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Section 1
Introduction

The contents of this manual are important and must be kept in close proximity of the IFP-NET System workstation. If building ownership is changed, this manual including all other testing and maintenance information must be passed to the current owner of the facility. An electronic copy of this manual was shipped with the equipment and is also available from the manufacturer.

1.1 IFP-NET System Overview

The IFP-NET System provides a PC-based graphical monitoring system for IFP-series fire alarm control panels (FACPs) and conventional control panels and devices with dry contacts over an Echelon® LonWorks® network. For maximum flexibility, the IFP-NET System supports LonWorks network communication over CAT5 wire or fiber optic cable.

The IFP-NET Graphic Monitoring Software provides an easy to use and learn graphical user interface that operates on the Microsoft® Windows® 2000 Professional platform. The IFP-NET Graphic Monitoring Software provides extensive monitoring functions for fire at local sites. The software is customizable to adapt to a variety of monitoring situations. The software supports multiple operators, monitoring all or a portion of local sites.

In addition to the IFP-NET Graphic Monitoring Software, the IFP-NET workstation has an IFPN-PCLTA20 LonWorks Network Interface Card and communicates with information gateway devices known as NIONs via the IFPN-PCLTA20. The IFPN-PCLTA20 communicates over CAT5 topology. If an installation requires fiber optic cable, the IFPN-ROUTMB Intelligent Router or the IFPN-4WRMB Physical Layer Repeater can convert the topology to fiber optic.

The system can support up to 16 nodes (comprised of NIONs and IFPN-ROUTMBs). See Figure 1-1 for a basic IFP-NET System configuration example and Figure 1-2 for a more detailed IFP-NET System configuration example.
IFP-NET System Installation Manual

Figure 1-1 IFP-NET Node Configuration

Figure 1-2 IFP-NET System with IFP-Series FACPs and Dry Contact Devices
1.2 Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>5824</td>
<td>A serial/parallel module that provides the data connection between an IFP-series FACP and the IFP-NET System.</td>
</tr>
<tr>
<td>FACP</td>
<td>Fire alarm control panel</td>
</tr>
<tr>
<td>IFPN-2C8M</td>
<td>General term used to describe the four NIONs for use with dry contact devices.</td>
</tr>
<tr>
<td>IFPN-4WRMB</td>
<td>Physical Layer Repeater. A free topology (star), physical layer repeater that allows transparent passage of system messages between four FT-10 system segments.</td>
</tr>
<tr>
<td>IFPN-DFXC</td>
<td>This is the enhanced fiber-optic transmitter. It transmits and receives on a single fiber. Fiber provides the best distance capabilities and noise immunity.</td>
</tr>
<tr>
<td>IFPN-EPP</td>
<td>For the IFPN-NION motherboard, refers to the two chipsets that are installed on the IFPN-NION motherboard to establish two things: the communication medium that is used to the PC and the communication with the 5824 Serial/Parallel Module. For the IFPN-2C8M NION motherboard, refers to the single chipset that is installed on the IFPN-2C8M motherboard to establish the communication medium.</td>
</tr>
<tr>
<td>IFPN-NION</td>
<td>General term used to describe the four NIONs for use with IFP-series FACPs.</td>
</tr>
<tr>
<td>IFP-NET</td>
<td>Graphic Monitoring Software. This package includes the software package that is installed in the IFP-NET workstation. The workstation must be running Window® 2000 Professional. IFP-NET is a includes a software installation CD, documentation CD, Hardware Key, IFPN-PCLTA20 LonWorks Network Interface Card.</td>
</tr>
<tr>
<td>IFP-NET System</td>
<td>The term used to refer to the Silent Knight system that has all of the required components to perform fire monitoring functions at a local site using a graphical user interface.</td>
</tr>
<tr>
<td>IFPN-FOXC</td>
<td>This is the basic fiber-optic transceiver, it is uses two fibers, one for transmit and one for receive. It must be installed in a home run style configuration. Fiber provides the best distance capabilities and noise immunity.</td>
</tr>
<tr>
<td>IFPN-FTXC</td>
<td>This transceiver supports the basic CAT5 communication. The IFPN-FTXC can use T-tapped or home-run style wiring configuration.</td>
</tr>
<tr>
<td>IFPN-PCLTA20</td>
<td>LonWorks Network Interface Card. This PCI card is installed in the IFP-NET workstation. It ships with IFPN-FTXC CAT5 Basic Transceiver, which is the only way that it can be configured to the LonWorks network. If you want to switch to a fiber optic connection a router or repeater is required.</td>
</tr>
<tr>
<td>IFPN-ROUTMB</td>
<td>A field programmable, protocol regenerating intelligent router.</td>
</tr>
<tr>
<td>IFPN-S7FTXC</td>
<td>This is an enhanced version of the basic transceiver that provides signal processing to enable it to run over longer distances and/or in harsh environments. The IFPN-S7FTXC can use T-tapped or home-run style wiring configuration.</td>
</tr>
<tr>
<td>NION</td>
<td>Term used to describe the IFPN-NION and IFPN-2C8M NION installation packages.</td>
</tr>
<tr>
<td>Transceiver</td>
<td>This a small PC daughter board that determines what type of communication (topology) path you are using, i.e., CAT5 or fiber optic cable. The transceivers are installed on NION, router, and repeater boards. Silent Knight packages these boards in installation packages with all of the appropriate parts to connect to an IFP-series FACP for a smoother installation.</td>
</tr>
</tbody>
</table>
1.3 IFP-NET System Components

This section provides a list and description of IFP-NET System parts required and optional parts. A basic IFP-NET System is composed of the components listed below.

- IFP-NET Graphic Monitoring Software
- PC computer (provided by the customer)
- At least one NION

1.3.1 IFP-NET Graphic Monitoring Software

The IFP-NET Graphic Monitoring Software provides the graphical fire monitoring of equipment at a local site. The following components are included with the IFP-NET Graphic Monitoring Software (P/N IFP-NET):

- IFP-NET software CD
- IFPN-PCLTA20 LonWorks Network Interface Card
- Hardware Key
- User manuals (on CD)

1.3.2 IFP-NET System Workstation Requirements

The components listed below for the IFP-System workstation are required for a IFP-NET System and must be provided by the customer.

**Important:** The PC on which the IFP-NET Graphic Monitoring Software runs should be dedicated solely to IFP-NET Graphic Monitoring Software. Many applications will automatically install themselves into a computer’s startup folder. This adversely affects a computer’s operation speed, as will running multiple programs simultaneously. To ensure optimal performance of your, it is recommended that IFP-NET and pertinent support applications be the only programs present on the PC.

- CPU - Intel Pentium IV processor 2 GHz or better
- 256 MB RAM
- 20 GB hard disk drive
- CDRW drive
- Audio w/speakers
- Monitor - 17”, capable of 1024x768 display resolution
- Video card capable of high color, 16-Bit at 1024x768 resolution, large fonts
- Microsoft serial PS/2 compatible mouse
- 101-key keyboard

**Note:** It is strongly recommended that NO Ethernet network card be present on the IFP-NET. If the computer contains a built-in card that cannot be removed, make sure that the computer is configured with a fixed IP address. Contact your network administrator for assistance with IP addresses.
1.3.3 NION Installation Packages

Silent Knight has developed eight basic NION installation packages that contain everything needed to add equipment to an IFP-NET System communicating over CAT5 wiring or multimode fiber optic cable. Four installation packages, referred to as IFPN-NIONs, are used for connecting an IFP-series FACP to an IFP-NET System. Four installation packages, referred to as IFPN-2C8Ms, are used to connect conventional control panels and devices that have dry contacts to an IFP-NET System.

1.3.3.1 IFPN-NION Installation Packages

IFPN-NION Installation Packages contain everything you need to provide an information gateway between an IFP-series FACP and the IFP-NET System. There are four IFPN-NION installation packages. The only difference between the installation packages is the transceiver included with the package, which determines the communication typology supported (CAT5 or fiber optic) by the NION. Each IFP-series FACP that you want to add to the IFP-NET System requires an IFPN-NION Installation Package. Each NION counts as a node on the IFP-NET System.

