IDNet+ Module Installation Instructions

Introduction

This product is compatible with both 4100U and 4100ES Fire Alarm Control Panels.

This publication describes the installation procedure for the 4100-3107 IDNet+ module. The IDNet+ module is specially designed for retrofit installations when existing wiring is to be re-used. Some key features include:

- Built-in Quad Isolator (uses IDNet addresses 247 to 250)
- Supports 246 external addressable IDNet devices
- Improved noise immunity eliminates the need for shielded and twisted wire in most applications
- Duplicate Device Detection and Weak Answer Detection (diagnostic feature)
- Channel configuration diagnostic tool
- **NOTE:** For use with 4100U Software Revision 11.10 or higher

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.

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.

EYE SAFETY HAZARD - Under certain fiber optic application conditions, the optical output of this device may exceed eye safety limits. Do not use magnification (such as a microscope or other focusing equipment) when viewing the output of this device.

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.

Introduction to the IDNet+ Module

Overview

The 4100-3107 IDNet+ module (shown below) provides a single IDNet channel with four isolated output circuits allowing the System CPU to communicate with up to 246 IDNet peripherals, such as smoke detectors and pull stations. Each IDNet Circuit (A, B, C, and D) is individually isolated by the IDNet+ module in case of a short circuit. If a short circuit occurs on one or more output circuits, the short circuits are isolated and do not affect IDNet channel communications on other circuits.

Each circuit has terminations for Class A or Class B wiring, selected by the configuration of two jumpers. Class B wiring requires the configuration jumpers set to Position 1-2 (see Figure 1). If required, the IDNet+ module is capable of supporting both Class A and B Circuits. When configured for Class B operation, the B+, B- and A+, A- Terminals are "T-tapped" on the IDNet channel and may be used for connecting to IDNet devices on separate runs such as the existing zone wiring in a retrofit installation (see "Class B Wiring" section later in this publication).

The module is a flat, 8" by 5-9/16" (204 mm x 144 mm) option module that plugs into the Power Distribution Interface (PDI).

Note: The IDNet+ module built-in Quad Isolator uses IDNet Point Addresses 247 to 250.

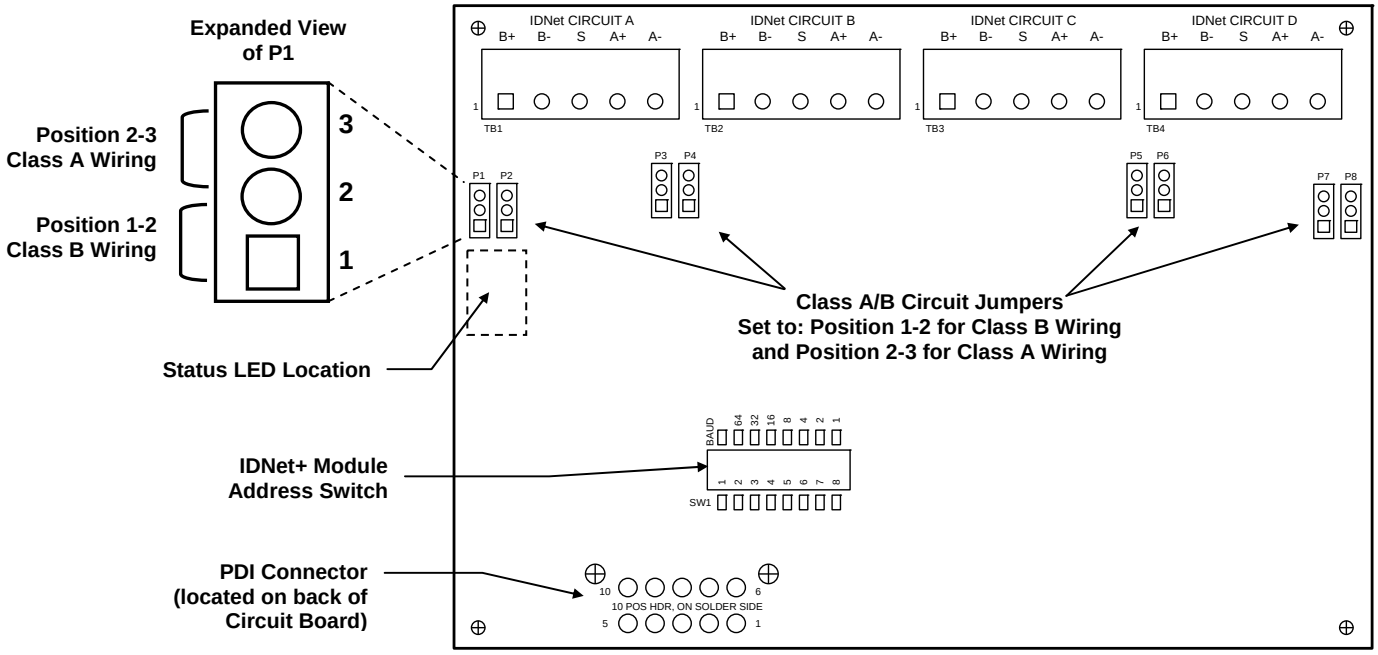

Figure 1. The 4100-3107 IDNet+ Module

IDNet+ Module LEDs

The IDNet+ module has the following status indicating LEDs:

Communications Trouble Indicator:

LED 2: Normally OFF. Turns ON steady if the IDNet+ module is not communicating with the CPU.

