

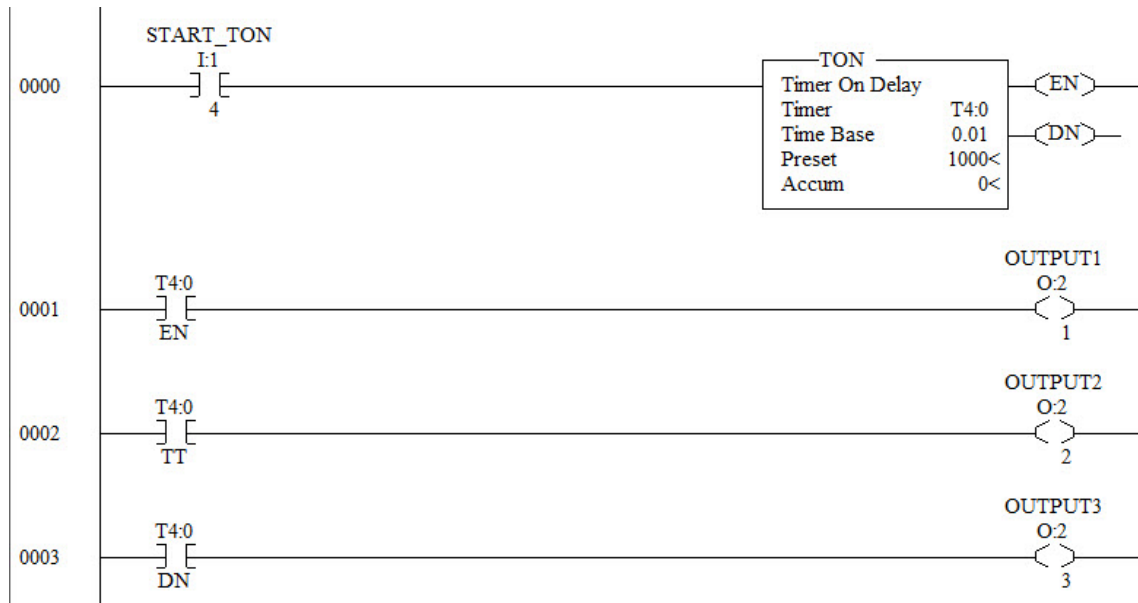
## Allen Bradley SLC-500 On-Delay Timer Lab 1

Objective: Upon completion of this lab exercise, the student should be able to:

1. Explain the operation of a TON instruction.
2. Explain the operation of the status bits controlled by a TON instruction.
3. Change the time delay value in the TON instruction.
4. Explain the operation of the RTO and RES instructions.
5. Explain the operation of the status bits controlled by an RTO instruction.

Create the following program in RSLogix500. Download the program into an SLC-500 unit, go online and verify the processor is in the Run Mode.

Follow the lab instructions and answer the questions at the end of the lab.



**Figure 1. Basic TON timer circuit.**

1. What is the time delay for the timer in this lab?
2. Turn on the START\_TON input. Does the timer start timing?

What status bits come on immediately?

How long do they stay on?

When does Output3 turn on?

3. Turn off the Start\_Ton input.

How is the Accumulated value of the timer affected?

How are the status bits affected?

4. When will Output1 be on?

When will Output2 be on?

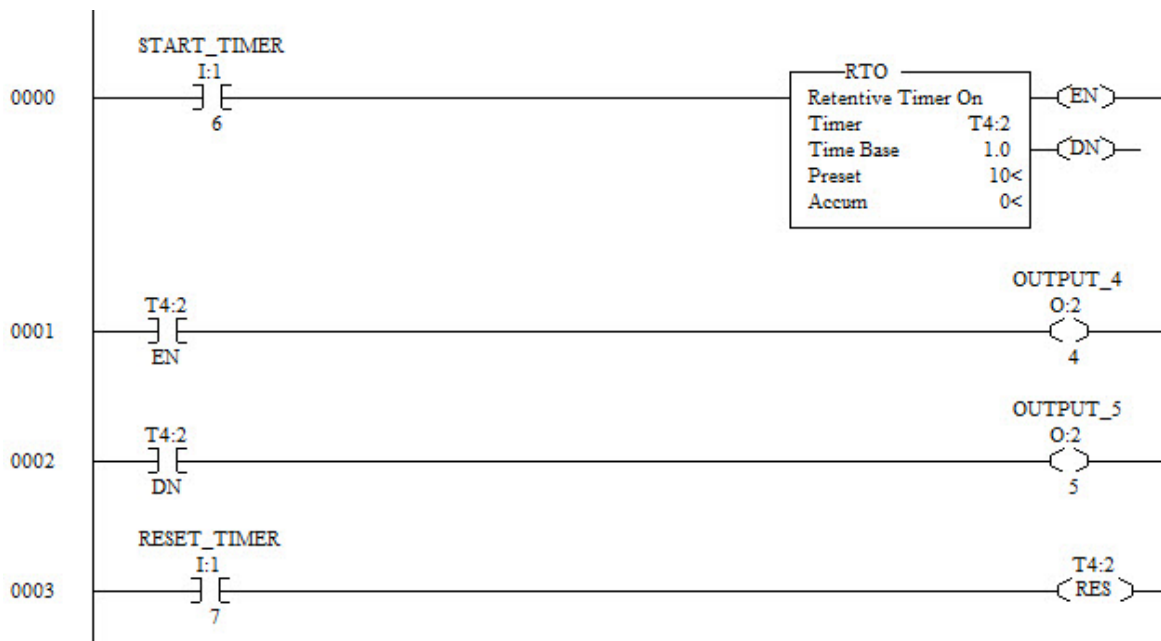
When will Output3 be on?

5. Change the preset value of the timer to 1750. What is the new time delay for the timer?

**Part Two:**

Create the following program in RSLogix500. Download the program into an SLC-500 unit, go online and verify the processor is in the Run Mode.

Follow the lab instructions and answer the questions at the end of the lab.



**Figure 2. Basic RTO timer circuit with Reset.**

1. Notice the time base of the RTO is 1.0 seconds.

What would the preset value be for a 30 second time delay?

2. Make sure the RESET\_TIMER input is shut off.

Turn on the START\_TIMER input. Does the timer start timing?

3. When does OUTPUT\_4 turn on?

4. When does OUTPUT\_5 turn on?

5. Keep the START\_TIMER input on until the timer times out.

6. Turn off the START\_TIMER input. Does the accumulated value reset?

7. Turn on the RESET\_TIMER input. Does the accumulated value reset?

8. Keep the RESET\_TIMER input on. Then turn on the START\_TIMER input.

Will the RTO start timing?

Explain!

**Questions:**

1. How does the user change the value of the preset in the Timer instruction while online?
2. What is the maximum value the user can put into the timer preset?
3. What is the value of the Accumulated value, 5 seconds into the time cycle in the first lab?
4. If the TON is shut off, what will happen to the Accumulated value of a timer?
5. Explain the address: T4:0.ACC
6. Explain the address: T4:0/DN
7. With the START\_TON input off in the first program, can the user key in a new value for the Accum value?  
  
Explain!
8. What resets the accumulated value of a timer that is controlled by an RTO instruction?
9. What is the disadvantage of using a 1.0 second time base, versus a 0.01 second time base for an Allen Bradley PLC timer instruction?
10. What does an RES instruction addressed as T4:2 do when it is energized?

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