All IFPN-NION installation packages (see Table 1-1) include the following:

- 1 IFPN-NION Motherboard
- 1 IFPN-EPP Chipset (There are two chips sets available: IFPN-EPP-FT which is compatible with all transceivers except the IFPN-DFXC and IFPN-EPP-DF which is compatible with IFPN-DFXC transceivers.)
- IFPN-DFXC
- 1 Transceiver
- 1-5824 Serial/Parallel Module
- 1 Serial Cable (P/N IFPN-SERCAB)
- 1 IFPN-CAB1 Cabinet
- All the necessary mounting hardware

<table>
<thead>
<tr>
<th>IFPN-NIONFT</th>
<th>CAT5 Basic Installation Package. Includes the IFPN-FTXC transceiver and all the other parts needed to set up an IFP-series FACP to communicate over CAT5 wiring.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFPN-NIONSM</td>
<td>CAT5 Enhanced Installation Package. Includes the IFPN-S7FTXC transceiver and all the other parts needed to set up an IFP-series FACP to communicate over CAT5 wiring. Used in areas that need longer wire runs or in electrically noisy environments.</td>
</tr>
<tr>
<td>IFPN-NIONFX</td>
<td>Two Cable Multimode Fiber. Includes the IFPN-FOXC transceiver and all of the parts needed to set up an IFP-series FACP to communicate over a pair of fiber cables.*</td>
</tr>
<tr>
<td>IFPN-NIONDF</td>
<td>Single Cable Multimode Fiber. Includes the IFPN-DFXC transceiver and all of the parts needed to set up an IFP-series FACP to communicate over a single fiber cable.*</td>
</tr>
</tbody>
</table>

* Fiber systems can run longer distances than CAT5 and are immune to electrical noise.
1.3.3.2 IFPN-2C8M NION Installation Packages

IFPN-2C8M NION installation packages contain everything you need to connect a control panel or devices with dry contacts to the IFP-NET System. There are four IFPN-2C8M installation packages. The only difference between the installation packages is the transceiver included with the package, which determines the communication topology supported by the NION (CAT5 or fiber optic). Each NION counts as a node on the IFP-NET System.

All IFPN-2C8M NION installation packages (see Table 1-2) include the following:

- 1 IFPN-2C8M Motherboard
- 1 EP Chipset
- 1 Transceiver
- 1 IFPN-CAB1 Cabinet
- 8-10k EOL resistors
- All the necessary mounting hardware

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFPN-2C8MFT</td>
<td>CAT5 Basic Installation Package. Includes the IFPN-FTXC transceiver and all the other parts needed to set up a conventional panel or devices with dry contacts to communicate over CAT5 wiring.</td>
</tr>
<tr>
<td>IFPN-2C8MSM</td>
<td>CAT5 Enhanced Installation Package. Includes the IFPN-S7FTXC transceiver and all the other parts needed to set up a conventional panel or device with dry contacts to communicate over CAT5 wiring. Used in areas that need longer wire runs or in electrically noisy environments.</td>
</tr>
<tr>
<td>IFPN-2C8MFX</td>
<td>Two Cable Multimode Fiber. Includes the IFPN-FOXC transceiver and all of the parts needed to set up a conventional panel or device with dry contacts to communicate over a pair of fiber cables.*</td>
</tr>
<tr>
<td>IFPN-2C8MDF</td>
<td>Single Cable Multimode Fiber. Includes the IFPN-DFXC transceiver and all of the parts needed to set up a conventional panel or device with dry contacts to communicate over a single fiber cable.*</td>
</tr>
</tbody>
</table>

* Fiber systems can run longer distances than CAT5 and are immune to electrical noise.
1.3.4 Routers and Repeaters

The IFPN-ROUTMB Intelligent Router and the IFPN-4WRMB Physical Layer Repeater connect up to four communication channels and route system messages between communication channels on an IFP-NET System. The IFPN-ROUTMB filters and reconditions the signal before passing it along. The IFPN-4WRMB is a pass through which does nothing but change topology and pass the signal along.

The router or repeater are suited for applications that require long wire runs, noisy environments, or complex configurations. Typically, a router or repeater is required any time the segment needs to be more than 6000 ft. or if a free topology (star) configuration would be more efficient. A router or repeater is required if topology changes from wire to fiber or if the installation is all fiber.

Note: **Routers count as a node on each LonWorks network segment to which they connect. Repeaters do not count as a node on the network.**

Transceivers must be ordered separately for the IFPN-ROUTMB and the IFPN-4WRMB. See 1.3.5.

1.3.5 Transceivers

IFP-NET System transceivers are used with NIONs, routers, repeaters, and the LonWorks Network Interface Card. The transceiver defines the communication topology supported (CAT5 or fiber optic) and each model is described in Table 1-3. With the four transceivers, you have the flexibility to connect to CAT5 installations with short wire runs, CAT5 installations with long wire runs or noisy environments, fiber optic installations with a single multimode cable, or fiber optic installations with two multimode cables.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part Name/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFPN-FTXC</td>
<td>Basic CAT5 Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td>IFPN-S7FTXC</td>
<td>Enhanced CAT5 Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td>IFPN-FOXCC</td>
<td>Two Cable Multimode Fiber Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td>IFPN-DFXCC</td>
<td>Single Cable Multimode Fiber Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
</tbody>
</table>
### 1.3.6 IFP-NET System Replacement Parts

Table 1-4 lists IFP-NET System replacement parts.

**Table 1-4 NION Replacement Parts**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part Name/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transceivers</strong></td>
<td></td>
</tr>
<tr>
<td>IFPN-FTXC</td>
<td>Basic CAT5 Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td>IFPN-S7FTXC</td>
<td>Enhanced CAT5 Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td>IFPN-FOXC</td>
<td>Two Cable Multimode Fiber Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td>IFPN-DFXC</td>
<td>Single Cable Multimode Fiber Transceiver. For use with IFPN-NIONs and IFPN-2C8Ms.</td>
</tr>
<tr>
<td><strong>Motherboards</strong></td>
<td></td>
</tr>
<tr>
<td>IFPN-NIONNBP</td>
<td>IFPN-NION Replacement Motherboard. For use with IFPN-NIONS.</td>
</tr>
<tr>
<td>IFPN-2C8M</td>
<td>2C8M Replacement Motherboard. For IFPN-2C8Ms.</td>
</tr>
<tr>
<td><strong>Chipsets</strong></td>
<td></td>
</tr>
<tr>
<td>IFPN-EPP-FT</td>
<td>Motherboard Chipset. For use with IFPN-NION motherboards using all transceivers except the IFPN-DFXC.</td>
</tr>
<tr>
<td>IFPN-EPP-DF</td>
<td>Motherboard Chipset. For use with IFPN-NION motherboards using the IFPN-DFXC transceiver.</td>
</tr>
<tr>
<td>IFPN-EP2C8MFT</td>
<td>Motherboard Chipset. For use with IFPN-2C8M motherboards using all transceivers except the IFPN-DFXC.</td>
</tr>
<tr>
<td>IFPN-EP2C8MDF</td>
<td>Motherboard Chipset. For use with IFPN-2C8M motherboards using the IFPN-DFXC transceiver.</td>
</tr>
<tr>
<td><strong>Batteries</strong></td>
<td></td>
</tr>
<tr>
<td>IFPN-BATT</td>
<td>NION Replacement Battery. For use with IFPN-NION motherboards.</td>
</tr>
</tbody>
</table>
1.4 IFP-NET Installation Task Checklist

The following table lists the steps necessary to install the IFP-NET System, including where to find detailed instructions. You should perform the tasks in the order in which they appear on the following checklist.

