



00-005C
2 May, 2007

M300 PHOTO TRANSISTOR (OPTO) REPLACEMENT

I. PURPOSE:

To inform you of a change in the photo transistor (opto isolator) circuit of the M300 CO analyzer

II. TOOLS:

Diagonal Cutters
Phillips Head Screwdriver
Standard Flat Tip Screwdriver
Soldering Iron
O-Scope

III. PARTS

KIT000109

IV. PROCEDURE:

1. The vendor that Teledyne API purchases the photo transistors from has changed the spec on the photo transistors that we purchase for the M300 analyzer. To ensure long life and good results, when you change the photo transistor you are going to have to check the resistor that drives the LED in the photo transistor.
2. To check this resistor turn the instrument off, remove the power and remove the cover from the analyzer.
3. Remove the synch demod card from the analyzer. This is the most forward card in the motherboard.
4. Locate the R50 resistor on the synch demod card and inspect the resistor, the correct resistor is a 499Ω (the resistor value code on the resistor should show "4000F" on it). IF the resistor on your synch demod card is a 499Ω then you do NOT install the adapter cable provided in the KIT.
5. If the resistor that you have in the R50 position shows that it is a 124Ω ("1240F") then you ARE going to have to install the adapter cable in the analyzer. Directions for installing the adapter cable are later in this service note.
6. Reinstall the synch demod card into the motherboard.
7. From the top of the bench, remove the 4 screws that hold the bench onto the shock mounts.
8. Turn the bench over onto its side so that you have access to the photo transistor. To get the bench to turn completely onto its side you might have to cut some of the tie wraps that hold the wiring for the bench.
9. Replace the photo transistor with the new one that is in the KIT.
10. If you have to install the adapter cable into the analyzer then install it now between the new photo transistor that you just installed & the wiring harness that is on the bottom of the bench that you disconnected the old photo transistor from.
11. If the analyzer that you are working on already has an adapter cable in it the do NOT install the new adapter cable that came with the KIT 109.

12. When you are installing the new photo transistor make sure that you push the transistor all the way forward in the holder so that it is as close to the wheel as **possible**. If you hook your O-scope up to the analyzer & find that the opto signal is not a nice square wave check to ensure that this opto is pushed up as far as possible in this block.
13. Turn the bench back over and ensure that nothing is in the way of turning on the analyzer.

NOTE: Ensure that all ground straps are securely fastened to the analyzer. If they are not you might see a very noisy analyzer and it will make for unpredictable results and data.

14. Plug the analyzer back in and turn it on.
15. Hook up your O-scope to the test points that are in the service note 95-005. Ensure that the waveforms that you are seeing on your scoped match the ones that are on the service note.
16. If your waveforms do not match the ones on that are in the service note adjust the mirrors per the procedure that is in the service note 95-005.
17. When you have the waveforms looking good then screw the bench back to the mounts in the analyzer and again, ensure that all your grounding straps are secured into the analyzer.
18. Calibrate the analyzer per the directions that are in your manual. Make sure that you do the dark calibration before you do the zero and span calibrations.