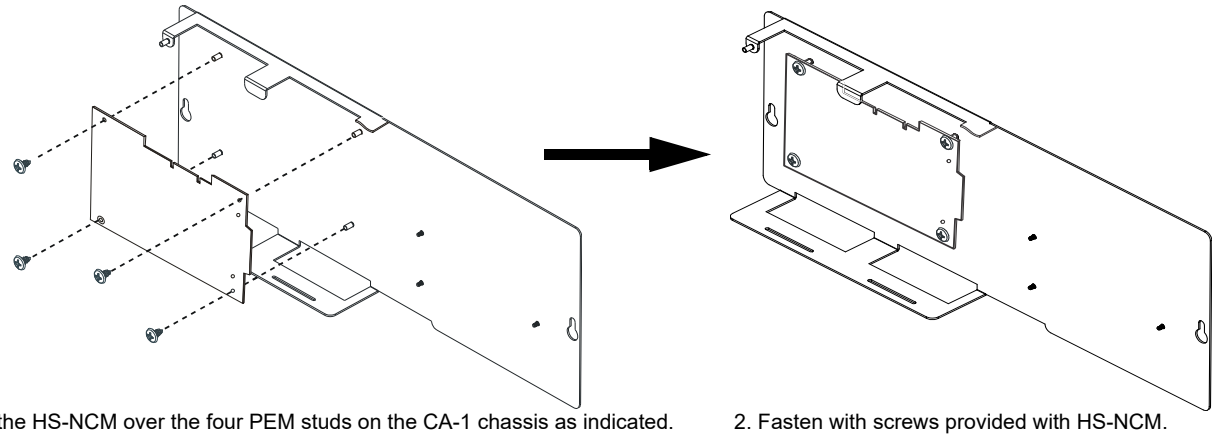


Figure 9 Installing an HS-NCM-W/W-2/MF/SF/MFSF onto the CA-1 or CA-2 Audio Chassis Assembly

Door-mounting the HS-NCM-W:

- Mount the HS-NCM-W on the ADP-4B Dress Panel using a single-space blank plate (BMP-1) in a CAB-4 series backbox, as shown in Figure 10.

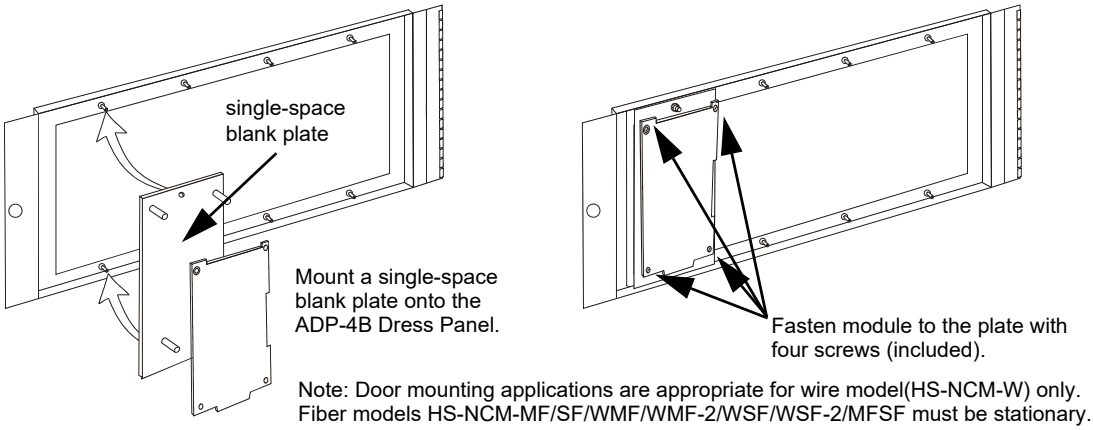


Figure 10 Door-Mounting the HS-NCM-W/W-2

NOTE: The module cannot be mounted in the ADP-4B Dress Panel when a front slot of the CHS-4 or CHS-4N is occupied, or when either of the two front right positions of the CHS2-M2 is occupied. Always be certain there is enough clearance to close the cabinet door when this installation is used.

