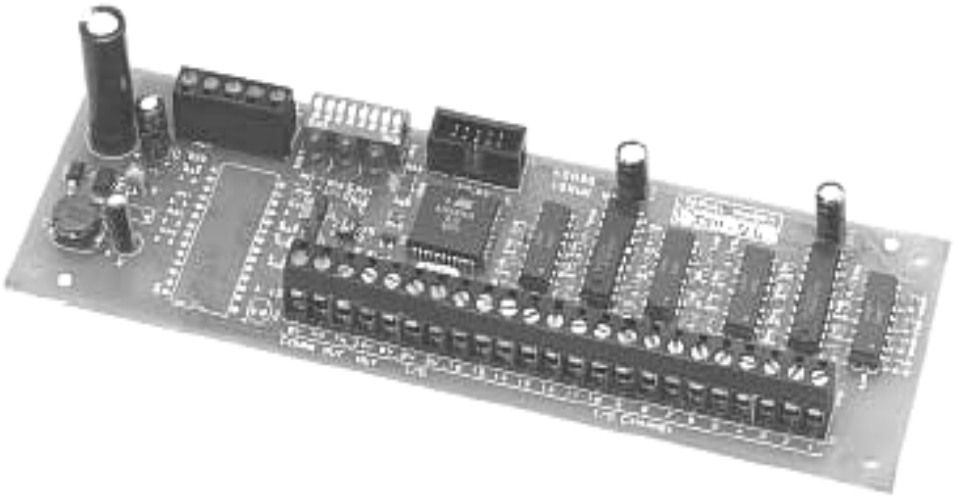
16 Channel I/O Interface Installation Manual



Avenger Systems LLC - 11586 Zagarolo Lane - Las Vegas, NV 89141 - USA - 1.702.850.8503 - www.avengersystems.com

Contents

Section 1
Introduction

Using This Manual 2
Related Documentation 2
Document Conventions 2
Writing styles 2
If You Need Help 3
Contacting Avenger Tech Support 3
RMA Returns Required 3
Warranty Returns 3
Advanced Replacements 4
Suspect-Product Testing 4
Product Return Address 4

Section 2
Overview

Connecting Inputs 7
Connecting Outputs 7

Section 3
Installation 8

Before You Begin. 8
Setting the Address 9
Connecting the Terminating Jumper 10
Connecting Power 10
Connecting Communications. 11
Configuring 11
Troubleshooting 12

Contents

Appendix A
Specifications

Electrical 14
Cabling 14
Operating Environment. 14
Physical Specifications. 14

Section 1

Introduction

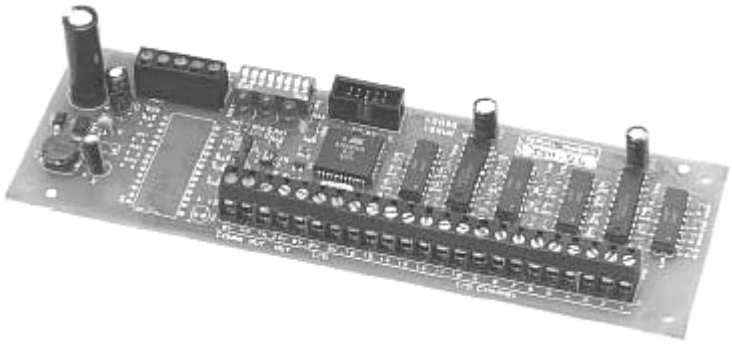
This manual describes the installation of the Avenger 16 Channel I/O Interface,

AS1171-00. This section describes:

- UL Certification Requirements
- Using This Manual
- Related Documentation
- Document Conventions
- If You Need Help
- Contacting Avenger For Repair

The figure below illustrates the 16 Channel I/O Interface, AS1171-00:

Figure 1-1
16 Channel I/O Interface



Using This Manual

The following sections provide instructions for installing, testing and troubleshooting the 16 Channel I/O Interface:

Section 1	**Introduction** provides document conventions, the technical help-line, repair and return information.
Section 2	**Overview** provides summary features of the 16 Channel I/O Interface.
Section 3	**Installation** describes how to install, configure and troubleshoot the 16 Channel I/O Interface.
Appendix A	**Specifications** provides operating characteristics of the 16 Channel I/O Interface.

