Communication with TI support regarding temperature reading on PDB

Philippe Dollo 1:26 PM
Following up on that question, I believe we actually *can* support your request. However, the question I was getting from the team was about what application you are doing. Since we need to rebuild the firmware to support adding the Thermistor LUT, it's good to make sure we are doing it on the right chipset for your application.

Mar 26, 2021

Ivo Strasil 4:29 AM
Our application is projection module for sewing machines. Projection module is in enclosed space with dedicated fan controller. We need temperature data to adjust the fan speed to limit noise output.

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All we need is any way to read thermistor value. It does not have to be converted to celsius, we can handle raw ADC value and do conversion on our side.

Philippe Dollo 8:33 AM
Ivo,

Thanks, that makes sense. If you are using a dedicated, embedded display application like that the DLPC3435 should be a good choice for you.

Ultimately, the reason we have to rebuild the firmware is because the thermistor LUT is not built in by default in the latest build. The "read temperature" command (D4) consults the LUT to compute the temperature readout based on the user's choice of thermistor. Since the LUT is not installed on your firmware you are getting zero returned to you over I2C.

If you are using the same components as the DLPDLCR3010EVM-G2, then I can generate a LUT and rebuild the firmware to support it based on those values. If you modified the components, it looks like I would need the B-Constant, Thermistor R, and Divider R of your network to generate a new LUT for you.

Just to clarify, I have to put in a LUT myself regardless, as there is not built-in support in the firmware for the default thermistor value. I also am not aware of a built-in method to ignore the LUT entirely.

I should be able to get you a firmware build to try by early next week. Let me know if you have any other questions in the meantime.

Best Regards,

Philippe

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Yes, we use same components. I have just double-checked. The only difference is that we do not use GPIO11_THERM_PWR and our divider is connected directly to 3v3 (always ON).

Thank you.

Philippe Dollo 11:52 AM
Ivo,

Thanks for the update. I'll let you know as soon as I have a firmware build for you to try.

- Philippe

Philippe Dollo 12:31 PM
Ivo,

Can you share an email address you have associated with TI.com to me? I will need it to deliver firmware to you over a secure link.

Mar 30, 2021

Ivo Strasil 3:57 AM

Email for this account is ivo@strasil.net, is this what you require?

Philippe Dollo 10:32 AM
Ivo,

Yes, that's correct. I just granted you access to Temp Folder A on mySecureSoftware. You should get an access notification email to that address within the next hour. After this, you can access the download link via the portal here:

https://www.ti.com/securesoftware/docs/securesoftwarehome.tsp

I uploaded a thermistor-enabled firmware for you to try here. I was getting a good reading off of the thermistor register, so hopefully you will get something good too. If you get a reading but it is the wrong offset I can adjust that for you if you don't want to add extra logic for your frontend. Just let me know.

Best Regards,

Philippe

Mar 31, 2021

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Thank you, i have downloaded this firmware but unfortunately it is way to big. We are limited by 2MB flash memory. However, we are also limited by production flashing time. Current firmware we are using is only 700kB in size.

Currently i am only able to test firmware images up to 2MB in size.

Philippe Dollo 10:15 AM
Ivo,

Let me see if I can shrink down the firrmware image for you. Will post back here soon.

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Ivo,

I just uploaded a new firmware image built to fit within 700k onto mySecure. The page you accessed earlier should be updated with a new link within the next hour or so.

Apr 1, 2021

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Hello,

I have tested this firmware and it does not seem to work at all. It does not even show on I2C bus.

I was a bit confused about dpp3439 in the name. We actually use DLPC3435 and DLPA2005.

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Ivo,

Let me double check my build. I may have used the wrong settings and given you a firmware for a different platform by accident. If so, I apologize.

If that is the case I shall upload a new firmware for you ASAP today.

Philippe Dollo 2:09 PM
Ivo,

New FW build was just uploaded to the mySecure Server in the same place. Made sure it was for the DLPC3435 this time. 🙂

I also removed the splash screens to ensure it stayed within the 700kb size you need for your system. Note that the system boots up to a checkerboard TPG instead because of this.

I loaded the FW on a live 2010-based system to verify that the thermistor was working. Let me know if you encounter any difficulties loading the firmware.

Thanks again for your patience.

Best Regards,

Philippe

Apr 6, 2021

Ivo Strasil 6:52 AM

Hello,

I am now able to measure something. It is not a temperature though. If i replace thermistor with potentiometer i can see that value is changing.

I have measured PWM_IN pulse and it seems to peak only at 1.67V, i am not sure this is correct.

Just to make sure:

Our RC_CHARGE resistor is 300Ω and capacitor is 100nF.

Philippe Dollo 9:59 AM

Ivo,

Can you elaborate? It sounds like you are saying the reading is not varying with the temperature of the system. Is that right?

Can you share your schematic?

