SS-100 UNIVERSAL "SOFT START" INSTALLATION INSTRUCTIONS

PARTS SUPPLIED WITH THIS KIT:

(1) SS-100 "Soft Start" Circuit Board	(2) 100µF 63VDC Electrolytic Capacitors
(2) 48VDC SPDT Relays	(1) 1N4005 Diode
(2) 20Ω 10-Watt Resistors	(1) 2.4kΩ 2-Watt Resistor

It is not possible to give exact installation instructions for the Universal "Soft Start" module because I have neither the schematic nor the physical layout of your specific amplifier or equipment. I can give you enough information, together with the theory of operation of the Universal "Soft Start", to help you install this module. **NOTE: This module is designed for a typical 120 VAC only or 120/240 VAC dual-primary transformer system.** See the installation diagram for the Clipperton-L amplifier below. This is a typical installation in a 117/234 VAC dual-primary power supply. **The SS-100 will also in a 237 or 240 VAC single primary transformer system as long the AC mains are a 4-wire 234/240 VAC system (2 hot legs, a neutral and a ground!) It will not work in a 234/240 VAC 3-wire system (no neutral).**

Please examine the SS-100 module. Note that there are letters on the foil side that designate the leads to be connected. The **"C"** and **"D"** leads will be connected to the switched power input. The **"A"** and **"B"** leads will be connected to the load. A #20 wire from the hole between pads **"C"** and **"D"** (user supplied) is connected to the return (finish lead of the transformer winding) of the input power line (NOT to chassis ground). The module can be mounted using silicone adhesive relay side to the chassis.

( ) Assemble the SS-100 according to the parts layout diagram.

The overall operation is quite simple. When the power switch in turned ON, 120 volts is applied to the load through a 20Ω 10W resistor in either or both sides of the AC input lines. The voltage at the load is measured by the diode connected to pad **"A"**. As the filter capacitors and other components charge or stabilize in current drain, the voltage at pad **"A"** rises. When this voltage reaches approximately 90 volts, the two relays are activated, shorting out the 20Ω resistors. Now the power circuit is back to its full power state and the soft start circuit is locked out of operation.

INSTALLATION IN A 234/240 VAC 4-WIRE EQUIPMENT OR SYSTEM

If this circuit is to be installed in equipment operating from 234 AC 4-wire mains system, the following connections must be used:

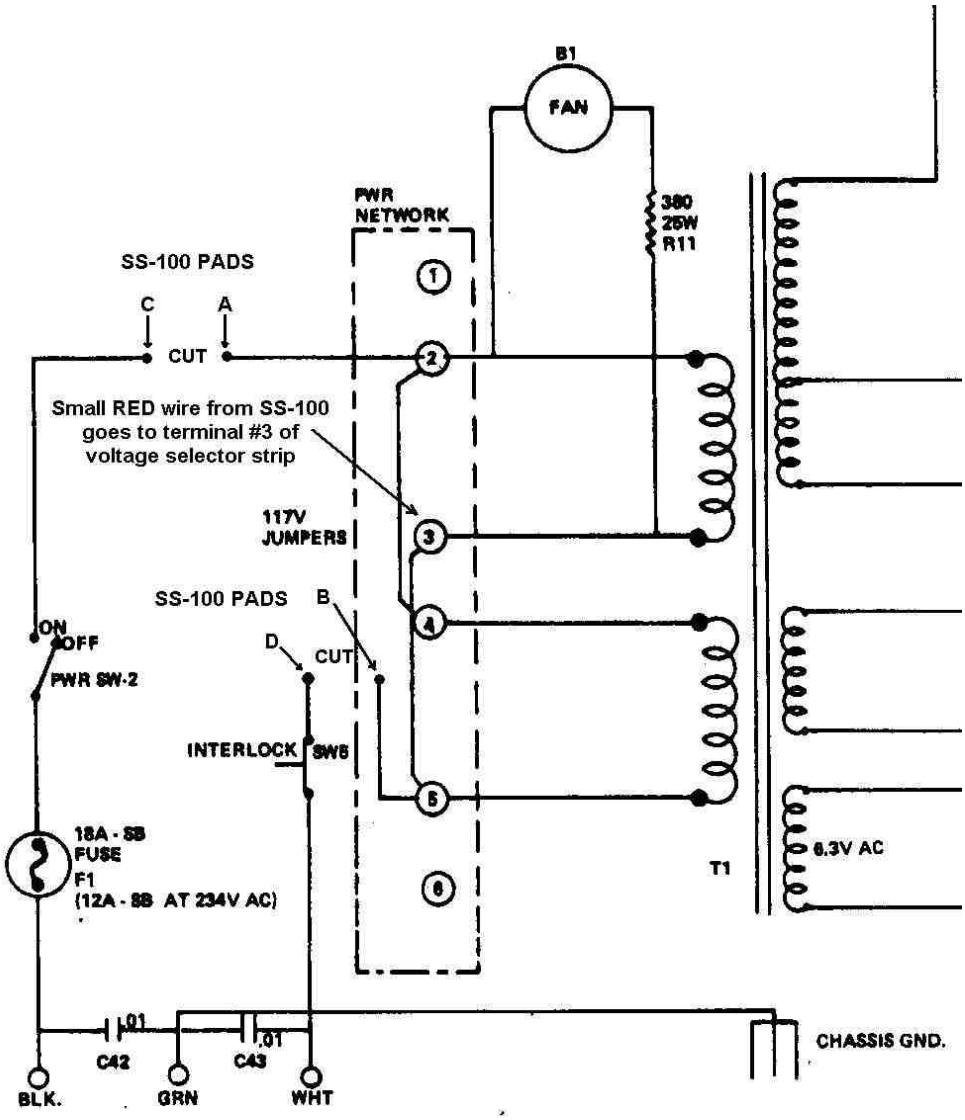
PAD A	One leg of the 234/240 VAC to the load device, usually the transformer primary.
PAD B	One leg of the 234/240 VAC to the load device, usually the transformer primary.
PAD C	One leg of the 234/240 VAC mains supply (usually RED or BLACK).
PAD D	One leg of the 234/240 VAC mains supply (usually RED or BLACK).
PAD F	Connection to the neutral of the 234/40 VAC mains supply (usually WHITE) (NOT GROUND-GREEN).