IDNet Trouble Indicators:

LED 1: Normally OFF. ON steady indicates a channel failure (no devices talking on any of the four circuits).

LED 3: ON steady indicates a Circuit A Fault (Open or Short).

LED 4: ON steady indicates a Circuit B Fault (Open or Short).

LED 5: ON steady indicates a Circuit C Fault (Open or Short).

LED 6: ON steady indicates a Circuit D Fault (Open or Short).

Requirements and Limitations

Table 1. General System Specifications

Electrical Specifications	
Module Input Voltage	24 VDC from FACP
Channel Voltage to IDNet Remote Devices	30 VDC (normal); 36 VDC maximum @ 350 mA During alarm or when activating large quantity of device outputs, channel output voltage is increased to 36 VDC Data rate is 3333 bps Output circuits are supervised and power-limited
Wiring Sizes	18 AWG (0.82 mm^2) minimum to 12 AWG (3.31 mm^2) maximum
Wiring Parameters	Refer to details on page 8
Remote Device LED Control	The IDNet+ module tracks which remote device LEDs (if equipped) should be on and can activate up to 20 at one time
Coded Piezo Sounder Support	Up to 43 coded piezo (tone-alert) sounders are supported by one IDNet channel
Environmental Specifications	
Operating Temperature	32° to 120° F (0° to 49° C)
Humidity	Up to 93% relative humidity at 94° F (38° C)

Step 1: Installing the IDNet+ Module into the PDI

Overview

The 4100-3107 IDNet+ module mounts on a PDI in an Expansion bay. It can be mounted on any of the PDI connectors with an adjacent empty slot.

Note: The IDNet+ module consumes two slots, side by side. Only **two** IDNet+ modules can be mounted in a single bay and only **two** IDNet+ modules are allowed on the same module power tap. *Due to a symmetrical PDI connector design, the module can be mounted either with terminals up or down to allow proper location with adjacent modules.*