6.2 Interconnecting the HS-NCM-W/W-2

When wiring consecutive HS-NCM-W/W-2 boards, note that wiring may enter or exit at Port A or Port B as shown in Figure 11. HS-NCM-W/W-2 port-to-port wiring is port sensitive. Port A must be connected to Port B of the next HS-NCM-W. A HS-NCM-W may be connected to any of the following devices:

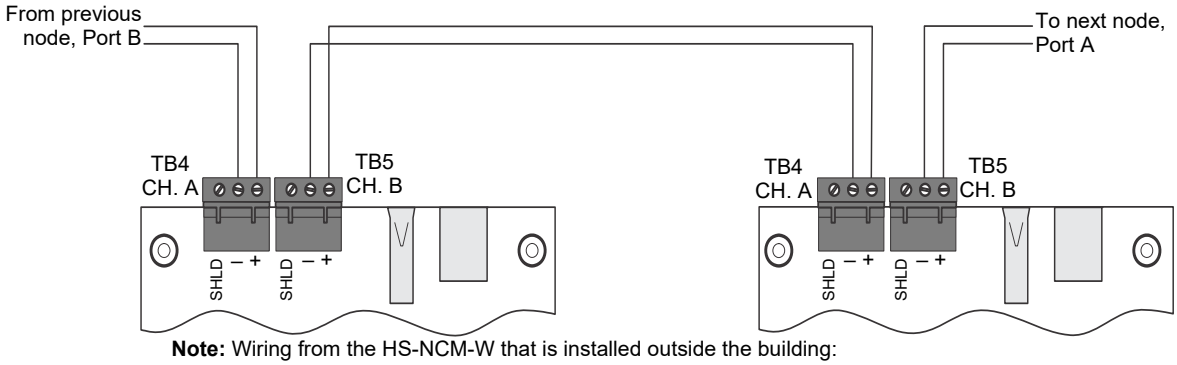
- HS-NCM-W (in another panel)
- HS-NCM-WSF/HS-NCM-WMF (in another panel)
- ONYXWORKS-HNW

A HS-NCM-W-2 may be connected to any of the following devices:

- HS-NCM-W-2 (in another panel)
- HS-NCM-WMF-2 (in another panel)
- HS-NCM-WSF-2 (in another panel)
- ONYXWORKS-HNW-2

For information regarding these devices, refer to the documentation listed in Table 7, “Supplemental Documentation”.

NOTE: HS-NCM-W to HS-NCM-W-2 cannot be connected directly through wire connection Must be bridged through Ethernet port



Note: Wiring from the HS-NCM-W that is installed outside the building:

- Cannot exceed 1000m (3280 ft.).
- Must be in conduit and is to be buried in a trench separate from any power lines.
- Cannot cross any power lines.

Figure 11 HS-NCM-W/W-2 Connections

TB4-1	CH-A (+)	Channel-A Driver/Receiver
TB4-2	CH-A (-)	Channel-A Driver/Receiver
TB5-1	CH-B (+)	Channel-B Driver/Receiver
TB5-2	CH-B (-)	Channel-B Driver/Receiver

Table 2 Noti•Fire•Net Connections: HS-NCM-W and HS-NCM-W-2

6.3 Interconnecting Modules

NOTE: BroadR-Reach references HS-NCM-W-2 connections and VDSL references HS-NCM-W connections

6.3.1 Replacing the HS-NCM-W with the HS-NCM-W-2

When connecting the HS-NCM-W to a HS-NCM-W-2 you must use an RJ45 Ethernet cable. Refer to Figure 12, “Replacing a HS-NCM-W with a HS-NCM-W-2”

