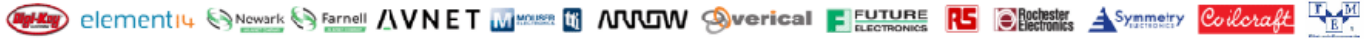




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Topic: **Fluke 732B problems with charging circuit** (Read 1013 times)

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**Awesome14**

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**Fluke 732B problems with charging circuit**

« on: February 16, 2017, 02:56:41 pm »

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I read this post: <https://www.eevblog.com/forum/testgear/fluke-732b-repair/> . I followed it: replaced R520 with a 16.5 Ohm, added C541, and I replaced U501 and Q502 as per the manual section on the charge circuit.

I have constructed an oven-thermistor and battery-voltage-monitor cable that connects to the D-sub 9-pin on the rear of the unit. It's not official that one can monitor the battery voltage by connecting to the ext. bat. in pins, but I checked it against the voltage at the battery terminals, and it's accurate to within about 200mV.

If I discharge the battery to a point at which the constant-current charger stays on (charge LED is lit), it won't switch to trickle charge, even at over 16VDC at the battery (after 48 hr. charge). And 'it is' stuck on constant current. The charge light is not in error.

But, if I cycle the AC power, the charge light is lit for several moments and goes out, as is normal.

So, the charge LED is accurately portraying the charge type (it goes out when the unit switches from constant current to trickle charge). I just don't know why the charger won't switch over to trickle charge if I just leave the unit plugged in to AC.

What could make it work only when the AC power is cycled?

« Last Edit: February 16, 2017, 06:23:32 pm by Awesome14 »

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 **Re: Fluke 732B problems with charging circuit**« **Reply #1 on:** February 17, 2017, 01:41:02 am »[Say Thanks](#)[Reply](#)[Quote](#)

Do you mean 16.5 kOhm (vice 16.5 Ohm)?

Are the comparator (U501) input and output voltages OK? Does the comparator switch? Does Q502 switch?

Your issue may get more response in the repair section.

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 **Bill158**

Regular Contributor



Posts: 68

Country:

 **Re: Fluke 732B problems with charging circuit**« **Reply #2 on:** February 17, 2017, 05:10:59 pm »[Say Thanks](#)[Reply](#)[Quote](#)**Quote from: Awesome14 on February 16, 2017, 02:56:41 pm**

What could make it work only when the AC power is cycled?

Since the comparator circuit does switch over and the "charge on" led goes off after going through the AC power cycle, which causes a quick rise of the voltage on the non-inverting input of the comparator, the problem has to be with a component that is changing value when there is a slow rise of the voltage during the constant current charging of the battery. When the AC is cycled off the battery voltage will drop until the AC is reapplied and then rise quickly causing the comparator output to switch from low to high. You need to monitor pins 6 and 7 of U501 with a differential input oscilloscope to observe what is happening during the constant current portion of the circuit operation. I am sure you will see pin 7 is lower in voltage than pin 6 when the comparator output is low, even though the battery voltage is at 16 volts. Since pin 6 is set by the +10 volt reference, and is constant, the problem almost has to be in the voltage divider components in the circuit that sets the voltage on pin7, unless C-541 is "leaky". But then by monitoring the voltage on pin 6 during charging you could see it change over time if C-541 was the problem. The "tricky" part of this circuit is that the junction of R517 & R518 is held "low", maybe a positive few hundred millivolts depending upon the VCES(AT) of the output transistor of U 501 until the comparator goes high. So the voltage on pin 7 is dependent upon the "low" voltage of pin 1 of the comparator and the division ratio of R518 and R519. Since you have changed Q502 and U501 you can probably eliminate those components as where the problem is located. But since the voltage at pin 7 could be low by only a few millivolts it is going to be difficult to pinpoint the exact problem component. Then it might be easier to just "shotgun" the circuit by replacing R-517,518,519 & 521 along with C-505, you have already replaced R520. That is the approach that I would take, to avoid wasting a lot of time, and see what happens. Good luck as this looks like a "fun" troubleshooting job.

Bill

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 **ManateeMafia**

Frequent Contributor



Posts: 719

Country:

 **Re: Fluke 732B problems with charging circuit**« **Reply #3 on:** February 17, 2017, 06:10:46 pm »[Say Thanks](#)[Reply](#)[Quote](#)

I have seen it take several hours for the charge light to go out on a battery that is low. I did this mostly as a test of the charger circuit before putting in a new battery. I have also added the missing capacitor to one or two 732B and it now switches to CC mode at plug-in of the AC cord.

Is your battery new and of a reputable brand? Don't buy your batteries from Battery Plus or some other local retailer. Many of those batteries do not meet the listed Amp-Hour rating. I have tested the cheapies vs the name brand like Panasonic or BB Battery and there is no comparison using my electronic load. The name brands exceeded the ratings and the junk batteries weren't close. Also, the cheap batteries die an early death. Less than a year of charging and you can bet they will not live past the first couple of discharges.

I also had a charger with a bad LT1086 (U500) that was shorted input to output cooking the battery. I would check it to make sure that it is working correctly by using a resistor in place of the battery as per the t/s guide on page 5-15.

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 **Awesome14**

Regular Contributor

 **Re: Fluke 732B problems with charging circuit**« **Reply #4 on:** February 24, 2017, 04:39:19 pm »[Say Thanks](#)[Reply](#)[Quote](#)



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Thanks for the responses. I ended up ordering a power board from Fluke. I made a deal with the seller to cover the cost.

I neglected to add that I use sla batteries from Chrome Battery. They're Chinese made to Chrome Battery's specs. Chrome Battery is located in Carmel, Indiana USA. Over the years I have purchased 37 sla batteries from Chrome, and not a bad one in the bunch.

I've tested with electronic load and these batteries appear to be over capacity.

« Last Edit: March 02, 2017, 01:54:52 am by Awesome14 »

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