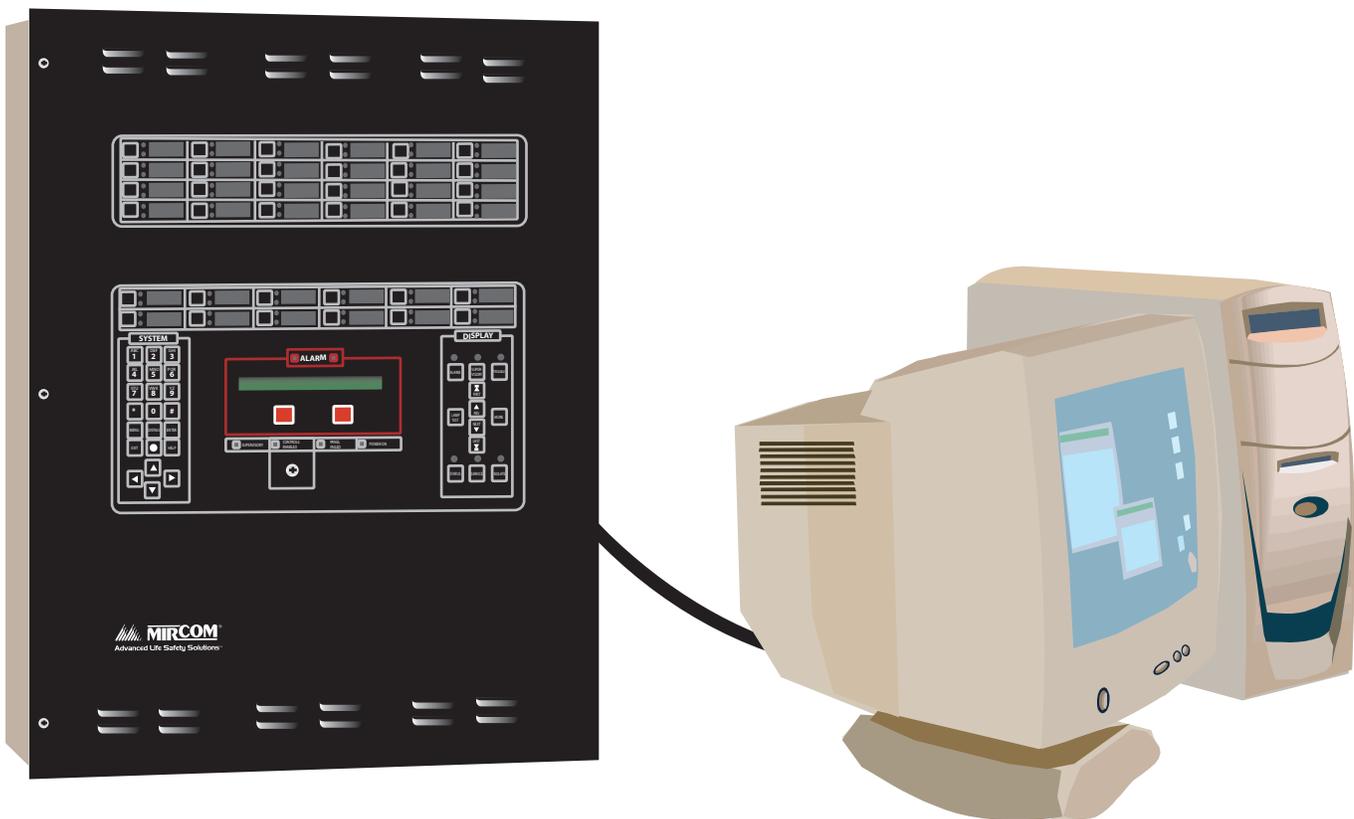


# PRO-2000 Series

Addressable Fire & Gas Detection and Control System





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# Setup and Installation

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## Introduction

The Model PRO-2000 was designed as a general-purpose unit for the control of the alarm monitoring, signaling and fire suppression. Each application of a Model PRO-2000 Control Panel will have its own requirements for time delays, output triggering, types of inputs and General Alarm configuration. The field programmable memory allows each panel to be customized to the specific customer needs. This memory can be programmed by the Configurator Software via the PC Laptop as described in this manual.

The Mircom PRO-2000 Panel Configurator software is a configuration tool used to program all Model PRO-2000 Fire Detection and Control Panels. The Configurator should be installed on a laptop computer. Control Panel memory configuration can be done on-site as well as off-site. Configurations can be saved on disk or uploaded directly to the panel.

## System Requirements

Only users who are familiar with the Model PRO-2000 Fire Detection Control panels and who have been trained to use the Configurator should perform configuration using this software. The computer system must contain the following minimum requirements or equivalent:

- PC running on WIN95 or WIN98 with a floppy disk drive
- SVGA graphics board
- Available RS232 serial port separate from the mouse port to be used for communication between the PC and the Control Panel
- 9 Pin Female D-sub connector with Telephone cable.
- PRO-2000 Panel Configurator application software that resides in PC (MEM-15451-00)

## Installation

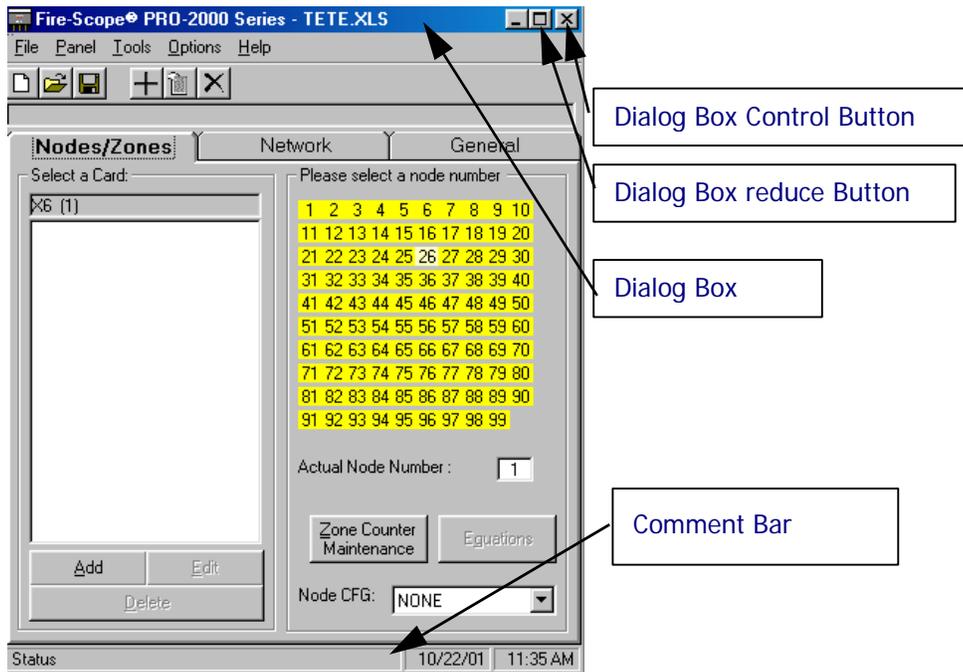
1. Use the Configurator application software that resides in 3 disks (MEM\_15451-00)
2. Insert disk # 1, click on "set-up" application file and follow up the instructions.

Note that you can't use more than 8-character directory names.

## Terminology

The following terms take on special meanings in the context of the PRO-2000 Panel Configurator program. Your familiarity with them will make the concepts and procedures presented in this manual easier to understand:

Term	Meaning
Click	Press and release the mouse button.
Desktop	The graphic environment the software displays on the computer screen.
Double-click	Click the mouse button twice in rapid succession.
Drag	Press and hold down the mouse button while you slide the mouse.
Select	Place the pointer on the item to be selected and click the mouse button.
Dialog Box	A graphic box used as an information interface. A dialog box is displayed when the software needs to give information to the user or when it needs to receive information from the user. Most dialog boxes can be opened, closed, resized and moved. Several can be displayed on the desktop at the same time.
Dialog Box Icon	A small image representing a dialog box. To make a minimized dialog box reappear in its maximum size, moves the mouse pointer over the icon and double-click.
Dialog Box Reduce Button	Select this button to create a dialog box icon.
Dialog Box Control Button	Select this button to make the dialog box full screen size.



## Starting the PRO-2000 Panel Configurator

Click the **Start** button, click **Programs**, click **Mircom**, and then click **PRO-2000**

The Configurator program is now running and the Confirm Graphic Devices dialog box shortly appears on the screen. Select **Cancel**, the program automatically displays the default Window.

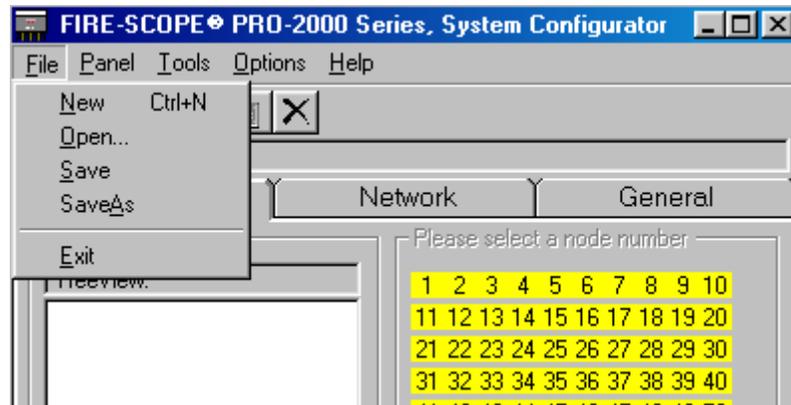
## Exiting the PRO-2000 Panel Configurator

To exit the Configurator program:

1. Select `F`ile from Menu bar;
2. Select "Exit" from `F`ile' menu to close the Configurator program.

## Alternate Command Selection

Selecting a command may be achieved either by using the mouse, by pressing and holding down the [Alt] key followed by the underscored letter of the desired command (from active Menu Bar), or using a shortcut Icon. For example, selection of above-mentioned `close' command from `F`ile' menu can also be achieved by selecting the Dialog Box Control Button by using your mouse.

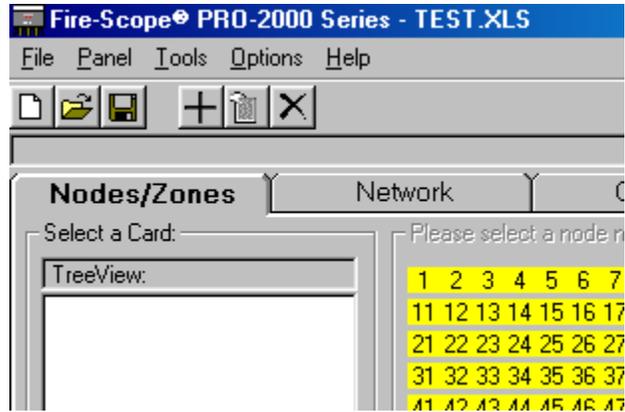


## Navigating through menus and dialog boxes

In order to help you navigate through the various menus and dialog boxes, refer to *Terminology* on page 2.

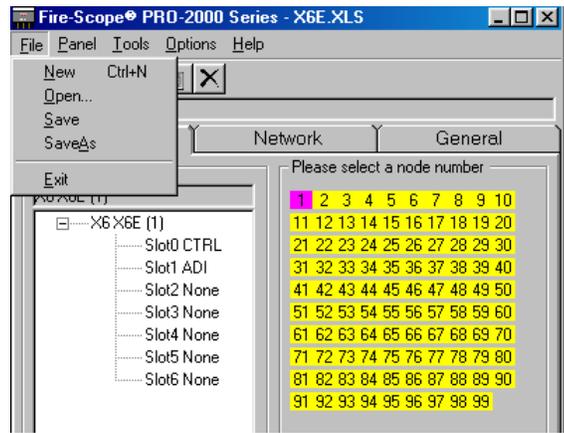
# Running the PRO-2000 Panel Configurator Program

1. Start the PRO-2000 Configurator program by the Windows Start Menu and open the Configurator application program.
2. Login dialog box appears. Select **CANCEL**



1. Once the Mircom PRO-2000 Panel Configurator has been launched its main dialog box appears:
2. By pointing to the icon, the function name appears under the icon and at the left bottom of the window (Comment Bar).

