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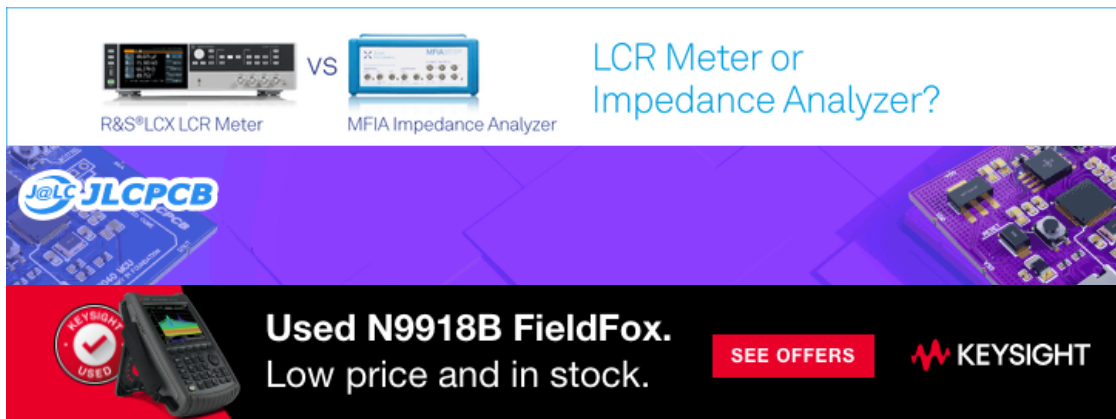
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 **Author**


Topic: **Fluke 189 Is Not Working Correctly, Need Help** (Read 5358 times)

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bdallen87

Contributor

Posts: 5

Country: 



 **Fluke 189 Is Not Working Correctly, Need Help**

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« on: March 03, 2017, 06:17:28 am »

I recently purchased a used Fluke 189 that powered on, and I thought was working. After testing it further, I've concluded the meter is not working. I'd like to fix it. Here are the issues with it:

1. After I turn the rotary switch to any and all positions other than 'OFF', the battery icon in the top left displays along with a reading of '0', 'Manual', and another '0' on the bottom center of the screen (see picture). The 4 x AA batteries are brand new and have been tested with another meter (1.6 volts each).
2. When the 'RANGE' button is pressed, the meter turns off, displays all segments, then displays the items listed above (the battery icon in the top right displays along with a reading of '0', 'Manual', and another '0' on the bottom center of the screen).
3. I tested the fuses per page 6-2 of the Fluke 187 & 189 Users Manual. Both F1 and F2 display 'LEADS' when tested. I checked both fuses with another meter (both checked good). I also inserted other fuses from another working Fluke meter and got the same result.
4. I found this Fluke 189 Repair blog on the EEVBlog website (<https://www.eevblog.com/forum/repair/fluke-189-teardown-repair/>) and thought the pins and the contact block may be loaded with grease. I desoldered the contact block and tested the pins and found no continuity between pins in the contact block.

I have no idea what could be wrong with this Fluke 189. Please help.

Thank you,
Ben



P1060421 (1280x1097).jpg (540.69 kB, 1280x1097 - viewed 597 times.)

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retiredcaps

Super Contributor



Posts: 3565

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

« Reply #1 on: March 03, 2017, 06:37:51 am »

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What is the current draw of the 189? Obviously with new batteries, the low battery icon should not be on.

Take it apart and post clear focused pictures of the pcb (both sides).

PS. The fuses, good or bad, have no bearing on the functionality of the meter itself other than current measurement. In other words, both fuses can be bad and the meter will still power on and measure voltage and resistance fine.

