# WINDOW LIFTER'S

# [STATE MACHINE IMPLEMENTATION WHIT INFINITE LOOP]

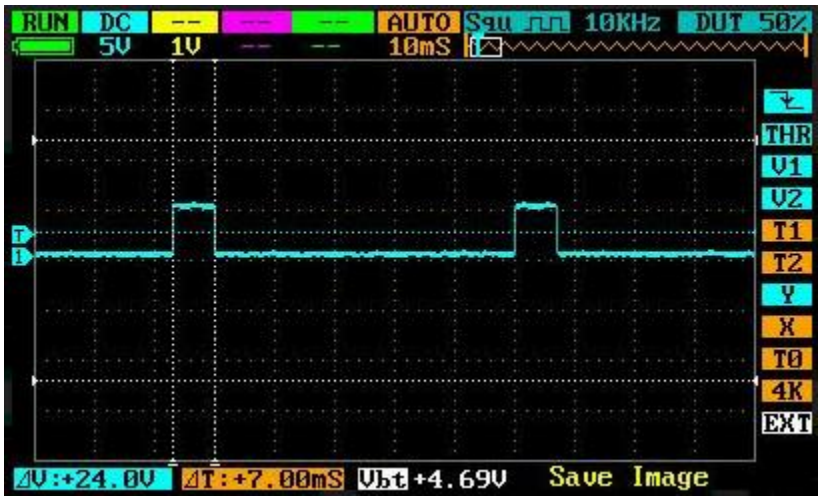
# TEST LOG

- **Debounce Testing**
- **Automatic work validation Testing**
- **Semiautomatic work validation Testing**
- **Semiautomatic work validation (Considering the time transition) Testing**

- **DEBOUNCE TESTING:** (TEST PASSED)
  - Signal Generator's Testing Time Constraints [ > 9ms ]:
    - 7ms → PASS: No action is performed provided the time length of input signal.
    - 8ms → PASS: No action is performed provided the time length of input signal.
    - 9ms → PASS: No action is performed provided the time length of input signal.
    - 10ms → PASS: Enters in automatic mode (either up or down).
    - 11ms → PASS: Enters in automatic mode (either up or down).
  - Signal Generator's code snippets:

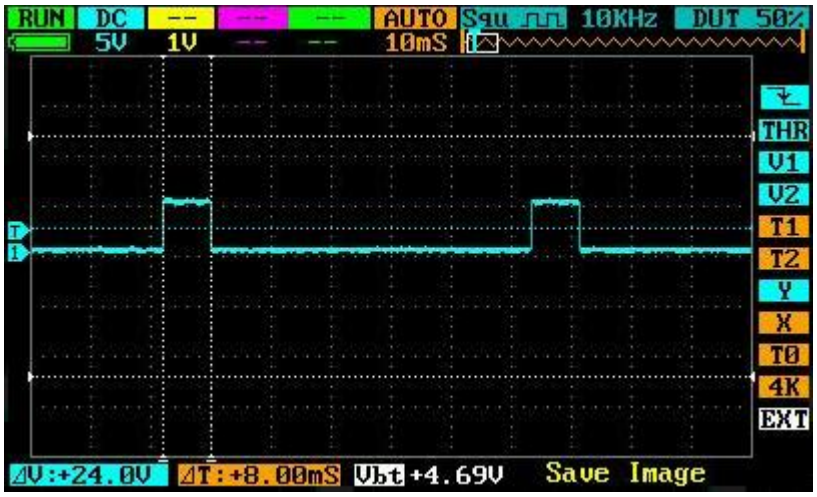
  - 7ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(7);
  digitalWrite(13,LOW);
  delay(50);
}
```



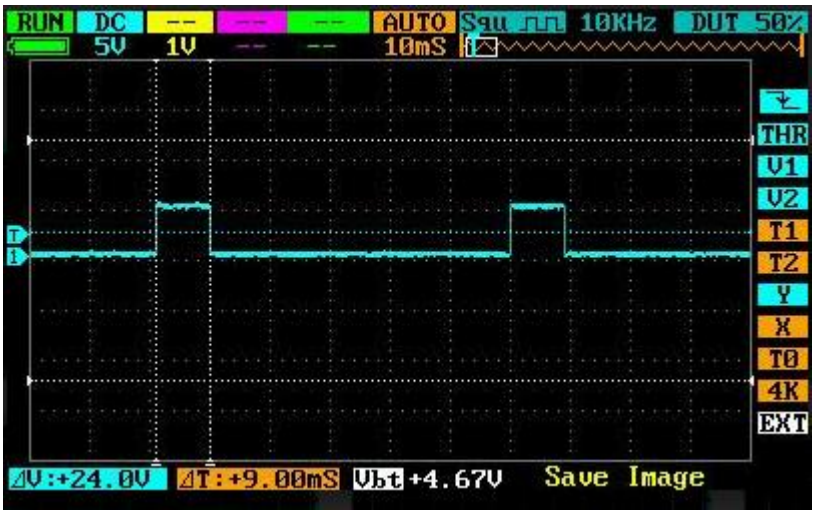

  - 8ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(8);
  digitalWrite(13,LOW);
  delay(50);
}
```



