Introduction

This publication describes the installation procedure for the following:

- 4100-3101 IDNet Card – 250 Devices (742-476)

- 4100-3104 IDNet Card – 127 Devices (742-817)

- 4100-3105 IDNet Card – 64 Devices (742-818)

- 4100-3106 IDNet Card w/Quick Connect capability – 250 Devices (742-954)

- 4100-9811 IDNet Card – 250 Devices (Aftermarket)

- 4100-9835 IDNet Card – 127 Devices (Aftermarket)

- 4100-9836 IDNet Card – 64 Devices (Aftermarket)

This product is compatible with 4100U and 4100ES Fire Alarm Control Panels (FACP).

IMPORTANT: Verify FACP System Programmer, Executive, and Slave Software compatibility when installing, or replacing system components. Refer to the Technical Support Information and Downloads website for compatibility information..

Inspecting Contents of Shipment

Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify Simplex.

In this Publication

This publication discusses the following topics:

Cautions, Warnings, and Regulatory Information

Cautions and Warnings

READ AND SAVE THESE INSTRUCTIONS- Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depend upon proper installation.

DO NOT INSTALL ANY SIMPLEX® PRODUCT THAT APPEARS DAMAGED- Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify an authorized Simplex product supplier.

ELECTRICAL HAZARD - Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or authorized agent of your local Simplex product supplier.

STATIC HAZARD - Static electricity can damage components. Handle as follows:

- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

FCC RULES AND REGULATIONS – PART 15 - 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.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES To ensure proper system operation, this product must be tested in accordance with NFPA 72® after any programming operation or change in site-specific software. Reacceptance 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.

NFPA 72® is a registered trademark of the National Fire Protection Association.

Introduction to the IDNet Card

Overview

The 4100-series IDNet Card allows the system CPU to communicate with up to 250 IDNet peripherals, such as smoke detectors and pull stations.

The IDNet card is a flat, 4" by 5" option card that plugs into the power distribution interface (hereafter referred to as PDI).

Figure 1 depicts the IDNet card.
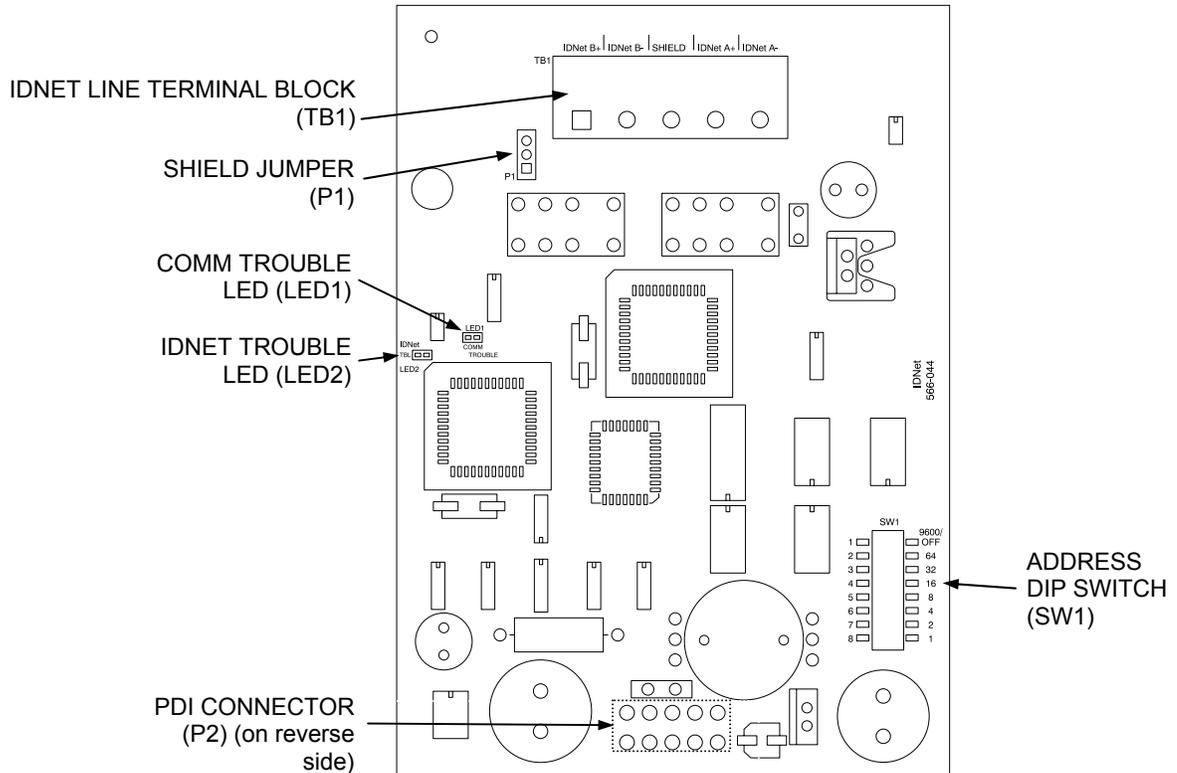
Figure 1. The IDNet Card