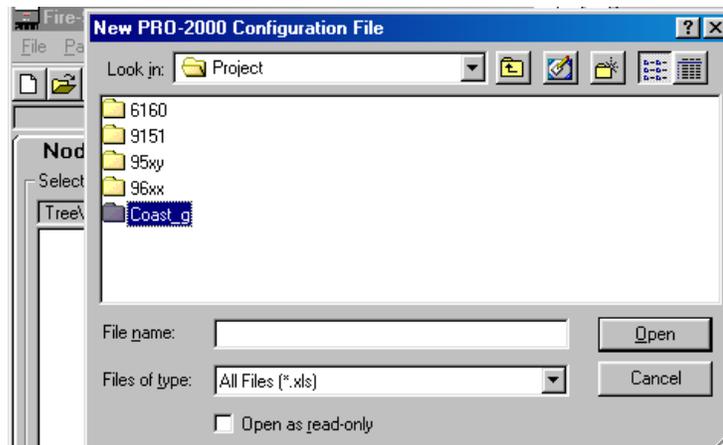
## File Menu



Selecting 'File' from the Menu bar displays the following:

## New

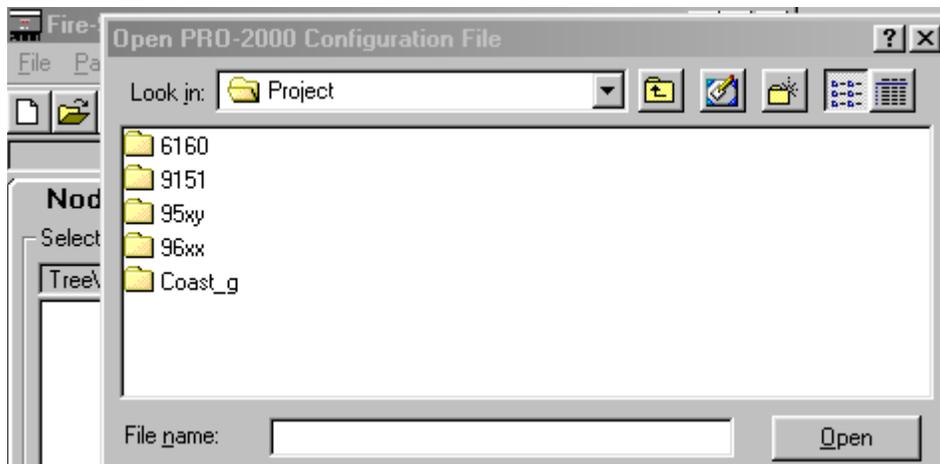
To create a new file, select **New** from **File** menu, or click on the “NEW” icon.



Create a folder for your new configuration and type in a name for your configuration file.

## Open

To open a previously saved configuration file, the **Open** command must be selected from the **File** menu, or from the icon bar. The following dialog box is displayed:



If necessary, you can change the path by double clicking on the appropriate path name in the "Look in" Window box. To enter the file name, double click on the required file or type the file names in the "File name:" window box. Then press the [ENTER] key or click on the "Open" button. A Backup file \*.ABC will be created automatically.

## Save

The **File** menu's **Save** option is used to save a configuration file under its previous name, i.e. to overwrite an already existing file. When the **Save** command is chosen or the "SAVE" icon is selected the following window box appears. If the file has not previously been saved under a specific name the following "Save As" command must be used.

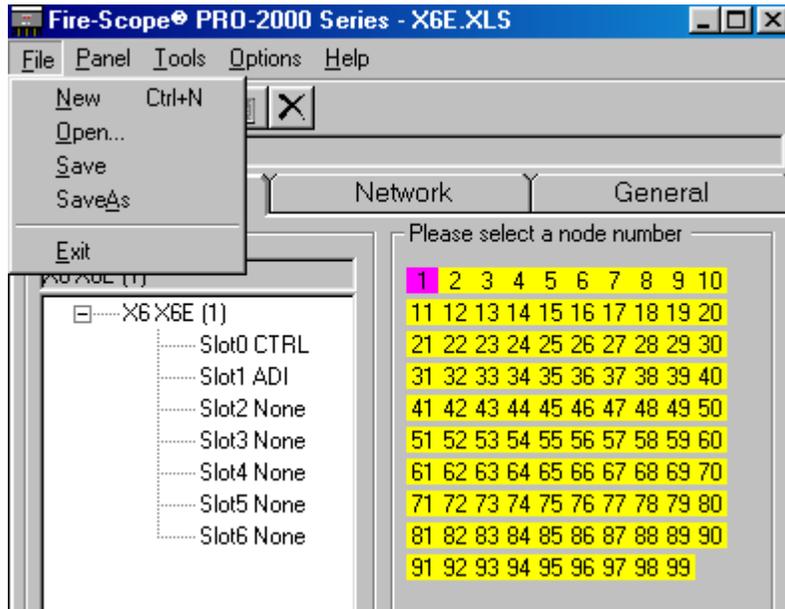
## Save As

The **Save As** option enables the user to save a previous saved file under a new name.

Type in the new name in the "File name" box.

### Exit

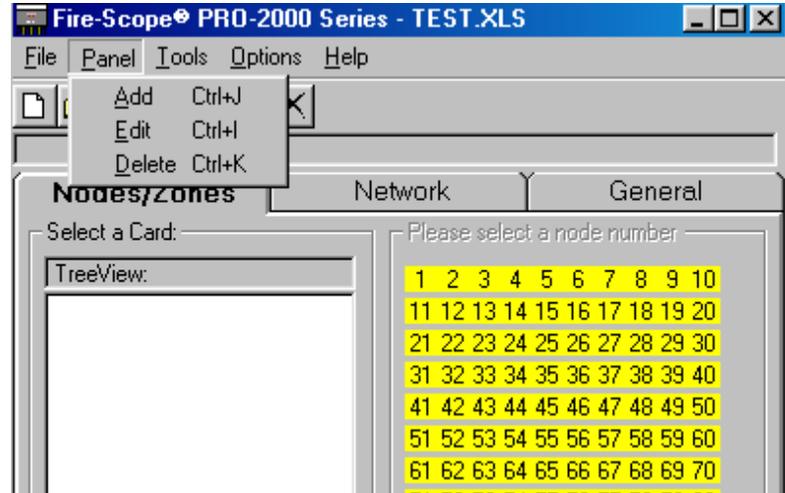
This command is used to close the configuration file without saving it. The "Exit" command is active only when a configuration file has been opened or created.



### Panel Menu

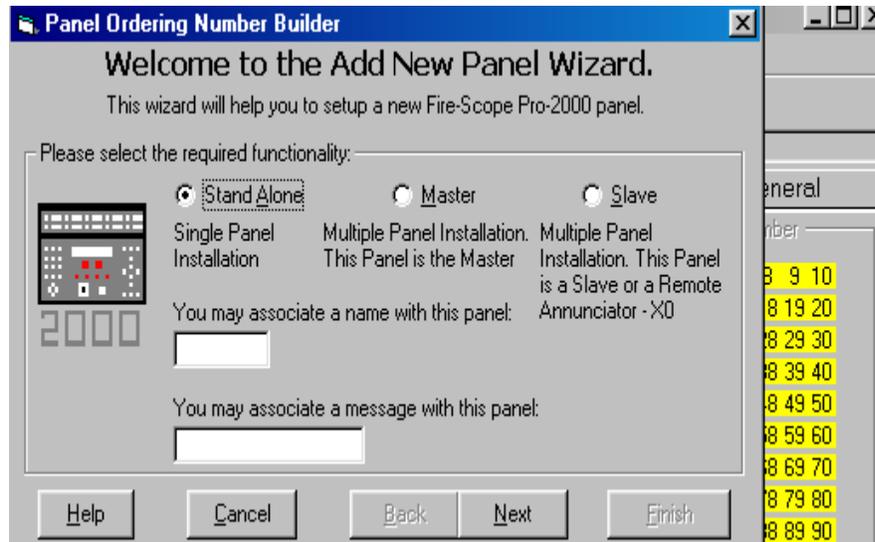
The "Panel Menu " option is used to Add a panel, Edit a panel, or Delete a panel.

#### Selecting panel



## Add

This command allows the operator to Add a panel, basically adding a panel, is configuring a new panel. You can select, “standalone” by using the mouse and clicking into the circle, “Stand Alone”, or “Slave”. You may select master if you are networking with two or more panels. In this case the second or third panel should be configured as a Slave panel. You may associate a name (**Max of 8 Characters without a space. This name will be used as the file name for the configuration file**) for your panel and/or a message (max of 32 characters: this info will not be sent to the panel). Select the dialog box next to proceed to the next window. Selecting the type of panel.



### Selecting Type X2

- The LCD performs processing and display functions.
- The LCD Backplane is used to provide connectivity between the LCD and the interface cards. Up to 2 expansion cards can be connected to the LCD Backplane.

### Selecting Type X6

- The LCD performs display functions.
- The MPU Backplane is used to provide connectivity between the MPU and the interface cards Up to 6 expansion cards can be connected to the MPU Backplane.
- MPU communicates with the LCD via a RS422 communication.

### Selecting panel enclosure



#### PRO-2000 Standard 24"

The standard panel housed in a 24" X 24" enclosure. The standard enclosure consists of a processing unit (MPU) to process the entire field data and display unit (LCD) to display all events. The LCD has a standard 2-line X 40-character display with the associated display lists controls and indicators and the standard 24 configurable indicators (LED's) and 12 configurable pushbuttons.

#### PRO-2000 Expander 30"

The expanded version housed in a 24" X 30" enclosure. It has the same features as the Standard panel, plus additional 48 configurable indicators (LED's) and additional 24 configurable pushbuttons.

#### PRO-2000 Mimic 41"

The mimic version housed in a 24" X 41" enclosure. It has the same features as the Standard plus a geographic mimic providing a graphical representation of the protected area. The mimic contains up to 144 indicators (LED's) to provide visual feedback.

Selecting the PRO-2000 basic communication Interface Module

Note that there is no functional difference in between SIMM # 1 and SIMM # 2

#### Dual RS422

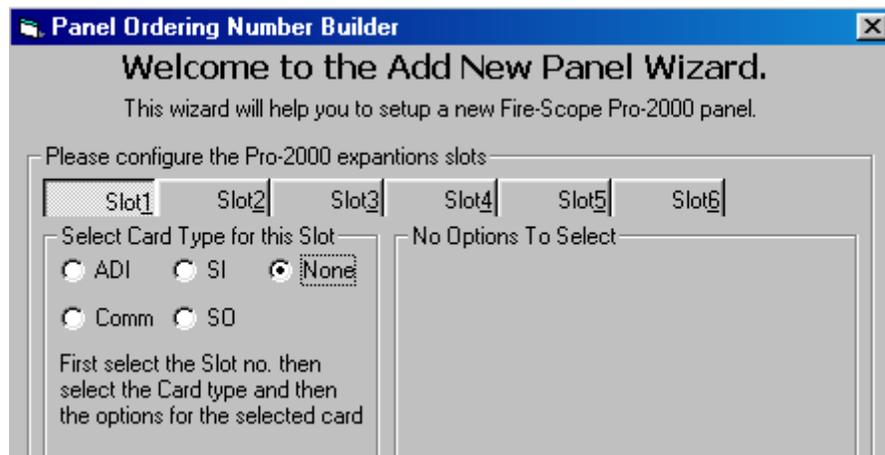


The Dual RS422 communication modules activate a data link to the MPU or to the Repeater network. In the X6 series an RS422 will be used to communicate between the MPU and the LCD which in this case will have an RS422 driver. In the X2 series an RS422 driver will only be needed to communicate with a repeater or a Network.

## RS232

Installing an RS232 module activates the phone jack allowing LCD or MPU software configuration through an external PC, or Interfacing to a Printer.

