



Mute This Topic (https://groups.io/g/HP-Agilent-Keysight-equipment/ft/31675429?csrf=5513314409256117711&mute=1&p=Created%2C%2C%2C20%2C2%2C0%2C0)

E4418B won't power on

Date (https://groups.io/g/HP-Agilent-Keysight-equipment/topic/31675429?p=Created%2C%2C%2C20%2C2%2C0%2C0)



2019-05-19 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/96591)

Hello All,

I am working on an HP E4418B power meter that won't power on with the battery connected. With the battery disconnected it can be turned on once and turned off, but will not turn on again unless it is unplugged for a minute or so. This is all with the battery disconnected. With the battery connected it will not power on.

Before I tear too deep into this, has anyone on the list run into this problem and what did it take to fix it?

Tom Bryan

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Pete Manfre <pmanfre@gmail.com>

2019-05-19 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/96592)

If you find it to be the processor pcb... I might just have a spare here.

Pete wa2odo

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Mark Bielman (/g/HP-Agilent-Keysight-equipment/profile/502679)

2019-05-19 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/96593)

The service manual does have this:

There are three connections from the rechargeable battery assembly to the A1 psu/charger assembly, +12V, 0V, and Signal 1. The Signal 1 line is an indicator line which signals when the battery is below a threshold limit. When this line goes low, indicating there is insufficient charge left in the Battery Assembly to continue operating the power meter, it will cause the A1 psu/charger assembly to shut down.

Maybe check that Signal 1 line?

Mark

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Tom B

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96594\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96594)

Hi Pete,

Thanks. I have a spare here too, but I am trying to fix this one. The power circuit is not that complicated but I am trying to find out if there is a common problem with these things so I can fix this one.

I also have a Transworld PRC1099A that has the same symptoms.

Tom

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Tom B

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96595\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96595)

Hi Mark,

Sorry, I wasn't clear. The battery I am talking about is the backup battery. This meter does not have the rechargeable battery pack option.

Tom

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Pete Manfre <pmanfre@gmail.com>

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96596\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96596)

RRR

Pete

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Mark Bielman (/g/HP-Agilent-Keysight-equipment/profile/502679)

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96597\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96597)

Hi Tom,

Oh, OK. Wondering if the protection circuit is defective. If the diode is shorted for example it may be killing the supply that connects to the backed up RAM...

Removing the Power Meter RAM Battery (BT1)

- 1.Remove the A2 processor assembly as described on page 5-
- 10.2.Remove the A2J1 link to disconnect the battery from the rest of the circuitry.
- 3.**Verify the battery protection circuitry by ensuring that there are no electrical short circuits across the battery terminals; ensure that there are no voltages present which could apply a charging voltage.**
- 4.Once the protection circuit has been verified remove the battery. The battery is siliconed to the assembly. It may be necessary to remove it using a scalpel.
- 5.Store the battery individually in an anti-static (dissipative) bag or suitable non-conductive packaging.
- 6.After replacing the battery secure it using a tie wrap. This should be secured from the top of the A2 processor assembly. The recommended tie wrap part number is 1400-1154.
- 7.Replace the A2J1 link.

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2019-05-19  (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/96598>)

Hi Mark,

I have installed a new battery and checked to make sure that the protection diode (CR3) was not shorted.

Any idea if the MAX703 chip (U1) has a history of going bad?

