

Installation/Operation

Dresser Wayne FusionNet[®]
Ethernet Installation Rev A

Table of Contents

| Title | Page |
|--|------|
| 1 PRODUCT | 5 |
| 2 INTRODUCTION | 5 |
| 3 HOW TO USE THIS DOCUMENT | 5 |
| 4 UNPACKING AND INSPECTION | 5 |
| 5 RETURNING DAMAGED COMPONENTS | 6 |
| 6 SAFETY INFORMATION | 6 |
| 7 INSTALLATION LOCATION | 7 |
| 8 CONFORMITY WITH STANDARDS | 8 |
| 9 REQUIRED TOOLS | 8 |
| 10 INSTALLATION OVERVIEW | 9 |
| 11 INSTALLATION PROCEDURE | 9 |
| 11.1 Shutdown the Site | 9 |
| 11.2 FusionNet Installation | 10 |
| 11.3 FusionNet Pump Board Installation | 10 |
| 11.4 Site Startup | 11 |
| 12 APPENDIX | 13 |
| 12.1 FusionNet Rear Panel | 13 |
| 12.2 FusionNet Box Components | 14 |
| 12.3 FusionNet Ports | 15 |
| 12.4 FusionNet Plug | 15 |
| 12.5 FusionNet Pump Board | 16 |
| 12.6 Troubleshooting | 16 |

1 PRODUCT

| | |
|--------------------|--------------------------------|
| Product | Dresser Wayne FusionNet |
| Application | Nucleus or other 3rd Party POS |
| Production Version | Version x.xx |
| Current Build | Version x.xx |
| Hardware Platform | Wayne Proprietary Hardware |

2 INTRODUCTION

The Dresser Wayne FusionNet is a device used to implement Ethernet protocol over the existing 2 wire communications cable that talks to the CAT (**C**ustomer **A**ctivated **T**erminal) which is in place at existing sites. This is to avoid having to lay another conduit or pull additional wires at a site for a CAT5 ethernet cable. This implementation will use the FusionNet device to communicate using Ethernet which is transmitted across the existing 2 core cable to the dispenser. The dispenser head will contain a FusionNet pump board that will convert the Ethernet over the 2 core cable to standard CAT 5 Ethernet which is then sent on to the iX.

3 HOW TO USE THIS DOCUMENT

By following the installation instructions and performing the steps in the sequence presented, you will be assured of a successful install.

NOTE: This kit may require installation of several wiring and hardware assemblies. Any installation or modification must comply with the requirements of the National Electrical Code (NFPA 70), the Automotive and Marine Service Station Code (NFPA 30A) and any other applicable codes

NOTE: You must wear a static wrist strap, part number 916962 or equivalent, securely attached to an earth ground, when handling any circuit board, electronic component or assembly, or when reaching into the site controller or dispenser computer enclosure. Do not use power tools.

4 UNPACKING AND INSPECTION

Complete the following steps:

1. Before opening any cartons, count the number of cartons and verify the carton count against the supplied packing list.
2. Inspect the cartons for damage made during transit.
3. File claim information with the carrier on the bill of lading.
4. Retain cartons suspected of damage for future claim purposes.

NOTE: You must wear an anti-static wrist strap, part number 916962 when removing electronic components from static packages. Attach the wrist strap securely to an earth grounding point to prevent possible damage from static electricity.

5. Remove all equipment from the shipping cartons and carefully inspect for visible damage.

NOTE: Any damage should be brought to the attention of the carrier and claims made immediately. Return all equipment to the respective cartons for protection until actual installation is made. Save all cartons until it is certain that return shipments are not required.

5 RETURNING DAMAGED COMPONENTS

Parts or components returned to the factory under warranty or for repair are subject to damage if not packaged properly. Complete the following steps to return parts or components to the factory.

1. Place electronic components in an anti-static bag and in the original shipping cartons for return shipment to the factory.

NOTE: If original shipping cartons are not available use a sturdy cardboard container and suitable packing materials such as anti-static polyethylene foam or bubble pack, to ensure the component is firmly packed.

2. Include a Return Parts Tag with the defective component describing the particular problem with the part.
3. Make sure adequate insurance is provided when returning parts to the factory.



WARNING

If the parts or components arrive at our factory in a damaged condition and it is determined that the damage is a direct result of inadequate or improper packaging, the damage will not be covered under the original warranty and the customer or distributor will be held responsible for the cost of repairs necessary to correct or replace the damaged parts.

6 SAFETY INFORMATION

Read NFPA 30A and NFPA 70 (U.S. Installations)

Before installing the equipment, the installer must read, understand and follow this manual, NFPA 30A, NFPA 70, and applicable federal, state and local codes and regulations. Failure to do so may adversely affect the safe use and operation of the equipment.

CSA C22.1 (Canadian Installations)

For installation in Canada the installer must read and understand this manual, CSA C22.1 (Canadian Electrical Code) and applicable federal, provincial and local codes and regulations.