Press **NEXT** to Select the Card type



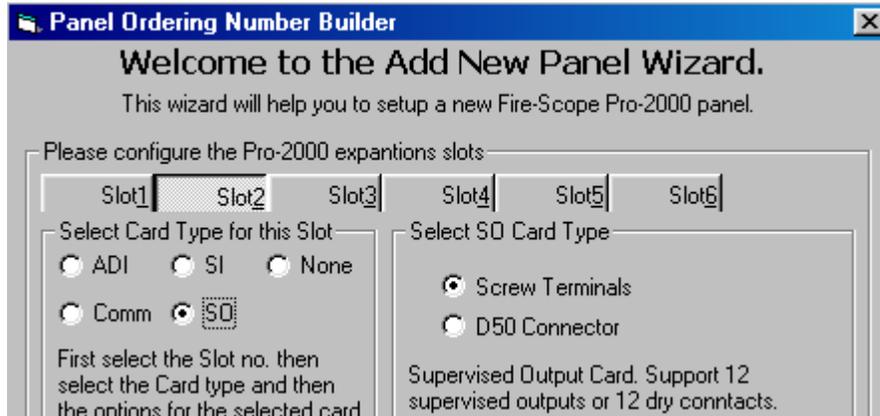
## ADI Card

The ADI-Addressable Device Interface Card, supports up to two loops (complying with the operation and supervision requirements of NFPA Signaling Line Circuit Style 6) of detectors or up to four stubs (complying with NFPA SLC Style 4 requirements). You can have up to 99 detectors and 99 modules on each loop or stub for a total monitoring capacity of 600 devices---limited by memory. The ADI card interfaces with addressable sensors (photoelectric, ionization and thermal), addressable modules (monitor and control) and conventional detector interface (ACDI) modules. The ADI's modular design provides two SIMM's for the ADI Drivers. One **Module at SIMM J5 gives connections to connector J7 pins 1 to 4. A second module at SIM J4 gives connections to connector J6 pins 1 to 4. Each ADI Driver (or Module) can support one loop or two stubs.**



### SO Card

The SO card supports 12 supervised outputs or 12 dry contacts (Form C). The card's 12 relays have jumpers to determine if the outputs are supervised or not. There are two versions of this card. It can either come with **screw terminal connections** (Just in slot # 2 for accessibility reason) or a DSUB connector. The screw terminal connections allow more current load and should be used for high power outputs. **The DSUB connector** version is limited in current handling but is easier to use when wiring a large number of outputs. Supervision circuits use an external power supply (24V) isolated from the main power supply of the cards. The power supply should be regulated and UL Listed for Fire Protective Signaling Systems (ULC in Canada). To use dry contacts, no external power is required, the supervised jumper and power should be removed.



### 24/32 Zone Supervised Input Card

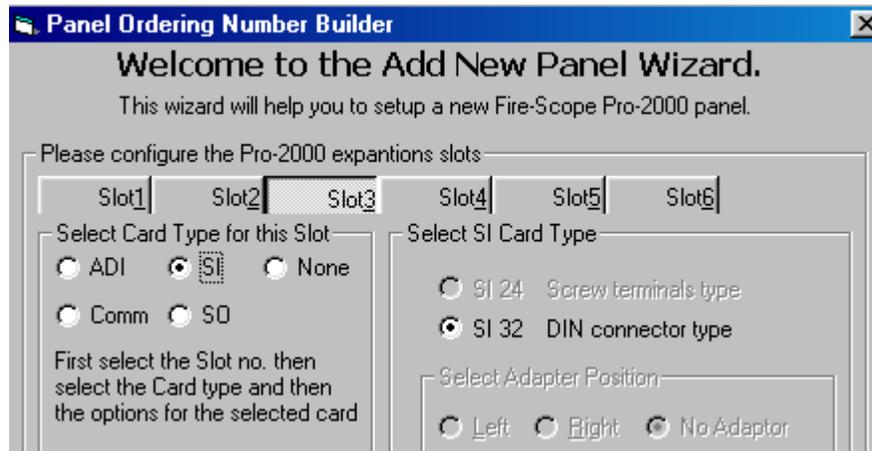
The supervised Input card supports up to 32 conventional detection zones. There are two versions of this card. One is with screw termination (available only for slot # 2 for accessibility reason) and supports 24 supervised inputs. The other is used with a screw terminal adapter and gives access to 32 supervised inputs.

The supported field devices can be shorting or non- shorting devices. The power indicators provide status of the internal voltages on the card.

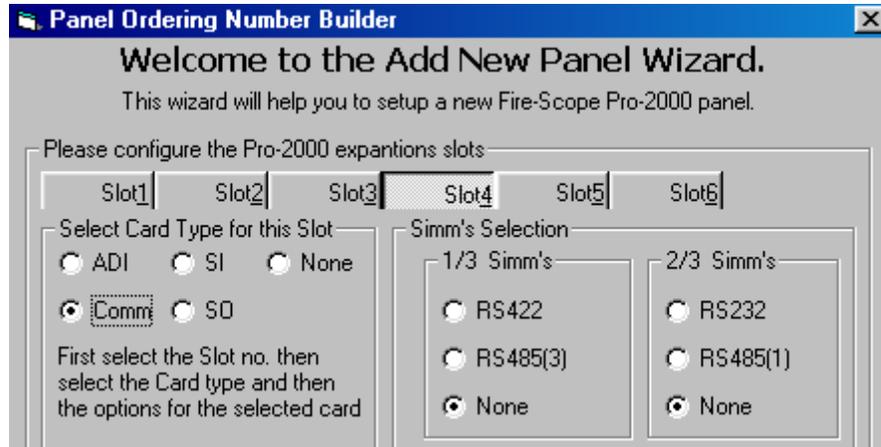
### Communication Card

The communication card enables the PRO-2000 panels to be connected to various communication interfaces such as RS232, RS485 and RS422. You must install an RS232, RS485, or RS422 communication module into the interface sockets of the communication card. It is the installation of the communication modules that defines if the card is RS422 and /or RS232. Field wiring connection on the communication card is dependent on the installed module. The RS422 communication module activates two serial data links on J1. The RS232 communication module Activates one serial data link on J2. The RS485 communication module activates one, two, or three serial data links on J1 and J2.

The communication modules can be inserted in any socket; however, there cannot be two of the same communication module on each communication card.

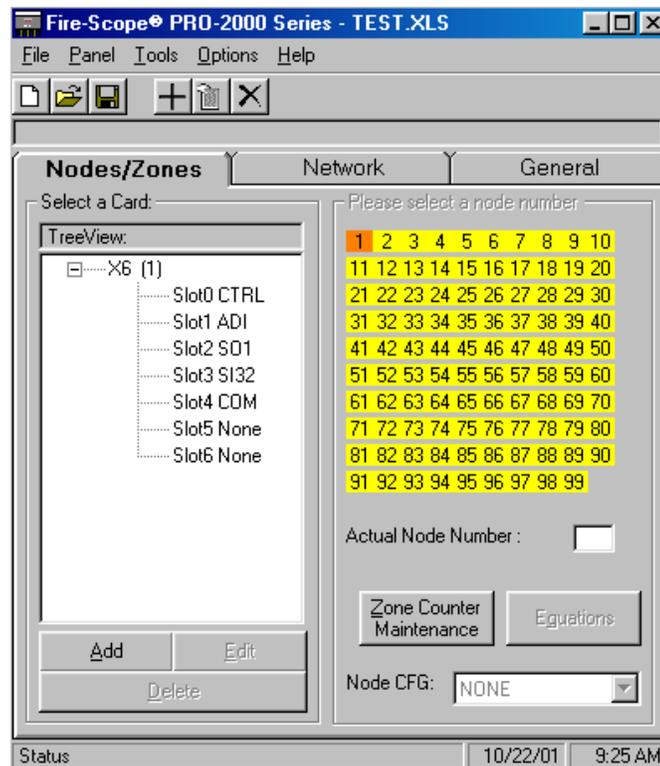


Note that there is no functional difference in between SIMM # 1 and SIMM # 2. SIMM # 3 is for future use.



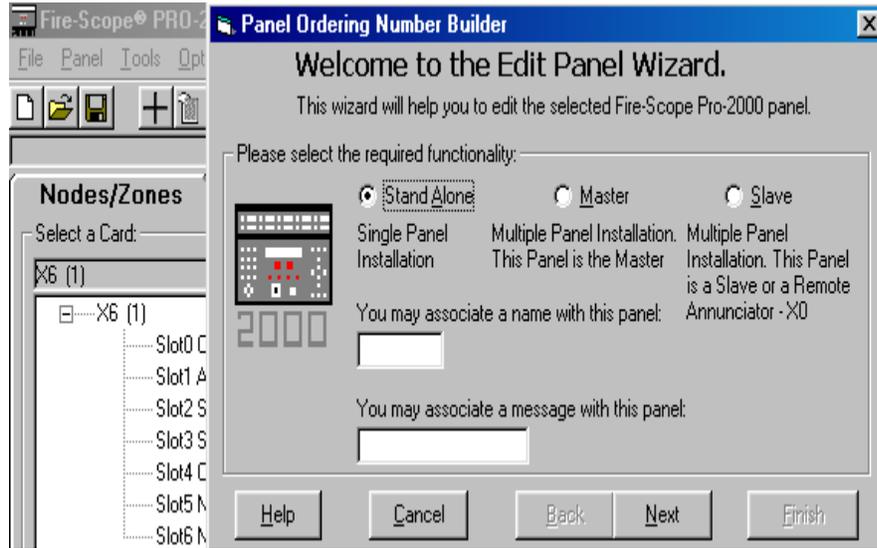
**Finish**

Once you have selected **Finish** the following window will appear with the cards you have selected in every slot.



**Edit**

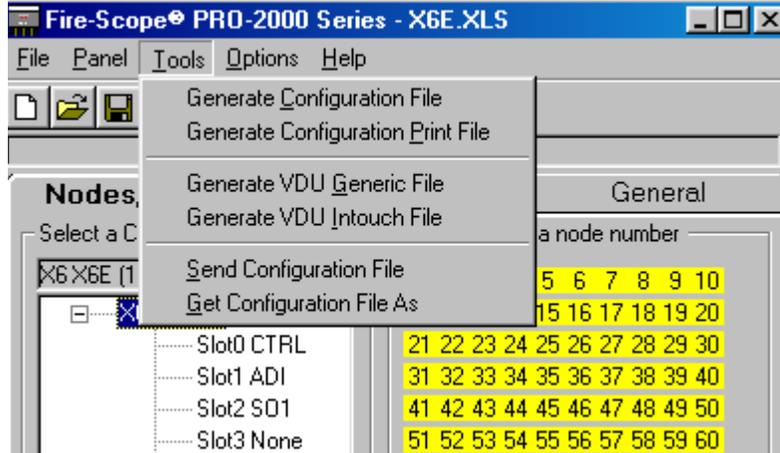
- Select the configured panel, selecting **E**dit will edit your configuration to view it or to make changes
- The “Network” configuration setting will be set to default every time you **E**dit This menu



**Delete**

Selecting Delete will delete the configured panel.

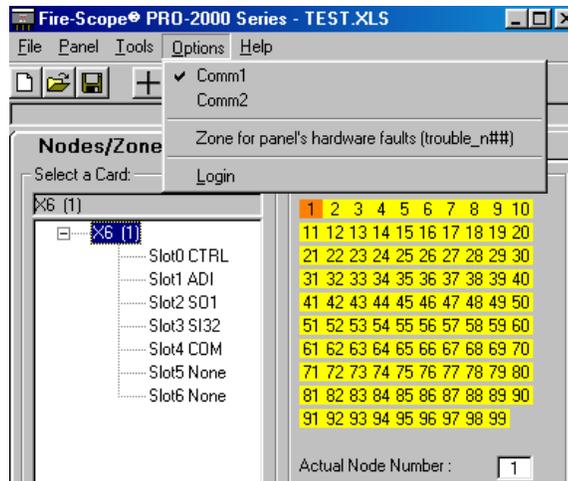
**Tools Menu**



- **Generate Configuration File:** This option will generate a Binary file of the configuration (.CFG file). It will be used to download to the Panel.
- **Generate Configuration Print File:** This option will generate a list of the configuration (.LST file). It is a text file formatted ready for a printout.
- **Generate VDU generic File:** This Option will generate a text file which contains the Modbus Addresses for each device.
- **Generate VDU Intouch File:** This option will generate a file to be used by Wonderware User.
- **Send Config.File:** To upload the .CFG file to the Panel.
- **Get Config.File as:** To download the .CFG file from the Panel.

