



***Model PSKIT-H540***  
***Ultrasonic Power***  
***Supply Kit***  
***40 kHz***  
***500 Watts***

**INSTRUCTION MANUAL**



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September 2016 Rev 2

## SONICS Model PSKIT-H540

This Sonics & Materials manufactured ultrasonic power supply kit is designed for use as an internal electrical component. It should only be powered after being properly mounted and earth grounded inside of an industry standard NEMA type electrical enclosure.

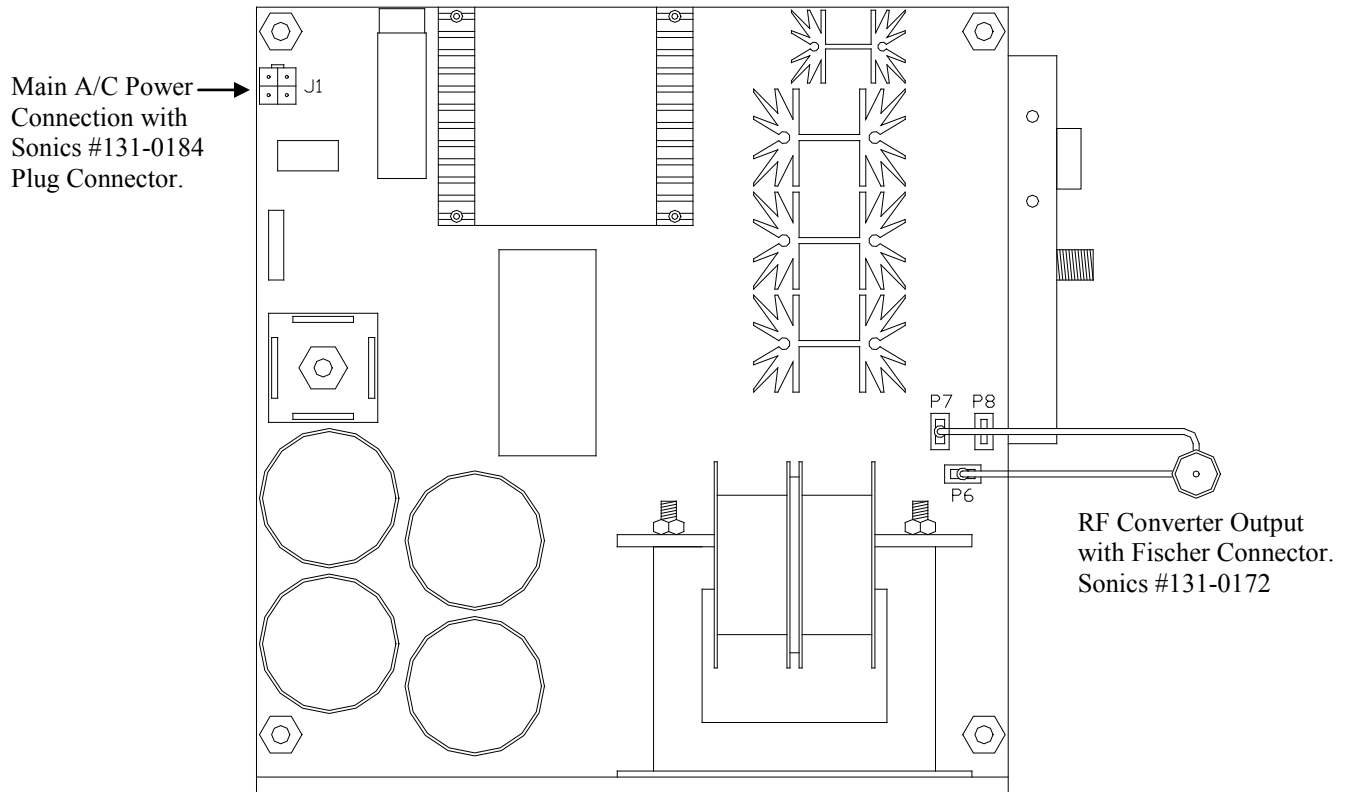


### IMPORTANT INFORMATION

1. *NEMA enclosure needs to be properly fan cooled and vented.*
2. *Incoming line voltage (120 VAC 50/60 Hz.) must be noise filtered and correctly earth grounded.*
3. *Because of potential noise interference, all RF signal cables and cable connections should be routed as far away from other electrical components as possible.*