Emergency Power Cutoff

NFPA30A requires that an emergency power cutoff be installed. An emergency power cutoff is a single control that removes AC power from all site fueling equipment and submersible pumps. Make sure the control is accessible, labeled clearly, and installed away from dispensers. Make sure all station employees know where the Emergency Power Cutoff is located and how to operate it.

Electrical Circuits

Some of the procedures in this manual involve removal and connection of components during installation or service. Remove power from the distribution box before executing these procedures.

Low Voltage

Do not be misled by the term "Low Voltage". Voltage potentials as low as 50 volts may cause death under adverse conditions.

High Voltage

High voltage of 110 volts AC is used for operation of this equipment. Death on contact may result if safety procedures are not followed.

7 INSTALLATION LOCATION

Fusion equipment may be installed in a variety of locations, all the cabinets and required wireways must be located in a non-hazardous area of an enclosed weather protected building.

Table 1: Mounting Location

| Component | Preferred Location | Notes |
|-------------------------|--|-------------------------|
| Dresser Wayne FusionNet | Back room; on wall or rack mounted near the wiring conduits for pumps and CATs | AC Power input required |

Table 2: Space Requirements (in inches)

| Component | Width | Height | Depth |
|-------------------------|--------------|---------------|--------------|
| Dresser Wayne FusionNet | 13.5 | 14 | 2 |

Dispenser conduit and Wiring requirements

Conduits used must be ¾ in. Verify that approved wireways and threaded metallic conduit with tight connections are used, that Data Link wiring is #18 AWG 600 Volt oil and gasoline resistant as a minimum.

Environmental Requirements

Ensure that all cabinets are located in an area that offers easy access for service, and free air space for cooling, 6" away from other cabinets.

Care should be taken to ensure that the temperature of the cabinets does not exceed the operational ranges of 0°C to 50°C (32°F to 122°F)

Preliminary Wiring

The site wiring must be completed before installation of a FusionNet device.

Data Link and CAT Wiring

Two pairs of data link wires are used. One pair for pump communication and one pair for CAT communication (2 Wire Ethernet).

8 CONFORMITY WITH STANDARDS

Ensure that all National, State, and local standards and codes are observed in site preparations, wiring, and installation.

Power Wiring

Confirm that all 120VAC to 240VAC wiring for outdoor equipment (line, neutral, relay select, etc.), is #14 AWG minimum (unless local codes call for 12 gauge), stranded, oil and gasoline resistant.

Codes

Confirm that all equipment is installed in accordance with the US National Electrical Code (NFPA 70), the automotive and Marine Service Station Code (NFPA 30A), and any other applicable State and local codes. For installations outside the US, follow all applicable local and international codes.

9 REQUIRED TOOLS

Refer to Table 3 for a list of tools required to install Fusion.

Table 3: Required Tools

| Quantity | Description |
|-----------------|---|
| 1 | Small Channel Lock pliers |
| 1 | Phillips Screwdriver Set (standard sizes) |
| 1 | Slotted Screwdriver Set (standard sizes) |
| 1 | Wire Cutters |
| 1 | Anti-static Wrist Strap |
| 1 | Needle Nose Pliers |
| 1 | Wire Strippers |
| 16 to 32 | Wire Nuts |
| 1 | Volt Meter |
| 1 | Diagonal Cutters |
| 1 | Standard Drill Bit Set |
| 1 | Drill |

