

# Model PS2402UL-4

Four Output Access Control Power Supply

Operating and Installation Instructions

52-233 Rev C.01

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## Warnings and Notices

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- WARNING - To reduce the risk of fire or electric shock, do not expose this product to rain or moisture
- WARNING - This installation and all servicing should be made by a qualified service person and should conform to all local codes
- NOTICE - This equipment shall be installed in a manner which prevents unintentional operation from employees, janitors and cleaners working about the premises, by falling objects, by customers, by building vibration and by similar causes
- NOTICE - This equipment is not intended for use within the patient care areas of a Health Care Facility

## Symbol Definitions



WARNING - Read the instruction manual to avoid personal injury or property damage



WARNING - Risk of electric shock. Service to be performed by a qualified service person

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## Table of Contents

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Section	Page
I. Warnings and Notices	2
1 Introduction	4
2 Applicable Standards / Documents	4
3 System Overview	5
3.1 Electrical Ratings and Specifications	5
3.2 Terminal Descriptions	6
3.3 Fusing	9
4 Installation	10
4.1 Mounting	10
4.2 Wiring	11
5 Operating the PS2402UL-4 Power Supply	12
5.1 Jumper Configuration	12
5.2 Visual Indicators	12
5.3 Troubleshooting	14
6 Specifications	15
6.1 Electrical Specifications	15
6.2 Temperature Specifications	15
6.3 Mechanical Specifications	15
Appendices:	
Glossary	18

## **Section 1**

### **Introduction**

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The PS2402UL-4 power supply system provides 24VDC power with four fused, FAI controllable outputs for use with access control systems. FAI control is selectable by zone for all four lock outputs. Integrated battery charger for up to 14AH (Space for 7AH in enclosure) of battery backup. Separate AC and DC fault contacts and integral tamper switch provide trouble notification to the access control panel. Pre-wired harness allows easy interconnect to popular access control panels, such as the Software House APC.

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## **Section 2**

### **Applicable Standards / Documents**

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#### **NFPA Standards**

NFPA 72 National Fire Alarm Code

NFPA 70 National Electrical Code

NFPA 731 Standard for the Installation of Electronic Premises Security Systems

#### **US Standards**

UL 294 Access Control System Units

#### **Other**

Applicable Local and State Building Codes

Requirements of the Local Authority Having Jurisdiction (LAHJ)

## Section 3

### System Overview

#### 3.1 Electrical Ratings and Specifications

##### Manufactured By

AlarmSaf  
65A Industrial Way  
Wilmington, MA 01887

Tel: 800 987 1050  
Tel: 978 658 6717  
Fax: 978 658 8638  
www.alarmsaf.com

##### Product Use

When installed in accordance with all standards listed in Section 2 of this document, the PS2402UL-4 provides DC power for access control equipment or other DC powered devices.

##### Model Numbers and Specifications

Model Number	Maximum System Current		No. Of Outputs	Maximum Input Power	Maximum Battery Storage
	Total	Per Zone			
PS2402UL-4	2.0A	1.0A	4	120 Watts	Two 7AH, 12VDC

##### Replacement Parts

Order Number	Part Number	Description
00009	Tamper Switch Kit	Tamper Switch with mounting hardware
00631	T29V120A	Replacement Transformer
97425	PS2402UL-4-BD	Replacement PS2402UL-4 Power Supply Board
97482	HARN-4	Replacement Fault Cable
97485	BH-1	Replacement Battery Cable

## 3.2 Terminal Descriptions

Wire should be sized appropriately for voltage drop and current carrying capability. All terminals are labelled for polarity where appropriate.