4. *RF cable out from the NEMA enclosure and direct to a single ultrasonic converter should not exceed 15' (4.6 meters) in length.*
5. *When sequencing, RF cables out from the NEMA enclosure to individual ultrasonic converters should not exceed 15' (4.6 meters) in length.*
6. *To avoid RF cable capacitance variations, all RF cables should be equal in length. Coil and zip-tie any excess RF cable lengths.*

Description	Detail
<b>Power Requirement</b>	<b>120 VAC 50/60 Hz 10 AMPS 220 VAC 50/60 Hz 5 AMPS</b>
<b>Frequency</b>	<b>40 kHz</b>
<b>Power</b>	<b>500 Watts</b>
<b>Current Main Board Configuration</b>	<b>Sonics #855-00098 Rev 4</b>
<b>Current PLL Board Configuration</b>	<b>Sonics #855-00097 Rev 4</b>

## MAIN BOARD SIDE



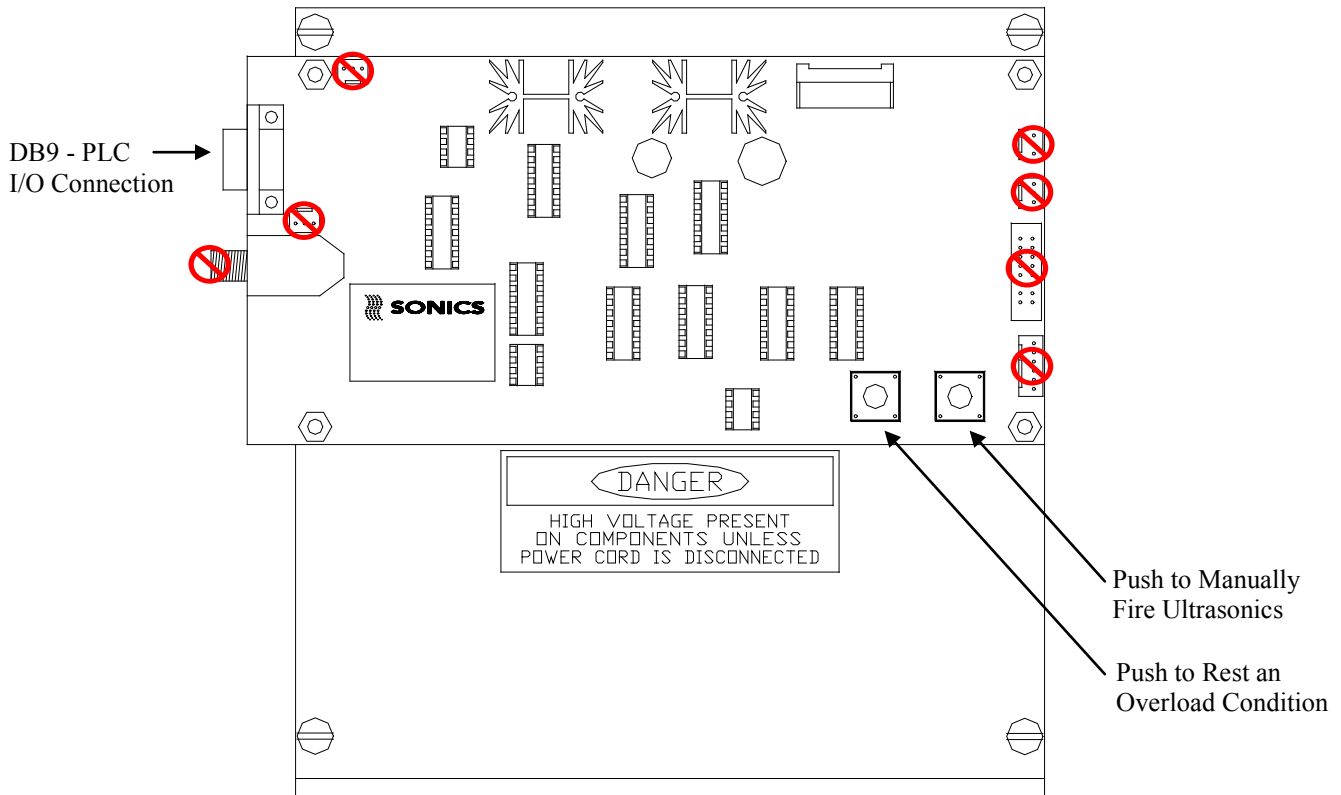
**MAIN BOARD:** Similar to a computers motherboard, the kits main board is the primary ultrasonic power source.