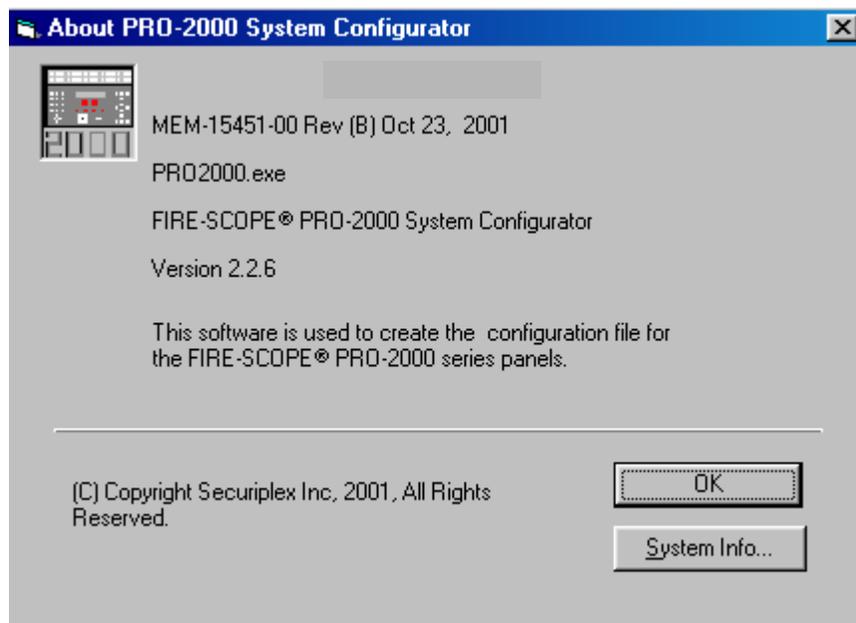
## Option Menu

- Comm1 is to select the serial Port 1 of the PC to be the communication port with the Panel.
- Comm2 is to select the serial Port 2 of the PC to be the communication port with the Panel.
- Zone for panel's hardware faults (trouble\_n##) to associate all hardware faults of the panel to one zone counter, which should have the name trouble\_n## . ## is the panel node number from 1 to 99
- Login: for Mircom use only.



## Help Menu

- Contents (This option will be available soon.)
- Search For Help On (This option will be available soon.)



- ABOUT
- Selecting this option will display the Version of the Configurator software that you are using.
- Selecting System Info, to give information about your PC drives.

# Field Devices

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## Device ID Concepts

The Device ID is identification used by the system to identify each device connected to the PRO-2000. The following identifies the different fields of the Device ID:

AA-BBCD-EFFF.G

Where:

- Field A is the Node number - A number identifying a specific panel. This number is a node address and is assigned when the system is configured (1 to 99).
- Field B is the Slot number - A number identifying the expansion card to which the device is connected. Slot 00 has a special meaning and refers to devices on the MPU for the X6 Series or on the Processing and Display Unit (LCD) for the X2 Series. (00 to 06/02)
- Field C is the Line type - A letter identifying whether the device is connected to a Stub or a Loop (S or L).
- Field D is the Line Number - A number identifying the Stub/Loop. (0 to 9)
- Field E is the Device type - A letter identifying the type of the Device, for example:
  - F: Thermal detector
  - N: Ionization detector
  - S: Photoelectric detector
  - M: Monitor module
  - C: Control module
  - D: ACDI module
  - R: ADI Supervised output
  - I: Supervised Input device
  - O: Supervised OUTPUT device
  - A: Card fault
  - V: Virtual device
  - H: Hardware fault
  - K: Cable break
  - P: Push button
  - L: LCD Panel LED
  - G: RS485 Device
  - #: All devices
  - B: Omni Detector (Mircom use only)
  - E: Laser Detector
- Field F is the Device address - An identification of the device on the Stub or Loop.(100—999)
- Field G is the Device point - A decimal point and number value identifying a specific device function. Refer to the table below:

Device type	Device point	Device description
Monitor, control modules and AcDi	0	Input and output Modules
Sensors (detectors)	1	Photo, thermal and ionic detector
RS485 detectors (Alarm)	2	Gas and Flame detectors
RS485 detectors (warning)	1	Gas and Flame detectors
.....	4	.....

## ADI Devices

Selecting Slot X to configure ADI card

The ADI Menu could be divided into **3 sectors**:

1. The top sector:

- *Stub / Loop Settings*

In stub mode the detectors will communicate with the ADI Card in Class B (Style 4).

In loop mode the detectors will communicate with the ADI Card in Class A (Style 6).

- *Card Modbus Address*: It is the address of the card, it will be used by the panel in order to send the card status through Modbus interface to a VDU, PC or a PLC. It is an address generated automatically (refer to *General* on page 36 for more information)

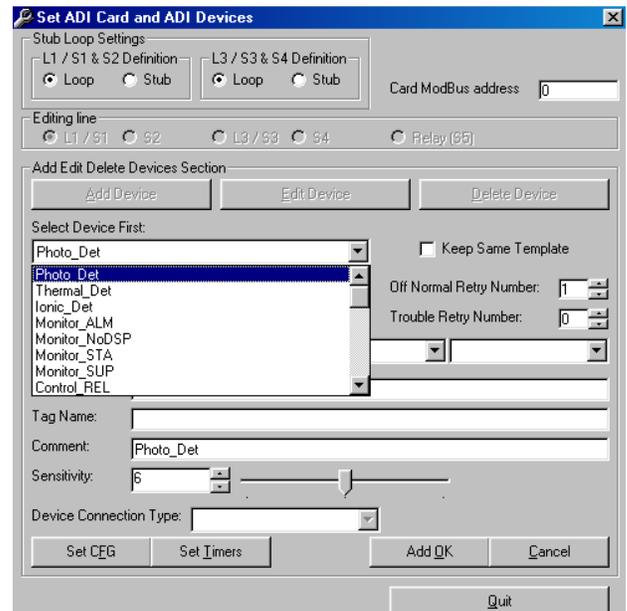
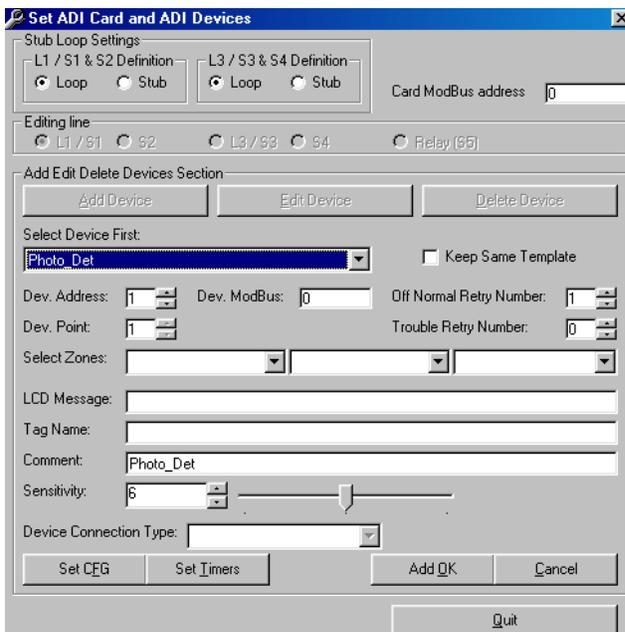
2. The middle sector:

- *Editing Line*: To select which stub or loop will be edited. With an ADI Card you can have 4 stubs or two loops, once you have determined if you are using a loop or a stub, you have to select from which ADI Driver you will be connecting to. If you select a stub mode you will have to select which stub Lx1 or Ly1 you want to use, or both. Same for Lx2 or Ly2. If you select Loop mode of ADI driver 1 or ADI driver 2, selecting Lx1 will mean loop 1 and selecting Lx2 will mean loop 2.
- *Relay*: Selecting relay will make it possible to configure up to 4 supervised outputs or 4 unsupervised outputs, dry contacts.

3. The main sector: refer to the table below:

- **Add Device**
- Add Device is selected to add desired devices for chosen loop or stub.
- “Select Device First”

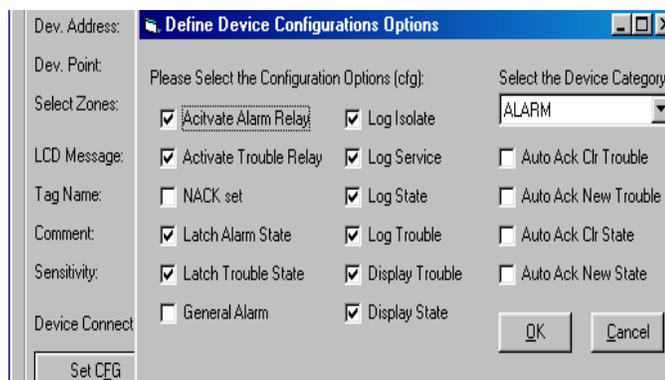
Device type	Device point	Device Description
Photo_det	1	Photoelectric detector
Thermal_det	1	Thermal detector
Ionic_det	1	Ionization detector
Monitor_alm	0	A Manual pull station or a conventional detector could be connected to this module
Monitor_nodsp	0	Control/ Key Switch
Monitor_sta	0	A door switch ....could be connected to the module
Monitor_sup	0	A pressure switch ...could be connected to this module
Control_Rly	0	A dry contact which could be used to shutdown ventilation or to send a signal to the security systems in case of an alarm
Control_so	0	To activate Bells, Horn and Strobe lights....
ACDI	0	To connect conventional detectors to the addressable systems
Adi_2251HR	1	Mircom use only
Adi_2551a_ulc	1	Mircom use only
...	...	Mircom Use only



- **Dev. Address:** to select an address number to detector 01-99. The lower unused address will be selected by default.
- **Dev. Point:** this number will be selected automatically by default.
- **Dev. Modbus:** An address generated automatically by pressing the "Generate Modbus address" key where you could find it in the "General " menu.
- **Tag Name:** A user identification of a device. By default the DEV ID will be assigned as a Tag name.

- **Select Zones:** Each device may be associated with up to 3 Zone Counters. If the state of the device changes (e.g. from normal to alarm) then the corresponding counters are updated. A name should be assigned to each zone for easy reference. Refer to *Zone Counter* on page 22 for more information.
- **Comment:** A note where you can put some comments regarding that device. By default, the device type will be assigned as a comment. (this info will not be sent to the panel)
- **LCD Message:** it is the message which appears on the panel front LCD, the device ID is the default message and the user can modify this message up to 40 characters long. A default text will appear where indicated "LCD Message". The user can also change this text, which will be appeared, on your front panel LCD.
- **Off Normal Retry Number:** The number of times that the panel will communicate with the detector before annunciating an Alarm, supervisory, or status, assuming the Off Normal state is still present.
- **Trouble Retry Number:** The number of times that the panel will communicate with the detector before annunciating a fault
- **Keeps same Template:** This box selection will keep the same configuration setup including the same message, although it will increment the address setting by 1.
- **Device Connection Type:** To select Input or an Output to be normally opened or normally closed, supervised or unsupervised.
- **Sensitivity: to select the sensitivity of** the Smoke Detector.
- **Set Timers:** Select the set timing window.

### Set CFG:



Selecting Set CFG will display a menu that is used to configure an input type. It can program the input by selecting the device category. Input can be configured as an alarm, supervisory, or status. An alarm is used to annunciate a fire e.g. Manual Pull Station. A supervisory is used to annunciate a trouble e.g. Low air in a cylinder bottle. A status is used for e.g. A door opening and closing or a motion detector.

There are also more selections that we can select in order to activate the general alarm or fault relay. This depends on your choice when an alarm or supervisory or status is programmed.