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<thead>
<tr>
<th>IFP-NET Setup/Installation</th>
<th>Section</th>
</tr>
</thead>
<tbody>
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<td>Install the IFPN-PCLTA20 LonWorks Network Interface Card into IFP-NET workstation</td>
<td>Section 3.4</td>
</tr>
<tr>
<td>Install the IFP-NET software</td>
<td>Section 3.5</td>
</tr>
<tr>
<td>Assemble and mount the IFPN-CAB1 Cabinet</td>
<td>Section 4.2</td>
</tr>
<tr>
<td>Install NION motherboards in their respective cabinets</td>
<td>Section 4.3</td>
</tr>
<tr>
<td>Remove cardboard from IFPN-NION motherboard backup battery</td>
<td>Section 5.1.3</td>
</tr>
<tr>
<td>Make IFPN-NION data wiring connections by connecting the IFPN-SERCABL serial cable to the NION board and the 5824 Serial/Parallel Module</td>
<td>Section 5.1.6</td>
</tr>
<tr>
<td>Wire and configure IFPN-2C8M inputs</td>
<td>Section 5.2.6</td>
</tr>
<tr>
<td>Wire and configure IFPN-C28M outputs</td>
<td>Section 5.2.7</td>
</tr>
<tr>
<td>Install any routers/repeaters in their respective cabinets</td>
<td>Section 4</td>
</tr>
<tr>
<td>Make router/repeater data wiring connections</td>
<td>Section 6</td>
</tr>
<tr>
<td>Wire NION, router, and repeater transceivers</td>
<td>Section 7.2</td>
</tr>
<tr>
<td>Set jumpers on any IFPN-FTXC or IFPN-S7FTXC transceivers</td>
<td>Section 7.3</td>
</tr>
<tr>
<td>Mount transceivers on NION, router and repeater motherboards</td>
<td>Section 7.4</td>
</tr>
<tr>
<td>Make NION, router, and repeater power wiring connections</td>
<td>5.1.5 and Section 6</td>
</tr>
<tr>
<td>Install and configure printers</td>
<td>Section 8</td>
</tr>
</tbody>
</table>

1.5 Additional Documentation

The table below lists documentation for the IFP-NET System and IFP-series FACPs.

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFP-NET System Documents</td>
<td></td>
</tr>
<tr>
<td>IFP-NET Installation Manual</td>
<td>151338</td>
</tr>
<tr>
<td>IFP-NET Programming Manual</td>
<td>151339</td>
</tr>
<tr>
<td>IFP-NET Operation Manual</td>
<td>151340</td>
</tr>
<tr>
<td>Fire Alarm Control Panel Manuals</td>
<td></td>
</tr>
<tr>
<td>IFP-1000 Installation Manual</td>
<td>151139</td>
</tr>
<tr>
<td>IFP-100 Installation Manual</td>
<td>151280</td>
</tr>
<tr>
<td>IFP-50 Installation Manual</td>
<td>151302</td>
</tr>
</tbody>
</table>

1.6 How to Contact Silent Knight

If you have questions or encounter a problem not covered in this manual, contact Silent Knight Technical Support at 800-328-0103 (or 763-493-6455). To order parts, contact Silent Knight Sales at 800-446-6444 (or 763-493-6435).
Installation Precautions

Warning  Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until this manual is read and understood.

Caution  System Re-acceptance Test after Software Changes. To ensure proper system operation, this product must be tested in accordance with NFPA 72-1999 Chapter 7 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0°C to 49°C (32°F to 120°F); and at a relative humidity (noncondensing) of 85% at 30°C (86°F) per NFPA, and 93% ± 2% at 32°C ± 2°C (89.6°F ± 1.1°F) per ULC. 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 all peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning-induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department Technical Assistance Center if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Overtightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

Though designed to last many years, system components can fail at any time. This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static-suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation by authorized personnel.
Limitations of Fire Alarm Systems

Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer’s recommendations, State and local codes, and the recommendations contained in Guide for the Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off or give early warning in as many as 35% of all fires. While fire alarm systems are designed to provide warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons. For example:

- Particles of combustion or smoke from a developing fire may not reach the sensing chambers of smoke detectors because:
  - Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
  - Smoke particles may become cold, stratify, and not reach the ceiling or upper walls where detectors are located.
  - Smoke particles may be blown away from detectors by air outlets.
  - Smoke particles may be drawn into air returns before reaching the detector.

In general, smoke detectors on one level of a structure cannot be expected to sense fires developing on another level.

- The amount of smoke present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

- Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectric sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

- Smoke detectors are subject to false alarms and nuisance alarms and may have been disconnected by users. For example, a smoke detector located in or near a kitchen may go into nuisance alarm during normal operation of kitchen appliances. In addition, dusty or steamy environments may cause a smoke detector to falsely alarm. If the location of a smoke detector causes an abundance of false alarms or nuisance alarms, do not disconnect the smoke detector; call a professional to analyze the situation and recommend a solution.

- Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially within bedrooms), smoking in bed, violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).
Heat detectors do not sense particles of combustion and are designed to alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Heat detectors are designed to protect property, not life.

Warning devices (including horns, sirens, and bells) may not alert people or wake up sleepers who are located on the other side of closed or partially open doors. A warning device that activates on a different floor or level of a dwelling or structure is less likely to awaken or alert people. Even persons who are awake may not notice the warning if the alarm is muffled by noise from a stereo, radio, air conditioner or other appliance, or by passing traffic. Audible warning devices may not alert the hearing-impaired (strobes or other devices should be provided to warn these people). Any warning device may fail to alert people with a disability, deep sleepers, people who have recently used alcohol or drugs, or people on medication or sleeping pills.

Please note that:

i) Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.

ii) Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner’s responsibility to conduct fire drills and other training exercises to make people aware of fire alarm signals and instruct on the proper reaction to alarm signals.

iii) In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

Telephone lines needed to transmit alarm signals from a premises to a central station may be out of service or temporarily out of service. For added protection against telephone line failure, backup radio transmission systems are recommended.

System components, though designed to last many years, can fail at any time. As a precautionary measure, it is recommended that smoke detectors be checked, maintained, and replaced per manufacturer’s recommendations.

System components will not work without electrical power. If system batteries are not serviced or replaced regularly, they may not provide battery backup when AC power fails.

Environments with high air velocity or that are dusty or dirty require more frequent maintenance.

In general, fire alarm systems and devices will not work without power and will not function properly unless they are maintained and tested regularly.

While installing a fire alarm system may make the owner eligible for a lower insurance rate, an alarm system is not a substitute for insurance. Property owners should continue to act prudently in protecting the premises and the people in their premises and should properly insure life and property and buy sufficient amounts of liability insurance to meet their needs.
Requirements and recommendations for proper use of fire alarm systems including smoke detectors and other fire alarm devices:

Early fire detection is best achieved by the installation and maintenance of fire detection equipment in all rooms and areas of the house or building in accordance with the requirements and recommendations of the current edition of the National Fire Protection Association Standard 72, National Fire Alarm Code (NFPA 72), the manufacturer’s recommendations, State and local codes and the recommendations contained in Guide for the Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. For specific requirements, check with the local Authority Having Jurisdiction (ex. Fire Chief) for fire protection systems.

Requirements and Recommendations include:

- Smoke Detectors shall be installed in sleeping rooms in new construction and it is recommended that they shall also be installed in sleeping rooms in existing construction.
- It is recommended that more than one smoke detector shall be installed in a hallway if it is more than 30 feet long.
- It is recommended that there shall never be less than two smoke detectors per apartment or residence.
- It is recommended that smoke detectors be located in any room where an alarm control is located, or in any room where alarm control connections to an AC source or phone lines are made. If detectors are not so located, a fire within the room could prevent the control from reporting a fire.
- All fire alarm systems require notification devices, including sirens, bells, horns, and/or strobes. In residential applications, each automatic alarm initiating device when activated shall cause the operation of an alarm notification device that shall be clearly audible in all bedrooms over ambient or background noise levels (at least 15dB above noise) with all intervening doors closed.
- It is recommended that a smoke detector with an integral sounder (smoke alarm) be located in every bedroom and an additional notification device be located on each level of a residence.
- To keep your fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer’s recommendations and UL and NFPA standards. At a minimum the requirements of Chapter 7 of NFPA 72 shall be followed. A maintenance agreement should be arranged through the local manufacturer’s representative. Maintenance should be performed annually by authorized personnel only.
- The most common cause of an alarm system not functioning when a fire occurs is inadequate maintenance. As such, the alarm system should be tested weekly to make sure all sensors and transmitters are working properly.
Section 2  
Agency Listings, Approvals, and Requirements

### 2.1 Federal Communications Commission (FCC)

<table>
<thead>
<tr>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>This device has been verified to comply with FCC Rules Part 15. Operation is subject to the following conditions: (1) This device may not cause radio interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.</td>
</tr>
</tbody>
</table>

**Canadian Requirements**

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n’emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.
This section describes how to install the IFP-NET System software (supplied on CD-ROM) and IFPN-PCLTA20 LonWorks Network Interface Card.

### 3.1 Environmental Conditions

Install and maintain the IFP-NET workstation in a location that meets the following environmental requirements.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>32°F - 120°F (0°C - 49°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>93% non-condensing at 86°F (30°C)</td>
</tr>
</tbody>
</table>

### 3.2 PC Setup Preparation

The computer should be placed on a desk or table with the monitor, keyboard, and mouse. This must be done in accordance with local code requirements.

