

PRO-2000 X2 Panels



Features

- Up to 1200 local detection/control devices
- Up to 5000 networked detection/control devices
- Integrated gas detection
- Agent releasing service
- Support for 2-wire addressable devices
- Support for conventional 2-wire initiating devices
- Support for notification circuits
- Support for multi-panel networking
- Battery backed-up real time clock and event log
- Independent ground fault detection circuits on each interface card for easy ground fault tracking
- Wall mount enclosure equivalent to NEMA 2

Description

The PRO-2000 X2 panels are microprocessor-based fire alarm control units, suitable for small to medium fire detection and suppression applications. Larger applications can be covered using additional panels in a master/slave network configuration.

There are three types of X2 panels available: the X2S, the X2E and the X2M.

The X2S panel is the standard model. It has a 2 line by 40 character display, with associated controls and indicators. It also has 24 programmable indicators and 12 programmable pushbuttons.

The X2E panel has the same features as the X2S plus 48 additional programmable indicators and 24 additional programmable pushbuttons.

The X2M panel has the same features as the X2S plus a geographic mimic panel containing up to 144 indicators. The geographic mimic also supports 72 pushbuttons for special applications. The geographic mimic provides a graphical representation of the protected areas. When new events are displayed on the LCD, their location can be identified rapidly via the appropriate indicators on the geographic mimic.

The following types of devices are supported by the X2 panels:

Addressable devices:

- Smoke detectors, heat detectors, monitor modules and control modules

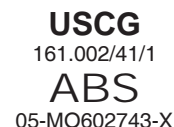
Conventional initiating devices:

- Non-shorting detectors (Heat detectors, smoke detectors, etc.)
- Shorting devices (Pull-stations, Abort pushbuttons)

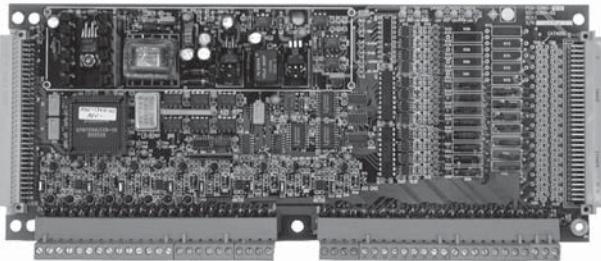
Conventional notification devices:

- Unsupervised NO or NC relay output
- Supervised and powered relay output

The X2 panels support communication and networking functions and can be configured to communicate to several RS-232 devices such as printers or PLC's. Similarly, the X2 panels can be connected in a network configuration with several X2 panels communicating together in a master/slave setup. In the master/slave configuration, all the events detected by slave panels are reported to the master panel.



PRO-2000 24/32 Zone Supervised Input Card



Description

The Supervised Input Card supports connection of up to 32 initiating circuit inputs. It can be hooked up to any of the PRO-2000 Series panels. Each NFPA style B initiating circuit input is suitable to be used for waterflow, supervisory, conventional detectors and manual devices. A total of up to 20 conventional detectors can be connected on the same initiating circuit input. This allows for a maximum of 640 functional detectors to be connected and monitored by a single Supervised Input Card.

All input circuits have full transient protection to prevent damage to the card in the event that a field power surge should occur. The field interface electronics of the card are fully isolated from system electronics thus insuring an exceptional electrical immunity.

The built-in ground fault detection circuit is designed to pinpoint a ground fault source at the board level, unlike other systems that give a global system level ground fault. This makes it easier to identify the faulty wiring/circuit. A high efficiency power supply insures a lower power consumption.

Precision analog-to-digital converters are used to read the status of the initiating devices. Software processing then analyses these readings. This increased flexibility allows for multiple configurations and devices, and also insures a better compatibility with future devices.

Two versions of the Supervised Input Card are available; a 24-zone and a 32-zone model.

The 24-zone model allows for up to 24 initiating circuits through two (2) removable "Combicon" terminal blocks. The unit features on-board transient protection.

Features

- Up to 32 initiating circuits
- Up to 20 conventional detectors per initiating circuit
- Suitable for interfacing with waterflow, supervisory, detectors and manual devices
- Fuseless initiating circuits with individual supervision and power limiting
- Full transient protection on all initiating circuits
- Field interface electronics fully isolated from system electronics for increased electrical noise immunity
- Built-in local ground fault detection for easier maintenance and troubleshooting
- Built-in isolated switching power supply for increased power efficiency
- Software based processing for easy configuration and upgradability
- Built-in self-diagnostic for increased reliability
- Surface mount technology
- Removable connectors for easy servicing
- Multiple device support through flexible software configuration

Specifications

Electrical Specifications			
Line short circuit per channel	22 mA		
Line supervision current per channel	3 mA		
Line resistance	50 ohm. max.		
End-of-line resistor value	6.8 K		
Line standby voltage	18 - 25 VDC		
Card current consumption (excluding field devices)	281 mA @ 24 VDC		
Max. total detector standby current	Application specific		
Physical Specifications			
Length	11.9" (302.3 mm)	Thickness	1" (25.4 mm)
Width	4.88" (124 mm)	Weight	14.1oz (400g)



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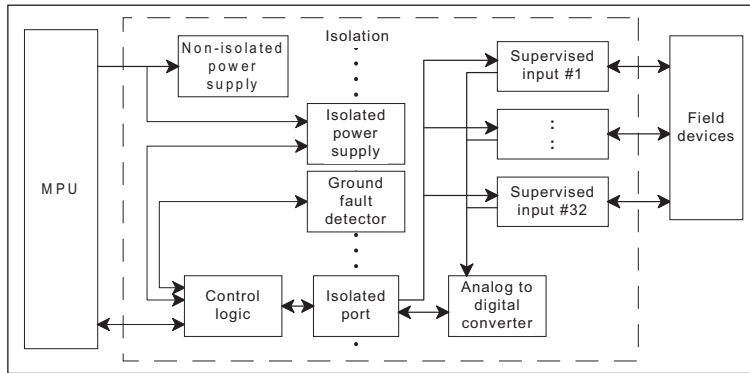
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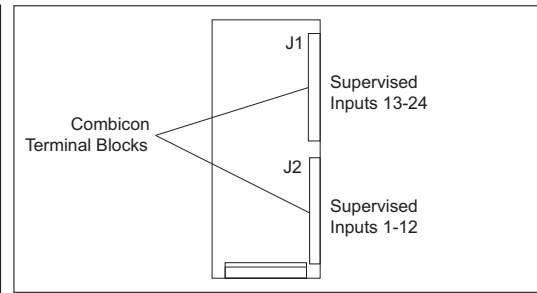
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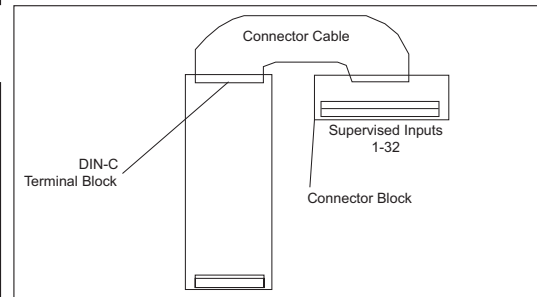
Block Diagram



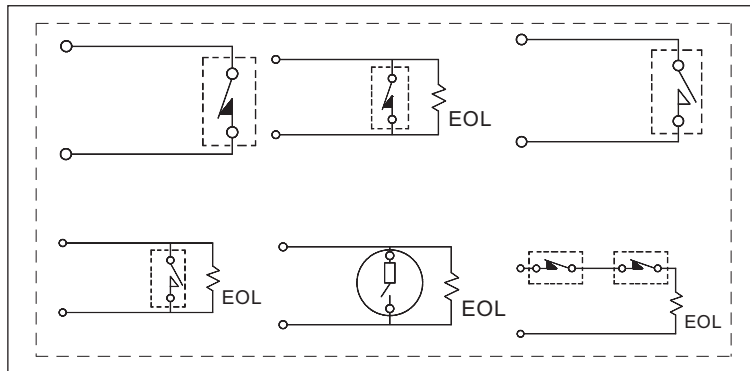
24-Zone Supervised Input Card



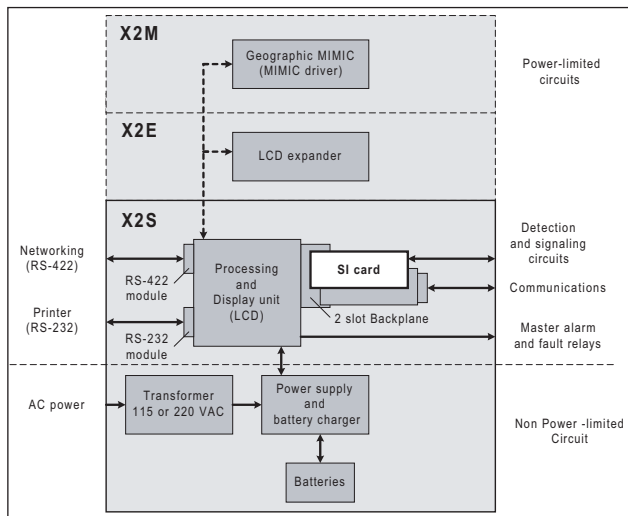
32-Zone Supervised Input Card



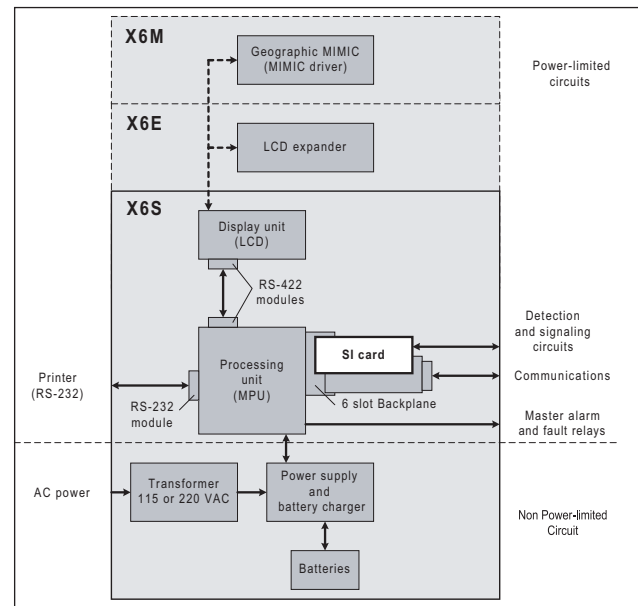
Supported Initiating Circuit Configurations



24/32 SICard Connected to an X2 Panel



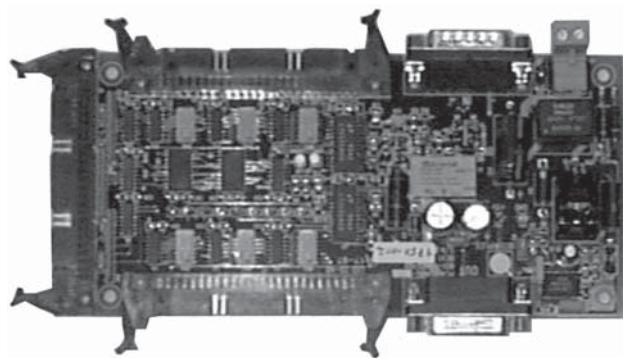
24/32 SI Card Connected to an X6 Panel



Ordering Information

Model Number	Description
PCA-12895-00	PRO-2000 24-Zone Supervised Input Card, UL/ULC
PCA-12895-02	PRO-2000 24-Zone Supervised Input Card, Marine
PCA-12895-01	PRO-2000 32-Zone Supervised Input Card, UL/ULC
PCA-12895-03	PRO-2000 32-Zone Supervised Input Card, Marine
PCA-14308-00	PRO-2000 Connection Board for 32-Zone Input Card, UL/ULC
PCA-14308-01	PRO-2000 Connection Board for 32-Zone Input Card, Marine

PRO-2000 Mimic Driver Card



Description

The Mimic Driver Card enables the X0, X2 and X6 configurations of the PRO-2000 Series to power and control a geographic annunciator.

A serial link relays information between the LCD processor, the LCD display unit and the Mimic Driver Card. The serial link enables daisy chaining of up to three Mimic Drivers. Each Mimic Driver Card controls up to 48 LEDs and 72 push buttons available for a geographic annunciator.

The Mimic Driver Card has two DSUB-15 connectors: one input and one daisy-chained output, through which power and information pass.

On the X2 type panels, the serial communication occurs between the Processing and Display Unit (LCD) and the Mimic Driver.

On the X0 and X6 type panels, the serial communication occurs between the LCD and the Mimic Driver.

The Mimic Driver has removable connectors to facilitate easy installation and field support. Also a step down switching power supply is used for optimum efficiency and reliability.

Features

- Controls up to 48 LED indicators and 24 push buttons
- Up to three Mimic cards can be cascaded for increased capacity
- Serial interface with the LCD/Processing and Display Unit (LCD)
- Switching power supply for increased power efficiency
- Removable connectors for easy servicing

Specifications

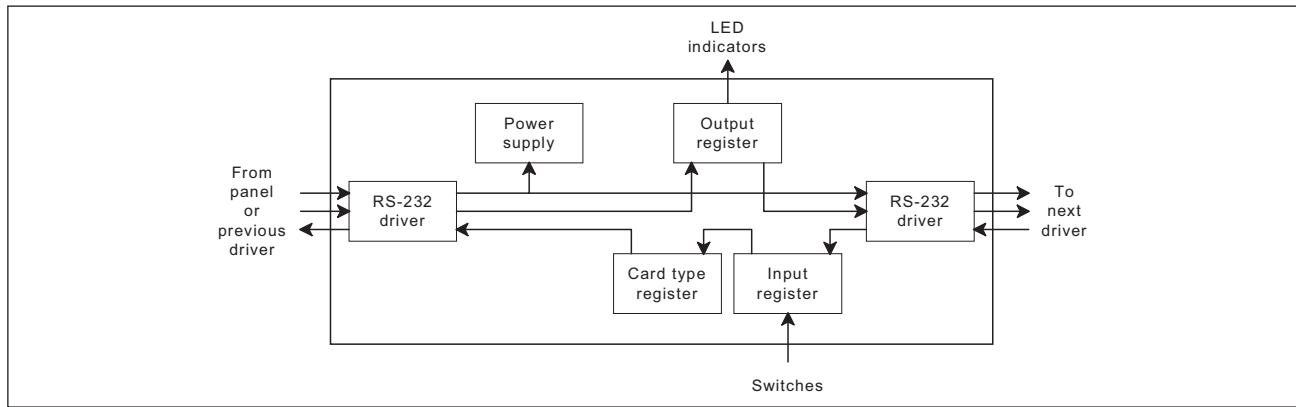
Electrical Specifications	
Input Voltage	20 to 28.5 VDC
Standby Input Current (all LED indicators OFF)	50 mA @ 24 VDC
Maximum Input Current (all LED indicators ON)	160 mA @ 24 VDC
LED Indicator	
Current per LED	2.2 mA @ 24 VDC
Serial Communication	
Input Serial Communication	As per RS-232 electrical standards
Output Serial Communication	As per RS-232 electrical standards
Physical Specifications	
Length	7.0" (177.8 mm)
Width	3.25" (82.6 mm)
Thickness	1" (25.4 mm)
Weight	5.29 oz. (150 g)



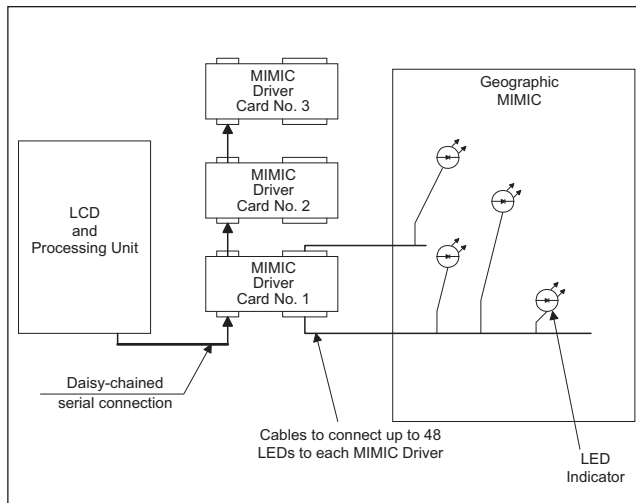
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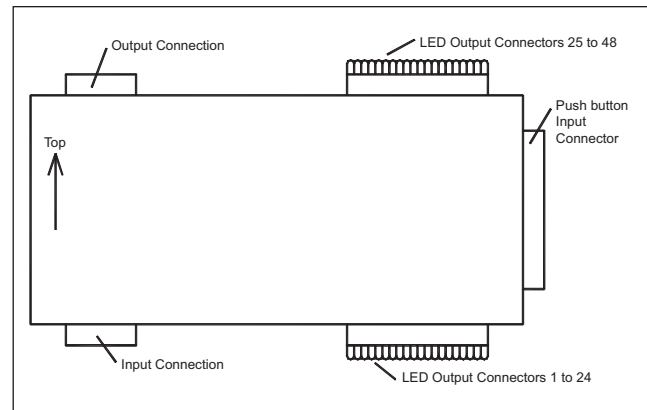
Block Diagram