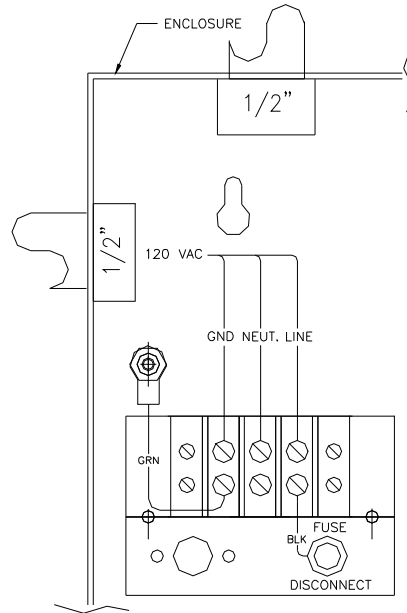


Figure 3.2.1.1

### 3.2.1 AC Input (System)

The primary AC input voltage connects to the three position terminal block with the label “Warning High Voltage” located near the transformer. The wire connected must be 14 through 12 AWG. See Figure 3.2.1.1.

**Note** - All wiring should be installed in accordance with (NEC760) NFPA70, NFPA72, and all local code requirements. Power limited wiring requires that power limited and non-power limited wiring remain physically separated. All power limited circuits must remain at least one quarter inch (1/4”) away from any non-power limited circuit wiring. All power limited circuit wiring must enter and exit the cabinet through different knockouts than non-power limited wiring.

**Note** - The earth ground wire should always be connected first or disconnected last for safety.

### 3.2.2 DC Outputs

DC output power is available from the OUT1 - OUT4 terminals. Each output can supply a maximum of 1.0A, with the total system current not to exceed 2.0A out. These terminals accept 22 through 12 AWG wire.

### 3.2.3 Battery Terminals (BAT +/-)

The PS2402 has one set of battery terminals labelled BAT+/- which will charge a 24V battery set of up to 14 amp hours within 48 hours. These terminals accept 22 through 12 AWG wire.

**Caution** - Observe the polarity of the PS2402 battery terminals with respect to the battery set or damage to the load, power supply, or battery set may occur.

**Note** - Series-connected batteries should always be of the same ampour capacity, age, and state-of-charge to prevent battery / system damage.

**Note** - It is the responsibility of the installer to determine the minimum battery requirement for the particular application in which the supply is being used. Backup batteries should be serviced at regular intervals as determined by local and/or national codes.

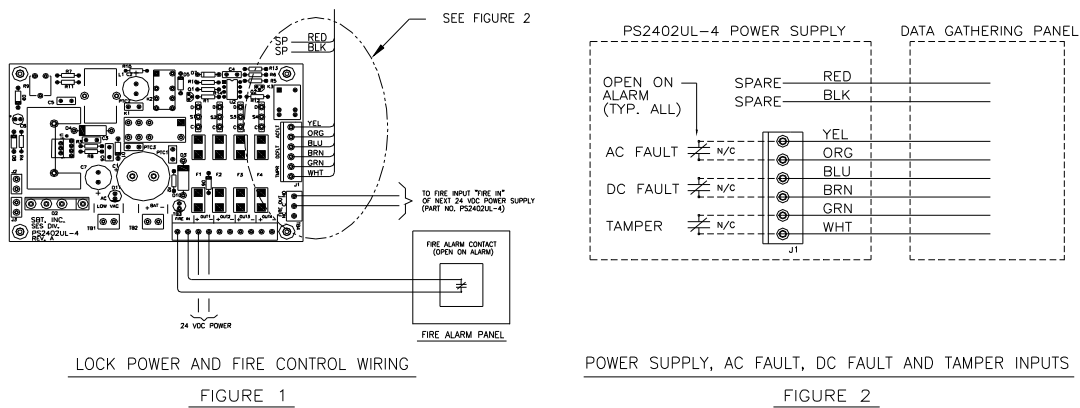


Figure 3.2.4.1

### 3.2.4 Fault Cable

The PS2402 power supply is supplied with a cable for connection to a panel. The six colored wires provide fault and tamper switch status to the panel. The yellow and orange wires are the AC fault contact, the blue and brown wires are the DC fault contact, and the green and white wires are the tamper switch.

## 3.3 Fusing

When replacing fuses in a PS2402 system, only the equivalent type and rating are to be used. The PS2402 system utilizes commonly available AGC fast-blow fuses.