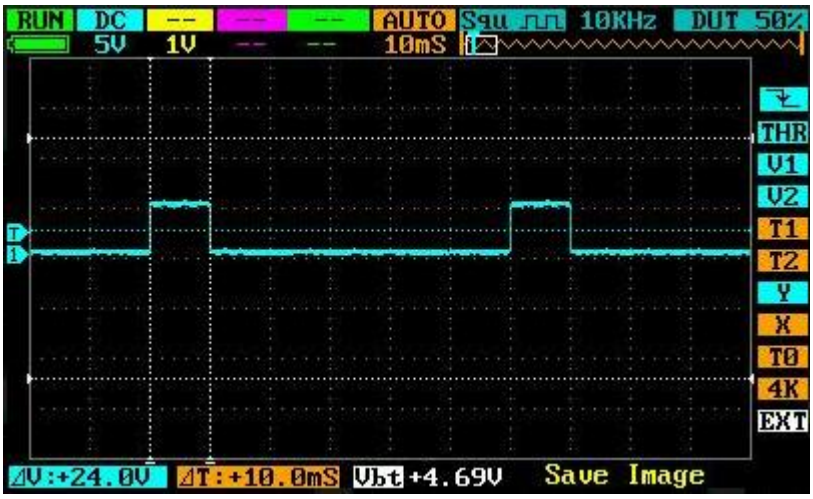
- 9ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(9);
  digitalWrite(13,LOW);
  delay(50);
}
```



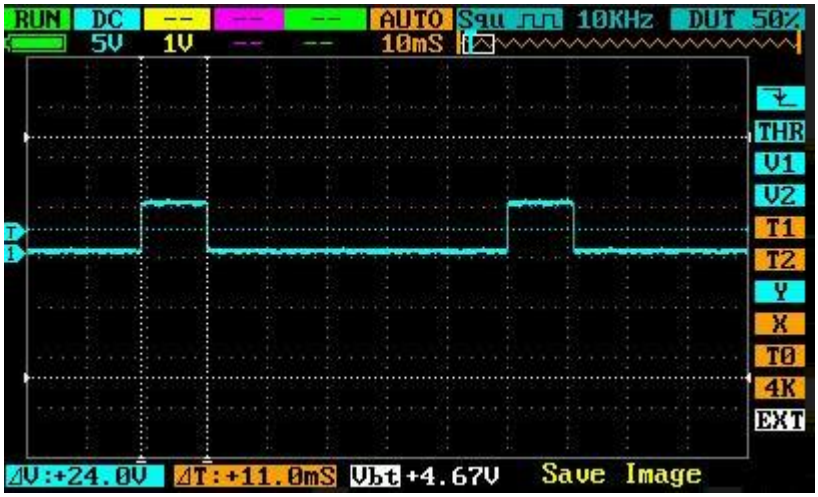

- 10ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(10);
  digitalWrite(13,LOW);
  delay(50);
}
```



- 11ms Test:

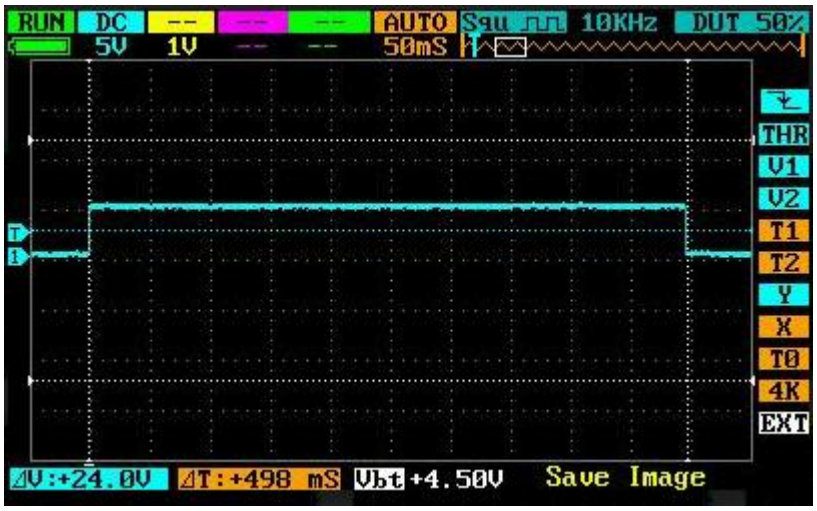
```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(11);
  digitalWrite(13,LOW);
  delay(50);
}
```



