

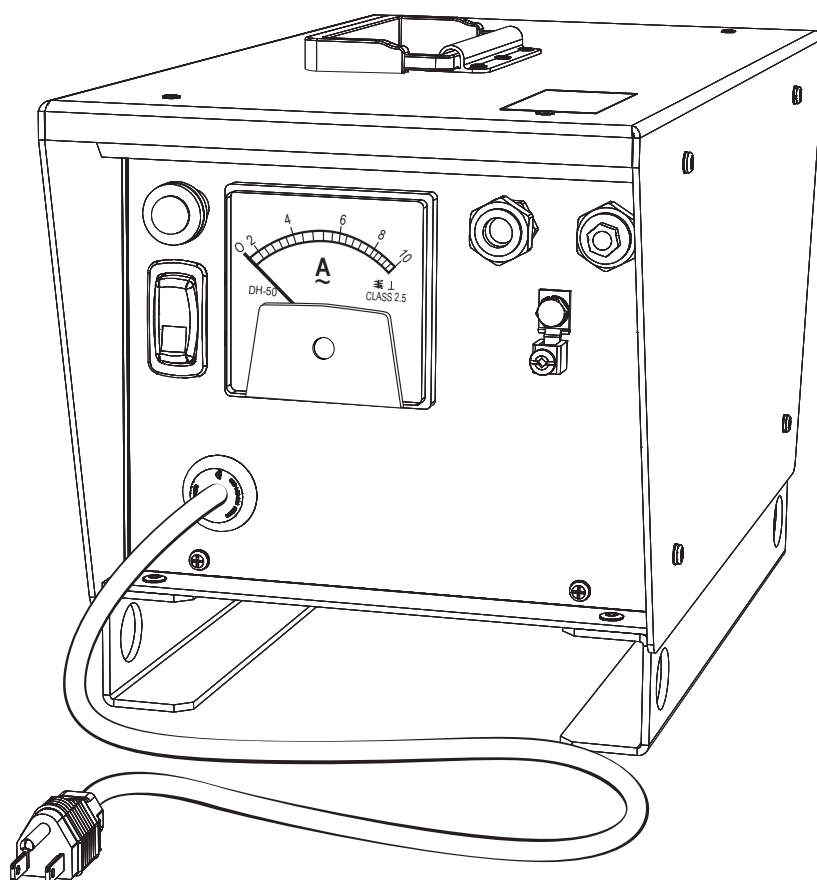


an EnerSys company

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# APP 9005C Service Power Supply Installation and Operation Manual

Effective: August 2019



## Safety Notes

Alpha considers customer safety and satisfaction its most important priority. To reduce the risk of injury or death and to ensure continual safe operation of this product, certain information is presented differently in this manual. Alpha tries to adhere to ANSI Z535 and encourages special attention and care to information presented in the following manner:



### **WARNING! GENERAL HAZARD**

GENERAL HAZARD WARNING provides safety information to PREVENT INJURY OR DEATH to the technician or user.



### **WARNING! ELECTRICAL HAZARD**

ELECTRICAL HAZARD WARNING provides electrical safety information to PREVENT INJURY OR DEATH to the technician or user.



### **WARNING! FUMES HAZARD**

FUMES HAZARD WARNING provides fumes safety information to PREVENT INJURY OR DEATH to the technician or user.



### **WARNING! FIRE HAZARD**

FIRE HAZARD WARNING provides flammability safety information to PREVENT INJURY OR DEATH to the technician or user.

There may be multiple warnings associated with the call out. Example:



### **WARNING! ELECTRICAL & FIRE HAZARD**

This WARNING provides safety information for both Electrical AND Fire Hazards.



### **CAUTION!**

CAUTION provides safety information intended to PREVENT DAMAGE to material or equipment.



### **NOTICE:**

NOTICE provides additional information to help complete a specific task or procedure.

### **ATTENTION:**

ATTENTION provides specific regulatory/code requirements that may affect the placement of equipment and /or installation procedures.

# APP 9005C Service Power Supply

## Installation and Operation Manual

016-562-B0-001, Rev. A

Effective Date: August 2019

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### Disclaimer

Images contained in this manual are for illustrative purposes only. These images may not match your installation.

Operator is cautioned to review the drawings and illustrations contained in this manual before proceeding. If there are questions regarding the proper operation of this power supply, please contact Alpha Technologies Services, Inc. or your nearest Alpha representative.

