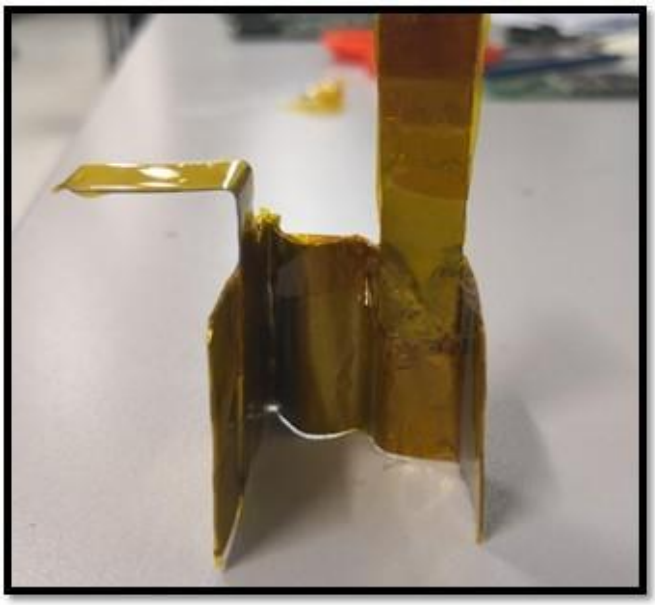
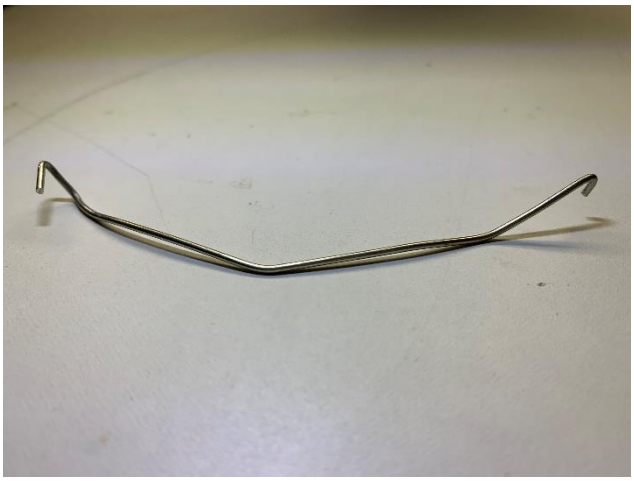
This document is created to provide rework instructions for replacing original component (Diodes Inc. B2100, a 100V, 2A Schottky diode, Bose PN **326318-0100)** at location D21 with ON Semi MURS120T3G (200V, 1A ultrafast silicon diode, Bose PN **836410-0200**).

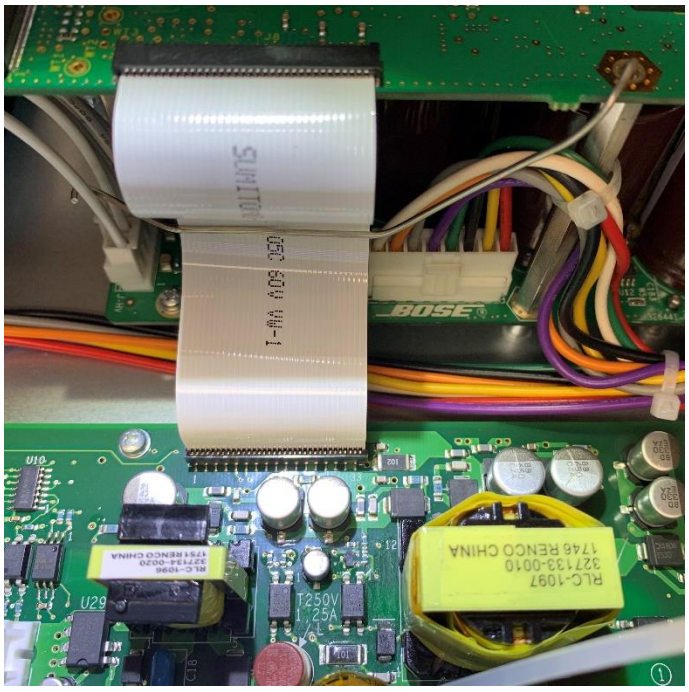
List of Tools Required:

1. A heat shield to protect electrolytic cap (C136) and other surrounding components. This shield is made of thin metallic sheet that was molded to fit around D21. It's also fully wrapped with Kapton Tape. See below pics.