Related Documentation

The following documents shall be used to provide additional information for installing the 16 Channel I/O Interface:

- eLAN H Installation Manual With Releasing AS1615-00, Rev.E05.XX
- eLAN A Installation Manual With Releasing AS1635-00, Rev.E02.XX
- Supreme H Installation Manual, AS3515-00, Rev.E02.XX
- Supreme A Installation Manual, AS3514-00, Rev.E02.XX

Document Conventions

This document contains conventions for part numbers and writing style.

Writing styles

Before you begin using the 16 Channel I/O Interface, familiarize yourself with the stylistic conventions used in this manual:

Bold type	Indicates text that you must type exactly as it appears or indicates a default value.
Italic type	Denotes a displayed variable, a variable that you must type, or is used for emphasis.
`Courier font`	Indicates text displayed on a computer screen.

If You Need Help

If you need technical support contact Avenger at (800) 274 - 9514 or email techsupport@avengersystems.com. Avenger technical support is available Monday through Friday, 8:00 AM to 6:00 PM, Eastern Standard Time.

Contacting Avenger Tech Support

On-site technicians familiar with the product issue should contact Avenger Tech Support and include the:

- Product part number
- Purchase order or Avenger order number
- Product serial number
- Current function of the product
- Expected function of the product
- Installation of the product

RMA Returns Required

A Return Material Authorization (RMA) must be assigned to all products returning to Avenger. Avenger Tech Support will assign an RMA to a returning product after recording information collected from the on-site technician. Avenger cannot not accept product-returns that do not include an accompanying RMA number.

An RMA number is assigned when:

- A product issue is acknowledged by a Avenger Tech Support representative
- A product was damaged during shipping
- An order was placed using an incorrect part number *
- An order was placed using an incorrect part quantity *
- An order is no longer required *

** Restocking fees may apply.*

Warranty Returns

Avenger Tech Support can replace a defective product when the original purchase is within the warranty period defined in the sales contract. Check your sales-contract for more information or contact your Avenger sales representative about the warranty period described in your sales-contract.

Warranty products that have been placed in service will be repaired or replaced by Avenger. Warranty products that have *not* been placed in service will be returned to Avenger stock and an equivalent credit will be provided to the contractor.

Advanced Replacements

Products that fail to operate in the field can be replaced quickly using the advanced replacement process. The advanced replacement process is available to all contractors who maintain an acceptable line of credit with Avenger.

Initiate the advanced replacement process by requesting an RMA number from a Avenger Tech Support representative. Advanced replacements can be shipped to your location when the suspect-product is covered under warranty and when a replacement product is in stock. All advanced replacement products are shipped UPS ground.

Expedited Replacements

Advanced replacements can be expedited at the request of the contractor. Shipping costs associated with this process are the responsibility of the contractor.

Returning Products

Products returning to Avenger using the advanced replacement process must be received 30 days from the RMA issue-date. Contractors can be billed for returning products received following this 30 day period.

Suspect-Product Testing

Suspect-products returned to Avenger are tested to confirm operating failures experienced in the field.
If the suspect-product is found to be functional, contractors must absorb the following expenses:

- Shipping of the advanced replacement product
- Return-shipping of the suspect-product
- Cost of the advanced replacement product

Product Return Address

Prominently display the RMA number on all packages sent to Avenger for return. Ship all return products to:
Attention: RMA # _____
Avenger, LLC
620 Allendale Road, Suite 175
King of Prussia, PA. 19406

This page intentionally left blank.

