# Real-Time Clock (RTC)

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# 1. Overview and Operation

## Overview

When creating a clock, even if the address and time are correctly set, the hour hand may not point at the correct position. Take 12:30 as example, the hour hand should point to the middle of 12 and 1, but it is stuck to 12. This demo project shows how to use a Macro Function defined in Macro Library to correctly display current time.
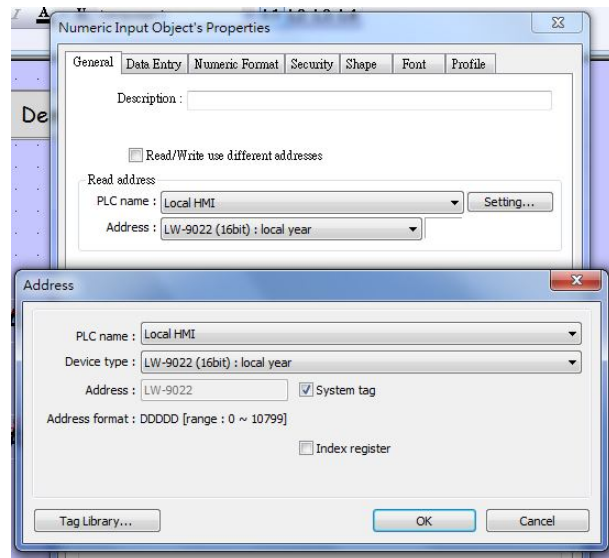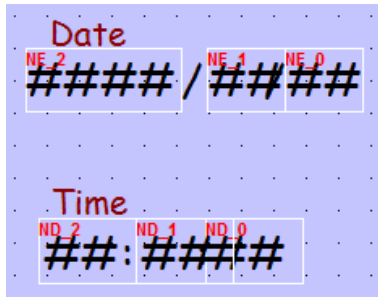


## Operation

After downloading and executing this project, the clock displayed will automatically be adjusted according to the HMI internal clock with no further settings.
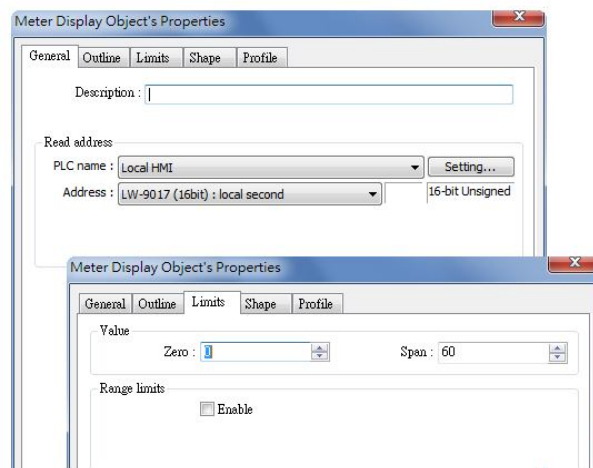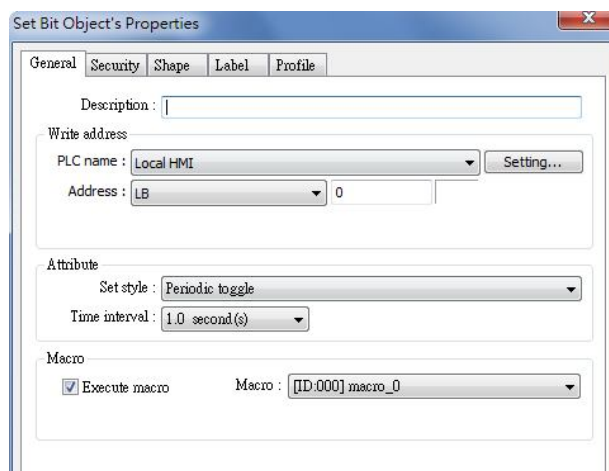
## 2. Setting up the Screen

**[Objects]**

1. Create multiple Numeric Input Objects, set addresses to LW-9017~9022 (16bit) local second, minute, hour, day, month, and year.