10 INSTALLATION OVERVIEW

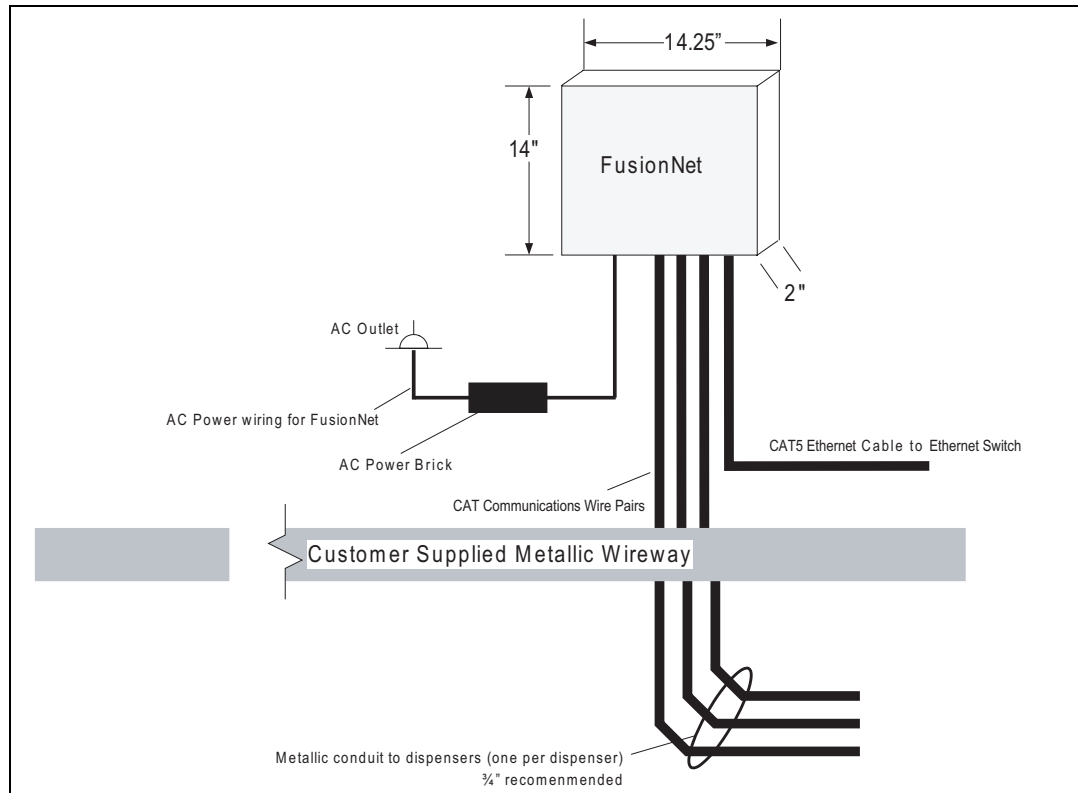


Figure 1 Backroom Installation

11 INSTALLATION PROCEDURE

When possible, mount the Dresser Wayne FusionNet unit in the equipment rack with access to the wiring trough where the dispenser comm wires are located. The above diagram shows a typical placement of the FusionNet.

NOTE: The Fusion mounting location may require different placement than shown. Whenever handling boards and components that are susceptible to damage from static electrical discharge, **BE SURE** to wear an anti-static wrist strap.

11.1 Shutdown the Site

- ___ 1. Stop all pumps one at a time, allowing current customers to complete their transactions.
- ___ 2. Shutdown the site and tape off the pumps and run EOD.
- ___ 3. Open the wiring trough and verify the labeling of the pump and CAT data wires.
- ___ 4. Disconnect CAT wires from their current location (Data distribution box or Fusion GRIB connector).
- ___ 5. Extend discrete CAT wire pairs from the wiring trough to the FusionNet box location for each dispenser if needed.

NOTE: CAT data wires may have been bundled together in parallel within the wiring trough. Un-bundle the wire pairs and splice extensions if needed so that each discrete CAT wire pair reaches the location of the FusionNet box.

11.2 FusionNet Installation

1. FusionNet can be mounted in an existing equipment rack. For rack mounting, the FusionNet mounting brackets should be mounted on the Fusion box first as shown.

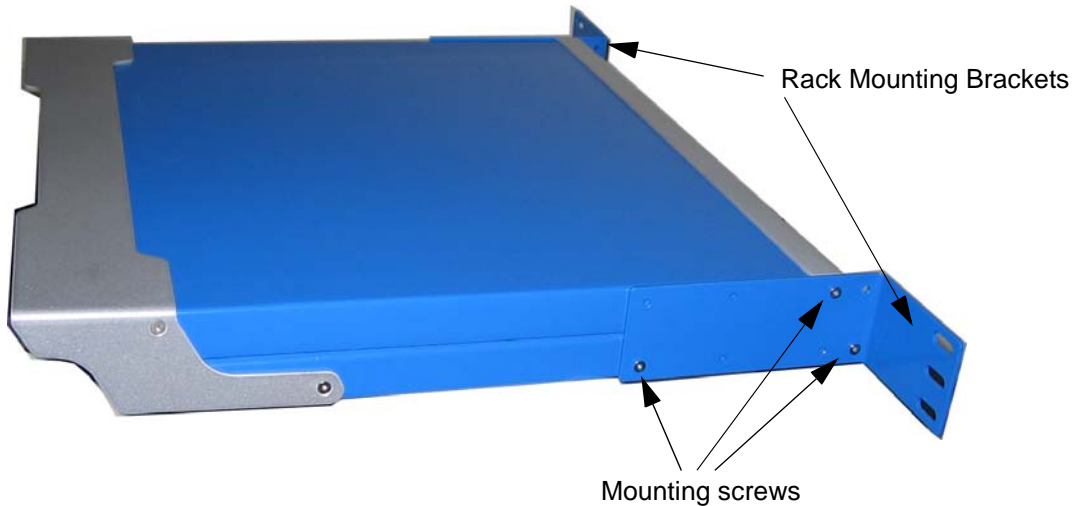


Figure 2 Fusion Rack Mounting Bracket

2. Next, the FusionNet slides onto the equipment rack with the rear connection panel facing outwards. Fusion should be mounted in such a way that there is visual access to the power button.
3. Connect each CAT data wire to a FusionNet plug and connect to the FusionNet ports beginning with Dispenser #1. CAT data wires can be connected as 2 fueling points per plug. See Figure 5 and Figure 6.
4. Complete the wiring, secure the conduit, etc.
5. Plug Fusion power brick into the dedicated 120VAC power outlet, then plug the other end into the transformer input of the FusionNet. See Figure 3.
6. Connect a CAT5 ethernet cable from the ethernet port of the FusionNet board to the network switch connected to the POS. Plug into any available port on the switch.