Main AC Input: AGC-3  
 Lock Outputs 1-4: AGC-1

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## Section 4

### Installation

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#### 4.1 Mounting

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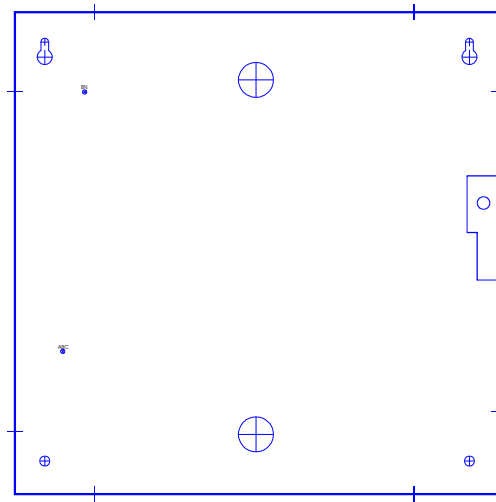
4.1.1 Mount the unit in locations that meet the following temperature and humidity requirements. Do not expose to conditions outside of these ranges.

Temperature	0 °C to 49 °C (32 °F to 120 °F)
Humidity	32 °C (90 °F) @ 93%

Use #8 hardware minimum in four locations. Use an appropriate fastening system for the mounting surface.

Cabinet Mounting:

1. Remove backplate assembly (optional).
2. Mark and predrill two holes for the top keyhole mounting screws
3. Install two fasteners in the mounting wall leaving screwheads protruding approximately 1/4 inch
4. Using the two upper keyholes, mount the cabinet over the two screws
5. Mark the two lower holes, remove the cabinet and drill the lower mounting holes
6. Mount the cabinet, install the remaining fasteners, and tighten all fasteners



## 4.2 Wiring

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### 4.2.1 Wire Routing

All wiring must be installed in accordance with NFPA70 [NEC760] and all local code requirements.

*Power Limited wiring requires that power limited and nonpower limited wiring remain physically separated. All power limited circuits must remain at least one quarter inch (1/4 ") away from any nonpower limited circuit wiring.*

### 4.2.2 AC Power Connection

Before making the AC connection, ensure that the electrical power to the location of the unit is off.

The primary AC input voltage connects to the three position terminal block with the label "Warning High Voltage" located near the transformer. The wire connected must be 14 through 12 AWG. To make the connection, remove the protective cover from the terminal strip. The cover is labeled with the phasing and earth ground connections. Replace the cover after connecting the primary wiring.

### 4.2.3 Field Wiring

Field wiring is connected either to the terminal strips located on the board or via the premade harness supplied with the unit. Wire sizing and terminal information is provided in Section 3 of this manual.

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## Section 5

### Operating the PS2402UL-4

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#### 5.1 Jumper Configuration

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Before powering the system, the jumpers on the board must be set for proper operation.

##### 5.1.1 Output Jumpers (S1-S4)

Each output on the PS2402 has a jumper to set its operation to one of two modes:

- D - The output **D**rops when an FAI is received
- C - The output maintains a **C**onstant output when an FAI is received

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#### 5.2 Visual Indicators

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The PS2402 has two visual indicators:

5.2.1 LOW VAC (D11) - This green LED lights when low voltage AC power from the input transformer is present on the board.

5.2.2 FIRE IN (D10) - This red LED lights when the FAI relay is energized.

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#### 5.3 Troubleshooting

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WARNING - Installation and service should only be performed by a qualified service person and should conform to all local codes