120-VOLT OPERATION

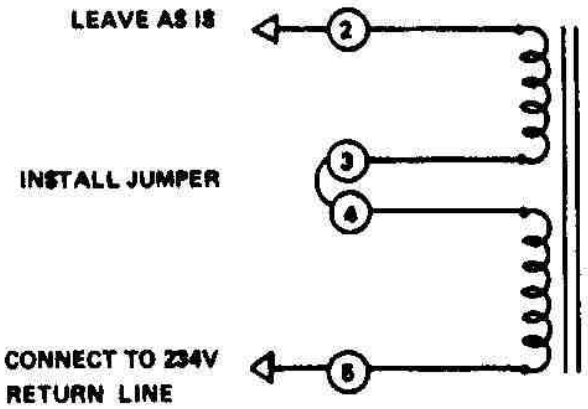
If this circuit is to be installed in equipment operating from 120-volt AC power lines, a modification may be required. The 20Ω 10-watt resistors must be changed to 10Ω 10-watt. These resistors are readily available at any electronic store or can be purchased from Harbach Electronics. However, if the soft start is used with equipment running on less than 120 volts, the resistors probably do not need to be changed.

NOTE: If only one side of the input power line is switched, be sure that the switched lead is on the "C to A" side of the soft start circuit.

SS-100 INSTALLATION IN A DENTRON CLIPPERRTON-L AMPLIFIER
120/240 (117/234) VAC DUAL-PRIMARY TRANSFORMER POWER SUPPLY



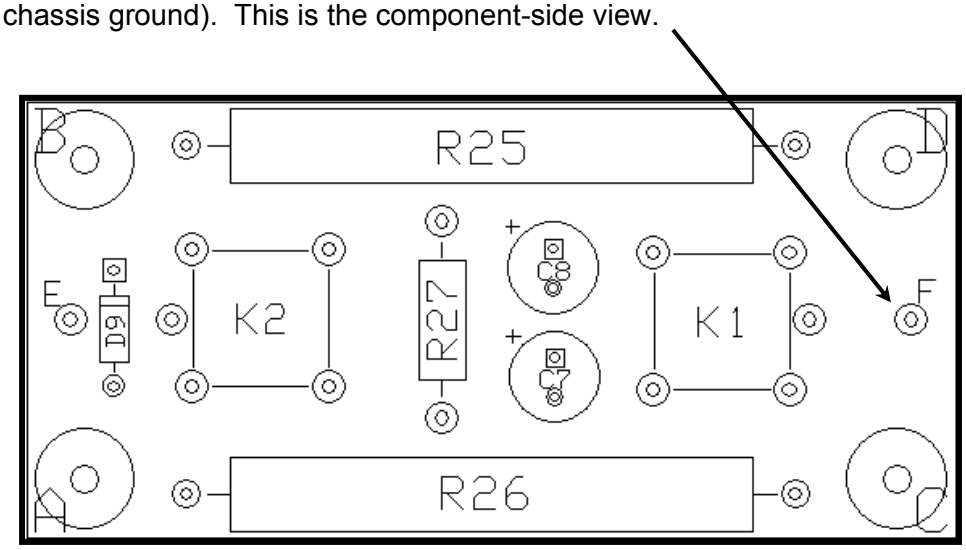
234 AC PRIMARY HOOKUP



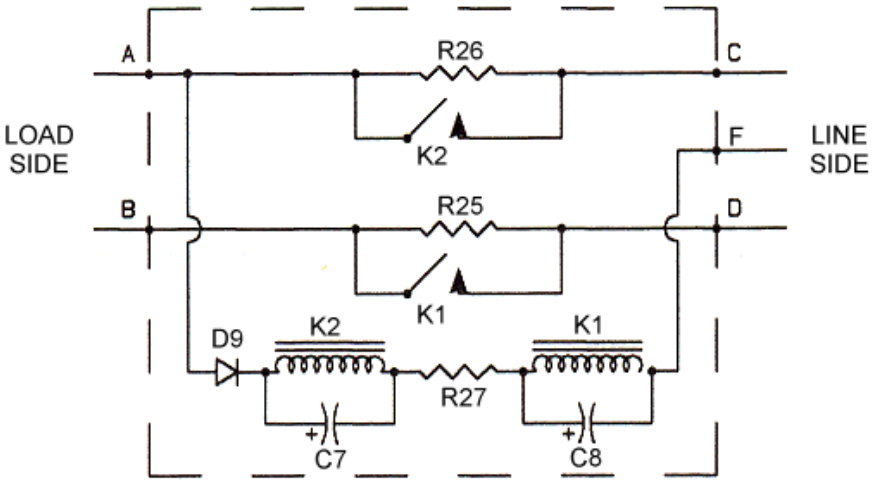
PC BOARD PARTS DESIGNATION:

K1-K2	48VDC SPDT Relays	**R25-R26**	10Ω/20Ω 10-Watt Resistors
C7-C8	100μF 63 VDC Electrolytic Capacitors	**R27**	2.4kΩ 2-Watt Resistor
D9	1N4005 Diode		

A #20 wire goes through the hole between pads **"C"** and **"D"** and solders to the pad on the foil side of the PC board. This is the return (finish lead of the transformer winding) of the input power line (NOT connected to chassis ground). This is the component-side view.



SS-100 SCHEMATIC DIAGRAM



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Interfacing

Ham Radio KITS in Washington Island BOOKS

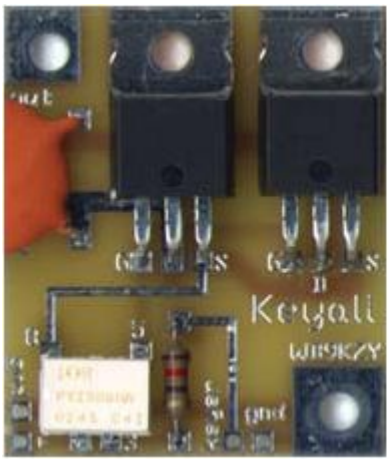
The Keyall kit

An excellent alternative to a mechanical relay is the "Keyall" kit from Chuck Olson at Jackson Harbor Press. I believe Andy, W8NCZ is making a pre-assembled plug-'n-play version (see at this address).

http://wb9kzy.com/keyall.htm

The Keyall is optically isolated and uses a pair of high-voltage/current MOSFETs for switching the amplifier key line, including the 30L-1. The MOSFETs can safely switch 500V AC/DC amp key lines at 2.5A. Through the TS-590 menu, +12V is output on the key line as Jerry stated and the Keyall becomes self-powered from the TS-590. The TS-590's key line is then operating only into an isolated photo-diode.