### 3.3 IFPN-PCLTA20 Board Layout

The IFPN-PCLAT-20 LonWorks Network Card provides the connection between your IFP-NET System workstation and the LonWorks network to which IFP-NET Systems devices are connected. Figure 3-1 shows the layout of the IFPN-PCLTA20 board. The IFPN-PCLTA20 ships with an IFPN-FTXC Basic CAT5 Transceiver installed and configured.

![Figure 3-1 IFPN-PCLTA20 LonWorks Network Card Board Layout](image)
3.4 Installing the IFPN-PCLTA20 Card

*Note:* Install the IFPN-PCLTA20 before installing the IFP-NET System software.

To install the IFPN-PCLTA20:

1. Shutdown the computer into which you are installing the IFPN-PCLTA20.

   **Caution:** Always remove power from the PC before removing or installing PC cards and software upgrade chips, or damage may result. Always observe electrostatic discharge (ESD) precaution procedures.

2. Open the computer and locate an empty PCI slot in which to install the IFPN-PCLTA20.

3. Run the LonWorks network cabling (CAT5 only) through the back of the computer and through the IFPN-PCLTA20 opening.

4. Attach the LonWorks network cable to the IFPN-FTXC transceiver on the IFPN-PCLTA20.

5. Remove the slot cover and insert the card into the empty PCI slot. Make sure all of the edge connectors are touching and the card is seated properly.

6. Replace the screw to secure the IFPN-PCLTA20 to the computer, and close the computer case.

7. Connect the hardware key to the LPT1 port on the back of the computer.

   **Important:** An error message display if you attempt to install the IFP-NET System software before installing the hardware key. After clicking OK, exit out of the software installation, install the hardware key, then restart the installation software.

8. Restart your computer. The computer will detect the IFPN-PCLTA20 card and add it to the device database, and Windows will display the Found New Hardware Wizard.

   **Important:** Select Cancel from the "Found New Hardware Wizard". DO NOT select Next.
3.5 Installing the IFP-NET Software

This section describes how to install the IFP-NET Graphical Monitoring Software on an IFP-NET System workstation. The IFP-NET software allows you to view in a graphical user interface activity from IFP-NET devices connected to a LonWorks network.

**Note:** You should install the IFPN-PCLTA20 LonWorks Network Interface Card before attempting to install the IFP-NET software.

1. If running IFP-NET in a language other than English, place the IFP-NET Foreign Language software CD into the IFP-NET System workstation CD drive and follow the prompts to install the desired language.

2. After installing the pertinent foreign language files, configure Windows Regional Settings. From Windows Desktop, click **Start**, **Control Panel**, then **Regional and Language Options**.

3. Once any pertinent language files have been installed, place the IFP-NET CD into the IFP-NET System workstation CD drive. When the IFP-NET Setup dialog box appears, click **Next**.

   If your CD drive does not automatically run setup, click **Start**, **Run**, and manually type X:\setup.exe (where X is the letter of your CD drive). When the IFP-NET Setup dialog box appears, click **Next**.
4. The next screen displays a list of files that IFP-NET will install. Click Next.

5. The system verify that the IFPN-PCLTA20 has been installed. Click Yes to continue with the installation.

   ![IFP-NET System Installation Manual]

   **Note:** If the IFPN-PCLTA20 is NOT installed, click No. The installation will cancel, and you will see a message popup giving you the opportunity to shut down the computer, install the IFPN-PCLTA20, and restart the installation.

6. Once you verify that your IFPN-PCLTA20 card is installed, the system will begin installing the drivers for the IFPN-PCLTA20 card. The PCLTA Driver Installation dialog box provides you with some instructions to follow during this process. Click OK.
7. The next dialog box will prompt you to run the LonWorks installation. Click **Setup** to do this.

8. Click **Next** to proceed with the installation.

9. Click **Yes** to accept the LonWorks software license agreement.
10. Click **Next** to accept the default file folder that LonWorks will create in order to store the IFPN-PCLTA20 support files.

11. It is unnecessary to view the README file. Uncheck the box, then click **Finish** to complete the setup and resume software installation.

12. The system will prompt you to restart your computer in order to apply the LonWorks drivers to the IFPN-PCLTA20. Select **Yes**, and click **Finish**. The computer will restart Windows.
13. Once Windows has restarted, the installation application will display a resume setup screen. Click **Next**.

14. Click **Next**, and the IFP-NET application files will be installed.

15. A message window will display when the master databases have been installed. Click **OK**.
16. Next, WinPcap will be installed as part of the IFP-NET application. Click **Next**.

17. A message box will be displayed when WinPcap has finished installing. Click **OK**.

18. Next, click **Finish**.
19. IFP-NET software installation is now complete. Select **Yes, I want to restart my computer now**, then click **Finish**.

20. Once the computer has restart, you will receive instructions regarding the LonWorks® Plug ‘n Play dialog box. Click **OK**, and the Plug ‘n Play window will appear.
21. The only option that may require a change is the NI Application field. Set this field to NSIPCLTA. The information shown in LonWorks® Plug ‘n Play dialog box below is accurate for most local area server configurations. Set up the IFPN-PCLTA20 per these settings. Click **Apply**, then click **OK**.

*Note:* The Transceiver button does not contain any editable information.

22. If you wish to view the README file regarding IFP-NET, click **Yes**.

23. Click **Finish** to complete the setup of the IFP-NET software.
Section 4
Installing the IFPN-CAB1 Cabinet & System Boards

This section describes how to mount the IFPN-CAB1 Cabinet and how to mount the NION (IFPN-NIONs and IFPN-2C8Ms), IFPN-ROUTMB Intelligent Router, and IFPN-4WRMB Physical Layer Repeater printed circuit boards in the IFPN-CAB1. IFP-NET System NION, routers, repeaters are mounted in the IFPN-CAB1, unless otherwise indicated.

4.1 Environmental Specifications

It is important to protect NIONs, routers, and repeaters from water. To prevent water damage, the following conditions should be AVOIDED when installing the units:

- Do not mount directly on exterior walls, especially masonry walls (condensation)
- Do not mount directly on exterior walls below grade (condensation)
- Protect from plumbing leaks
- Protect from splash caused by sprinkler system inspection ports
- Do not mount in areas with humidity-generating equipment (such as dryers, production machinery)
- Install in a location that meets the following environmental requirements:

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>32°F - 120°F (0°C - 49°C)</td>
<td>93% non-condensing at 86°F (30°C)</td>
</tr>
</tbody>
</table>

The type of hardware used is at the discretion of the installer, but must be in accordance with local code requirements.
### 4.2 Mounting the IFPN-CAB1 Cabinet

For single NION mounting applications, where power is supplied by the monitored equipment or an external source, the IFPN-CAB1 should be used. The IFPN-CAB1 is included with NION Installation Packages. The IFPN-CAB1 includes a door, key lock, and key.

To mount the cabinet to its wall position:

1. Use the provided key to unlock the cabinet cover.
2. Open the cabinet cover.
3. Mount the cabinet to the wall. Refer to the enclosure mounting hole layout below.

![Figure 4-1 IFPN-CAB1 Mounting Hole Layout](image)
4.3 Installing NION Motherboards

NION Installation Packages include the IFPN-CAB1, however, you can order additional NION motherboards (IFPN-NIONNPB and IFPN-2C8M) separately and place up to two boards in a cabinet.

**Note:** The IFPN-CAB1 Cabinet must contain power limited wiring only.

To install the NION motherboard in the cabinet:

1. Mount the two transceiver standoffs using 1/2" standoffs and 1/4" screws on the IFPN-NION or IFPN-2C8M motherboard as Figure 4-2.

**Note:** When using the DFXC transceiver with the IFPN-2C8M, be sure to use the longer standoffs and header adapter provided with the DFXC transceiver.

---

![Figure 4-2 Mounting Transceiver Standoffs on the NION Motherboards](image-url)
2. Identify the correct location for the motherboard your are installing as shown in Figure 4-3. If mounting an IFPN-NION motherboard and an IFPN-2C8M motherboard in the same cabinet, mount the IFPN-NION on the right and the IFPN-2C8M on the left.

3. Remove the appropriate knockouts for the board(s) being installed.

4. Install four 1/2" standoffs on the cabinet mounting board studs in the appropriate location for the type of board you are installing (see Figure 4-3).