LEDs

The IDNet card has the following LEDs:

LED1. Normally off. Turns on steady if the IDNet card is not communicating with the 4100 CPU.

LED2. Normally off. Illuminates to indicate a problem with the IDNet lines.

- Steady on indicates channel failure.

- One repetitive blink indicates a line short.

- Two repetitive blinks indicate a Class A failure or an open line.

3

**Requirements
and Limitations**

Refer to Table 1 for general system specifications.

Table 1. System Specifications

Electrical Specifications	
Voltage	24 VDC from FACP
Comm/Power Voltage to IDNet Slaves	30 VDC (nominal) or 36 VDC @ 350 mA *(See note)*
Comm Wiring Distance	40 Ohms line resistance 0.60 µF capacitance (line to line and shield to line) 10,000 feet
Environmental Specifications	
Operating Temperature	32° to 120° F (0° to 49° C)
Humidity	Up to 93% relative humidity at 94° F (38° C)

Note: Voltage output to IDNet slaves is normally 30 VDC. Output is increased to 36 VDC when it is necessary to activate large numbers of output devices on IDNet peripherals, such as piezo sounders. The system CPU will set the output to 36 VDC when LEDs, piezos, or other outputs are activated, usually in an alarm state.

• Up to 250 IDNet devices are supported by one IDNet channel.

IMPORTANT: You must use the 4100-3106 IDNet card when installing Quick Connect devices.

• The IDNet card keeps track of which LEDs should be on at all times, and displays up to 20 at any given time.

• Up to 43 coded piezo sounders are supported by one IDNet channel.

Step 1: Installing the IDNet Card into the PDI

Overview   The 4100-series IDNet card is designed to be mounted on the PDI in an FACP expansion cabinet. The card can be mounted on any of the PDI connectors.

Use connector P2, labeled on the back side of the IDNet card, to connect to any of the eight PDI connectors as shown in Figure 2, below.
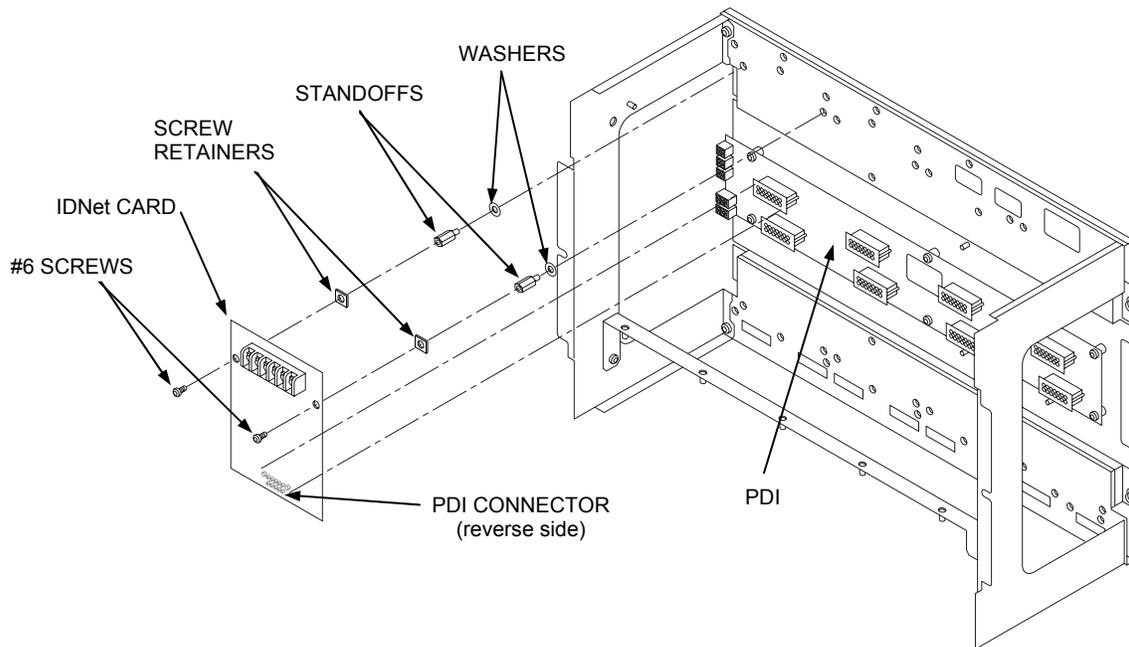
Figure 2. Mounting onto the Power Distribution Interface

