12 Clintonville Road
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800-289-3473 • FAX 203-484-7118
www.notifier.com

1. Installation

1.1 Agency Listings

1.1.1 Standards

■ **Compliance** - This product has been investigated to, and found to be in compliance with, the following standards:

National Fire Protection Association

• NFPA 72   National Fire Alarm and Signaling Code

Underwriters Laboratories

• UL 864   Control Units for Fire Alarm Systems, Tenth Edition
• UL 2017   General Purpose Signaling Devices and Systems, Second Edition
• UL 2572   Mass Notification Systems, Second Edition

Underwriters Laboratories Canada

• CAN/ULC S527-11   Standard for Control Units for Fire Alarm Systems, Third Edition
• CAN/ULC S559-13   Standard for Equipment for Fire Signal Receiving Centres and Systems, Second Edition

■ **Installation** - This product is intended to be installed in accordance with the following:

Local

• AHJ   Authority Having Jurisdiction

National Fire Protection Association

• NFPA 70   National Electrical Code
• NFPA 72   National Fire Alarm and Signaling Code
• NFPA 101   Life Safety Code

Underwriters Laboratories Canada

• CAN/ULC S524   Installation of Fire Alarm Systems
• CAN/ULC S561   Installation and Services for Fire Signal Receiving Centres and Systems

Canada

• CSA C22.1   Canadian Electrical Code, Part I, Safety Standard for Electrical Installations

1.1.2 Agency Restrictions and Limitations

• MODBUS-GW is UL 864 listed for supplementary use only.
• MODBUS-GW is UL 2572 listed for supplementary use only and cannot be used to trigger mass notification announcements.
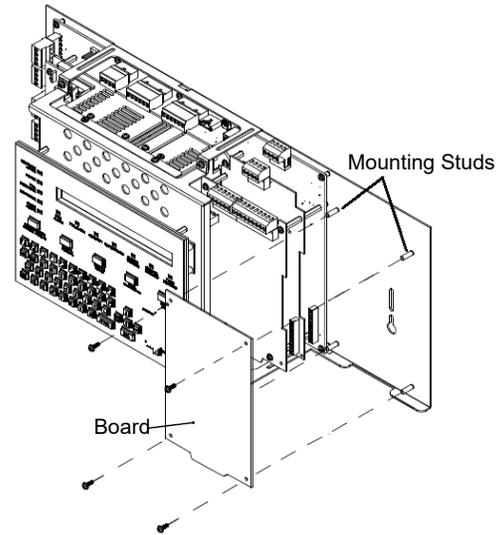
1.2 Board Installation

The MODBUS-GW may be installed in a CAB-3 or CAB-4 cabinet as shown below.
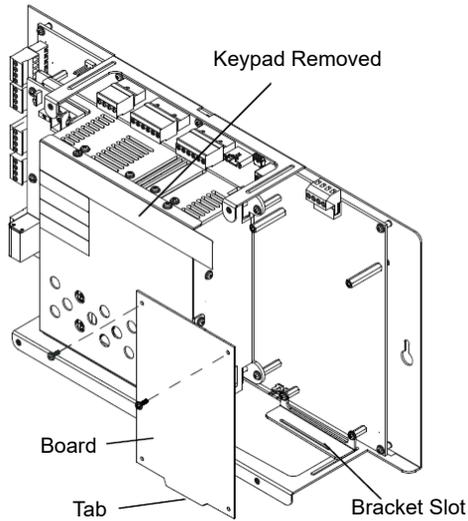
Install bracket on 1/2" standoffs. Place the board's tab in the bracket slot and screw the board to the top of the standoffs. May be stacked in front of or behind another board using standoffs of adequate length to clear the rear board.

