

Installation and Operations Manual



SEI 600/24-2U-P DC-UPS



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TABLE OF CONTENTS

| | |
|------------------------------------|----|
| Table of Contents | 1 |
| Description | 2 |
| Technical Specifications | 3 |
| Environmental Specifications | 3 |
| Safety Information | 4 |
| Installation Instructions | 5 |
| Startup and Checkout | 8 |
| Theory of Operation | 9 |
| LED indicators | 10 |
| Storage | 11 |

DESCRIPTION

The SEI 600/24-2U-P DC-UPS is a compact unit designed to power a wide range of customer equipment requiring battery-backed 24 VDC power. The unit comes equipped with 600 Watts of rectifier power. The power distribution is provided on the rear of the unit via a pair of fused 10/32 studs suitable for a two-hole compression lug. Commercial power is applied to the left side of the rear unit. The SEI DC-UPS can be mounted on a 19-inch rack and occupies 2U (3.5 inches) of rack space.

The SEI 600/24-2U-P comes equipped with two field replaceable, non-spillable sealed lead acid battery packs. Both battery packs must be installed to provide back-up power. Circuitry within the DC UPS monitors and periodically tests the condition of the batteries and displays the results via front panel LEDs. The DC UPS also utilizes a Low Voltage Disconnect, (LVD), circuit that prevents damage to the Battery Packs during an extended AC outage.

TECHNICAL SPECIFICATIONS

SEI 600/24-2U-P

AC Input Power

| | |
|-----------|---|
| Voltage | 85-264 Vac |
| Frequency | 47-63 Hz |
| Current | 6.2 Amps Typical (115 Vac input, 600 W output) 8.5 Amps Max |

DC Output Power

| | |
|-------------|-----------------|
| Voltage | 21.0 – 27.4 Vdc |
| Power | 600W max |
| Current | 30 Amps max |
| Fuse Rating | 30 amps |

Battery

| | |
|-------------|---------|
| Capacity | 18 Ahr |
| Fuse Rating | 60 amps |

Mechanical Dimensions

| | |
|--------|--------------|
| Width | 19.00 Inches |
| Depth | 22.00 Inches |
| Height | 3.50 Inches |
| Weight | 45 lbs |

ENVIRONMENTAL SPECIFICATIONS

Temperature

| | |
|-----------|------------------|
| Operating | 0 °C to +50 °C |
| Storage | -20 °C to +50 °C |

Humidity

0-95% non-condensing

Thermal Load

| | |
|---------|----------------|
| SEI-600 | 270 BTU/hr max |
|---------|----------------|

SAFETY INFORMATION

Always insure that the person assigned to the job can perform the job safely.

Always lift all equipment properly.

Always disconnect commercial power and remove the battery fuse before working on the unit.

Always replace the batteries with batteries of the same type and style.

DO NOT work on this equipment during an electrical storm.

DO NOT work in locations where there is condensing moisture or standing water.

Service to the DC UPS should be performed by a qualified technician.

INSTALLATION INSTRUCTIONS

GENERAL

The installation section of this manual will provide all the necessary information for room requirements, proper inspection, and installation.

Inspection

The equipment has been fully tested and inspected prior to shipment. Although the unit has been packed in accordance with good commercial practices, it does not preclude damage in transit.

The following actions should be taken on receipt of the equipment:

- Visually inspect the shipping container for damage. If damaged, request that the carrier inspect the shipment.
- Unpack the inner container from the shipping container and remove the unit from the packaging. Inspect the unit for visible damage.

If a claim for damages is to be made, it should be filed promptly with the transportation company. In addition, notify SEI within two days of delivery. SEI will advise the customer of any further procedures that may be required, including an RMA number in the event that the unit has to be returned to the factory for repair.

Make sure the following items are included inside the package:

- SEI 600/24-2U-P DC-UPS
- One AC Power Cord.
- One Installation and Operations Manual.

The two battery packs are shipped in a separate package.

Room Requirements

Electrical Requirements

- Each unit requires a separate NEMA 5-15R receptacle protected by a 15 Amp circuit breaker.
- A standard 7 foot 6 inch power cord with a molded NEMA 5-15 plug is supplied with each unit.