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bdallen87

Contributor

Posts: 5

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

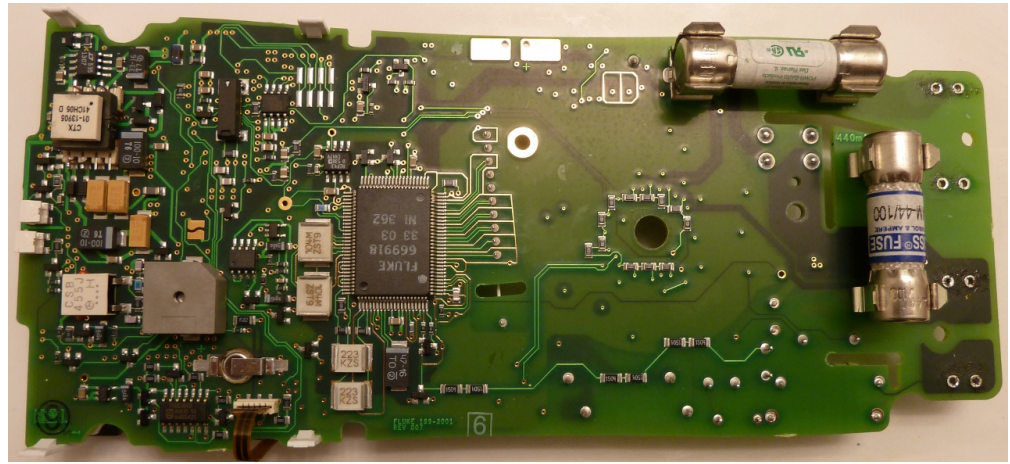
« Reply #2 on: March 03, 2017, 07:31:40 am »

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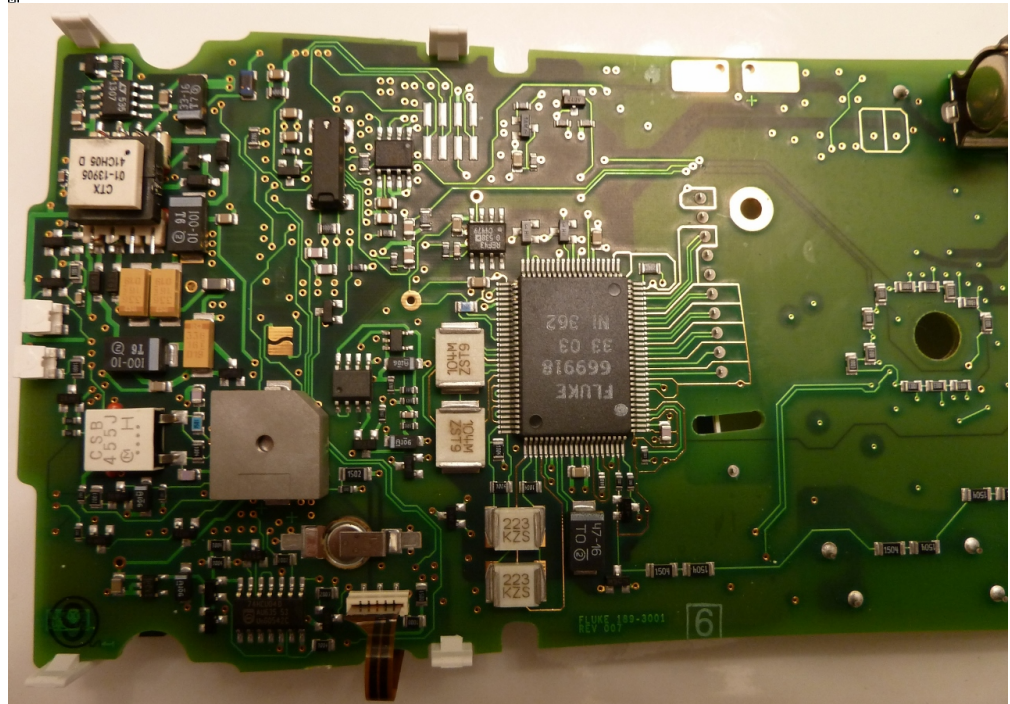
RetiredCaps,

Thank you so much for your help. I'm not sure what the current draw of the 189 is. Is there a way that I can measure this for you? I've posted several pictures for you. I haven't soldered the contact block back on yet.

