

Re: Isolation transformer

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- *From:* Jamie <jamie_kallpa_not_valid_after_kallpa_@xxxxxxxxxxx>
 - *Date:* Sun, 06 May 2007 11:53:33 -0400
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spamfree@xxxxxxxxxxx wrote:

On Sat, 5 May 2007 12:46:59 +0100, "Andrew Holme" <andrew@xxxxxxxxxxx> wrote:

<spamfree@xxxxxxxxxxx> wrote in message
news:v12o33tslue4l3ejsh35knts2b4gbbjnra@xxxxxxxxxxx

I'm trying to find out why these are used as safety precautions in servicing mains connected equipment. Seems to me that not being electrically connected to the mains is a moot point. Surely the pole transformer isolates me from the generating dynamo at the power station, but my outlet can surely still kill me. Induced currents can surely be as dangerous as directly conducted currents?

Wikipedia states under this heading:

"In electronics testing, troubleshooting and servicing, an isolation transformer is a 1:1 power transformer which is used as a safety precaution. Since the neutral wire of an outlet is directly connected to ground, grounded objects near the device under test (desk, lamp, concrete floor, oscilloscope ground lead, etc.) may be at a hazardous potential difference with respect to that device. By using an isolation transformer, the bonding is eliminated, and the shock hazard

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is entirely contained within the device."

Why would things connected to the same ground have dangerous potential differences from that ground?
Could some kind soul 'splain this to me, please?

jack

If you put your fingers between live and neutral you get zapped. But neutral is locally connected to ground, and your body has at least some capacitance to ground, so you are connected to neutral via ground. If you touch live, it completes the circuit. Isolation transformer neutral is not connected to ground.

Thanks Andrew.

Sorry, I still don't get it. How does the floating neutral of an isolation transformer help in one's safety? You still get a shock if you touch live and are in any way connected to earth. Surely, however you place yourself between a high potential and a low one is rather immaterial. If you allow electrons to be pushed through your body with more than about 80V, you are flirting with death? I understand the worst case (where an earth leakage won't protect you) is to hold the live/active wire in one hand and the neutral in the other. That is almost certain death in Australia (240V single phase). Even worse to do it with two phases of a three phase supply (415V). Does an isolating transformer perhaps only ground a live chassis with a non-polarised, non-earthed supply? jack

ps could you explain that "capacitance to ground"? I would have expected "electrical connection to ground". But then I'm on the steep learning curve :)

If you isolate the device from the line via a transformer then, connect the chassis to a real ground. it will protect you in the handling of the device.

years ago, old things like radio's used the line voltage directly with a non polarized plug, one side was normally connected to the chassis.

If you didn't first test the condition, you could get knock on your butt.

By using a Isolated transformer, you can simply connect the chassis to a real earth ground after it, with out any problems of line shorting..

This way, you were protected with a real ground and don't take any chances of causing a line short..

P.S.

Take note that many do not know the difference between and autotransformer and a real isolated transformer.. You do not want to use an auto transformer..

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"I'm never wrong, once i thought i was, but was mistaken"

Real Programmers Do things like this.

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