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Author Topic: Tektronix AM503 Current Probe Amplifier Repair Help? (Read 1298 times)

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bklein
Contributor
Posts: 12

Tektronix AM503 Current Probe Amplifier Repair Help?
« **on:** December 30, 2017, 04:48:06 am »

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My AM503 decided to die - from lack of use I guess. It used to work but was a bit fussy - now I can't get the DC zero to go full +/- screen, it seems to just go positive and never zero.
There is some amplification of the probe signal that I can see on one of the amplifiers. I just lost interest in debugging when I see custom IC's all over.
Supplies seemed good but I didn't check everything. I went on ebay and ordered another really cheap as it was "for parts only", thinking I'd use it for parts, or fix it.
This second one has a different pcb that is obviously older. Same design though. IC's in embedded pin sockets.
I found that the gold range switch wipers had some issues - I cleaned them up with contact cleaner and got them all to work. Then I found that the signal amplitude was not correct. I looked around and found a broken fuse and shorted +19.3V zener. Replace them with parts from the first unit and still same deal - the amplitude of the output is not correct - but the output does correctly correspond to the range switch operation through the ranges. (double range = double output) The DC zero function works on this one.
So I am left at a loss understanding what would give an incorrect output range. Maybe who had it before messed with the attenuation network? I can use it as is by setting my scope input range switch to 20mv/div instead of 10mv/div. but that can drive a guy crazy if you have to use it in a hurry. Some settings to explain what I'm seeing:

Test load is 50mA
50 ohm termination on the channel input (verified same result on second scope, different brand)

AM503 range switch	Scope Channel Input Range	Reading on Scope
20mA	10mV/div	5 divisions
50mA	10mV/div	2 divisions
100mA	10mV/div	1 division
20mA	50mV/div	1 division

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EHT
Regular Contributor
Posts: 140
Country:

Re: Tektronix AM503 Current Probe Amplifier Repair Help?
« **Reply #1 on:** January 08, 2018, 11:08:50 pm »
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Hi. Did you get anywhere with this? I have an AM-503 which I will be testing out sooner or later. How do you know your problem is not the current probe? Do you have a way of setting up a test load without the probe?

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bklein
Contributor
Posts: 12

Re: Tektronix AM503 Current Probe Amplifier Repair Help?
« **Reply #2 on:** January 14, 2018, 08:17:13 am »
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I went back to the original unit and am trying to repair it. When I push the degauss button I see signals on the inputs and outputs of the first black rectangular custom IC but only on the inputs to the second black custom IC. The outputs are supposed to be at zero volt baseline and are positive instead. So I am suspecting this IC but have a bit more things to look at.
To your question about the probe itself, I just hooked up a resistor to a DC power supply for a 100ma load and can see this through the probe amplifiers, plus the DC level works. The manual discusses using a special input cable to a signal generator of some sort. There's not a lot to the probe itself so I'd think most of these are good unless the ferrite got cracked from dropping it.
If you debug the degauss circuit you validate a lot of the circuits. The gold wipers on the range switching needed cleaning on both units. Take a thin strip of paper, put it under the wiper, spray a bit of contact cleaner on it and pull it as you press the wiper down on it. You'll see little dark stripes caused by the crud you cleaned off the contact points.
I'm at a point now that I need to compare signals between the two units and look for differences. The original has a jump in DC level with the range switch that it probably shouldn't have (not sure). After the unit's been on awhile a few of the transistor pairs etc. get kinda hot. Wondering if that's normal.
I tried using two blue LEDs for the range switch lamps but one gets biased on a bit when it is supposed to be off. I don't really like the blue, will switch to white leds or back to lamps.

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