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/*
 * This is the .h file for the PMS7003 sensor
 * This code was written exclusively by MECH 45X Team 26
 */

#include <stdint.h>
#include "WProgram.h"

#define LIB_PM_H
#define FIRST_BYTE 0x42
#define SECOND_BYTE 0x4D
#define SENSOR_OUTPUT_PIN A0
#define MAX_FRAME_LENGTH 64

#define START_TIME 6000
#define SAMPLING_TIME 280
#define SLEEP_TIME 912
#define MAX_READ_COUNT 5
#define MAX_FRAME_SYNC_COUNT 40

class PM_7003 {
    public:
        PM_7003();
        virtual ~PM_7003();
        bool run_PM_sensor(void);
        int getpm(void);

private:
    int current_byte;
    bool sync_state;
    char print_buffer[256];
    uint16_t byte_sum;
    int drain;
    uint16_t current_data;
    float pm_avgpm2_5;
    int pm2_5;

    bool done_reading;
    int read_count;
    int frame_sync_count;

    char frame_buffer[MAX_FRAME_LENGTH];
    int frame_count;
    int frame_length;

    void drain_serial(void);
    void frame_sync(void);
    void read_sensor(void);
    void data_switch(uint16_t current_data);
    void print_messages(void);

    struct PMS7003data {
        uint8_t  start_frame[2];
        uint16_t frame_length;
        uint16_t concPM1_0_factory;
        uint16_t concPM2_5_factory;
        uint16_t concPM10_0_factory;
        uint16_t concPM1_0_ambient;
        uint16_t concPM2_5_ambient;
        uint16_t concPM10_0_ambient;
        uint16_t countPM0_3um;
        uint16_t countPM0_5um;
        uint16_t countPM1_0um;
        uint16_t countPM2_5um;
        uint16_t countPM5_0um;
        uint16_t countPM10_0um;
        uint8_t  version;
        uint8_t  error;
        uint16_t checksum;
```

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70          } packetdata;
71      };
72
73
```