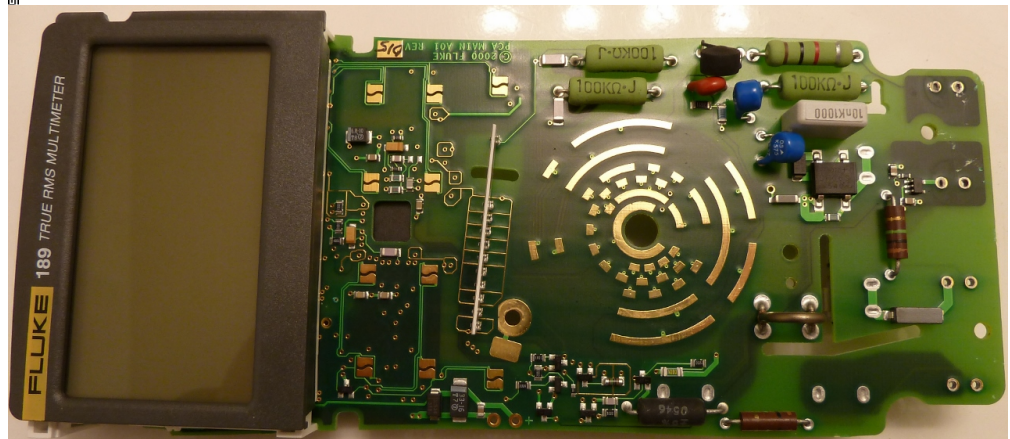
Thank you,
Ben



P1060422 (1280x587).jpg (488.42 kB, 1280x587 - viewed 2626 times.)



P1060423 (1280x902).jpg (679.47 kB, 1280x902 - viewed 556 times.)



P1060424 (1280x561).jpg (415.4 kB, 1280x561 - viewed 2389 times.)

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bdallen87

Contributor

Posts: 5

Country:

Re: Fluke 189 Is Not Working Correctly, Need Help

« [Reply #3 on: March 03, 2017, 07:33:22 am](#) »

[Say Thanks](#)

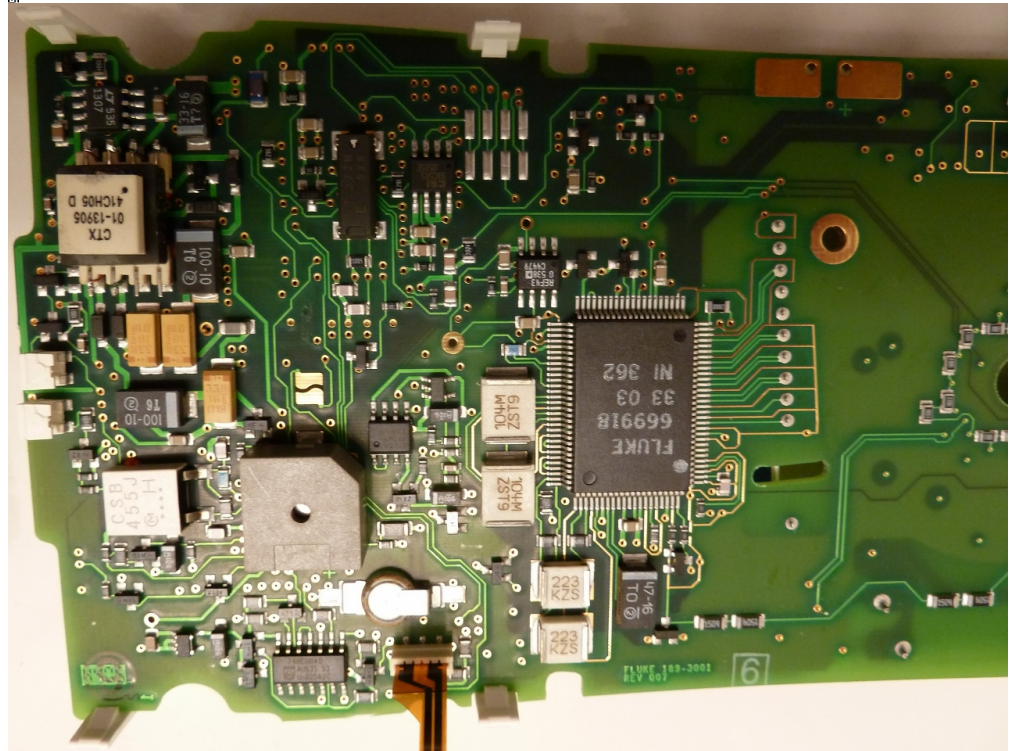
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Two more pictures.