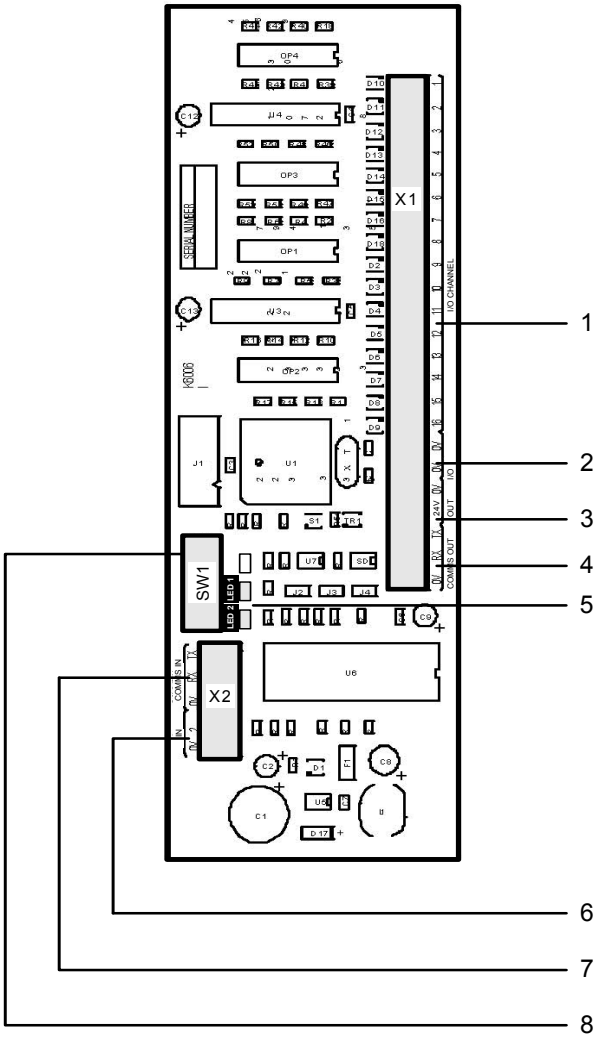
Section 2
Overview

The 16 Channel I/O Interface enhances the versatility of the alarm system by providing additional input and output capabilities to the eLAN or Supreme Panel. Inputs or outputs can be selected up to 16 individual channels. A maximum of 32, 16 Channel I/O Interfaces can be connected to the RS485 communications bus on the eLAN or Supreme Panel providing the capability of 512 inputs, 512 outputs or a mixture of both in any combination. All inputs and outputs are configured in the same way as devices connected to addressable loops of the eLAN or Supreme Panel.
The 16 Channel I/O Interface can be configured to contribute or act upon cause and effect logic.

Input points of this device are not supervised and therefore shall not be used for life safety initiation within a UL listed system. In a UL application this module must be housed in the Fire Control Panel or a listed enclosure connected to a Fire Control Panel by metal conduit. Power must also be provided by a UL listed power supply.

Figure 2-1 illustrates connections on the 16 Channel I/O Interface:

Figure 2-1
16 Channel I/O Interface Connections



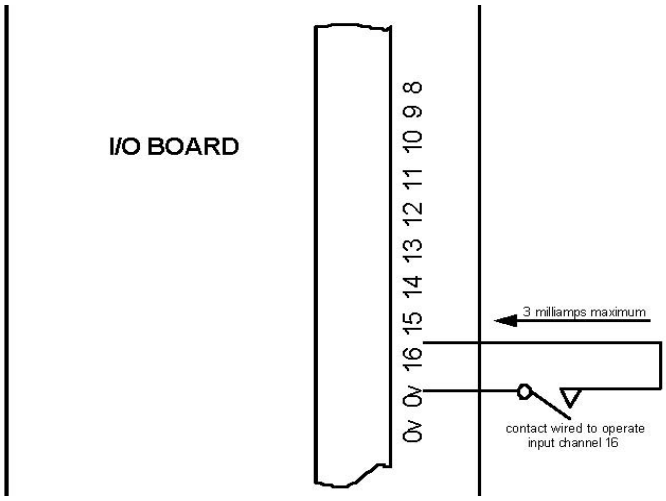
Key	Name	Description
1	X1, I/O CHANNEL	16 channels available for operating circuit inputs or outputs.
2	X1, I/O	Terminals 0V and 0V are the return connections for each I/O CHANNEL.
3	X1, OUT	Terminals 24V and 0V are the 24 VDC output connections.
4	X1, COMMS OUT	Terminals 0V, + and - are available output connections for the RS485 serial bus.
5	COMMS LED1 and LED 2	Communication LED 1 flashes for receive traffic. Communication LED 2 flashes for transmit traffic.
6	X2, IN	Terminals 24V and 0V are the 24 VDC input connections.
7	X2, COMMS IN	Terminals 0V, + and - are input connections for the RS485 serial bus.
8	SW1	DIP switch capable of setting 32 unique addresses.

Connecting Inputs

Inputs on the 16 Channel I/O Interface are optically isolated and are activated when connecting one of the 0V terminals to one of the 16 channel inputs. The 16 Channel I/O Interface inputs are activated when resistances of the circuit-path are less than 500 ohms. The switch-current caused by contact closure is limited to a maximum of 3 mA.