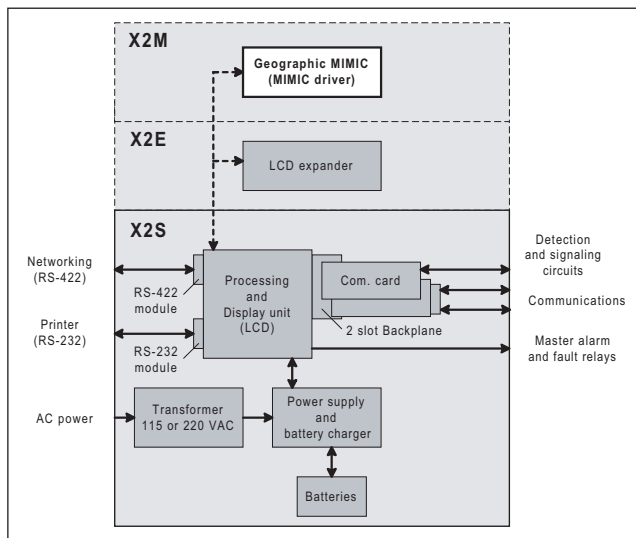
Typical Diagram



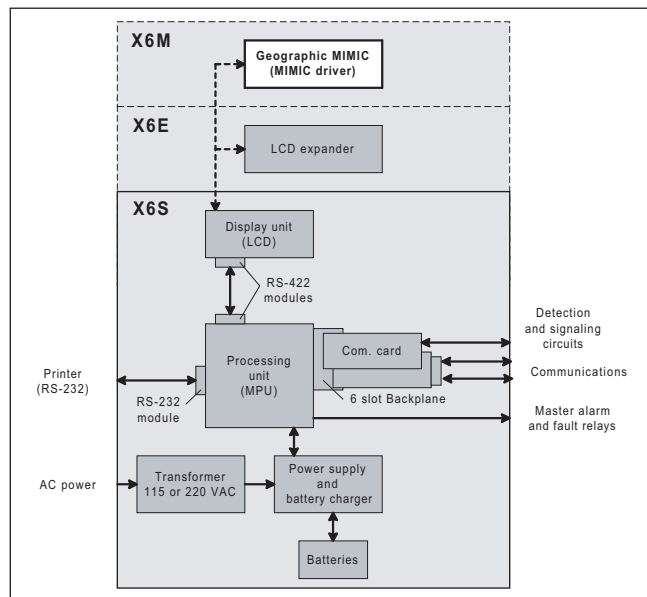
Mimic Driver Connection Sketch



LCD Expander Card Connected to an X2 Type Panel



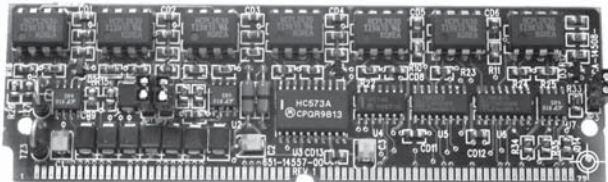
LCD Expander Card Connected to an X6 Type Panel



Ordering Information

Model Number	Description
PCA-13461-00	PRO-2000 Mimic Driver Card UL/ULC
PCA-13461-01	PRO-2000 Mimic Driver Card Marine

PRO-2000 RS-485 Interface Module



Description

The RS-485 Interface Module easily snaps onto the PRO-2000 Series products to enable RS-485 MODBUS communication capabilities to compatible equipment.

The module has three RS-485 channels. A module with one RS-485 channel is also available.

The RS-485 module allows "multi drop" serial communication and can be used on the following PRO-2000 Series products:

- Communication Card mounted onto the backplane of the Display Unit (LCD Card)
- Communication Card mounted onto the backplane of the Processing Unit (MPU Card)

The RS-485 module has an optical interface to the system electronics and is powered by two isolated power supplies that greatly increases electrical noise immunity.

All inputs and outputs have full transient protection that guard against electrical and electrostatic discharges that can occur in the field.

Using the RS-485 Interface Module, a variety of detectors and devices equipped with the RS-485 MODBUS Interface can be connected to the PRO-2000 Series panel.

Features

- Allows RS-485 MODBUS communication on PRO-2000 Series products
- Full transient protection on all inputs and outputs
- Opto-isolated interface to system electronics for increased electrical noise immunity
- Modular design for easy replacement by insertion into the receiver board's 72-pin socket
- One or three ports on each module

Specifications

Electrical Specifications	
Input Voltage	5 VDC \pm 0.3 VDC
Input Current	80 mA
RS-485 - Outputs and Inputs	
Output Transmitter Voltage	As per RS-485 standard
Input Receiver Voltage	As per RS-485 standard
Physical Specifications	
Length	4.25" (108 mm)
Width	1.275" (32.4 mm)
Thickness	0.75" (19.1 mm)
Weight	0.71 oz. (20 g)



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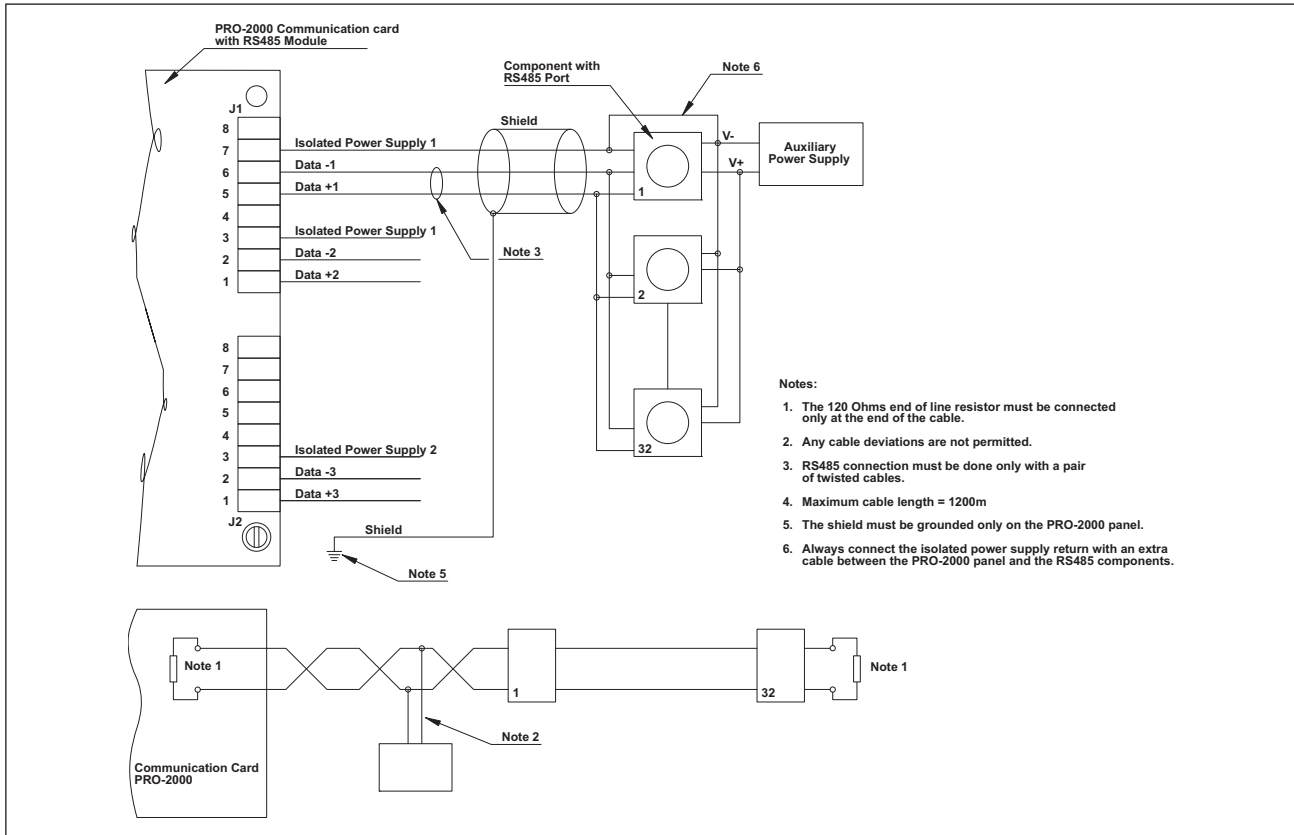
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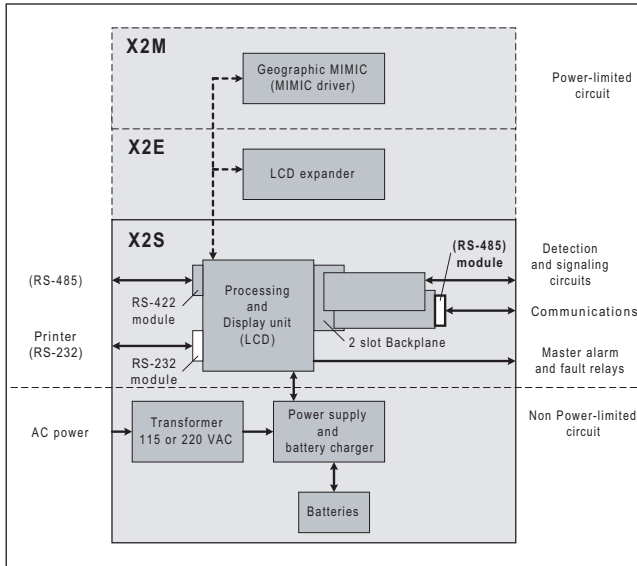
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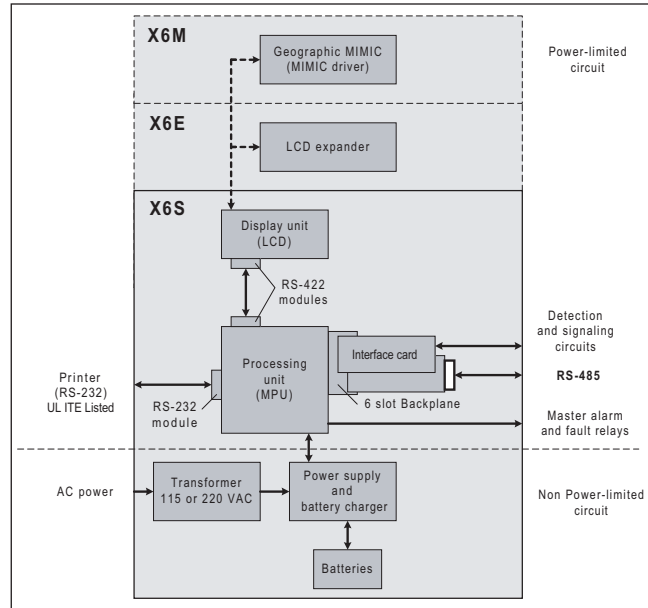
RS-485 Interface Module Typical Connection Diagram



RS-485 Interface Module Connected to an X2 Type Panel



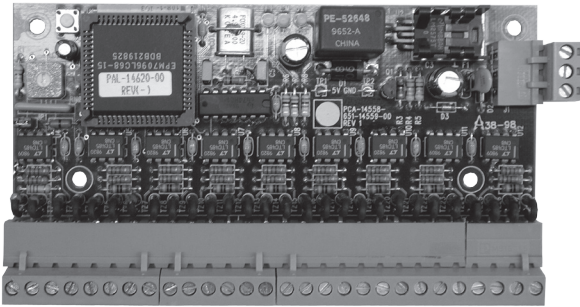
RS-485 Interface Module Connected to an X6 Type Panel



Ordering Information

Model Number	Description
PCA-14508-00	PRO-2000 RS-485 Interface Module
PCA-14508-01	PRO-2000 RS-485 Interface Module, One Channel
PCA-14508-02	PRO-2000 RS-485 Interface Module, Coated, Marine
PCA-14508-03	PRO-2000 RS-485 Interface Module, 1 Channel, Coated, Marine

PRO-2000 RS-485 Distribution Card (Hub)



Features

- Eight (8) RS-485 slave ports receiving/sending data to/from the master port (maximum of 32 devices for each port)
- Selective communication speed with a 16 position rotary selector
- 8 bits asynchronous UART communications mode, 1 bit parity
- Automatic connection and disconnection of the faulted slave port
- Several RS-485 Distribution Cards can be connected in parallel to the same line
- All inputs and outputs are protected against any transients
- Supported communication speeds: 300, 600, 1200, 2400, 4800, 9600, 14000, 19200 and 28800 Baud

Description

The RS-485 Distribution Card provides one to eight RS-485 channel splitters. Each channel is equipped with an RS-485 driver/ receiver chip set. This eliminates the problem of a communication bus failure found on multi-drop point configurations due to a single shorted device.

The RS-485 Distribution Card has nine separate ports; one (1) master port and eight (8) slave ports. The master port is connected to the PRO-2000 Series panel and directs data to the eight slave ports. The RS-485 Distribution Card monitors all ports, automatically disconnecting any shorted port and automatically reconnecting the port once the short is removed without disrupting the communication of the other ports.

The ability to operate several distribution cards in parallel provides flexibility in the system configuration. For maximum reliability each device will have a dedicated port with a maximum of eight devices per distribution card.

In a branch/star configuration, each of the eight ports can support a maximum of 32 devices. A shorted device will only disrupt the communication of the branch to which it is connected.

The rotary selector is used to select the matching communication speed of the master panel. The RS-485 Distribution Card should be mounted inside a protective box and requires a 28-Volt power source.



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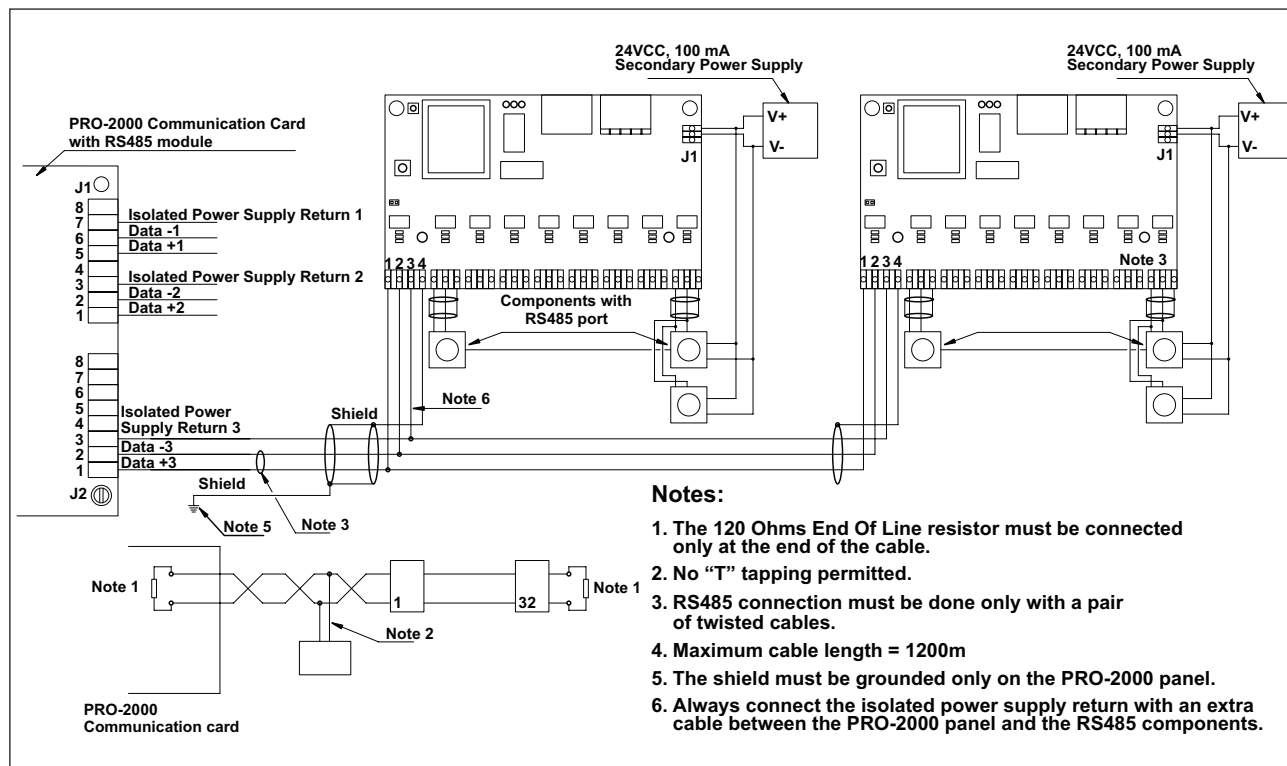
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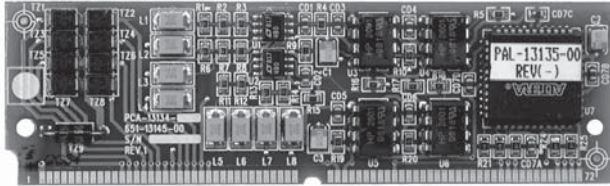
Typical Wiring Diagram



Ordering Information

Model Number	Description
PCA-14558-02	PRO-2000 RS-485 Distribution Card, 1-In/8-Out
PCA-14558-01	PRO-2000 RS-485 Distribution Card, 1-In/8-Out, Coated, Marine

PRO-2000 RS-422 Interface Module



Description

The RS-422 communication interface module easily snaps onto the PRO-2000 Series products to enable RS-422 communication capabilities to compatible equipment.

