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#define <p16f873>
#include <delays.h>
#include <stdio.h>
#include <stdlib.h>

// shortcut definition

#define Temp_ok           portb.7 //temperature is good
#define Temp_nok         portb.6 //temperature is not good
#define Pressure_ok      portb.5 //pressure is good
#define Pressure_nok     portb.4 //pressure is not good
#define short_circuit_GND portb.3 //short circuit GND
#define short_circuit_supply portb.2 //short circuit supply
#define ill              portb.1 //sensor is ill
#define open_circuit     portb.0 //open circuit
#define battery_output    portc.7 //battery
#define sensor_pressure_input porta.0 //pressure signal sensor
#define sensor_temp_input porta.1 //temperature signal sensor
#define battery_input     porta.5 //signal battery

//constant and variable declaration

unsigned double sensor_output,sensor_pressure_input,sensor_temp_input;
unsigned double s1,s2,s3,s4,s5;

void main ()
{
    // initialization (we initialize all variable)
    failure=0;
    short_circuit_supply=0;
    short_circuit_GND=0;
    Pressure_nok=0;
    Pressure_ok=0;
    Temp_nok=0;
    Temp_ok=0;
    open_circuit=0;
    battery_output=0;
}
while (1)
{
    // Analog Digital Conversion configuration
    {
        ADFM=1; //Left justified

        Result.low8=ADRESH //to retrieve only 16-Bits word instead 2 8-
bits word
        Result.hight=ADRESSL // to retrieve only 16-Bits word instead 2 8-
bits word

        PDCF0=0; // enable to config pin like analog or digital input with
this config AN0=AN1=AN4=analog input
        PDCF1=0; // enable to config pin like analog or digital input
        PDCF2=0; // enable to config pin like analog or digital input
        PDCF3=1; // enable to config pin like analog or digital input

        ADCS1=0 // bit which enable to choose frequency for ADC
        ADCS0=1 // bit which enable to choose frequency for ADC
    }
}

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CHS2=0 //bit which enable to select analog input to convert
CHS1=0 //bit which enable to select analog input to convert
CHS0=0 //bit which enable to select analog input to convert

GO/DONE=1 //bit which launch conversion
ADON=1 // Actuate ADC

GO/DONE=0 //bit which switch off conversion

ADON=0 // Switch off ADC
}
// level definition

0<s1<0,2 // s1= short circuit GND
0,2<s2<1,8 // s2=ill
1,8<s3<2,2 // s3= good sensor
2,2<s4<3,15 // s4=ill
3,15<s5<3,55 // s5=open circuit
3,55<s6<4,8 // s6=ill
s7<4,8 // s7=short circuit supply

//level pressure comparaison
if (sensor_temp_input=s1) //if the voltage level is between 0V and 0,2V
{
    portb.7=0; //temperature is good
    portb.6=1; //temperature is not good
    portb.3=1; //short circuit GND
    portb.2=0; //short circuit supply
    portb.1=0; //sensor is ill
    portb.0=0; //open circuit
}

else if (sensor_temp_input=s2) //if the voltage level is between 0,2V
and 1,8V
{
    portb.7=0; //temperature is good
    portb.6=1; //temperature is not good
    portb.3=0; //short circuit GND
    portb.2=0; //short circuit supply
    portb.1=1; //sensor is ill
    portb.0=0; //open circuit
}

else if (sensor_temp_input=s3) // if the voltage level is between 1,8V
and 2,2V
{
    portb.7=1; //temperature is good
    portb.6=0; //temperature is not good
    portb.3=0; //short circuit GND
    portb.2=0; //short circuit supply
    portb.1=0; //sensor is ill
    portb.0=0; //open circuit
}

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    }

    else if (sensor_temp_input=s4) // if the voltage level is between 2,2 V
and 3,15V
    {
        portb.7=0;    //temperature is good
        portb.6=1;    //temperature is not good
        portb.3=0;    //short circuit GND
        portb.2=0;    //short circuit supply
        portb.1=1;    //sensor is ill
        portb.0=0;    //open circuit
    }

    else if (sensor_temp_input=s5) // if the voltage level is between 3,15V
and 3,55V
    {
        portb.7=0;    //temperature is good
        portb.6=1;    //temperature is not good
        portb.3=0;    //short circuit GND
        portb.2=0;    //short circuit supply
        portb.1=0;    //sensor is ill
        portb.0=1;    //open circuit
    }

    else if (sensor_temp_input=s6) // if the voltage level is between 3,55V
and 4,8V
    {
        portb.7=0;    //temperature is good
        portb.6=1;    //temperature is not good
        portb.3=0;    //short circuit GND
        portb.2=0;    //short circuit supply
        portb.1=1;    //sensor is ill
        portb.0=0;    //open circuit
    }

    else if (sensor_temp_input=s7) // if the voltage level is "superieur à "
4,8V
    {
        portb.7=0;    //temperature is good
        portb.6=1;    //temperature is not good
        portb.3=0;    //short circuit GND
        portb.2=1;    //short circuit supply
        portb.1=0;    //sensor is ill
        portb.0=0;    //open circuit
    }
}

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