Figure 2-2 illustrates input connections on the 16 Channel I/O Interface:

Figure 2-2
Input Connections

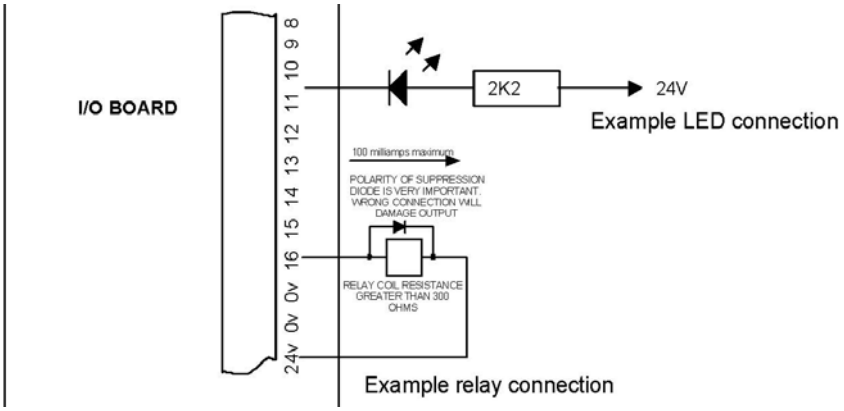


Connecting Outputs

Channels of the 16 Channel I/O Interface provide a negative voltage with respect to the 24V supply when outputs are configured. Care should be taken when connecting outputs to ensure that suppression diodes of relay coils are correctly polarized. Wrongly connected diodes will damage 16 Channel I/O Interface outputs. Installers must connect the cathode-band of suppression diodes to the positive 24VDC terminals to provide polarization. Individual channels can provide current up to 100 mA but each bank of eight channels must be limited to 500 mA. I/O channels 1 through 8 must be limited to operating currents below 500mA. I/O channels 9 through 16 must also be limited to operating currents below 500mA. The power supply operating the 16 Channel I/O Interface should also be evaluated to ensure that its rating is not exceeded when multiple channels function simultaneously.

Figure 2-3 illustrates an example relay and LED connection on the 16 Channel I/O Interface:

Figure 2-3
Example relay and LED connection



Section 3
Installation

This section provides instructions for connecting cables, mounting and testing the 16 Channel I/O Interface for installation.

To complete the installation:

1. Notify the monitoring center and location security that the eLAN or Supreme Panel will be temporarily out of service when replacing the 16 Channel I/O Interface.
2. Remove AC and battery power to the eLAN or Supreme Panel.
3. Set the address of the 16 Channel I/O Interface.
4. Remove the 16 Channel I/O Interface from its packaging and check its contents.
5. Mount the 16 Channel I/O Interface in eLAN or Supreme Panel.
6. Install a termination jumper to complete the RS485 communication path.
7. Connect multiple 16 Channel I/O Interfaces together using the inputs of connector X2 and the outputs of connector X1.
8. Connect power connections from the eLAN or Supreme to terminal X1.
9. Applying power to the eLAN or Supreme.
10. Check LED 1 and LED 2 on the 16 Channel I/O Interfaces to identify communication from the eLAN or Supreme.
11. Configure the 16 Channel I/O Interfaces using the Loop Explorer application.

Install this product in accordance with NFPA 72, the National Electrical Code and all local codes.

CAUTION !



The 16 Channel I/O Interface must be installed by personnel familiar with electronic components. Electronic components within the 16 Channel I/O Interface are vulnerable to damage from electrostatic discharge. Ground straps must be worn by installers before handling 16 Channel I/O Interface to prevent electrostatic discharge damage.

Before You Begin

Before you begin the installation, take a few minutes to review the installation information, gather the required items, and complete the tasks listed below to make the installation as quick and easy as possible:

1. Verify that you received the following items with the 16 Channel I/O Interface:

Item	Quantity	Description
Terminating Jumper	1	The 16 Channel I/O Interface ships from the factory with the terminating jumper installed on jack J3.

