Reading the Built-In FraunchPad Thermometer

1.01

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Contents

Chapter 1

FraunchPad NTC Thermometer

Simple sketch for the built-in FraunchPad NTC

Developed with `embedXcode`

Author

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Date

Oct 08, 2012

Version

101

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See Also

- Table algorithm by larsie — Tue Apr 03, 2012 1:18 pm

  `http://www.43oh.com/forum/viewtopic.php?f=10&p=18608#p18608`

- NTC table generated with TDK / Epcos NTC R/T Calculation 5.0

  `http://www.epcos.com/designtools/ntc/index.html`

  Select B57560G1104 for NTC 100 k = 25 oC

  with temperature scaling = 5 oC, lower limit = -25 oC and upper limit = + 75 oC

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 4

Class Documentation

4.1 NTC_FR Class Reference

Temperature NTC on FraunchPad.

```
#include <FraunchPad_NTC.h>
```

Public Member Functions

- NTC_FR ()

  Constructor.
- void begin ()

  Initialisation.
- String WhoAmI ()

  Who am I?
- void get ()

  Acquire temperature.
- void celsiusX10 (int32_t &t)

  Return temperature in degrees celsius, X10 to avoid float.
- void fahrenheitX10 (int32_t &t)

  Return temperature in degrees fahrenheit, X10 to avoid float.

4.1.1 Detailed Description

Temperature NTC on FraunchPad.

4.1.2 Member Function Documentation

4.1.2.1 void NTC_FR::celsiusX10 (int32_t & *t*)

Return temperature in degrees celsius, X10 to avoid float.

```
Serial.print(x/10, DEC);     // integer part
Serial.print(".");           // decimal separator
Serial.print(x%10, DEC);     // decimal part
```

Parameters

t	temperature in degrees celsius

4.1.2.2   void NTC␣FR::fahrenheitX10 (int32␣t & *t*)

Return temperature in degrees fahrenheit, X10 to avoid float.

```
Serial.print(x/10, DEC);     // integer part
Serial.print(".");           // decimal separator
Serial.print(x%10, DEC);     // decimal part
```

Parameters

t	temperature in degrees celsius

4.1.2.3   void NTC␣FR::get ( )

Acquire temperature.

Note

> Call this function prior to degreeX10 or fahrenheitX10

4.1.2.4   String NTC␣FR::WhoAmI ( )

Who am I?

Returns

> Who am I? string

The documentation for this class was generated from the following files:

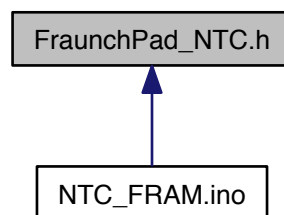- FraunchPad_NTC.h
- FraunchPad_NTC.cpp

Chapter 5

File Documentation

5.1 FraunchPad␣NTC.h File Reference

Library header.

This graph shows which files directly or indirectly include this file:

Classes

- class NTC_FR

    Temperature NTC on FraunchPad.

5.1.1 Detailed Description

Library header.

Project FRAM_TEMP

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  Select B57560G1104 for NTC 100 k = 25 oC

  with temperature scaling = 5 oC, lower limit = -25 oC and upper limit = + 75 oC

5.2 NTC_FRAM.ino File Reference

Main sketch.

```
#include "FraunchPad_NTC.h"
```
Include dependency graph for NTC_FRAM.ino:
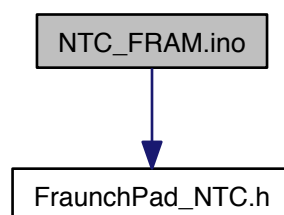
Functions

- void printX10 (int32_t i)

  Print for value X10.
- void setup ()

  Setup.
- void loop ()

  Loop.

Variables

- int32_t temperature

     temperature X10
- NTC_FR myNTC

     NTC.

5.2.1   Detailed Description

Main sketch.

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See Also

ReadMe.txt for references

5.2.2   Function Documentation

5.2.2.1   void printX10 (int32_t *i*)

Print for value X10.

Parameters

i	value X10

Index

NTC R/T Calculation 5.0

Type	= G1560/100k/+2	Ordering code	= B57560G1104G002
R/T characteristic	= 8304	B(25/100)	= 4092.0 [K] Â± 1.0%
R at 25°C	= 100000.0 [Ω]	R nom at 25°C	= 100000 [Ω] Â± 2.0%

T[°C]	R nom[Ω]	R min[Ω]	R max[Ω]	ΔR/R [+-%]	ΔT [+-°C]	α [%K]
-25	1344300	1279500	1409000	4.8	0.8	6.0
-20	998530	953700	1043400	4.5	0.8	5.9
-15	748670	717400	779940	4.2	0.7	5.7
-10	566360	544420	588310	3.9	0.7	5.5
-5	432120	416630	447610	3.6	0.7	5.3
0	332400	321410	343390	3.3	0.6	5.2
5	257690	249860	265520	3.0	0.6	5.0
10	201270	195680	206860	2.8	0.6	4.9
15	158340	154340	162340	2.5	0.5	4.7
20	125420	122550	128280	2.3	0.5	4.6
25	100000	98000	102000	2.0	0.4	4.5
30	80239	78413	82066	2.3	0.5	4.3
35	64776	63159	66392	2.5	0.6	4.2
40	52598	51174	54022	2.7	0.7	4.1
45	42950	41699	44201	2.9	0.7	4.0
50	35262	34164	36359	3.1	0.8	3.9
55	29100	28138	30062	3.3	0.9	3.8
60	24136	23293	24978	3.5	0.9	3.7
65	20114	19376	20853	3.7	1.0	3.6
70	16841	16193	17490	3.8	1.1	3.5
75	14164	13594	14733	4.0	1.2	3.4