- **AUTOMATIC ACTIVATION TESTING:** (TEST PASSED)
  - Signal Generator's Testing Time Constraints [ < 500ms ]:
    - 498ms → PASS: Enters in automatic mode (either up or down).
    - 499ms → PASS: Enters in automatic mode (either up or down).
    - 500ms → PASS: No action is performed provided the time length of input signal.
    - 501ms → PASS: No action is performed provided the time length of input signal.
    - 502ms → PASS: No action is performed provided the time length of input signal.
  - Signal Generator's Code Snippet:

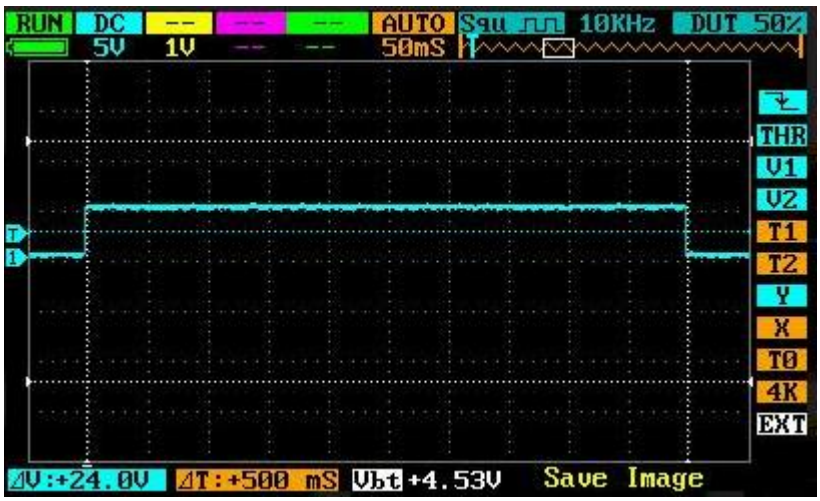
  - 498ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(498);
  digitalWrite(13,LOW);
  delay(498);
}
```



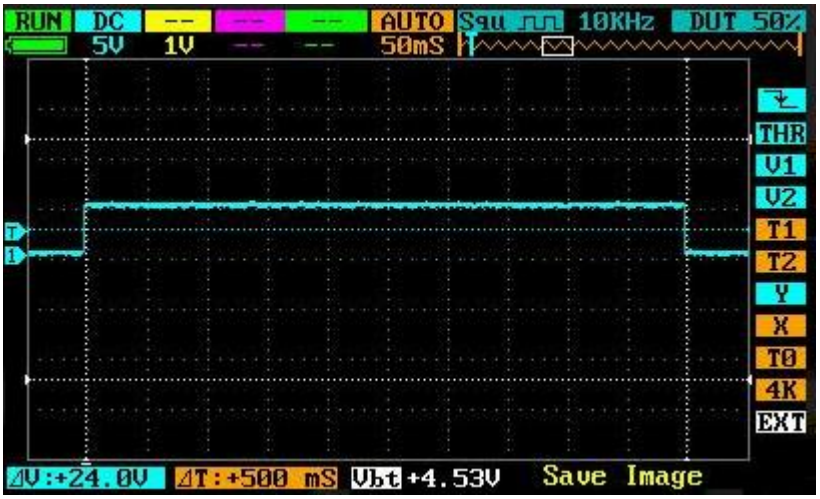

  - 499ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(499);
  digitalWrite(13,LOW);
  delay(499);
}
```