11.3 FusionNet Pump Board Installation

1. Open each dispenser and replace the existing iX switch with the FusionNet pump board.
2. Plug the existing CAT communications cable into J11 of the FusionNet pump board. Re-install the ethernet cables into the FusionNet pump board that were removed earlier. See Figure 7.
3. Plug the power distribution cable 892368-001 into the power input of the FusionNet pump board (J10) and the other end into the DC distribution board of the dispenser.

11.4 Site Startup

1. Power up the POS system and check the sales screen for CAT communications.

12 APPENDIX

12.1 FusionNet Rear Panel

The following diagram shows the FusionNet connections.

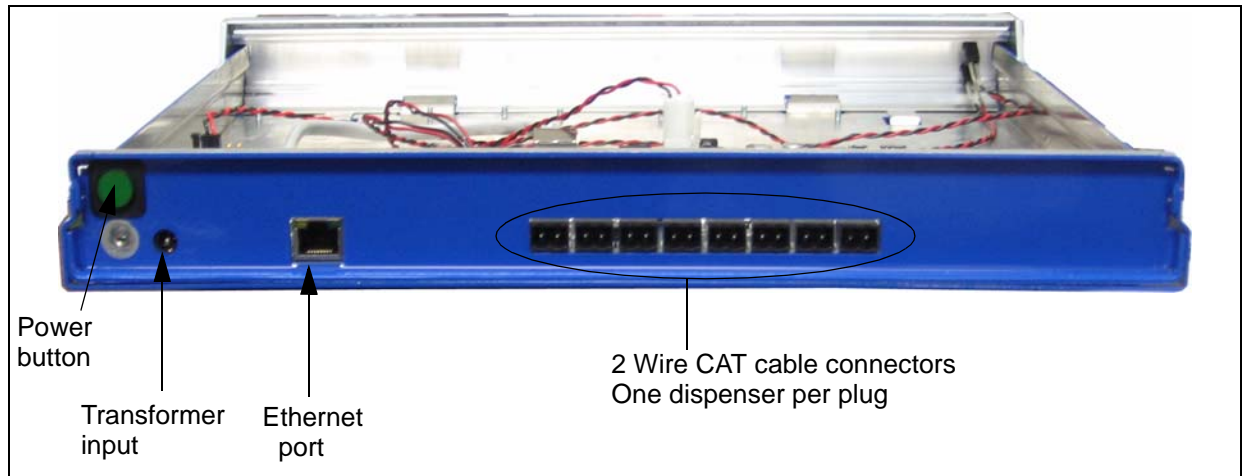


Figure 3 Fusion Rear Panel (Wayne Dispenser Configuration)

