

Re: Measuring the resistance of a hot resistor

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- *From:* Ross Herbert <rherber1@xxxxxxxxxxxxxxxx>
 - *Date:* Wed, 28 Feb 2007 02:58:37 GMT
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On Tue, 27 Feb 2007 04:58:25 -0800, MassiveProng
<MassiveProng@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote:

On Tue, 27 Feb 2007 08:56:25 GMT, Ross Herbert
<rherber1@xxxxxxxxxxxxxxxx> Gave us:

On 27 Feb 2007 03:56:59 GMT, Puckdropper <puckdropper@xxxxxxxx>
wrote:

Ross Herbert <rherber1@xxxxxxxxxxxxxxxx> wrote in
<news:3567u2lhr1e8jkggvab1pci17irp33t0bq@xxxxxxxx>:

snip

I agree with everything you say...

However, we are talking about a simple
resistor. You don't need

all

of

the fancy tests which cost more than a new
resistor in order to
determine if it is faulty in some way. It
would be far quicker,

easier

and cheaper to simply chuck out the old
resistor and replace it.

This

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would be the most reliable method of fault determination in this

case.

The question is, how do you know the new resistor isn't just as

faulty?

Firstly, it would be advantageous to know if the original resistor

was

new or pulled from the spare parts box.

The OP just said it was a 100W "old wound cement"

WHICH ARE NOT CHEAP.

The OP was trying to determine why his readings in his unexplained circuit were variable particularly when the resistor was hot. He didn't say what was the function of the circuit in which this resistor was fitted, but since it was a 2 ohm 100W unit one would assume the circuit was for some practical purpose. If you are building a circuit with this sort of component it implies you have some intended use or purpose for it and you wouldn't just pluck an old 2 ohm 100W resistor out of somewhere and use it unless you were anticipating some hefty current. It sounds to me as if the circuit wasn't behaving as expected and he determined that the 100W resistor might be the cause of the problem.

The OP just wanted to know why the variance in his readings when measuring the cold Vs hot resistance and a number of practical suggestions as to how he could do that have been made. I simply suggested an easy method which didn't require anything other than a DMM which would give him a good idea whether he was on the right track or not and you responded in a negative manner which basically pooh-poohed the idea.

I have no argument against using the DC voltage/current measurement

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principle and it can be extremely accurate. However, in order to achieve good accuracy when measuring a 2 ohm 100W resistor when hot it is necessary to have a stable, low impedance source of current capable of at least 5–6A in order to heat the 100W resistor sufficiently (ie. need to dissipate at least 50W in order to get it hot enough). You also need a meter for measuring current and another for measuring voltage, each with good resolution and low error tolerances in order to produce meaningful results when dealing with measurements on low resistance circuits. These items may or not be in the possession of the OP (he hasn't said so).

However, if he has access to a good quality DMM such as a Gossen MetraHit 25S (now superseded, but it's what I use) http://www.gossenmetrawatt.com/resources/zz_tam/hit22-26m/db_gb.pdf or similar – as long as it has a ZERO ohms cancellation function, you can get very good results by direct reading.

You conveniently snipped my suggested possible cause for variance in his initial readings and made no comment on it. If the said resistor was a slider type (OP doesn't say exactly what type he is using) the wire might have been damaged by over-tightening the slider or some other abuse, thus leading to errors especially when hot.

A little more explanation from the OP might be helpful.

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