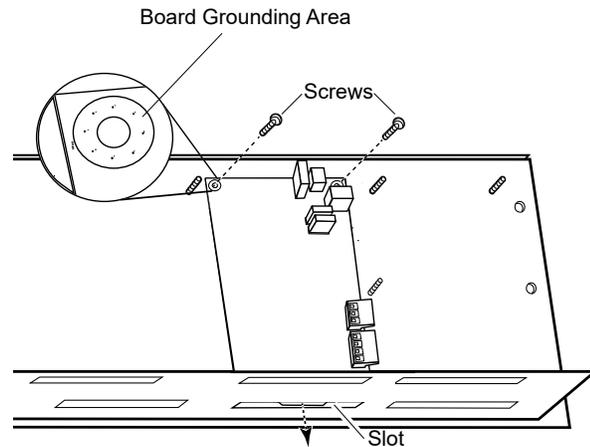**Figure 1. NFS-320 Series Installation**

Mount in 4th column of the NFS2-640 Series chassis. Mount chassis to backbox before installing the board in rear position. May be mounted in front of another board using standoffs of adequate length to clear the rear board.

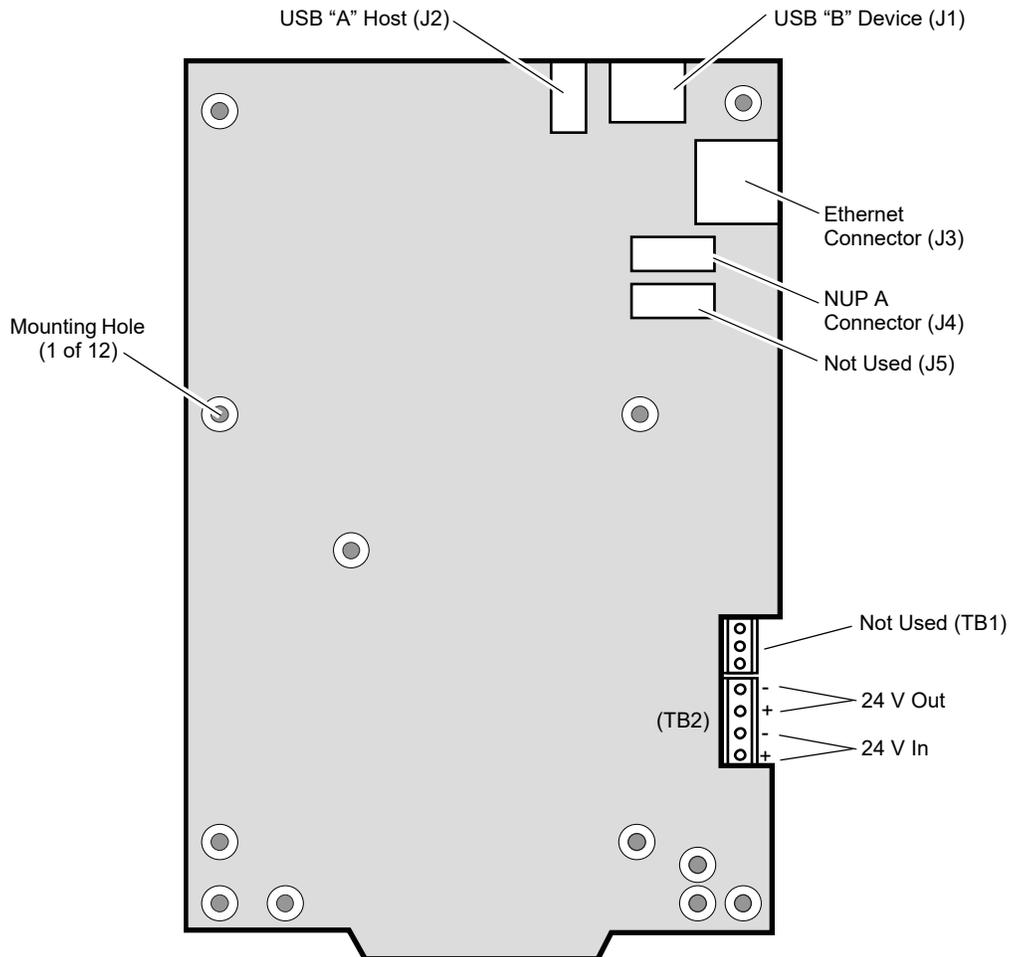**Figure 2. NFS2-640 Series Installation**
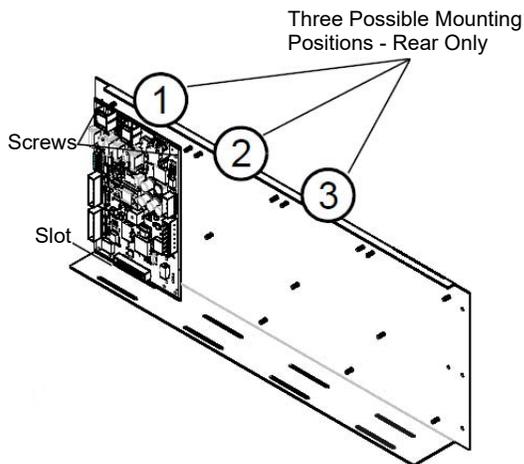
Figure 3. CHS-4L Installation