Advantages of the Keyall over other commercial amp buffer units: 1) self-powered, 2) completely silent, 3) accommodates both DC polarities and AC amp key lines without internal modification.



The Keyall kit allows the owner of a keyer with a low voltage positive (NPN or n-channel MOSFET) keying transistor to drive the vacuum tube transmitters and transceivers of yesteryear. This unit will key negative voltage rigs (grid block keying) or positive voltage rigs (cathode keyed tube transmitters and conventional +13.8V powered solid state rigs). The output transistors and capacitor are rated at 500 V and 2.5 A (2500 mA).

The Keyall kit is a replacement for the previous Grid Block keying adapter kit.

Note that the Keyall kit has been used for ***high power external amplifier keying*** by Gary, KD9SV.

http://www.radiobooks.com/products/svkr.htm

Note that the PVI (white rectangle in the picture) now has a black color.

Also note that the board plating appears corroded, however it should not affect soldering.

An OM reported that his Eico 723 would not key correctly until he had removed the .01 uF cap.

design is a MOSFET based solid state relay high voltage output is optically isolated from the low voltage input kit includes a circuit board and all board mounted components just add your enclosure, in/out jacks and a battery holder.

Size is 1.25 x 1.5 inches - fits into a candy tin with room to spare

Price (no printed documentation) is $14.00 plus $3.00 shipping/handling in USA

Add $4 to above price for Worldwide (DX) orders

Note: the following documents for this kit (manual, schematic, and hookup diagram) are in this booklet.

Kit Order Form / Price List

Charles Olson
1418 Foss Road
Washington Island, WI 54246
Please make checks / money orders Payable to: Charles Olson - send with this form to address above.
Please note that none of the kits or chips comes with documentation.