

Model PS2402UL-4

Four Output Access Control Power Supply

Operating and Installation Instructions

52-233 Rev E.01

Warnings and Notices

- 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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Section 1

Introduction

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.

Section 2

Applicable Standards / Documents

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

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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 | T29V120 | Replacement Transformer |
| 97425 | PS2402-UL-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.

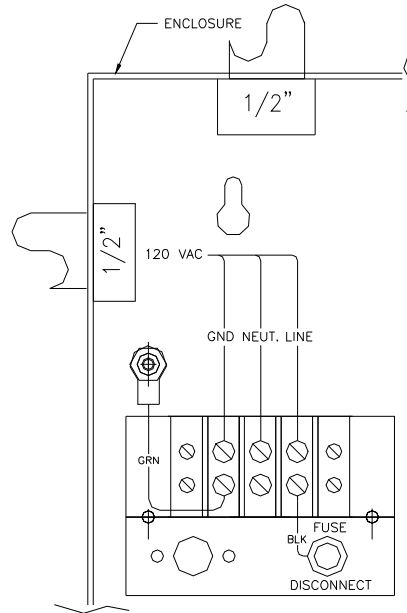


Figure 3.2.1.1

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.

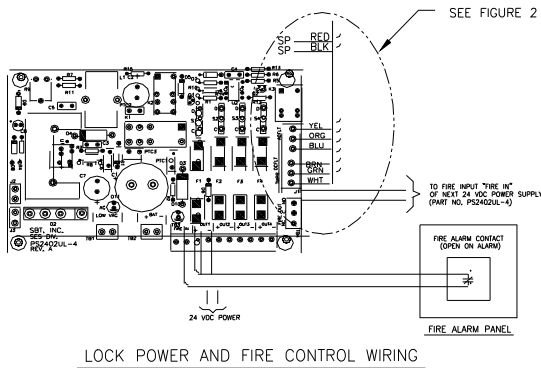
3.2.3 Battery Terminals (BAT +/-)

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.

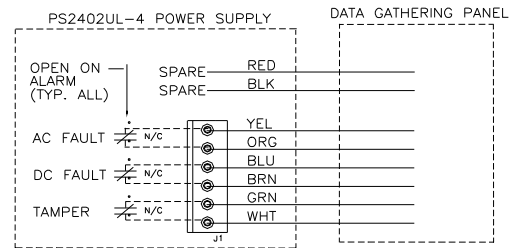
Note - Series-connected batteries should always be of the same ampour capacity, age, and state-of-charge to prevent battery / system damage.

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.



LOCK POWER AND FIRE CONTROL WIRING

FIGURE 1



POWER SUPPLY, AC FAULT, DC FAULT AND TAMPER INPUTS

FIGURE 2

TECHNICAL NOTE: Wire colors may vary. In some systems the #22 AWG WHT wire for the tamper switch may be RED and/or the #18 AWG SPARE RED wire may be WHITE.

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 (or red) 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

Section 4 Installation

4.1 Mounting

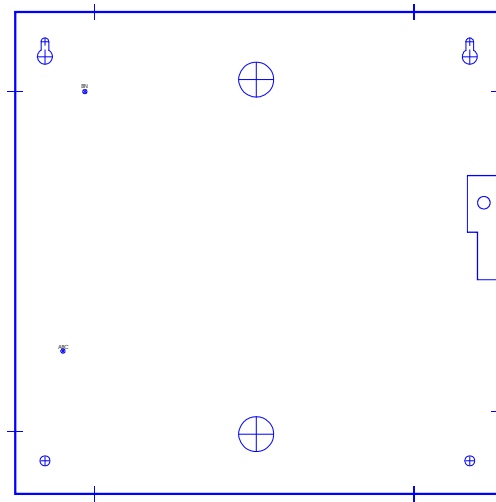
4.1.1 Mount the unit in locations that meet the following temperature and humidity requirements. Do not expose to conditions outside of these ranges.

| | |
|-------------|---------------------------------|
| 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

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.

Section 5

Operating the PS2402UL-4

5.1 Jumper Configuration

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

5.2 Visual Indicators

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.