The CFG selection list:

- **Activate Alarm Relay:** MPU (LCD for X2) Alarm Relay will be activated if the device is in Alarm
- **Activate Trouble Relay:** MPU (LCD for X2) Trouble Relay will be deactivated if the device is in Trouble
- **NACK set:** Set NACK bit. (Reserved for Mircom use.)
- **Latch Alarm State:** Annunciation remains active even if input device is restored to normal.
- **Latch Trouble State:** Annunciation remains active even if input device is restored to normal.
- **General Alarm:** Not Used. Refer to *Equation* on page 23 for the GA setting.
- **Log Isolate:** Isolate event will be logged into the System Event Log
- **Log Service:** Service event will be logged into the System Event Log
- **Log State:** Off-normal state event will be logged into the System Event Log
- **Display Trouble:** Trouble event will be displayed on the LCD

- **Display State:** Off-normal event will be displayed on the LCD
- **Device Category:** Three Types (Alarm, Supervisory, Status) of input function can be categorized as follows:
  1. **Alarm:** Input which monitors manual stations, automatic detectors, water flow switches, etc.
  2. **Supervisory:** Monitors devices such as tamper switches, sprinkler valve status, pressure switches, etc.
  3. **Status:** Input used to monitor Status of fans, dampers, elevators, etc.
- **Auto Ack Clr Trouble:** No intervention needed (Acknowledge Push Button) when device change from trouble state to normal state.
- **Auto Ack New Trouble:** No intervention needed (Acknowledge Push Button) when device change from normal state to trouble state.
- **Auto Ack Clr State:** No intervention needed (Acknowledge Push Button) when device change from Off-normal state to normal state.
- **Auto Ack New State:** No intervention needed (Acknowledge Push Button) when device change from normal state to off-normal state.

Once completing the selections for every window click Ok to go to the next device.

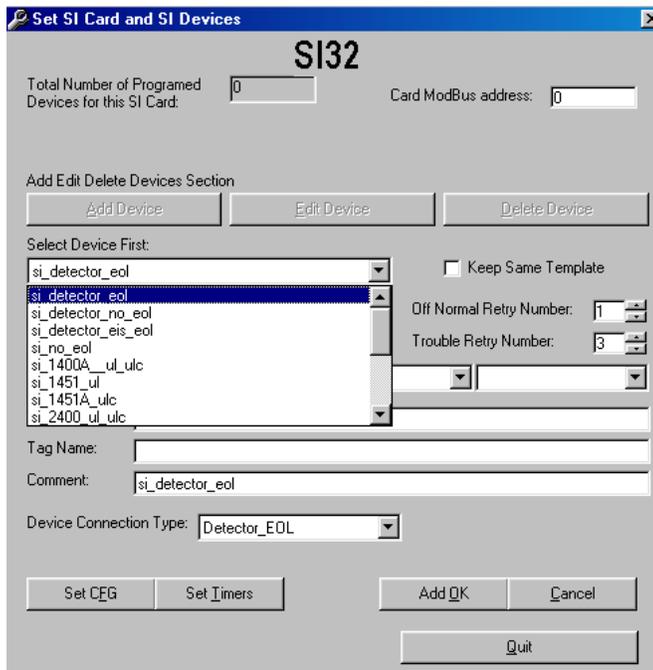
Selecting Edit Device will edit the device in order for the user to view it or make any changes.

Selecting D Delete Device will delete that device and it will no longer be configured.

## SI32 Devices

### Selecting Slot X- SI32 to Configure SI32 Input Card (supervised input)

Using your mouse select Slot X SI32 to configure SI32 Input Card.



### A Add Device

A Add Device is selected to add desired devices for chosen input. SI32 Card is used only for Shorting Device (Dry Contact) or Non Shorting Device (Conventional Detector). It can have up to 32 inputs. Each input can be programmed to be normally open or normally closed, supervised or unsupervised by selecting the select device box. E.g. Selecting “si\_no\_eol” means normally open and supervised.

Refer to *Device ID Concepts* on page 14 for more information on each field.

## S012 Devices

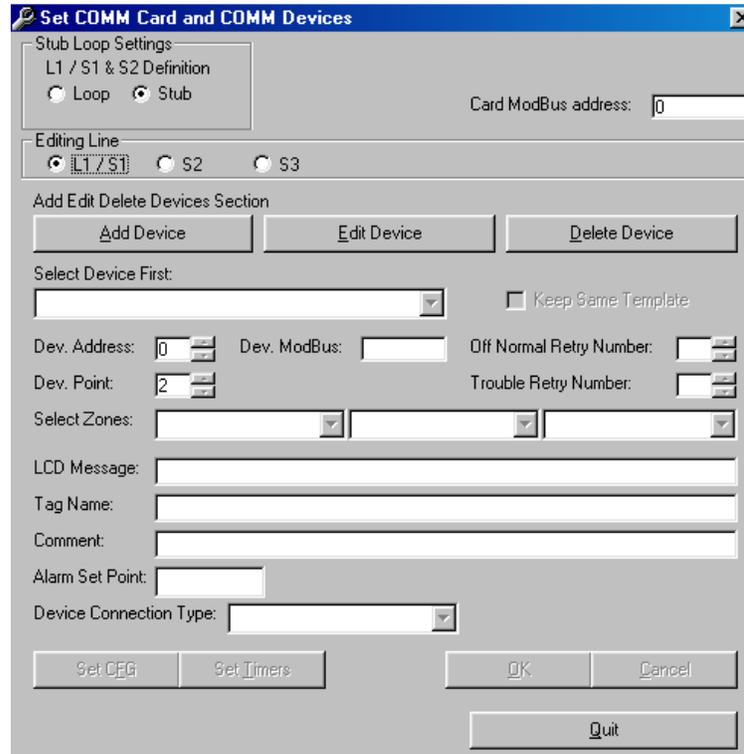
Selecting Slot X SO to configure (Supervised Output Card)

Using your mouse select Slotx SO2 to configure SO Card.

### Add Device

- Add Device is selected to add desired devices for chosen outputs. SO Card is used to activate solenoids, horn/strobe, bells, etc. They can also be used as dry contacts. Outputs can be programmed to be normally open or normally closed, supervised or unsupervised by selecting the select device box. E.g. Selecting “so\_no” means normally open and unsupervised.
- The SO Card supports 12 outputs and when configured you have to address them 1 through 12 depending on how many outputs you are using.

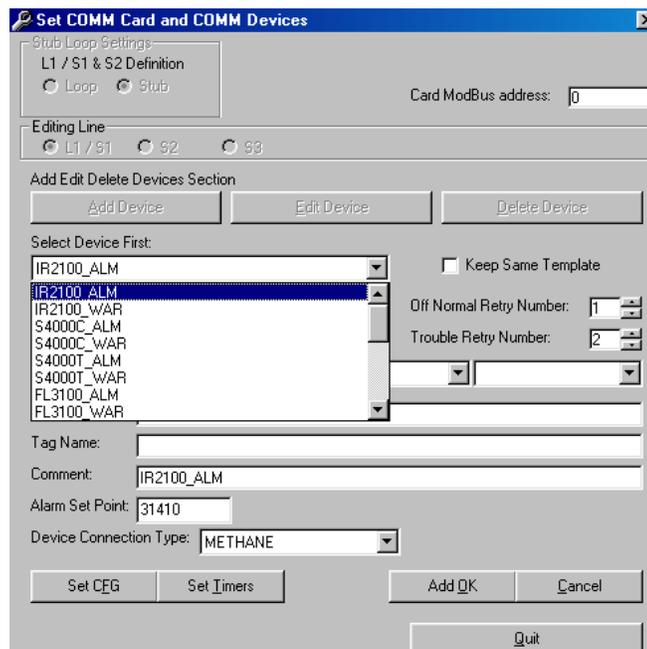
## Com Modbus Devices



Selecting Slot x COM to configure the Communication Card with RS485 module.

- Using your mouse select Slotx COM to configure COM Card.
- Communicating with RS485 Modbus detectors.

### Add Device



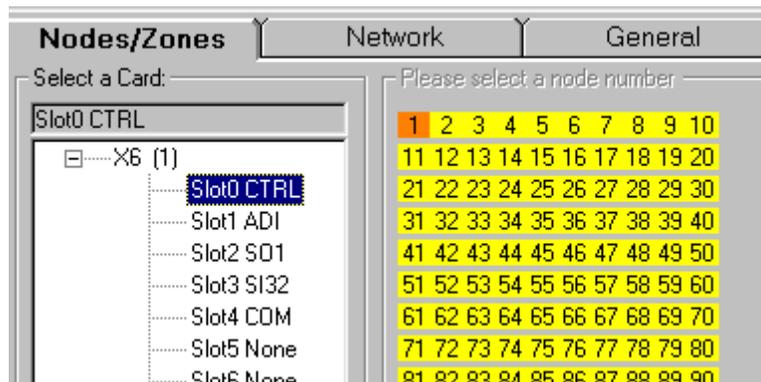
Add Device is selected to add desired devices for chosen detectors. COM Card with RS485 module can be configured as one Loop and one Stub, or three Stubs. These detectors communicate using RS485 serial communications.

You can select addresses for the detectors from (0-255). Each detector can have two device IDs, one for High level ( \_ALM) and one for Low level ( \_WAR). You must configure the High Level ( \_ALM) device first then the Low level device.

Refer to *Device ID Concepts* on page 14 for more information on each field.

## Virtual Devices

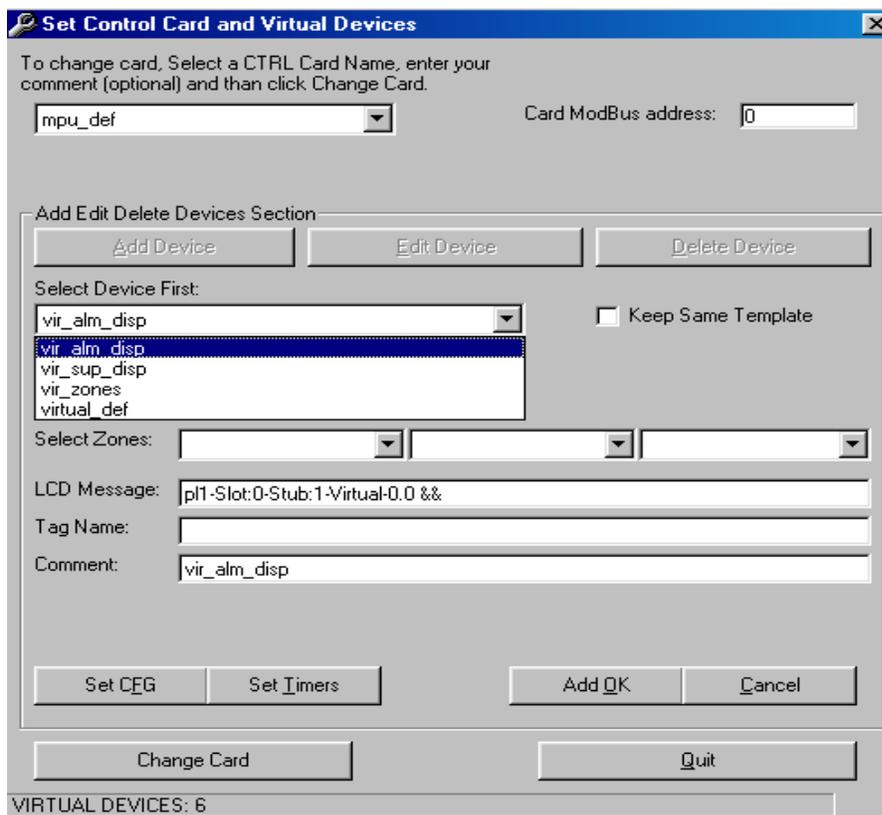
A Virtual Device is an internal variable that has the same structure of a device. It can be used as an intermediate to add more versatility to the logic of the PRO-2000 panel. A Virtual Device can be triggered by using an Input Device in the equation. An Output Device can be triggered by using a Virtual Device in the equation.



- Select **Slot0 CNTR** field to enter the Virtual Devices window.

### Add Device

- Add Device is selected to add desired configuration for a chosen virtual device



- You can select an address for virtual device from (0-99) and a **Dev Point** from (0-9)  
Refer *Device ID Concepts* on page 14 for more information on each field.

## Zone Counter

The Zones Counters form a matrix in the PRO-2000 memory. Each row is a Zone Counter and the last zone number used automatically determines the number of rows, but that number must be less or equal to 4095. To gain memory space, it is recommended to use the lower numbers for the zone counters. E.g. if you use 2 zone counters, do not number them 1000 and 1001 but 1 and 2.

Each Zone Counter comprises a group of up to 16 counters (columns); each of them may be assigned to a type of counter, ALARM, TROUBLE, SERVICE, ISOLATE, NEWALM, ACKALM, CLRALM, NEWFLT, ACKFLT or CLRFLT.

The six last counters are reserved for future use.