5. Place the NION board on the standoffs, and use four 1/4" screws to secure the NION board to the standoffs, as shown in Figure 4-4.
4.4 Installing a 5824 Serial/Parallel Module

The 5824 Serial/Parallel Module is used only with an IFPN-NION motherboard (IFPN-NIONNPB) and is installed in the same cabinet in which the IFPN-NION motherboard is installed.

To install the 5824:

1. Install four 1/2" hex standoffs onto the cabinet studs on the IFPN-CAB1 mounting plate. See Figure 4-5.

![Figure 4-5 Standoff location and mounting](image)

2. Install the 5824 as shown in Figure 4-6.

![Figure 4-6 5824 Installation](image)
4.5 Installing Routers & Repeaters

Mount only one IFPN-ROUTMB Intelligent Router or IFPN-4WRMB Physical Layer Repeater per IFPN-CAB1 Cabinet to accommodate incoming and outgoing wire runs.

To install the IFPN-ROUTMB or IFPN-4WRMB:

1. Mount two transceiver standoffs for each transceiver to be installed on the board using 1/2” standoffs and 1/4” screws on the IFPN-ROUTMB or IFPN-4WRB as shown in Figure 4-7.

Figure 4-7 Mounting Transceiver Standoffs on the IFPN-ROUTMB and IFPN-4WRMB
2. Identify the correct location in the IFPN-CAB1 for the board you are installing as shown in Figure 4-8.

![Figure 4-8 Installation Location for the IFPN-ROUTMB and IFPN-4WRMB](image)

3. Install four 1/2" standoffs on the cabinet mounting board studs in the appropriate location (see Figure 4-8).

4. Place the IFPN-ROUTMB or IFPN-4WRMB on the standoffs, and use four 1/4" screws to secure the board to the standoffs, as shown in Figure 4-4.
Section 5
Installing NIONs

This section provides installation information for the IFPN-NIONs, which are for use with IFP-series FACPs and IFPN-2C8M NIONs which are for use with conventional control panels and devices with dry contacts.

5.1 IFPN-NIONs

This section provides information on wiring and configuring IFPN-NIONs. IFPN-NIONs are for use with IFP-series FACPs. The IFPN-NION part numbers covered in this section are as follows: IFPN-NIONFT, IFPN-NIONSM, IFPN-NIONFX, and IFPN-NIONDF. For a description of the IFPN-NION installation packages, see Section 1.3.3.1.

5.1.1 Motherboard Layout

The IFPN-NION motherboard layout is shown in Figure 5-1. The IFPN-NION motherboard provides two EIA-232 serial ports (only one is used) and one RS-485 port. The IFPN-NION motherboard is powered by any 24 VDC power limited, filtered source with battery backup.

Figure 5-1 IFPN-NION Motherboard Board Layout
5.1.2 Diagnostic LEDs

The IFPN-NION motherboard has six LEDs which are used as aids in diagnosing proper operation. The table below explains the possible conditions.

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
<th>Appearance</th>
</tr>
</thead>
</table>
| Service           | Indicates binding status of node on LonWorks network.                        | Slow Blink: IFPN-NION not bound  
|                   |                                                                              | Off: IFPN-NION bound  
|                   |                                                                              | On: Nonrecoverable error                                                   |
| Network Status    | Indicates status of LonWorks network interface.                              | Slow Blink: Network operation normal  
|                   |                                                                              | Off: Interface not functioning  
|                   |                                                                              | Fast blink: Lonworks network communication error                           |
| Network Packet    | Indicates when data is sent or received on the LonWorks network.             | Brief Blink: Data packet received or transmitted.                           |
| Serial 2          | Not Used                                                                     |                                                                            |
| Serial 1          | Indicates serial port activity.                                              |                                                                            |
| IFPN-NION Status  | Indicates status of the IFPN-NION.                                           | Rapid Blinking: IFPN-NION operating properly  
|                   |                                                                              | On or Off: Critical error. The IFPN-NION is not functioning.               |

5.1.3 Preparing the Motherboard Backup Battery

The IFPN-NION motherboard has a 3V lithium long-life backup battery with voltage monitoring to back up the 256K of onboard RAM.

Important: The IFPN-NION motherboard lithium battery is shipped with a cardboard insert to prolong battery shelf life. Remove the card board once the IFPN-NION is installed.

5.1.4 Mounting

Install the IFPN-NION in a location that meets the following environmental requirements.

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>32°F - 120°F (0°C - 49°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>93% non-condensing at 86°F (30°C)</td>
</tr>
</tbody>
</table>

The IFPN-NION boards mount in the IFPN-CAB1 Cabinet. The IFPN-NION is designed to be installed on a wall within 20 ft of the FACP with all connections running in conduit. See Section 4 for environmental specifications and cabinet mounting instructions.
5.1.5 Power Requirements and Wiring

The IFPN-NION requires 24VDC @ 200mA nominal in accordance with local code requirements and is wired as shown in Figure 5-2. It can be powered by any power limited, regulated source.

![Image of IFPN-NION/NPB Power Connections]

**Figure 5-2 IFPN-NION/NPB Power Connections**

**Note:** Terminal block 5 is only required for system application. It is not used for direct panel interfacing.

**Important:** To avoid damage to hardware, always remove power from the IFPN-NION before making any changes to switch settings, or removing or installing option modules, network modules and software upgrade chips. Always observe ESD protection procedures.
5.1.6 Wiring the 5824 Serial/Parallel Module

The 5824 Serial/Parallel Module provides the data connection between an IFP-series FACP and the IFP-NET System. The IFPN-NION operates at 19200 baud, 8 data bits, no parity, and 1 stop bit. The 5824 must be with SBUS limitations of the IFP-series FACPs with all connections running in conduit.

To install the 5824:
1. Turn off the power at the IFP-series FACP and the NION.
2. Connect the serial cable (P/N IFPN-SERCABL) to the NION motherboard, matching the notched side of the cable connector with the notch on the right side of the P1 port (see Figure 5-3).

3. Connect the serial cable connector to the 5824 as shown in Figure 5-4.
4. Wire the 5824 to the IFP-series FACP as shown in Figure 5-5.

![Diagram of connecting the 5824 to the NION Motherboard and an IFP-Series FACP]

**Figure 5-5 Connecting the 5824 to the NION Motherboard and an IFP-Series FACP**

5. Assign an IFP-series FACP ID # to the 5824 using the dip switches on the 5824. See *Configuring Modules* in the appropriate IFP-series FACP Installation Manual for more information on setting the device ID #.

6. At the IFP-series FACP or from SKSS Download software, add the 5824 to the IFP-series FACP and configure as follows: Monitor Printer=NO and Output Port=PARALLEL. See *Selecting 5824 Options* in the IFP-series FACP Installation Manual for more information.

7. To use all features available with the IFP-series FACPs, configure the corresponding Plug-In utility at the IFP-NET System workstation. See the IFP-NET Operation Manual for general Plug-In setup information.
5.2 IFPN-2C8M NIONs

The IFPN-2C8M (2 control and 8 monitor) installation packages provide a general purpose module for monitoring eight inputs and controlling two outputs on an IFP-NET system. Each of the four installation kits provides all of the components necessary to connect control panels and devices with dry contacts to the IFP-NET System. The four IFPN-2C8Ms offer the flexibility to connect to short and long or noisy CAT5 installations and single or two multimode fiber optic installations. The IFPN-2C8M part numbers covered in this section are as follows: IFPN-2C8MFT, IFPN-2C8MSM, IFPN-2C8MFX, and IFPN-2C8MDF. For a description of the IFPN-2C8M installation packages, see Section 1.3.3.1.

5.2.1 Board Layout

Figure 5-6 shows the IFPN-2C8M Motherboard layout.