2 Acquire the following items that are not included with the 16 Channel I/O Interface, but may be required for the installation:

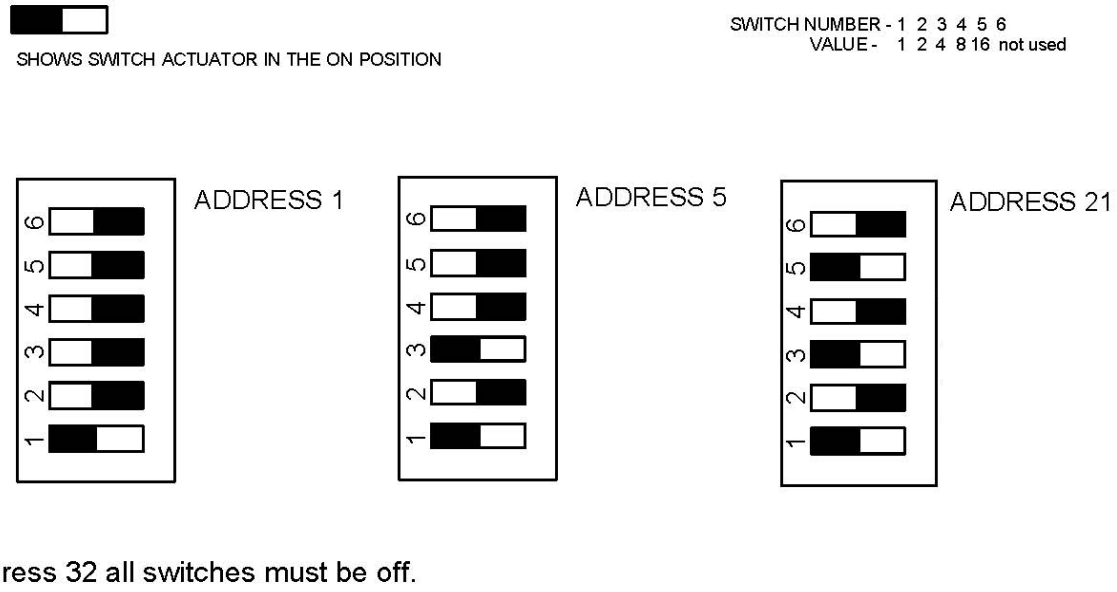
Item	Quantity	Description
Communication Cabling		Specify required lengths of 14 through 24 AWG.
Power Cabling		Specify required lengths of 14 through 24 AWG.
Mounting Hardware	1	The mounting hardware secures the 16 Channel I/O Interface to the cabinet of the eLAN or Supreme and is not provided in the packaging.
Ground Strap	1	A ground strap is required for handling circuit boards. *The ground strap is not provided in the packaging of the 16 Channel I/O Interface.*

Setting the Address

Up to 32, 16 Channel I/O Interfaces can be connected to a Fire Alarm Control Panel (FACP) when each contains an individual address. Configure an address on the 16 Channel I/O Interface by selecting a binary number on the SW1 DIP switch. Unique address settings must be configured on the DIP switch when more than one 16 Channel I/O Interface is used. Address 32 must be set to off on all DIP switches.

Figure 3-1 illustrates example address settings on the 16 Channel I/O Interface:

Figure 3-1
Example Address Settings



For address 32 all switches must be off.

Connecting the Terminating Jumper

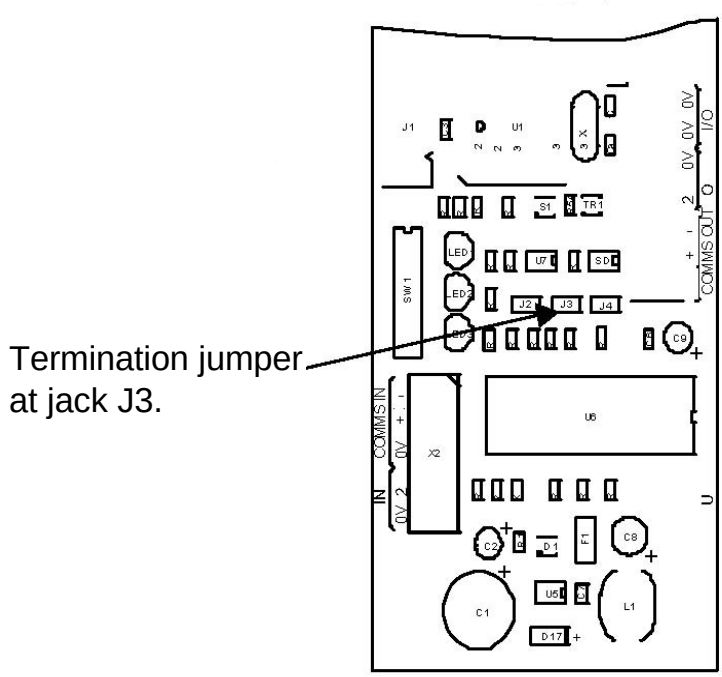
Connect a termination jumper to Jack J3 to provide RS485 communication on the 16 Channel I/O Interface card.