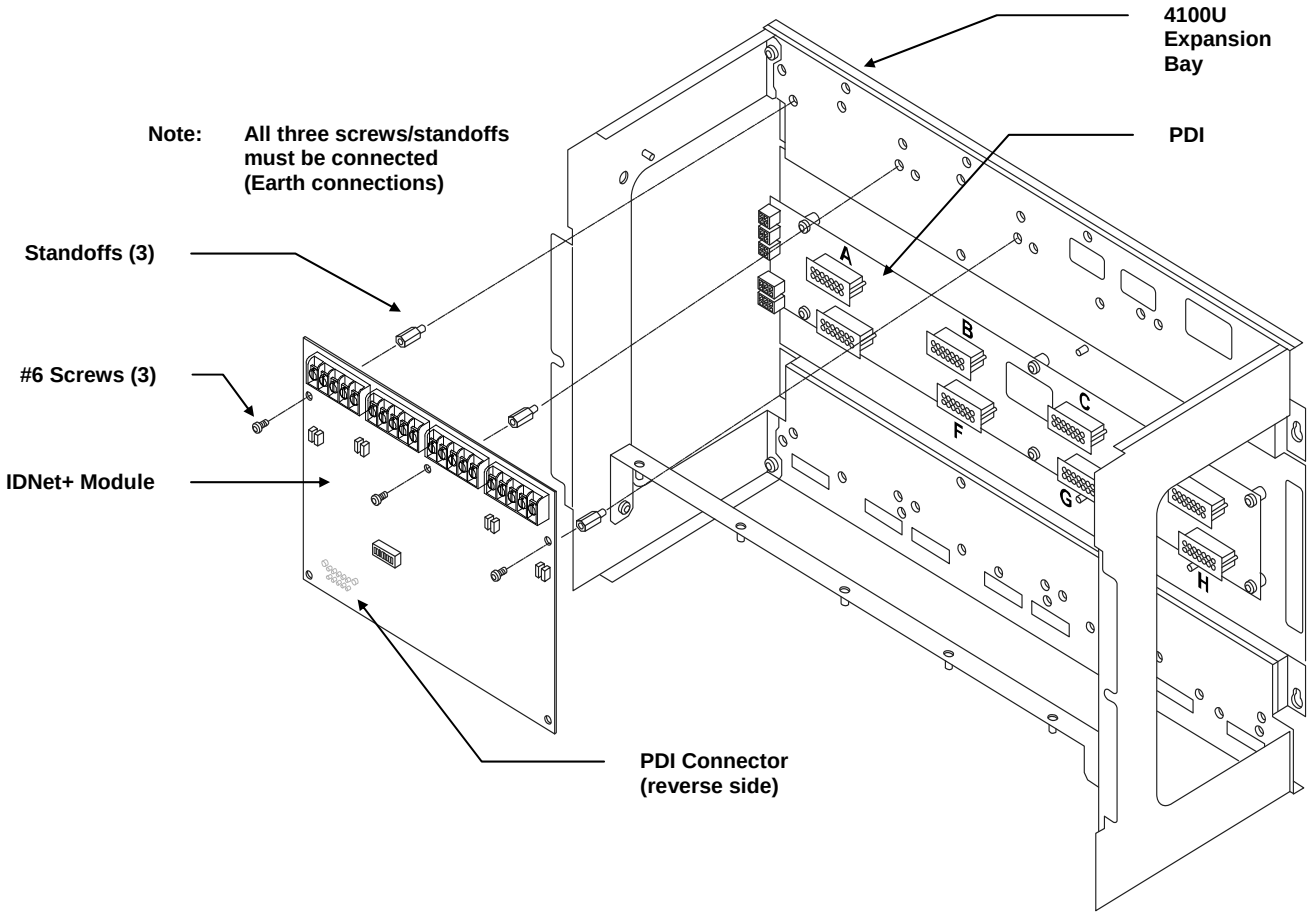

Figure 2. Mounting onto the Power Distribution Interface (PDI) (4100U Shown)

The PDI connector (located on the reverse side of the IDNet+ module) must be mated with one of the PDI receptacles. The IDNet+ module mounts in either the top or bottom row of the PDI. When mounted in the top row, the PDI connector mates with connectors “A,” “B,” or “C” (see figure above). When mounted in the bottom row of the PDI, the IDNet+ module must connect with receptacle “F,” “G,” or “H.”

Step 2: Configuring the Module

Setting the Address

The module address is set via DIP Switch SW1, which is a bank of eight switches. From left to right (see the figure 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 IDNet+ module and the 4100 CPU. Set this switch to ON.
- **SW1-2 through SW1-8:** These switches set the IDNet+ module address within the 4100 FACP. Refer to Table 2 for a complete list of switch settings for all of the possible module addresses.

Note: Set these switches to the value assigned to the module by the Programmer.

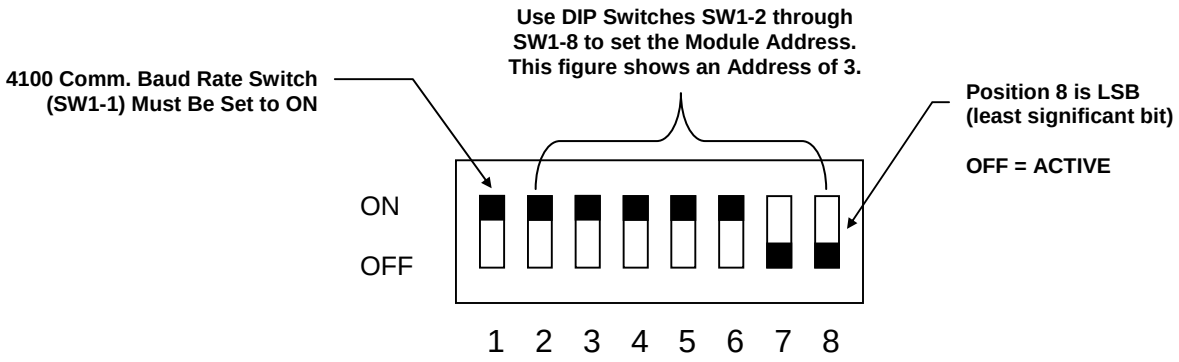

Figure 3. DIP Switch SW1

Setting Class A or Class B Operation

Each of the four circuits must be set for Class A or Class B operation. There are two jumpers per circuit. Setting the jumpers to Position 1-2, selects Class B operation. Removing the jumpers, or setting them to Position 2-3, selects Class A operation.

When set for Class B operation, the terminals for each circuit are jumpered together. Both sets of terminals are available for Class B field wiring, providing extra room for cases where multiple circuits are replaced by a single IDNet+ module.

Note: Refer to Figure 1 for jumper locations.

Step 2: Configuring the Module, *Continued*

IDNet+ Module Addresses

Refer to the table below to configure the IDNet+ module DIP switches with the proper address.

Table 2. 4100-3107 Module Addresses

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

Step 3: Wiring to IDNet Peripherals

Overview

Up to 246 IDNet remote devices can be connected to the IDNet+ module with either Class A or Class B wiring. Typical devices include smoke and heat sensors and a variety of addressable input and/or output modules.

IMPORTANT: The 4100-3107 IDNet+ module is not compatible with QuickConnect sensors. Refer to datasheet S4090-0011 for compatible IDNet devices.

Class A wiring provides an alternate communication path that provides communications to all devices when a single open circuit fault occurs. Class A wiring requires two wires to be routed from the IDNet+ Primary Terminals (B+, B-) to each IDNet device, and then back to the IDNet+ Secondary Terminals (A+, A-). **Wiring is in/out, "T" tapping is not allowed.**

Class B wiring allows "T" tapping, and typically results in less wiring distance per installation compared to Class A. IDNet wiring is inherently supervised due to individual device level communications, and end-of-line resistors are not required.