Figure 4. Securing the Board

1.3 Connections

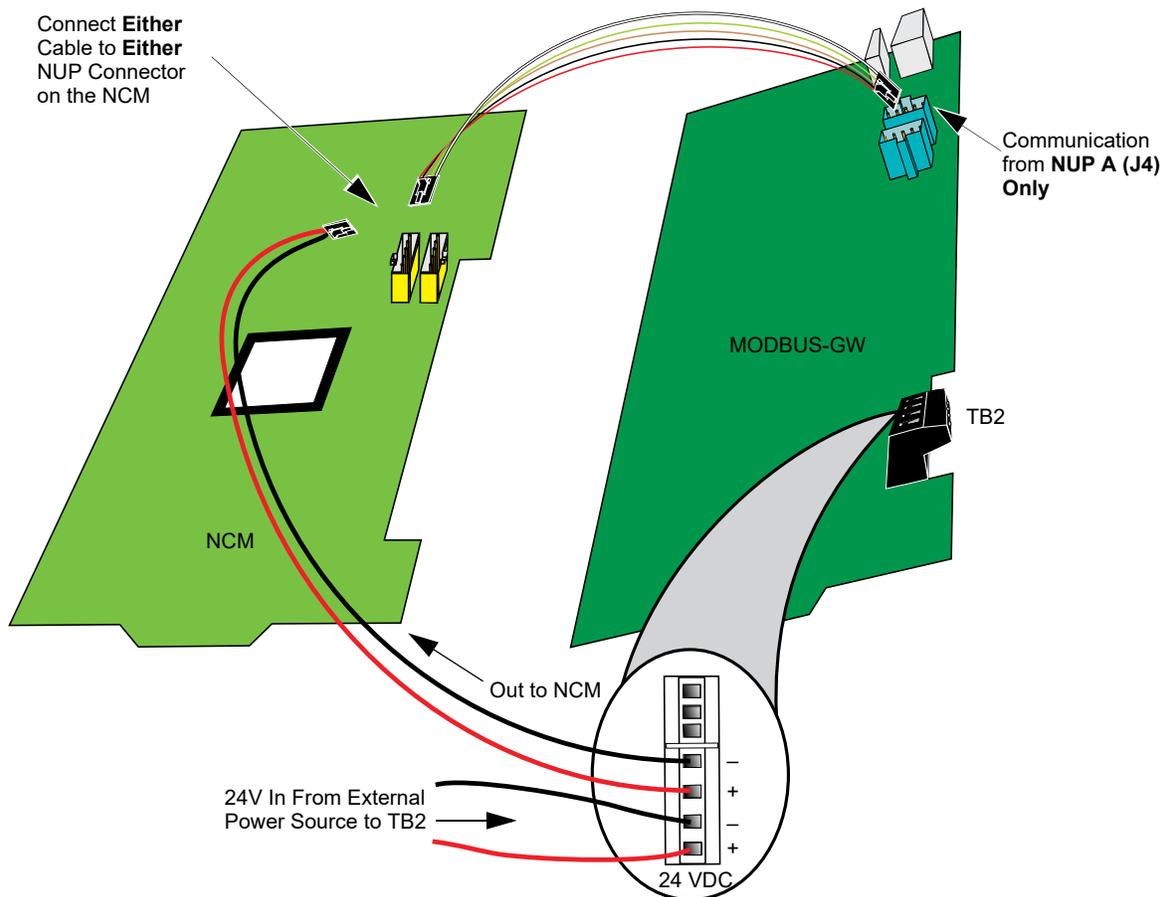### 1.3.1 Connecting to the MODBUS-GW

Figure 5. MODBUS-GW Connections

Table 1. Connection Specifications

Reference Designator	Description	Circuit Class	Specifications
TB2	DC Power	2	Power Source - FACP or UL 1481 listed 24 VDC regulated power supply Nominal Voltage: 24 VDC, Regulated Current: 125 mA Locate in same cabinet or use close nipple fitting
J1	USB B	2	Locate in same cabinet or use close nipple fitting
J2	USB A	2	Locate in same cabinet or use close nipple fitting
J3	Ethernet	2	Line Impedance 100 ohm Max Distance 328.083 ft. (100 m)
J4	NUP A	2	RS-232 Locate in same cabinet or use close nipple fitting
• All wiring from the power supply is power limited, and a separation of at least 1/4-inch (6.35 mm) must be maintained between power limited and non-power limited wiring. • All interconnects are power limited. • Ethernet connections are power limited and are not supervised including ground faults.			

