REMOVAL / INSTALLATION

MANUAL

MODEL
SS50

28 VDC TO 115 VAC, 60 HZ SINE WAVE STATIC INVERTER

FAA TSO - C73

Dwg. No. 110106 Rev. J

Prepared By:	Sumio Sato	Date:	Aug 11/00
Checked By:	Ted Imoto	Date:	Aug 11/00

Total pages in this manual: 11

KGS ELECTRONICS
418 East Live Oak Avenue
Arcadia, Ca. 91006 (USA)
TEL: (626) 574-1175
FAX: (626) 574-0553
Internet: www.kgselectronics.com

RECORD OF REVISION

REV.	ECO #	BRIEF DESCRIPTION	DATE	BY
N/R	----	NO REV. ORIGINAL ISSUE	03/94	SS
A	1412-	TYPO ERROR CORRECTION	04/94---	SS
B	1439	TEMP REG IS 2.5%	10/94	SS
C	1557	TSO-C73 ADDED	05/95	SS
D	1646	ROR PAGE ADDED. DWG NO ON EACH PAGE	FEB 20/96	SS
E	1709	HEADING TYPO CORRECTION	SEP 12/96	SS
F	1805	AREA CODE CHANGED TO 626. WORD PROG	SEP 18/97	SS
G	1899	REMOTE ON WAS A+ FOR ON TYPO ERROR	JLY 27/98	SS
H	2130	Instruction for Continued Airworthiness added	AUG 11/00	SS
J	2451	Weight tolerance was ±.2 lb	DEC 06/02	SS

LIST OF EFFECTIVE PAGES

PAGE NO	ISSUE	REV	REV. DATE	INSERTION DATE
TITLE	03/94	J	DEC 06/02	DEC 06/02
ROR 1	FEB 20/96	J	DEC 06/02	DEC 06/02
LEP 1	03/94	J	DEC 06/02	DEC 06/02
TOC 1	03/94	H	AUG 11/00	SEP 18/97
1	03/94	H	AUG 11/00	SEP 18/97
2	03/94	J	DEC 06/02	DEC 06/02
201	03/94	H	AUG 11/00	SEP 18/97
202	03/94	H	AUG 11/00	SEP 18/97
203	03/94	H	AUG 11/00	SEP 18/97
301	03/94	H	AUG 11/00	SEP 18/97
401	03/94	H	AUG 11/00	SEP 18/97

TABLE OF CONTENTS

PARAGRAPH		*PAGE*
1.	**INTRODUCTION**	**1**
A.	Purpose of Manual	1
B.	Purpose of Equipment	1
C.	Description	1
D.	Technical Characteristics	2
2.	**INSTALLATION**	**201**
A.	General Information	201
B.	Selection of Mounting Area	201
C.	Installation Procedures	201
D.	Operating Instruction	201
E.	Instruction for Continued Airworthiness	201
3.	**REMOVAL**	**301**
4.	**HOW TO RETURN MATERIAL AND EQUIPMENT**	**401**

FIGURES

Fig. 201	Outline and Mounting Dimensions	202
Fig. 202	Suggested Hook-Up	203

1. INTRODUCTION

A. Purpose of Manual

The purpose of this manual is to provide removal/installation instructions for KGS ELECTRONICS Model SS50 (28 VDC to 115 VAC, 60 Hz sine wave Inverter).

B. Purpose of Equipment

The Model SS50 is designed to power audio/video entertainment systems, portable computers, telecommunication equipment, EMS (emergency medical equipment) and other appliances which require 115 Vac, 60 Hz, sine wave power from aircraft 28 VDC electrical systems.

C. Description

The Model SS50 is a solid-state, DC volt to 115 VAC, 60 Hz switch-mode inverter that invert a 28 VDC to a regulated 115 Vac, 60 Hz sine wave output. The continuous output power rating for this Model is 500 VA.

This Model utilizes a crystal controlled oscillator circuit that generates a stable amplitude and frequency reference voltage. Based on this reference voltage and using a pulse width modulation (PWM) topology, four (4) gate signals are produced to drive four (4) power mosfet devices. The mosfet devices, used as switches in a full-bridge configuration, create the output sine wave.