Tom

Tom

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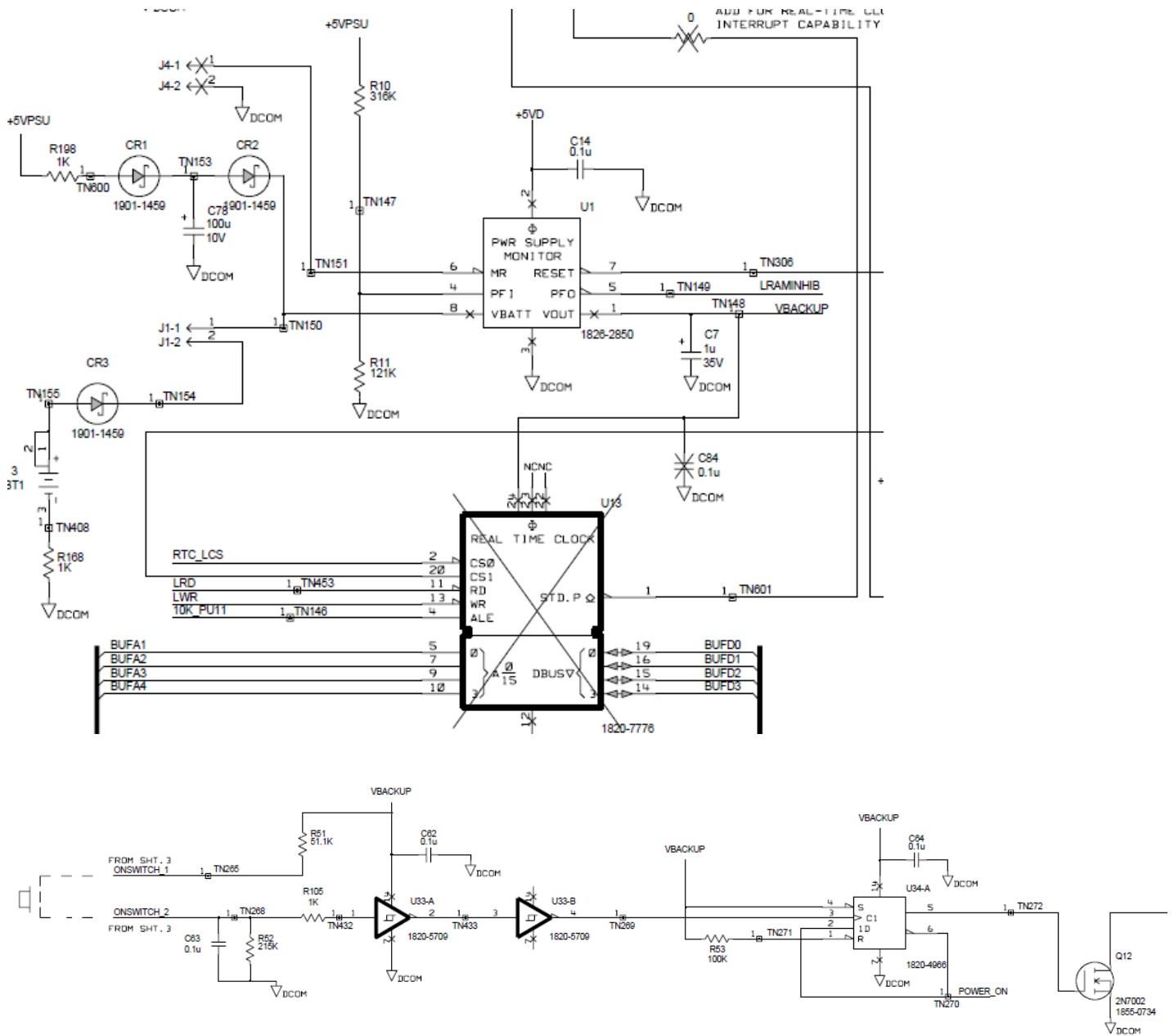
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Mark Bielman (/g/HP-Agilent-Keysight-equipment/profile/502679)

2019-05-19 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/96599)

No clue on U1 history but certainly possible. Looks like VBACKUP powers the line switch as well.



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Tom B

2019-05-19 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/96602)

Hi Mark,

Thanks. I measured the input to the Schmitt trigger and it only going to 0.8V when the button is pushed. From that, the problem could be R51, R105, or the switch. Fortunately there is a CLIP available that shows part locations.

Tom

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amirb

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96606\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96606)

I think this is yet another case of the very well known power switch failure on these units which is due to the bad membrane keypad many of these units develop this problem over time specially with ON/OFF button and as far as I know it is not repairable. I know you might say it depends on the backup battery so it must be something in the circuit but I have seen so many of these units with the same failure which by the way might show different symptoms but in the end it turns out to be the keypad

just try to make the ONSWITCH connection manually using a say 100 ohm resistor directly touching the two pins when the keypad connector is disconnected or keypad removed

the chinese cloned replacement keypads on ebay work fine though

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Tom B

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96607\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96607)

Hello Amir,

I measured the switch resistance and it is 60 Ohms which is about right for that type of switch. I will try what you suggest next.