The module has two RS-422 channels, with each channel having one "Receiver" and one "Transmitter" output.

The RS-422 module allows "point-to-point" serial communication and can be used on the following PRO-2000 Series products:

- Communication card mounted onto the backplane of the Display Unit (LCD card)
- Communication card mounted onto the backplane of the Processing Unit (MPU card)
- Communication socket of the Display Unit (LCD card)
- Communication socket of the Processing Unit (MPU card)

The RS-422 module has an optical interface to the system electronics and is powered by an isolated power supply that greatly increases electrical noise immunity.

All inputs and outputs have full transient protection that guards against electrical and electrostatic discharges that can occur in the field.

Operation

Point-To-Point Communication

The point-to-point communication capability between the Master Panel and a remote LCD Unit allows installation of a remote LCD Unit away from the Master Panel. The Master Panel can be an X2 or and X6 type panel. In order to improve the reliability of the communication between panels, it is possible to add a loop back connection. The loop back connection allows fault tolerant communication between devices.

Features

- Allows RS-422 communication on PRO-2000 products
- Full transient protection on all RS-232 inputs & outputs
- Opto-isolated interface to system electronics for an increased electrical noise immunity
- Modular design for easy replacement by insertion into the receiver board's 72-pin socket
- Two RS-422 ports on each module

Network Communication

This type of application displays the network capability of the PRO-2000 line of products. The Master System and/or the Slave System can be any X2 or X6 type panel.

The network protocol is handled by the master system that sends and receives information to and from the slave system.

An incoming RS-422 signal to a slave system is divided into two paths: the first path is used to signal the local slave while the second path is sent back through the second port in the RS-422 module, where a regenerated RS-422 signal is sent to the next slave system in line.

An optional loop back connection can be added from the last slave in the chain to the master in order to improve reliability and provide fault tolerant communication.

This would prevent a system shutdown and maintain network continuity in the event that a cable should short or sever. The loop back connection would ensure continued network communication from both sides of the ruptured cable. The loop back connection can be enabled or disabled when the system is configured.



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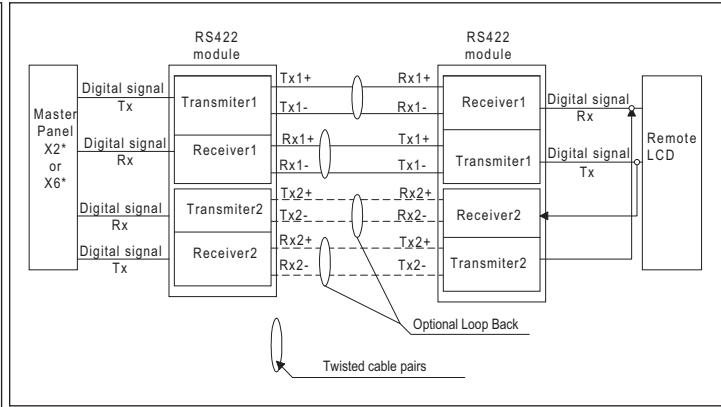
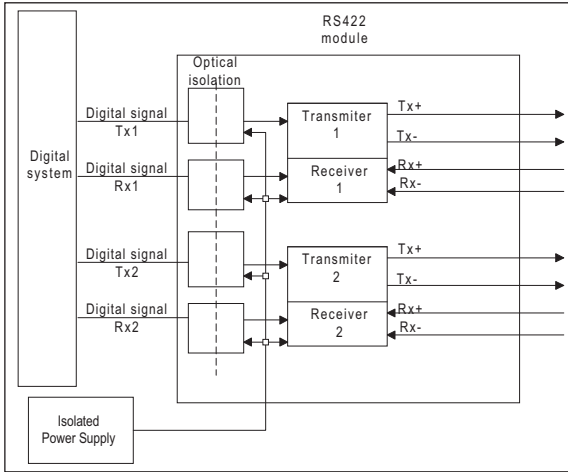
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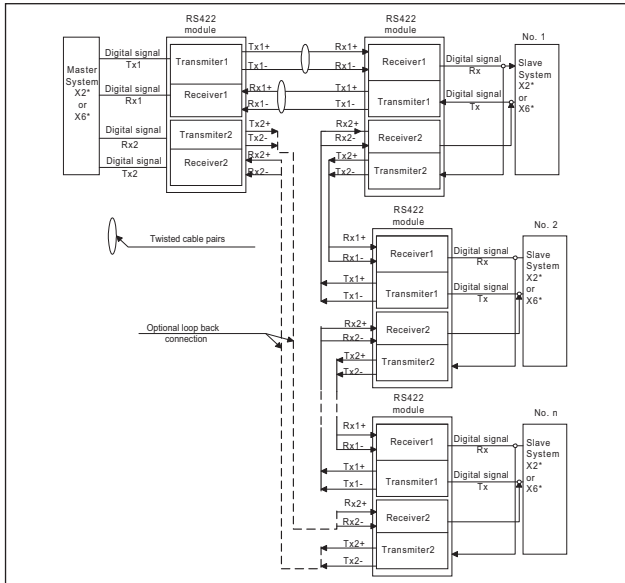
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Wiring Diagrams

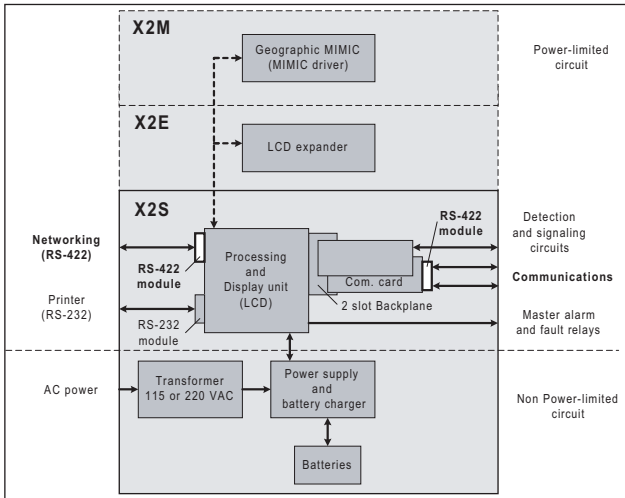


Specifications

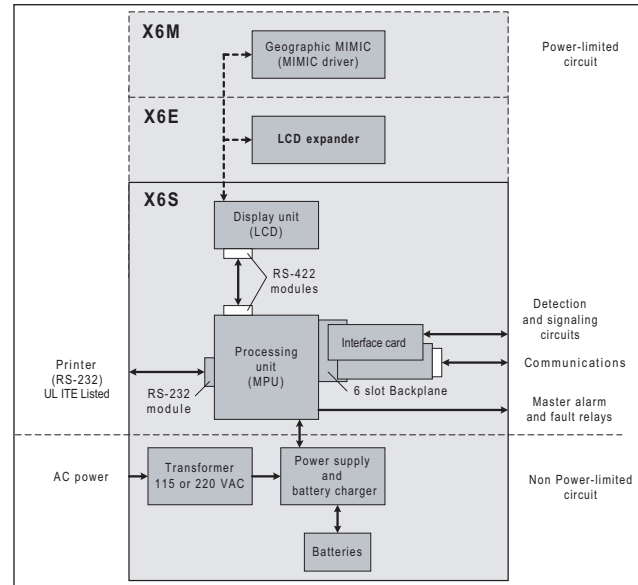


Electrical Specifications	
Input Voltage	5 VDC ± 0.3 VDC
Input Current	80 mA
RS-422 Outputs & Inputs	
RS-422 Output Transmitter Voltage	As per RS-422 standard
RS-422 Input Receiver Voltage	As per RS-422 standard
Physical Specifications	
Length	4.25" (108 mm)
Width	1.275" (32.4 mm)
Thickness	0.75" (19.1 mm)
Weight	0.71 oz. (20 g)

Interface Module Connected to an X2 Type Panel



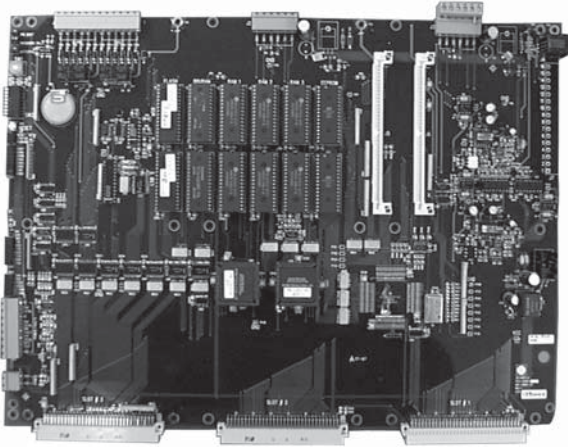
Interface Module Connected to an X6 Type Panel



Ordering Information

Model Number	Description
PCA-13134-00	PRO-2000 RS-422 Interface Module, UL/ULC
PCA-13134-01	PRO-2000 RS-422 Interface Module, Marine

PRO-2000 Main Processing Unit (MPU) Card



Description

The Main Processing Unit (MPU) provides processing and communication circuitry for the X6 series panels. It provides two RS-422 full-duplex, 4-conductor serial links used for communications with the local LCD panel.

The MPU is shipped pre-installed on the enclosure backplate with an MPU Backplane attached and an RS-422 communication module installed. The MPU Backplane enables the MPU to have up to 6 expansion cards installed, for example, the ADI, Supervised output, or Supervised Input cards.

The MPU Backplane has a side connector to plug into the MPU expansion slot providing connectivity between the MPU and the expansion cards.

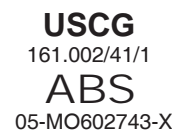
The MPU provides monitoring of the power supply for AC/DC fault detection. The card provides the following visual indicators and controls:

- Various status LEDs provide a visual indication of the card's health. There are Red LEDs for error codes, blinking LEDs (Running) indicating the board is working; Green Power LEDs, and Communication LEDs.

Features

- Six (6) I/O expansion slot capability
- Common alarm and fault relays
- High speed RS-422 serial communication interface to annunciator panel
- 4 MB of RAM memory
- One RS-232 serial port - for printer, video display unit or programming unit
- 1000 Event History Log for Alarm, Supervisory and Trouble events
- Watchdog circuit
- Calendar/Clock
- Battery backed event memory
- On-card status indicators
- Ground fault detection circuit
- Can accommodate up to 3 repeater annunciator panels wired as Class A or B

- Reset push button to hard reset the MPU card.
- Dipswitch providing software options. Factory set only.
- Rotary switch allowing the selection of different configuration modes. Factory set only.
- Three jumpers, two for the watchdog and one for battery. These jumpers must be connected at all times. A watchdog circuit, monitoring microprocessor, halts system operation if a hardware or software failure occurs. The lithium battery provides the backup for the real-time clock and the RAM memory used for event logging. The real-time clock provides time and date for event recording.



When a system is first delivered the MPU card has its internal battery jumper, JP3, disabled. Prior to installation move the jumper shunt (located above the board mounted battery) into position over both pins. If the jumper is missing the panel will annunciate a "Clock Battery Fault " at power up. If the jumper is in, you can remove power and the event log and the clock remain powered.

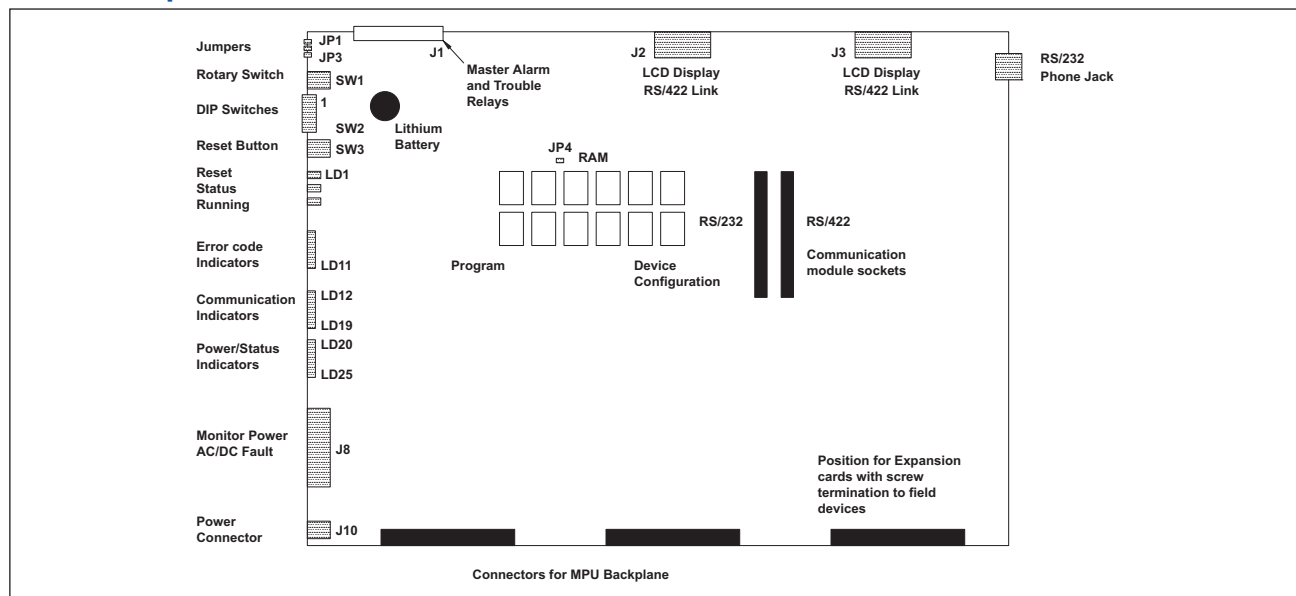
The MPU has two sockets for adding communication modules. Depending on your configuration, these could be either the RS-232 or RS-422 communication modules. Installing an RS-232 module activates the phone jack allowing MPU software configuration through an external PC or communication with a printer.

Installing an RS-422 module activates the two connectors to the LCD. The two connectors provide power to the LCD. This available power is current limited to 1 amp.

Note: The MPU ships with a pre-installed RS-422 module.

The MPU has built-in Master Alarm and Fault Relays; Two Form-C contacts for each relay. The Master Alarm Relay activates whenever an alarm is present on the system. The Master Fault Relay activates whenever a fault is present on the system. The rating for Master Alarm and Fault Relay is as follows: 0.3A, 115VAC, 0.3A, 110VDC 1A, 30V.

