ThermoAppC.nc

configuration ThermoAppC{

}

implementation{

components

HplMsp430GeneralIOC,

new Msp430GpioC() as SO,

new TimerMilliC() as Timer0,

BusyWaitMicroC,

ThermoC,

LedsC,

MainC;

ThermoC -> MainC.Boot;

ThermoC.Leds -> LedsC;

ThermoC.MISO -> SO.GeneralIO;

SO -> HplMsp430GeneralIOC.Port26; //ADC1

ThermoC.Timer0 -> Timer0;

ThermoC.BusyWait0 -> BusyWaitMicroC;

}

ThermoC.nc

#include "printf.h"

module ThermoC{

uses interface GeneralIO as MISO;

uses interface Boot;

uses interface Timer<TMilli> as Timer0;

uses interface BusyWait<TMicro,uint16\_t> as BusyWait0;

uses interface Leds;

}

implementation{

event void Boot.booted() {

TOSH\_SEL\_ADC1\_IOFUNC(); //\_CS

TOSH\_MAKE\_ADC1\_OUTPUT();

TOSH\_MAKE\_GIO2\_OUTPUT(); //SCK

//call MISO.makeInput();

TOSH\_MAKE\_GIO3\_INPUT(); //SO

TOSH\_SET\_ADC1\_PIN(); //\_CS=1

call Timer0.startPeriodic(2000);

}

uint8\_t spiread() {

int i;

uint8\_t d = 0;

for (i=7; i>=0; i--)

{

TOSH\_CLR\_GIO2\_PIN(); //SCK=0

call BusyWait0.wait(1000);

if (call MISO.get()) {

d |= (1 << i);

}

TOSH\_SET\_GIO2\_PIN(); //SCK=1

call BusyWait0.wait(1000);

}

return d;

}

uint16\_t readVoltage() {

uint16\_t v;

TOSH\_CLR\_ADC1\_PIN(); //\_CS=0

call BusyWait0.wait(1000);

v = spiread();

v <<= 8;

v |= spiread();

TOSH\_SET\_ADC1\_PIN(); //\_CS=1

return v;

}

event void Timer0.fired() {

uint16\_t v = readVoltage();

uint16\_t f = 100\*0.25\*(v >> 3); //Celsius\*100

printf("%u %u\n",v,f);

printfflush();

call Leds.led0Toggle();

}

}