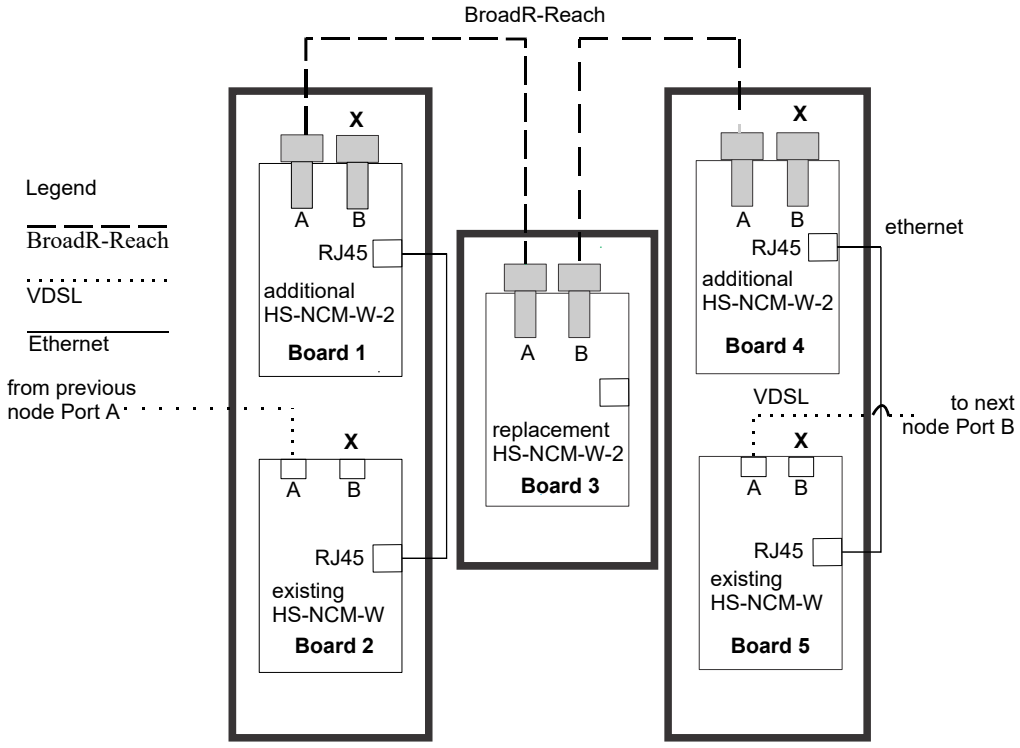


Figure 12 Replacing a HS-NCM-W with a HS-NCM-W-2

NOTE: When replacing a HS-NCM-W with a HS-NCM-W-2 the immediate adjacent nodes must also be replaced

Programming for Replacing a HS-NCM-W-2 into an Existing System

Refer to Figure 12, “Replacing a HS-NCM-W with a HS-NCM-W-2”.

To establish a link, each board should be programed individually from its local panel as follows:

Board 1: Check “Ethernet Enabled” and set Port A Mode as “To BR Port A”

Board 2: Check Ethernet Enabled” and set Port A Mode as “To Port A”

Board 4: Check “Ethernet Enabled”

Board 5: Check “Ethernet Enabled”

No other programming is required. Once programed, all nodes can be accessed remotely through VeriFire Tools.

6.3.2 Expanding an existing HS-NCM-W Network with the HS-NCM-W-2

When connecting the HS-NCM-W to a HS-NCM-W-2 you must use an RJ45 Ethernet cable. Refer to Figure 13, “Expanding an existing HS-NCM-W network using the HS-NCM-W-2”.