Mounting Instructions

1. Unit Weight - The SEI 600/24-2U-P weighs 45 lbs with the battery packs installed and 20 lbs without the battery packs installed. It is recommended to mount the unit before installing the battery pack.
2. Rack Mounting - The SEI DC-UPS is designed to mount to a 19" rack using two racks screws per side. The mounting slots on each rack adapter are spaced in conformance with EIA standard RS-310-B.
3. Ventilation - It is important that the DC-UPS's ventilation ports not be blocked. Therefore, leave adequate space on front and both sides of the unit to ensure unrestricted airflow to the unit. It is recommended that a minimum of 3 inches of space be allowed on both sides of the unit. The unit should be installed in a clean dry area where the ambient temperature does not exceed 50°C.
4. Battery Pack Installation
 - a. Open Front Panel – Loosen the two thumbscrews on the front of the DC-UPS. Fold down the front panel.
 - b. Install Battery Packs – Slide each of the two battery packs into the DC-UPS Chassis. The battery packs should be oriented so that the attached connectors point to the middle of the unit.
 - c. Attach the red and black connector of each battery pack to the one of the red and black connectors in the center conduit of the DC-UPS. Either battery pack can be connected to either DC-UPS connector
 - d. Gently push the connected red and black connectors into the center conduit.
 - e. Close the Front Panel – Fold up the front panel and secure the two thumbscrews.
5. Attach Customer Equipment - Attach the equipment to be powered to the 10/32 studs on the rear of the DC-UPS.



Figure 1 10/32 terminal Output Port

6. Attach the AC-Power Cord – Attach the provide AC Power Cord to the IEC receptacle on the rear of the DC-UPS.

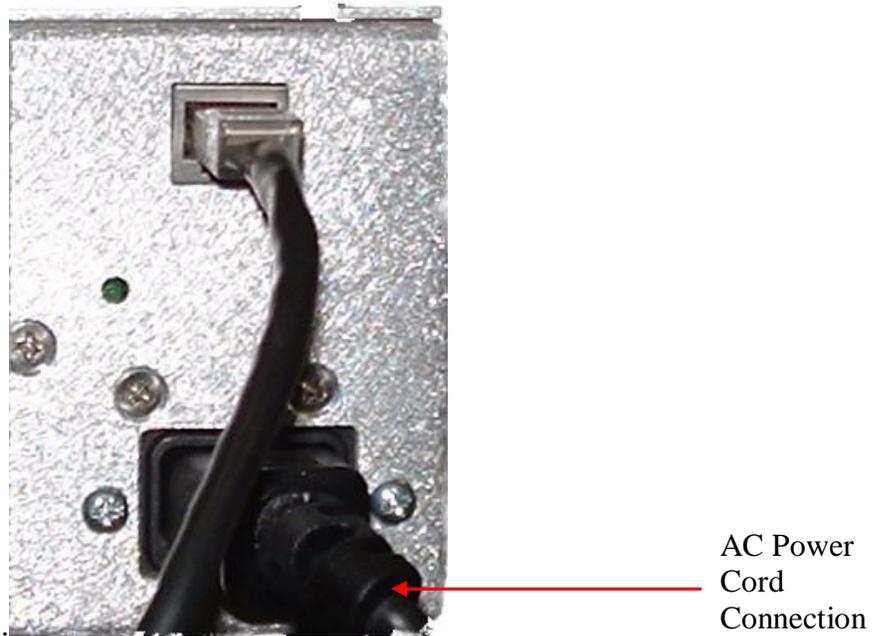


Figure 2 AC connections

START UP AND CHECKOUT

Power On Checkout.

1. Once the unit is properly mounted, you may begin the checkout procedure. First, insure that all the equipment to be powered by the unit is installed.
2. Plug in the DC-UPS power cord into the commercial AC outlet made available for this unit.
3. When power is first applied, the front panel LEDs will go through a start-up sequence of red, green and flashing yellow. The DC-UPS fans will also start-up.
4. After the start-up sequence, the Port 1 LED will turn on green. Verify that the connected customer equipment is receiving power.
5. The Battery Charge Status LED will flash green. This indicates that the Battery Pack is charging.
6. Disconnect the AC power cord. Verify that the Battery Charge Status LED and the System Status LED are flashing red. If there is no load on the DC-UPS this may take several seconds. Verify that the connected equipment is still receiving power.
7. Reconnect the AC power cord. The Battery Charge Status LED will flash green. This indicates that the batteries are charging.
8. If you have a specific question not addressed in this manual, please call **301-694-9601**

SYSTEM SHUTDOWN

1. The SEI 600/24-2U-P DC-UPS is an uninterruptible power system. Therefore, cutting the AC power feed to the unit will not shutdown the DC power distributed to the loads until the battery pack is full discharged.
2. Disconnect the AC power Cord.
3. Verify that the Battery Status LED and the System Status LED are flashing red.
4. Press and hold the Manual Battery Test Switch for 5 seconds. The Battery Test Status LED will quick flash red.
5. All front panel LEDs will turn off, the unit fans will stop and the connected equipment will power down.