**J1 - Primary 120 VAC line voltage connection.**

**P6 – High voltage RF converter connection.**

**P7 or P8 – High voltage RF connection ground.**

## FRONT & PLL BOARD SIDE

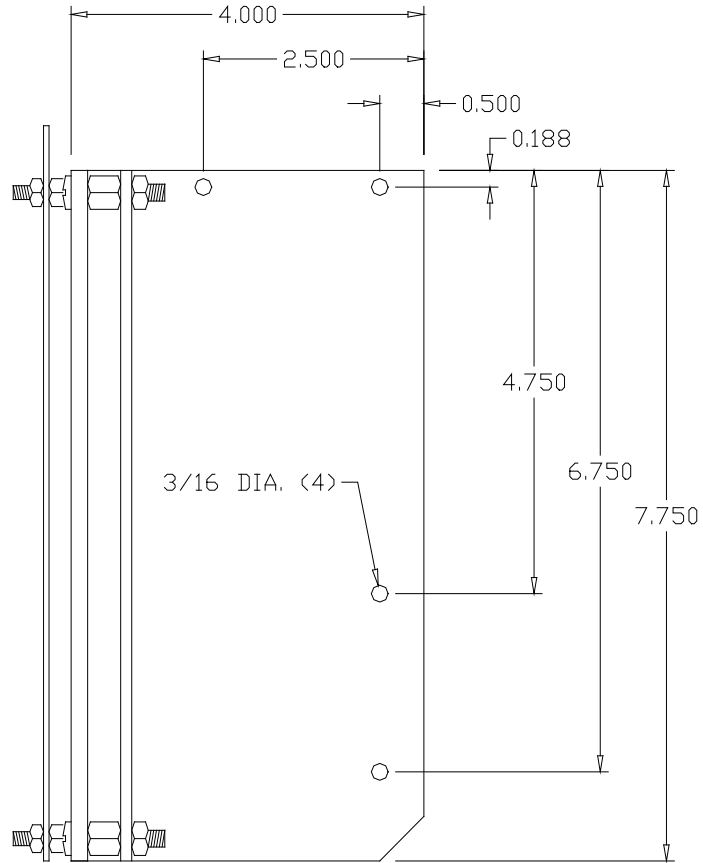