ZONES_COUNTERS_TYPES=	ALARM,	FAULT,	SERVIC E,	ISOLAT E,	...	...	...	NA
Zone Counter 1								
Zone Counter 2								
Zone Counter 3								
Zone_Counter 255								
Max : 4095								

Each device may be associated with up to 3 Zone Counters. If the state of the device changes (e.g. from normal to alarm) then the corresponding counters in the matrix are updated (the rows are the Zone Counters and the column is the state that changed).

The ALARM and TROUBLE counters will not be incremented if the device is in Service mode.

The zone numbers may be replaced by a Tag name, In that case, the Tag name be defined in the Zone **Counter Maintenance** section.

The Zone counters are common for all panels in a network Master/ Slave configuration. The zone counter will be updated in the slave where the event occurred as well as in the Master.

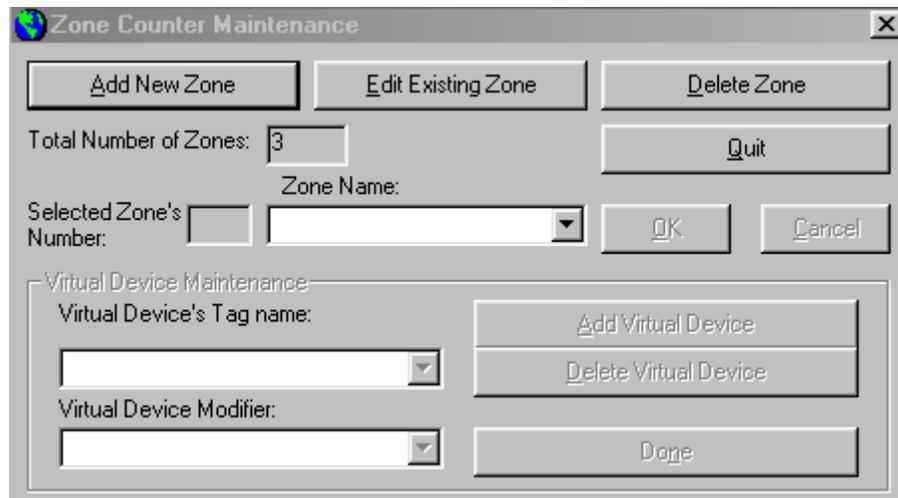
The same counter of the adjacent slaves will not be updated.

The counters may be used in any equation. A counter may be compared to a numeric constant or a "zone" type variable.

Example of equation: **(ROOM11 > 0) OR (LEVEL04 < 3)**.

It is possible to assign a zone name (zone number) to a virtual device. In that case, the virtual device will have a state according to the counters. E.g. if the FAULT counter is greater than 0 then the virtual device will be in FAULT state. **This feature will be used in order to transfer the zone information to the VDU / PLC system.**

## Add New Zone



- **Add New Zone** is selected to add desired zone name, maximum 32 characters without space or special character, for a chosen zone counter.
- **Total Number of Zones:** Is assigned automatically.
- **Selected Zone's Number:** Is assigned automatically.
- **Virtual Device's Tag name:** Click on **Add Virtual Device** in order to select one of the Virtual device. *Note that the virtual device should be defined prior to the Zone definition. Refer to Virtual Devices on page 21*
- **Virtual Device Modifier:** It should not be used. It is reserved for Mircom use.

Press **“DONE”** then **“OK”** keys to confirm every entered zone information.

- Use “Edit Existing Zone” key, select any one of the existing zones and then use “Delete Virtual Device” key in order to see which zone correspond to which Virtual device.

## Equation

The control section defines the processes that are done when something happens in a PRO-2000 panel. For each PRO-2000 panel that has controls to do, there is an equation to be defined. The equation is a sequence of controls. Each control has a trigger section (the outputs that are driven by an equation) and an equation section (with the inputs). The equation is of the form:

TRIGGER-----OutputDeviceId

EQUATION-----Operands and Operators

## Add Equation

Select a Panel to enable the **Equations** key

Select Equation to enter the trigger menu

The Trigger menu

- **Add Equation** is selected to add new control to the panel.
- **Trigger:** Select an Output Device to be triggered. The device will be deleted from the list once configured.
- **Equations:** A field where the equation logic resides.
- **Previous Term, Next Term:** To navigate the Equation field. An operand or an operator will be displayed (below **Equation** field) to show the location of the cursor.
- **Delete term:** To delete the displayed (below **Equation** field) operand or operator.
- **Add Term:** To add an operand or an operator after the displayed (below **Equation** field) operand or operator.
- **And, Or, Not, (, ):** Most common operators. Selecting a key will add the operator without using **Add Term**.
- **Trigger section**
  - The trigger section defines the outputs that are driven by an equation and the manner the output will react when the input is activated or deactivated. The keyword "TRIGGER" will be used.
  - A default trigger parameter may be defined in the trigger setting.
  - The *trigger's reference* must be an output device ID, tag name, a virtual device or a Led and must have a *modifier suffix* (except for the LED's) to change the effect of the equation on the device.

## Equation Sector

The Equation section must start with the operands and a modifier in the modifier field.

The equation is formed with operands separated by operators. Evaluation is done from left to right. Parenthesis may be used to modify the evaluation. The operands may be Variables, Constants, Input device ID or input device tag names.

- **Global Variables:** Available operands for the Equation field. Select a variable and click Add Term.

TOT_NEW_ALM	Total number of new alarms.
TOT_NEW_TRB	Total number of new supervisory.
TOT_NEW_FLT	Total number of new troubles.
TOT_NEW_STS	Total number of new status.
TOT_ACK_ALM	Total number of acknowledged alarms.
TOT_ACK_TRB	Total number of acknowledged supervisory.
TOT_ACK_FLT	Total number of acknowledged troubles.
TOT_ACK_STS	Total number of acknowledged status.
TOT_CLR_ALM	Total number of cleared alarms.
TOT_CLR_TRB	Total number of cleared supervisory.
TOT_CLR_FLT	Total number of cleared troubles.
TOT_CLR_STS	Total number of cleared status.
TOT_ALM_RELAY	Total number of alarms triggering alarm relay.
TOT_FLT_RELAY	Total number of troubles triggering trouble relay.
TOT_ALM_CONFIRMED	Total number of confirmed alarms (not in service).
HI_PRI_STATE	Contains the state of what should appear on the LCD display
CURRENT_DOW	Current day of week, 0=Sunday, 6=Saturday
CURRENT_DATE	Current date (in FIRE-SCOPE® PRO-2000 format)
TOT_IN_SERVICE	Total number of devices in Service mode
TOT_IN_ISOLATE	Total number of devices in Isolate mode
TOT_ALM_GA	Reserved for Mircom use
TOT_TRB_CONFIRMED	Reserved for Mircom use
TOT_FLT_CONFIRMED	Reserved for Mircom use
BACKUP_IN_CHARGE	Reserved for Mircom use
TOT_IN_SIMULATE	Reserved for Mircom use
IN_SIMULATE	Reserved for Mircom use
TOT_IN_MANUAL	Reserved for Mircom use
IN_MANUAL	Reserved for Mircom use
REDUNDANT_MAN	Reserved for Mircom use
REDUNDANT_MAIN_STATE	Reserved for Mircom use
REDUNDANT_BACK_STATE	Reserved for Mircom use

**Operators:** Available operators for the Equation field. Select an operator and click Add Term.

AND, OR	Logical AND and OR (shown on the front bar)
ANDB, ORB, ANDBM, ORBM	Bitwise AND and OR.
>=	Greater than or equal
>	Greater than
<=	Less than or equal
<	Less than
=,	Equal
ADDL	Addition
ANY N OF (d1, d2, ...)	Any TRUE n devices out of a set of devices
(ANDM, ORM,)	High speed version of the precedents AND (B) and OR (B). They are unary operators and accept a wildcarded dev-id (Ex. ANDM 05-03L4-###.#)
Led_Supervised (d1...)	Reserved for Mircom use
Led_Trouble (d1...)	Reserved for Mircom use
Impulse (d1...)	Reserved for Mircom use
Gen_Alarm (d1...)	Reserved for Mircom use
Led_Alarm (d1...)	Reserved for Mircom use
Led_Status (d1...)	Reserved for Mircom use

- **Zones:** Available zones for the Equation field to be used as an operand. Select a Zone and click Add Term. Refer to **Zone Counter on page 22** for more information.
- **Immediate Value:** Decimal value to be used as with an operator. Type a value and click Add Term.
- **Device Modifier:** Available Modifier to be used with an input device. Select a device from the “LED’s & Btns / Devices” list, select the modifier, and then click Add term. (Only the device id will be displayed). Refer to **Equation on page 23** for more information.
- The device modifier Suffix list :

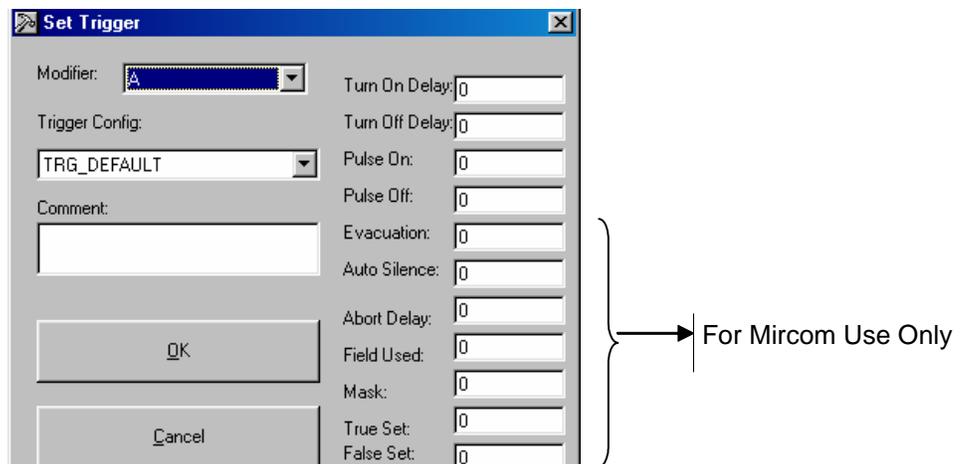
For devices type :	Suffix	Effect if equation is true	Effect if equation is false
L, O, C, R and V	:A	Set the output state in OFF NORMAL.	Set the output to NORMAL.
L, O, C, R and V	:F	Set the trigger in New Trouble state.	Clear the Trouble state.
L, O, C, R and V	:I	Set the trigger in Isolate.	Clear the Isolate state.
L, O, C, R and V	:S	Set the trigger in Service.	Clear the Service state.
L, O, C, R and V	:AN	Set the trigger in New Alarm.	Set the trigger in Alarm CLR.
L, O, C, R and V	:UA	Set the User Alarm Bit.	Clear the User Alarm Bit.
	NACK	Reserved For Mircom use	
	:UB1	Reserved For Mircom use	
	:UB2	Reserved For Mircom use	
	:UB3	Reserved For Mircom use	
	FNACK	Reserved For Mircom use	
	FA	Reserved For Mircom use	
	TEST	Reserved For Mircom use	
	FAST	Reserved For Mircom use	
	SLOW	Reserved For Mircom use	
	MAN	Reserved For Mircom use	

For devices type :	Suffix	Effect if equation is true	Effect if equation is false
	UB4	Reserved For Mircom use	
	PB	Reserved For Mircom use	
	IPB	Reserved For Mircom use	
	AL	Reserved For Mircom use	
	AA	Reserved For Mircom use	
	AC	Reserved For Mircom use	
	O	Reserved For Mircom use	
	FF	Reserved For Mircom use	
	FN	Reserved For Mircom use	
	FC	Reserved For Mircom use	

- **LED's & Btms / Devices** : This field will display all the devices , LED's and Push Buttons defined in the PRO-2000 panel. The Master panel will display all the devices in the Network.
- **Trigger Setting:** Available Trigger to be used to control an Output

Default_trig
Sir_alm_trig
Led_alm_trig
Led_other_trig
Push_GA_trig
GA_trig

**Edit Trigger:** This key will give the possibility to modify the Trigger configuration & Modifier.



The keywords that may be used in the DEFTRIG block(s) or the TRIGGER block(s) are the following:

Keyword	Default_trig	Description
Turn On DELAY :	0	The delay in seconds before the output is activated.
Turn Off Delay :	0	The time in seconds the output is activated (if not 0).
PULSE ON :	0	For blinking output, the time in seconds the output is ON.
PULSE OFF :	0	For blinking output, the time in seconds the output is OFF.
Evacuation :		For Mircom Use