![Figure 5-6 IFPN-2C8M Board Layout](image-url)
5.2.2 Diagnostic LEDs

Four LEDs on the IFPN-2C8M NION Motherboard provide information about module operation. The table below explains the possible conditions.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Description</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Green</td>
<td>Provides information on network communication and node binding.</td>
<td><strong>Flashing Slow</strong>: IFPN-2C8M is functioning properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Flashing Fast</strong>: IFPN-2C8M is bound but not communicating or the packet was lost.</td>
</tr>
<tr>
<td>Unbound</td>
<td>Yellow</td>
<td>Provides information on node binding and NGM status.</td>
<td><strong>Off</strong>: IFPN-2C8M is bound.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Flashing</strong>: IFPN-2C8M is not bound (Status LED is off).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Solid</strong>: IFPN-2C8M is in a fault condition or the PROM chip was not installed.</td>
</tr>
<tr>
<td>Output On</td>
<td>Red</td>
<td>Indicates whether or not an output is energized.</td>
<td><strong>Solid</strong>: An output has been energized.</td>
</tr>
<tr>
<td>Input On</td>
<td>Red</td>
<td>Indicates whether or not an output is active.</td>
<td><strong>Solid</strong>: An input is active.</td>
</tr>
</tbody>
</table>

5.2.3 Input LEDs

Each of the IFPN-2C8M inputs also has a related pair of LEDs as shown in Figure 5-7. The red LED indicates an alarm state (short) and a yellow LED indicates a trouble state (open).

![Figure 5-7 LEDIndicate Trouble or Alarm State for Each Input](image)

5.2.4 Mounting

Install the IFPN-2C8M in a location that meets the following environmental requirements.

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>32°F - 120°F (0°C - 49°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>93% non-condensing at 86°F (30°C)</td>
</tr>
</tbody>
</table>

The IFPN-2C8M mounts in the IFPN-CAB1 Cabinet. The IFPN-2C8M is designed to be installed on a wall within 20 ft of the monitored equipment in the same room. The type of hardware used is at the discretion of the installer, but must be in accordance with local code requirements. See Section 4 for detailed mounting instructions.
5.2.5 Power Requirements and Wiring

The IFPN-2C8M can be powered by any 24 VDC power-limited source with battery backup which is UL listed for use with fire protective signaling units. Power must be supervised or placed within 20 ft of the IFPN-2C8M NION with connections running in conduit. See Figure 5-8 for wiring.

The IFPN-2C8M requires 24 VDC @ 100 mA nominal and battery backup in accordance with local code requirements. It can be powered by any power limited 24 VDC source which is UL or ULC listed, as appropriate for your area, for use with fire protective signaling units.

**Warning** Always remove power from the IFPN-2C8M before making any changes to switch settings and software upgrade chips or damage may result.

![Figure 5-8 Wiring the IFPN-2C8M NION for Power](image-url)
5.2.6 Configuring and Wiring Inputs

The IFPN-2C8M accepts eight normally open or normally closed dry contact inputs. Each normally open input is monitored by an 10k end-of-line resistor, which must be installed in parallel with the contact. The board is labeled, and the terminals are numbered for convenience. Inputs are rated for 18V nominal, 1.8mA maximum current and 2,000 ohm maximum resistance.

Note: Normally closed inputs are not supervised and cannot be used for fire applications.

Wiring conventional control panels and conventional devices with dry contacts to the IFPN-2C8M, then select each input style (NO or NC) by setting jumpers JP4 through JP11 to the desired settings as shown in Figure 5-9.

![Figure 5-9 Select the Input Style by Setting the Jumpers](image1)

5.2.7 Configuring and Wiring Outputs

The IFPN-2C8M provides two SPDT relay outputs as shown in Figure 5-10. The relays are rated at 5A @ 30 VDC. They can be wired for normally open or normally closed operation. All rated loads are resistive. Inductive and tungsten loads will be lower. For special applications, consult with a Silent Knight application engineer.

![Figure 5-10 IFPN-2C8M Outputs](image2)
5.2.8 Replacing a NION Motherboard Chipset

Perform the following steps to replace or upgrade a chipset on the IFPN-NION or IFPN-2C8M motherboard:

1. Disconnect all power to the NION.

Important: Always exercise ESD precautions when directly handling the NION or any other hardware.

2. Orientate the notch on the chip with the notch on the motherboard socket as shown in Figure 5-11. For the IFPN-NION motherboard, place the chipset in the appropriate socket.

3. Re-apply power to the NION.
Section 6
Installing the IFPN-ROUTMB Router & IFPN-4WRMB Repeater

This section provides installation information for the IFPN-ROUTMB Intelligent Router and IFPN-4WRMB Physical Layer Repeater.

The IFPN-ROUTMB is suited for applications that require network runs over extreme distances or complex configurations. Typically, a router is required any time the segment needs to be more than 6000', or if a free topology (star) configuration would be more efficient. A router or repeater is required if topology changes from wire to fiber or if the installation is all fiber. The IFPN-4WRMB can be used in installations when only a pass through is required. See Table 6-1 for a comparison of the IFPN-ROUTMB and the IFPN-4WRMB.

**Note:** Nodes include NIONs and Routers. Routers count as a node on each network segment they connect. Repeaters do not require configuration or binding and do not count as a node on the network.

Table 6-1: IFPN-ROUTMB Router and IFPN-4WRMB Repeater Comparison

<table>
<thead>
<tr>
<th>Capability</th>
<th>IFPN-ROUTMB Router</th>
<th>IFPN-4WRMB Repeater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Regenerated</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Node Address Required</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Configuration Required</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Supports the IFPN-S7FTXC Transceiver</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports the IFPN-FTXC Transceiver</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports the IFPN-FOXC Transceiver</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports the IFPN-DFXC Transceiver</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Number of Transceivers Supported</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

6.1 IFPN-ROUTMB Intelligent Router

The IFPN-ROUTMB Intelligent Router is a field programmable, protocol regenerating, intelligent router. It allows transparent passage of system messages between two system segments of the same or different topologies. The IFPN-ROUTMB supports two transceivers allowing you to connect two LonWorks network segments of the same or different topologies: FTXC or S7FTXC for CAT5 wire and FOXC for point-to-point optical fiber (maximum fiber attenuation of 8db) and DFXC (maximum fiber attenuation of 12.5db) for fiber media. All transceivers are mounted to the IFPN-ROUTMB motherboard using header strips.

**Note:** The IFPN-ROUTMB can support only one DFXC transceiver.

Each transceiver is controlled via a LonWorks programmable router core module mounted on the IFPN-ROUTMB motherboard. The router core is programmed using the local area server software.
### 6.1.1 Board Layout

The IFPN-ROUTMB motherboard layout is shown in Figure 6-1.

![ROUTMB Intelligent Router](image)

**Figure 6-1 ROUTMB Intelligent Router**

### 6.1.2 Diagnostic LEDs

The IFPN-ROUTMB board has four LEDs which are used as aids in diagnosing proper operation. The table below explains the possible conditions.

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network OK</td>
<td>Indicates status of LonWorks network interface.</td>
<td>Slow Blink: Network operation normal</td>
</tr>
<tr>
<td>Packet</td>
<td>Indicates when data is sent or received on the LonWorks network.</td>
<td>Brief Blink: Data packet received or transmitted.</td>
</tr>
<tr>
<td>Service A</td>
<td>Indicates binding status on LonWorks network.</td>
<td>On: IFPN-ROUTMB not bound or Service Pin was pressed.</td>
</tr>
<tr>
<td>Service B</td>
<td>Indicates binding status on LonWorks network.</td>
<td>On: IFPN-ROUTMB not bound or Service Pin was pressed.</td>
</tr>
</tbody>
</table>
6.1.3 Mounting

Install the IFPN-ROUTMB in a location that meets the following environmental requirements.

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>32°F - 120°F (0°C - 49°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>93% non-condensing at 86°F (30°C)</td>
</tr>
</tbody>
</table>

The IFPN-ROUTMB mounts in the IFPN-CAB1 Cabinet. See Section 4 for environmental specifications and cabinet mounting instructions.

LonWorks network connections are made via plug-in screw terminals for CAT5 wiring. Fiber optic network connections use ST style connectors with dedicated fiber optic cable.

6.1.4 Power Requirements and Wiring

The ROUTMB requires 24 VDC @ 0.075 A nominal and battery backup in accordance with local code requirements. It can be powered by any power limited, filtered 24 VDC source. See Figure 6-2 for 24 VDC terminal locations.

![Figure 6-2 IFPN-ROUTMB Intelligent Router Power Connections](Image)
6.2 IFPN-4WRMB Physical Layer Repeater

This section provides information on wiring the IFPN-4WRMB Physical Layer Repeater. The IFPN-4WRMB is a free topology (star), physical layer repeater. It allows transparent passage of system messages between four system segments. The IFPN-4WRMB supports IFPN-FTXC, IFPN-S7FTXC, and IFPN-FOCX transceivers to connect up to four wire and/or fiber LonWorks network segments. The IFPN-4WRMB does not support the IFPN-DFXC transceiver. The IFPN-4WRMB requires no configuration in the field, and does not use any of the 16 nodes allowed on an IFP-NET System.

