Application Note

Product Family: **Click, BRX, and Productivity PLCs**   **Number:**   **AN-MISC-037**

Subject: **Time Of Day Functions in PLC**   **Date Issued:**   **July 15, 2021**

                                                        Revision: **V1.0**

Time of Day functions in the PLC.

Doing clock-based logic in the PLC can get a little tricky, since the minutes on the clock cycle from 0 - 59, every hour. Having logic that looks at hours and minutes can get tricky because of that. An easier way to do time-based functions in the PLC is to convert the time to an 24H value. Then your logic can use compare functions to compare the PLC clock value to your setpoints. If you also use the Day of Week register, you can have things occur only on certain days.

Calculations

You have two ways to calculate the time, either using integer result or floating-point result. Integer is usually fine for most applications, where you want something to occur on a minute interval. If you need something to happen, down to the second, then the floating-point method would work better.

> **Integer Clock Time**
> Range: 0 – 1439
> Integer Time = (Hours * 60) + Minutes
> 1:35 PM -> (13 * 60) + 35 = 815
>
> **Floating Point Clock Time**
> Range: 0.0 – 23.99
> Floating Point Time = ((Hours * 3600) + (Minutes * 60) + Seconds) / 3600
> 1:35:16 PM -> ((13 * 3600) + (35 * 60) + 16) / 3600 = 13.58

In the PLC, if you wanted something to turn on at 1:35 PM, then your logic would look for the time value to be 815 in the compare instruction. If you wanted it to occur at 1:35:16 PM, then use 13.58 in the compare instruction instead.

The following examples are for the various PLCs. Both the integer and floating-point calculations are shown, but you will only need one of the two for your application.
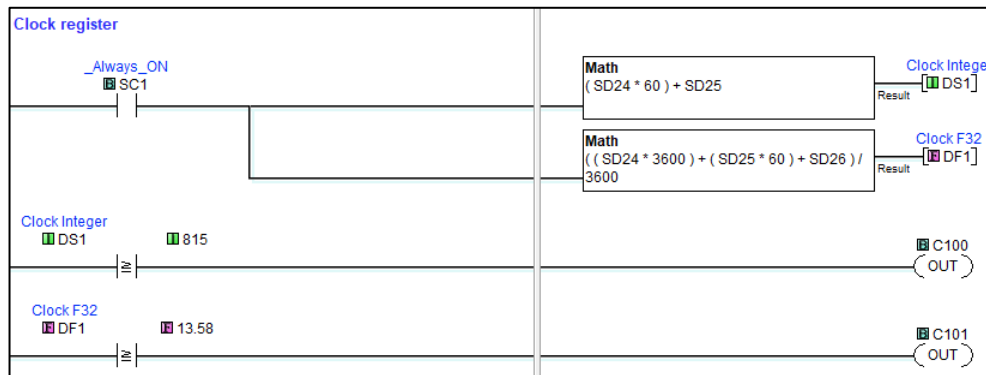
Click PLC

Note: "Basic" Clicks do not have an internal clock.

	Click Register	Valid Range
Day Of Week	SD23	1 = Sun, 2 = Mon, … 7 = Sat
Hours	SD24	0 -23
Minutes	SD25	0 − 59
Seconds	SD26	0 − 59

Do-More PLC

	BRX Structure	Valid Range
Day Of Week	SDT0.DayOfWeek	0= Sun, 1 = Mon, … 6 = Sat
Hours	SDT0.Hour	0 -23
Minutes	SDT0.Minute	0 − 59
Seconds	SDT0.Second	0 - 59
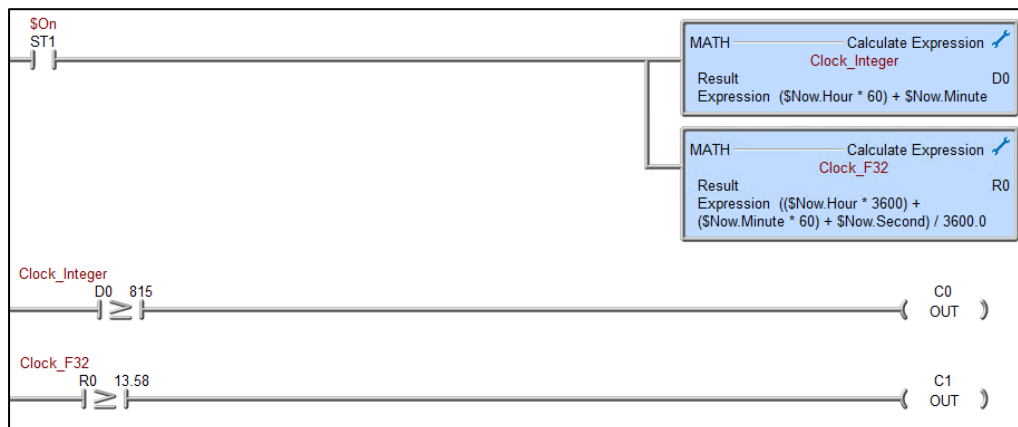
Technical Assistance: If you have questions regarding this Application Note, please contact Technical Support for further assistance.

Productivity PLC

	Productivity System Tag	Valid Range
Day Of Week	Clock Day of Week	1=Mon, 2=Tues, … 7 = Sun
Hours	Clock Hours	0 -23
Minutes	Clock Minutes	0 - 59
Seconds	Clock Seconds	0 - 59

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