Wiring Parameters

Table 3 (below) identifies the IDNet+ module wiring parameters that must be considered when applying this module. For additional wiring information, refer to document 900-242, Simplex Addressable Fire Alarm Panels Field Wiring Specifications.

Table 3. IDNet+ Module Wiring Parameters

IDNet+ Wiring Capacitance Parameters				
Parameter			**Value**	
Maximum Supported Channel Capacitance; **Total of all four Isolated Outputs**			The sum of line-to-line capacitance, plus the capacitance of either line-to-shield (if shield is present) = 0.6 µF (600 nF)	
Capacitance between IDNet+ SLCs wiring (between wires of the same polarity; plus to plus, minus to minus)			1 µF maximum (this is for multiple IDNet+ channels)	
IDNet+ Wiring Distance Limits (see notes below)				
	Class B Wiring, Total Channel Wiring Parameters, Including T-Taps		**Class A Wiring, Total Channel Wiring Parameters**	
Channel Loading	**Up to 125 devices**	**126 to 250 devices**	**Up to 125 devices**	**126 to 250 devices**
Total Loop Resistance	50 Ω maximum	35 Ω maximum	50 Ω maximum	35 Ω maximum
18 AWG (0.82 mm^2)	12,500 ft (3.8 km)		4000 ft (1219 m)	2500 ft (762 m)
16 AWG (1.31 mm^2)	12,500 ft (3.8 km)		5000 ft (1524 m)	2500 ft (762 m)
14 AWG (2.08 mm^2)	12,500 ft (3.8 km)		5000 ft (1524 m)	2500 ft (762 m)
12 AWG (3.31 mm^2)	12,500 ft (3.8 km)		5000 ft (1524 m)	2500 ft (762 m)

NOTES: Maximum wiring distance is determined by either reaching the maximum resistance, the maximum capacitance, or the stated maximum distance, whichever occurs first. Class A maximum distances are to the farthest device on the loop from either "B" or "A" terminals. For Class B wiring, the maximum distance to the farthest device is limited to the stated Class A wiring distances.

IDNet+ Wiring Considerations using 2081-9044 Overvoltage Protectors (2081-9044 is UL listed to Standard 1459, *Standard for Telephone Equipment)*	**NOTE: External wiring must be shielded (for lightning suppression) and 2081-9044 Overvoltage Protectors must be installed at building exit and entrance locations**
	Capacitance; each protector adds 0.006 µF across the connected line
	Resistance; each protector adds 3 Ω per line of series resistance; both IDNet lines are protected; 6 Ω per protector will be added to total loop resistance
	Maximum distance of a single protected wiring run is 3270 ft (1 km)
	Refer to document number 574-832, *2081-9044 Overvoltage Protector Installation Instructions,* for additional information.

Step 3: Wiring to IDNet Peripherals, *Continued*

Installing Ferrite Beads

For Class A or Class B wiring, install ferrite beads at the wiring exit point of the box (before the wires leave the box). Loop the wires through the bead as shown. The ferrite bead should be on both sides of the loop on a Class A circuit. If more than 4 ferrite beads are needed, order kit 4100-5129.

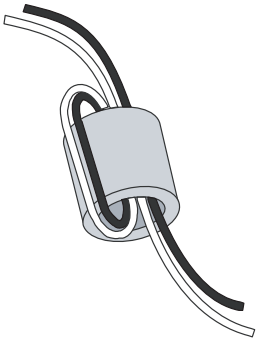

Figure 4. Ferrite Bead

Class A Wiring

To connect the IDNet+ module to devices using Class A wiring, read the following instructions and refer to the figure below:

1. Route wiring from the IDNet Circuit Primary Terminals (B+, B-), and SHIELD Terminals on TB1 of the IDNet+ module to the appropriate inputs on the first IDNet device. **NOTE:** Shielded wiring is optional, **SHIELD terminations are connected to Earth**.
2. Route wiring from the first IDNet device to the next as in/out as shown in the diagram below. Repeat for each device.
3. Route wiring from the last IDNet device to the IDNet Circuit Secondary Terminals (A+, A-) and SHIELD Terminals (if used) on TB1 of the IDNet+ module.
4. Ensure that circuit jumpers are configured for Class A operation.

Notes:

Set jumpers to Position 2-3, to select Style 6 (Class A) operation. (See expanded view of P1 in Figure 5.)

For this application, the Shield (if present) can be terminated at both ends for improved EMI susceptibility.