2. 16 AWG Copper wire to hold FCC cable away from the board. Bend its ends and hold it in place on the Digital board as seen below. This will be the FFC cable retainer.





3. Flux dispensing pen

4. Flux remover pen

5. Long tweezer iron to remove the part

6. Single iron to solder new diode

7. Regular (long) tweezer

8. Lead-free solder
9. Solder wick
10. Kimwipes

11. DMM

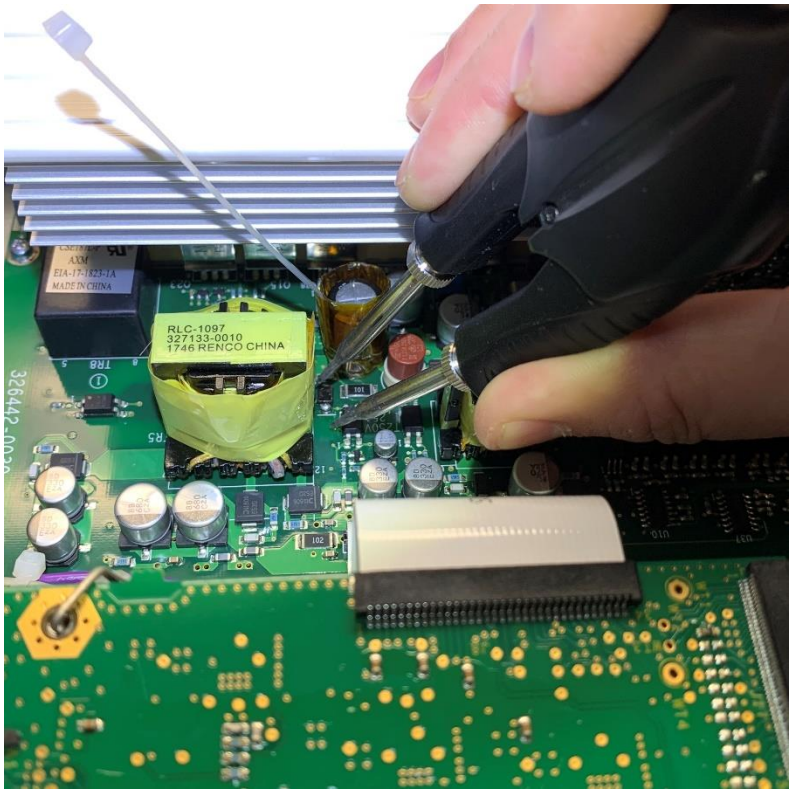
Rework Instructions:

1. Open the box carefully and save it for later.
2. Remove the unit, make sure to place it on a soft surface to protect the chassis and preserve anything that came with the unit and the box (such as power cord, user manual, and input/output connectors).
3. Unscrew the unit's bottom metal-enclosure and save the screws for later.
4. Lift the enclosure and leave it on the side to put it back later after the diode rework is done.
5. Identify the power supply board and the D21 diode location then follow the below procedures to do the rework.

6. **To remove the original diode *(Diodes Inc. B2100)* at location D21:**
   a. Add flux to both sides of the part using a flux dispensing pen.

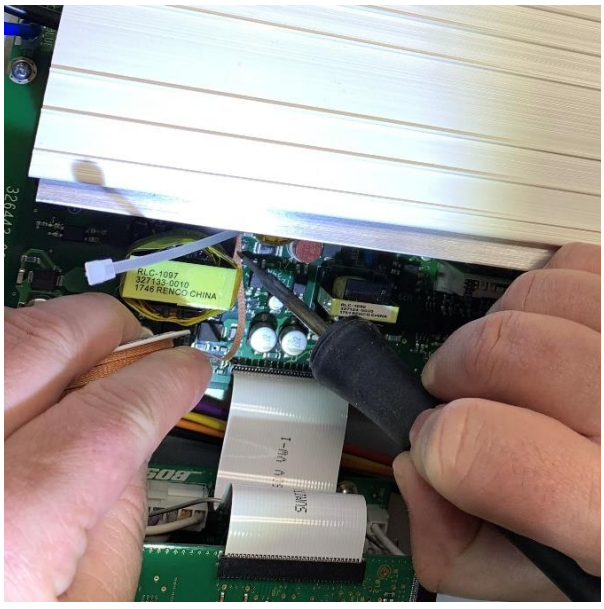
   b. Add solder to each end of the diode using a single iron.

c. Remove the diode using the tweezer iron.