P1060425 (1280x772).jpg (598.32 kB, 1280x772 - viewed 453 times.)



P1060426 (1280x959).jpg (713.54 kB, 1280x959 - viewed 439 times.)

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retiredcaps

Super Contributor



Posts: 3565

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

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« Reply #4 on: March 03, 2017, 07:39:44 am »

Quote from: bdallen87 on March 03, 2017, 07:31:40 am

Is there a way that I can measure this for you?

The easiest way is to hook up the 189 to a DC variable power supply. The DC power supply will usually show the current draw.

If you don't have a DC variable power supply, you will need to use another multimeter in series with the 189 AA batteries.


PS. Did you buy this as "working" off ebay? Or did you buy this "as is"?

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bdallen87

Contributor

Posts: 5

Country:  **Re: Fluke 189 Is Not Working Correctly, Need Help**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #5 on:** March 03, 2017, 07:56:37 am »

I bought the meter from a pawn store under the impression that it was working. I turned it on and saw the screen with the picture above and assumed (dumb, I know) everything was working correctly.

When I put my Fluke 85 III in series with the AA batteries, the DC amps read 10 Amps and begin decreasing.


« Last Edit: March 03, 2017, 07:59:22 am by bdallen87 »

[Report to moderator](#)  [Logged](#) **mzacharias**

Frequent Contributor



Posts: 704

Country:  **Re: Fluke 189 Is Not Working Correctly, Need Help**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #6 on:** March 03, 2017, 01:43:26 pm »**Quote from: bdallen87 on March 03, 2017, 07:56:37 am**

I bought the meter from a pawn store under the impression that it was working. I turned it on and saw the screen with the picture above and assumed (dumb, I know) everything was working correctly.

When I put my Fluke 85 III in series with the AA batteries, the DC amps read 10 Amps and begin decreasing.

If this is true - something in there will be getting HOT very quickly. When you burn your finger touching it 😬 the troubleshooting phase is complete.

(By the way - I would guess the main processor IC). Had it happen to me on a Beckman 223.

« Last Edit: March 03, 2017, 01:46:53 pm by mzacharias »

[Report to moderator](#)  [Logged](#) **ModemHead**

Frequent Contributor



Posts: 731

Country: 

No user-serviceable parts inside.

 **Re: Fluke 189 Is Not Working Correctly, Need Help**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #7 on:** March 03, 2017, 02:03:13 pm »

Yeah, 10A means get out the fire extinguisher.

Nice photos. Can't see any issues except for the RTC super-cap. It looks nasty. ~~I don't think I've ever heard of a bad one causing any issues except for loss of the clock when the batteries are out.~~ [Take that back, I believe there have been cases where it kills the batteries. Maybe it can drag a power rail down...] I suppose I would de-solder it just to make sure. Like mzacharias, intuition tells me this is a digital-domain problem. Hard to diagnose without documentation.

BUT, before going further, I think I'd investigate options for return of the meter to the place it was bought, especially if it was sold as a working meter.


« Last Edit: March 03, 2017, 03:23:51 pm by ModemHead »

[Report to moderator](#)  [Logged](#) **Robomeds**

Frequent Contributor



Posts: 391

Country:  **Re: Fluke 189 Is Not Working Correctly, Need Help**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #8 on:** March 03, 2017, 02:32:38 pm »


Off the wall suggestion. I recently lost one of the contacts on 187. I didn't notice at first since the meter turned on but the display was giving me nonsensical info. Well it turns out I lost a spring contact in the rotor switch (see my thread on the issue). Jury rigging a contact showed that my issue was clearly the missing contact. This is a failure that only happens if someone was curious/dumb enough to take things apart but out doesn't hurt to check... assuming you don't lose a contact 😬

[Report to moderator](#)  [Logged](#) **Johnny10**

Frequent Contributor



Posts: 879

Country:  **Re: Fluke 189 Is Not Working Correctly, Need Help**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #9 on:** March 03, 2017, 02:39:32 pm »

I'm surprised you didn't start to see smoke at 10amps. How long did the batteries last?

