

ToughC5 RTC Real-Time Clock

ToughC5 RTC APIs and example program.

Example Program

Compilation Requirements

- M5Stack Board Manager Version >= 3.3.9
- Board Selection = M5ToughC5
- M5Unified Library Version >= 0.2.22
- M5GFX Library Version >= 0.2.28

cpp

```

1  #define WIFI_SSID      "*****"
2  #define WIFI_PASSWORD "*****"
3  #define NTP_TIMEZONE  "UTC-8" // POSIX standard, in which "UTC+0" is UTC London, "UTC-8" is UTC+8 Beiji
4  #define NTP_SERVER1   "0.pool.ntp.org"
5  #define NTP_SERVER2   "1.pool.ntp.org"
6  #define NTP_SERVER3   "2.pool.ntp.org"
7  #include <WiFi.h>
8
9  // Different versions of the framework have different SNTP header file names and availability.
10 #if __has_include(<esp_sntp.h>)
11 #include <esp_sntp.h>
12 #define SNTP_ENABLED 1
13 #elif __has_include(<sntp.h>)
14 #include <sntp.h>
15 #define SNTP_ENABLED 1
16 #endif
17
18 #ifndef SNTP_ENABLED
19 #define SNTP_ENABLED 0
20 #endif
21
22 #include <M5Unified.h>
23
24 static constexpr const char* const wd[7] = { "Sun", "Mon", "Tue", "Wed", "Thr", "Fri", "Sat" };
25
26 void setup() {
27     M5.begin();
28     M5.Display.setRotation(1);
29     M5.Display.setFont(&fonts::FreeMono12pt7b);
30
31     if (!M5.Rtc.isEnabled()) {
32         M5.Display.println("RTC not found");
33         while (true) {
34             delay(500);
35         }
36     }
37     M5.Display.println("RTC found");
38
39     M5.Display.print("WiFi: ");
40     WiFi.begin(WIFI_SSID, WIFI_PASSWORD);
41     while (WiFi.status() != WL_CONNECTED) {
42         M5.Display.print(".");
43         delay(500);
44     }
45     M5.Display.println("\nWiFi connected");
46
47     configTzTime(NTP_TIMEZONE, NTP_SERVER1, NTP_SERVER2, NTP_SERVER3);
48
49     M5.Display.print("NTP: ");
50 #if SNTP_ENABLED
51     while (sntp_get_sync_status() != SNTP_SYNC_STATUS_COMPLETED) {
52         M5.Display.print(".");
53         delay(500);
54     }
55 #else

```

```

56     struct tm timeInfo;
57     while (!getLocalTime(&timeInfo, 1000)) {
58         M5.Display.print(".");
59         delay(500);
60     }
61 #endif
62     M5.Display.println("\nNTP connected");
63
64     time_t t = time(nullptr) + 1; // Advance one second
65     while (t > time(nullptr))
66         ; // Synchronization in seconds
67     M5.Rtc.setDateTime(gmtime(&t));
68
69     delay(1000);
70     M5.Display.clear();
71 }
72
73 void loop() {
74     auto dt = M5.Rtc.getDateTime();
75     M5.Display.setCursor(0, 0);
76     M5.Display.printf("RTC   UTC:  \n%04d/%02d/%02d (%s) \n%02d:%02d:%02d", dt.date.year, dt.date.month, dt
77
78     // ESP32 internal timer
79     auto t = time(nullptr);
80
81     {
82         auto tm = gmtime(&t); // for UTC
83         M5.Display.setCursor(0, 80);
84         M5.Display.printf("ESP32 UTC:  \n%04d/%02d/%02d (%s) \n%02d:%02d:%02d", tm->tm_year + 1900, tm->tm_mo
85     }
86
87     {
88         auto tm = localtime(&t); // for local timezone
89         M5.Display.setCursor(0, 160);
90         M5.Display.printf("ESP32 %s:  \n%04d/%02d/%02d (%s) \n%02d:%02d:%02d", NTP_TIMEZONE, tm->tm_year + 19
91     }
92
93     delay(500);
94 }

```

Enter the Wi-Fi name and password and your local time zone in the program, then click Upload to display the real-time clock on the screen.

Note

The `NTP_TIMEZONE` definition in the program follows the POSIX standard, which uses the opposite sign from common human-readable time zones. For example, `"UTC+0"` means UTC London, `"UTC-8"` means UTC+8 Beijing, and `"UTC+5"` means UTC-5 New York.



API

The ToughC5 RTC example uses `RTC_Class` from the `M5Unified` library. See the following documentation for more APIs:

- [M5Unified - RTC Class](#)