Re: Lahman, how ya doing?

Source: http://coding.derkeiler.com/Archive/General/comp.object/2005−05/msg00273.html

- *From*: glhansen@xxxxxxxxxxxxxxxxxxxx (Gregory L. Hansen)
- *Date*: Sat, 21 May 2005 00:37:27 +0000 (UTC)

In article <9_qje.11131$Y36.5049@trndny05>,
H. S. Lahman <hsl@xxxxxxxxxxxxxxxx> wrote:
>Responding to Hansen...
>
>>>>>Is there any software at all involved in producing the delta V? If not,
>>>>>then this doesn't seem interesting to the simulation because it will all
>>>>>be replaced by your heat flow calculation that produces the delta V. (I
>>>>>had that heat flow calculation living in Target and responding to the E1
>>>>>event.)
>>>>
>>>>
>>>>No software at all in producing delta V, it's just something read out over
>>>>the GPIB.
>>>
>>>So when you say, "Input is temperature, output is a voltage difference"
>>>you mean the hardware is observing a temperature and presenting its
>>>value as a delta−V, right? Does the feedback control processing deal
>>>directly in delta−V values or is a software driver converting the
>>>delta−V to a temperature as it is sampled and before it is processed?
>>
>>
>> It's a raw delta−V. Our thermometers aren't calibrated, so we don't know
>> exactly what the temperature is, anyway. We just need to keep delta−V
>> near zero. Even better is that the thermometer is in an AC bridge with a
>> ratio transformer on the warm end. Switching the transformer changes the
>> setpoint, but it also changes dV/dT.
>>
>> As if that's not enough, when a control action is calculate, the program
>> takes the square root of the result and outputs it as a voltage. That
>> makes the output linear in power, since P=V^2/R. But the output isn't
>> really a power. It goes through an attenuator which reduces the size of
>> the finite voltage steps of the DAC, through a shunt resistor, through the
>> heater resistor... you can't know what the actual power is unless you run
>> through the chain and work it out. The controller just puts out a number.
>
>One of the problems I am having in understanding this is that I don't
>know what is hardware and what is software in the real controller and
>how they interact. So far my guess is (in order of appearance):
>

>Thermometer: HW
>AC Bridge: HW
&