I missed buying a 189 at local surplus shop. Still mad at myself.

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Tektronix TDS7104, DMM4050, HP 3561A, HP 35665, Tek 2465A, HP8903B, DSA602A, Tek 7854, 7834, HP3457A, Tek 575, 576, 577 Curve Tracers, Datron 4000, Datron 4000A, DOS4EVER uTracer, HP5335A, EIP534B 20GHz Frequency Counter, TrueTime Rubidium, Sencore LC102, Tek TG506, TG501, SG503, HP 8568B

retiredcaps

Super Contributor



Posts: 3565

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

Say Thanks

Reply

Quote

« **Reply #10 on:** March 03, 2017, 07:06:33 pm »

Quote from: bdallen87 on March 03, 2017, 07:56:37 am

When I put my Fluke 85 III in series with the AA batteries, the DC amps read 10 Amps and begin decreasing.

Do you mean 10mA? If 10mA, that might be okay for this meter. If yes, as others mentioned, I would try taking this back to the pawn shop and getting your money back. Of course, the pawn shop can always say you broke it and refuse.

If you are looking to buy used meters, there is a thread that suggests what to look for

<https://www.eevblog.com/forum/chat/buying-used-multimeter-what-to-watch-for/>

There is another too, but right now I can't find it.

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james_s

Super Contributor



Posts: 17500

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

Say Thanks

Reply

Quote

« **Reply #11 on:** March 03, 2017, 07:11:54 pm »

Seems like if it was actually pulling 10 Amps from a set of AA's you'd know very quickly. I wouldn't expect alkaline AA's to be able to supply that much for more than a few seconds.

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retiredcaps

Super Contributor



Posts: 3565

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

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« **Reply #12 on:** March 03, 2017, 07:16:45 pm »

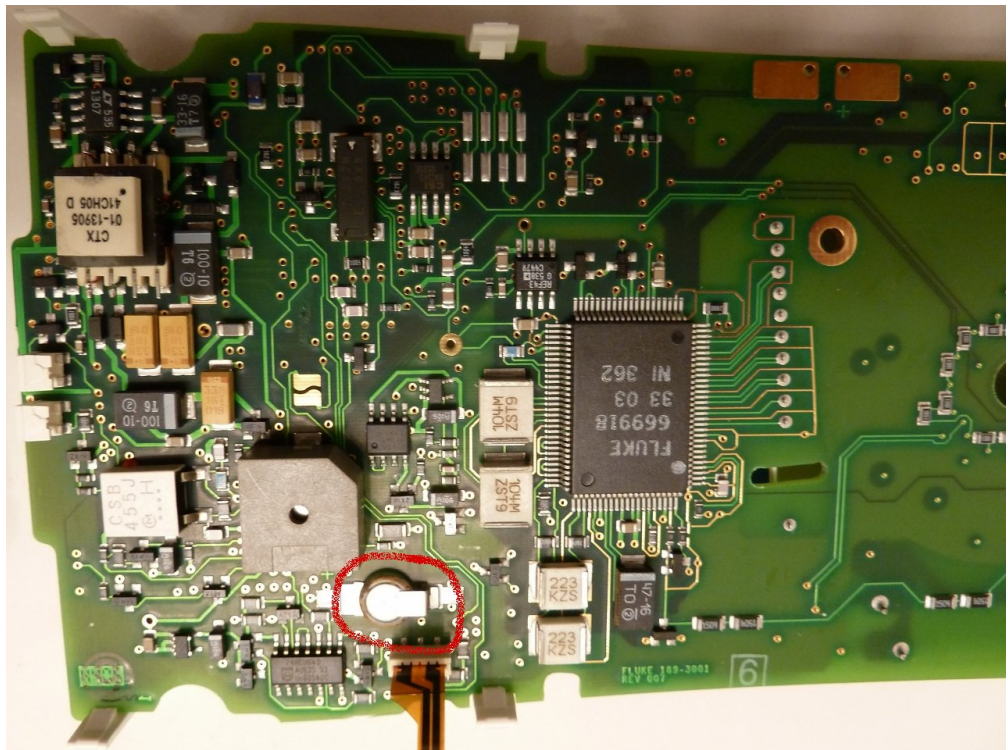
Quote from: ModemHead on March 03, 2017, 02:03:13 pm

Can't see any issues except for the RTC super-cap. It looks nasty.