I also checked all the resistors in the chain and they are all OK. That leaves the power switch or the 74HC14 Schmitt trigger as the problem.

Tom

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Chuck Harris

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96609\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96609)

Or, maybe an electronic failure is causing the operator to destroy the membrane keyboard?

Correlation is not equal to causation.

My take on it is, an electronic failure compells the user to get Neanderthal on the power button, thus breaking it.

I too have seen lots of failed membrane type power buttons, but I also have noticed that my initial reaction to a power button not working is to press it even harder... and to press it a lot of times.... with feeling.

I do this, even though I know that when the button is working properly, it only takes the lightest touch...

Broken electronics can lead to broken membrane power buttons.

-Chuck Harris

amirb wrote:

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 Chuck Harris

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96610\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96610)

Have you measured the power coming out of the Maxim power controller IC? Specifically at the power terminals to the schmitt trigger?

If it is changing voltage as you change between with lithium cell, and without lithium cell, it could be the problem.

-Chuck Harris

Tom B wrote:

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 Tom B

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96612\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96612)

Hi Chuck,

Vout on the MAX chip is about 4.7 with the power plugged in and 2.9 with the power disconnected. I think that is working.

I did not try it without the lithium cell. What would you expect to happen?

I jumpered the switch as Amir suggested but that did nothing.

It is looking more like a bad Schmitt trigger to me. Is it common for a 74HC14 Schmitt trigger to fail?

Tom

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 Chuck Harris

2019-05-19 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/96614\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/96614)

Hi Tom,

The problem, as I understand it, is that when the lithium cell is installed, the power button doesn't work, and when the lithium cell is removed, the power button does work.

I think you will find that the power driving the power switch electronics, specifically around the schmitt trigger, changes between those two conditions.

-Chuck Harris

Tom B wrote:

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2019-05-19 <https://groups.io/g/HP-Agilent-Keysight-equipment/message/96615>

amirb

just to make sure again, the keyboard must be disconnected totally and then "momentarily" connect TN265 and TN268 points (on schematics) by a 100 ohm resistor or even piece of wire. Note the RS flip flop needs a falling edge clock to change state as you do the above test, monitor the output of the RS flip flop (pin 5 of U34)

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2019-05-19 <https://groups.io/g/HP-Agilent-Keysight-equipment/message/96617>

Tom B

Hi Chuck,

When the lithium battery is removed it will power up upon connecting the AC power. While is still plugged into AC it will turn off once, but will not turn back on.

At the input to the Schmitt trigger, with the instrument in standby mode, it is sitting at 0V. When the power button is pressed the voltage at the Schmitt trigger input goes up to 0.8V. The output of the Schmitt trigger should go to 0V but is only drops a few 10ths of a Volt.

The input of the Schmitt trigger is connected to a voltage divider 51k/215k in series with a 1k. I would expect the input current to be very low (microA) and but the voltage to be a little bit higher than 0.8V. Does this sound correct?

Tom

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2019-05-19 <https://groups.io/g/HP-Agilent-Keysight-equipment/message/96618>

Tom B

Hello Amir,

That will take more time than I have today. It will probably be a few days before I can get back to it.

I did measure resistance with the keyboard connected. Withe the switch out it measured infinite and the switch in it is 60 Ohms.

Tom

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2019-05-20 <https://groups.io/g/HP-Agilent-Keysight-equipment/message/96664>

nigel adams

Replace thw battery...

Sent from Samsung by banging a nail into a piece of wood.

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- 20 of 40 > (https://groups.io/g/HP-Agilent-Keysight-equipment/topic/e4418b_won_t_power_on/31675429?p=Created%2C%2C%2C20%2C1%2C20%2C0&next=1)

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→ (<https://groups.io/g/HP-Agilent-Keysight-equipment/topic/92447078?p=%2C%2C%2C20%2C0%2C0%2C0%3A%3A%2C%2C%2C0%2C0%2C0%2C92447078>)