Step 2. Configuring the Card

Overview

Configuring the card consists of selecting the shield tie point, and setting the device address. This section covers both topics.

Setting the Shield Tie Point

If a shield is used, use jumper port (P1) to select where the shield will be tied.

- Positions 1 and 2 connect the shield to 0 V.

- Positions 2 and 3 connect the shield to Earth.

Setting the Address

The device address is set via DIP switch SW1, which is a bank of eight switches. From left to right (see Figure 3, below) these switches are designated as SW1-1 through SW1-8. The function of these switches is as follows:

- **SW1-1**. This switch sets the baud rate for the internal 4100 communications line running between the card and the 4100 CPU. Set this switch to ON.

- **SW1-2 through SW1-8**. These switches set the card's address within the 4100 FACP. Refer to Table 2 for a complete list of the switch settings for all of the possible card addresses.

Note: You must set these switches to the value assigned to the card by the Panel Programmer.

Dip Switches SW1-2 through
SW1-8 set the Card Address.
Figure shows an Address of 3.

4100 Comm. Baud Rate.
Switch (SW1-1)
Must Be Set to ON

ON

OFF

1 2 3 4 5 6 7 8
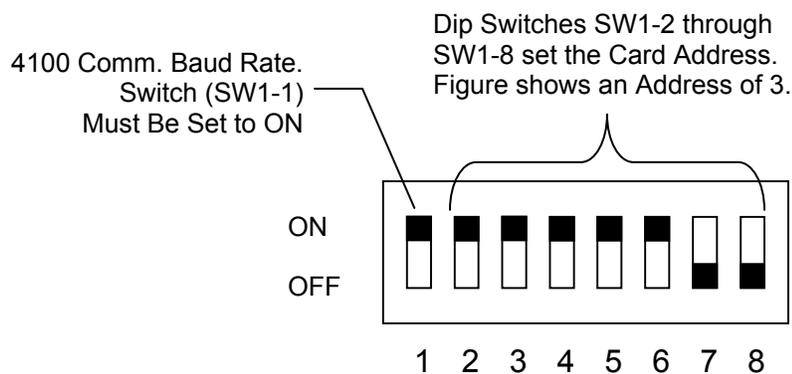
Figure 3. DIP Switch SW1