MPU Backplane



Specifications

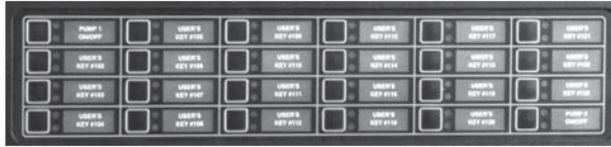
Electrical Specifications	
Power Requirement Voltage	20 to 28.5 VDC
Standby Current	0.301 A
Common Alarm/Fault Relay Outputs	
Contact Arrangement	2 Form C
Contact Load Rating	0.3 A @ 115VAC 0.3A @ 110VAC 1 A @ 30VAC
RS-422 Communication	
Interface	RS-422 Full-Duplex Serial
Protocol	ADCCP CLASS UN
Maximum Baud Rate	38400
Maximum Cable Length	1.2 Km

RS-232 Communication	
Interface	RS-232 Full-Duplex
Maximum Baud Rate	38400
Maximum Cable Length	20 meters
Dimensions	
Height	10.5" (266.7 mm)
Width	19.0" (482.6 mm)
Depth	1.5" (38.1 mm)

Ordering Information

Model Number	Description
PCA-12886-00	PRO-2000 MPU, UL/ULC
PCA-12886-01	PRO-2000 MPU, Marine
PCA-12902-00	PRO-2000 MPU Backplane, UL/ULC
PCA-12902-01	PRO-2000 MPU Backplane, Marine

PRO-2000 LCD Expander Module



Features

- 24 programmable push buttons with associated LED pair per standard panel
- Switching power supply for increased power efficiency
- Removable connectors for easy servicing
- Serial interface with the LCD/Processing and Display Unit (LCD)

Description

The LCD Expander card allows for any PRO-2000 Series panel to control up to 24 programmable push buttons with their associated LED pairs. This increases the range of programmable push buttons that can be controlled from a standard X0, X2 or X6 panel.

A serial link ensures that information is relayed between the LCD/Processing and Display Unit (LCD) and the LCD Expander.

On the X2 type panels, the serial communication occurs between the Processing and Display Unit (LCD) and the LCD Expander.

On the X0 and X6 type panels, the serial communication occurs between the LCD and the LCD Expander card.

Each LCD Expander card has its own step down switching power supply that provides increased efficiency and reliability.

The LCD Expander card is fitted with removable connectors that facilitate field servicing.

Specifications

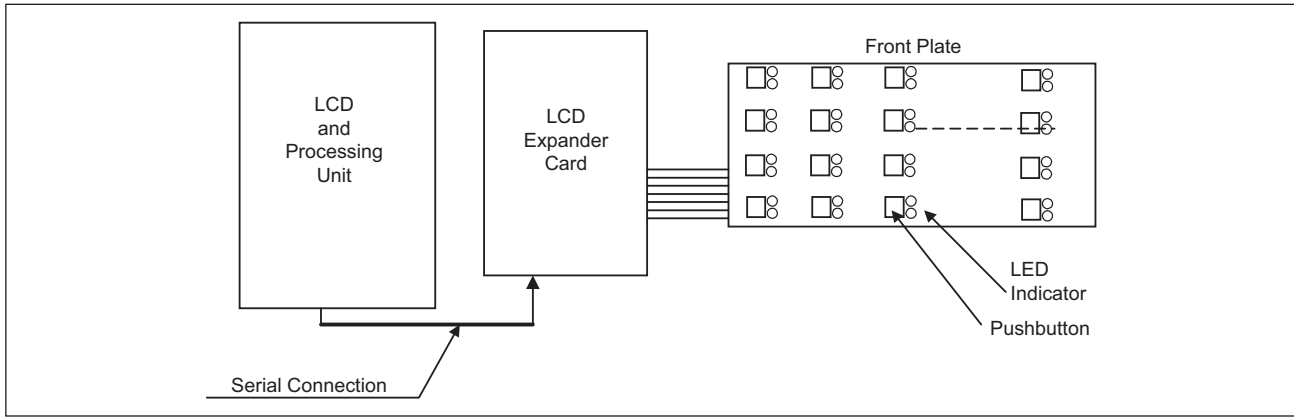
Electrical Specifications	
Input Voltage	20 to 28.5 VDC
Standby Input Current (all LED indicators OFF)	50 mA @ 24 VDC
Maximum Input Current (all LED indicators ON)	160 mA @ 24 VDC
LED Indicator	
Current per LED	2.2 mA @ 24 VDC
Serial Communication	
Input Serial Communication	As per RS-232 electrical standards
Output Serial Communication	As per RS-232 electrical standards
Physical Specifications	
Length	16.5" (419.1 mm)
Width	4.23" (107.4 mm) with base
Thickness	1" (25.4 mm)
Weight	42.33 oz (1200 g)



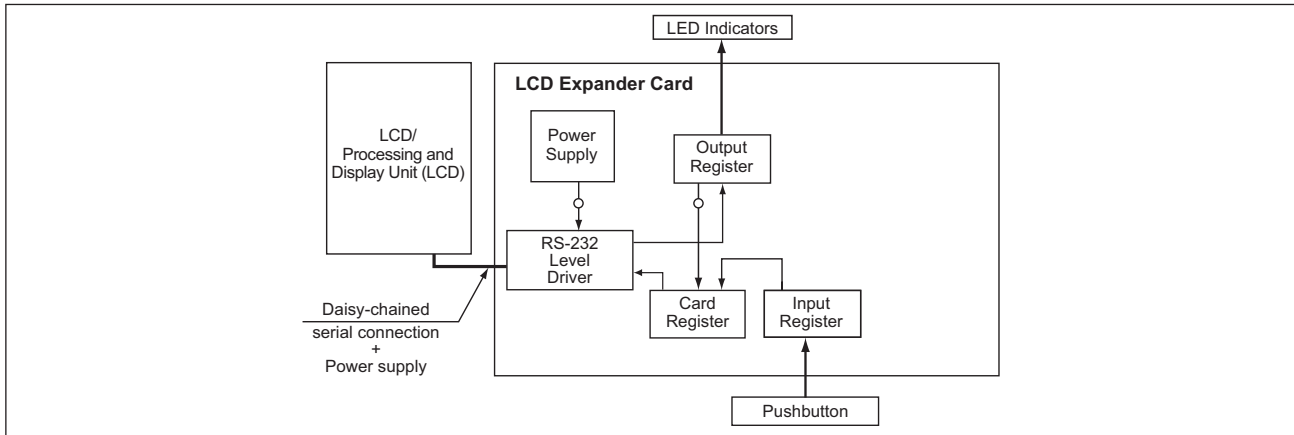
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Block Diagram

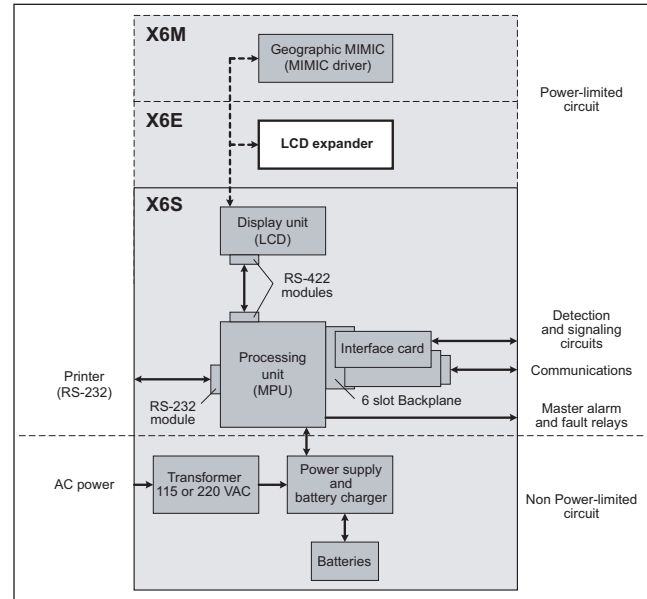
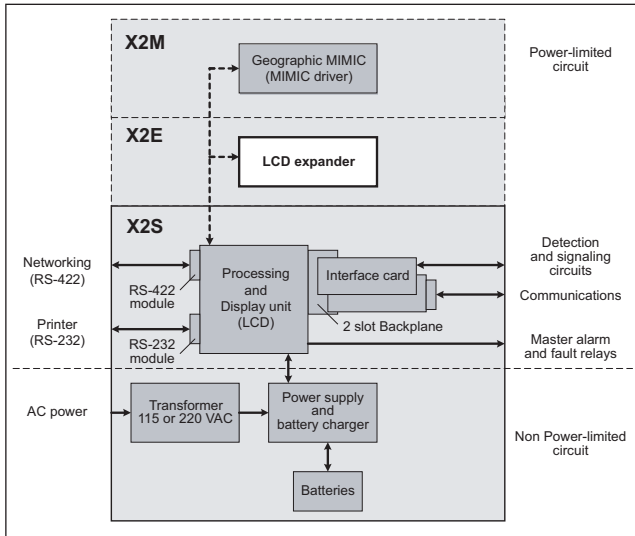


Typical Application



LCD Expander Card Connected to an X2 Type Panel

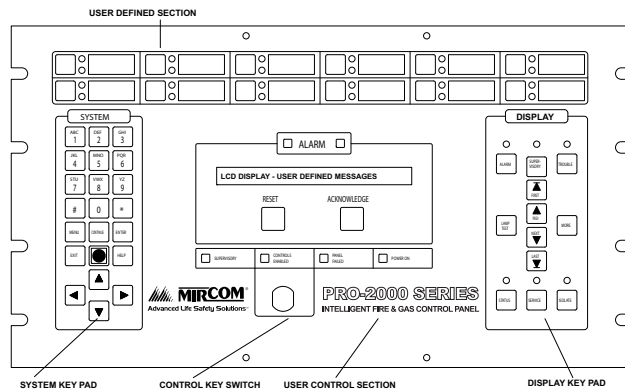
LCD Expander Card Connected to an X6 Type Panel



Ordering Information

Model Number	Description
PCA-14289-00	PRO-2000 LCD Expander Card, UL/ULC
PCA-14289-01	PRO-2000 LCD Expander Card, Marine
PAM-14402-00	Front Panel FS PRO-2000 LCD Expander, UL/ULC
PAM-14402-01	Front Panel FS PRO-2000 LCD Expander, Marine

PRO-2000 LCD Annunciator Assembly



Features

- Panel mount or 19-inch rack mount capability
- 2 line by 40 character LCD display
- Local or remote (repeater) installation
- Complies with UL/ULC requirements for scrolling of alarms and troubles
- 12 user-programmable push buttons
- Interchangeable “slide-in” labels
- Control key switch
- Service keypad

Description

The LCD implements the user interface to the PRO-2000 panels using LEDs and a 2-line x 40-character LCD unit.

For X0, X6 Series, the LCD performs the user interface function only.

For , X2 Series, the LCD performs the user interface function, and provides processing and communication circuitry for the panel.

The User Interface

- Mounted on the enclosure door, the LCD provides the user interface for the PRO-2000 Series panel. The LCD Display comprises of an LCD card, a display/control escutcheon with configurable LEDs and push buttons, control key switch and a buzzer. The built-in buzzer draws attention to the panel on occurrence of any detected event. The buzzer sounds intermittently at two different rates: fast for alarms and slow for all other conditions. The display/control escutcheon interfaces between the operator and the panel. There are 4 selections:
- The Display section provides selectable display lists for the events you want to access. By selecting a Mode, Alarm, Supervisory, Trouble, Status, Service or Isolate, the appropriate list appears in the LCD.
- The System section provides selections for system maintenance. For example, enable/disable printing, print the event log, place/remove devices into/from service or isolate mode.

- The User Defined section contains 12 configurable push buttons and 24 status LEDs; one red and one yellow for each push button.
- The User Control section displays events and provides acknowledge and reset features.
- Membrane push button control acknowledge and silence alarms, reset the detection circuits and test the panel display. These controls also enable authorized service personnel to perform service functions. Using the System keypad, the operator can select different maintenance functions such as the event log, backlighting intensity and other maintenance related features.
- The LCD Display features a 2 line by 40 character Liquid Crystal Display (LCD) indicating the status of the panel and all connected input and output devices. When an off-normal condition occurs, the first line displays event occurrence and time, the second line provides a plain language description of the off-normal condition. The text description for the zone or device is user defined.



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When a system is first delivered the LCD card has its internal battery jumper, JP6, disabled. Prior to installation move the jumper shunt into position over both pins. If the jumper is missing the panel will announce a "Clock Battery Fault" at power up. If the jumper is in, you can remove power and the event log and the clock remain powered.

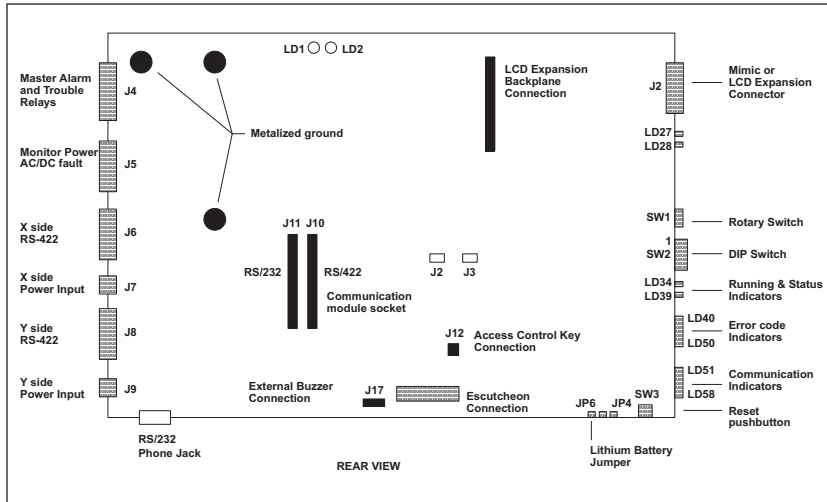
Up to two (2) expansion cards can be added via the LCD backplane. For panel models X0E, X0M, X2E, X2M, X6E, and X6M, the LCD Connector J2 connects the LCD to the Mimic Driver card or the LCD Expander card for additional display/control capabilities.

The LCD has two sockets for adding communication modules. Depending on your configuration, these could be either RS-232 or RS-422 communication modules.

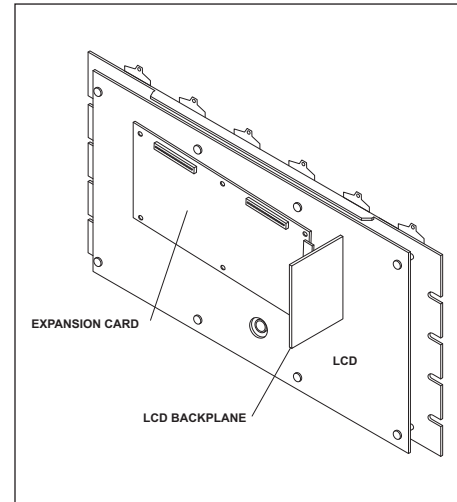
For LCDs used as processing and display units, installing an RS-232 module activates the phone jack allowing LCD software configuration through an external PC, or interfacing to a Printer. Installing an RS-422 module activates data links to other panels

The RS-232 module is not used when LCDs are display units. Installing an RS-422 module activates data links to the MPU or to a Repeater network.

Board Layout



LCD Backplane



Specifications

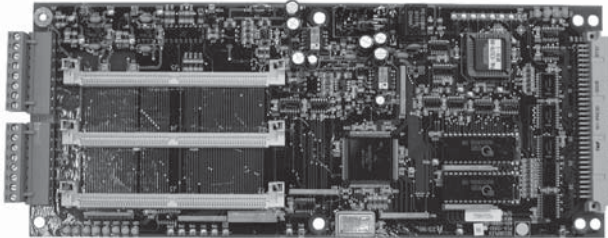
Electrical Specifications	
Power Requirement Voltage	20 to 28.5 VDC
Standby Current	0.301 A
Common Alarm/Fault Relay Outputs	
Contact Arrangement	2 Form C
Contact Load Rating	0.3 A @ 115VAC 0.3A @ 110VAC 1 A @ 30VAC
RS-422 Communication	
Interface	RS-422 Full-Duplex Serial
Protocol	ADCCP CLASS UN
Maximum Baud Rate	38400
Maximum Cable Length	1.2 Km

RS-232 Communication	
Interface	RS-232 Full-Duplex
Maximum Baud Rate	38400
Maximum Cable Length	20 meters
Dimensions	
Height	10.5" (266.7 mm)
Width	19.0" (482.6 mm)
Depth	1.5" (38.1 mm)

Ordering Information

Model Number	Description
PCA-12898-00	PRO-2000 LCD Annunciator Assembly, UL/ULC
PCA-12898-01	PRO-2000 LCD Annunciator Assembly, Marine
PCA-14104-00	PRO-2000 LCD Backplane, UL/ULC
PCA-14104-01	PRO-2000 LCD Backplane, Marine
PAM-14401-00	Front Panel, PRO-2000 UL/ULC/Marine, English
PAM-14401-01	Front Panel, PRO-2000 UL/ULC/Marine, French

PRO-2000 Communication Card



Description

The Communication Card enables the PRO-2000 Series panels to be connected to various communication interfaces such as RS-232, RS-422 and RS-485.