5.3 Troubleshooting

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 |

Section 6

Specifications

6.1 Electrical Specifications

| | |
|---------------------------------------|----------------|
| 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 |

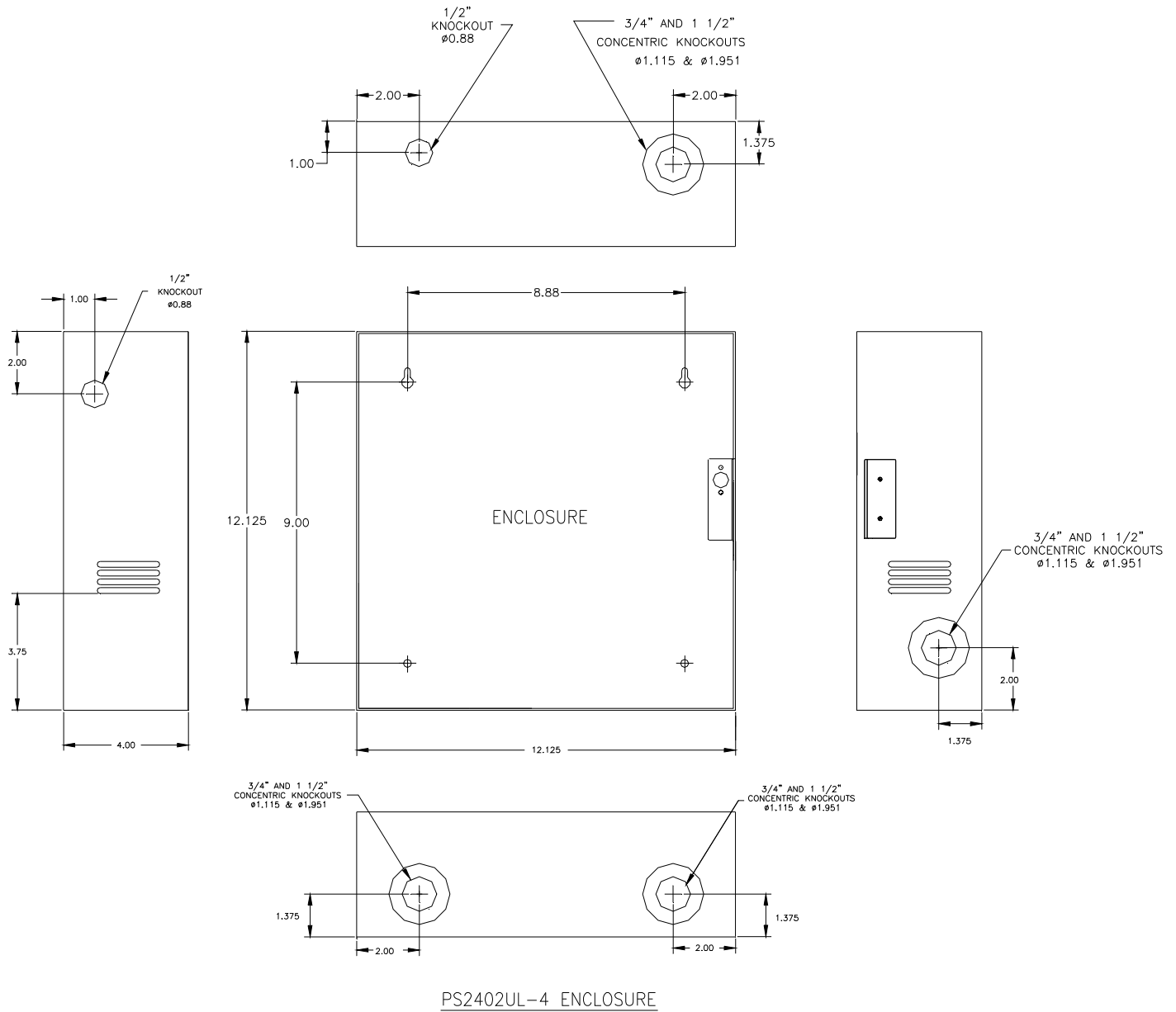
6.2 Temperature Specifications

| | |
|---------------------------------|-----------------------------|
| 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 |

6.3 Mechanical Specifications

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

6.3.3 CAD Drawing



Glossary

| | |
|--|---|
| 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. |