**Important:** The IFPN-4WRMB can not directly connect to another IFPN-4WRMB without a router between them, unless you T-tap across the input transceiver.

When using wire, each FT-10 segment allows T-tapping of nodes up to a maximum distance of 1500' between any two nodes. An FT-10 segment can have a maximum length of 8000' when only one node is attached to the repeater on that segment. When using fiber, each segment must be point-to-point only (repeater to router or repeater to a single node). Each segment can tolerate up to 8db of attenuation.
6.2.1 Board Layout

The IFPN-4WRMB motherboard layout is shown in Figure 6-3. The IFPN-NION motherboard supports up to four IFPN transceivers.

![IFPN-4WRMB Physical Layer Repeater Motherboard](image)

**Figure 6-3** IFPN-4WRMB Physical Layer Repeater Motherboard

6.2.2 LED Indicators

Three LEDs are provided to display repeater operation:

- **Power** - On during normal operation.
- **Packet Transmit/Receive** - Flashes when a system message is transmitted or received.
6.2.3 Mounting

Install the IFPN-4WRMB in a location that meets the following environmental requirements.

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>32°F - 120°F (0°C - 49°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>93% non-condensing at 86°F (30°C)</td>
</tr>
</tbody>
</table>

The IFPN-4WRMB mount in the IFPN-CAB1 Cabinet. See Section 4 for environmental specifications and cabinet mounting instructions.

6.2.4 Power Requirements and Wiring

The IFPN-4WRMB requires 24 VDC @ 100 mA nominal and battery backup in accordance with local code requirements. It can be powered by any power limited, filtered 24 VDC source.

![IFPN-4WRMB Physical Layer Repeater Power Connections](image)

Figure 6-4 IFPN-4WRMB Physical Layer Repeater Power Connections
Section 7
Installing Transceivers

This section provides installation information for the IFPN transceivers. A transceiver is a small PC daughter board that determines what type of communication (topology) path you are using, i.e. CAT5 or fiber-optic cable. Transceivers are installed on the NION, router, and repeater motherboards.

7.1 Wiring Requirements

7.1.1 CAT5

The wire used to connect a transceiver to a Lonworks network must be:

- Twisted pair cable.
- Riser, plenum, or non-plenum cable, according to local fire alarm wiring codes.

Table 7-1 shows wiring specifications including brands and types of wire supported by Silent Knight for use with any of our LonWorks based monitoring products. The information shown identifies the American Wire Gauge (AWG) sizes to be used for different types of cables. The loop resistance in Ohms per kilometer (RloopW/km) is also shown. The capacitance in nanofarrads per kilometer (CnF/km) and the velocity Propagation percent of the speed of light (Vprop% of c) in Celsius is the final category. The continuation of the table shows type of termination (double or single), maximum length of bus wire runs and maximum length of wire runs between nodes.

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>AWG</th>
<th>Rloop(W/km)</th>
<th>CnF/km</th>
<th>Vprop% of c</th>
<th>IFPN-S7FTXC Bus (m/ft)*</th>
<th>IFPN-FTXC FT (m/ft)†</th>
<th>IFPN-FTXC (m/ft)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belden 85102, single twisted pair, stranded 19/29, unshielded, 150°C</td>
<td>16</td>
<td>28</td>
<td>56</td>
<td>62</td>
<td>2700/8858</td>
<td>500/1640</td>
<td>500/1640</td>
</tr>
<tr>
<td>Belden 8471, single twisted pair, stranded 19/29, unshielded, 60°C</td>
<td>16</td>
<td>28</td>
<td>72</td>
<td>55</td>
<td>2700/8858</td>
<td>400/1312</td>
<td>500/1640</td>
</tr>
<tr>
<td>Level IV 22AWG, twisted pair, typically solid and unshielded</td>
<td>22</td>
<td>106</td>
<td>49</td>
<td>67</td>
<td>1400/4593</td>
<td>400/1312</td>
<td>500/1640</td>
</tr>
<tr>
<td>TIA568A, Category 5 24AWG, twisted pair</td>
<td>24</td>
<td>168</td>
<td>46</td>
<td>58</td>
<td>900/2952</td>
<td>250/820</td>
<td>450/1476</td>
</tr>
</tbody>
</table>

* Max bus length
† Max free topology node-to-node
‡ Max total wire length
7.1.2 Fiber Optic Cable

Fiber optic segments require fiber that is:

- Multi-mode.
- 62.5/125 µm dia.

For FOXC transceivers, two strands are required per segment: one dedicated to transmit, the other to receive with no more than 8db of attenuation between nodes. For DFXC transceivers, one strand is used to transmit and receive, no more than 12.5 db of attenuation between nodes.

7.2 Wiring Transceivers

7.2.1 IFPN-FTXC Transceiver

When used by the FTXC transceiver, free topology wire allows up to 8,000 feet (2438.4 m) per segment in a point-to-point configuration, up to 6,000 feet (1828.8 m) per segment in a bus configuration, or up to 1,500 feet (457.2 m) per segment in a star configuration.

Note: All system connections are transformer isolated, making all network communication immune to ground fault conditions. Therefore, no ground fault supervision of the LonWorks network is required or provided.
7.2.2  IFPN-S7FTXC Transceiver

The IFPN-S7FTXC combines two FT-10 interface ports that allow the transceiver to meet Style-7 wiring requirements. The two ports on the S7FTXC, when used with true style-7 wiring requirements, create a point-to-point type network segment allowing up to 8,000 feet between nodes that use the S7FTXC. The separate FT ports allow two twisted pair connections so that a cabling fault on one segment will not affect the other.

![Figure 7-2 S7FTXC Board Layout](image)

7.2.3  FOXC and DFXC Fiber Optic Transceivers

The FOXC allows up to 8db of attenuation per segment in a point-to-point configuration only.

The DFXC can operate in either a bus or a ring format. The regenerative properties of the DFXC transceiver allow runs of up to 12.5db of attenuation between each node.

**Note:** See Section 7.1.2 of this manual for fiber optic cabling requirements for these transceivers.

![Figure 7-3 Board Layout for the FOXC and DFXC Fiber Optic Transceivers](image)
7.3 Setting Transceiver Jumpers

You must terminate each segment in CAT5 wire runs to prevent network signal degradation, ringing, etc., due to signal reflections. Network terminator circuits are built into the NION modules. Jumpers close these circuits to terminate the network. Setting Electrical Termination Jumpers on the IFPN-FTXC and S7FTXC Transceivers

7.3.1 Free Topology and Bus Topology Termination

Free topology termination is used when Lonworks network segments are non-linear, incorporating T-taps, stars, or other random wiring conventions. A segment is defined as any segment of wire originating from the Local Area Server, a router, repeater or a S7FTXC. One termination jumper must be set at the end of each of these segments. Free topology allows for flexible wiring of networks; however, this flexibility constrains the overall network distance.

Use bus topology termination when wire runs are long (several thousand feet), linear and without T-taps. This allows for greater end-to-end segment distance; however, wiring is constrained to a simple bus architecture.

7.3.2 FTXC and S7FTXC Electrical Termination Jumper Settings

For FT-10 wire operation, set termination jumpers as follows and as shown in Figure 7-4.

- Free Topology (star or point-to-point) - only one termination jumper set in the FT setting per segment, a bus segment requires that the BUS termination be set at each end of the segment. Free Topology termination is done using the onboard jumper (JP1) with the FTXC or JP1/JP3 on the S7FTXC.
- Bus Topology - Both ends of a segment must be terminated. Bus Topology termination can be done using the on board jumper (JP1) only with the FTXC or jumper JP1/JP3 on the S7FTXC.

![FTXC Jumper Settings](image1.png)

![S7FTXC Jumper Settings](image2.png)

Figure 7-4 Setting Jumpers for FTXC and S7TXC Transceivers
7.4 Mounting Transceivers

Transceivers are mounted on NIONs, routers, and repeaters. The general mounting procedure is described below.

To mount a transceiver on an IFP-NET System device:
1. Turn off the power to the IFP-NET System device (NION, router, etc.).
   **Caution:** Always remove power from the IFP-NET device before removing or installing boards and software upgrade chips, or damage may result. Always observe ESD precaution procedures.