Each of the three ports is built into a communication module. The user simply inserts the communication module of the desired protocol into anyone of the three available slots. The communication card can support the use of all three modules simultaneously if desired, but multiples of the same communication module cannot be used.

The RS-232 enables the PRO-2000 Series panels to communicate with personal computers and printers. The RS-422 enables the PRO-2000 Series panels to communicate in a network configuration. The RS-485 enables the PRO-2000 Series panel to communicate with specialized gas and flame detectors.

Each communication module has an isolated power supply and is fully isolated from other panel electronics and from each other. Port#1 has independent transient protection and ground fault detection. While ports #2 and #3 share transient protection and ground fault detection.

Features

- Microprocessor controlled
- Three (3) communication ports available
- Short circuit protection on each output circuit
- Fuseless power input with supervision and power limiting
- Full transient protection on all outputs
- Field electronics fully isolated from system electronics for increased electrical noise immunity
- Built-in local ground fault detection for easier maintenance and troubleshooting
- Built-in isolated switching power supply for increased power efficiency
- Software based analysis for easy configuration and upgradability
- Surface mount technology
- Removable connectors for easy servicing
- Removable driver cards for easy servicing

Specifications

Electrical Specifications	
Input Voltage	20 to 28.5 VDC
Standby Current	113 mA
Standby Current required with RS-232/RS-485/RS-422	190 mA
Physical Specifications	
Length	11.9" (302.3 mm)
Width	4.85" (123.2 mm)
Thickness	1" (25.4 mm)
Weight	14.1 oz. (400 g)



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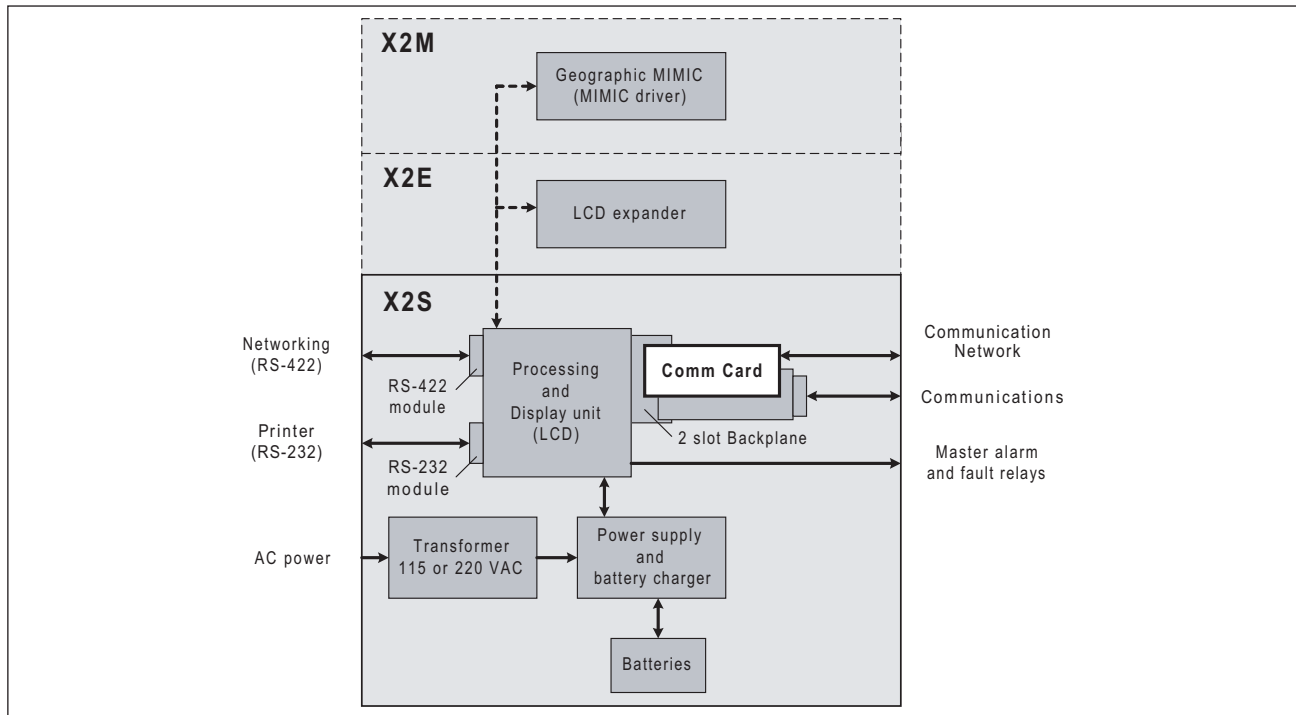
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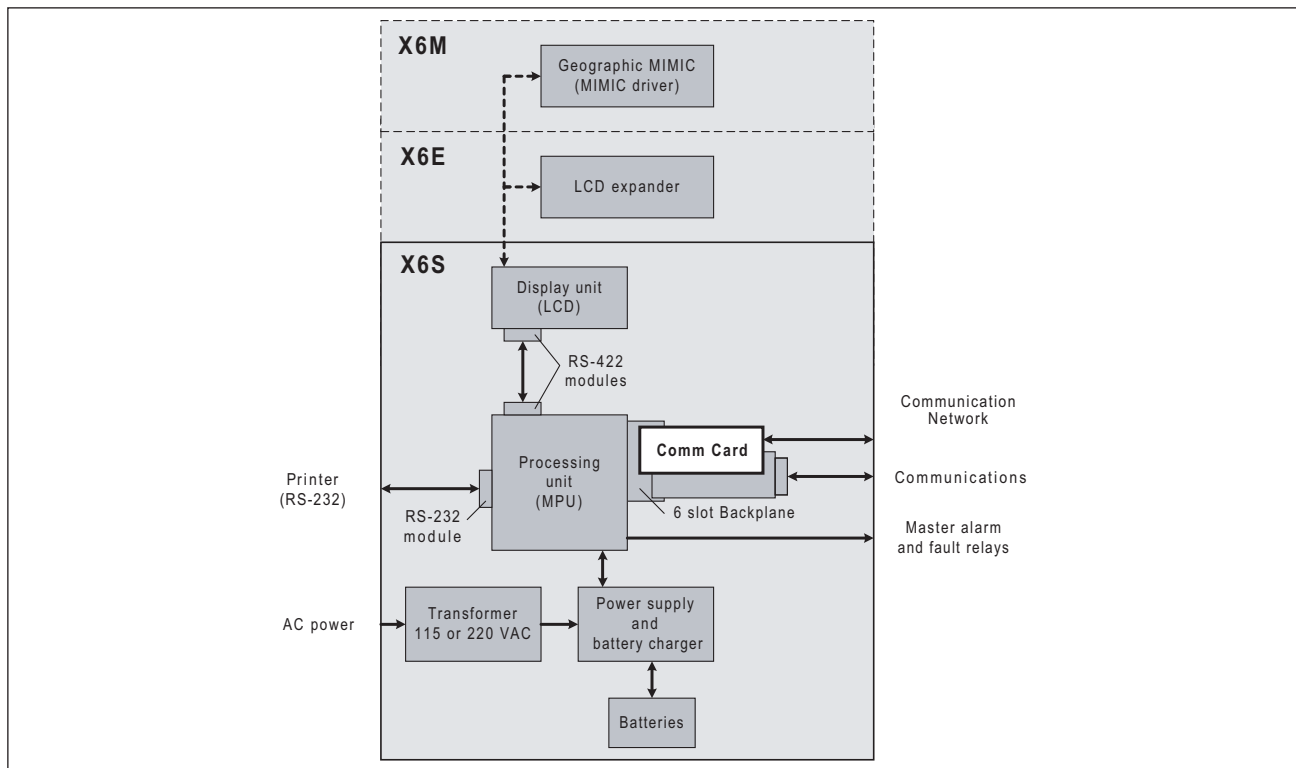
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Communication Card Connected to an X2 Type Panel



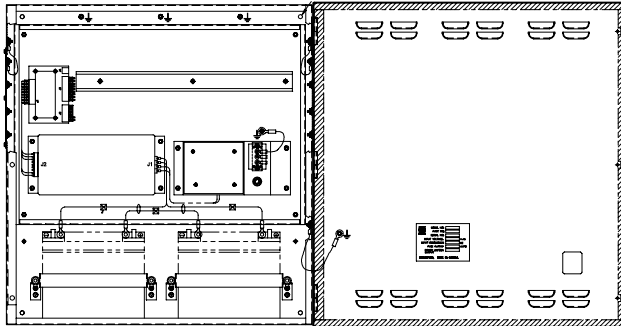
Communication Card Connected to an X6 Type Panel



Ordering Information

Model Number	Description
PCA-12892-00	PRO-2000 Communications Card, UL/ULC
PCA-12892-01	PRO-2000 Communications Card, Marine

PRO-2000 APS-15291 Auxiliary Power Supply



Features

- Rugged enclosure in 18 gauge steel
- Voltage input 115 VAC or 220 VAC
- Fuse protected on AC line and battery
- Built-in transient protection
- Up to 125 Watts total output power
- 3 output voltages: 28 VDC, 5 VDC, 28 VDC for battery charger
- Built-in local ground fault detection for easier maintenance and troubleshooting
- Built-in Ground Fault Detection with dry contact for output signaling
- Built-in AC fault detection with dry contact for output signaling
- Built-in DC fault detection with dry contact for faults detection
- Built-in isolated switching power supply for increased power efficiency
- Battery charger with voltage regulator and current limit
- Up to 2.2 A current output for battery charger
- Space in the enclosure for two 12 V batteries of 17 AH each
- Removable connectors for easy servicing

Description

The Auxiliary Power Supply is suitable for applications where it is necessary to have a battery backup in case of loss of the main power supply. The input voltage is 115V, 60Hz or there is a second version which sustains an input voltage of 220V, 50Hz. The Power Supply Module operates in conjunction with the Transformer Bracket Assembly and the transformer input is protected by a 2A fuse (1A for 220 VAC service).

The output provides 28VDC with a current of up to 4.7A. A fraction of this current is up to 2.2A is used to charge two 12V batteries. All outputs are protected against over-current and over-voltage conditions. The battery charger is protected against reverse polarity connection.

Three signals are provided to monitor the Power Supply Module operation,. They are as follows:

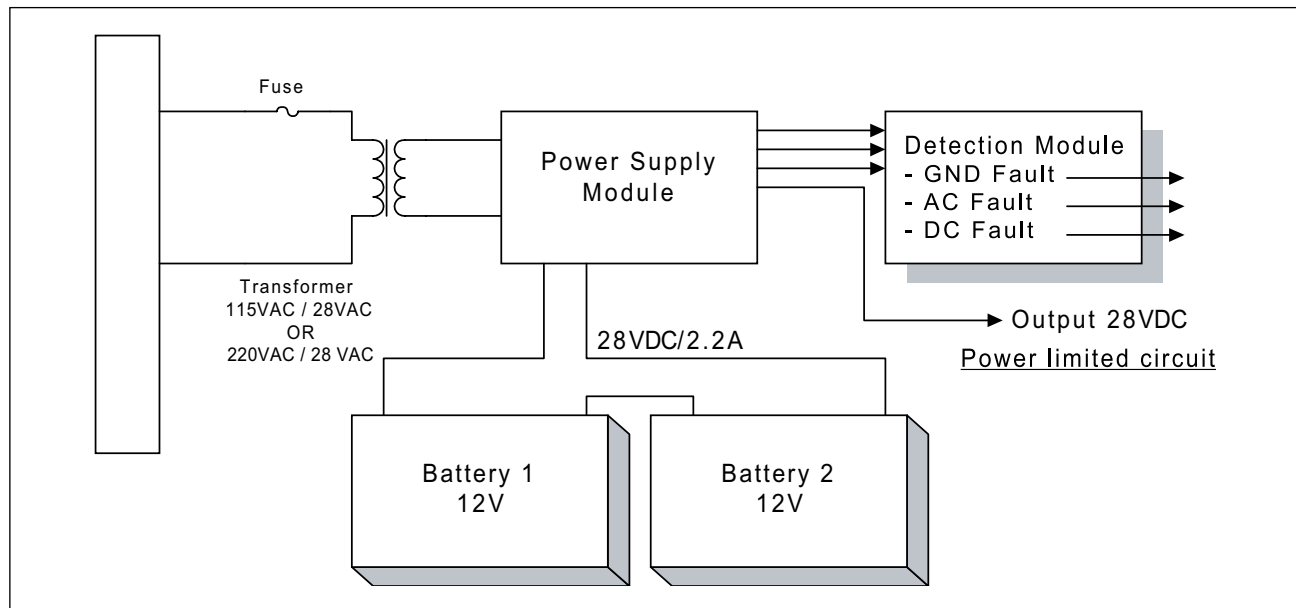
- The "AC Fault" signal is activated when the AC input voltage at the Power Supply input terminal falls below 12VAC. The information is sent via a dry contact.

- The "DC Fault" signal is activated when they battery voltage falls below 22.6VDC. The information is sent via a dry contact.
- The "GND Fault" signal is activated of a condition of GND fault is detected. The information is sent via a dry contact.

Each dry contact can be used in the "normally open" or "normally closed" positions. Signals to monitor the Power Supply are provided by the fault detection module.

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Typical Wiring Diagram



Power Supply Specifications

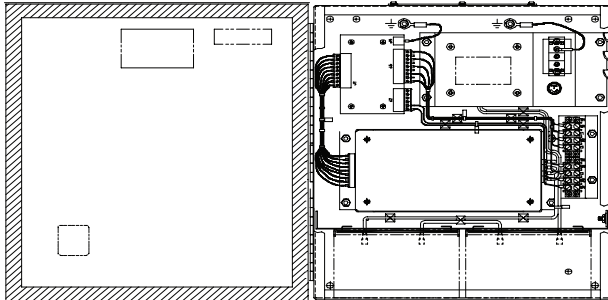
Electrical Specifications	
Input Voltage Range	110VAC, 60Hz or 220VAC, 50Hz
Fuse Protection	2A for 115VAC 1A for 220VAC
Output Transformer	
Voltage	25 VAC
Maximum Current	5 Amps
Input Power Supply Module	
Voltage Range	20 - 30 VAC
Frequency	50/60 VAC
Total Power Supply Module Output (Output1 + Output2 + Battery Charger)	125 W
Output 1	
Operating Voltage	28.5 ± 0.3 VDC
Current Limit	4.7 Amps ± 10%
Ripple and Noise (full load)	50 mV peak-to-peak max.
Temperature Drift Coefficient	Change in output voltage 0.03%/ °C max.

Output 2	
Operating Voltage	5.0V ± 0.1V
Current Limit	3.0 ± 0.3 Amps
Ripple and Noise (Full load)	20 mV peak-to-peak max.
Temperature Drift Coefficient	Change in output voltage 0.03%/ °C max.
Battery Charger (Constant Voltage, Current Limited Type)	
Operating Voltage	27.3 VDC
Current Limit	2.2 Amps
Battery Protection	Automatic battery disconnect at 19.5V
Fuse Protection	5 Amps
Fault Signals (Dry Contacts)	
AC Fault - Relay	0.5 A, 30 VDC
DC Fault - Relay	0.5 A, 30 VDC
GND Fault - Relay	1 A, 30 VDC
Environmental	
Storage Temperature	-40°C - 60°C (-40°F - 140°F)
Physical Specifications	
24.4" H x 23.5" W x 7.25" D (610 mm x 587 mm x 181 mm)	

Ordering Information

Model Number	Description
APS-15291-00	PRO-2000 Auxiliary Power Supply, 220V, 42AH, UL
APS-15291-01	PRO-2000 Auxiliary Power Supply, 110V, 42AH, Marine
APS-15291-02	PRO-2000 Auxiliary Power Supply, 110V, 42AH, UL
APS-15291-03	PRO-2000 Auxiliary Power Supply, 220V, 42AH, Marine
APS-15291-04	PRO-2000 Auxiliary Power Supply, 110V, 42AH, ULC
APS-15291-05	PRO-2000 Auxiliary Power Supply, 220V, 42AH, ULC

PRO-2000 APS-14127 Auxiliary Power Supply



Description

The Auxiliary Power Supply is suitable for applications where it is necessary to have a battery backup in case of loss of the main power supply. The input voltage is 115V, 60Hz or there is a second version which sustains an input voltage of 220V, 50Hz.

The output provides 28VDC with a current of up to 4.7A. A fraction of this current of up to 2.2A is used to charge two 12V batteries. All outputs are protected against over-current and over-voltage conditions. The battery charger is protected against reverse battery connection.