Provide this connection when installing one or multiple 16 Channel I/O Interface cards.

Connect the termination jumper to Jack J3 of the last card on the loop when multiple cards are installed. All other cards on the network *must not* have a termination jumper connected to jack J3.

Figure 3-2 illustrates the termination jumper on the 16 Channel I/O Interface:

Figure 3-2
Termination Jumper



Connecting Power

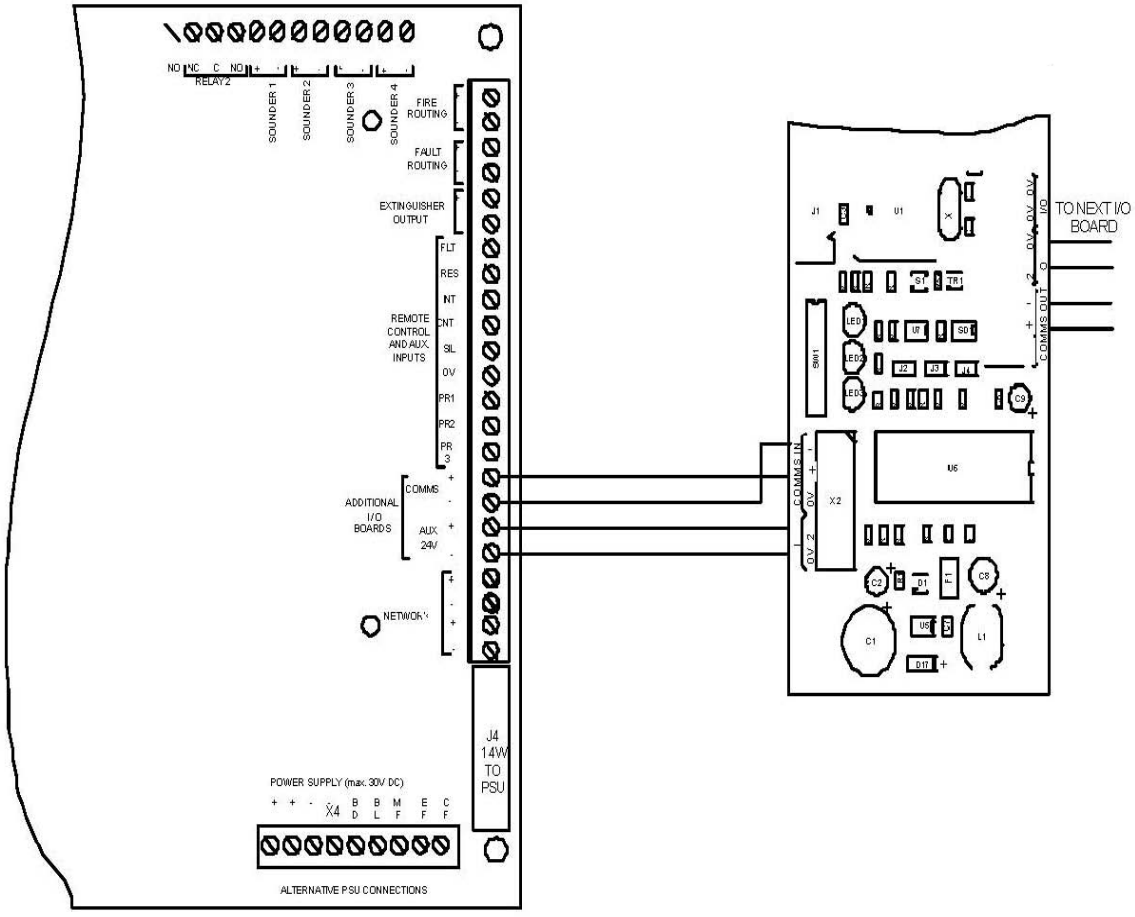
The 16 Channel I/O Interface operates between 21 and 30 VDC. The Aux 24V available in the eLAN and Supreme Panel is fused at 500 mA and is suitable for powering the 16 Channel I/O Interface. The total load current drawn by all outputs should be considered when using this supply.