12.2 FusionNet Box Components

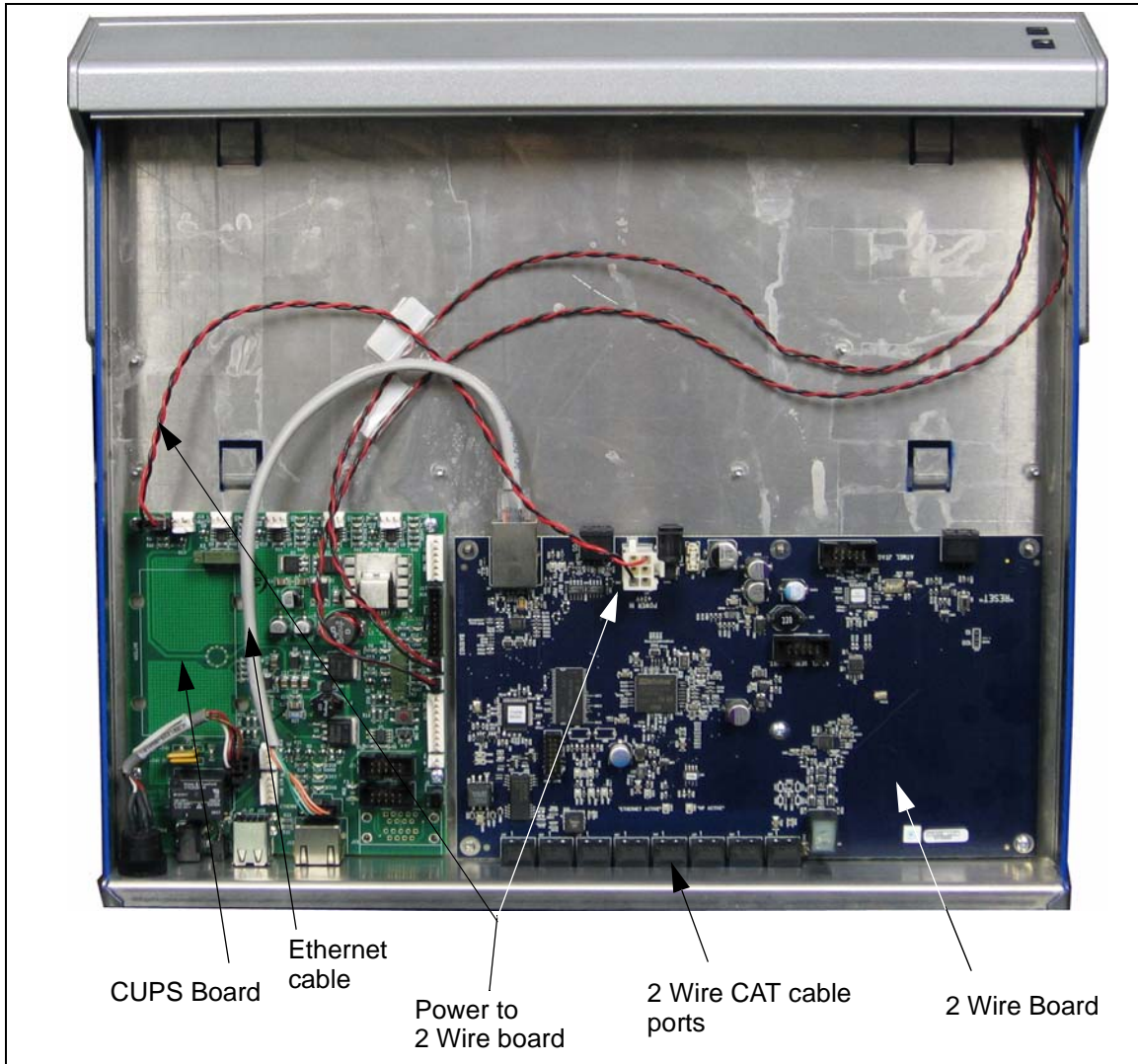


Figure 4 FusionNet Box Components

12.3 FusionNet Ports

NOTE: Each FusionNet port connects to one dispenser

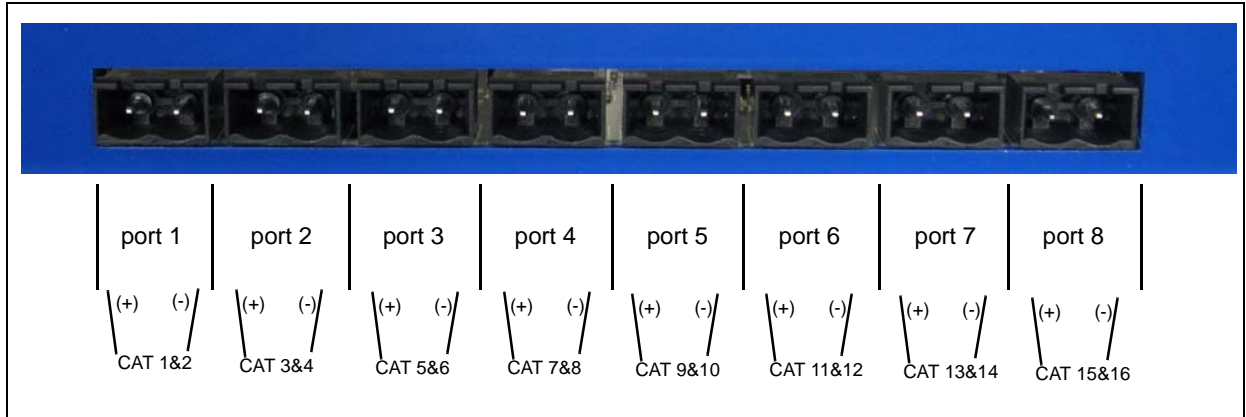


Figure 5 FusionNet Ports

12.4 FusionNet Plug

NOTE: Each FusionNet plug can connect with one dispenser (2 Fueling Points)