Three signals are provided to monitor the Power Supply Module operation, they are as follows:

- The "AC Fault" signal is activated when the AC input voltage at the Power Supply input terminal falls below 12VAC. The information is sent via a dry contact.
- The "DC Fault" signal is activated when the battery voltage falls below 22.6VDC. The information is sent via a dry contact.

Features

- Rugged enclosure in 18 gauge steel
- Voltage input 115VAC or 220 VAC
- Fuse protected on AC line and battery
- Built-in transient protection
- Maximum power output 125 W
- 2 output voltages: 28VDC, 5VDC
- Built-in Ground fault detection with dry contact for output signaling
- Built-in AC fault detection with dry contact for output signaling
- Built-in DC fault detection with dry contact for output signaling
- Normally Open or Normally Closed output for fault detection
- Built-in isolated switching power supply for increased power efficiency
- Battery charger with voltage regulator and current limit
- Space in the enclosure for two 12 V batteries of 12 AH each
- Removable connectors for easy servicing

- The "GND Fault" signal is activated of a condition of GND fault is detected. The information is sent via a dry contact.

Each dry contact can be used in the "normally open" or "normally closed" positions. Signals to monitor the Power Supply are provided by the fault detection module.



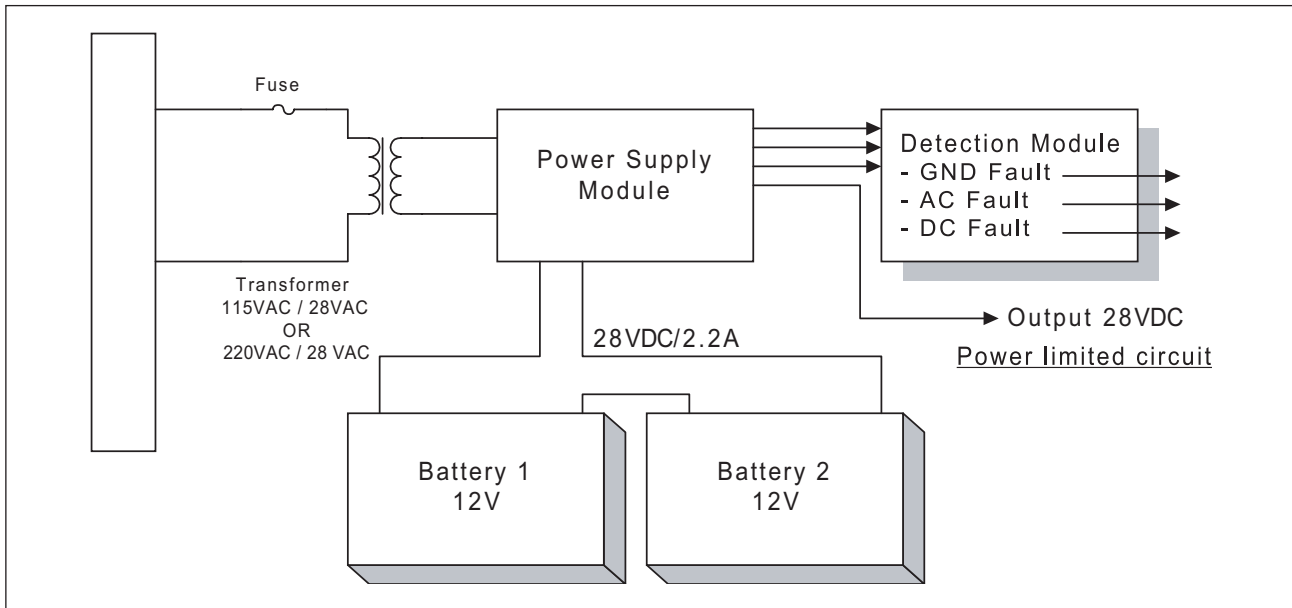
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Typical Wiring Diagram



Power Supply Specifications

Electrical Specifications	
Input Voltage Range	110VAC, 60Hz or 220VAC, 50Hz
Fuse Protection	2A for 115VAC 1A for 220VAC
Output Transformer	
Voltage	25 VAC
Maximum Current	5 Amps
Input Power Supply Module	
Voltage Range	20 - 30 VAC
Frequency	50/60 VAC
Total Power Supply Module Output (Output1 + Output2 + Battery Charger)	125 W
Output 1	
Operating Voltage	28.5 ± 0.3 VDC
Current Limit	4.7 Amps ± 10%
Ripple and Noise (full load)	50 mV peak-to-peak max.
Temperature Drift Coefficient	Change in output voltage 0.03%/ °C max.

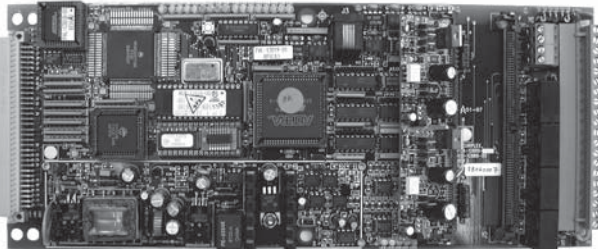
Output 2	
Operating Voltage	5.0V ± 0.1V
Current Limit	3.0 ± 0.3 Amps
Ripple and Noise (Full load)	20 mV peak-to-peak max.
Temperature Drift Coefficient	Change in output voltage 0.03%/ °C max.
Battery Charger (Constant Voltage, Current Limited Type)	
Operating Voltage	27.3 VDC
Current Limit	2.2 Amps
Battery Protection	Automatic battery disconnect at 19.5V
Fuse Protection	5 Amps
Fault Signals (Dry Contacts)	
AC Fault - Relay	0.5 A, 30 VDC
DC Fault - Relay	0.5 A, 30 VDC
GND Fault - Relay	1 A, 30 VDC
Environmental	
Storage Temperature	-40°C - 60°C (-40°F - 140°F)
Physical Specifications	
16" H x 14" W x 6" D (406.4 mm x 355.6 mm x 152.4 mm)	

Ordering Information

Model Number	Description
APS-14127-00 (04)	PRO-2000 Auxiliary Power Supply, 110V, 12AH, UL (ULC)
APS-14127-01	PRO-2000 Auxiliary Power Supply, 110V, 12AH, Marine
APS-14127-02 (05)	PRO-2000 Auxiliary Power Supply, 220V, 12AH, UL (ULC)
APS-14127-03	PRO-2000 Auxiliary Power Supply, 220V, 12AH, Marine

PRO-2000

Addressable Detector Interface (ADI) Card



Description

The Addressable Detector Interface (ADI) card is the connection point for all field devices to the PRO-2000 panel. Any type of analog addressable sensor or module (control or monitor) as well as the Addressable Conventional Detector Interface (ACDI) module can be connected to the ADI card.

Each ADI card can monitor or control: Two (2) analog loops as defined by the NFPA signaling line Class A, Style 6 or 7 circuits or Four (4) analog stubs as defined by the NFPA signaling line SLC Class B, Style 4 circuits.

The ADI card also features four (4) output relays which can be used for signaling or relay output. The relay output can be a supervised or non-supervised output.

All outputs are transient protected to prevent card damage in the event that a field power surge should occur. The field electronics on the card are fully isolated from system electronics insuring an exceptional electrical noise immunity from the field connection.

The built-in ground fault detection circuit is designed to pinpoint a ground fault source at the board level, unlike other systems that give a global system level ground. This makes it easier to identify the fault wiring/circuit. A high efficiency power supply insures low power consumption.

The ADI card has two (2) slots for driver cards. The size of the detection system dictates the need for one (1) or two (2) driver cards. Each driver card can handle one (1) Loop (NFPA Signalling Line Class A, Style 6 or 7 circuits) or two (2) Stubs (NFPA SLC Class B, Style 4).

The ADI card is microprocessor controlled. The microprocessor is monitored by a watchdog circuit which halts the system's operation if a hardware or software failure occurs.

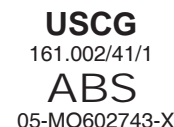
When connected to an X2S, X2E or X2M panel, the ADI card is controlled by the Processing and Display Unit. When connected to an X6S, X6E or X6M panel, the ADI card is controlled by the MPU card.

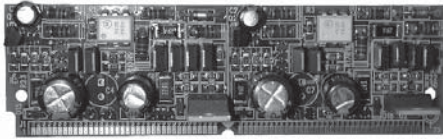
Features

- Microprocessor controlled
- Up to Four (4) Stub outputs or Two (2) Loop outputs for addressable devices
- Up to 99 addressable devices per stub or loop output
- Up to 99 addressable modules per stub or loop output
- Short circuit protection on each output circuit
- Four (4) supervised/unsupervised relay outputs
- Fuseless power input with supervision and power limiting
- Full transient protection on all outputs
- Field electronics fully isolated from system electronics for increased electrical noise immunity
- Built-in local ground fault detection for easier maintenance and troubleshooting
- Built-in isolated switching power supply for increased power efficiency
- Software based analysis for easy configuration and upgradability
- Built-in self diagnostics
- Surface mount technology
- Removable connectors for easy servicing
- Removable driver cards for easy servicing
- Maximum of 600 devices per ADI card
- 1000 event history log for alarm, trouble and supervisory conditions

Specifications

Electrical Specifications			
Input Voltage	20 to 28.5 VDC		
Standby Current (1 Driver card)	230 mA		
Standby Current (2 Driver cards)	285 mA		
Addressable Device Driver Output			
Maximum current (short circuit)	0.5A		
Maximum voltage	28 V		
Maximum cable length	Max. 4000 ft., 40 ohm, 0.5 mF		
Max. cable resistance (Loop/Stub)	40 ohm		
Maximum cable capacitance	0.5 mF		
ADI Card - Output Relays			
Contact type	1 Form C (SPDT)		
Contact rating	2A @ 28VDC or 120VAC 2A @ 240VAC Resistive		
EOL Resistor for signaling outputs	6.8K, ¼W, 5%		
Physical Specifications			
Length	11.9" (302.3 mm)	Thickness	1" (25.4mm)
Width	4.85" (123.2mm)	Weight	15.9oz. (450g)

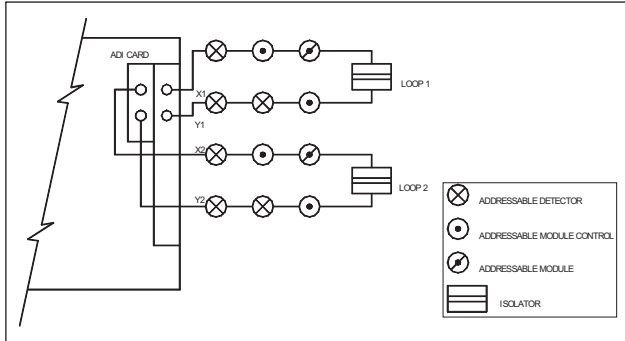




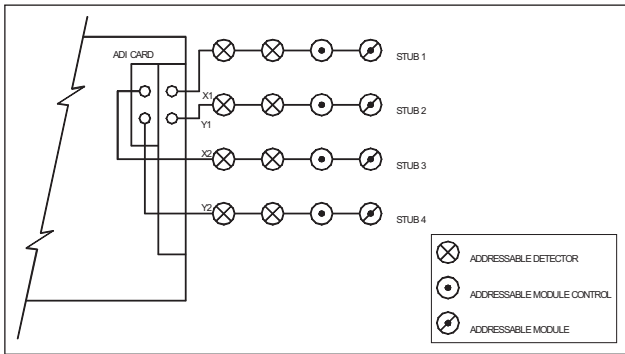
ADI Driver Card

The Driver Card acts as a switching device that translates digital signals into a sequence of voltages (0, 5 or 24V) needed to drive the output line of addressable devices. The ADI card can have either one or two Driver cards. Input and output signals from the Driver card to the ADI card pass through two 72-pin sockets mounted on the ADI card. The Driver Card is held in place by two metallic locks. This arrangement facilitates for field servicing.

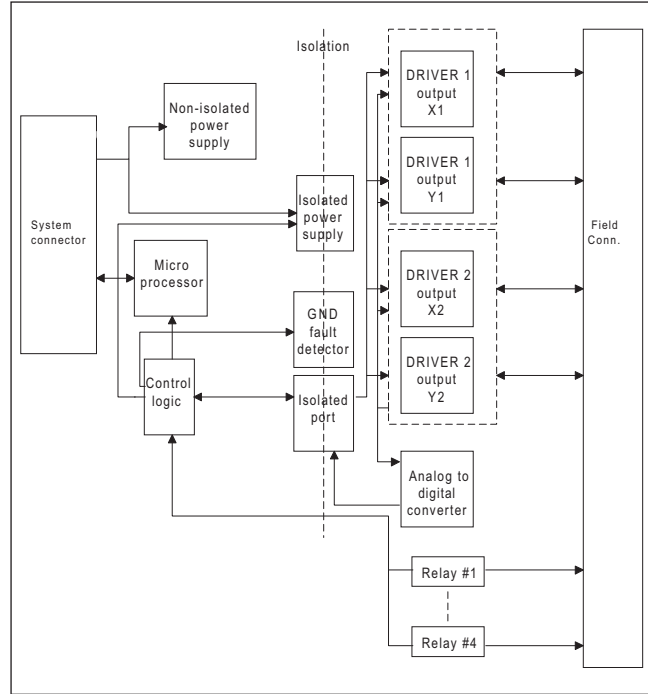
Loop Connection



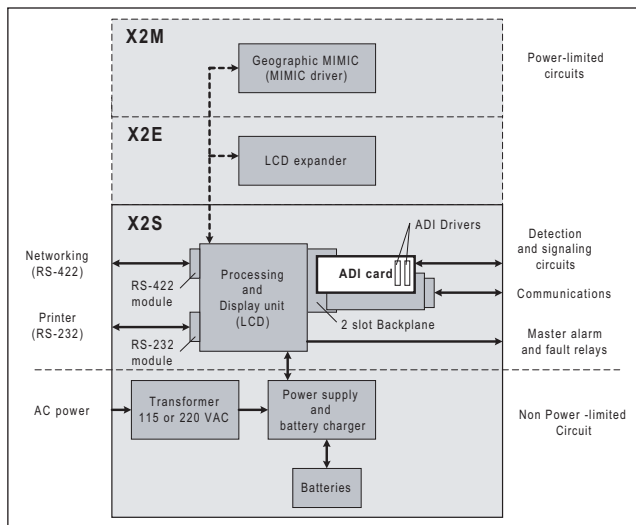
Stub Connection



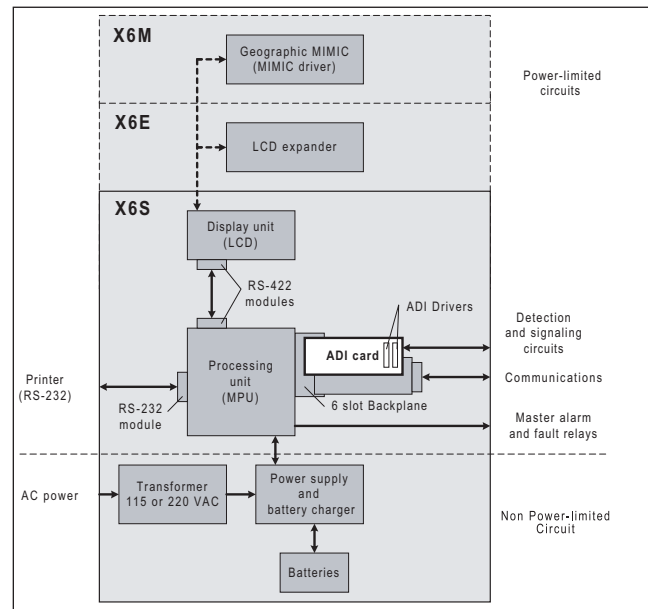
Block Diagram



ADI Card Connected to an X2 Panel



ADI Card Connected to an X6 Panel

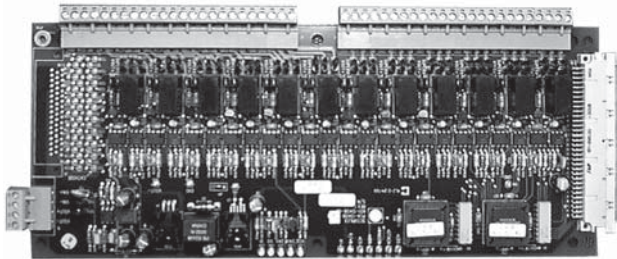


Ordering Information

Model Number	Description
PCA-12889-00	PRO-2000 ADI Card, UL/ULC
PCA-12889-01	PRO-2000 ADI Card, Marine
PCA-14292-00	PRO-2000 ADI Driver Card, UL/ULC
PCA-14292-01	PRO-2000 ADI Driver Card, Marine



PRO-2000 12 Zone Supervised Relay Card



Features

- Up to 12 relay output circuits rated at 5A @ 30VDC/ 250VAC (resistive load)
- Suitable for interfacing with notification and activation devices
- Each output can be individually configured as supervised or unsupervised
- Each output can be individually configured as powered or unpowered
- Full transient protection
- Switching power supply for increased power efficiency
- Field electronics fully isolated from system electronics for increased electrical noise immunity
- Removable connectors for easy servicing

Description

The Supervised Relay Card enables a PRO-2000 Series panel to control output devices through 12 relay output circuits. Each output circuit can be configured to be supervised or not for cable fault detection. Each output can also be configured to be powered by the system supply or act as an unpowered contact.