Step 2. Configuring the Card, *Continued*

Setting the Address,

Table 2. 4100-3101 Card Addresses

Address	SW 1-2	SW 1-3	SW 1-4	SW 1-5	SW 1-6	SW 1-7	SW 1-8
1	ON	ON ON		ON	ON ON		OFF
2	ON	ON	ON	ON	ON	OFF	ON
3	ON	ON ON		ON	ON	OFF	OFF
4	ON	ON	ON	ON	OFF	ON	ON
5	ON	ON	ON	ON	OFF ON	OFF	
6	ON	ON	ON	ON	OFF	OFF	ON
7	ON	ON ON		ON	OFF	OFF	OFF
8	ON	ON	ON	OFF	ON	ON	ON
9	ON	ON ON		OFF	ON	ON	OFF
10	ON	ON	ON	OFF	ON	OFF	ON
11	ON	ON ON		OFF	ON	OFF	OFF
12	ON	ON	ON	OFF	OFF	ON	ON
13	ON	ON ON		OFF	OFF	ON	OFF
14	ON	ON	ON	OFF	OFF	OFF	ON
15	ON	ON	ON	OFF	OFF OFF	OFF	
16	ON	ON	OFF	ON	ON	ON	ON
17	ON	ON	OFF	ON	ON ON		OFF
18	ON	ON	OFF	ON	ON	OFF	ON
19	ON	ON	OFF	ON	ON	OFF	OFF
20	ON	ON	OFF	ON	OFF	ON	ON
21	ON	ON	OFF	ON	OFF ON	OFF	
22	ON	ON	OFF	ON	OFF	OFF	ON
23	ON	ON	OFF	ON	OFF	OFF	OFF
24	ON	ON	OFF	OFF	ON	ON	ON
25	ON	ON	OFF	OFF	ON	ON	OFF
26	ON	ON	OFF	OFF	ON	OFF	ON
27	ON	ON	OFF	OFF	ON OFF		OFF
28	ON	ON	OFF	OFF	OFF	ON	ON
29	ON	ON	OFF	OFF	OFF	ON OFF	
30	ON	ON	OFF	OFF	OFF	OFF	ON
31	ON	ON	OFF	OFF	OFF OFF	OFF	
32	ON	OFF	ON	ON	ON	ON	ON
33	ON	OFF ON		ON	ON	ON	OFF
34	ON	OFF	ON	ON	ON	OFF	ON
35	ON	OFF ON		ON	ON	OFF	OFF
36	ON	OFF	ON	ON	OFF	ON	ON
37	ON	OFF ON		ON	OFF ON	OFF	
38	ON	OFF	ON	ON	OFF	OFF	ON
39	ON	OFF ON		ON	OFF	OFF	OFF
40	ON	OFF	ON	OFF	ON	ON	ON
41	ON	OFF ON		OFF	ON	ON	OFF
42	ON	OFF	ON	OFF	ON	OFF	ON
43	ON	OFF ON		OFF	ON OFF		OFF
44	ON	OFF	ON	OFF	OFF	ON	ON
45	ON	OFF ON		OFF	OFF	ON OFF	
46	ON	OFF	ON	OFF	OFF	OFF	ON
47	ON	OFF	ON	OFF	OFF OFF	OFF	
48	ON	OFF	OFF	ON	ON	ON	ON
49	ON	OFF	OFF	ON	ON ON		OFF
50	ON	OFF	OFF	ON	ON	OFF	ON
51	ON	OFF	OFF	ON	ON	OFF	OFF
52	ON	OFF	OFF	ON	OFF	ON	ON
53	ON	OFF	OFF	ON	OFF ON	OFF	
54	ON	OFF	OFF	ON	OFF	OFF	ON
55	ON	OFF	OFF	ON	OFF	OFF OFF	
56	ON	OFF	OFF	OFF	ON	ON	ON
57	ON	OFF	OFF	OFF	ON	ON	OFF
58	ON	OFF	OFF	OFF	ON	OFF	ON