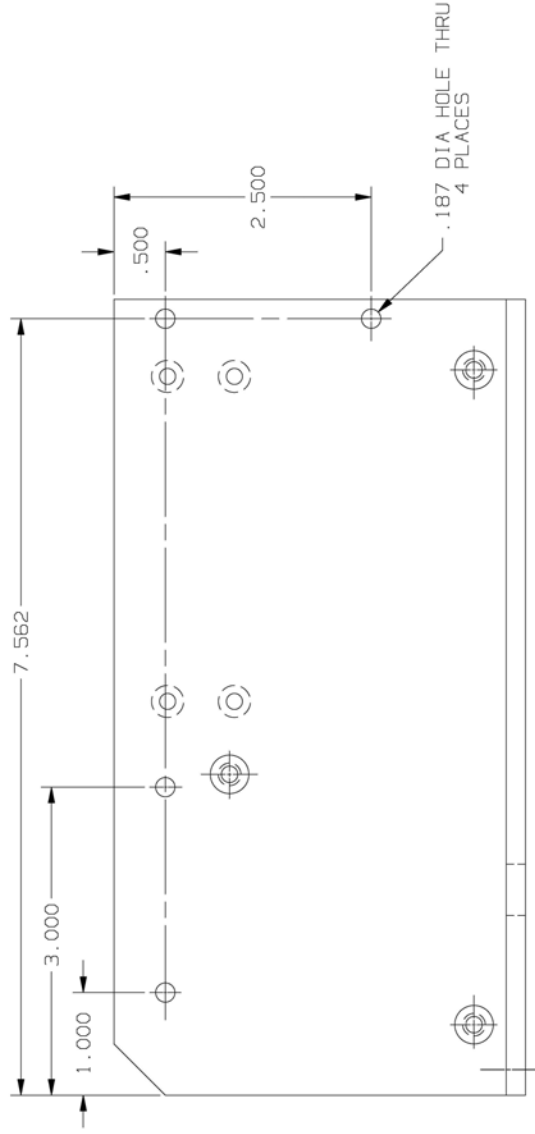
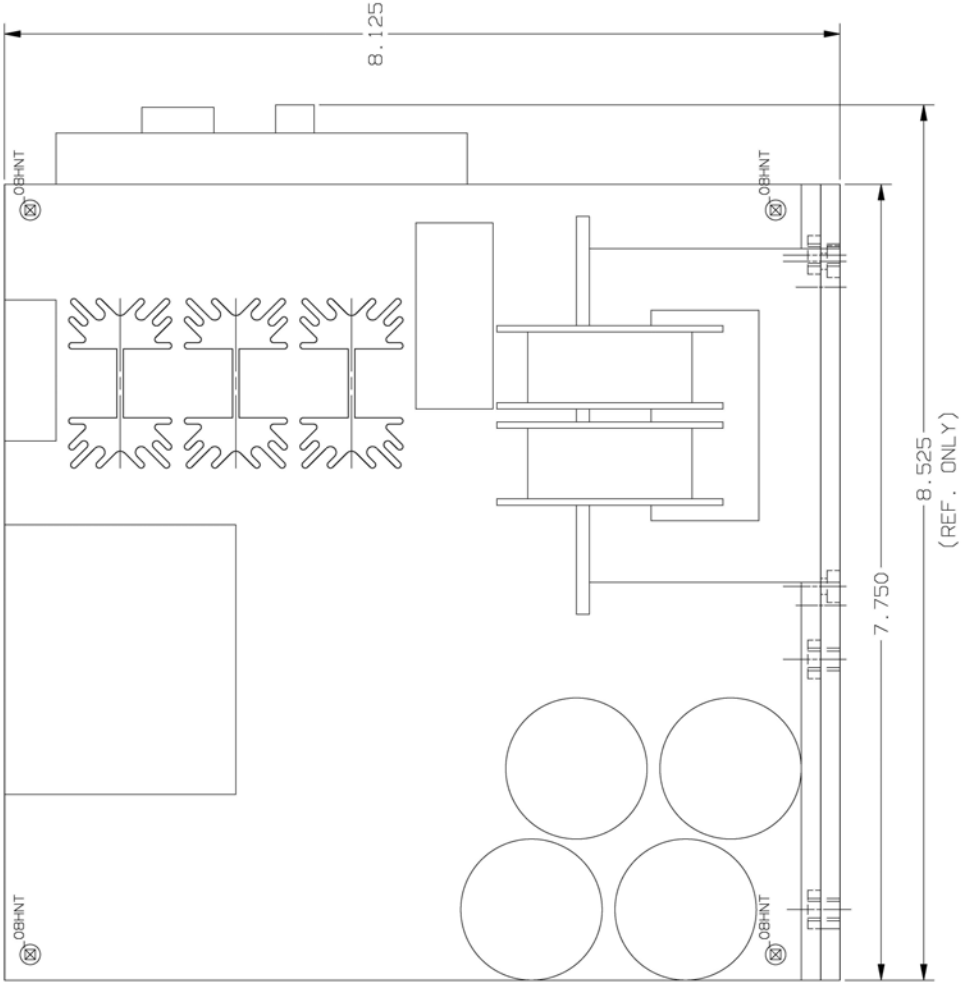
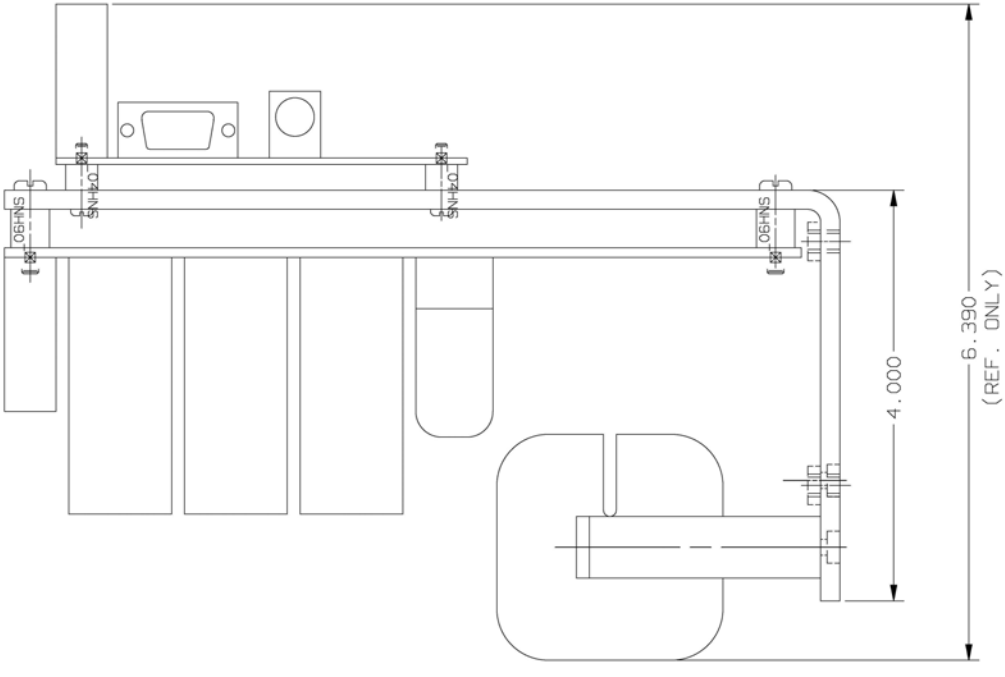
**PLL BOARD (Phase-Lock-Loop):** Working in tandem with the main board, the primary purpose of the PLL board (also referred to as a control board) comprises of automatic frequency tuning, energy functions and variable amplitude settings.

