Arduino Real Time Clock

Generated by Doxygen 1.8.9.1

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1.1 Class List

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

2 File Index

2.1 File List

Here is a list of all files with brief descriptions:

3 Class Documentation

3.1 RealTimeClock Class Reference

`#include <RealTimeClock.h>`

Public Member Functions

- virtual unsigned char getSeconds ()=0
- virtual unsigned char getMinutes ()=0
- virtual unsigned char getHour ()=0
- virtual unsigned char getDay ()=0
- virtual unsigned char getDate ()=0
- virtual unsigned char getMonth ()=0
- virtual unsigned char getYear ()=0

3.1.1 Detailed Description

Arduino - Real Time Clock.

Interface for real time clocks.

Author

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 12 of file RealTimeClock.h.

3.1.2 Member Function Documentation

3.1.2.1 virtual unsigned char RealTimeClock::getDate ( ) [pure virtual]

Return the current date.

3.1.2.2 virtual unsigned char RealTimeClock::getDay ( ) [pure virtual]

Return the current day.

3.1.2.3 virtual unsigned char RealTimeClock::getHour ( ) [pure virtual]

Return the current hour.

3.1.2.4 virtual unsigned char RealTimeClock::getMinutes ( ) [pure virtual]

Return the current minutes.

3.1.2.5 virtual unsigned char RealTimeClock::getMonth ( ) [pure virtual]

Return the current month.

3.1.2.6 virtual unsigned char RealTimeClock::getSeconds ( ) [pure virtual]

Return the current seconds.

3.1.2.7 virtual unsigned char RealTimeClock::getYear ( ) [pure virtual]

Return the current year.

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

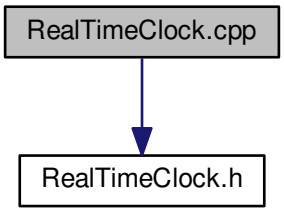
- RealTimeClock.h

4 File Documentation

4.1 RealTimeClock.cpp File Reference

```
#include "RealTimeClock.h"
```

Include dependency graph for RealTimeClock.cpp:

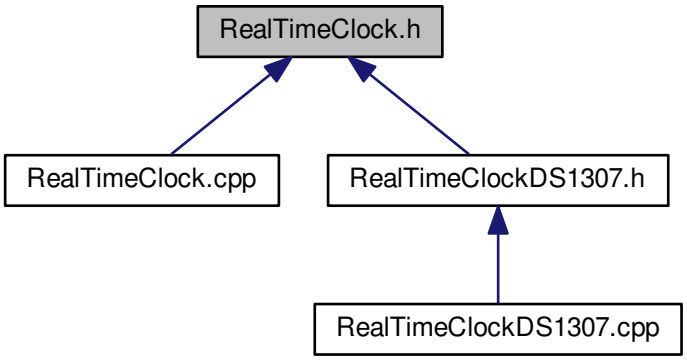


4.2 RealTimeClock.cpp

```
00001 #include "RealTimeClock.h"
```

4.3 RealTimeClock.h File Reference

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



Classes

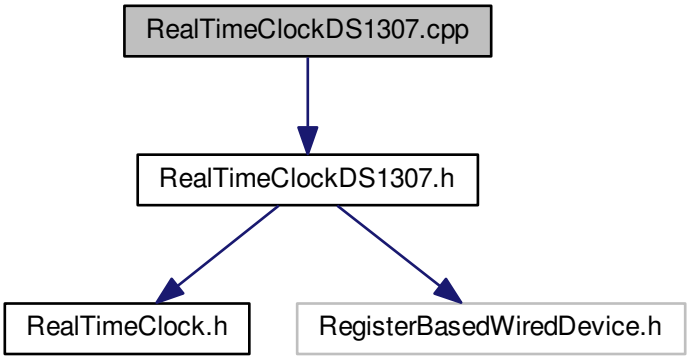
- class RealTimeClock

4.4 RealTimeClock.h

```
00001
00009 #ifndef __ARDUINO_REAL_TIME_CLOCK_H__
00010 #define __ARDUINO_REAL_TIME_CLOCK_H__ 1
00011
00012 class RealTimeClock {
00013
00014 public:
00015
00019     virtual unsigned char getSeconds() = 0;
00020
00024     virtual unsigned char getMinutes() = 0;
00025
00029     virtual unsigned char getHour() = 0;
00030
00034     virtual unsigned char getDay() = 0;
00035
00039     virtual unsigned char getDate() = 0;
00040
00044     virtual unsigned char getMonth() = 0;
00045
00049     virtual unsigned char getYear() = 0;
00050 };
00051
00052 #endif /* __ARDUINO_REAL_TIME_CLOCK_H__ */
```