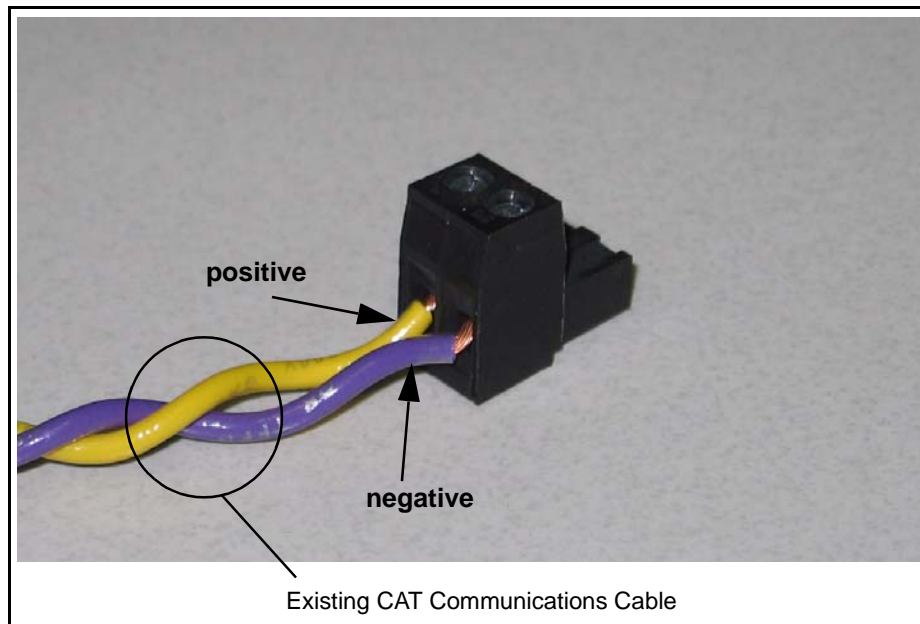


Figure 6 FusionNet Plug

12.5 FusionNet Pump Board

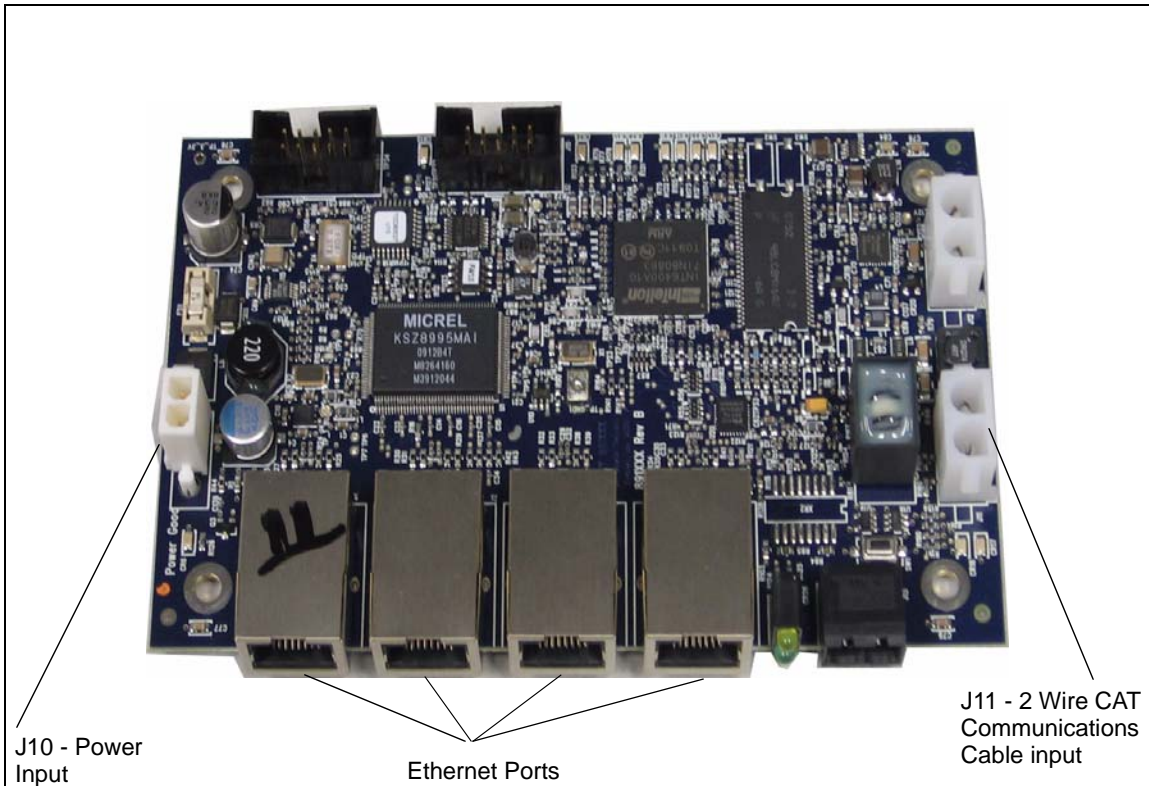


Figure 7 FusionNet Pump Board

12.6 Troubleshooting

If communication cannot be established between the FusionNet board and the FusionNet pump boards then you need to check the password assigned to each of the devices and verify that each of the passwords is the same. Follow this procedure to verify the password assigned to each of the devices. To do this you must connect a CAT 5 ethernet cable from a computer running the Intellon AV Device Manager to the box or board that you want to configure. This must be done one at a time to each of the devices that will communicate on the FusionNet network.