D. Technical Characteristics

Input Voltage:	28 VDC (20 to 36.5 VDC range)
Input Current:	0.5 ADC at No load 20.7 ADC (nominal) at Full Load at 28 VDC
Output Voltage:	115 Vrms ± 3 Vrms (nominal), 108 Vrms to 120 Vrms
Output Current:	4.3 Aac at Full Load (nominal)
Output Power:	500 VA
Output Frequency:	60 Hz ± 0.1 Hz
Phase & Waveform:	Single-phase, Sine
Harmonic Distortion:	0.5% (nominal)
Efficiency:	87% (nominal)
Regulation:	1% Line, 1% Load, 2.5% Temperature
Overload Capacity:	110% of the rated output power for two hours; 150% of the rated output power for five minutes. (Above 55°C maximum overload is limited to 135% ±10%)
Protection Circuits:	The unit will shutdown under the following conditions Input voltage > 37.5 Vdc ± 1 Vdc Input voltage < 18.0 Vdc ± 1.5 Vdc Internal, high ambient temperature. Short circuit condition. (restart required by remote or input DCV)
Cooling:	Thermostatically controlled brushless fan. fan on above 50°C
Operating Temperature:	-65° F to +160° F (-55° C to +71° C)
Altitude:	55,000 Ft.
Dimensions:	9.50" (241.3mm) L x 6.34" (161.0mm) W x 3.50" (88.9mm) H
Weight:	4.3 ± 0.3 lbs (1.95 ± 0.14 kgs).
Environmental Test:	DO-160C Env. Cat. F3ZBB[LV]E1XXXXXBXAXXXZXXX
Compliance:	FAA TSO-C73

2. INSTALLATION

A. General Information

The Model SS50 is ready to be installed into an aircraft when delivered from the factory. If required, the unit can be tested using a bench test setup as shown in Figure 202 prior to the final installation within the aircraft.

B. Selection of Mounting Area

The Model SS50 is to be mounted directly to a metallic plate (or similar supports) that will provide an adequate heat sink to the bottom of the unit. The location of the unit should be in a well ventilated area such that the ambient temperature will not exceed 160 °F (71 °C). Exposure to excessive moisture and excessive mechanical vibration should be avoided. **Do not** block or restrict air flow near the ventilation holes of the unit. If an external fan is located near the unit, the direction of air flow must not conflict with the internal air flow of the unit.

C. Installation Procedures

Figure 201 illustrates the mounting dimensions of the Model SS50. The mounting screws (4 total) should be #10 - 32 size and have lengths such that 2 or more threads are exposed when all necessary hardware are installed.

Figure 202 illustrates a suggested hook-up for the unit. The mating plug used with the unit is JK30005 (MS3106*18-9S) and the recommended wire sizes are as follows: (* = A,B,E,R or eq.)

Pin A -	#12 AWG	Input +28 VDC
Pin B -	#16 AWG	Output 115 VAC, 60 Hz hot
Pin C -	#16 AWG	Output AC Return
Pin D -	#12 AWG	Input Return DC Ground (Chassis Ground)
Pin E -	#20 AWG	Remote On - Off (Connect to Pin G or Chassis Ground for ON)
Pin F	NC	Optional
Pin G -	#20 AWG	Remote On - Off Return