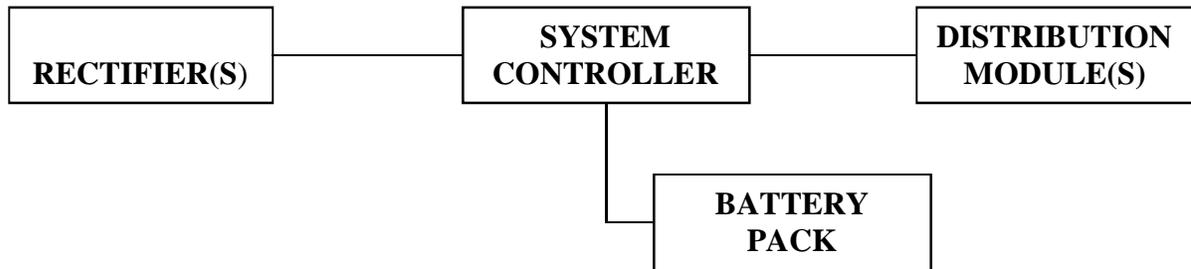
THEORY OF OPERATION

Theory of Operation

The following will provide you with an outline of operations and a list of modules found in the DC-UPS.

Modules

- Rectifiers
- System Controller/LVD
- Battery Module
- Distribution and Connectors
- Alarm Contact Closures



Functional Block Diagram DC-UPS

Figure 1

Rectifier

The 600W rectifier converts AC input power to regulated DC output power. The input of the rectifier is fused for protection...

System Controller/LVD

The System Controller has the following functions:

- Distribution of the DC power
- Battery charge voltage and current control and monitoring
- Load monitoring and overload control
- Battery Low Voltage Disconnect Function (LVD)
- Battery charge and test status indicators
- Automatic and manual battery test

Low Voltage Disconnect Function

The low voltage disconnect function will disconnect the battery when the battery voltage drops below a 21.0 Vdc. This is done to prevent deep discharge of the batteries, which can adversely affect battery life. Both internal and external batteries are disconnected

LED Indicators

There are three sections of LED indicators on the front panel of the unit; Output, System Status and Battery Status. The functions of these indicators are as follows:

Output Section:

| LED state | Indication |
|-----------------|--|
| Off | Output Port DISABLED or not implemented |
| Solid Green | Output Port ON and operating normally |
| Flashing Yellow | Output Port Load Warning – Output Port power exceeds the user-settable Port Power Warning Level |
| Solid Red | Output Port Overload – Output Port OFF - Output Port power exceeds the user-settable Port Power Shutdown Level |

System Status Section:

| LED | LED state | Indication |
|---------------------------|-------------------------------------|---|
| System Voltage | Solid Green | Operating normally |
| | Slow Flash Red (once per second) | System Voltage below optimal battery charge voltage. If Battery Charge Status LED is also flashing, unit is operating on battery |
| | Fast Flash Red (5 times per second) | Battery almost depleted – less than 10% of battery life remains |
| System Temperature | Solid Green | Operating Normally |
| | Flashing Yellow | Warning Internal temperature > 40° C |
| | Flashing Red | Fault - Internal temperature > 50° C – Battery charging inhibited. |
| System Overload | Solid Green | Operating Normally |
| | Flashing Yellow | Total Output power exceeds the user-settable UTILIZATION ALARM THRESHOLD percentage |
| | Flashing Red | Total Output power exceeded available power. In units with multiple output ports, the lowest priority ports will be SHUTDOWN until the OVERLOAD is removed. |

Battery Status Section:

| LED | LED state | Indication |
|-----------------------------------|-------------------------------------|--|
| Battery Charge Status | Solid Green | Battery fully charged |
| | Flashing Green | Battery charging |
| | Flashing Red | Unit operating on battery power |
| Battery Test Status | Off | Battery under Test |
| | Green | Battery Test Pass – Battery OK |
| | Slow Flash Red (5 times per second) | Battery Test Fail – Replace Battery Packs. |
| | Fast Flash Red (5 times per second) | Battery Test not Allowed |
| Manual Battery Test Switch | Push to Test | Battery Test not allowed when battery is charging, when there is a system fault condition, or within one minute of a previous battery test |

STORAGE

The DC-UPS batteries may be stored at temperatures of 25°C or below for up to six months. The DC-UPS must be powered up with the battery packs installed for at least 48 hours every six months to maintain the batteries. For storage temperatures between 26°C and 40°C, the un-powered storage time must not exceed three months. For storage temperatures above 40°C, the un-powered storage time must not exceed one month. Failure to maintain the batteries will result in decreased battery capacity, decreased battery life and battery failure.