The total current consumption for powered relays is limited to 900 mA. All outputs have full transient protection to prevent card damage in the event that a field power surge should occur.

The field electronics of the card is fully isolated from the system electronics, thus insuring an exceptional electrical noise immunity from the field connection.

The Supervised Relay Card is available in two versions. Both models are functionally equivalent with the difference residing in that one is equipped with a Combicon connector and the other with a DSUB-50 connector.

Specifications

Electrical Specifications	
Maximum Supplied Output Current	900 mA
Supervision Current	800 mA
Voltage Drive / Series Resistor	5V @ 330W
End-of-line Resistor Value	6.8K
Standby Current Consumption (excluding devices)	51 mA @ 24 VDC
Physical Specifications	
Length	11.9" (302.3 mm)
Width	4.85" (123.2 mm)
Thickness	1" (25.4 mm)



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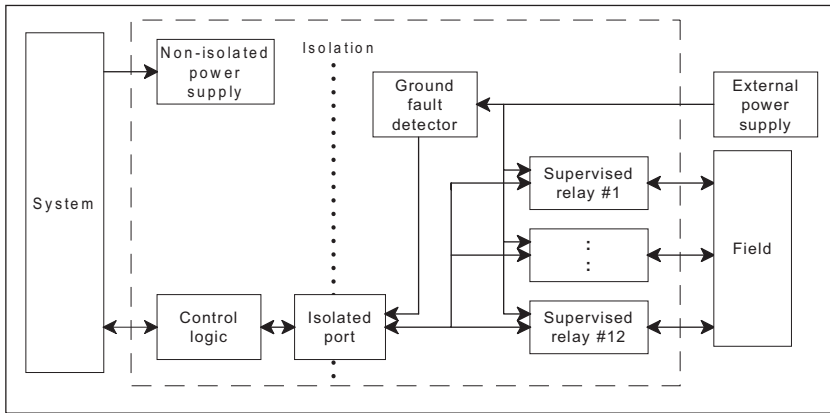
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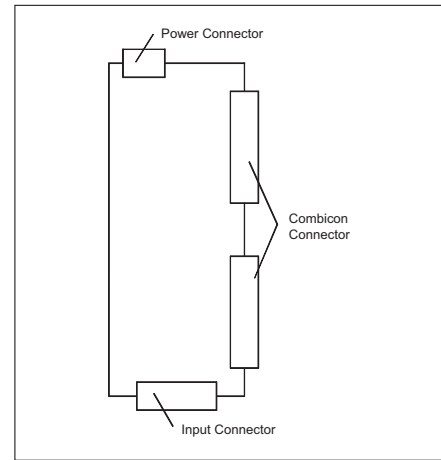
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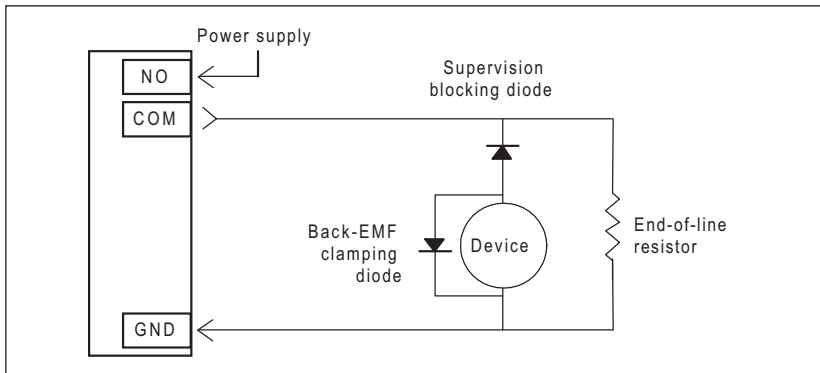
Block Diagram



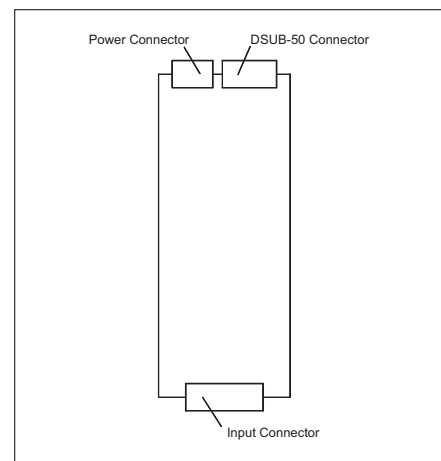
Card With Combicon Connectors



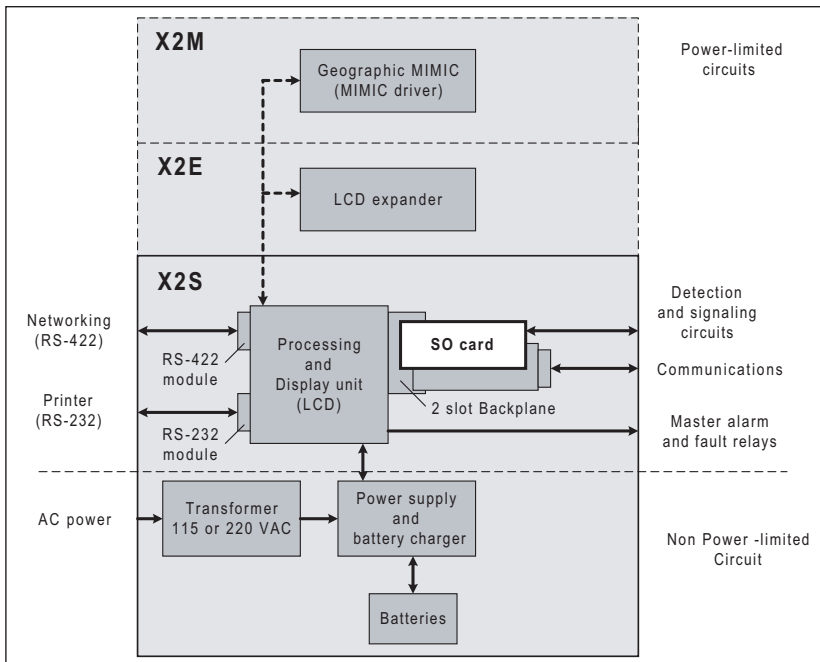
Typical Device Connecting Sketches



Card With DSUB-50 Connector



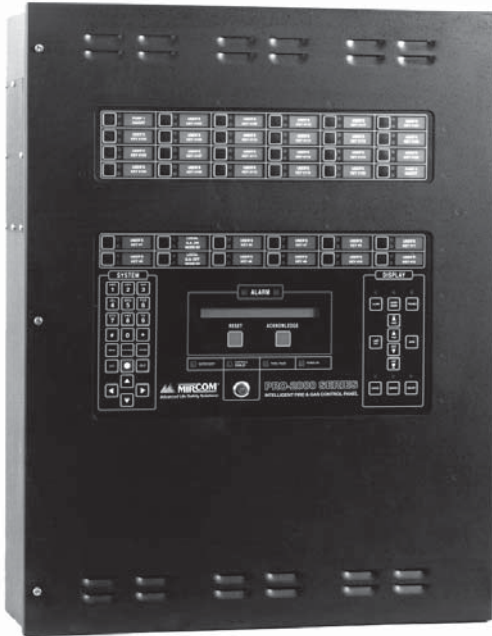
SO Card Connected to an X2 Type Panel



Ordering Information

Model Number	Description
PCA-13459-00	PRO-2000 12-Zone Supervised Relay Card with Combicon Connector, UL/ULC
PCA-13459-01	PRO-2000 12-Zone Supervised Relay Card with DSUB-50 Connector, UL/ULC
PCA-13459-02	PRO-2000 12-Zone Supervised Relay Card with Combicon Connector, Marine
PCA-13459-03	PRO-2000 12-Zone Supervised Relay Card with DSUB-50 Connector, Marine

PRO-2000 X6 Panels



Features

- Up to 3600 local detection/control devices
- Max. 10000 networked detection/control devices
- Integrated gas detection
- Agent releasing service
- Support for 2-wire addressable devices
- Support for conventional 2-wire initiating devices
- Support for notification circuits
- Support for multi-panel networking
- One man walk test
- Battery backed-up real time clock and event log with built-in battery charger
- Independent ground fault detection circuits on each interface card for easy ground fault tracking
- Wall mount enclosure equivalent to NEMA 2

Description

The PRO-2000 X6 panels are microprocessor-based fire alarm control units, suitable for medium to large fire detection and suppression applications. Larger applications can be covered using additional panels in a master/slave network configuration.

There are three types of X6 panels available: the X6S, the X6E and the X6M.

The X6S panel is the standard model. It has a built in LCD display (2 line by 40 characters) and associated controls and indicators. It also has 24 programmable indicators and 12 programmable pushbuttons.

The X6E panel has the same features as the X6S plus a matrix of 48 additional programmable indicators and 24 additional programmable pushbuttons.

The X6M panel has the same features as the X6S plus a geographic mimic panel containing up to 144 indicators. The geographic mimic also supports 72 pushbuttons for special applications. The geographic mimic provides a graphical representation of the protected areas. When new events are displayed on the LCD, their location can be identified rapidly by the appropriate indicators on the geographic mimic.

The following types of devices are supported by the X6 panels:

Addressable devices:

- Smoke detectors, heat detectors, monitor modules and control modules

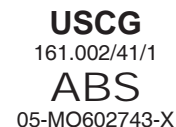
Conventional initiating devices:

- Non-shorting detectors (Heat detectors, smoke detectors, etc...)
- Shorting devices (Pull-stations, Abort pushbuttons, Manual release-pull stations)

Conventional notification devices:

- Unsupervised NO or NC relay output
- Supervised and powered relay output

The X6 panels support communication and networking functions via different physical interfaces such as RS-232 (to connect printers, PLC's or PC's), RS-422 (panel networking), or RS-485.



All PRO-2000 Series panels (X6, X2 and X0) may be connected together in a master/slave configuration (up to 32 panels). The X0 is only a repeater panel (remote annunciator).

The X6 panels can be configured to support up to 6 interface cards. The interface cards can be any of the following:

- Addressable detector interface card (Smoke/heat detectors, monitor modules, control modules)
- Supervised input card (Conventional detector, shorting and non-shorting devices)
- Supervised relay card (Supervised outputs and dry contacts)
- Communication card (Networked configurations)

All the events occurring on the X6 panels (alarms, troubles, etc...) are communicated to the user using a 2-line by 40-character Liquid Crystal Display (LCD). There are four control sections associated with the LCD: Display section, acknowledgment section, System section and user defined section.

The Display section gives the user an easy way of accessing the system's display list: Alarm, Supervisory, Trouble, Status, Isolate and Service.

The acknowledgment section enables the user to handle the new events and to clear the obsolete events using the associated buttons (Acknowledge and Reset). Access to these functions can only be obtained via a control key thus preventing unauthorized use of the system.

The System section is used mainly for maintenance activities and is used to access various functions of the X6 panel. The Service and Isolate mode as well as the one man walk test mode may be accessed through the System section's menu.

The user defined section consists of a group of configurable indicators and buttons. There are 24 indicators and 12 buttons. Special functions such as fan control or pump control can be assigned to the configurable indicators and buttons.

Technical Specifications

Electrical Specifications

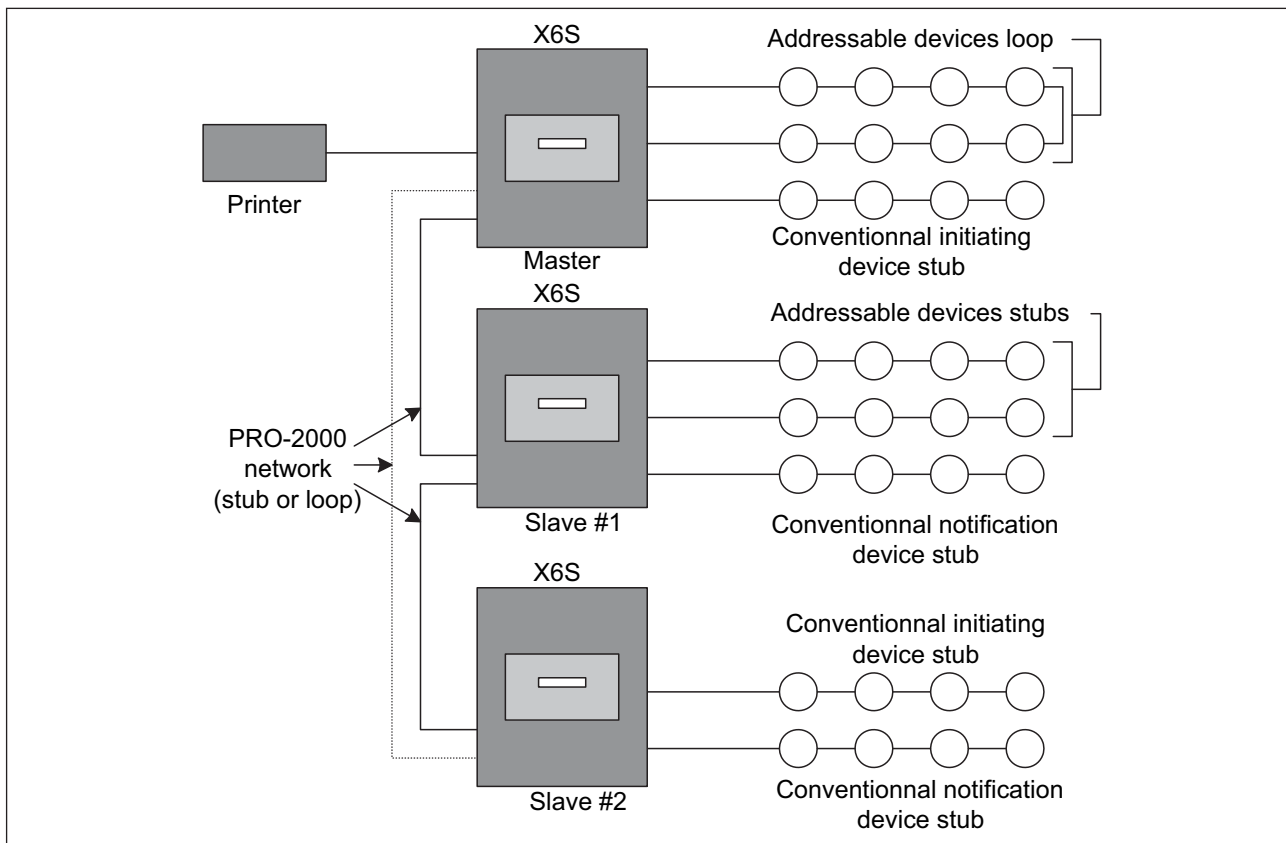
Primary AC Power Supply	
Voltage	115 or 220 VAC
Frequency	50 or 60 Hz
Maximum power	125 Watts
Master Alarm and Trouble Relays	
Contact rating	2 A @30 VDC
Communication Modules	
Number of sockets for communication modules	2*
Interface Cards	
Number of connectors for expansion cards	6

* One socket is used for local LCD connection.