1.3.2 Connecting to a Standard NCM

Connect **Either** Cable to **Either** NUP Connector on the NCM

Communication from **NUP A (J4) Only**

MODBUS-GW

TB2

NCM

Out to NCM

24V In From External Power Source to TB2

24 VDC

Figure 6. Routing Power and Communication to a Standard NCM

Table 2. Standard NCM Connections

Type	Connection
NCM-W	Twisted pair wire
NCM-F	Fiber-optic cable

1.3.3 Connecting to an HS-NCM

For Communications,
Connect USB A to B
OR USB B to A

HS-NCM

MODBUS-GW

TB2

Out to HS-NCM

24V In From External
Power Source to TB2

24 VDC
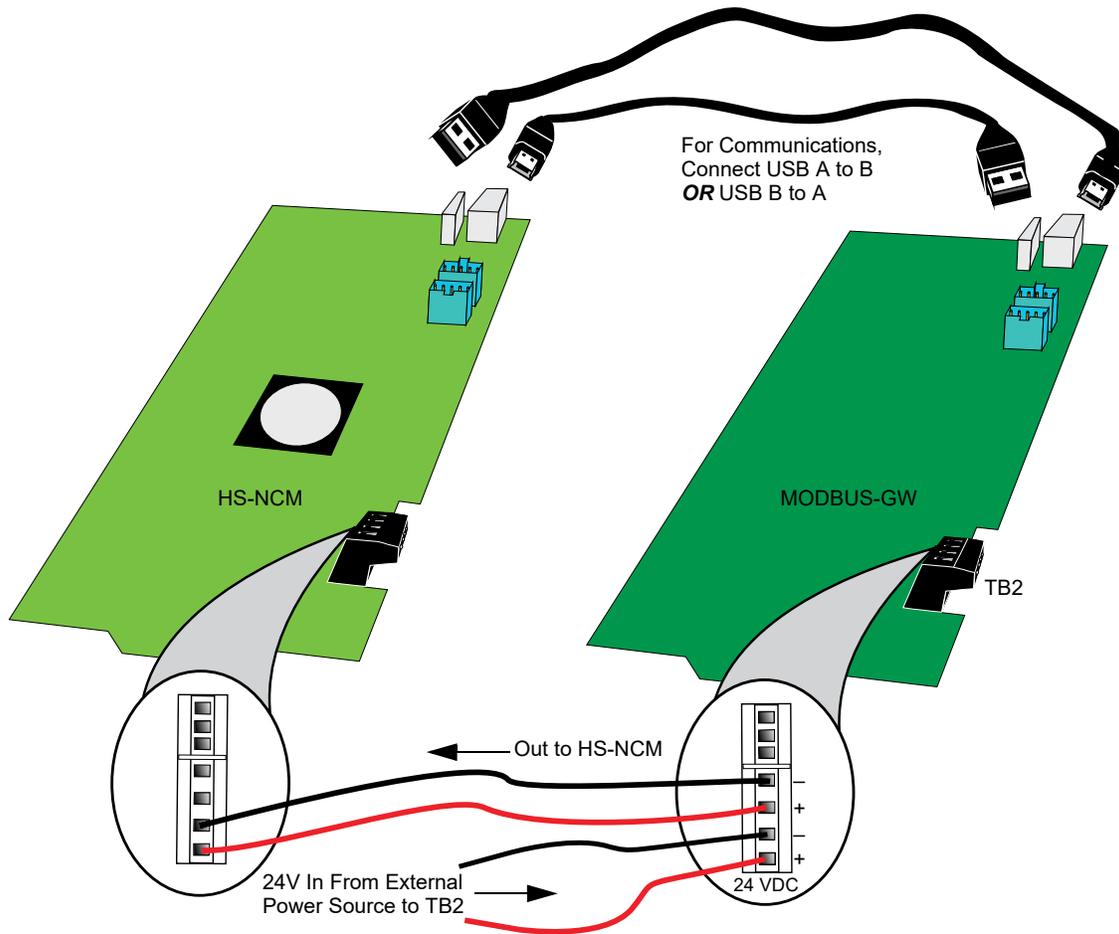