2. Align the transceiver header connectors on the transceiver header and the IFP-NET device board and press down until the transceiver securely attached to the IFP-NET device board.

7.5 IFP-NET System Configuration

After all hardware and wiring connections are made, NIONs and routers must be configured and bound to the network. This process requires two technicians; one at the server or terminal and one at the NION or router. For instructions on binding (also referred to as service) NIONs and routers, refer to the IFP-NET Programming Manual.
Section 8
Installing and Configuring Printers

8.1 Printer Installation

IFP-NET supports a screen/report printer that can be attached to the workstation to print the following items:

- Screens and floorplans (requires the Enhanced Printing option).
- Text of linked files.
- Guidance text (requires the Enhanced Printing option).
- History logs.

8.2 General Printer Setup

Any printer attached to the workstation for use by the workstation requires some setup when it is installed. In the case of PRN series event printers, they need only to be set up in the workstation software; screen/report printers must be installed in Windows as well.

Screen/Report Printer Setup

The screen/report printer is attached to the workstation computer by the LPT port. The setup for this printer must be done in Windows, including installation of the printer driver. When installing these drivers, be sure to disable bidirectional support and set the graphics mode to raster. This can be done through the Windows Start menu by selecting Settings, Printers, Properties. Any Windows-compatible printer that will work connected to the parallel port can be a screen/report printer. Printer font and printer pitch can be configured for the screen/report printer by selecting Workstation Configuration, Options, then clicking on the Printers tab.

To print floor plans, the Enhanced Printing option must be installed.

Note: When using the HP Laserjet 5, be sure that Advanced Functions are turned off under the Parallel menu. With any printer always be sure to disable bidirectional communication. Never use bidirectional devices such as tape or disk drives on the parallel port. This feature does not support the HP Laserjet Series II printers.

Event Printer Setup

The event printer is a dot-matrix printer (i.e. NOTIFIER® PRN series) that receives all messages from the COM port; it is configured in the Printers tab of the System Setup option. Do not install this printer in Windows.

Windows Printer Setup

Selecting Printer Setup from the File menu displays a dialog box for setting up your specific printer for screen/report printing.

To choose a printer, select either the default printer or a specific printer displayed in the list box.
There are two page orientations available:
- Portrait is a vertical page layout. This orientation is preferred for report printing.
- Landscape is horizontal page layout. This orientation is preferred for a screen print.

The paper settings (size and source) are specific to the printer. The Options button gives the user choices regarding graphics and print quality. The options are specific to the printer.

**Event Printer Connections**

PRN series event printers require a serial cable assembled with the following connections.

![PRN Series Serial Cable Wiring Diagram](image)

**Figure 8-1** PRN Series Serial Cable Wiring Diagram
8.3 Event and Report Printer Workstation Setup

**Important:** The software must be configured properly for communication with optional event and report printers.

Report printers must be configured and installed in Windows.

The following event printer parameters must be set up to match the parameters configured in the serial event printer:

- Event printer location - select the following from the combo box:
  - none (default) if no event printer is attached to the system.
  - local if an event printer is connected directly to a computer COM port.
- Handshaking - default is None. (Special applications)*
- Buffer Size - default is 4k. (Special applications)*
- Local Event Printer COM Port - select the COM port (1-4) that the local printer is attached to.
- Local Event Printer Parity - select none, even or odd.
- Local Event Printer Data Bits - select seven or eight.
- Local Event Printer Baud Rate - select 1200, 2400, 4800 or 9600.
- Local Event Printer Stop Bits - select one or two.

If an optional report printer is connected to the LPT port, then a desired font and pitch size can be selected in the **Report Printer Font** combo box and the **Report Printer Pitch field**.

![Figure 8-2 The Printers Dialog](image_url)
Appendix A
Installation Troubleshooting

During normal installation, the IFP-NET Graphic Monitoring Software should be installed after installing the IFPN-PCLTA20 LonWorks Network Interface Card. If you attempt to install the IFP-NET software before the IFPN-PCLTA20 card, an error message will be displayed.

Since the IFPN-PCLTA20 card in its current state is not being detected properly by IFP-NET, we will uninstall and then reinstall it via the Device Manager. Perform the following steps to do this:

1. Access the Device Manager by selecting Start, Settings, Control Panel. Then, double-click on the System option.
2. The System Properties screen has several tabs at the top. Select Hardware, then click on the Device Manager button.
3. Expand the Other Devices list item, then right-click on the IFPN-PCLTA20 item. From the popup menu, select Uninstall...Confirm this action when prompted.
4. Once the card has been uninstalled, select Action, Scan for hardware changes. The system will detect the IFPN-PCLTA20 card, and IFP-NET will automatically configure the drivers at this time.
5. To confirm that the IFPN-PCLTA20 is now correctly installed, go back into Device Manager. Now, instead of being listed under Other Devices, the IFPN-PCLTA20 card will be listed under its own item, the LonWorks Network Interface.
6. Once the card is correctly installed, follow the steps in Section 3.5, IFPN-PCLTA20 Installation, to complete the configuration process.
General Terms and Conditions

- All new fire products manufactured by Silent Knight have a limited warranty period of 18 months from the date of manufacture against defects in materials and workmanship. See limited warranty statement for details.

- This limited warranty does not apply to those products that are damaged due to misuse, abuse, negligence, exposure to adverse environmental conditions, or have been modified in any manner whatsoever.

Repair and RA Procedure

- All products that are returned to Silent Knight for credit or repair require a RA (Return Authorization) number. Call Silent Knight Customer Service at 800-446-6444 or 763-493-6435 between 8:00 A.M. and 4:45 P.M. CST, Monday through Friday to obtain a return authorization number. Silent Knight Technical Support is available at 800-328-0103 between 8:00 A.M. and 6:00 P.M. CST, Monday through Friday.

- RA number must be prominently displayed on the outside of the shipping box. See return address example under Advanced Replacement Policy.

- Include a packing slip that has the RA number, a content list, and a detailed description of the problem should be included with each return.

- All products returned to Silent Knight must be sent freight pre-paid. After product is processed, Silent Knight will pay for shipping product back to customer via UPS ground.

- Return the Silent Knight product circuit board only. Products that are returned in cabinets will be charged an additional $50 to cover the extra shipping and handling costs over board only returns. Do not return batteries. Silent Knight has the authority to determine if a product is repairable. Products that are deemed un-repairable will be returned to the customer.

- Product that is returned that has a board date code more than 18 months from date of manufacture will be repaired and the customer will be assessed the standard Silent Knight repair charge for that model.

Advanced Replacement Policy

- Silent Knight offers an option of advance replacement for fire product printed circuit boards that fail during the first 6 months of the warranty period.

- For advance replacement of a defective board contact your local Silent Knight Distributor or call Silent Knight at 800-446-6444 or 763-493-6435 to obtain a RA (Return Authorization) number and request advanced replacement.

- Customers without a Silent Knight account must use a MasterCard, Visa, or American Express credit card to get an advance replacement.
• A new or refurbished board will be shipped to the customer. The customer will initially be billed for the replacement board but a credit will be issued after the repairable board is received at Silent Knight. All returned products must comply with the guidelines described under “General Terms and Conditions”.

• The defective board must be returned within 30 days of shipment of replacement board for customer to receive credit. No credit will be issued if the returned board was damaged due to misuse or abuse.

• Repairs and returns should be sent to:

Silent Knight
Attn: Repair Department
7550 Meridian Circle Suite 100
Maple Grove, MN 55369-4927
RA Number:___________________

Limited Warranty
Silent Knight warrants that the products of its manufacture shall be free from defects in materials or workmanship for 18 months from the manufacturing date code on the printed circuit board, if such goods have been properly installed, are subject to normal proper use, and have not been modified in any manner whatsoever. Upon return of the defective product, Silent Knight will at its sole discretion, either repair or replace, at no cost, such goods as may be of defective material or workmanship. Customers outside the United States are to return products to their distributor for repair.

Silent Knight SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM LOSS OF PROPERTY OR OTHER DAMAGE OR LOSSES OWING TO THE FAILURE OF Silent Knight PRODUCTS BEYOND THE COST OF REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCTS.

Silent Knight MAKES NO WARRANTY OF FITNESS OR MERCHANTABILITY AND NO OTHER WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, BEYOND THE 18 MONTH WARRANTY EXPRESSLY SPECIFIED HEREIN.