Connecting Communications

The eLAN or Supreme Panel communicate with the 16 Channel I/O Interface using a 2-wire RS485 data bus. Terminate connections inside the fire control panel with small gauge equipment wire. Terminate connections outside the fire control panel with using a suitable RS485 data communications cable such as Belden 9271.

Figure 3-3 illustrates power and communication connections between the eLAN or Supreme Panel and the 16 Channel I/O Interface:

Figure 3-3
Power and Communication Connections



Configuring

Configure the 16 Channel I/O Interface using the Loop Explorer application when operating a system containing the Supreme A and Supreme H Panel. Configure the 16 Channel I/O Interface using the Loop Explorer application when operating a fire control system containing the eLAN A and eLAN H Panel.

Troubleshooting

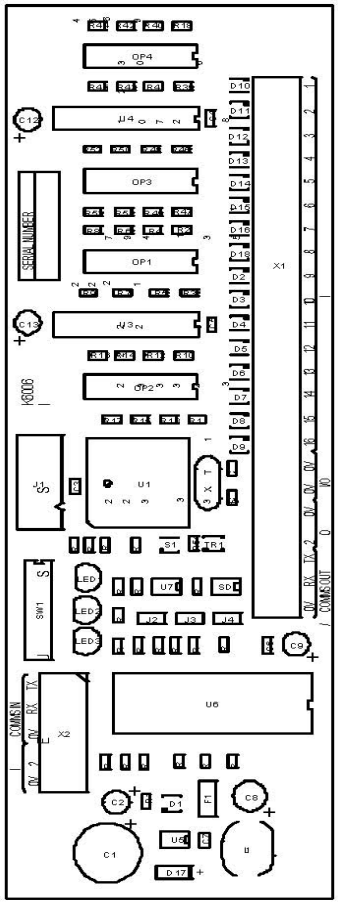
LED indicators on the 16 Channel I/O Interface provide diagnostic information to identify fire control panel communication. Red LED1 flashes when the 16 Channel I/O Interface receives message traffic from the fire control panel. When LED1 does not light, the 16 Channel I/O Interface is not receiving message traffic from the fire control panel. Check the integrity of the comms communication path. When LED1 lights continuously, corrupt-data is being received on the comms communication path. Confirm that interference is not being induced on the comms communication path by checking the power-mains or other noise generating sources.

Yellow LED2 flashes when the 16 Channel I/O Interface transmits message traffic to the fire control panel.

The LED does not flash when the 16 Channel I/O Interface is not transmitting message traffic to the fire control panel. Check the integrity of the comms communication path.

Figure 3-4 illustrates components of the 16 Channel I/O Interface:

Figure 3-4
Components of the 16 Channel I/O Interface



This page intentionally left blank

Appendix A
Specifications

This appendix provides electrical and environmental specifications for the 16 Channel I/O Interface.

Electrical

Input Voltage	24 VDC
Maximum input Current	100 mA
Quiescent Current	20 mA
Current Per Output Channel	100 mA maximum
Current Per Bank	500 mA maximum for channels 1 through 8. 500 mA maximum for channels 9 through 16.
Current Per Input	3 mA

Cabling

Communications	RS485 two-wire Maximum distance from fire control panel: 3900 feet (1200 meters) Specify Belden 9271 or any 18 - 24 AWG insulated copper-wire.
Terminal Blocks	Each terminal accepts two 14 - 24 AWG

Operating Environment

Low Temperature	32 +/- 3^{o}F (0 +/- 2^{o}C)	Dry indoor use only
High Temperature	120+/- 3^{o}F (49 +/- 2^{o}C)	Dry indoor use only
Relative Humidity	93% +/- 2% @ 90 +/- 3^{o}F (32 +/- 2^{o}C)	This device functions in an atmosphere of relative humidity up to 93 percent, non-condensing.

Physical Specifications

Dimensions	190mm X 60mm or 7.5” x 2.5”

This page intentionally left blank.