Apr 16, 2021

Ivo Strasil 5:49 AM

Hello,

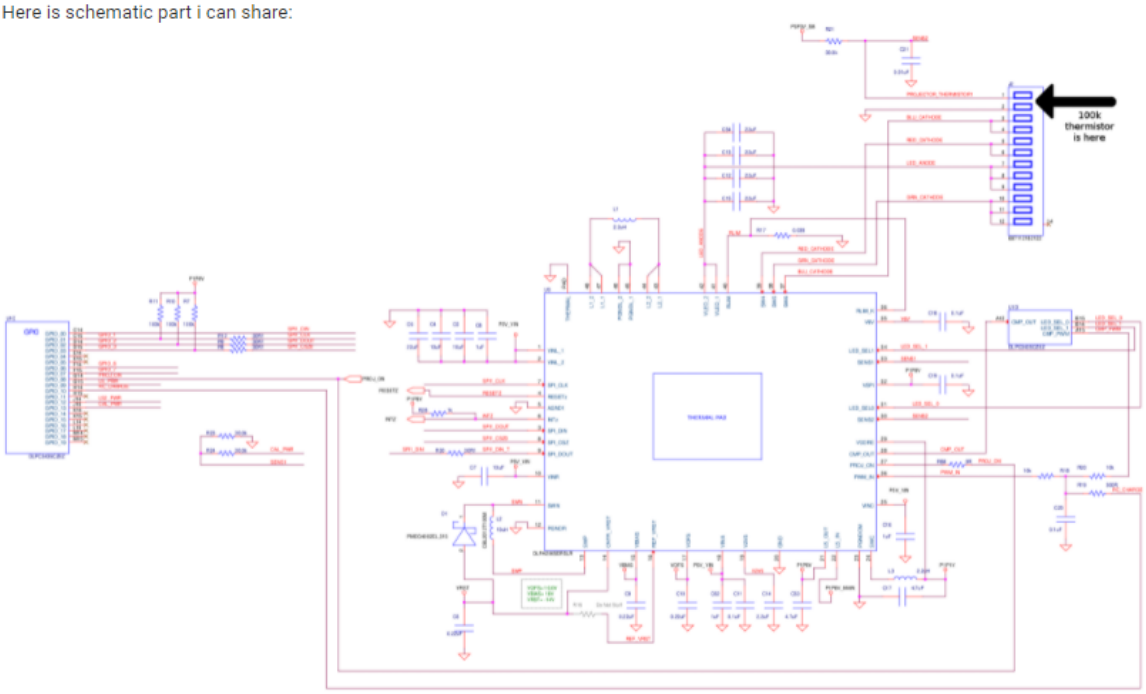
The issue is that tables you provided do not work with 30kΩ resistor and 100kΩ thermistor at 3v3.

Expected voltage for 100kΩ thermistor with this divider configuration is about 2.5 V. This is way above 1.67 V peak i can measure using oscilloscope at PWM_IN.

If i replace thermistor with 50kΩ variable resistor, i can see values changing, until i exceed RC peak voltage for comparator.

Also, i have one request. Can you please configure firmware so it defaults to RGB input, instead of checker board? Thank you.

Here is schematic part i can share:



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Ivo,

Thanks for your summary, that makes sense.

I believe we should be able to update the thermistor curve on your system to be more accurate. As for the input settings it is possible to change the default boot mode to parallel DPI input if you are interested.

Will need a few days before we can deliver that to you. Thanks ahead for your patience.

Ivo Strasil 4:14 AM

Hello,

We would appreciate default boot mode set to parallel DPI.

Thank you for your support.

Apr 20, 2021

Philippe Dollo 11:55 AM

Ivo,

I understand. We will need some time before we can deliver on this. Will try to keep you posted as we make progress.

Best Regards,

Philippe

May 3, 2021

Philippe Dollo 4:06 PM

Ivo,

Thanks for your patience during the long delay.

I went ahead and uploaded a new FW version to mySecure which boots the chipset to external video mode. As for your thermistor issue, I'm afraid that 3.3v drive for the thermistor circuit is not supported. You need to provide a 1.8V Thermistor Power rail (typically, this is done via the DLPC3435's GPIO) so that the comparator input does not saturate.

I hope this helps.

Best Regards,
Philippe

May 4, 2021

Ivo Strasil 5:26 AM

Thank you for reply and for new firmware. This will help us a lot.

I do not think i have any additional questions or requests.

I will check this firmware out as soon as i can.

Same text as above, just copied as plain text and not screenshots.

- Ivo Strasil
  Hello, i am ready for further assist with temperature sensor.
    - 2:31 PM
- 
- Philippe Dollo
  Ivo,
  Apologies for the delay. I was able to reach out to the team about this (supporting custom LUTs

for the thermistor) and it looks like this feature is no longer supported.
I apologize for the inconvenience.
Regards,
Philippe Dollo

- Mar 25, 2021
  - 4:55 AM
  - More

- Ivo Strasil
  Oh, that is not a good news for us. Is there any chance to get temperature reading working? Either with minimal hardware changes or older firmware?
  - 11:20 AM

- Philippe Dollo
  Ivo,
  - 11:20 AM

- Philippe Dollo
  Let me see what I can do for you. I might need a couple of days to inquire further with the team.
  - 1:19 PM

- Philippe Dollo
  Ivo, can you share what your application is here?
  - 1:26 PM

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