Condition	Possible Cause	Solution
Green "AC" LED is not lit	No AC, Low AC, or blown AC fuse	Verify that primary AC voltage is present and within the range of 102-132VAC. Replace AC input fuse if necessary.
	Loss of transformer	Check for transformer secondary voltage at the power supply board's input (TB1).
	Internal problem	Contact AlarmSaf
Output voltage not present	Short circuit or overload	Remove any wiring from TB3 on power supply board and check output
	Internal problem	Contact AlarmSaf
The output voltage is incorrect	Excessive loading on output	Verify that individual and total output current is less than rated current
	AC trouble	Verify presence of at least 102VAC on the input
	Bad / Incorrect Battery Set	Verify that a good battery set of the proper voltage is connected
The Common Fault relay is indicating a fault condition	Excessive loading on output	Verify that output current is less than the rated current
	Bad, Incorrect, or Missing Battery Set	Verify that a good battery set of the proper voltage is connected properly
	Internal problem	Contact AlarmSaf
The AC Fault relay is indicating a fault condition	Low or Missing AC	Verify the presence of at least 102VAC on the input and the input fuse is not blown

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## Section 6

### Specifications

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#### 6.1 Electrical Specifications

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6.1.1 Input Voltage	120VAC nominal
6.1.2 Input Power	120W Max
6.1.3 Input Frequency	60Hz
6.1.4 Minimum Battery Charge Capacity	4 Amphours
6.1.5 Maximum Battery Charge Capacity	14 Amphours

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#### 6.2 Temperature Specifications

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6.2.1 Ambient Temperature Range	0°C to 49°C (32°F to 120°F)
6.2.2 Ambient Humidity	93% at 32°C (90°F) maximum
6.2.3 BTU Output	112 BTU

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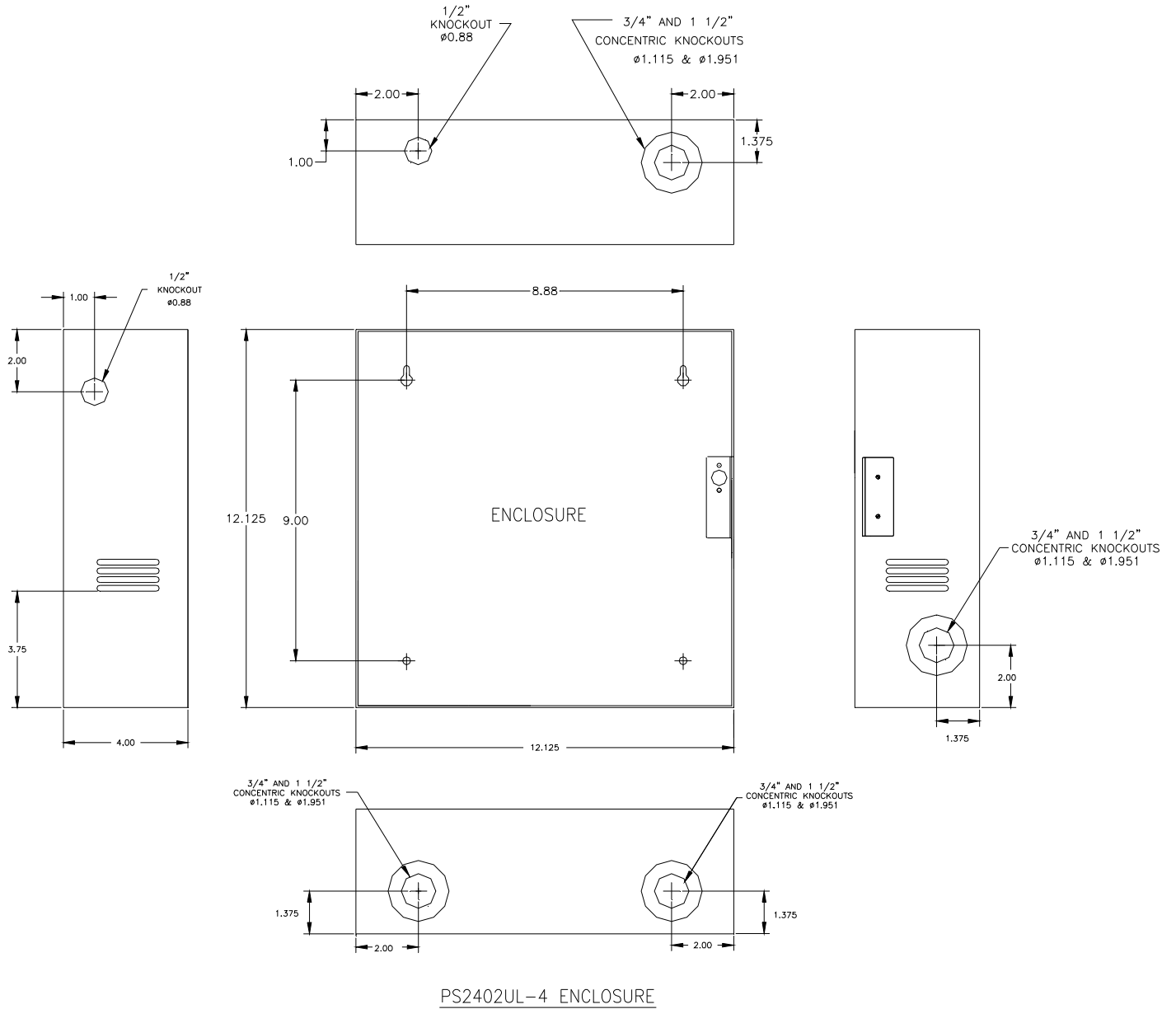
#### 6.3 Mechanical Specifications