**PLC INTERFACING:** Included with this manual is Sonics drawing #E-3113 which details customer supplied PLC I/O (input and output) connections to the kits DB9 connector.

 No user connections required.

# TOP VIEW – MECHANICAL MOUNTING





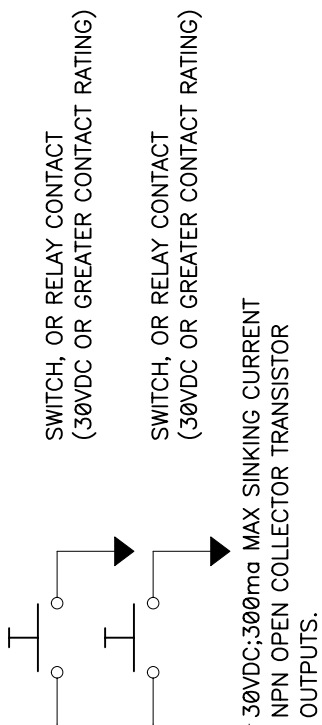
1 NOTES:

- 1. ALL REFERENCE USE COMMON GROUND
- 2. DOTTED LINES DENOTES CUSTOMER CONNECTIONS

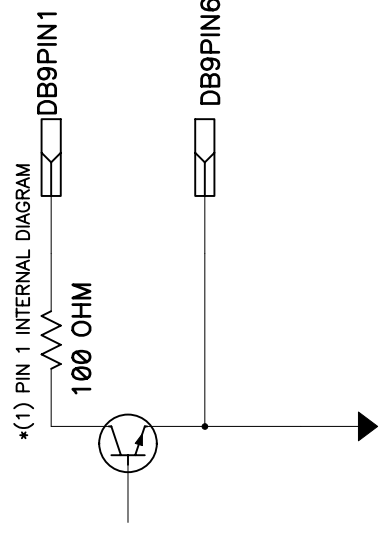
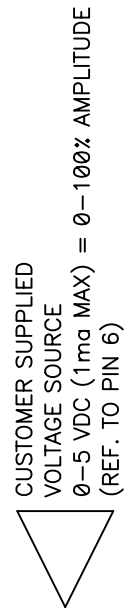
DB9 FUNCTIONS

- |      |                                                   |
|------|---------------------------------------------------|
| PIN# | SONICS START<br>(15V CMOS SINK 1.5mA)             |
| (7)  | O.L RESET<br>(15V CMOS SINK 1.5mA)                |
| (2)  | O.L INDICATION (*1)                               |
| (1)  | FREQUENCY /10 (5V TTL)<br>1K OHM SOURCE IMPEDANCE |
| (4)  | GROUND                                            |
| (6)  | WATTS (5mV = 1WATT)                               |
| (5)  | (10K OHM INPUT IMPEADENCE)<br>AMPLITUDE CONTROL   |
| (8)  | 5.1V REFERENCE (INTERNAL) (*2)                    |
| (9)  | N.C.                                              |
| (3)  |                                                   |

CUSTOMER I/O CONNECTIONS



WATTS OUTPUT: 0-2.500 VDC = 0-100% WATTS



FILE NAME E\_ 3113.SCH

5			
4			
3			
2			
1	ECN 624	BP	2/09/04
NO.	DESCRIPTION	BY	DATE

		53 CHURCH HILL RD. NEWTOWN, CT 06470	
H-520/540 DB9 I/O CONNECTIONS			
TOLERANCES (EXCEPT AS NOTED)			
DECIMAL .X = +/- 0.030 .XX = +/- 0.015 .XXX = +/- 0.005			
FRACTIONAL +/- 1/64			
ANGULAR +/- 1/2 DEG.			
DRAWN BY RJPOSCA	SCALE	DRAWING NO.	
CHK'D	DATE 03-06-00	E-3113	
MATERIAL			