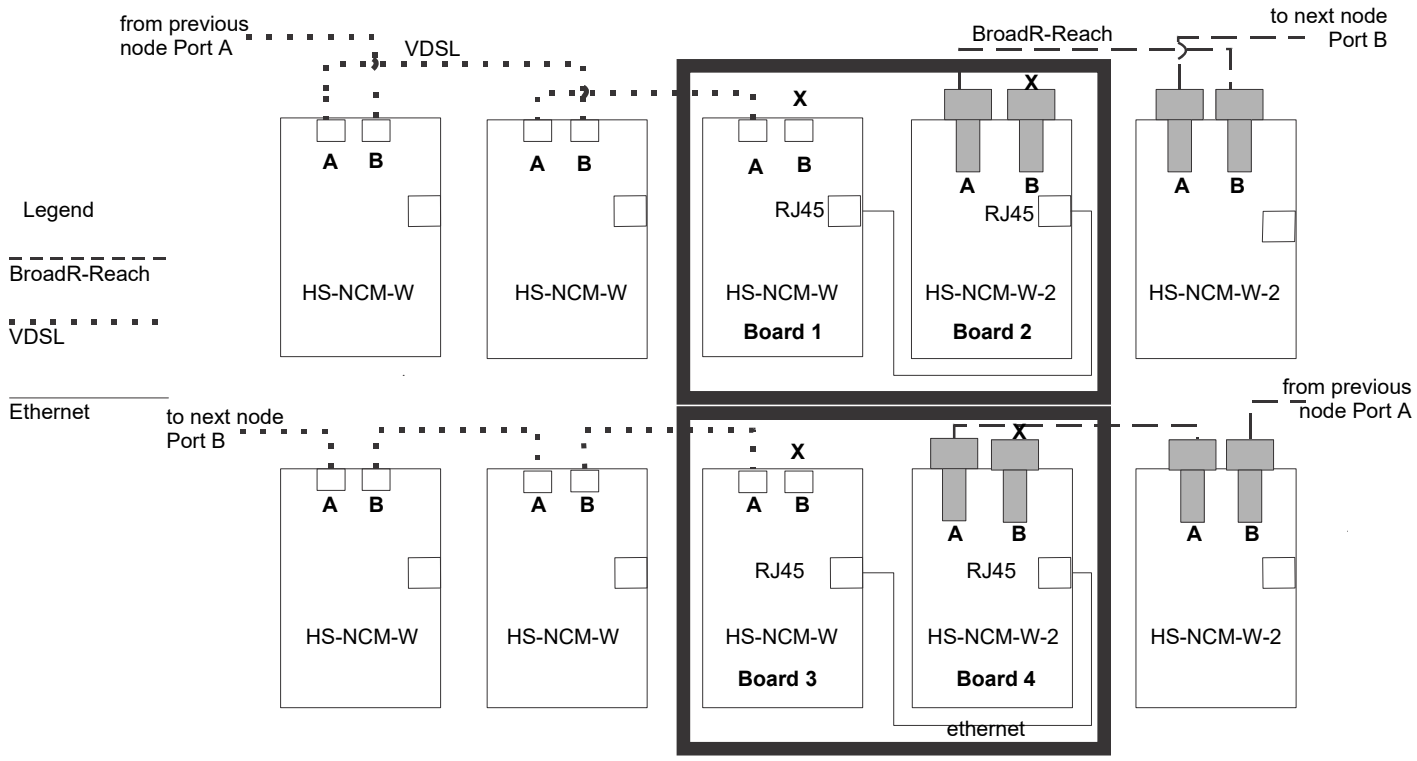


Figure 13 Expanding an existing HS-NCM-W network using the HS-NCM-W-2

Programming for Expanding an Existing HS-NCM-W Network Using the HS-NCM-W-2

Refer to Figure 13, “Expanding an existing HS-NCM-W network using the HS-NCM-W-2”.

To establish a link, each board should be programed individually from its local panel as follows:

Board 1: Check “Ethernet Enabled” and set Port A Mode as “To Port A”

Board 2: Check “Ethernet Enabled”

Board 3: Check “Ethernet Enabled”

Board 4: Check “Ethernet Enabled” and set Port A Mode as “To BR Port A”

No other programming is required. Once programed, all nodes can be accessed remotely through VeriFire Tools.

Switch Functions: Ground Fault Detection.

For UL 864 applications, enable ground fault detection by setting EF switches to the ON position:
SW4.1 for Channel A, and SW4.2 for Channel B.

Correct configuration depends on your network design; for an explanation of design concepts, refer to the *High-Speed Noti•Fire•Net™ Manual*.

Ground faults are detected when the resistive value reaches 0 ohms.

Ground Fault monitoring is performed by the FACP associated with the HS-NCM.

NOTE: Ground fault detection **must** be enabled for UL 864 applications and for ULC applications.

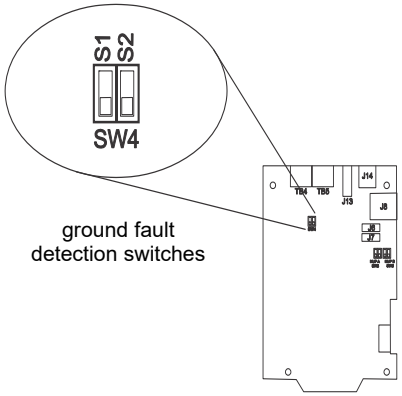


Figure 14 HS-NCM-W and HS-NCM-W-2 Switches

6.3.3 Interconnecting the HS-NCM-MF/SF/WMF/WSF/MFSF and HS-NCM-WMF-2/WSF-2

A HS-NCM-MF/SF/MF-2/SF-2/MFSF may be connected to any of the following devices:

- HS-NCM-MF/SF/WMF/WMF-2/WSF/WSF-2/MFSF (in another panel)
- ONYXWORKS-HNMF/SF

For information regarding these devices, refer to the documentation listed in Table 7, “Supplemental Documentation”.