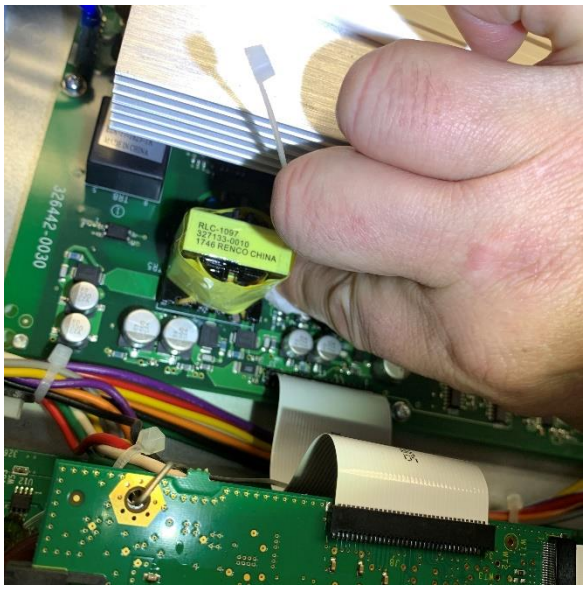


7. To clean the area before soldering the new part:

a. Clean off excess solder using solder wick.

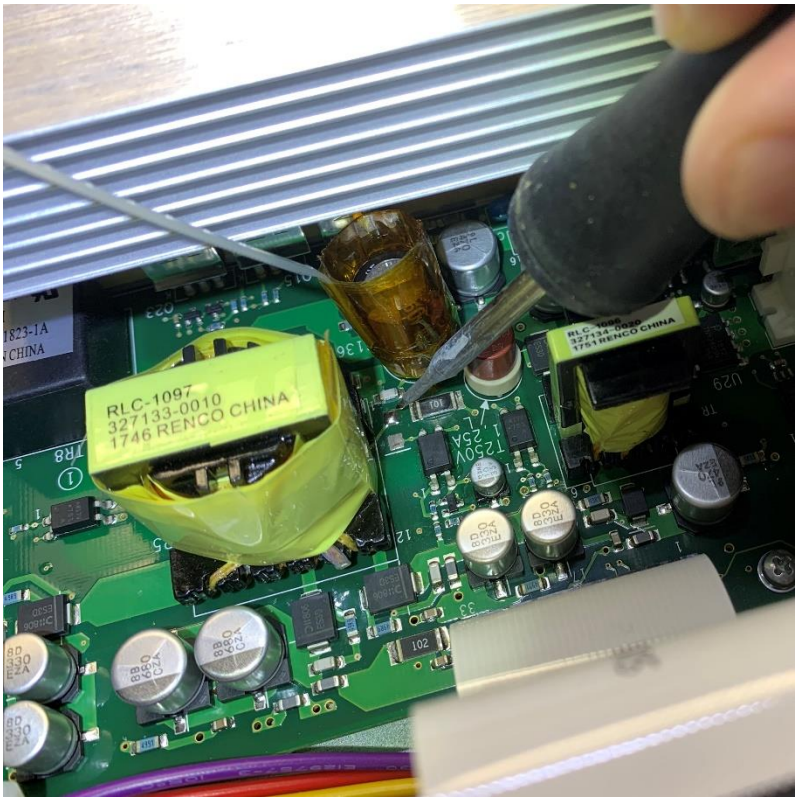


b. Clean off excess flux with flux remover pen then dry the area with a Kimwipe.

