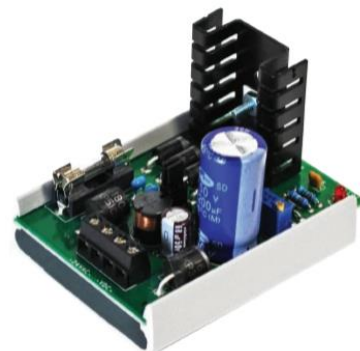


## Overview

The NSA-A/PS24 Series low voltage power supplies accepts a 24 VAC input voltage from a Class 2 transformer and converts it into an adjustable 1.5 to 26 VDC regulated output voltage. The NSA-A/PS24 is able to be configured in either Half or Full Wave mode by using the integral jumper shunt selection switches. An onboard potentiometer is available to allow for field adjustment of the 24 VDC factory set voltage to any voltage from 1.5 to 26 VDC. The standard unit is shipped in a standard snap track mounting configuration to allow for easy mounting inside of your electrical panel or piece of equipment. In applications where a Pilot Duty or remote relay is required, the A/DO008 transorb can be placed across the coil of the relay to snub electrical spikes when the relays are de-energized. An external transorb may not be required if the relay and PS24 power supply is mounted within the same control panel.



**Applications:** DC Power Supply, Transducer Supply, Test Bench Supply, Analog Signal Simulator, DC Power Regulation from Control Transformer

## Part Numbers

**NSA-A/PS24-24V-S**

## Specifications

<b>Input Voltage:</b>	22 to 26 VAC, 50/60 Hz (Class 2 Transformer w/ 24 VAC Secondary) or 30 to 36 VDC
<b>VA Requirements:</b>	1.5 VA minimum (No Load); Determine additional VA required by load size
<b>Rectification:</b>	Half-Wave (Default) or Full Wave (Jumper Selectable)
<b>Output Voltage:</b>	Factory set at 24 VDC; Adjustable from +1.5 to 26 VDC
<b>Output Current:</b>	See <b>Figure 1</b> graphs for Output Current vs Ambient Operating Temperature
<b>Overload Protection:</b>	Internal Current Limiting Thermal Protection
<b>Ground Loop Protection:</b>	Fused, 3.15A/250 VAC, 5 x 20 mm, fast acting (Littelfuse 02173.15 MXP or equivalent)
<b>Status Indication:</b>	Red LED Indicates power on status
<b>Operating Temperature Range:</b>	32 to 158°F (0 to 70°C)
<b>Operating Humidity Range:</b>	5 to 95%, non-condensing
<b>Storage Temperature Range:</b>	50 to 95°F (10 to 35°C)
<b>Storage Humidity Range:</b>	30 to 60%
<b>Connections   Wire Size:</b>	Screw Terminal Blocks   14 (1.31 mm <sub>2</sub> ) to 22 AWG (0.129 mm <sub>2</sub> )
<b>Terminal Block Torque Rating:</b>	4 lb-in (0.5 Nm) maximum
<b>Snap Track Material   Flammability Rating:</b>	Polyvinyl Chloride (PVC)   UL94 V-0
<b>Product Dimensions (L x W x H):</b>	3.10" (78.8 mm) x 2.88" (73.2 mm) x 2.05" (52.1 mm)
<b>Product Weight:</b>	0.14 lbs. (0.064 kg)
<b>Agency Approvals:</b>	CE, RoHS2, WEEE

