COURSE - PLC AND SCADA

COURSE CODE – 18INT52

Experiment Number - 3

Duration - 2 Hours

Title of Experiment -

- Understanding of Function of Counter used in PLC Programming UP Counter / Down Counter / Up – Down Counter
- 2. PLC Programming of Counters

Objective of the Experiment

The students are required to understand the following –

- Functioning of Counters
- Problem solving of Counters

Intended Learning Outcomes : At the end of the experiment the student should be able to do

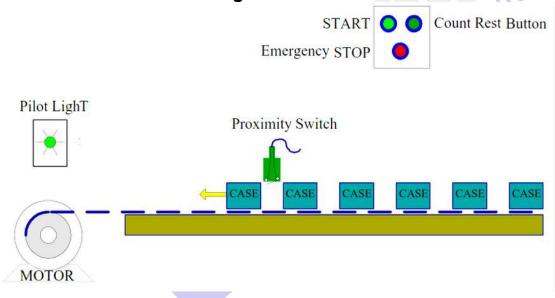
1. PLC Programming – Up Counter / Down Counter / Up-Down Counter

Software/Equipment/Tools Required:

PC, PLC Software,

Problem 1 –

UP Counter – Box Counting



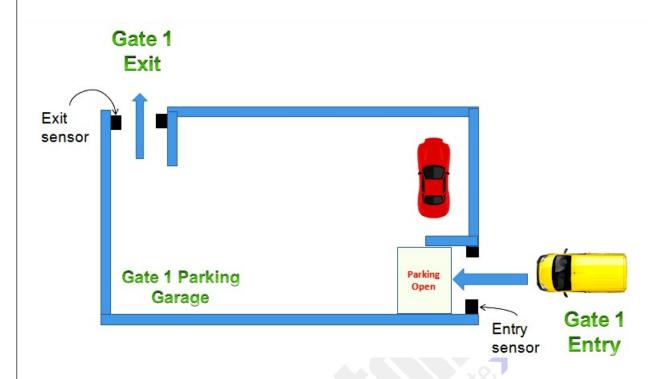
Sequence of Operation

- 1. The Start button is pressed to start the conveyor motor.
- 2. Cases move past the proximity switch and increment the counter's accumulated value.
- 3. After a count of 10, the conveyor motor stops automatically.
- 4. The conveyor motor can be stop manually without losing the accumulated count.
- 5. The accumulated count of the counter can be reset using the counter reset button.

Write the Ladder Programme -UP COUNTER - BOX COUNTING LAD 2 - --- Total Rungs in File = 4 ON PUSH BUTTON EMG OFF OFF PUSH BUTTON CONVEYOR MOTOR ON E0 0000 Bul.1763 Bul.1763 Bul.1763 Bul.1763 CONVEYOR MOTOR ON 0:0 0 Bul 1763 PROXIMITY SWITCH Cl 0001 Count Up Accum RESET COUNTER 1:0 C1 C5:0 0002 Bul.1763 0003

Problem 2

Car Parking - Up / Down Counter - EXAMPLE



Sequence of Operation

- 1. As a car enters, the enter switch triggers the up counter output instruction and increments the accumulated count by 1.
- 2. As a car leaves, the exit switch triggers the down counter output instruction and decrements the accumulated count by 1.
- 3. Because both the up- and down-counters have the same address, C5:0, the accumulated value will be the same in both instructions.
- 4. Whenever the accumulated value of 10 equals the preset value of 10, the counter output is energized by the done bit to light up the Lot Full sign (Red Light).
- 5. When the accumulated value is less than the preset value, it will light up the Lot Available (Green Light).
- 6. A reset button has been provided to reset the accumulated count.

Write the Ladder Programme -CAR PARKING - UP DOWN COUNTER - EXAMPLE LAD 2 - --- Total Rungs in File = 6 ENTRY SENSOR COUNTER I-0 -CTU 0000 Count Up (cu) 1 C5:0 Counter Bul.1763 Accum EXIT SENSOR COUNTER -CTD 0001 Count Down C5:0 Counter Bul.1763 Preset Accum PARKING FULL COUNTER 0002 Bul.1763 PARKING AVAILABLE COUNTER GREEN C5:0 0003 Bul.1763 COUNTER RESET COUNTER CS:0 (RES) 0004 Bul 1763 0005 (END)

Precautions: Students must use proper type and range of the meters. They must show the wiring connections before switching the supply on.

Conclusion/Critical Observation: Students learn the following

1. Basic PLC Programming – Counters