Keyword	Default_trig	Description
Auto Silence :		For Mircom Use
Abort Delay :		For Mircom Use
Field Used :		For Mircom Use
Mask :		For Mircom Use
True Set		For Mircom Use
False Set		For Mircom Use

The keywords that may be used in the trigger **configuration** menu are the following:

Keyword	Default_trig	Description
TRG_DEFAULT		Reserved For Mircom use
ABORT_DEVICE		Reserved For Mircom use
TRIG_CFG_EQU_RES		Reserved For Mircom use
TRIG_CFG_INH_EV		Reserved For Mircom use
GA_INDICATOR_ON		Reserved For Mircom use
GA_INDICATOR_OFF		Reserved For Mircom use

The keywords that may be used in the trigger **Modifier** menu are the following:

For devices type :	Suffix	Effect if equation is true	Effect if equation is false
L, O, C, R and V	:A	Set the output state in OFF NORMAL.	Set the output to NORMAL.
L, O, C, R and V	:F	Set the trigger in New Trouble state.	Clear the Trouble state.
L, O, C, R and V	:I	Set the trigger in Isolate.	Clear the Isolate state.
L, O, C, R and V	:S	Set the trigger in Service.	Clear the Service state.
L, O, C, R and V	:AN	Set the trigger in New Alarm.	Set the trigger in Alarm CLR.
L, O, C, R and V	:UA	Set the User Alarm Bit.	Clear the User Alarm Bit.
	NACK	Reserved For Mircom use	
	:UB1	Reserved For Mircom use	
	:UB2	Reserved For Mircom use	
	:UB3	Reserved For Mircom use	
	FNACK	Reserved For Mircom use	
	FA	Reserved For Mircom use	
	TEST	Reserved For Mircom use	
	FAST	Reserved For Mircom use	
	SLOW	Reserved For Mircom use	
	MAN	Reserved For Mircom use	
	UB4	Reserved For Mircom use	
	PB	Reserved For Mircom use	
	IPB	Reserved For Mircom use	

- **Modifier:** Available Modifier to control an Output. Refer to **Trigger on page 24** for more information.
- **Trigger Config:** Same as **Trigger Setting**
- **Comment:** Optional information to be used for reference.

**Edit Equation**

- Edit Equation is selected to modify an existing equation.

**Delete Equation**

Delete Equation is selected to delete an existing equation.

Device ID may be followed by a *modifier* suffix.

For devices type :	Suffix	Description
H,I,M,N,S,F,A,K,D, L,O,C,R,V and P	:A	Use the Alarm state of the input device.
L,O,C,R,V	:O	Use of the OFF normal bit.
H,I,M,N,S,F,A,K,D, L,O,C,R,V and P	:F	Use the Fault state of the input device.
H,I,M,N,S,F,A,K,D, L,O,C,R,V and P	:S	Use the Service state of the input device.
H,I,M,N,S,F,A,K,D, L,O,C,R,V and P	:I	Use the Isolate state of the input device.
	:K	Reserved For Mircom use
	:UA	Reserved For Mircom use
	:UB1	Reserved For Mircom use
	:UB2	Reserved For Mircom use
	:UB3	Reserved For Mircom use

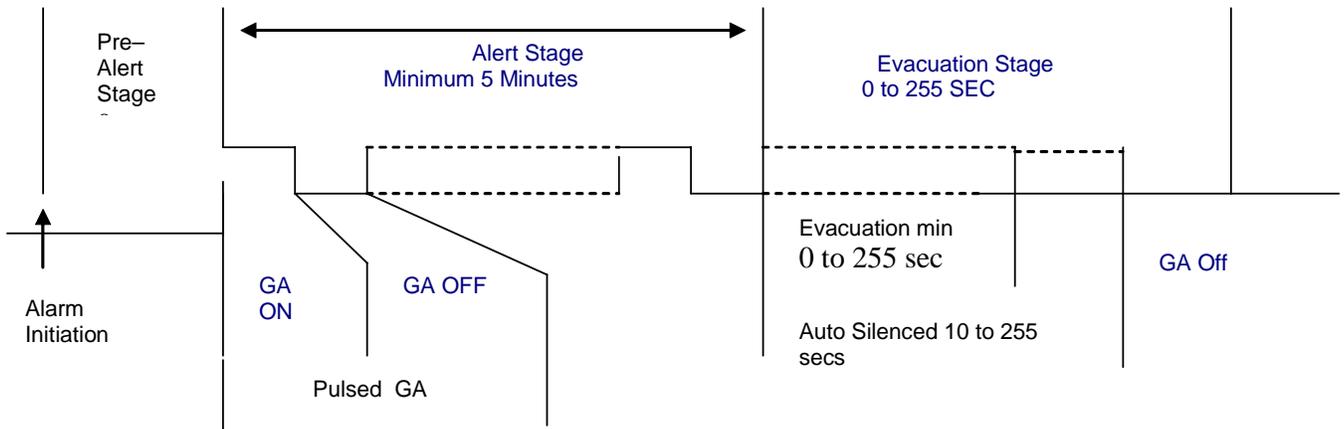
Predefined tag names for LCD Panel Pushbuttons and LED's:

There are 12 user programmable pushbuttons on the LCD, numbered 1 to 12. PUSHB-nn (nn=1,2,9..12) are available as toggle inputs to equations.

On the LCD, there are two LEDS, one red and one yellow, per pushbutton. Therefore, we use the same numbering as pushbuttons.

PUSHB-1	PUSHB-3	PUSHB-5	PUSHB-7	PUSHB-9	PUSHB-11
LED1-RED	LED3-RED	LED5-RED	LED7-RED	LED9-RED	LED11-RED
LED1-YEL	LED3-YEL	LED5-YEL	LED7-YEL	LED9-YEL	LED11-YEL
PUSHB-2	PUSHB-4	PUSHB-6	PUSHB-8	PUSHB-10	PUSHB-12
LED2-RED	LED4-RED	LED6-RED	LED8-RED	LED10-RED	LED12-RED
LED2-YEL	LED4-YEL	LED6-YEL	LED8-YEL	LED10-YEL	LED12-YEL

### General Alarm



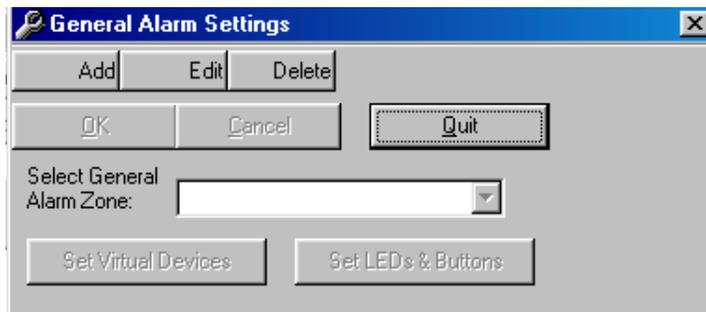
One or all of the networked panels can have a push button as a General Alarm. The General Alarm functionality is configurable. Activating a General Alarm, either through devices or through the GA ON/OFF push button, broadcasts the alarm to all the panels. Silencing the General Alarm at any panel silences all the 'General Alarm' devices. Any new alarm, anywhere in the system, reactivates all the 'General Alarm' devices.

The General Alarm Sequence is applied to each control OUTPUT that has been configured as a General Alarm output. The General Alarm sequence consists of the following stages:

- **Pre-Alert Stage:** Initiated by alarm condition. Alarm is announced but GA output is not energized during this time (**Pre Activate Delay** field).
- **Alert Stage:** GA output pulses ON/OFF during this time period. (**Active Period** field)
- **GA Alert ON:** GA ALERT Stage pulse ON time. (**Pulse On** field)
- **GA Alert OFF:** GA ALERT Stage pulse OFF time. (**Pulse On** field)
- **EVAC Min:** Initiated at beginning of EVAC stage. During this period the GA cannot be silenced by pressing "GA OFF". (**Evacuation** field)
- **Auto Silence:** GA output is de-energized when this timer times out. A setting of 0 causes the GA output to remain energized continuously - until "GA OFF" is pressed. (**Auto Silence** field)
- Click this key to display the **General Alarm Setting** menu

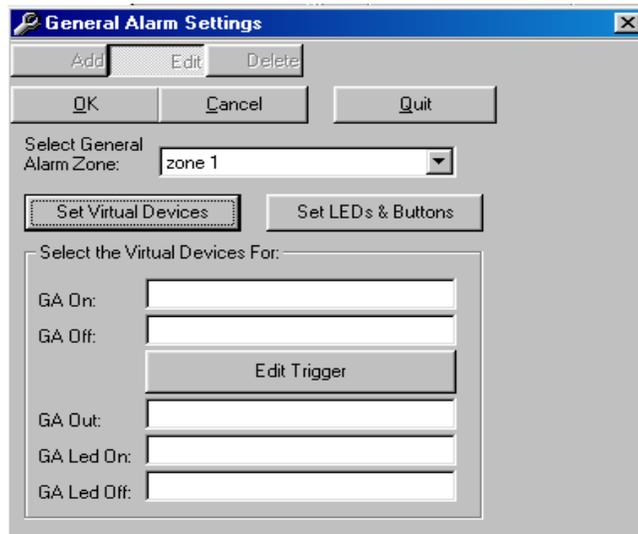
### Add

- Add is selected to control new General Alarm zone.



## Edit

- Edit is selected to modify an existing control of General Alarm zone.

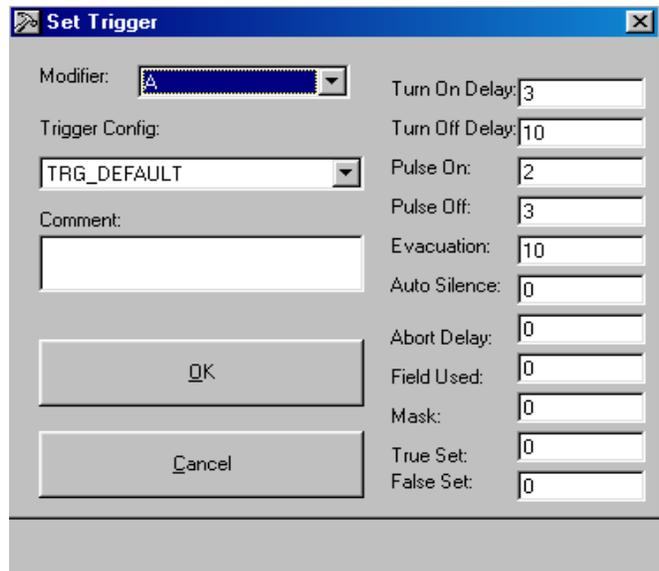


## Delete

Delete is selected to delete an existing control of General Alarm zone.

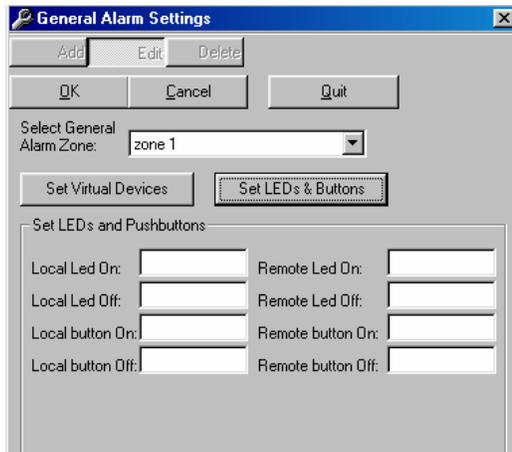
- **Select General Alarm Zone:** Is the Equation section of a General Alarm control. Select one zone. Refer to *Zone Counter* on page 22 to define a Zone.
- **Set Virtual Devices:** Click this key the following window will appear. Five Virtual devices per General Alarm Zone should be defined in order to define the General Alarm Zone.
- **GA On:** Select a virtual device for this field. The virtual device will be used by the Configurator to be controlled by the ON Push Button of the General Alarm Zone. (Modifier "UA" will be triggered)
- **GA Off:** Select a virtual device for this field. The virtual device will be used by the Configurator to be controlled by the OFF Push Button of the General Alarm Zone. (Modifier "UA" will be triggered)
- **GA Out:** Select a virtual device for this field. The virtual device will be used by the programmer to control the Output devices (Horn, Bell...).
- **GA LED On:** Select a virtual device for this field. The virtual device will be used by the Configurator to control the ON LED of the General Alarm Zone.
- **GA LED Off:** Select a virtual device for this field. The virtual device will be used by the Configurator to control the OFF LED of the General Alarm Zone.