Figure 7. Routing Power and Communication to an HS-NCM

Table 3. HS-NCM Connections

Type	Connection
HS-NCM-W	Twisted pair wire
HS-NCM-SF	Single mode fiber-optic cable
HS-NCM-MF	Multimode fiber-optic cable
HS-NCM-WSF	Twisted pair wire, Single mode fiber-optic cable
HS-NCM-WMF	Twisted pair wire, Multimode fiber-optic cable
HS-NCM-MFSF	Multimode fiber-optic cable, Single mode fiber-optic cable

1.3.4 Connecting to a Fire Alarm Control Panel (FACP)

Panel is shown for illustrative purposes only. The MODBUS-GW is mounted within the FACP cabinet and connected with the NUP connection located on the FACP.
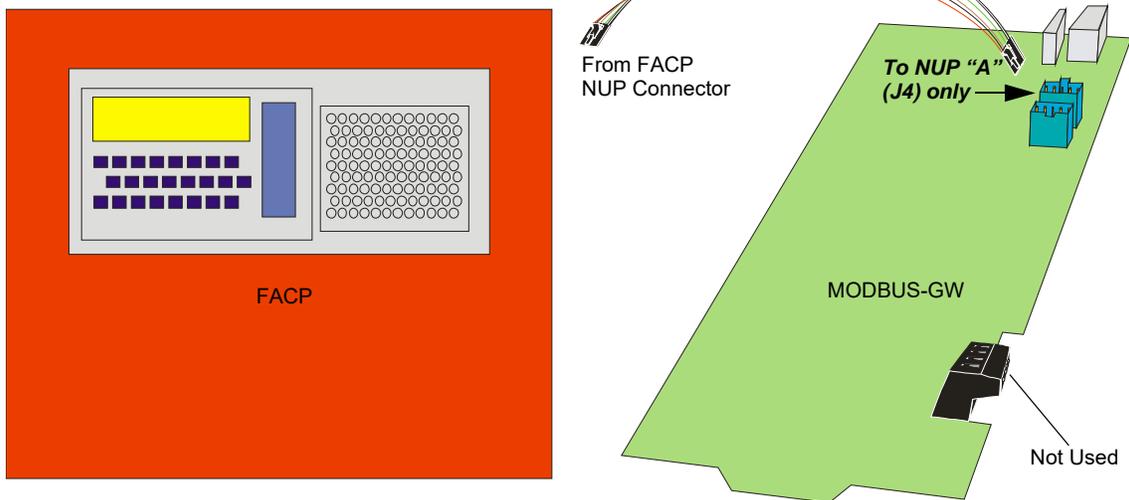