1. Load the Intellon Device Manager on the PC that will be used to configure the FusionNet devices. This PC must have an operational ethernet port.
2. Connect a CAT5 ethernet cable from the ethernet port on the PC to the ethernet port of the FusionNet board in the Fusion enclosure. There is no need to configure any IP addresses.
3. Power up the FusionNet board.
4. Start the Intellon Device Manager utility on the PC. (The green icon on the desktop - "Customer Device Manager") The following window will be displayed which shows the **Local Station** (towards the top right of the screen) which is the MAC address of the connected device.

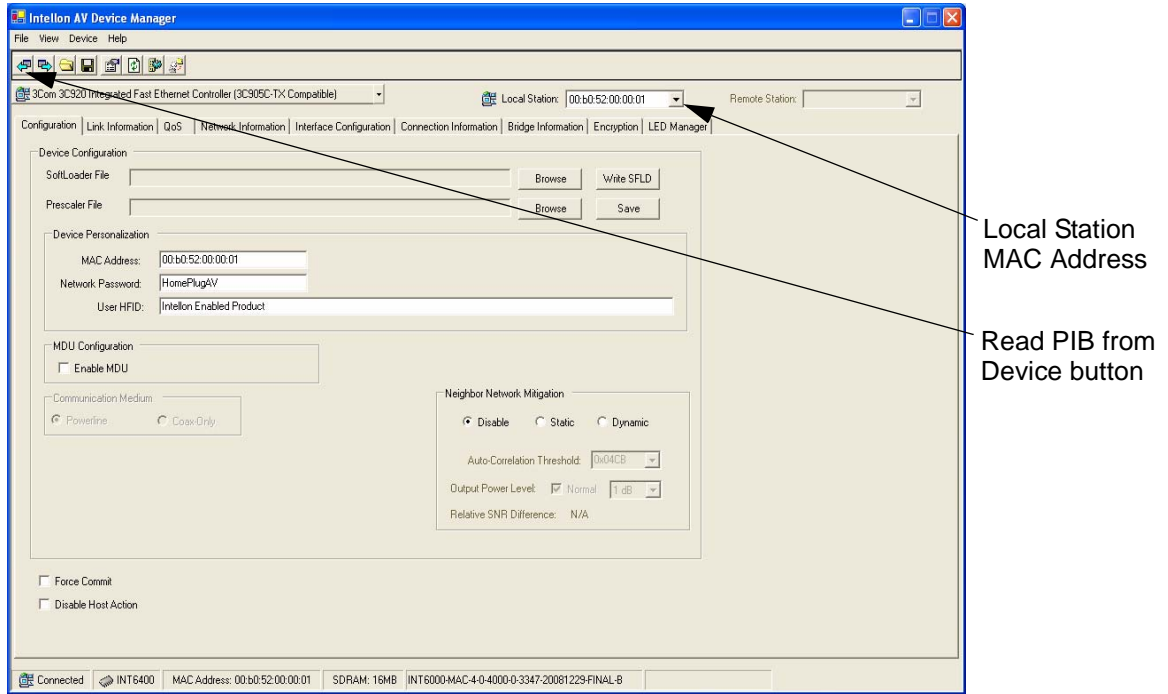
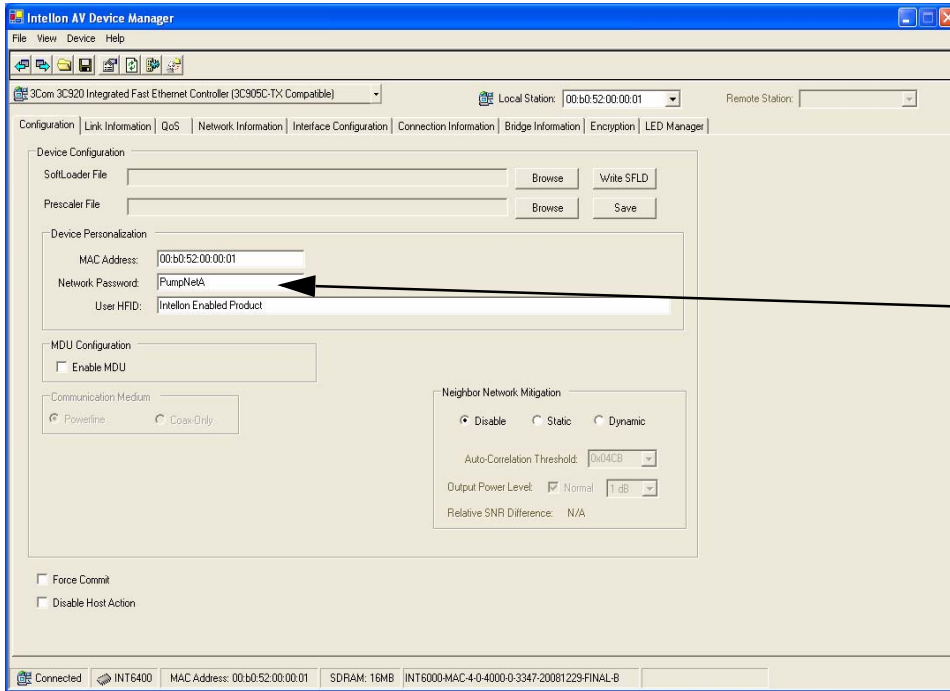