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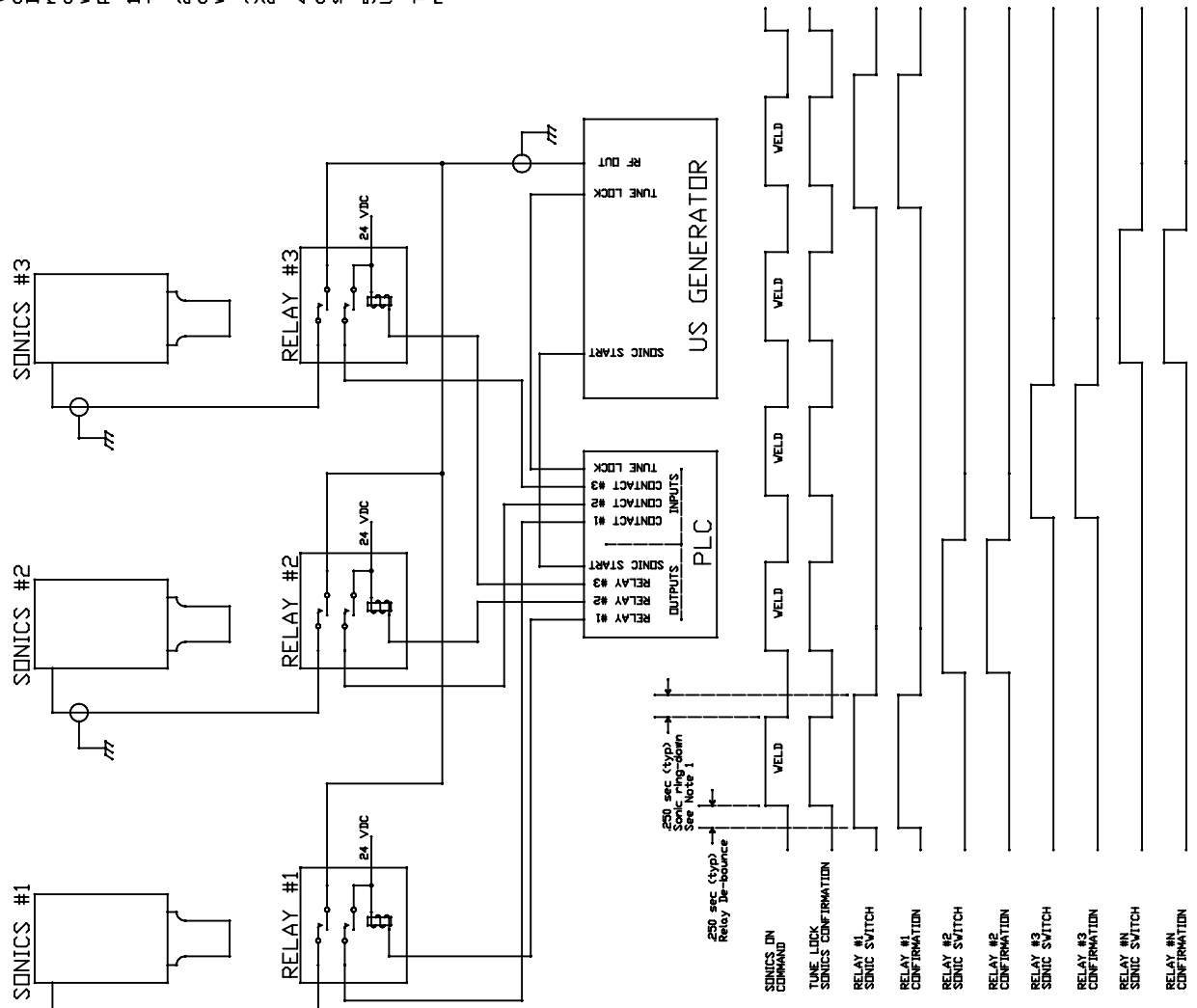
When sequencing it is essential to make sure the contacts are never switched either on or off while sonics is cycling. Doing so will cause the relay contacts to arc resulting in relay failure along with possible damage to the converters and the power-supply being used. The following delay times will need to be programmed into the PLC to avoid this potential problem.

1. Before activating sonics, there should be a delay of 250ms once the relay is energized to allow the closure of contacts (debounce time).
2. After terminating sonics there should be a delay of 250ms before the contacts are released and the next set of contacts are switched. This will allow the mechanical energy to dissipate and avoid arcing the contacts.
3. When a light curtain or E-Stop is activated, there must be a delay of 250ms before releasing the relay after sonics is terminated.
4. The PLC program should monitor the state of each relay and assure that one and only one converter is connected to the power supply. If a relay should get stuck in the closed state, the PLC should prevent further operation.
5. The cables should always be the same length (as shipped). Do not lengthen or shorten the RF coax. It is part of the tuned system.