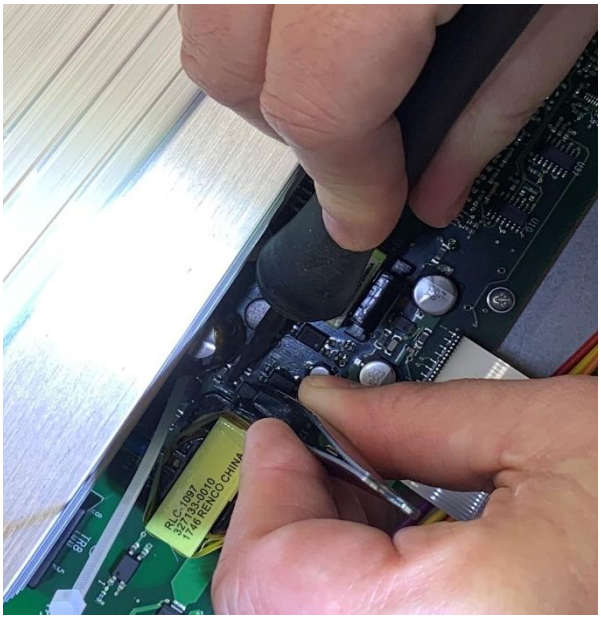


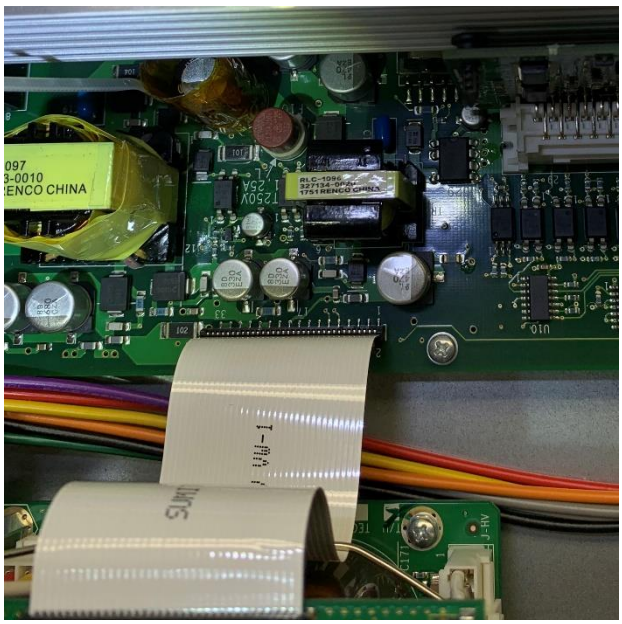
8. To solder the new part *(ON Semi MURS120T3G)*:

a. Re-load one of the pads (top one) with solder using single iron.

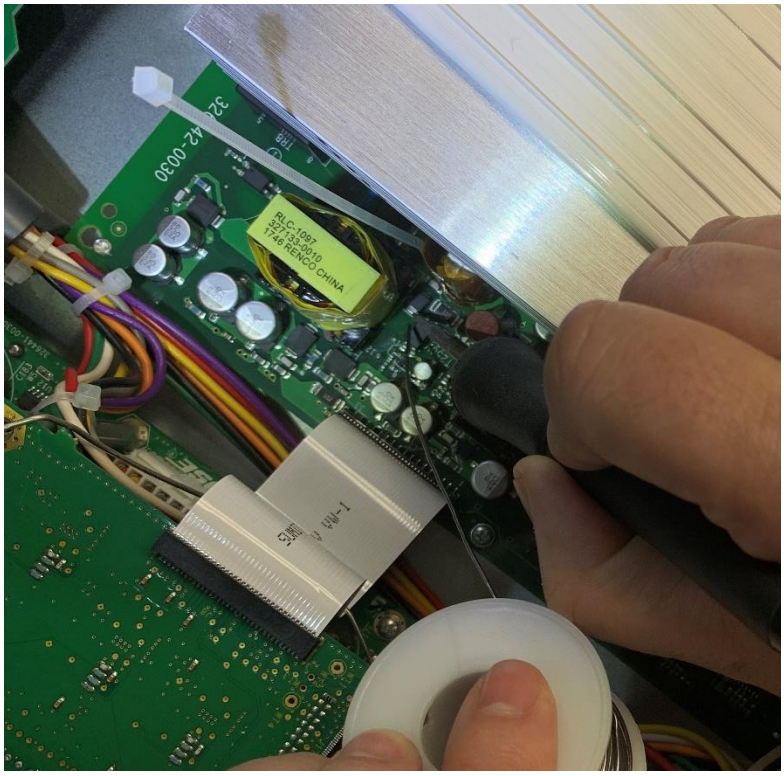


b. Tack the part in place with careful attention to polarity using a single iron and a regular tweezer. Cathode stripe should be towards the Digital board.





c. Solder the other side of the diode using a single iron. Make sure the part is well secured in place.