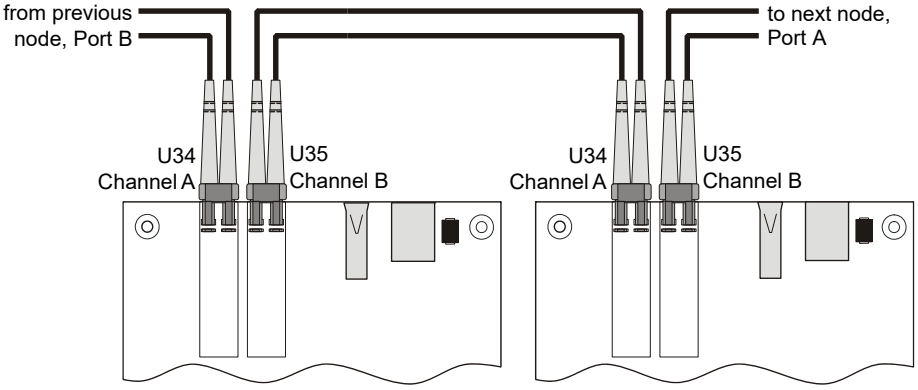


Figure 15 HS-NCM-MF/SF/MFSF Connection

U34	CH A	Transmit
U34	CH A	Receive
U35	CH B	Transmit
U35	CH B	Receive

Table 3 Noti•Fire•Net Connections: HS-NCM-MF/SF/MF-2/SF-2/MFSF

6.4 Mixing Wire and Fiber on One Network

In some networks, it may be necessary to mix twisted-pair wire and fiber-optic cable. Use a HS-NCM-WMF/WMF-2 or HS-NCM-WSF/WSF-2 as an interface between wire and fiber.

Fiber ports are not polarity sensitive. However, port-to-port wiring for the HS-NCM wire connections are polarity sensitive. When converting from a wire to fiber network, it may be necessary to change the port designation for the wire connection on the HS-NCM-WMF/WSF/WMF-2/WSF-2. To change the wire port designation, the HS-NCM parameters must be changed via VeriFire Tools. For instructions on how to change the HS-NCM parameters, refer to “HS-NCM Configuration” on page 4.

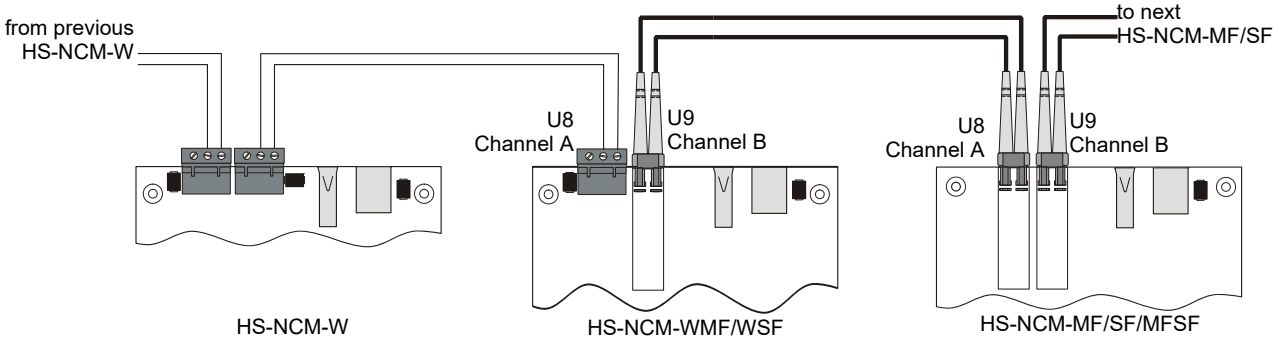


Figure 16 Wire-to-Fiber Connections

See Section 2.1, “Network Communications Module for Fiber (HS-NCM-MF, HS-NCM-SF, HS-NCM-MFSF)” for requirements and restrictions on the use of fiber-optic cable. See the High-Speed Noti•Fire•Net Manual for a discussion of all compatible configurations.