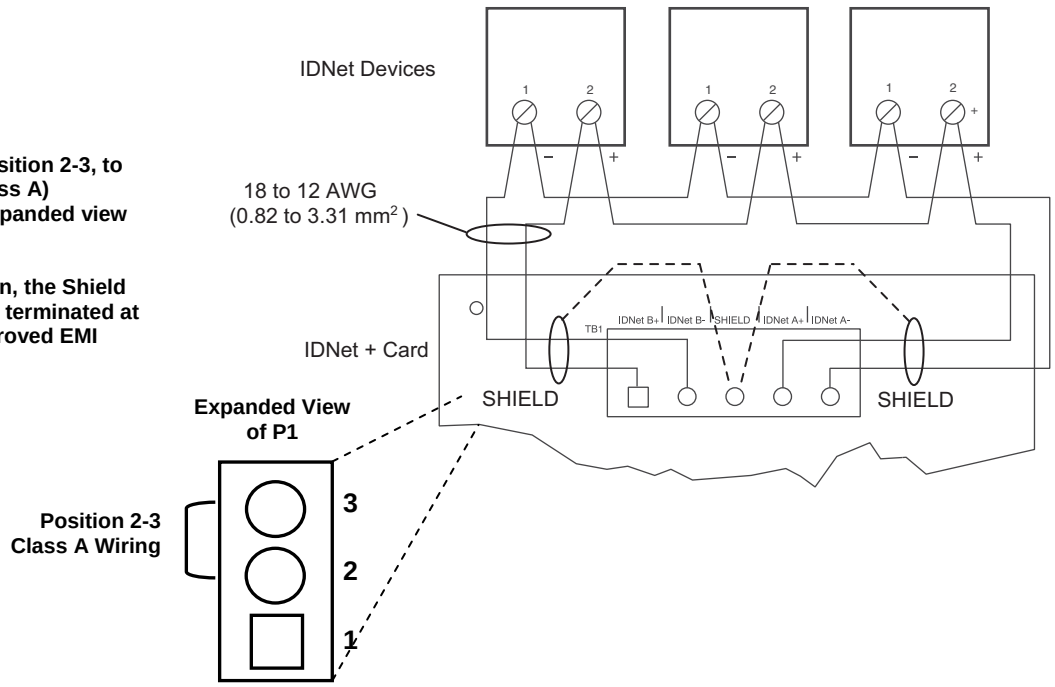

Figure 5. Class A Wiring (Shield Optional)

Step 3: Wiring to IDNet Peripherals, *Continued*

Class A Wiring Device Addressing Note

There are two considerations for addressing Class A wired IDNet devices connected to the IDNet+ module.

1. If no remote isolators or isolator bases are on the loops, device addressing can be assigned without concern for sequence.
2. **If remote isolators or isolator bases are on the loops**, the required addressing approach is to start from the "B" side of the A Loop output and assign each successive isolator a higher address than the isolator it proceeds. Follow this sequencing through to the "B" side of the B Loop, then the "B" side of the C Loop, then to the "B" side of the D Loop.

Class B Wiring

Class B wiring requires the configuration jumpers to be set to Position 1-2; two jumpers must be set for each circuit (refer to Figure 6 below for locations). Each of the four IDNet outputs provides short circuit isolation between each other. A short on one output is isolated from the others.

For Class B wiring only, both the B+, B- and A+, A- Terminals are available for parallel connections. A+ is connected to B+, and A- is connected to B- as shown in Figure 6. Additionally, two wires can be connected to each screw terminal. The result is that for Class B wiring only, four parallel output branch circuits can be connected at the IDNet+ module terminals.