9. For verification after rework is done:

a. Inspect the board to make sure there is no splash, no bridging and no excess flux around the part.

b. Make sure again that the polarity of the diode is correct.

c. Verify resistance across diode using a DMM (no short circuit).

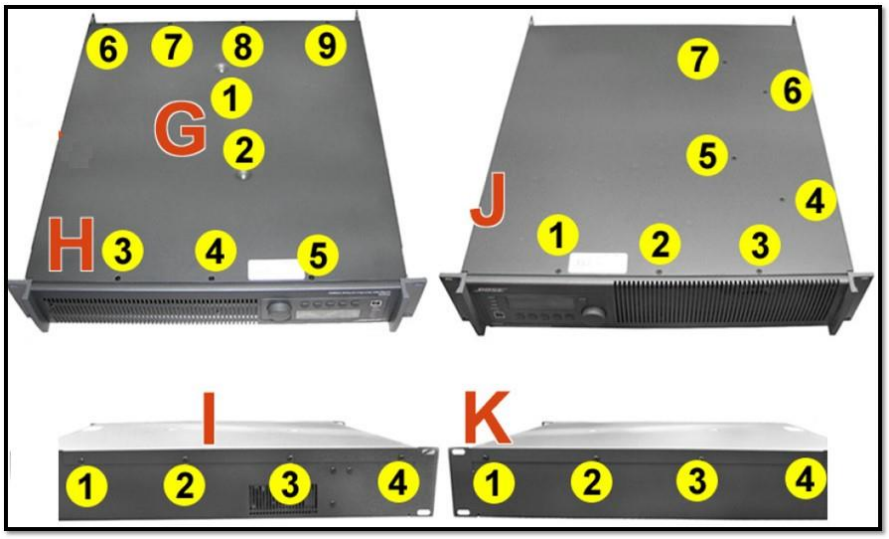
d. Remove the electrolytic heat shield/tube and the FFC cable retainer.

10. For final testing:

a. Inspect all boards in the system as a safety check, making sure nothing splashed on them and no tools were left behind.

b. Bring everything back to how it was in the enclosure.

c. Put back the enclosure and make sure the alignment is correct before you screw it. Make sure not to put too much torque on the screws to prevent damaging them. See below torque specs and sequence:



G: 6±1 in-lbs
H: 16±2 in-lbs
I: 16±2 in-lbs
J: 16±2 in-lbs
K: 16±2 in-lbs

Please be careful handling the chassis and not causing any damage to it.

d. Test the system by turning it on and observing if it completely boots up or not:

☐ Is the front panel on?

☐ Are the fans on?

☐ No LED fault comes up?

e. If unit passes the complete boot-up test, run it through Hi-pot test by following the test specs and requirements listed below on Page 11, 12 and 13). Please keep a record of units that pass or fail.

11. For record purposes and re-packaging:

a. Add green dot to serial number.

b. Put unit back into existing package/box (with the user manual, power cord and input/output connectors which already came with the unit.)

c. Add green dot to the box.

d. Scan unit F# and record it in a spreadsheet.

Hi-Pot (High Potential) Leakage Test (Taken from TS326114_03, Section 4.2.8)

Our requirements for safety compliance are:

- North America/Canada/Mexico: UL 60065 7th edition; CAN/CSA-E60065-03 for normal and tropical climates

- Europe/Worldwide: EN60065 (7th Edition); IEC60065 (7th Edition) for normal and tropical climates with differences for all required countries per CB bulletin. IEC60065 6th Edition National Differences for Japan.

Our Hi-pot test requirement, from Appendix C of OP119939_231:
We will use TS test reference “D” in Appendix C (for 200 to 240 V products, three wire Class 1)
We will use Hi-Pot Voltage reference “5” for AC Input to earthed parts. Connection to the unit is made through the IEC input connector, and to the UUT chassis on the rear of the chassis at the unpainted corner of the rear rack ear, left unpainted for connectivity.
Hi-Pot: 1500VAC, rise time = 1 sec., dwell = 1 to 4 seconds, current limit = 500 uA

Due to the size of our X-capacitors, we will use the alternate test method: 2120 VDC, rise time = 1 second, dwell = 1 to 4 seconds, current limit = 500 µA.