2. Create two Meter Display Objects, set addresses to LW-9017 (second) and LW-9018 (minute). In [Limits] set [Span] to "60". Create another Meter Display Object, set address to "100" and [Span] to "720".
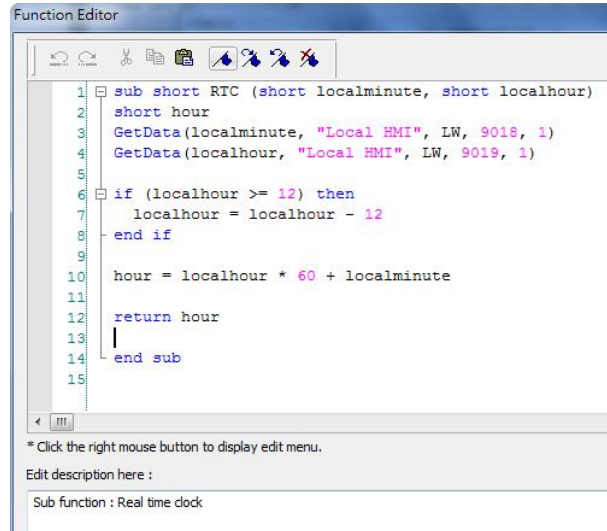
3. Create a Set Bit Object, set attribute to "Periodic toggle 1.0 second (s)" and check [Execute macro]. Macro will be executed once per second. Even if the local time is changed, the clock will be adjusted accordingly.
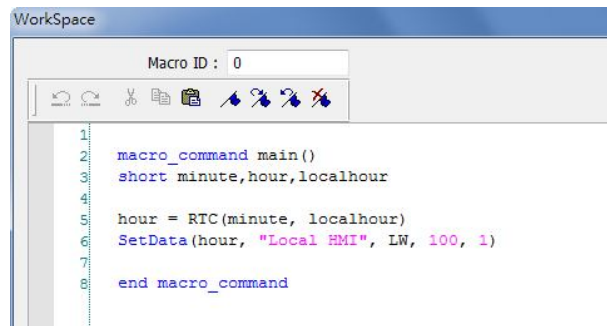
**[Macro]**

1. When time changes the hour hand will move by correct degrees.

Function Editor

```
1  sub short RTC (short localminute, short localhour)
2    short hour
3    GetData(localminute, "Local HMI", LW, 9018, 1)
4    GetData(localhour, "Local HMI", LW, 9019, 1)
5
6    if (localhour >= 12) then
7       localhour = localhour - 12
8    end if
9
10   hour = localhour * 60 + localminute
11
12   return hour
13
14  end sub
15
```

\* Click the right mouse button to display edit menu.

Edit description here :

Sub function : Real time clock

2. Apply this Macro command and display the result via the Meter Display Object which represents the hour hand, ex: LW-100.

WorkSpace

Macro ID : 0

```
1
2  macro_command main()
3  short minute,hour,localhour
4
5  hour = RTC(minute, localhour)
6  SetData(hour, "Local HMI", LW, 100, 1)
7
8  end macro_command
```

## 3. Addresses

The object addresses used in this demo project are listed below, the addresses and object ID can be modified based on actual usage.

| Object | Address | Object ID | Description |
| --- | --- | --- | --- |
| **Window 10** | | | |
| Numeric Input | LW9020 | NE_0 | (16-bit) local day |
| | LW9021 | NE_1 | (16-bit) local month |
| | LW9022 | NE_2 | (16-bit) local year |
| Numeric Display | LW9017 | ND_0 | (16-bit) local second |
| | LW9018 | ND_1 | (16-bit) local minute |
| | LW9019 | ND_2 | (16-bit) local hour |
| Meter Display | LW9017 | MD_0 | (16-bit) local second |
| | LW9018 | MD_1 | (16-bit) local minute |
| | LW100 | MD_2 | (16-bit) local hour |
| Set Bit | LB0 | SB_0 | Periodically execute Macro [ID:000] |

# 4. Function Reference

| Function Name | Description |
| --- | --- |
| RTC | As the minute hand moves the hour hand will move correct degrees to precisely display a clock. |