Figure 8 Intellon AV Device Manager Window

5. On the toolbar click on **Read PIB from device** (the furthest left icon)
6. In the "Device Personalization" portion of the window, the MAC Address should update to be the same as the "Local Station", the Network Password (if still at default) will show "HomePlugAV".
7. Change the password to either **PumpNetA** or **PumpNetB** depending on whether you are configuring a FusionNet/Pump Board A segment or B segment. The password is configurable and can be anything that you want it to be. Multiple passwords on multiple FusionNet/Pump Board combinations are used to separate different segments of the FusionNet network when more than 8 dispensers are used and multiple FusionNet/Pump Board combinations are needed.

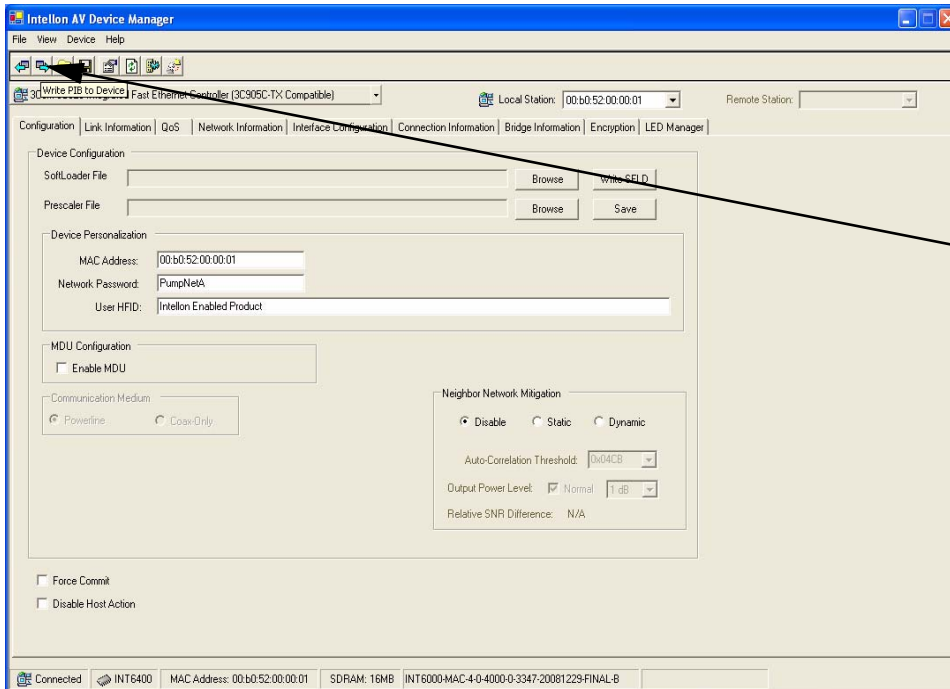
NOTE: FusionNet supports up to 8 dispensers. If there are more than 8 dispensers at a site you will need additional FusionNet/Pump Board segments.



Change the password to match all the devices on the segment

Figure 9 Intellon AV Device Manager Window - Change Password

8. On the toolbar click on **Write PIB to Device** (the next icon to the right of **Read PIB from device**)



Write PIB to Device button

Figure 10 Intellon AV Device Manager Window - Write PIB to Device

- ___ 9. A window will display showing a warning message about the password length, click on **Yes**.
- ___ 10. Another window will display the message "Workspace NMK differs from device", click on **Yes**.
- ___ 11. "Commit/Start Successful" should then be displayed in the status bar.
- ___ 12. Repeat from step 2 above for each of the FusionNet pump boards.
- ___ 13. If multiple FusionNet/Pump Board combinations are used, label the hardware with either "Board A", "Board B", "Box A" or "Box B" (on the boxes - place a label on the front and back).

Use the following Avery DesignPro Lite (free software) template:

\\edi111s1007\NWE_LogisticsAndSupport\UK\Support\Software - Released\FusionNet (Intellon) - Configuration Utility\FusionNet Labels.zdl

NOTE: Test that the passwords have been set up correctly - A boards should not successfully communicate with B boxes and vice versa. Also test that A boards communicates with A boxes and the same for B hardware.

NOTE: If you click on "Read PIB from device" again the password will be blank - this is a bug in the Intellon Utility and should be ignored.

INSTALLATION/OPERATION

Wayne FusionNet

Installation

Written by Tom Sigmon

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**Dresser Wayne, Dresser, Inc., is located at 3814 Jarrett Way, Austin TX 78728.
Wayne's general telephone number is (512)-388-8311.**

NOTE: "This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense."