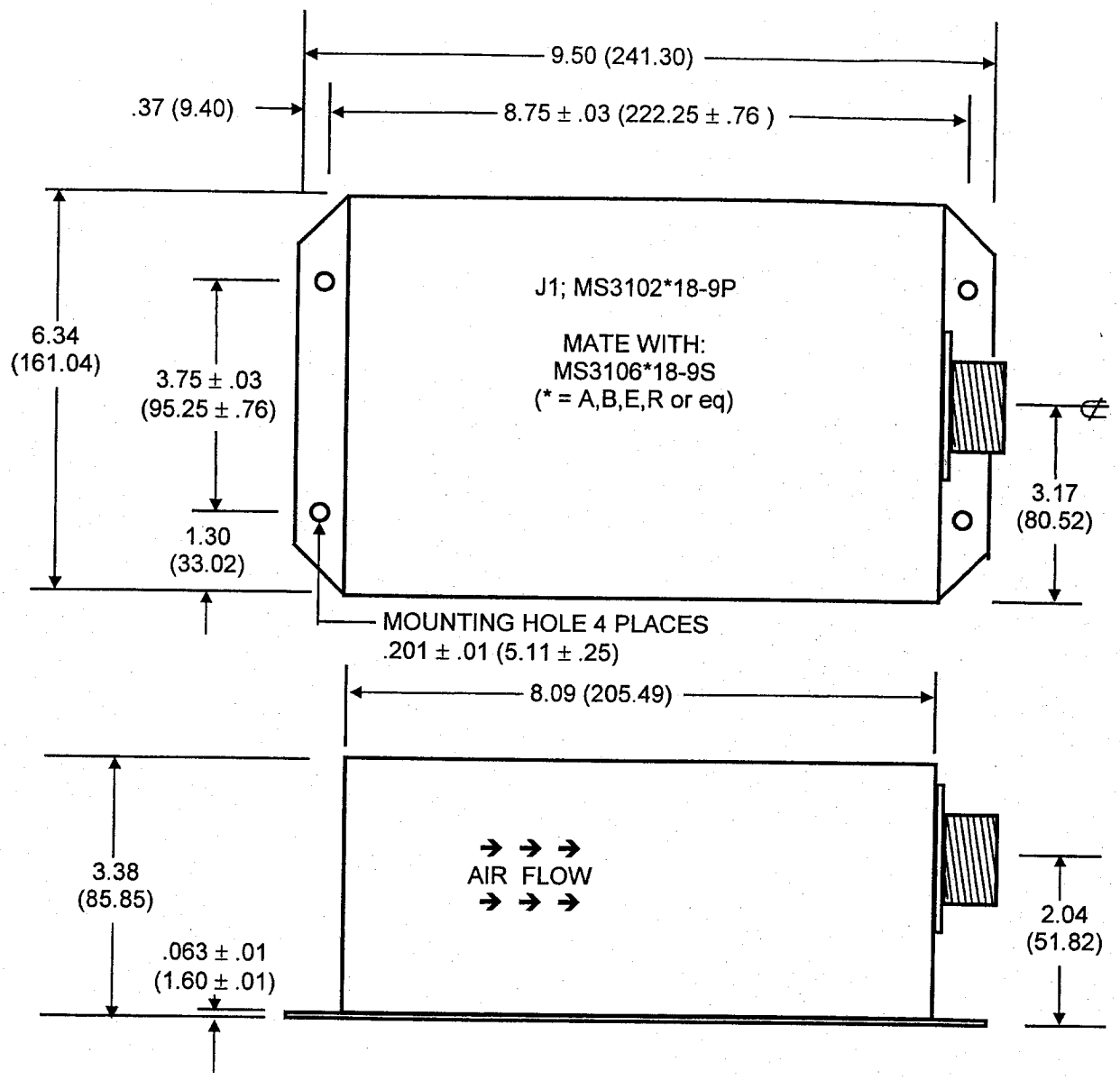
The input of the Model SS50 should be protected by an external, 30 ADC circuit breaker
(41-3-S14-LN2-30AMP by ETA or MIL-C-5809, 30 AMP or Equivalent).

D. Operating Instruction

Prior to application of 28 Vdc, check the connection of the load, remote control and input hook-up per the diagram of Fig. 202. To operate the unit, apply 28 Vdc and switch remote on-off ON.

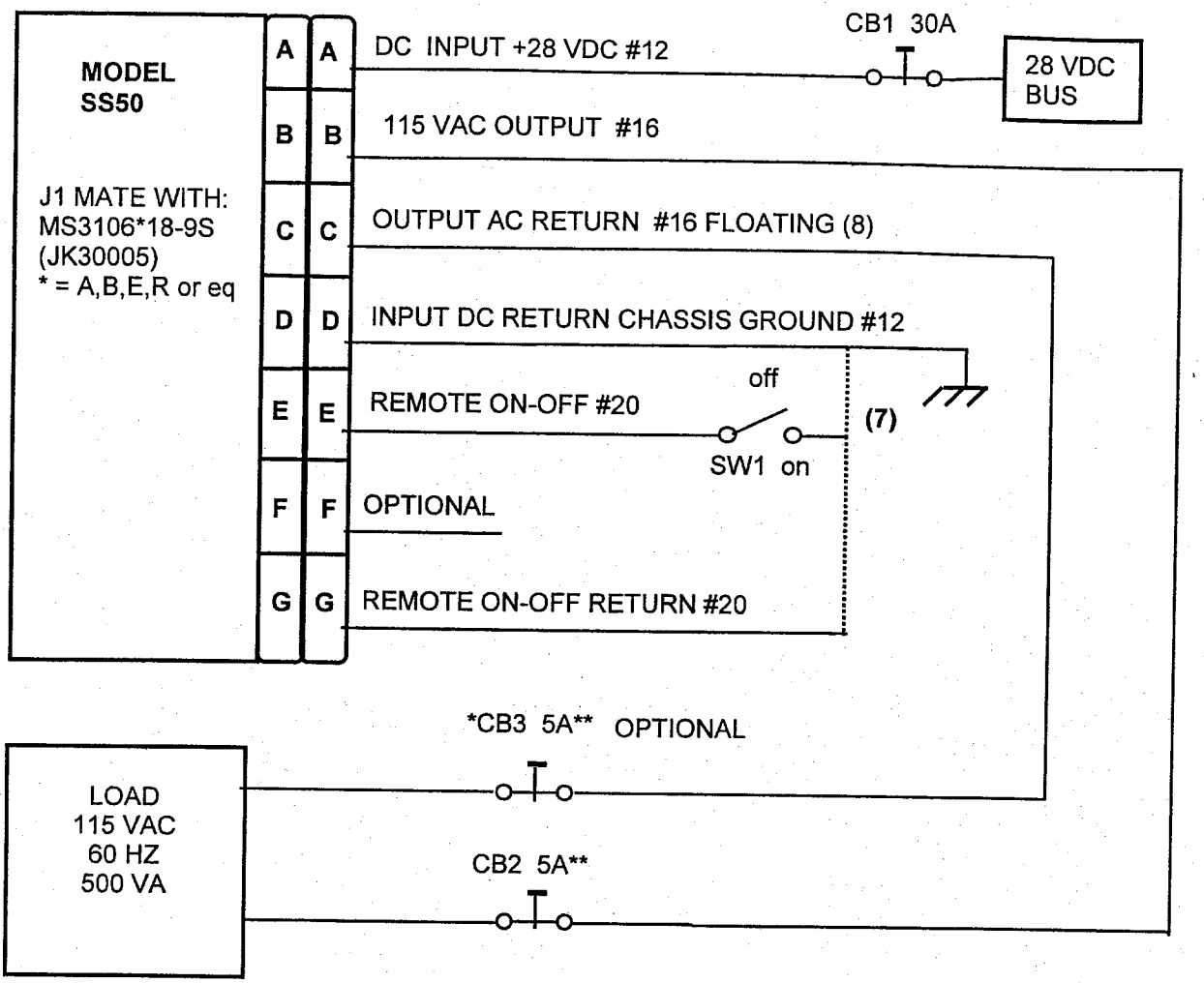
E. Instruction for Continued Airworthiness