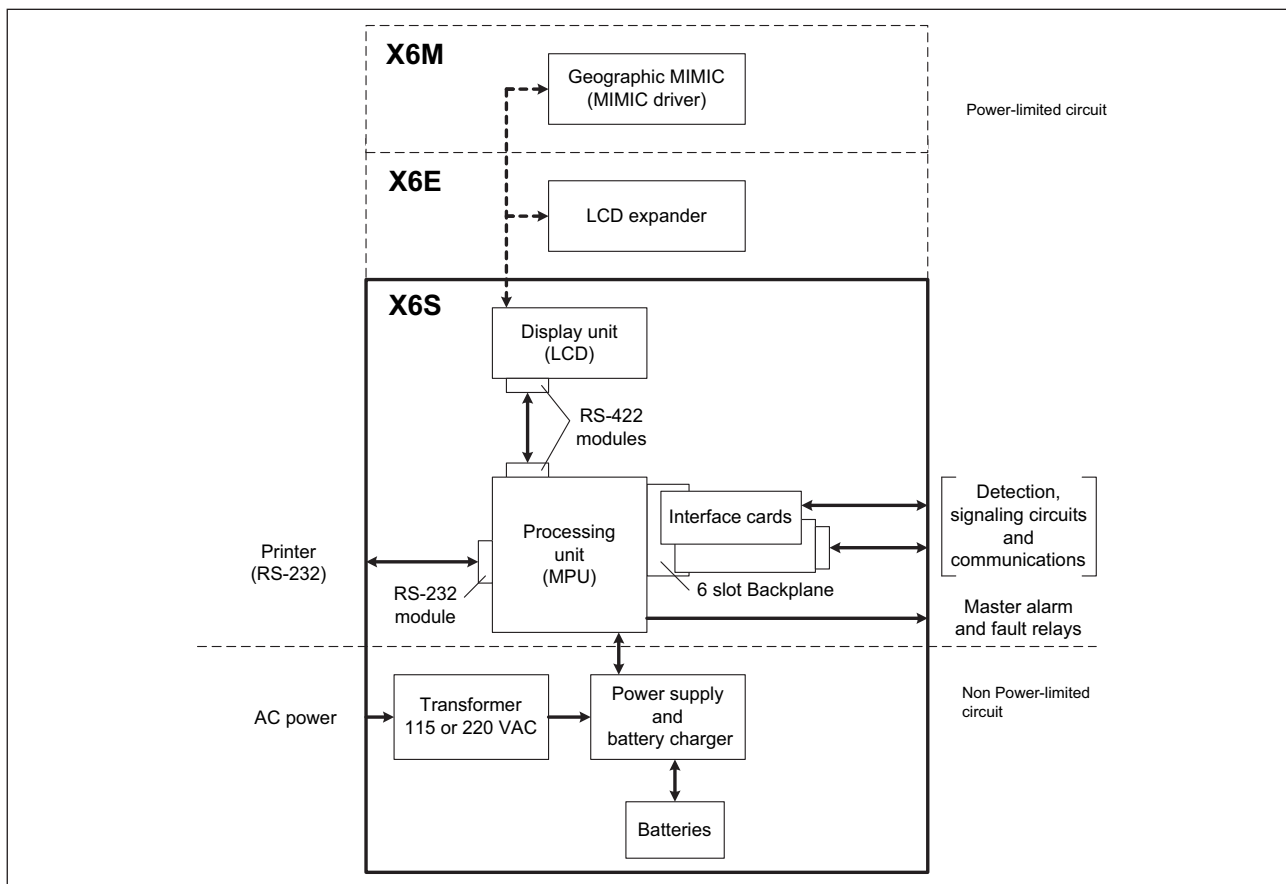
Physical Specifications

X6S Panel
30"H x 24"W x 7"D (762mm x 610mm x 178mm)
X6E Panel
30"H x 24"W x 7"D (762mm x 610mm x 178mm)
X6M Panel
41"H x 24"W x 7"D (1041mm x 610mm x 178mm)

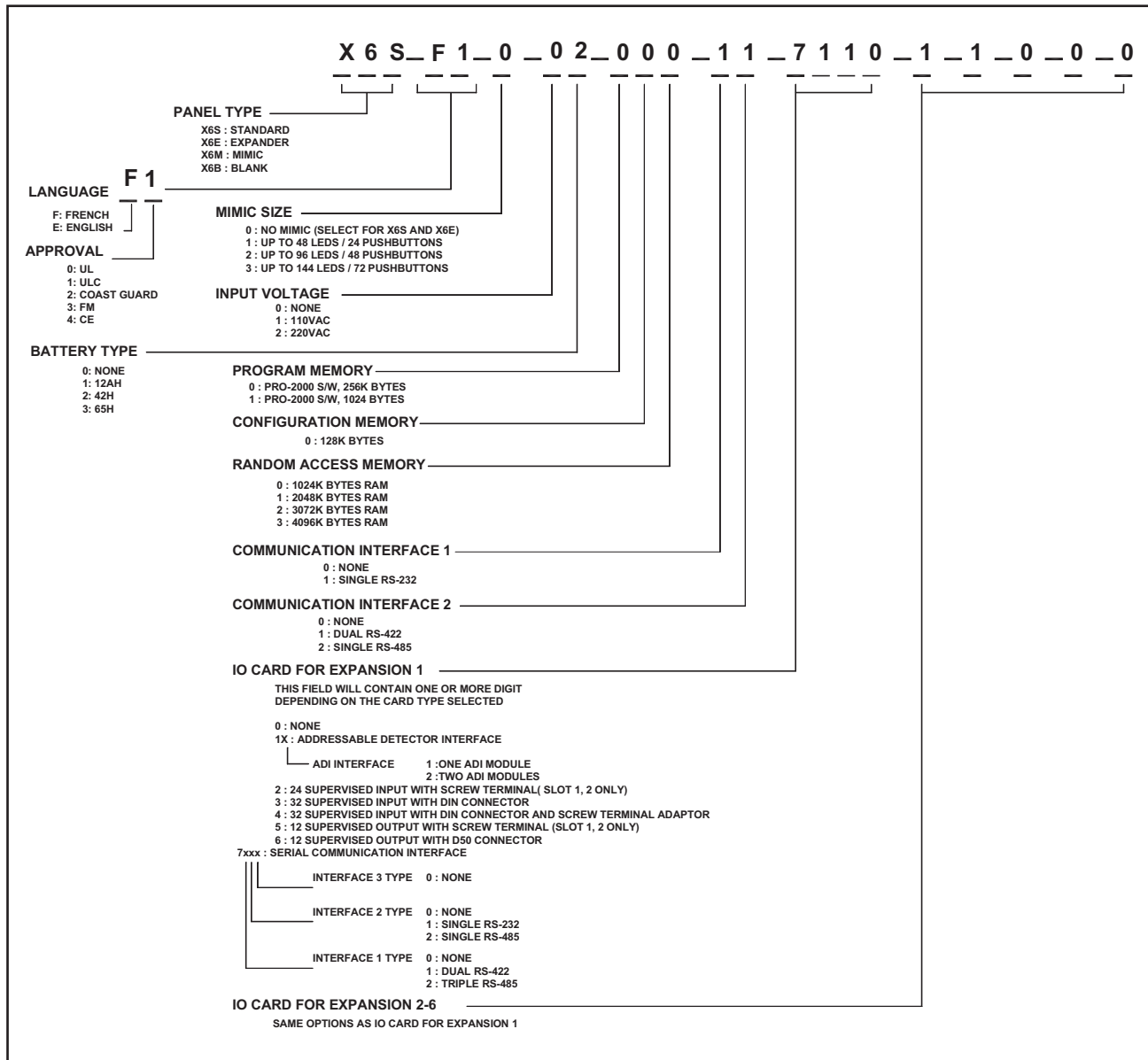
Typical Application Diagram



X6 Panel Block Diagram



Ordering Information



The X2 panels can also be networked with X6 panels and X0 panels. The X6 panels can be connected on the network as a master or slave panel. The X0 panels can only be connected to a master or slave panel as repeater panels.

There are two types of supported networks: master/slave networks and repeater networks.

The X2 panels can support communication to one RS-232 link and to a maximum of two networks (master/slave or repeater) by using small communication modules. For enhanced networking capabilities, a communication interface card can be added to the system.

The X2 panels can be configured to support up to 2 interface cards. The interface cards can be any of the following:

- Addressable detector interface card (Smoke/heat detectors, monitor modules, control modules)
- Supervised input card (Conventional detector, shorting and non-shorting devices)
- Supervised relay card (Supervised outputs and dry contacts)
- Communication card (Networked configurations)

All the events occurring on the X2 panels (alarms, troubles, etc.) are communicated to the user using a 2-line by 40-character Liquid Crystal Display (LCD). There are four control sections associated with the LCD:

the acknowledgment section, the Display section, the System section and the user defined section.

The acknowledgment section consists of an access control key, an "Acknowledge" button, a "Reset" button and several associated indicators.

The access control key prevents unauthorized access to the system, acknowledgment and reset functions. When the control key is not present, only the display section remains enabled.

The "Acknowledge" button is used to acknowledge the currently displayed event has been observed. The "Reset" button is used to reset events which were previously acknowledged.

The Display section gives the user an easy way to access the system's display lists: Alarm, Supervisory, Trouble, Status, Isolate and Service.

The System section is used mainly for maintenance activities and is used to access various functions of the X2 panel. The Service and Isolate mode as well as the one man walk test mode may be accessed through the System section's menu.

The user defined section consists of a group of configurable indicators and buttons. There are 24 indicators and 12 buttons. Special functions such as fan control or pump control can be assigned to the configurable indicators and buttons.

Technical Specifications

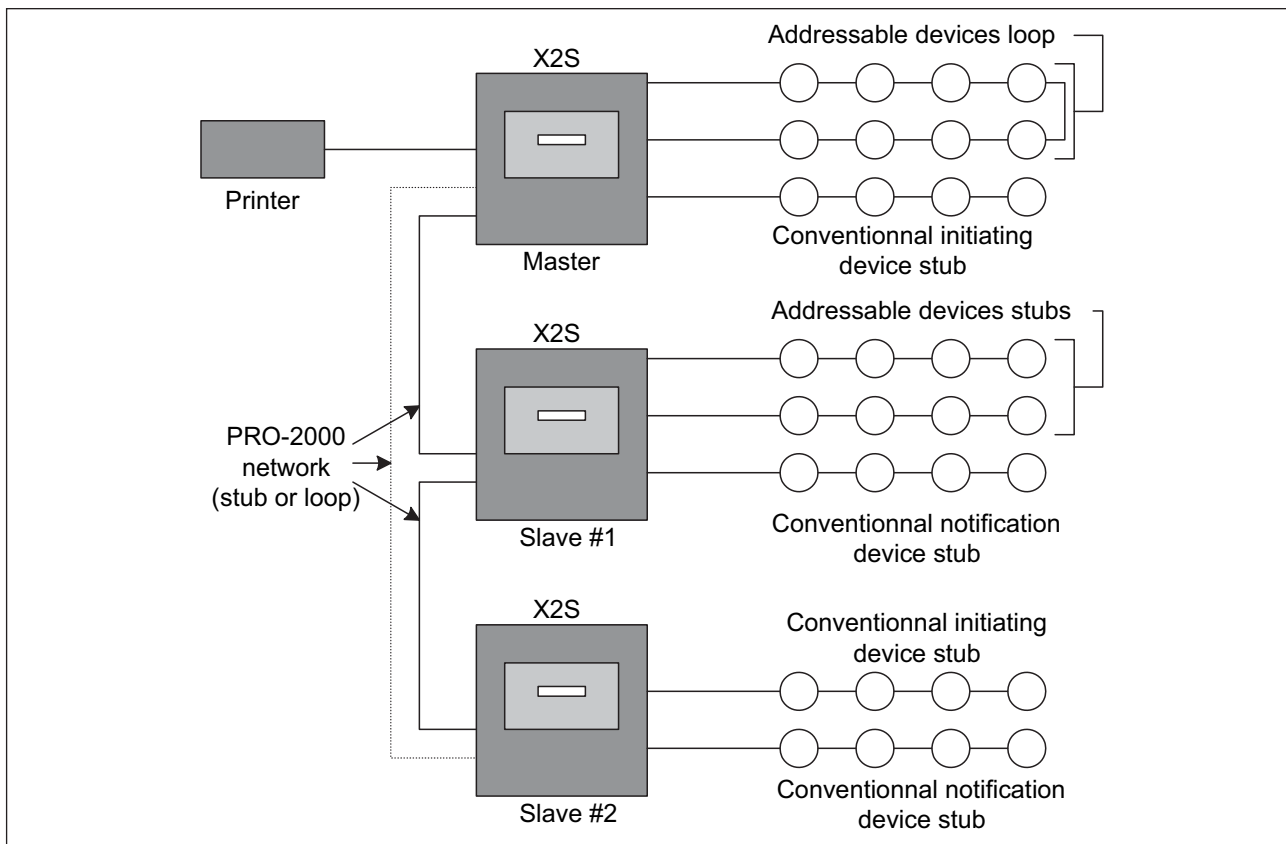
Electrical Specifications

Primary AC Power Supply	
Voltage	115 or 220 VAC
Frequency	50 or 60 Hz
Maximum power	125 Watts
Master Alarm and Trouble Relays	
Contact rating	2 A @30 VDC 0.5 A @125 VAC
Communication Modules	
Number of sockets for communication modules	2
Interface Cards	
Number of connectors for expansion cards	2

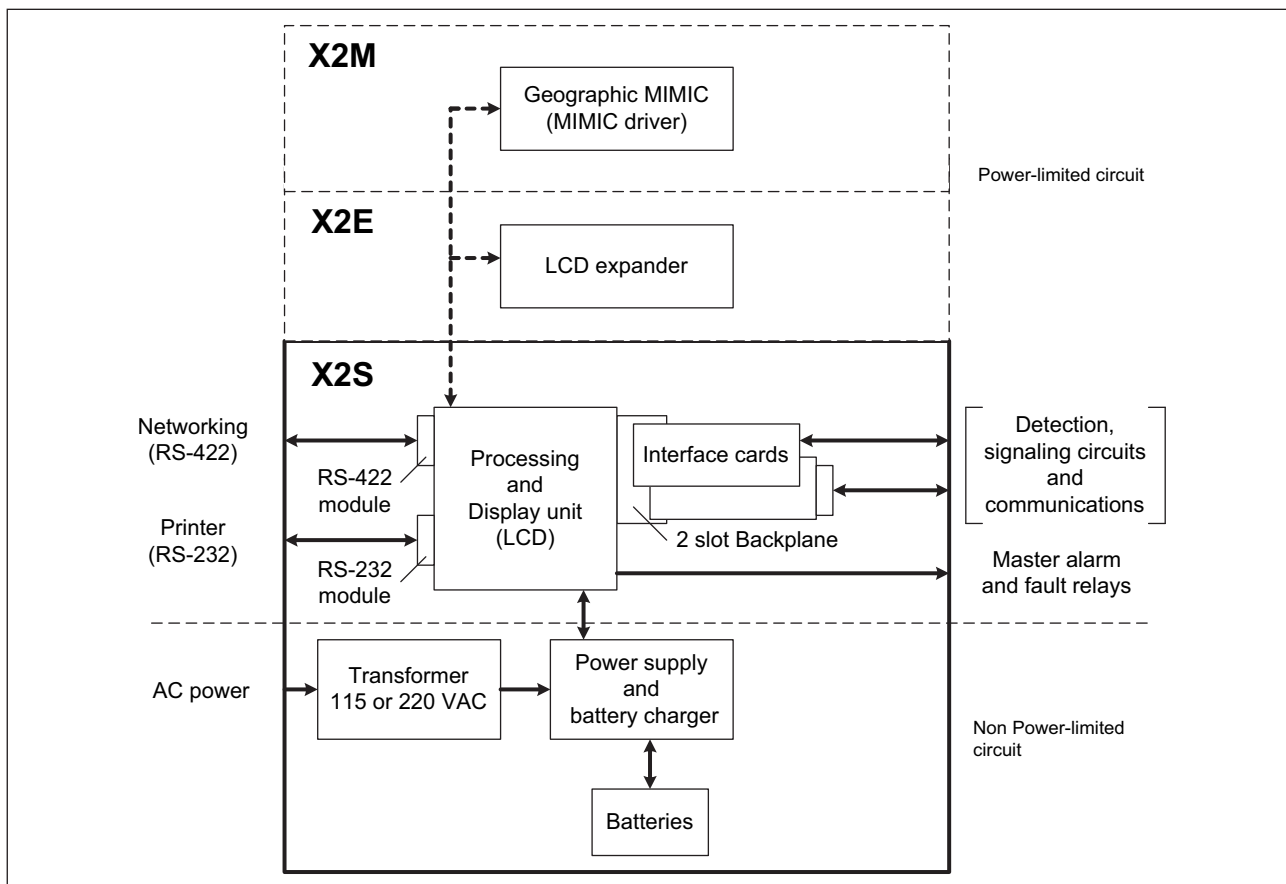
Physical Specifications

X2S Panel
24"H x 24"W x 7"D (610mm x 610mm x 178mm)
X2E Panel
30"H x 24"W x 7"D (762mm x 610mm x 178mm)
X2M Panel
41"H x 24"W x 7"D (1041mm x 610mm x 178mm)

Typical Application Diagram



X2 Panel Block Diagram



Ordering Information