59	ON	OFF	OFF	OFF	ON OFF		OFF
60	ON	OFF	OFF	OFF	OFF	ON	ON
61	ON	OFF	OFF	OFF	OFF	ON OFF	
62	ON	OFF	OFF	OFF	OFF	OFF	ON
63	ON	OFF	OFF OFF		OFF	OFF OFF	
64	OFF	ON	ON	ON	ON	ON	ON
65	OFF	ON	ON ON		ON	ON	OFF
66	OFF	ON	ON	ON	ON	OFF	ON
67	OFF	ON	ON ON		ON	OFF	OFF
68	OFF	ON	ON	ON	OFF	ON	ON
69	OFF	ON	ON	ON	OFF	ON OFF	
70	OFF	ON	ON	ON	OFF	OFF	ON
71	OFF	ON	ON ON		OFF	OFF	OFF
72	OFF	ON	ON	OFF	ON	ON	ON
73	OFF	ON	ON	OFF	ON	ON	OFF
74	OFF	ON	ON	OFF	ON	OFF	ON
75	OFF	ON	ON	OFF	ON	OFF	OFF
76	OFF	ON	ON	OFF	OFF	ON	ON
77	OFF	ON	ON	OFF	OFF	ON OFF	
78	OFF	ON	ON	OFF	OFF	OFF	ON
79	OFF	ON	ON	OFF	OFF	OFF	OFF
80	OFF	ON	OFF	ON	ON	ON	ON
81	OFF	ON OFF	ON		ON	ON	OFF
82	OFF	ON	OFF	ON	ON	OFF	ON
83	OFF	ON OFF	ON		ON	OFF	OFF
84	OFF	ON	OFF	ON	OFF	ON	ON
85	OFF	ON OFF	ON		OFF	ON OFF	
86	OFF	ON	OFF	ON	OFF	OFF	ON
87	OFF	ON OFF	ON		OFF	OFF	OFF
88	OFF	ON	OFF	OFF	ON	ON	ON
89	OFF	ON OFF		OFF	ON	ON	OFF
90	OFF	ON	OFF	OFF	ON	OFF	ON
91	OFF	ON OFF		OFF	ON	OFF	OFF
92	OFF	ON	OFF	OFF	OFF	ON	ON
93	OFF	ON OFF		OFF	OFF	ON OFF	
94	OFF	ON	OFF	OFF	OFF	OFF	ON
95	OFF	ON	OFF	OFF	OFF	OFF OFF	
96	OFF	OFF	ON	ON	ON	ON	ON
97	OFF	OFF	ON	ON	ON	ON	OFF
98	OFF	OFF	ON	ON	ON	OFF	ON
99	OFF	OFF	ON	ON	ON	OFF	OFF
100	OFF	OFF	ON	ON	OFF	ON	ON
101	OFF	OFF	ON	ON	OFF	ON OFF	
102	OFF	OFF	ON	ON	OFF	OFF	ON
103	OFF	OFF	ON	ON	OFF	OFF OFF	
104	OFF	OFF	ON	OFF	ON	ON	ON
105	OFF	OFF	ON OFF		ON	ON	OFF
106	OFF	OFF	ON	OFF	ON	OFF	ON
107	OFF	OFF	ON OFF		ON	OFF	OFF
108	OFF	OFF	ON	OFF	OFF	ON	ON
109	OFF	OFF	ON OFF		OFF	ON OFF	
110	OFF	OFF	ON	OFF	OFF	OFF	ON
111	OFF	OFF	ON	OFF	OFF	OFF OFF	
112	OFF	OFF	OFF	ON	ON	ON	ON
113	OFF	OFF	OFF OFF		ON	ON	OFF
114	OFF	OFF	OFF	ON	ON	OFF	ON
115	OFF	OFF	OFF OFF		ON	OFF	OFF
116	OFF	OFF	OFF	ON	OFF	ON	ON
117	OFF	OFF	OFF	ON	OFF	ON OFF	
118	OFF	OFF	OFF	ON	OFF	OFF	ON
119	OFF	OFF	OFF OFF		ON	OFF	OFF OFF	