No regular periodic maintenance is required for this product. Operation is "on condition" and service or repair is required only when a malfunction is detected.



NOTES:
1. Dimensions are inch (mm).
2. Dimensional tolerance is ± .06 in. (±1.52 mm) unless specified.
3. The dimensions shown do not include the protrusion of screw heads.

Fig. 201 Outline and Mounting Dimensions



(1) CB1; 30 Amp circuit breaker P/N 41-3-S14-LN2-30AMP by ETA or eq.
(2) CB2; 5 Amp circuit breaker P/N 483-TC-G11-J25-5Amp by ETA or eq.
*(3) CB3; OPTIONAL circuit breaker P/N 483-TC-G11-J25-5Amp by ETA or eq.
(4) SW1; On-off switch 1 amp min rating (40 ma actual current).
**(5) The rating of all above circuit breakers should be adjusted according to the actual LOAD.
(6). Shielded wires recommended.
(7). THE REMOTE ON-OFF SWITCH FROM PIN E HAS AN OPTION OF BEING CONNECTED TO PIN G OR CHASSIS GROUND.
(8). OUTPUT AC RETURN (PIN C) MAY BE CHASSIS GROUNDED.

Fig. 202 Suggested Hook - Up

3. REMOVAL

(A) Turn off and disconnect the input power source.

(B) Unscrew and disconnect the mating plug from the UNIT.

(C) Unscrew the #10-32 mounting screws and remove the UNIT.

(D) Clean the UNIT and store it in a cool and dry place.

4. HOW TO RETURN MATERIAL OR EQUIPMENT

If any material or equipment is to be returned to the factory, under warranty or otherwise, KGS ELECTRONICS must be notified prior to shipment with the following information:

(A) Model and serial number of equipment being returned.

(B) Date purchased.

(C) Date placed in service.

(D) Number of hours in service.

(E) Nature and cause of failure.

(F) Remarks, if any.

Upon receipt of such notice, KGS ELECTRONICS will issue a Return Material Authorization (RMA) number which then authorizes return of the material or equipment to the following address:

Service Department
KGS ELECTRONICS
418 E. Live Oak Ave.
Arcadia, CA 91006
(U.S.A.)

Telephone No.: (626) 574-1175
Facsimile No.: (626) 574-0553

Failure to obtain a RMA number and provide the details listed above may cause unnecessary delay and/or rejection of the returned material or equipment.
All material or equipment returned to the factory must be **freight prepaid.** Acceptable methods of shipment for international return are *Airborne, Burlington Air, DHL, Emery, Federal Express, UPS International,* and *World Wide* only. Do not use "International Commercial Airline" as such carriers may cause a **loss of returned material or equipment.**