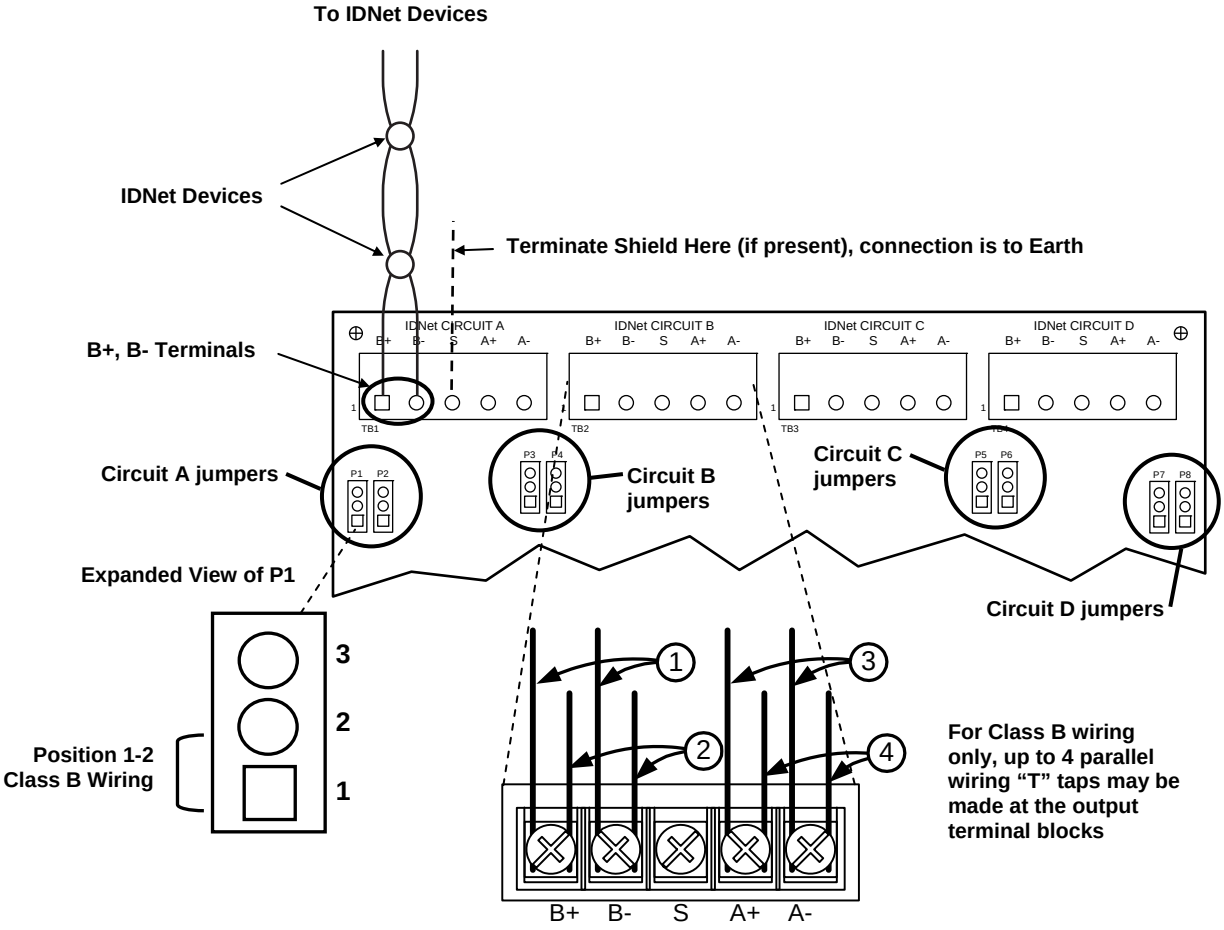

Figure 6. Class B Wiring

Step 3: Wiring to IDNet Peripherals, *Continued*

Class B Wiring Device Addressing Note

There are two considerations for addressing Class B wired IDNet devices connected to the IDNet+ module.

1. If no remote isolators or isolator bases are on the loops, device addressing can be assigned without concern for sequence.
2. **If remote isolators or isolator bases are on the loops**, the required addressing approach is to start at the A Loop output and assign each successive isolator a higher address than the isolator it proceeds. Follow this sequencing through to the B Loop, then to the C Loop, and then to the D Loop. Note: For Class B wiring only, the “A” output and “B” output per loop are connected together in parallel for wiring convenience.

Retrofitting an Addressable IDNet+ System onto Existing Wiring

Introduction

The IDNet+ module allows re-use of existing wiring when upgrading the fire alarm system in an existing building. IDNet devices are installed on the existing wiring and must replace **all** existing devices (detectors, pull stations, etc.). **It is very important to identify all existing devices, remove them, and replace them with IDNet devices.**

Incompatible Devices

Conventional initiating devices and non-IDNet addressable devices, are not compatible with IDNet+ operation. The presence of incompatible devices interferes with proper system operation and will very likely disable the IDNet+ System. Activation of a conventional pull station, smoke detector, or heat detector shunts out the IDNet wiring. Depending on the impedance of the shunt, the IDNet+ channel may not be able to operate. Furthermore, existing devices will not perform their intended function when wired to IDNet+ communications, they must be replaced by IDNet devices.

Note: Refer to datasheet S4090-0011 for compatible IDNet devices.

Suggested Method for Finding Existing Devices

Properly wired conventional detection circuit devices should have been connected as in/out wiring. “T-tapped” wiring should not have been used. Class B conventional circuits have an end-of-line-resistor (EOLR) at the end of the wiring circuit. The value of the EOLR is specified for each manufacturer's system, and should be identified in the documents for the existing system.

The suggested method for finding all existing devices requires use of an Ohmmeter. For a Class B circuit, remove the field wiring from the terminals at the Fire Alarm Control Panel. Use the Ohmmeter to measure the resistance between the two wires. The value that is measured should be close to the expected value of the EOLR. Some existing devices may affect the reading slightly, but should approximately measure the EOLR value.

Removal of Existing Devices

Follow the circuit wiring out to the first smoke or heat detector on the circuit. Remove the detector, and inspect the circuit wiring on the detector terminals. Conventional detectors provide IN/OUT wiring terminals, which open the circuit when a detector is removed from a base. The figure below shows typical detector wiring. With the detector removed from the base, measure from +OUT to -IN/OUT. The value measured should be the EOLR. Measure from +IN to -IN/OUT, which should be "open" (with the field wiring disconnected at the panel).

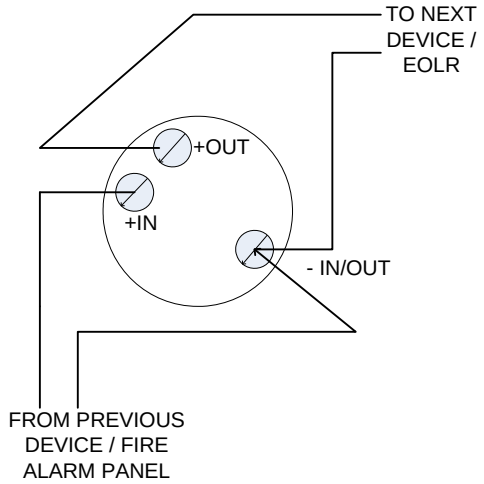

Figure 7. Typical Detector Wiring

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Removal of Existing Devices

When all of the detectors are removed from the associated bases, the EOLR is only measured at the last detector in the circuit. The EOLR may be located at the last detector, or at another device further down the circuit. The EOLR may alternately be located as a wall-plate mounted device.