Step 3. Wiring to IDNet Peripherals

Overview

Up to 250 IDNet slave devices, such as smoke detectors and pull stations, can be connected to the IDNet card. Class A or Class B wiring can be used to connect the IDNet card to peripherals.

IMPORTANT: You must use the 4100-3106 IDNet card when installing Quick Connect devices.

Class A wiring allows IDNet appliances to communicate with the IDNet card even in the event of an open circuit somewhere in the loop. Class A wiring requires that two wires are routed from the IDNet card to each IDNet appliance, and then back again to the IDNet card.

Class B wiring allows "T" tapping, and therefore requires less wiring distance per installation than Class A. IDNet wiring does not require end-of-line resistors, because each IDNet device communicates directly to the IDNet card.

Guidelines

Review these guidelines before wiring the IDNet card.

- Refer to 4100 Field Wiring Specification Document 900-242 for further information.

- All wiring is shielded, 18 AWG (minimum) to 12 AWG (maximum). Refer to Table 3, below, for specifications on each type of wire.

Table 3. IDNet Card Wiring Lengths

Wire Gauge	Maximum Distance
18 AWG	7.14 Ohms/10,000 ft
16 AWG	4.59 Ohms/10,000 ft
14 AWG	2.82 Ohms/10,000 ft
12 AWG	1.77 Ohms/10,000 ft

- All wiring is supervised and power-limited.

- IDNet communications power is 36.25 V (maximum) at 0.5 A, 3333 BPS.

- All wiring that leaves the building requires overvoltage protection. Install module 2081-9044 wherever wire enters or exits the building. A maximum of four 2081-9044 Modules may be connected to one channel. The maximum line distance with two suppressors is 2500 feet. With an additional two suppressors, the maximum line distance is 1500 feet.

- For Style 4 operation:
  - The maximum distance to any device is 10,000 feet or 40 Ohms.
  - "T" taps are allowed.
  - The total distance for one IDNet line is 10,000 feet.
  - Maximum allowed line-to-line capacitance ("+" to "-" terminals) is 0.60 µF. For applications with shielded wire, be sure that the total capacitance from line to line plus the shield to either line is no more than 0.60 µF.

- For Style 6 operation, the maximum loop distance is 2500 feet. "T" taps are not allowed.

**Figure 4.
The Ferrite Bead**

- Loop wires once through the supplied ferrite bead(s) as shown in Figure 3.

Step 3. Wiring to IDNet Peripherals, *Continued*

Class A Wiring

To connect the IDNet card to devices using Class A wiring, read the following instructions and refer to Figure 5, below.

1. Route wire between 12 and 18 AWG from the IDNetB+, IDNetB-, and SHIELD outputs on TB1 of the IDNet card to the appropriate inputs on a peripheral IDNet appliance.

   Note: Use ferrite beads as shown.

2. Route wire from the first IDNet appliance to the next one. Repeat for each appliance.

3. Route wire from the last IDNet appliance to the IDNetA+ and IDNetA- inputs on TB1 of the IDNet card.
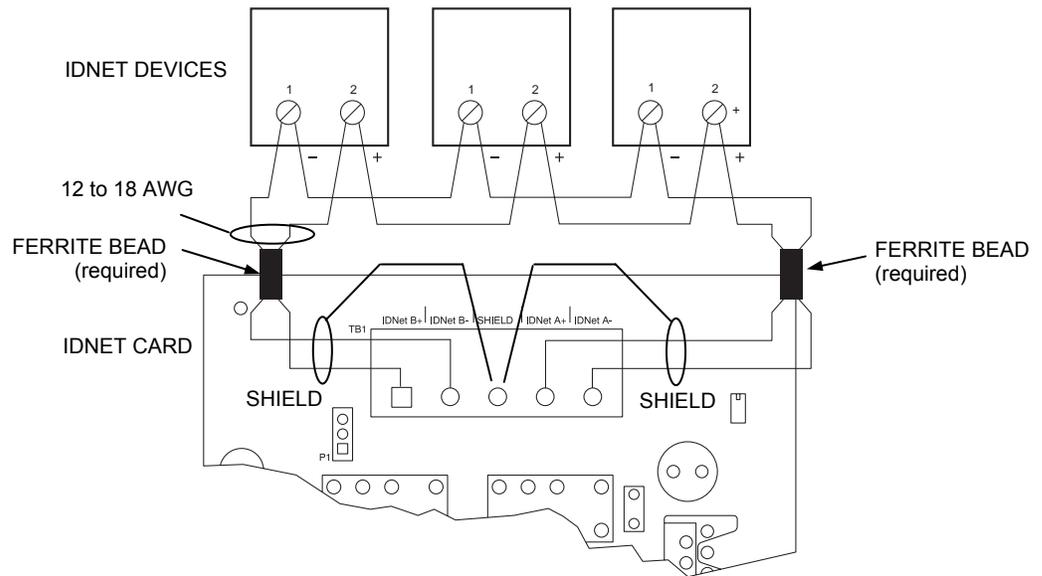
Figure 5. Class A Wiring

Step 3. Wiring to IDNet Peripherals, *Continued*

Class B Wiring

To connect the IDNet card to appliances using Class B wiring, read the following instructions.