## Output Current vs Ambient Operating Temperature

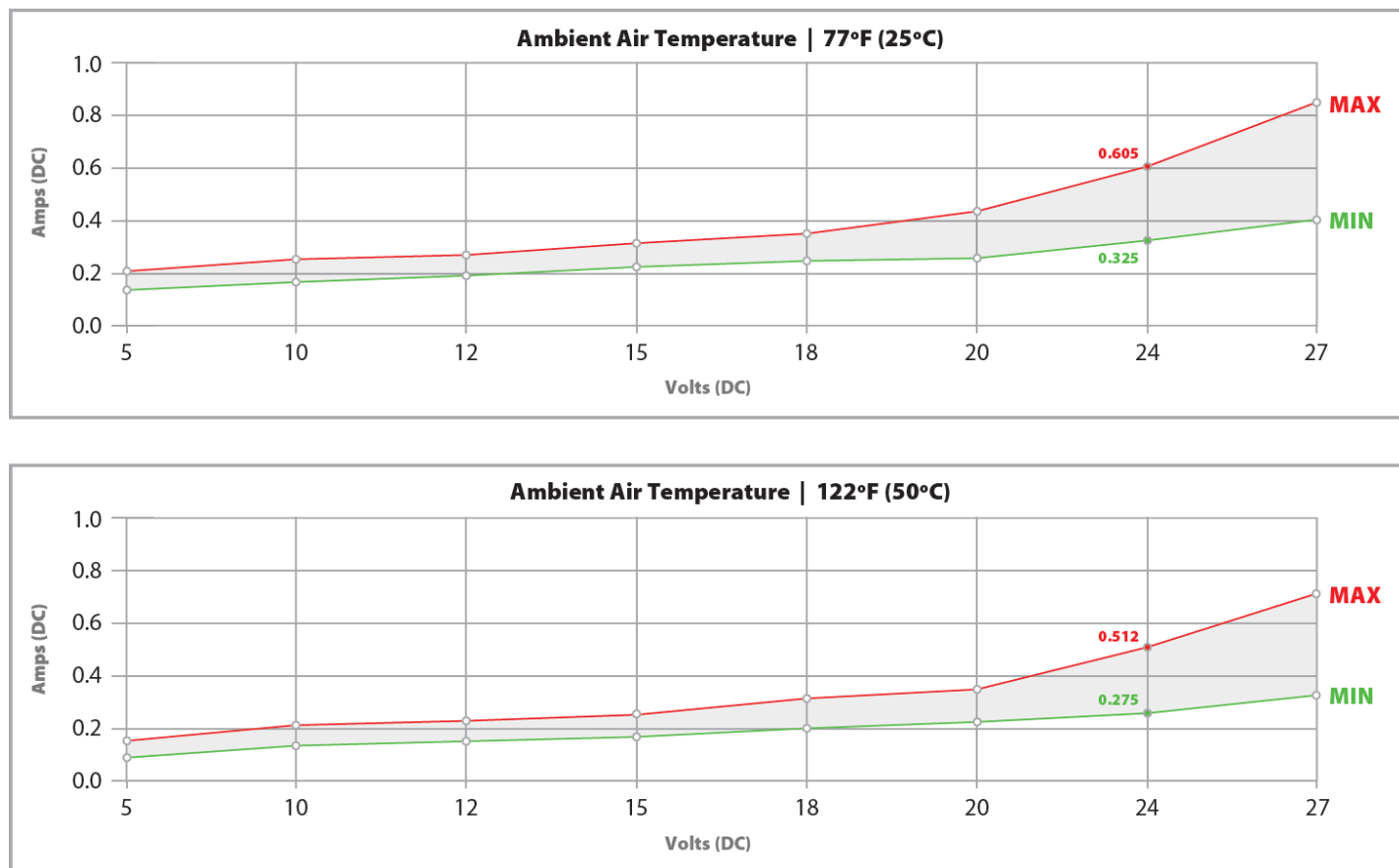


Figure 1

## Dimensional Drawing

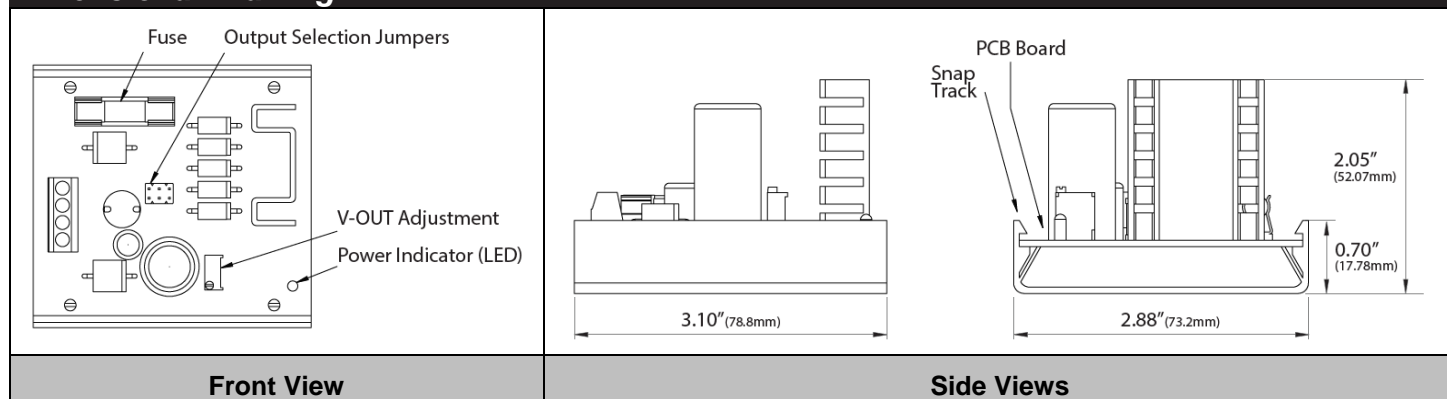


Figure 2



## Installation

### General Information

This unit will accept an input of up to 26 VAC or 36 VDC, and provides an adjustable 1.5 to 26 VDC output. Field voltage adjustment is done by adjusting a potentiometer using a flat-head screwdriver. The NSA-A/PS24-24V-S is setup for Half-wave rectification from factory, but can be set to Full-wave rectification via jumpers.