Figure 8. Connecting to an FACP

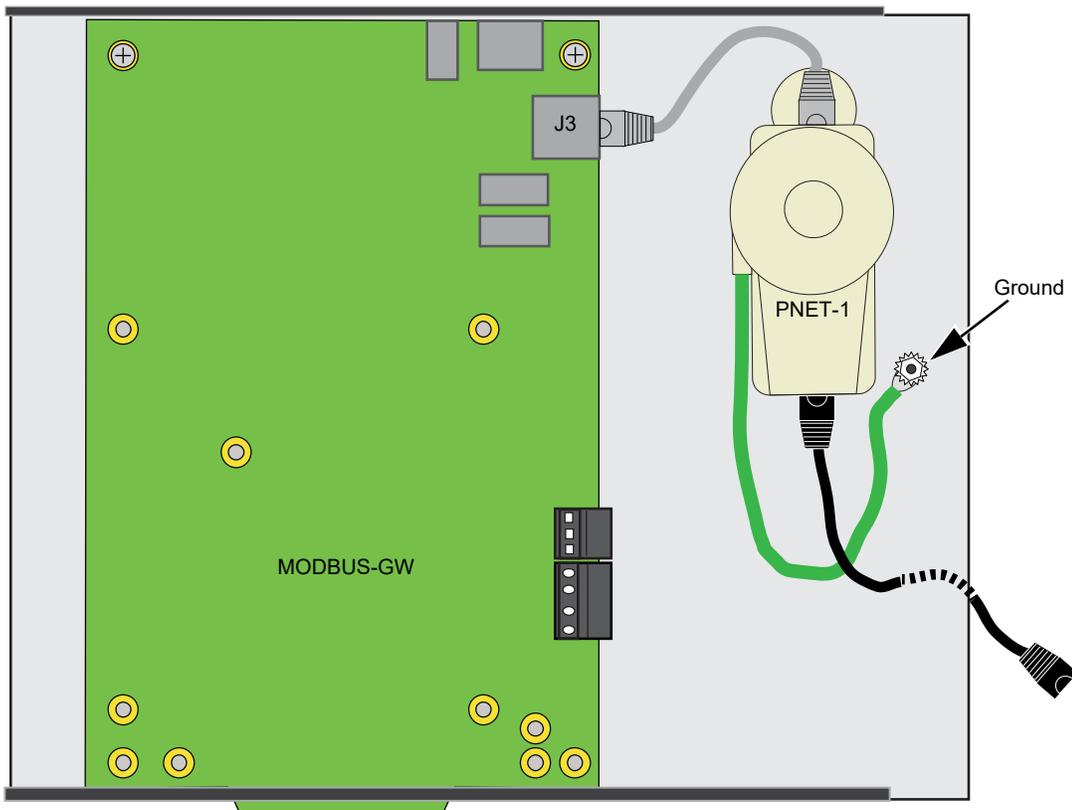## 1.3.5 Connecting to the PNET-1 Surge Suppressor

Figure 9. Connecting to the PNET-1

1.4 Environmental Requirements

This product meets the following requirements for operation:
- Temperature - 0°C to 49°C (32°F - 120°F)
- Relative Humidity - 93 ±2% non-condensing at 32 ±2°C (90 ±3°F)

However, it is recommended that this product be installed in an environment with a normal room temperature of 15-27º C (60-80º F).

2. Operation

The MODBUS-GW provides a communication link between stand alone FACPs or FACPs communicating over an NFN or a high-speed NFN to a Modbus master application.

3. Functionality

The MODBUS-GW:
- Communicates with the NFN network through an HS-NCM or NCM that is on that NFN network or a direct connection to a single FACP.
- Supports Modbus Application Protocol Specification V1.1b.
- Monitors up to 4 FACPs. Additional MODBUS-GWs may be added to an NFN network to accommodate additional FACPs.
- Supports a maximum of two Modbus masters.

4. Programming Options

The following table contains the available programming options for the MODBUS-GW.