All pull stations must also be identified, and removed from the existing wiring. Pull stations may be wired on the same circuit as smoke and heat detectors. In the example shown below, we want to know if Pull Station C is wired between Smokes A and B, or if it is wired after Smoke B.

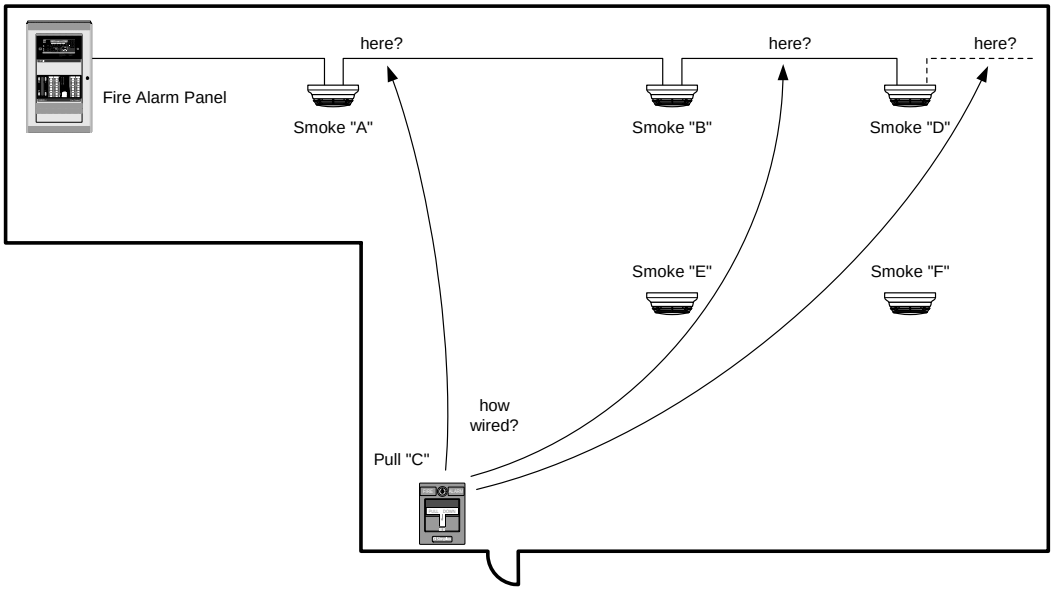

Figure 8. System Layout Example

If the handle is pulled at Pull Station C, the internal switch will short the circuit wiring. Remove the detector head and measure at “B” with an Ohmmeter. If the short is measured on the input terminals, Pull Station C is wired between Smoke A and Smoke B. If the short is measured on the output terminals of Smoke B, the pull station is wired after Smoke B.

Determining the routing of the existing wiring aids in identifying all existing devices. In the example above, the EOLR could be located at Pull Station C, or at any of the smoke detectors. The routing of the wiring determines the location of the EOLR (it must be at the end - the last device on the circuit).

For Class A wiring, the EOLR is located at the fire alarm panel, possibly as a component on a module or circuit board. To determine the routing for a Class A circuit, remove the wires from the terminals on both the start and return ends. Attach a suitable EOLR to the return wires, and trace from the start end.

Locations to check for pull stations include exit doors and along the pathway for planned emergency egress. Smoke detectors are usually located on the ceiling, but may also be located on vertical walls. Heat detectors may be located in attics, in machinery spaces, and in the area of cooking or heating appliances. Locate and replace all devices to ensure proper detection and emergency device coverage for the protected area. Duct detectors may be located on or in rooftop units, in machinery spaces, and above drop ceiling tiles or ceiling access panels.

Effects of Incompatible Devices

Method for Finding Existing Devices

Remember that the IDNet+ module must be used with compatible IDNet devices. Other devices do not operate as intended on IDNet wiring.

The IDNet+ module is designed to offer reliable performance on many types of existing wiring when upgrading an installed system to a System with IDNet+. It is expected that the installed devices are 100% removed from the wiring as part of the IDNet+ installation.

The following brief summaries describe symptoms that might indicate the presence of various incompatible devices on the IDNet+ channel. Typical problems would include IDNet channel fail, IDNet Short Trouble, IDNet bad answer, no answer, etc.

Conventional Smoke or Heat Detectors

When not in alarm, many conventional smoke detectors give no indication of their presence. When tested for alarm operation, the detector shunts out the IDNet channel and interferes with normal system operation. Symptoms include IDNet Short Circuit trouble, IDNet Channel Fail, and Device Comm errors (bad answer, no answer etc.).

Conventional Pull Stations

A pull station is most often a set of contacts “normally open” across the Initiating Device Circuit. The pull station has no effect until the lever is pulled to cause a manual alarm. At that point, the most likely symptom is IDNet Short Circuit Trouble.