1. On TB1, jumper IDNetB+ to IDNet A+, and jumper IDNetB- to IDNetA-. If the jumper is absent, a Class A Trouble will be indicated on LED 2.

   Note: Use ferrite bead as shown.

2. Route wire between 12 and 18 AWG from the IDNetA+, IDNetA-, and SHIELD outputs on TB1 of the IDNet card to a junction box. Begin "T" tapping at the junction box. The maximum wiring distance for any IDNet circuit is 10,000 feet or 0.60 µF.

The illustration below shows Class B wiring.
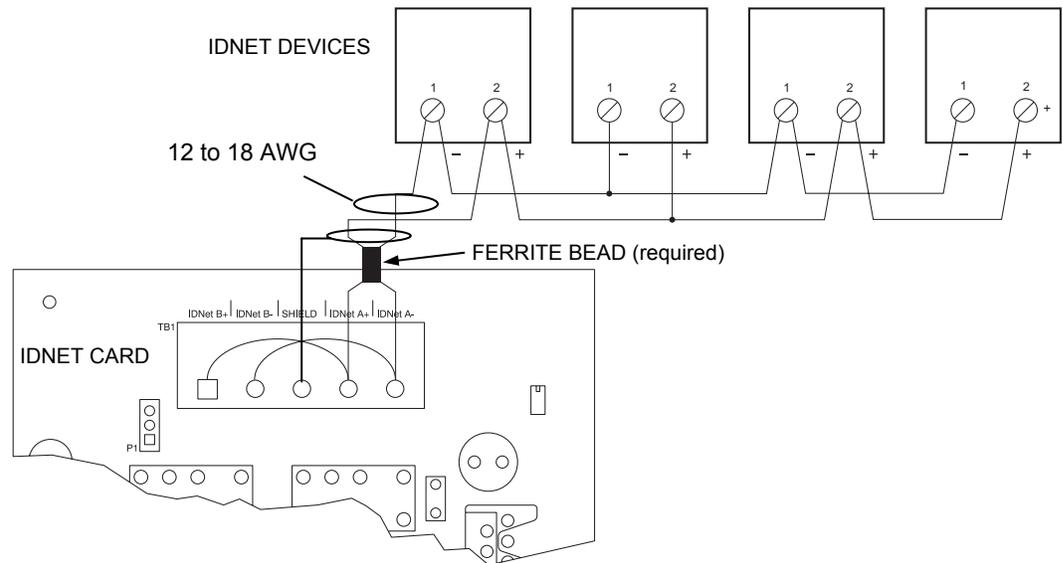
Figure 6. Class B Wiring

Note: Maintain correct polarity on terminal connections. Do not loop wires under terminals.

Troubleshooting

Overview

This section describes the messages that may appear on the 4100 display when using the IDNet card. Trouble messages appear on the left as titles, and possible causes are listed to the right in the text.

IDNet Power Monitor Trouble

There is no output voltage from the IDNet power supply. Replace the IDNet card.

Extra Device

Appears if one or more extra devices (i.e., devices that have not been configured for the IDNet channel) are found on the system, or if a device is at an incorrect address. Only one message appears, regardless of the number of extra devices found. Viewing the trouble log will reveal the extra device address.

Class A Trouble

There is an open on the IDNet channel. After fixing the wiring fault, a hardware reset is required to reset the trouble.

Earth Fault Search

Appears while the IDNet card is searching for earth faults on the IDNet line. When this message is displayed, the IDNet card cannot show any alarms or other statuses.

Short Circuit

Appears when a short is detected on the IDNet channel. This status clears automatically when the short circuit is removed.

Channel Fail

Appears when devices have been configured, but none of the devices are communicating on the channel. This message does not appear if there are no configured devices on the IDNet channel.

No Answer

Appears when a device is missing.

Bad Answer

Appears when there is a faulty device or a noisy communications channel.

Output Abnormal

Occurs during any of these conditions:

- 24 V is not present on TrueAlarm devices.
- TrueAlarm sensor bases with relay driver outputs are not properly supervised.
- Isolator devices are in isolation mode.