Table 4. Additional Properties

Navigation Tree Label	Property	Value
IP Address Settings	**IP Address Settings**	
	IP Address	Enter the IP address of the MODBUS-GW. (Default is 192.168.1.2) Note: If a new IP address is entered, the user must enter the new IP address in the browser address bar to log into the gateway at its new address.
	Subnet Mask	Enter the subnet address of the MODBUS-GW. (Default is 255.255.255.0)
	IP Gateway	Enter the IP address of the default gateway for the host network. (Default is 0.0.0.0)
	Connection Type	Displays how the gateway is connected to the NFN.
NFN Settings	**Node Settings**	
	Node	Enter the NFN node number of the MODBUS-GW. (Default is 240)
	Panel Label	Enter the panel label.
	Network Settings	
	Channel A Threshold	• Select **High** for a high-noise NFN network. • Select **Low** for a low-noise NFN network.
	Channel B Threshold	• Select **High** for a high-noise NFN network. • Select **Low** for a low-noise NFN network.
	Class X	• Select **Yes** for a Class X SLC (Signaling Line Circuit) configured NFN network. • Select **No** for a Class B SLC configured NFN network (default).

Table 4. Additional Properties *(Continued)*

Navigation Tree Label	Property	Value
Node Mapping	**Node Mapping**	
	Authorized Client IP	This is an optional security feature. The options are: • Enter the authorized client IP address. The gateway only responds to requests from the client at that IP – no other Modbus clients may communicate with the gateway. However, any computer running a browser in the local network will still be able to access the MODBUS-GW configuration web page as normal. • Leave the field blank to allow any client to request data. The MODBUS-GW only communicates with one client at a time. Once MODBUS-GW accepts a client's request to connect, it does not accept any other request to connect until the original client has disconnected.
	Gateway Unit ID	Displays the unit ID that the MODBUS-GW uses in the Modbus network. This is a configurable property of the nodes. By default, the Modbus Unit ID for a monitored node is set to be the same as the NFN Node ID. If for any reason the unit ID needs to be changed, click the value and enter the new unit ID number. Since each unit ID in the Modbus network needs to be unique, change this number only if there is a conflict in the unit IDs in the Modbus network. Note: Each of the 240 possible nodes on the NFN network (except for gateways, web servers, and DVCs) is automatically assigned a Modbus Unit ID. When a new unit ID number for a node is entered, the old unit ID number is reassigned to whichever node previously used the new unit ID number. However, the MODBUS-GW configuration web page does accept a new unit ID number that is currently being used by a monitored node. In order to reassign a unit ID number used by a monitored node, first assign a new unit ID number for the monitored node.
	Analog Value Timeout	Enter the minimum frequency (in seconds) at which the MODBUS-GW expects to receive continuing polls from clients seeking analog values from 4-20 mA devices. When a client that had been polling a set of analog values fails to re-poll the values within the time out period, the MODBUS-GW stops polling the points in question. Once the time out period expires without the MODBUS-GW receiving a repeated poll, any further poll received will be treated as a new poll, and the first read will be considered an initialization read. (Default is 20 seconds)
	Show Online or Mapped Nodes - Show All Nodes	The property label toggles between "Show All Nodes" and "Show Online or Mapped Nodes" depending on the mode selected. Select **Yes** to display the list of nodes in the mode indicated by the property label.

Table 4. Additional Properties *(Continued)*

Navigation Tree Label	Property	Value
Node Mapping *(Continued)*	**Node**	
	Node List	**Node Column** Displays the node numbers and names of nodes on the NFN network. **Monitored Column:** • Select **Yes** to monitor the node. • Select **No** if the node is not to be monitored. **Unit ID Column:** Displays the unit ID that the node uses on the Modbus network. If for any reason the node unit ID needs to be changed, click the value and enter the new Modbus network unit ID number (1-255). Since each unit ID in the Modbus network needs to be unique, change this number only if there is a conflict between unit IDs in the Modbus network. If a unit ID number is changed to a number already assigned to another node, the node currently having that unit ID number swaps the unit ID number with the node that was changed. Example: The node assigned Unit ID #214 is changed to be Unit ID #5. The result is that the node that was Unit ID #214 is now #5 and the node that was Unit ID #5 is now #214. However, the MODBUS-GW configuration web page does accept a new unit ID number that is currently being used by a monitored node. In order to reassign a unit ID number used by a monitored node, first assign a new unit ID number for the monitored node. **Notes:** • The "Unknown" nodes can only be seen in "Show All Nodes" mode. • If an "Unknown" node comes on line and is found to be of the wrong type for the MODBUS-GW to monitor, its Monitored field is automatically set to "No". • Some nodes in the node list are not usable by the MODBUS-GW and therefore are not configurable and do not have a unit ID.