### Mounting

The NSA-A/PS24-24V-S is supplied with a snap track for mounting. The circuit board may be mounted in any position. In equipment / electrical compartments, mounting upside down at top of the enclosure is not recommended as heat build-up could be a problem when running higher current loads. Use only fingers to remove board from snap track. Slide out of snap track or push against side of snap track and lift that side of the circuit board to remove. Do not flex board or use tools.

## Wiring Instructions

### Precautions

- Remove power before wiring. Never connect or disconnect wiring with power applied.
- All wiring must comply with local and National Electric Codes.
- It is recommended you use an isolated UL-listed class 2 transformer when powering the unit with 24 VAC. Failure to wire the devices with the correct polarity when sharing transformers may result in damage to any device powered by the shared transformer.
- In applications where a Pilot Duty or remote relay is required, the A/DO008 transorb can be placed across the coil of the relay to snub electrical spikes when the relays are de-energized. An external transorb may not be required if the relay and PS24 power supply is mounted within the same control panel.

### 1) Supply Voltage

The input voltage to the NSA-A/PS24-24V-S should come from an isolated 24 VAC transformer or a 30 to 36 VDC power supply. Connect this to the + 24 VAC – Terminal blocks.

**NOTE** A grounded DC (-) terminal and a grounded 24 VAC Input transformer will blow the unit's fuse in the Full-Wave mode. Also, in half-wave mode, the 24 VAC connections are POLARITY SENSITIVE. Be sure to insure that all 24 VAC minus (-) terminals are connected to the same lead on the 24 VAC transformer.

Without any load attached, the PS24 uses 1.5 VA when powered. Be sure to size the 120 VAC to 24 VAC transformer to handle the power (VA) required by both the PS24 and the load connected to the PS24. The PS24 is 65% efficient with a 24

VDC output voltage setting. Derate the transformer VA to x%. Determine output power required from the equation (voltage output x current draw from load) = VA load. Example: (24 VDC \* 0.2A) = 4.8 VA load. Determine transformer power from the equation (output VA / efficiency) = VA transformer (or similar). Example: (4.8 VA / 0.65) = 7.4 VA transformer.

### 2) Output Connections

Connect your load to – VDC + Terminal Blocks. Be mindful of polarity.

## Output Selection Jumpers

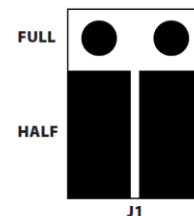
### Half Wave - Full Wave Rectification

- The NSA-A/PS24-24V-S comes with the option of selecting either a Full-Wave or Half-Wave output depending on your application needs. All power supplies are shipped from the factory in Half-Wave mode.
- Make sure there is no power applied to the unit when changing jumpers. Failure to do so may harm the unit or cause damage to any other device connected to the power supply.

### Half-Wave Versus Full-Wave Identification

- If a device is half-wave, the signal common will typically be connected to the AC minus (-) terminal on the device. Therefore, with no power applied, take an ohmic measure between signal common and AC (-) using a DMM; the reading should measure less than two (2) ohms.
- If a device is full-wave, the signal common and the AC (-) will read overload or open when measured with a DMM.

### HALF-WAVE JUMPER SETTING



### FULL-WAVE JUMPER SETTING

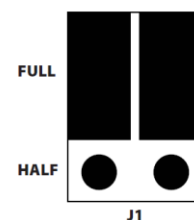


Figure 3

## Voltage Output Adjustment

The output is factory set to 24 VDC, but can be adjusted from 1.5 to 26VDC. The voltage output can be changed by adjusting the P1 turn pot with a flat-head screwdriver. Rotate the turn pot screw clockwise to increase the voltage output, or rotate the turn pot screw counter-clockwise to decrease the voltage output.

## W.E.E.E. Directive

At the end of their useful life the packaging and product should be disposed of via a suitable recycling center. Do not dispose of with household waste. Do not burn.