4.5 RealTimeClockDS1307.cpp File Reference

`#include "RealTimeClockDS1307.h"`
Include dependency graph for RealTimeClockDS1307.cpp:



4.6 RealTimeClockDS1307.cpp

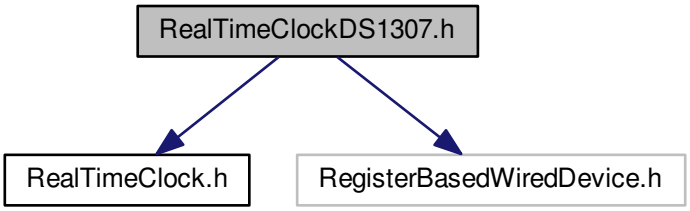
```
00001 #include "RealTimeClockDS1307.h"
00002
00003 RealTimeClockDS1307::RealTimeClockDS1307()
00004         : RegisterBasedWiredDevice(DS1307_ADDRESS) {
00005 }
00006
00007 unsigned char RealTimeClockDS1307::getSeconds() {
00008     SecondsBits bits = {0};
00009     bits.value = readRegister(SECONDS_REGISTER);
00010     return 10 * bits.TEN_SECONDS + bits.SECONDS;
00011 }
00012
00013 unsigned char RealTimeClockDS1307::getMinutes() {
00014     MinutesBits bits = {0};
00015     bits.value = readRegister(MINUTES_REGISTER);
00016     return 10 * bits.TEN_MINUTES + bits.MINUTES;
00017 }
00018
00019 unsigned char RealTimeClockDS1307::getHour() {
00020     unsigned char modeMask = 0x01;
00021     HourBits bits = {0};
00022     bits.value = readRegister(HOURS_REGISTER);
00023     if (bits.MODE_12_24) {
00024         modeMask = 0x02;
00025     }
00026     return 10 * (bits.TEM_HOURS & modeMask) + bits.HOURS;
00027 }
00028
00029 unsigned char RealTimeClockDS1307::getDay() {
00030     DayBits bits = {0};
00031     bits.value = readRegister(DATE_REGISTER);
00032     return bits.DAY;
00033 }
00034
00035 unsigned char RealTimeClockDS1307::getDate() {
00036     DateBits bits = {0};
00037     bits.value = readRegister(DATE_REGISTER);
00038     return 10 * bits.TEN_DATE + bits.DATE;
00039 }
00040
00041 unsigned char RealTimeClockDS1307::getMonth() {
00042     MonthBits bits = {0};
00043     bits.value = readRegister(MONTH_REGISTER);
00044     return 10 * bits.TEN_MONTH + bits.MONTH;
00045 }
00046
```

```
00047 unsigned char RealTimeClockDS1307::getYear() {
00048     YearBits bits = {0};
00049     bits.value = readRegister(YEAR_REGISTER);
00050     return 10 * bits.TEN_YEAR + bits.YEAR;
00051 }
```

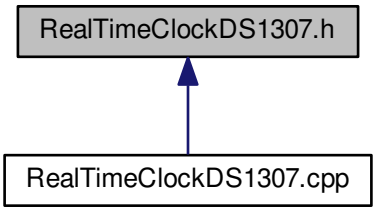
4.7 RealTimeClockDS1307.h File Reference

```
#include <RealTimeClock.h>
#include <RegisterBasedWiredDevice.h>
```

Include dependency graph for RealTimeClockDS1307.h:



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



Macros

- #define DS1307_ADDRESS 0xd0

4.7.1 Macro Definition Documentation

4.7.1.1 #define DS1307_ADDRESS 0xd0

Arduino - Real Time Clock.