6.5 Approved Cables and Distances

6.5.1 HS-NCM-W Applications

The following table shows approved wiring cables that can be used with the HS-NCM and the maximum total distance allowed for each.

Wire Type / Gauge	Maximum Distance:	Wire Type / Gauge	Maximum Distance
Aerospace 7131KK / 16 AWG	2000 ft. (609.6 m.)	Genesis 4631 / 18 AWG	3,000 ft. (914.4 m)
Belden 5220UM / 16 AWG	1,000 ft. (304.8 m)	Genesis 4633 / 14 AWG	3,000 ft. (914.4 m)
Belden 5320UJ / 18 AWG	3,000 ft. (914.4 m)	Genesis 5502 / 16 AWG	1,000 ft. (304.8 m)
Belden 5320UM / 18 AWG	3,000 ft. (914.4 m)	Lake Cable SNY141PR-NOT / 14 AWG	1,200 ft (365.8 m)
Comtran 8696 / 18 AWG	1,000 ft. (304.8 m)	Pyrotenax 2/16-246T / 16 AWG	425 ft (129.5 m)
Comtran 8698 / 14 AWG	1,000 ft. (304.8 m)	Radix CI14A0702-0000-I5000 / 14 AWG	1,500 ft (457.2 m)
Comtran 8706 / 16 AWG	1,000 ft. (304.8 m)	Radix CI16A0102-0000-I5000 / 16 AWG	1,600 ft (487.6 m)
Comtran 8709 / 14 AWG	1,000 ft. (304.8 m)	Radix DuraLife 18A0102 Unshielded 18AWG	1,000 ft (305.8m)
Comtran 35777 VITALink 2C/16 / 16 AWG	850 ft (259.0 m)	Radix DuraLife 16A0102 Unshielded 16AWG	1,000 ft (305.8m)
Comtran 35787 14AWG	850 ft (259.0 m)	Shawflex 64220M140118700 / 14 AWG	250 ft (76.2 m)
Comtran 36316 VITALink Shielded twisted-pair 14AWG FPLR-CI	1,000 ft (304.8 m)	West Penn AQ225 / 16 AWG	1,000 ft (304.8 m)
Draka USA C FLPR-2C/16NS / 16 AWG	1,000 ft. (304.8 m)	West Penn D980 / 18 AWG	2,000 ft (609.6 m)
Genesis 4050 / 18 AWG	3,000 ft. (914.4 m)	West Penn D990 / 16 AWG	2,000 ft (609.6 m)
Genesis 4431 / 18 AWG	2,000 ft. (609.6 m)	Windy City Wire / 16 AWG	900 ft. (274.32 m)
Genesis 4433 / 14 AWG	3,000 ft. (914.4 m)		