- **Edit Trigger:** Same as Equation Trigger Setting but we don't touch the setting of : "Modifier", "Trigger Configuration", "Auto Silence", "Abort Delay", "Field Used", "Mask", "True set" and "False set" keys .



}  
For Mircom  
use only

- **Set LED's & Buttons:** Click this key the following window will appear.



The "remote led" menu will be  
activated in a "Slave" panel only

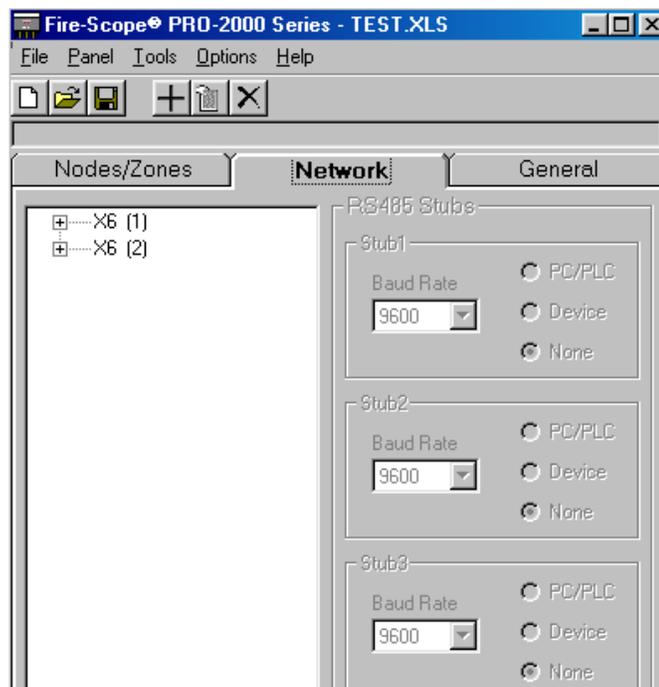
- **Local LED On:** Select an LED (RED) from the List. This LED will turn ON to indicate that the GA (Horn, Bell,...) is ON
- **Local LED Off:** Select an LED (Yellow) from the List. This LED will turn ON to indicate that the GA (Horn, Bell,...) is OFF (silenced).
- **Local button On:** Select a Push button from the list. By pressing the push button, the GA (Horn, Bell,...) will turn ON
- **Local button Off:** Select a Push button from the list. By pressing the push button, the GA (Horn, Bell,...) will turn OFF (silenced)
- **Remote LED On:** Select an LED (RED) from the List (Remote LCD). This LED will turn ON to **indicate that the GA (Horn, Bell,..) is ON**
- **Remote LED Off:** Select an LED (Yellow) from the List (Remote LCD). This LED will turn ON to indicate that the GA (Horn, Bell,...) is OFF (silenced).
- **Remote button On:** Select a Push button from the list (Remote LCD). By pressing the push button, the GA (Horn, Bell,...) will turn ON
- **Remote button Off:** Select a Push button from the list (Remote LCD). By pressing the push button, the GA (Horn, Bell,...) will turn OFF (silenced)

## Networking

The number and type of PRO-2000 panels depend on your application. They come in different versions—an X2, X6, and X0—allowing system scalability. The X2 and X6 versions are the main building blocks of the PRO-2000 series, with the X0 version acting as remote annunciator.

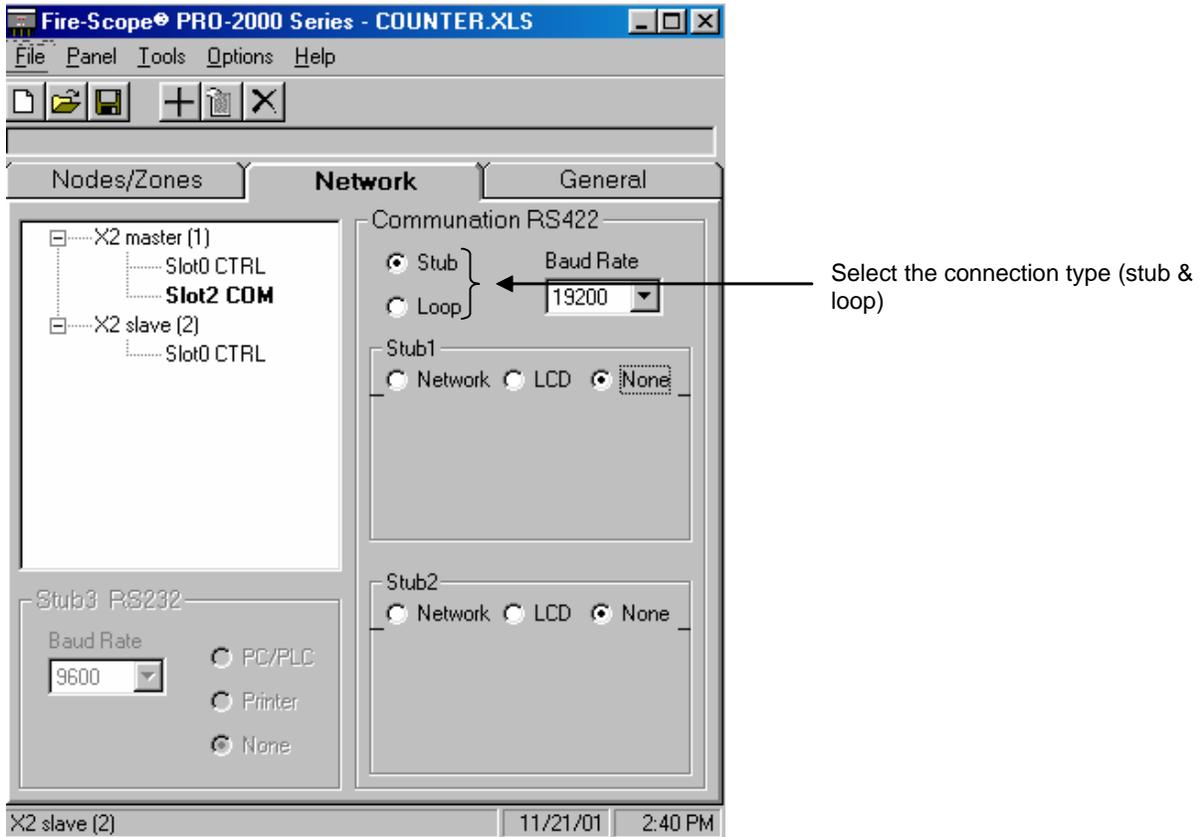
The panels are designed to operate as a stand-alone fire detection and control panel, or as part of a network, comprising several PRO-2000 panels, with a total capacity of 10,000 I/O points. In a network configuration, one panel is programmed as a Master, with all other panels configured as Slaves—reporting alarms and device states to the Master panel.

- The RS422 module should be used in the MPU, LCD, or COMM card.
- Before programming the network make sure that all the panels are created.
- Once added, select **Network** tab to configure the network.



- The “Network” Configuration will be set to default every time you Edit The panel Menu

Selecting the + box beside the X6 or X2, the configured communication cards / ports connected to the panels will be displayed.

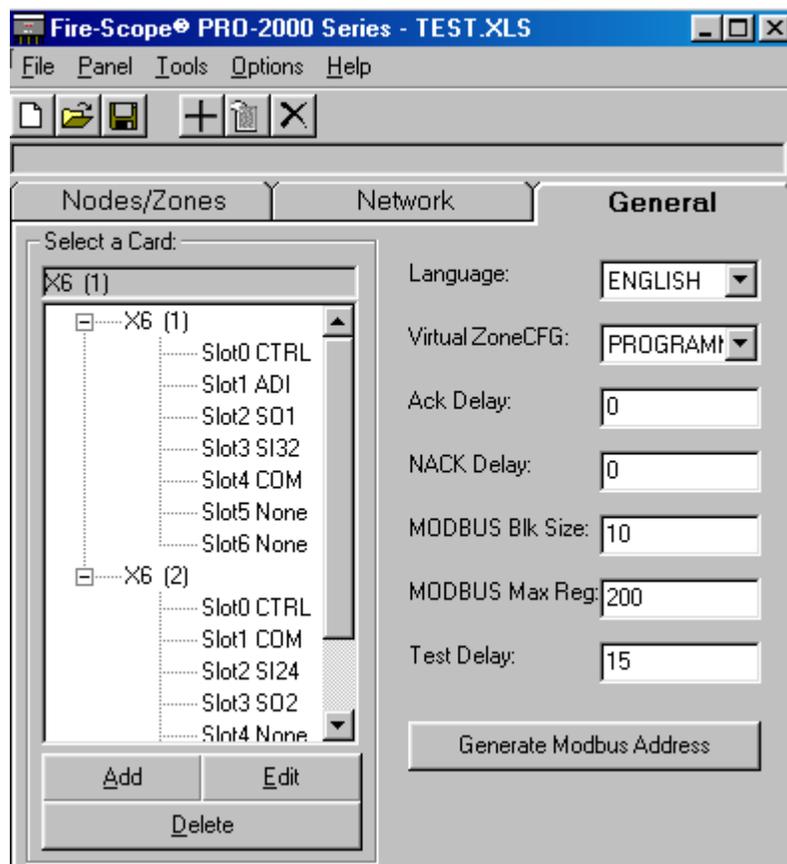


Selecting the Slot0 CTRL or Slotx COM will display the status of your configuration.

- **Communication RS422:** This communication module will be used for the panel networking.
  - **Stub & Loop:** Select a Stub or Loop Configuration. By default the LCD for a X6 panel will be connected to the Slot0 CTRL port with 19200 Baud rate.
  - **Baud rate:** Select a Baud rate between 4800 and 38400. By default the baud rate should be 19200. One common Baud rates per Module. **Note that the LCD has a fix baud rate of 19200**
  - **Number of LCD:** Is the number of repeater panel (X0) connected to this Panel. To display this field, select the **LCD** box.
  - **Master / Slave:** Is to select if Panel will be a Master or a Slave. To display these boxes, select the **Network** box.
  - **Slaves separate by a comma:** Enter the node number of the slaves connected to this port. To display this field, select **Master** box.
  - **Node Master:** Enter the Master node number of this network. To display this field, select the **Slave** box.
  - **If Rooting:** Not Available.
- **RS232 Stub:** This communication module will be used for Printer and PLC.
  - **Baud rate:** Select a Baud rate between 4800 and 38400.
  - **PC/PLC:** This selection will configure the PRO-2000 to use this port to interface to a PC/PLC VDU using the Modbus PROtocol.
  - **Printer:** This selection will configure the PRO-2000 to use this port to send the system events.
  - **None:** This selection will configure the PRO-2000 to use this port as a Diagnostic port. At this point only the RS232 port of the MPU/LCD is available for Diagnostics.

- **RS485 Stubs:** This communication module will be used for PC/PLC or for a Modbus Gas and Flame detectors.
  - **Baud rate:** Select a Baud rate between 4800 and 38400.
  - **PC/PLC:** Not Available.
  - **Device:** This selection will configure the PRO-2000 to use this port to interface to Modbus Gas and Flame detectors. By Default, the RS485 Module is configured to **Device** Option.

## General



- Select **General** tab to configure the General Parameters for the PRO-2000 network panels.
- The possible parameters are the following:
  - **Language:** To select the language of the System messages, English or French
  - **Virtual Zone CFG:** May be NONE, DIRECT or PROGRAMMABLE. Must be 'PROGRAMMABLE' if virtual devices are assigned to zones.
  - **Ack Delay:** Delay before automatic New Alarm acknowledges for a device in service mode.
  - **NACK Delay:** for Mircom use only.
  - **MODBUS Blk Size:** The size of the Modbus Read Block.
  - **MODBUS Max Reg:**  $\geq$  Number of Modbus register.
  - **Test Delay:** Delay before automatic ACK and RESET for a device in test mode.
  - **Generate Modbus Address:** To generate a Modbus address for all devices.

## Notes

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## Notes

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