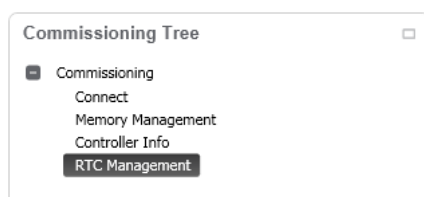


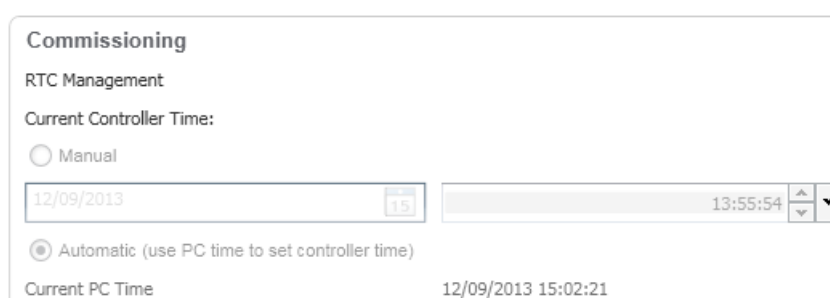
# Real Time Clock

## Setting the Clock

Settings are made in the RTC Management section which is in the **Commissioning** section of the **Commissioning Tree**.



There are two modes for setting the clock. The clock can either be set manually to a specific time and date or it can be synchronised to the computer time and date.



## Using the Clock

The values for the Real Time Clock are accessible through five system registers which can be used to access the time and date.

Register	Content	Format
%SW49	Day of the week	xN where N=1 for Monday
%SW50	Seconds	00SS
%SW51	Hour and Minute	HHMM
%SW51	Month and Day	MMDD
%SW53	Century and Year	CCYY

These values can be used for time-stamping information and events or measuring event duration.

Comparison blocks may be used to trigger an event at a particular time or on a particular date. For example, comparing %SW51 with a value representing a particular time can trigger an event at that time.

The values are in BCD but by viewing the values in Hexadecimal format, the date and time can be seen.

## Exercise - Using the Real Time Clock

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By the completion of this exercise you will:

- Be able to use the Real Time Clock in an application
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### **1 Create a new application in SoMachine Basic**

- i. Start SoMachine Basic and create a new application.
  - ii. Assign the correct controller to match the hardware.
  - iii. Save the application and give it the name "RTC Example".
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### **2 Create the program.**

- i. Go to the programming tab and rename the POU, calling it "RTC".
- ii. Rename the rung calling it "Time".
- iii. Check the current time and add 3-4 minutes. Write this time here.

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- iv. Add a compare block to the rung and enter the expression `%SW51 = 16#nnnn` where nnnn is the time written above without any formatting characters. For example if the time now is 10:45, the expression would be `%SW51 = 16#1048`.
  - v. Add an output coil and assign the address **%Q0.0** so the first output will turn on when the time is reached.
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### **3 Display the values in an animation table.**

- i. Create an animation table and add the status words for the Real Time Clock; **%SW49, %SW50, %SW51 and %SW52**.
- ii. Click the value displayed in the table and a selection box will allow the format to be change

Choose Hexadecimal for the four values.

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### **4 Connect to the controller and test the application.**

### **5 Change the RTC and test the application again.**

### **6 Reset the M221 Controller clock to the correct time.**

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