Table 4 Maximum Distance for Approved Cables

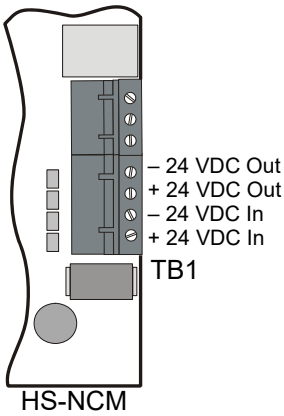
6.5.2 HS-NCM-W-2 Applications

Wire Type/ Gauge	Maximum Distance
Belden 5320UJ 18AWG, twisted-pair, unshielded FPL	1900ft (579 m)
Belden 522OUZ 16AWG, twisted-pair, unshielded FPLR-CIC	1000ft (305.8 m)
Belden 532OUM 18AWG, twisted-pair, unshielded FPLR-CI	1000ft (305.8 m)
Comtran 8696 18AWG, twisted-pair, unshielded FPLR	1000ft (305.8 m)
Genesis 4050 18AWG, twisted-pair, unshielded FPL	1500ft (457.2 m)
Genesis 4431 18AWG, twisted-pair, unshielded FPLR	1000ft (305.8 m)
Genesis 4433 14AWG, twisted-pair, unshielded FPLR	1500ft (457.2 m)
Genesis 4631 18AWG, twisted-pair, unshielded FPLP	2000ft (609.6 m)
Genesis 4633 14AWG, twisted-pair, unshielded FPLP	1000ft (305.8 m)
Lake Cable SNY141PR-NOT* 14AWG, 2 pair, unshielded, FPLP, NYCLL5	1200ft (365.7 m)
Radix CI14A0702-000-I5000 14AWG, twister-pair, unshielded FPL, 2-hour	1500ft (457.2 m)
Raychem CI-2C18UNSH 18AWG, twisted-pair, unshielded FPL-CI	765ft (233 m)

Table 5 Maximum Distance for Approved Cables

6.6 External Power for HS-NCM Applications

When using the HS-NCM with UL 8th edition panels, UL 9th edition, or UL10th edition panels where power can not be applied via the NUP port or when configured as a repeater, a 24 VDC external power source is required. Where applicable, the external 24 VDC external power source must share the same ground reference as the NUP port.



7 Diagnostic Indicators

The HS-NCM has LEDs that serve as diagnostic indicators to help in troubleshooting and system connection. Refer to Table 6 for a list of diagnostic indicators and their descriptions. Refer to the figure below for diagnostic indicator locations.