Circled in red is the super cap that modemhead is referring to.

Here is the megathread re the super cap problem ...

<https://www.eevblog.com/forum/testgear/fluke-189-with-leaking-surface-mount-coin-cell/>



P1060426 (1280x959).jpg (248.56 kB, 1280x959 - viewed 668 times.)

« Last Edit: March 03, 2017, 07:24:02 pm by retiredcaps »

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james_s
 Super Contributor

 Posts: 17500
 Country:

Re: Fluke 189 Is Not Working Correctly, Need Help

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« Reply #13 on: March 03, 2017, 07:18:54 pm »

If it's fuzzy like it looks in the pic, I would remove that ASAP and see if the meter behaves any better with it gone. It could be dragging down the supply to whatever it backs up.

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bdallen87
 Contributor
 Posts: 5
 Country:

Re: Fluke 189 Is Not Working Correctly, Need Help

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« Reply #14 on: March 04, 2017, 04:05:25 am »

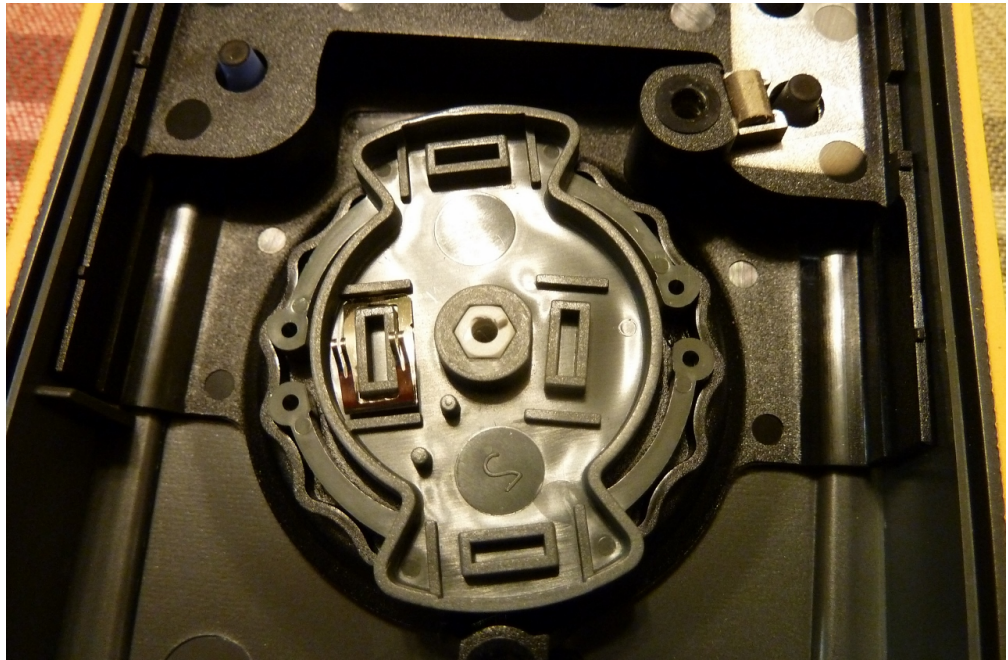
All who replied, thank you for your help. I feel like an idiot admitting this, but I think Robomed's nailed the problem. I not only have 1 missing contact, but three. When I looked at this after taking it apart, I thought the rotary switch was for multiple models and didn't need a contact in all four positions. I'm not sure if I lost all three or a previous owner did before he sold it to a pawn store as working.

For those of you wondering about the current draw, I checked it again with another Fluke 87V meter that I have, and the leads do get extremely hot to the touch when checking for current on a Fluke 189 missing 3 x contacts. The amperage starts high and decreases (~.3 amps starting). The other meter that I used to test current is a Fluke 85III which doesn't seem to be the most reliable.