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6.3.1 Weight	Approx. 12 lbs.
6.3.2 Overall Size	12.00"W x 12.00"H x 4.00"D

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### 6.3.3 CAD Drawing



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## Glossary

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ABC	See "Accessory Board Connector"
Accessory Board Connector	Connector present on some AlarmSaf power supplies and accessory boards, allowing plug-in expansion of the system
Accessory Board	An AlarmSaf product for use with AlarmSaf power supplies containing an ABC connector. These boards allow plug-in expansion of the functionality of the system. Examples of accessory boards include, but are not limited to, voltage distribution (simple and controlled), secondary DC-DC power supplies, and NAC Circuit expanders.
AC-DC Converter	A DC power supply whose voltage input is either direct from the AC line or through a step-down AC transformer
Buss 1 (B1)	The primary DC voltage in a system. Typically the higher of the two voltages in dual voltage systems
Buss 2 (B2)	The secondary DC voltage in a system. Only dual voltage systems use this voltage.
Class 2 Power Limited Controlled Distribution	A voltage output or wiring which conforms to NEC Article 725. Voltage distribution providing on/off control for the outputs. Control can be from FAI, an access control panel, card reader, or other device. The MB8(F) and CMB8(F) accessory boards, and the APD8(F) are examples of controlled distribution.
DC-DC Converter	A DC power supply whose voltage input comes from another DC source. DC-DC converters allow multi-voltage system backup with a single battery set.
FAI	See "Fire Alarm Interface"
Fire Alarm Interface	Input present on some AlarmSaf products allowing control of output(s) in the system. Typically used for dropping power to maglocks on egress doors during a fire alarm condition, but can also be used for other control functions, such as resetting smoke detectors
Negative Trip	An input which is activated upon the switching of a DC Common to its terminals. The DC Common may either be from an external (common grounded) source, or may be provided as one of the terminals of the input, depending on the product. This input type is used with a dry contact or open collector input.
Positive Trip	An input which is activated upon the switching of a positive DC voltage to its terminals. The positive voltage may either be from an external (common grounded) source, or may be provided as one of the terminals of the input, depending on the product. This input type is used with a dry contact or voltage input.
Power Limited	A voltage output or wiring which conforms to NEC Article 725.
PTC	A resettable overcurrent protection device, similar to a fuse or circuit breaker.
Rack Mount	A product which has an enclosure that allows mounting in a standard 19 inch equipment rack
Simple Distribution	Voltage distribution without any control function for the distributed outputs. Power is always available to the outputs. The PD8(F) accessory board is an example of simple distribution.
Voltage Distribution	Splitting a bulk power supply output into multiple, current limited outputs to prevent a single circuit failure from talking down an entire system. The multiple terminal outputs also simplify wiring by providing a pair of terminals for each circuit, rather than wiring several circuits to a single pair of terminals.