Alpha shall not be held liable for any damage or injury involving its enclosures, power supplies, generators, batteries, other hardware, or software if used or operated in any manner or subject to any condition not consistent with its intended purpose or is installed or operated in an unapproved manner or improperly maintained.

### Contact Information

Sales information and customer service in USA

(7AM to 5PM, Pacific Time):

360 392 2217

Complete technical support in USA

(7AM to 5PM, Pacific Time or 24/7 emergency support):

800 863 3364

Website:

[www.alpha.com](http://www.alpha.com)

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# Safety Precautions

- The APP Service Power Supply must be installed and serviced by qualified personnel.
- Always use proper lifting techniques whenever handling units, modules or batteries.
- Verify the voltage requirements of the equipment to be protected (load), the AC input voltage to the power supply (line), and the output voltage of the system prior to installation.
- When powered from AC mains, the utility service panel must be equipped with a properly rated circuit breaker for use with this power supply.
- When powered from Generator other than the Honda EU2000, the generator output must be overload and short-circuit protected.
- Do NOT exceed the output rating of the power supply when connecting the load.
- Use a bucket truck or suitable climbing equipment, such as safety harness and spikes, whenever installing or servicing pole-mount installations.

## Utility Power Connection Notes



### **WARNING! ELECTRICAL HAZARD**

DO NOT unplug output connector while unit is in operation! Circuit breaker must be turned off first.



### **WARNING! ELECTRICAL HAZARD**

Installation must be performed by qualified personnel only, and in compliance with local electrical codes. Connection to utility power must be approved by the local utility before installing the power supply.



### **WARNING! ELECTRICAL HAZARD**

A “high magnetic” trip breaker must be used in order to accommodate the high inrush currents normally associated with the start-up of ferroresonant transformers (400 Amp, no-trip, first-half cycle). Do not replace this breaker with a conventional service entrance breaker. Alpha recommends only Airpax breakers because of increased reliability in this powering application.

# 1.0 Introduction

The APP 9005C Service Power Supply (SPS) is a portable device used to provide temporary power to a remote PHY unit for up to 8 hours while the existing node is being optimized on site prior to connecting it to the network and carrying traffic.

The APP 9005C SPS contains a front panel ammeter to measure the output current to the load, dual 90V outputs with an auto-seize mechanism, and an “Output” indicator to verify AC output power.

APP 9005C Specifications	
Input Voltage (VAC)	120 ± 15%
Input Frequency (Hz)	60
Input Current (A)	5 Max
Output Voltage (VAC)	90 ± 5%
Output Current (A)	4
Output Power (VA) (Continuous)	360
Output Current Limit	150% of Output Rating
Efficiency	90% typical @ rated load
Finish	Flat Black Durable Powder Coat
Operating Temperature	-40° to 122°F (-40° to 50°C)
Dimensions (in/mm) (H x W x D)	10.38" x 9.5" x 17.75"/ 264 x 241 x 451
Weight (lbs/kg)	31.5 / 14.3
Enclosure Type	CSA NEMA3R

Table 1-1, Specifications

## 1.1 Theory of Operation

The APP 9005C SPS contains a ferroresonant transformer and a capacitor. During AC LINE operation, utility power is fed into the primary winding of the ferroresonant transformer. An AC capacitor becomes the resonant circuit of the ferroresonant transformer which provides noise and spike attenuation, short circuit current limiting, and output voltage regulation.

**Note:** The ferroresonant transformer produces a “quasi” square wave output which resembles a rounded square wave.

120V AC power enters the Service Power Supply where it is regulated to 90 VAC, and passed onto the remote PHY unit via coax cable connected to Output 1 or 2.

### NOTICE:

Use only a true RMS AC voltmeter. Non-RMS reading meters are calibrated to respond to pure sine waves and will not provide an accurate reading when measuring a quasi-square wave output.

### WARNING! ELECTRICAL HAZARD

DO NOT unplug output connector while unit is in operation! Power switch must be turned off first.

## 1.2 APP Service Power Supply Features

### Output Current (Ammeter)

The Ammeter displays output current flowing from the power module to the load. When there is no load at the output, the Ammeter reads zero.

### Output Power Indicator

The Output Power Indicator displays the presence of output AC voltage.



### CAUTION!

If the Output Power Indicator illuminates when the Power Switch is in the OFF position, this indicates there is power back-feeding from the Output Connector. Disconnect the services power supply and investigate the source of the network power.