Implementation for DS1307.

Author

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 15 of file RealTimeClockDS1307.h.

4.8 RealTimeClockDS1307.h

```
00001
00009 #ifndef __ARDUINO_REAL_TIME_CLOCK_DS1307_H__
00010 #define __ARDUINO_REAL_TIME_CLOCK_DS1307_H__ 1
00011
00012 #include <RealTimeClock.h>
00013 #include <RegisterBasedWiredDevice.h>
00014
00015 #define DS1307_ADDRESS  0xd0
00016
00043 class RealTimeClockDS1307: public RealTimeClock, public RegisterBasedWiredDevice {
00044
00045 public:
00046
00050     enum Register {
00051         SECONDS_REGISTER = 0x00,
00052         MINUTES_REGISTER = 0x01,
00053         HOURS_REGISTER = 0x02,
00054         DAY_REGISTER = 0x03,
00055         DATE_REGISTER = 0x04,
00056         MONTH_REGISTER = 0x05,
00057         YEAR_REGISTER = 0x06,
00058         CONTROL_REGISTER = 0x07
00059     };
00060
00061     enum Mask {
00062         CONTROL_OUT = 0x80,
00063         CONTROL_SQWE = 0x10,
00064         CONTROL_RS1 = 0x02,
00065         CONTROL_RS2 = 0x01,
00066     };
00067
00068     struct SecondsBits {
00069
00070         struct {
00071             unsigned char SECONDS :4;
00072             unsigned char TEN_SECONDS :3;
00073             unsigned char CH :1;
00074         };
00075         unsigned char value;
00076     };
00077
00078     struct MinutesBits {
00079
00080         struct {
00081             unsigned char MINUTES :4;
00082             unsigned char TEN_MINUTES :3;
00083             unsigned char :1;
00084         };
00085         unsigned char value;
00086     };
00087
00088     struct HourBits {
00089
00090         struct {
00091             unsigned char HOURS :4;
00092             unsigned char PM_AM :1;
00093             unsigned char MODE_12_24 :1;
00094             unsigned char :1;
00095         };
00096
00097         struct {
00098             unsigned char :4;
00099             unsigned char TEM_HOURS :2;
00100             unsigned char : 2;
00101         };
00102         unsigned char value;
00103     };
00104
00105     struct DayBits {
00106
00107         struct {
00108             unsigned char DAY :3;
00109             unsigned char :5;
00110         };
00111         unsigned char value;
```

```
00112     };
00113
00114     struct DateBits {
00115
00116         struct {
00117             unsigned char DATE :4;
00118             unsigned char TEN_DATE :2;
00119             unsigned char :2;
00120         };
00121         unsigned char value;
00122     };
00123
00124     struct MonthBits {
00125
00126         struct {
00127             unsigned char MONTH :4;
00128             unsigned char TEN_MONTH :1;
00129             unsigned char :3;
00130         };
00131         unsigned char value;
00132     };
00133
00134     struct YearBits {
00135
00136         struct {
00137             unsigned char YEAR :4;
00138             unsigned char TEN_YEAR:4;
00139         };
00140         unsigned char value;
00141     };
00142
00170     struct ControlBits {
00171
00172         struct {
00173             unsigned char RS0 :1;
00174             unsigned char RS1 :1;
00175             unsigned char :2;
00176             unsigned char SQWE :1;
00177             unsigned char :2;
00178             unsigned char OUT :1;
00179         };
00180         struct {
00181             unsigned char RS :2;
00182             unsigned char :6;
00183         };
00184         unsigned char value;
00185     };
00186
00187     RealTimeClockDS1307();
00188
00192     unsigned char getSeconds();
00193
00197     unsigned char getMinutes();
00198
00202     unsigned char getHour();
00203
00207     unsigned char getDay();
00208
00212     unsigned char getDate();
00213
00217     unsigned char getMonth();
00218
00222     unsigned char getYear();
00223 };
00224
00225 #endif /* __ARDUINO_REAL_TIME_CLOCK_DS1307_H__ */
```

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