MAPNET Addressable Devices

MAPNET-only devices are not compatible with the IDNet+ module (refer to datasheet S4090-0011
for more information). Typically, the presence of MAPNET devices causes unreliable channel operation. Device LEDs could be ON. Check the trouble log for IDNet Comm errors (Bad Answer, No Answer, Channel Failure etc.).

Note: Some devices are MAPNET and IDNet compatible. This section refers to MAPNET/MAPNET II compatible devices only.

Notification Appliances

Most notification appliances are reverse polarity type. If connected in alarm polarity, they draw extra current on the IDNet channel. They might possibly operate, which audibly or visibly indicates where the problem is. If the extra current is significant, the IDNet Short Trouble could be indicated. This would be an extreme case, with a heavy current draw. If only one device is present, or only a few low current devices, symptoms may include Comm errors on the IDNet channel. Device troubles might toggle in/out.

Other Branded Addressable Devices

Addressable devices from other manufacturers are not compatible with IDNet. Depending on the device, they may interfere with the IDNet communications and not operate properly. Devices that do not initiate alarms or operate properly, even when IDNet voltage is present on the terminals, must be removed from the IDNet channel.

Troubleshooting

Overview

Refer to the table below for a list of trouble messages that may appear on the 4100 display when using the IDNet+ module:

Table 4. Troubleshooting Information

Trouble Message	Possible Cause
IDNet Power Monitor Trouble	There is no output voltage from the IDNet power supply. Replace the IDNet+ module.
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 reveals the extra device address. Devices with LEDs will light their LED steady to indicate the trouble as long as no alarms are present in the system.
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+ module is searching for earth faults on the IDNet line. When this message is displayed, the IDNet+ module cannot show any alarms or other statuses.
Short Circuit	Appears when a short is detected on the IDNet channel. The circuit on which the short is present (A, B, C, or D) automatically isolates itself from the IDNet channel. A Hardware reset is required after the short condition is removed to clear the trouble.
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, damaged, improperly configured, or duplicate devices are present.
Bad Answer	Appears when there is a faulty device, a noisy communications channel, or duplicate devices are present.
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.

Note: Additional troubleshooting information about duplicate devices, weak answers and other problems may be obtained through panel diagnostics.

Service Port Diagnostics

Connecting to the Service Port

Diagnostic operations are available to authorized Service Representatives using the Service Port. Connect to the Service Port per the following settings:

Connection = COM1 Bits per Second = 19,200
Data Bits = 8 Parity = None
Stop Bits = 1 Flow Control = NONE

IDNet+ Module Diagnostics Summary

The following diagnostic operations are available using the Service Port.

Table 5. Service Port Diagnostics Summary

<table>
<tr><th>Diagnostic</th><th>Details</th></tr>
<tr><td>Duplicate Device Search
(also available at front panel)</td><td>Service Port Commands:
SYSDIAG DUP x ON [where x is the RUI module address to search]
SYSDIAG DUP x OFF [Stops duplicate device detection for module x]</td></tr>
<tr><td>Weak Answer Detection
(also available at front panel)

marginal devices will answer with “No Answer” or “Bad Answer”</td><td>Service Port Commands:
SYSDIAG WEAK x ON [where x is the RUI module address to check]
SYSDIAG WEAK x OFF [Stops weak answer detection for module x]</td></tr>
<tr><td>Device Detect
(only available at the Service Port)

use to locate duplicate addresses on loop or across loops, out of range addresses</td><td>Service Port Command to initiate Device Detect = SYSDIAG CFIG x [where x is the RUI address of the desired IDNet+ Module] (system will be dedicated to this operation)
When completed, Service Port Command to output report = TYPE IDNET CFIG
Report lists each device with format as below with descriptions listed (see sample report for format examples)
<table>
<tr><th>ADDR</th><th>LOOP</th><th>PRG DEV</th><th>REAL DEV</th><th>CUSTOM LABEL</th></tr>
<tr><td>address 1-250</td><td>A, B, C, or D</td><td>device as programmed</td><td>actual device type</td><td>as programmed</td></tr>
</table></td></tr>
</table>

Sample Device Detect Report Entries with Comments as Listed in Left Column

Status/Defect (* = error)	ADDR	LOOP	PRG DEV	REAL DEV	CUSTOM LABEL
(normal)	1	A	ION	ION	West Conference Room
(normal)	3	C	PHOTO	PHOTO	East Exit Hallway
Duplicate Device on One Loop	10	B*	PHOTO	UNKNOWN	North Security Desk
Duplicate Devices on Two Loops	15	A*	PHOTO	UNKNOWN	South Security Desk
	15	D*	PHOTO	UNKNOWN	South Security Desk
No Answer	60	-*	IAM	-	Office 135
Wrong Device	104	C*	PHOTO	HEAT	Office 205
(normal) on-board isolator addresses listed for reference	247	A	IDNISO	IDNISO	CIRCUIT LOOP A
	248	B	IDNISO	IDNISO	CIRCUIT LOOP B
	249	C	IDNISO	IDNISO	CIRCUIT LOOP C
	250	D	IDNISO	IDNISO	CIRCUIT LOOP D
Out of Range Address	251	B*	-	IAM	