5. Testing/Maintenance

Testing and maintenance should be performed according to the *Testing and Maintenance* section of NFPA-72 and CAN/ULC S536.

6. Compatibilities

6.1 Notifier

The MODBUS-GW is compatible with the following Notifier equipment. For additional documentation on this product, go to esd.notifier.com. This additional documentation for the MODBUS-GW may be used as reference only.

Table 5. Notifier Compatible Equipment

Type	Equipment
Fire Panels:	• NFS-320 • NFS2-640 • NFS2-3030
Network Cards:	• NCM-W, NCM-F • HS-NCM-W, HS-NCM-SF, HS-NCM-MF, HS-NCM-WSF, HS-NCM-WMF, HS-NCM-MFSF

Gateways:	• NFN-GW-EM-3
	• PC NFN Gateways:
	  – NFN-GW-PC-F
	  – NFN-GW-PC-W
	  – NFN-GW-PC-HNMF
	  – NFN-GW-PC-HNSF
	  – NFN-GW-PC-HNW

Other Products:	• BACNET-GW-3 • DVC • NCA-2 • NCD • NWS-3 • VESDA-HLI-GW

6.2 Honeywell

The MODBUS-GW is compatible with the following Honeywell equipment. For additional documentation on this product, go to the Fire team room. This additional documentation for the MODBUS-GW may be used as reference only.

Table 6. Honeywell Compatible Equipment

Type	Equipment
Fire Panels:	• XLS120 • XLS140-2 • XLS3000
Network Cards:	• NCM-W, NCM-F • HS-NCM-W, HS-NCM-SF, HS-NCM-MF, HS-NCM-WSF, HS-NCM-WMF, HS-NCM-MFSF
Gateways:	• XLS-GW-EM-3
Other Products:	• BACNET-GW-3 • HWS-3 • VESDA-HLI-GW • XLS-DVC • XLS-NCA2

6.3 Johnson Controls (JCI)

The MODBUS-GW is compatible with the following Johnson Controls equipment. For additional documentation on this product, go to ifc-fire.com. This additional documentation for the MODBUS-GW may be used as reference only.

Table 7. Johnson Controls Compatible Equipment

Type	Equipment
Fire Panels:	• IFC-320 • IFC2-640 • IFC2-3030
Network Cards:	• NCM-W, NCM-F • HS-NCM-W, HS-NCM-SF, HS-NCM-MF, HS-NCM-WSF, HS-NCM-WMF, HS-NCM-MFSF

Gateways:	• JNFN-GW-EM-3
	• PC NFN Gateways:
	  – JNFN-GW-PC-F
	  – JNFN-GW-PC-W
	  – JHSN-GW-PC-MF
	  – JHSN-GW-PC-SF
	  – JHSN-GW-PC-W

Other Products:	• BACNET-GW-3 • JDVC • JNCA-2 • JWS-3 • VESDA-HLI-GW

7. System Configuration

The following table describes the required and optional configurations needed to meet the MODBUS-GW's intended applications.

Table 8. System Configuration

Accessory/Subassembly	Part Number	Description	Network Configuration
Fire Panels	**Refer to Section 6.**	Current UL-listed Fire Panels	R
Network Cards		Current UL-listed Network Cards	O[1]
Gateways		Current UL-listed Gateways	O
Modbus-compliant Consumer Software		Customer Supplied	R

Notes:

R - Required component for minimally functional system.
O - Optional
1 - For a network with more than one fire panel, one of the network cards listed in the applicable compatible equipment table is required.

8. System Power

Table 9. Power Requirements

Power	Requirement
Input Voltage (Nominal)	24 VDC
Input Current @ 24 VDC	125 mA