To those commenting on the supercap, I will check battery life after I get the missing contacts from Fluke installed. The supercap does appear to be fuzzy or rusty, but I don't know if it works yet or not due to the 3 x missing contacts issue.

I posted the rotary switch so you all can laugh at me when you see only one contact.

Thank you again,
Ben



P1060427 (1280x840).jpg (607.11 kB, 1280x840 - viewed 503 times.)

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james_s

Super Contributor



Posts: 17500

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

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« **Reply #15 on:** March 04, 2017, 06:03:45 am »

I don't think the missing contacts are responsible for the high current, I can't see how that would happen. I don't know about that specific meter, but some do indeed have unfilled spots for switch contacts.

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Robomed

Frequent Contributor



Posts: 391

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

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« **Reply #16 on:** March 04, 2017, 09:03:47 pm »

The contacts definitely didn't cause a high current draw. Odds are you didn't lose the contacts unless you were rough when handling the thing. They are held in with a retaining tab (part of the contact). They won't just fall out. I bought one from ebay seller fluke-usa. He might have more. That still doesn't explain the current draw. Heck, 10A is far more than the batteries should be able to source. AA batteries would simply be unable to power the thing up if it needed 10A. Make sure no battery contacts are bent!

Also, go back to the pawn shop and either demand a refund or a price that is commensurate with being sold broken.

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BigB_52

Newbie

Posts: 3

Country:



Fluke 189 Is Not Working Correctly, Need Help

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« **Reply #17 on:** April 29, 2020, 02:16:32 am »

Hi,

I have a Fluke 189 which was in storage for a long time with batteries in, when I took it out the battery was corroded, I cleaned the battery cartridge, placed new batteries and turned it on the meter was running for itself without measuring anything, probs were in the air and no matter where the selector switch was. I opened the meter to inspect inside found nothing wrong, no battery liquid leaked and it was super clean, I changed the supper cap, nothing changed in the result, I sent it for calibration they reported "the meter can not register calibration constants.

I tested the eeprom 93c56 that holds the calibration constants, it is fine, I can read from and write to it with no problem with an external eeprom programmer.

Since it came back from calibration facility, the UNCAL mark is on the screen All the time, and the mere shows 0000 in all conditions, even when I activate calibration mode the measurement is zero, the measurement does not follow the input to match the required voltage calibration menu, Any one has any thought in that?

Thanks
BM

Report to moderator Logged

coromonadalix

Super Contributor



Posts: 3632

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

« **Reply #18 on:** April 29, 2020, 02:58:34 am »

Say Thanks Reply Quote

For the dial contacts, tons of them have shown up on ebay

Same for the battery contacts

@BigB_52 are you sure the dial is at the right position 🤔 are you sure there is no battery leak somewhere on the mainboard ?

And sadly no schematics exists or the main ic " Asic" part is not available.

The Fluke 189 can be used without the supercap, you loose the "clock" backup and time related measurements time stamp unless each time you set it up, while waiting my new supercap my meters where ok without it.

« Last Edit: April 29, 2020, 03:00:49 am by coromonadalix »

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shakalnokturn

Super Contributor



Posts: 1737

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

« **Reply #19 on:** April 29, 2020, 08:41:04 am »

Say Thanks Reply Quote

I'm starting to believe you've been measuring your batteries short-circuit current...

Report to moderator Logged

John.S

Contributor

Posts: 14

Country:



Re: Fluke 189 Is Not Working Correctly, Need Help

« **Reply #20 on:** April 29, 2020, 09:44:29 am »

Say Thanks Reply Quote

Hi,

As shakalnokturn stated, it is like you shorted your battery with the current measurement. I am pretty sure that when you draw that much current from your battery is wil definitely not showing anything on its display (as in your first photo) and you will have burnt traces on the PCB. How do you put the measuring leads of the meter you measure current with? It should be for instance: + battery to + current meter ; - current meter to +battery connector of broken meter ; -battery connector of broken meter to - battery.

Gr. John.

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Don't think in problems, think in solutions...

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