Test Procedure For Dielectric Strength Testing (Taken from OP119939_26, Section 7.0)

7.1 Dielectric Strength Test Objective.

To demonstrate the ability of a product to withstand a high voltage potential applied between mains connected parts and user accessible parts. Compliance with this testing is required per regulatory standards.

CAUTION: Care shall be taking when applying the high voltage. To reduce the risk of electrical shock, only trained personnel should be allowed to perform the Dielectric Strength test.

7.2 Test Conditions.

The test shall be conducted when the product is complete (fully assembled). Exceptions to this requirement will be reviewed by Product Safety on a case by case basis and shall appear in the TS.

7.3 Test Process.

During production, the test equipment shall be checked for proper operation at least once during each shift. This should be recorded in the daily log. When production line tests are performed sequentially, it is preferred that the Dielectric Strength Test be performed after the Ground Bond Strength Test. During the test, the primary switch (if so equipped), shall be in the on position, both sides of the primary circuit of the product are to be connected together and to one terminal of the test equipment, and the second test-equipment terminal is to be connected to accessible conductive parts including secondary connectors. The product shall be tested in accordance with the Test Specification for each product. The Test Specification shall include the test voltage and duration (based on the information in Appendix C), and the connection points.

7.4 Pass/Fail Criteria.

All products shall withstand the applied potential without an indication of electrical breakdown. If a product fails any of the above tests, follow the local non-conforming material process, immediately tag and remove it from the production line and record the failure.

APPENDIX C

	Type of Product and its mains Voltage	**Hi-Pot Voltage** The trip current set at 500µA or as determined by Test Systems and Product Safety Dept. Production dwell time more than 1 second but less than 4 seconds. See product TS for test reference and details.								
TS test reference		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
		800VAC OR 1130VDC , CAN/CSA-E60065, IEC60065	1000VAC OR 1530VDC UL60950, CAN/CSA-C22.2 No.60950, IEC60950,	1080VAC OR 1530VDC UL1492	1200VAC OR 1697VDC UL813, UL1480	1591VAC OR 2250VDC*** UL60065, IEC60065, CAN/CSA-E60065, IEC60065, UL60950, CAN/CSA-C22.2 No.60950, IEC60950, U/CSA62368-1, IEC62368-1,	1776VAC OR 2512VDC UL1480	2000VAC OR 2828VDC UL60950, CAN/CSA-C22.2 No.60950, IEC60950,	3000VAC OR 4200VDC*** UL60065, IEC60065, CAN/CSA-E60065, IEC60065, UL/CSA62368-1, IEC62368-1	3000VAC OR 4242VDC UL60950, CAN/CSA-C22.2 No.60950, IEC60950,
A	100-120 VAC 2-WIRE CLASS II			AC INPUT TO OUTPUT	AC INPUT TO OUTPUT	AC INPUT TO OUTPUT		AC INPUT TO OUTPUT		
B	100-120 VAC 3-WIRE CLASS I	AC INPUT TO EARTHED PARTS	AC INPUT TO EARTHED PARTS	AC INPUT TO EARTHED PARTS	AC INPUT TO EARTHED PARTS	AC INPUT TO OUTPUT**		AC INPUT TO OUTPUT**		
C	200-240 VAC or 100-240 VAC 2-WIRE CLASS II						AC INPUT TO OUTPUT		AC INPUT TO OUTPUT	AC INPUT TO OUTPUT
D	200-240 VAC or 100-240 VAC 3-WIRE CLASS I					AC INPUT TO EARTHED PARTS	AC INPUT TO EARTHED PARTS		AC INPUT TO OUTPUT**	AC INPUT TO OUTPUT**

*100-120VAC is for any voltage between 100 and 120 VAC.
*200-240VAC is for any voltage between 200 and 240 VAC.
*Production testing is 100% of all mains powered products.
*Initially, not more than half of the prescribed test voltage is applied, and then it is raised with a steepness not exceeding 1560V/ms to the full value which is held for 1s to 4s.
**Bose requirement, not an agency requirement.
***DC Voltage shall be applied in positive polarity, then again applied in negative polarity.

Appendix D

DIELECTRIC STRENGTH/INSULATION RESISTANCE VERIFICATION LOG (Example)

Date and time	Product Description	Product Serial No.	Voltage Setting in Volts	Trip Current or Resistance Setting in mA or MΩ	Dwell Time Setting in seconds	Pass/ Fail	Technician Signature and Test Equipment ID