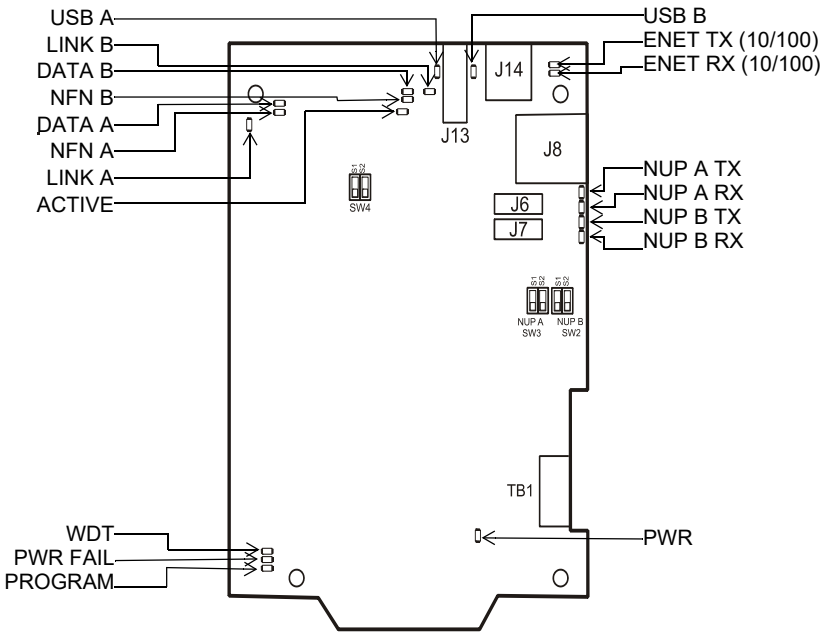


Figure 17 Diagnostic Indicator Locations

LED Indicator	LED Description	LED Color	LED State
PWR	Onboard +3.3V Power	Green	On steady when power is applied. If off, check the power wiring or the NUP connection.
PWR FAIL	Onboard Power Tolerance	Yellow	Normally Off. On steady when on-board power supply is out of tolerance. Contact Customer Service for replacement.
WDT	Watchdog Status	Yellow	Normally Off. On steady after any firmware upgrade that requires a power cycle. Typically, kernal or boot upgrades will result in a cycling of power. If remaining On following any power cycle other than one caused by a firmware upgrade, this indicates a watchdog failure. Contact Customer Service for replacement.
DATA A	Channel A Network Activity	Green	Blinks On when data is received.
DATA B	Channel B Network Activity	Green	Blinks On when data is received.
LINK A	Channel A Link	Green	On steady when link is established. If off when NFN is connected, check NFN wire and/or fiber connections.
LINK B	Channel B Link	Green	On steady when link is established. If off when NFN is connected, check NFN wire and/or fiber connections.
NUPA TX	NUPA Transmit	Green	Blinks On when data is transmitted. If not periodically blinking, check the NUP cable for connection and integrity.
NUPA RX	NUPA Receive	Green	Blinks On when data is received. If not periodically blinking, check the NUP cable for connection and integrity.
NUPB TX	NUPB Transmit	Green	Blinks On when data is transmitted. If not periodically blinking, check the NUP cable for connection and integrity.
NUPB RX	NUPB Receive	Green	Blinks On when data is received. If not periodically blinking, check the NUP cable for connection and integrity.
USBA	USBA Data Link	Green	On steady when USB data link is established. If communication can not be established, check the USB wire for connection and integrity.
USBB	USBB Data Link	Green	On steady when USB data link is established. If communication can not be established, check the USB wire for connection and integrity.
10/100	Ethernet frames receive	Green	Steady, Blinks when data is received.
10/100	Ethernet frames transmit	Green	Steady. Blinks when data is transmitted.

Table 6 Diagnostic Indicator Functions and Colors

LED Indicator	LED Description	LED Color	LED State
NFN A	Network test LED	Yellow	(Wire Only) Blinks On during communications failure. If On, check NFN wiring integrity and Port Mode mismatch. Refer to page 6 for Port Mode settings. (Fiber only) Blinks On during fiber module failure. If on, contact Customer Service for replacement.
NFN B	Network test LED	Yellow	(Wire Only) Blinks On during communications failure. If On, check NFN wiring integrity and Port Mode mismatch. Refer to page 6 for Port Mode settings. (Fiber only) Blinks On during fiber module failure. If on, contact Customer Service for replacement.
ACTIVE	Program Status	Green	Blinks On when a program on the HS-NCM is operating normally.
PROGRAM	Flash Programming	Yellow	Blinks On during Flash programming. **DO NOT REMOVE POWER WHEN FLASH PROGRAMMING!**

Table 6 Diagnostic Indicator Functions and Colors

8 Supplemental Documentation

The table below provides a list of document sources (manuals) containing additional information regarding the HS-NCM-W/MF/SF and the High-Speed Noti•Fire•Net products that it can connect to.

For information on…	Refer to…	Part No.
Fire Alarm Control Panels[1] (FACPs) and Networking	High-Speed Noti•Fire•Net Manual ONYXWorks Workstation Listing Document	54013 LS10050-051NF-E
	NCA-2/C Network Control Annunciator NWS-3 Noti•Fire•Net Web-Server-3 Listing Document ONYXWorks NFN Gateway-3 (Embedded) Listing Document ONYXWorks NFN GW PC Listing Document ONYXWorks Web Server BACNet Gateway-3 Listing Document	52482 LS10016-051NF-E LS10017-051NF-E LS10078-051NF-E 53030 LS10014-051NF-E
	NFS2-640 Listing Document	52741LD
	NFS-320 Listing Document	52745LD
	NFS2-3030 Listing Document	LS10010-051NF-E
	NFS-640 Installation Operations Programming	51332 51334 51333
	NFS-3030 Installation Operations Programming	51330 51344 51345
	N16E/N16X Listing Document	LS10239-051NF-E
	NCA	51482
	DVC and DAA Series Installation, Programming and Operations Manual	52411
	NCD Network Control Display Instruction Manual	LS10210-051NF-E
Off-line Programming Utility	VeriFire® Tools online help file (downloadable)	NA
Compatible Devices	Device Compatibility Document	15378
Cabinets & Chassis	CAB-3/CAB-4 Series Installation Document CA-1 CA-1 Audio Chassis Product Installation Document CA-2 Audio Chassis Installation Document BMP-1 Product Installation Document CHS-RL-MP Product Installation Document Also see your panel's Installation Manual	15330 52455 52474 51119 53215

Table 7 Supplemental Documentation

1 For module mounting instructions, refer to the documentation supplied with the control panel.

9 Software Disclosure

This product contains software provided by third parties. Refer to *document #LS10125-000GE-E* for software disclosure information.

Visit www.notifier.com for more information and to view respective licenses:

Honeywell-branded products do not necessarily use all of the third-party software packages as referred in the web link.