The recommended relay for use in sequencing is the Allen Bradley model #100-M09.

Note 1  
Larger horns (20kHz) may require a longer ring-down time.

Note 2  
This drawing is to serve as a functional diagram only. It is not intended to serve as a complete wiring diagram.



RELAY CONF. STATE		SONICS ALLOWED	
#3	#2	#1	
OFF	OFF	OFF	NO
OFF	OFF	ON	YES
OFF	ON	OFF	YES
OFF	ON	ON	YES
ON	OFF	OFF	NO
ON	OFF	ON	NO
ON	ON	OFF	NO
ON	ON	ON	NO

NO.	DESCRIPTION	DATE	BY
3			
4			
5			
6			
7			
8			
9			

**SONICS** THE CHOICE OF LEADS  
**ULTRASONIC SEQUENCER**  
 DRAWING NO. E-3140  
 DATE 05/29/03  
 DRAWN BY STEFFANSEN  
 CHECKED BY  
 APPROVED BY  
 MATERIAL

TELEPHONE 800-4-A-SONICS  
 FAX 800-4-A-SONICS  
 200 N. STEFFANSEN  
 WYOMING, WY 83091-1000

FUNCTIONAL SCALE  
 1" = 10'

REVISIONS  
 1" = 1/8" BS

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# WARRANTY

Sonics & Materials, Inc., hereinafter referred to as "SONICS", warrants its products for a period of one year from the date of shipment against defects in materials and workmanship under normal installation, use and maintenance as described in the operating instructions which accompany such equipment. During the warranty period, SONICS will, at its option, as the exclusive remedy, either repair or replace without charge for material and labor, the part(s) which prove upon our examination to be defective, provided the defective unit is returned to us properly packed with all transportation charges prepaid.

Ultrasonic horns constructed of titanium or aluminum are guaranteed against defects for a period of one year from date of shipment. SONICS will repair or replace a cracked or defective horn once without charge, if failure occurs within the warranty period.

Ultrasonic welding horns constructed of steel are guaranteed against defects for a period of ninety days from date of shipment. SONICS will repair or replace a cracked or defective steel horn once at a charge of 50% of the original purchase price, if failure occurs within the warranty period.

## LIMITATION OF WARRANTY

This warranty is in lieu of any other warranties, either express, implied, or statutory. SONICS neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale of its products. SONICS hereby disclaims any warranty or merchantability or fitness for a particular purpose. No person or company is authorized to change, modify, or amend the terms of this warranty in any manner or fashion whatsoever. Under no circumstances shall SONICS be liable to the purchaser or to any other person for any incidental or consequential damages or loss of profit or product resulting from any malfunction or failure of this SONICS product.

This warranty does not apply to equipment which has been subject to unauthorized repair, misuse, abuse, negligence or accident. Equipment which, in our judgment, shows evidence of having been used in violation of operating instructions, or which has had the serial number altered or removed, will be ineligible for service under this warranty.

Horns supplied by SONICS are manufactured to exacting specifications and are tuned to vibrate at a specific frequency. Using an out-of-tune horn will cause damage to the equipment and may result in warranty nullification. SONICS assumes no responsibility for converters, horns or fixtures not supplied by SONICS or for consequential damages resulting from their usage.

SONICS reserves the right not to warrant horns of unusual or experimental design which, in our judgment are more likely to fail in use.

This warranty does not cover equipment used for applications requiring metal-to-metal contact with weld time in excess of 1 second.

Data supplied in the instruction manual has been verified and validated and is believed adequate for the intended use of the equipment. If the equipment or procedures are used for purposes other than those specified herein, confirmation of their validity and suitability should be obtained in writing from SONICS. Otherwise SONICS does not guarantee results and assumes no obligation or liability.

