

# PLC128 LAB 1.3: ALLEN BRADLEY COMPACTLOGIX COUNTER INSTRUCTIONS

Student Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## LAB OUTCOMES:

1. Explain the operation of a CTU instruction
2. Explain the operation of each status bit for a counter instruction
3. Explain how the RES instruction affects the counter data values
4. Demonstrate how to change the data values of a CTU/CTD instruction while online

## LAB PROCESS:

### Allen Bradley Counter Basics:

#### **Counter Instruction:**

**CTU** stands for Count UP. The CTU instruction when energized will increase the accumulated value of the counter address by one.

**CTD** stands for Count Down. The CTD instruction when energized will decrement the accumulated value of the counter address by one. CTD are seldom used, but are usually used with a CTU in a pair.

**RES** stands for Reset. The RES instruction when energized will reset the Accumulated value and status bits of a Counter.

#### **Status Bits:**

**DN** – Done Bit – This bit is “on” when the Acc value is equal to or greater than the PRE value.

**CU** – CTU Enable – This bit is “on” when the CTU instruction has power on it.

**CD** – CTD Enable – This bit is “on” when the CTD instruction has power on it.

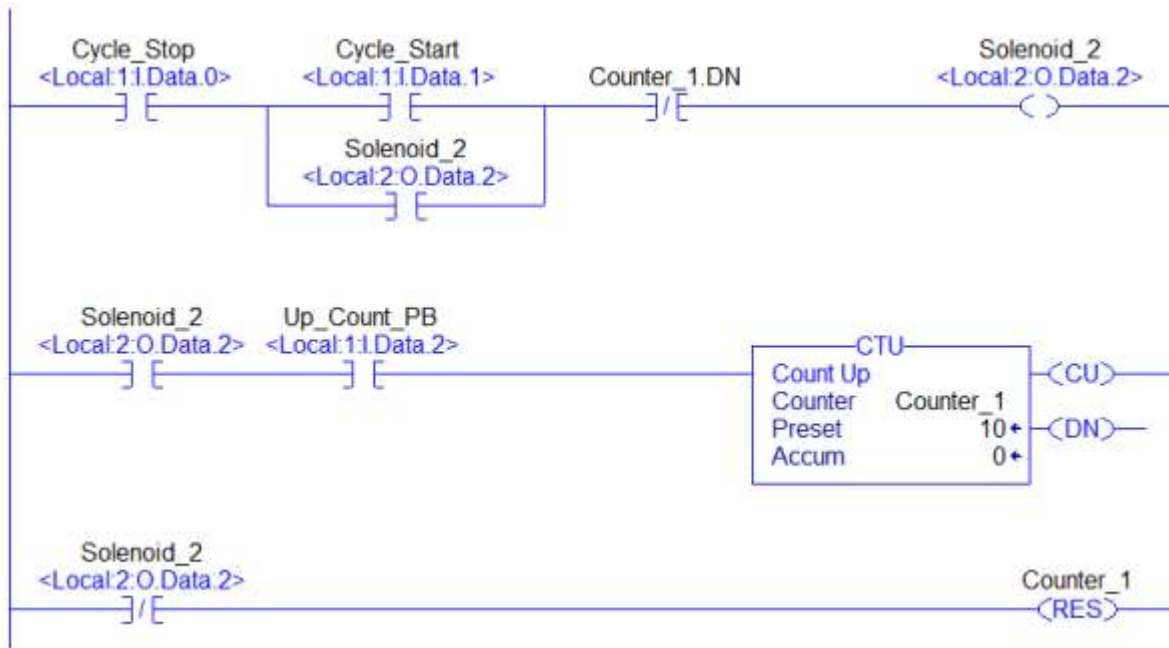
**OV** – Overflow Bit – This bit is “on” when the Acc value of the counter goes greater than +32767.

**UN** – Underflow Bit – This bit is “on” when the Acc value of the counter goes less than –32,768.

Key in the Alias tags for the Base I/O Tag addresses. Write the program with RSLogix5000 as shown in part 1 and then save it to the hard drive of the computer. You will then download the program to the ControlLogix processor. Once that it is complete you will go online with the ControlLogix and place the processor in RUN mode.

## Part 1

1. Key in the following program and save it to the hard drive. Name the project something you will be able to easily remember.



2. Push the **Cycle\_Start** input.  
  
Does **Solenoid\_2** come on?
3. What physical Output address is **Solenoid\_2** an alias tag for?
4. Push the **Up\_Count\_PB** ten times.  
  
Did **Solenoid\_2** shut off? Explain.

5. Did the Counter Accumulated value reset to zero?
6. Change the Preset value of the counter to 15.
7. Can the counter be pulsed up if Solenoid\_2 is off? Explain.

*The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.*

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: \_\_\_\_\_

Faculty Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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