### Power Switch

The AC power switch turns on or shuts off power to the APP 9005C SPS. If the unit does not turn ON when power is applied, first verify that the unit is plugged into the convenience outlet and that all circuit breakers are in the ON position.

- 1 Output Current
- 2 Output Power Indicator
- 3 Power Switch
- 4 5 ft. 120VAC 15A Line Cord
- 5 90V Output Connector 1
- 6 90V Output Connector 2
- 7 Ground Lug

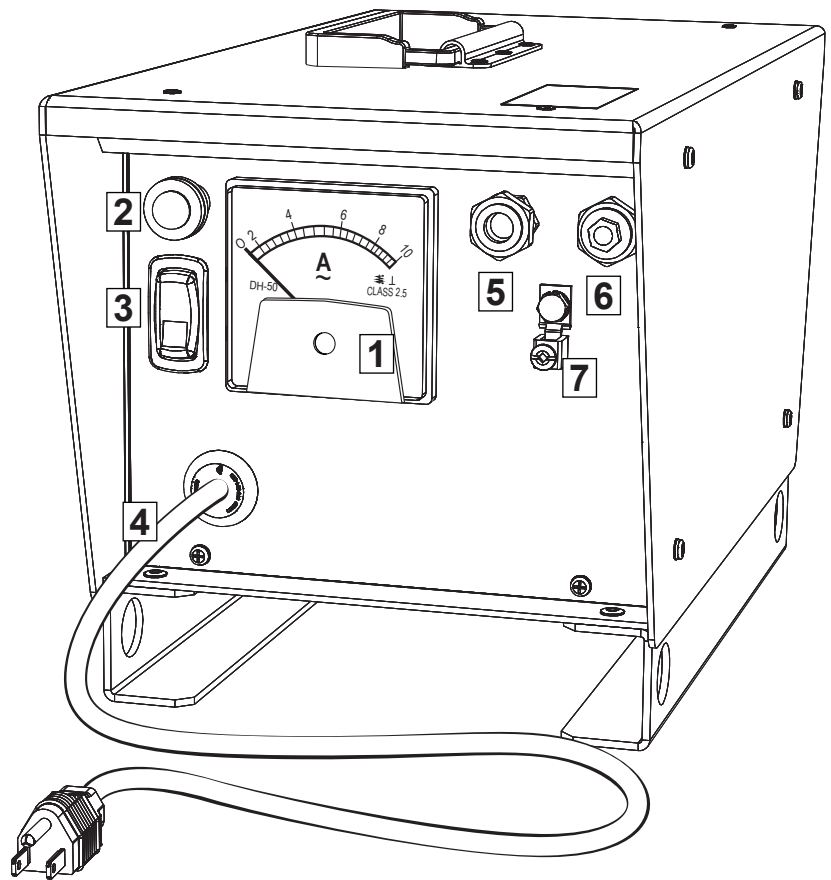


Fig. 1-1, APP 9005C Service Power Supply, Front Panel

## 2.0 Installation

### 2.1 APP 9005C Installation Procedure

#### Procedure

- 1 Connect a 6 AWG ground wire to the Burndy external ground (Fig. 1-1, item 7).
- 2 Plug the APP 9005C line cord into a portable generator (Honda EU2200 recommended) or 120VAC utility outlet.
- 3 Connect the coax from the remote PHY unit to the APP 9005C (PHY unit not supplied). If the Output Power Indicator illuminates while the Input Breaker/Power Switch is in the OFF position, this indicates there is power back-feeding from another power source via the Output Connector. Disconnect the service power supply and investigate the source of the network power.
- 4 Start generator.
- 5 Turn on the APP 9005C via the power switch.

Installation complete.

Reverse procedure to uninstall the APP 9005C.

