MODIFICATION RECOMMENDED –
CORRECTS MANUFACTURING OR DESIGN DEFECTS

SN 34401A-13E

S E R V I C E N O T E

Supersedes:
34401A-13D

34401A 6 ½ Digit Digital Multimeter

Serial Numbers: Please check this webpage to see if your unit is affected by this problem: http://www.get.agilent.com/shunt. Please call your sale representative if you have any question.

The Problem – Temperature drift out of accuracy specification on 3 Amp DC/AC current range

To Be Performed By: Agilent-Qualified Personnel

Parts Required:

P/N	Description	Qty.
0699-1514	R120 RESISTOR 0.1ohm +-1PCT 5W MFS TC=+30/-10	1

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	[ ] IMMEDIATELY X ON SPECIFIED FAILURE [ ] AGREEABLE TIME	STANDARDS: LABOR: 2.0 Hours	
LOCATION CATEGORY:	[ ] CUSTOMER INSTALLABLE [ ] ON-SITE X SERVICE CENTER	SERVICE INVENTORY: [ ] RETURN [ ] SCRAP X SEE TEXT	USED PARTS: [ ] RETURN X SCRAP [ ] SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	AGILENT RESPONSIBLE UNTIL: End of support life	
AUTHOR: TP	PRODUCT LINE: PLSP-SOURCE_MEAS		
ADDITIONAL INFORMATION:			

Agilent Technologies

April 24, 2006

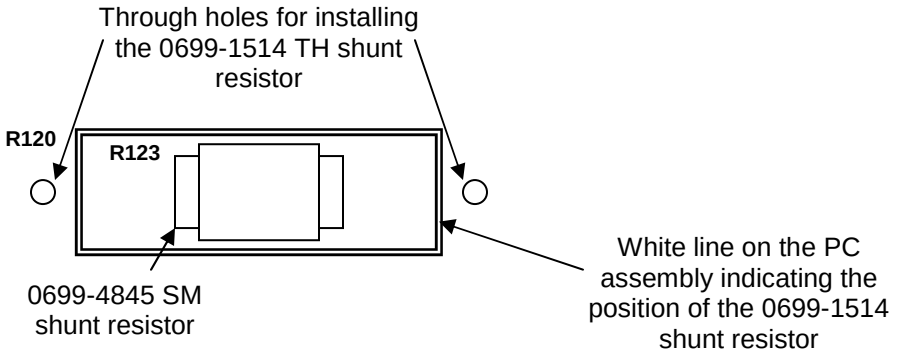
Situation:
The 0699-4845 shunt resistors used on 34401A 3 Amp DC/AC current range may have a temperature coefficient which is higher than the required value. This will cause the voltage drop across the shunt resistor to drift out of specifications while measuring continuous current levels above 2 Amp (for example, >30 sec at 3 Amp). However, this measurement drift does not affect current measurements using the 10 mAmp, 100 mAmp, or 1 Amp current measurement ranges, nor will it affect 3 Amp DC/AC range measurements if they are not made continuously for >30 seconds.

Solution/Action:
Test and, if necessary, repair:
Do not repair unless testing verifies the problem is present.

Test Equipment Required:
Fluke 5520A Calibrator or equivalent.

Test Procedure:
1. Output 2.8A DC from the calibrator and measure this current with the 34401A. The measured value should meet or exceed the 2.800000 +/- 0.004 A one year accuracy specification. If it fails, skip the following test steps and do the repair.
2. Be sure that the test current is continuously connected the 34401A during this entire procedure in order to see any drift due to heating the internal 0.1 ohm current measurement shunt resistor.
3. Repeat this measurement again after one minute and verify that the result meets the accuracy specification.
4. If the 34401A fails this test, replace the surface mount R123 current shunt resistor using the following repair procedure

Repair Procedure:
The 0699-4845 shunt resistor should be removed and replaced by the through-hole shunt resistor 0699-1514. The following figure indicates the relative positions of the 0699-4845 shunt resistor and 0699-1514 shunt resistor. The 0699-4845 is an SMT component and should only be removed by a technician skilled in the repair of surface mounted components. Damage to the PC assembly can occur unless the proper tools are used to remove the shunt resistor. The PC assembly has undergone special washing to achieve High-SIR. Proper handling and reworking technique should be practice avoid contaminating the PC assembly which, could lead to performance related problems. The unit must be calibrated after replacing the 0699-4845 shunt resistor.



Layout diagram on the PC assembly