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/*****
/* Program      : 1306SPI.H
/* Function     : SPI Real Time Clock Procedures Header File
/* Author      : John F. Fitter B.E.
/*
/*             The procedures communicate with the real time clock via the hardware
/*             spi facilities.
/*             The rtcc is also used as nvram for controller settings.
/*
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*****/

#ifndef _1306SPI_H
#define _1306SPI_H

// Hardware defines
#define DS1306PORT    PORTE           // port for 1306 enable
#define DS1306DIR     TRISE           // direction reg for 1306
#define DS1306PIN     2              // port pin for 1306 enable

// 1306 register map
#define SECONDS_1306    0
#define MINUTES_1306   1
#define HOURS_1306     2
#define DAY_1306       3
#define DATE_1306      4
#define MONTH_1306     5
#define YEAR_1306      6
#define SECALARM0      7
#define MINALARM0      8
#define HRALARM0       9
#define DAYALARM0      0x0a
#define SECALARM1      0x0b
#define MINALARM1      0x0c
#define HRALARM1       0x0d
#define DAYALARM1      0x0e
#define CONTROL_1306   0x0f
#define STATUS_1306    0x10
#define TRICKLE_1306   0x11

// 1306 user nvram defines
#define NVRAM_BASE     0x20           // base of user ram
#define NVRAM_TOP      0x7f           // top of user ram

// 1306 control register bits (or together)
#define WP_1306        0x40
#define F1HZ_1306     4
#define AIE1_1306     2
#define AIE0_1306     1

// 1306 status register mask bits
#define IRQF0_1306    1
#define IRQF1_1306    2

// 1306 trickle charger register bits
#define EN_TCHG_1306  0xa0
#define D1_1306       4
#define D2_1306       8
#define R0K_1306      0
#define R2K_1306      1
#define R4K_1306      2
#define R8K_1306      3

// Macros
#define select_1306()    DS1306_ce=B_HIGH;delay_2us() // select the 1306
#define deselect_1306() DS1306_ce=B_LOW;delay_2us()  // deselect the 1306

// Function prototypes
extern void init_1306(unsigned char, unsigned char);
extern void write_1306(unsigned char, unsigned char);
extern unsigned char read_1306(unsigned char);
extern double read_double_1306(unsigned char);
extern void write_double_1306(double, unsigned char);
//extern void copy_eeprom_to_1306(unsigned int, unsigned char, unsigned char);
extern void id_dt_1306(unsigned char, unsigned char);
unsigned char inc_dec(unsigned char, unsigned char, unsigned char, unsigned char);

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```
static volatile bit DS1306_ce @ (unsigned)&DS1306PORT*8+DS1306PIN;  
static bit DS1306_ce_dir @ (unsigned)&DS1306DIR*8+DS1306PIN;  
  
#endif // _1306SPI_H  
  
// ***** EOF 1306SPI.H *****
```