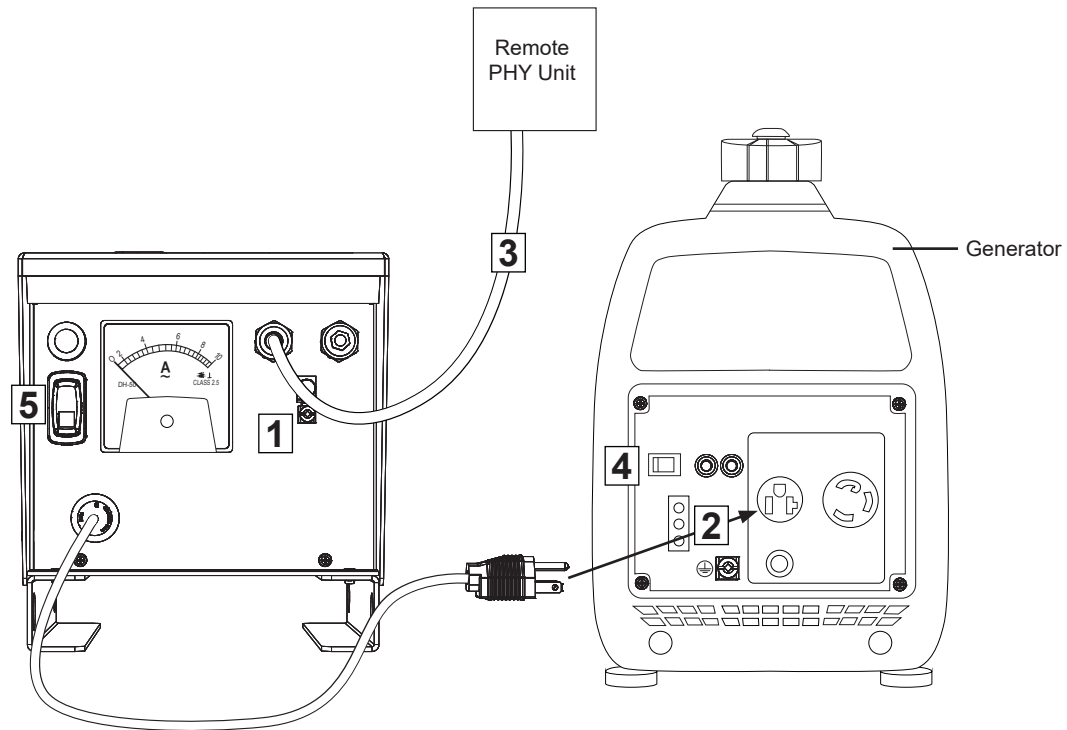


Fig. 2-1, APP 9005C Installation



## 3.0 Troubleshooting

### 3.1 Troubleshooting Guide

This guide is designed to cover typical problems, causes and solutions for troubleshooting the APP 9005C SPS. Alpha recommends that the power supply maintenance log accompany units brought in for bench service to aid the technician in troubleshooting the problem.

Troubleshooting Guide		
Problem	Probable Cause	Corrective Action
No output to cable; No AC line power; Green Output Power Indicator OFF	AC line cord unplugged	Plug in AC line cord
	Generator circuit breaker tripped	Reset circuit breaker and use voltmeter to verify correct voltage (120/240 VAC) at receptacle
Incorrect output voltage; And/or Ammeter reads excessive current (above rated output of APP SPS)	Wrong type of voltmeter used	Use true RMS voltmeter
	Under-loaded output (less than 1 Amp)	Connect load
	Overloaded output	Reduce load
	Short exists in load	Locate and remove short

Table 3-1, Troubleshooting

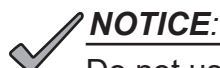
## 3.2 Returns, Repair, and Parts Ordering

### Returns for Repair

For units that must be returned for repair, Alpha requires a Return Material Authorization (RMA). An RMA can be obtained from Alpha Customer Service, using either method listed below:

- Alpha's Return Material Authorization Website: **rma.alpha.com**
- Call (800) 322-5742 for assistance.

Clearly mark the RMA on the unit's original shipping container. If the original container is not available, make sure the unit is packed with at least three inches of shock absorbing material to prevent shipping damage.



#### **NOTICE:**

Do not use popcorn-type material. Alpha is not responsible for damage caused by improper packing on returned units.

In addition to the returned unit, please include a copy of the power supply maintenance log and any information relevant to the power supply failure.

### Returns for Credit

For returns for credit, call (800) 322-5742.

### Parts and Ordering Information

To order parts, contact the Alpha Customer Service Department directly at:

United States and Latin America: (360) 647-2360

Canada: (604) 430-1476

United Kingdom: 44-279-422110

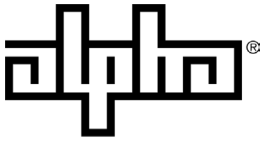
Germany: 49-9122-997303

Middle East: 357-5-375675

To obtain **emergency** technical support  
(7 days/week, 24 hours/day) call:

**1-800-322-5742**  
**(USA)**

**1-800-667-8743**  
**(Canada)**



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