EEE 442 PROGRAMMABLE LOGIC CONTROLLERS LABORATORY

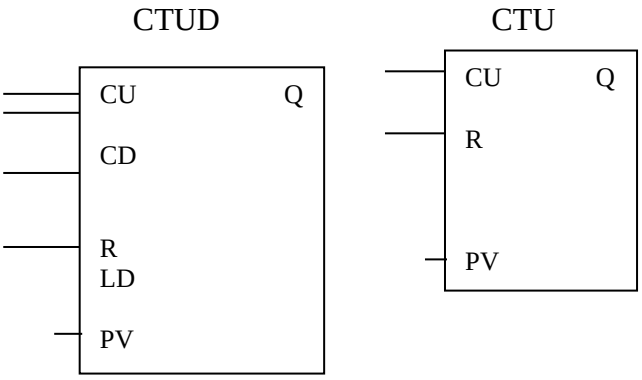
EXPERIMENT 3

COUNTERS

OBJECT: In this experiment S7-1200 counters and counter instructions will be introduced. There are three types of counters: Count Up counter(CTU), Count Down Counter(CTD) and Count Up/Down counter(CTUD).

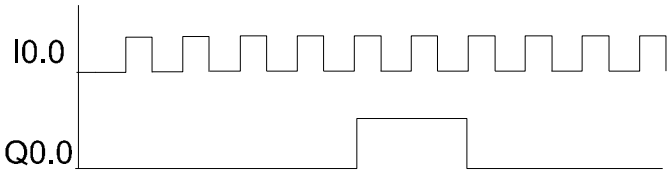
The Count Up instruction counts up to the maximum value on the rising edges of the Count Up (CU) input. When the current value (CV) is >= to the Preset Value(PV), the counter bit (Q) turns on. The counter resets when the reset input(R) turns on.

The Count Up/Down instruction counts up on rising edges of the Count Up input. It counts down on the rising edges of the Count Down (CD) input. When the current value (CV) is >= to the Preset Value(PV), the counter bit (Q) turns on.

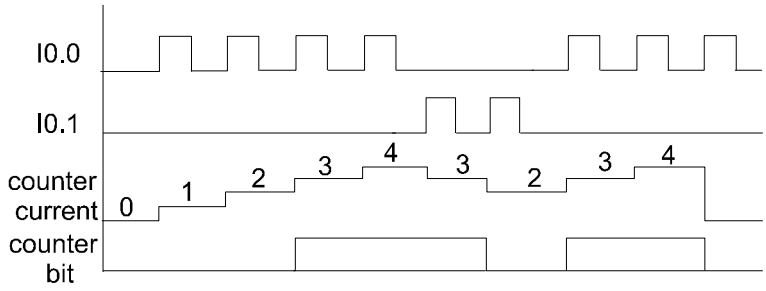


PRELIMINARY WORK

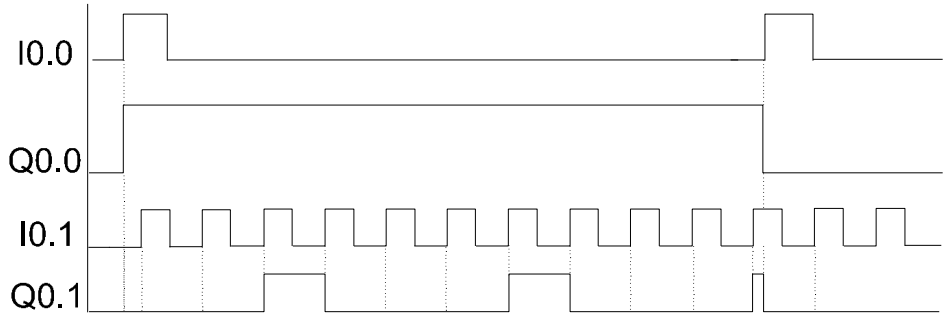
P.1 Write a PLC program using S-1200 PLC counters to obtain the following output waveform. Program must be in the form of ladder diagram.



P.2 Write a PLC program to obtain the following sequence on the S7-1200 PLC counter.. Program must be in the form of ladder diagram.



P.3 Write a PLC program, using counters, to produce the waveforms given below at the output named Q=0.0 and Q0.1. Program must be in the form of ladder diagram.



EXPERIMENTAL PROCEDURE

E.1 Verify the program which is written in P.1 using S7-1200 micro PLC.

E.2 Verify the program which is written in P.2 using S7-1200 micro PLC.

E.3 Verify the program which is written in P.3 using S7-1200 micro PLC.