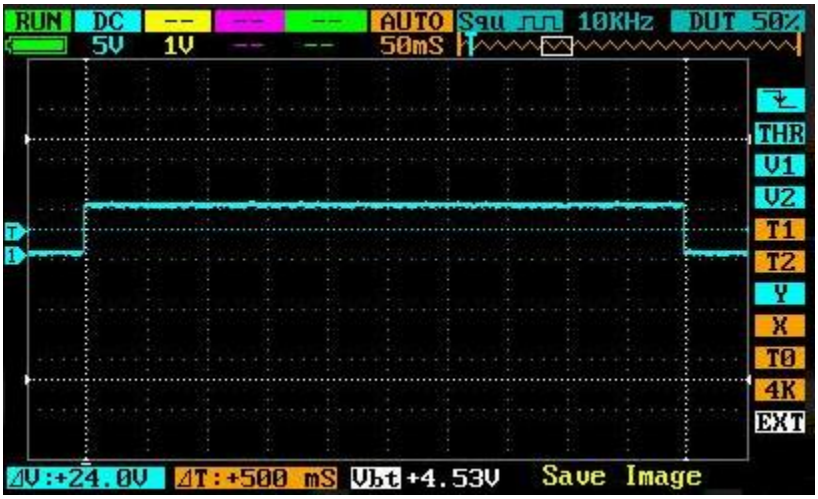
- 500ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(500);
  digitalWrite(13,LOW);
  delay(500);
}
```



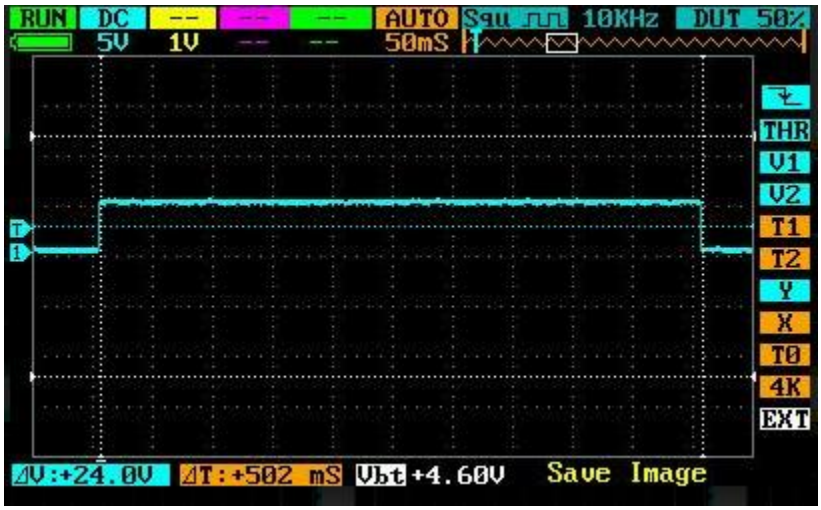

- 501ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(501);
  digitalWrite(13,LOW);
  delay(501);
}
```



- 502ms Test:

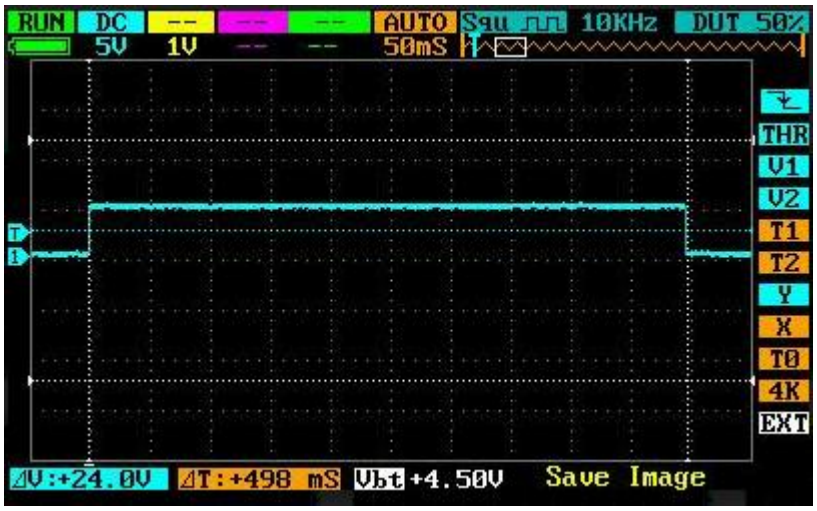
```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(502);
  digitalWrite(13,LOW);
  delay(502);
}
```



- **SEMI-AUTOMATIC ACTIVATION TESTING [ >= 500MS ]: (TEST PASSED)**
  - Signal Generator's Testing Time Constraints:
    - 498ms → PASS: Enters in automatic mode (either up or down).
    - 499ms → PASS: Enters in automatic mode (either up or down).
    - 500ms → PASS: No action is performed provided the time length of input signal.
    - 501ms → PASS: No action is performed provided the time length of input signal.
    - 502ms → PASS: No action is performed provided the time length of input signal.
  - Signal Generator's Code Snippets:

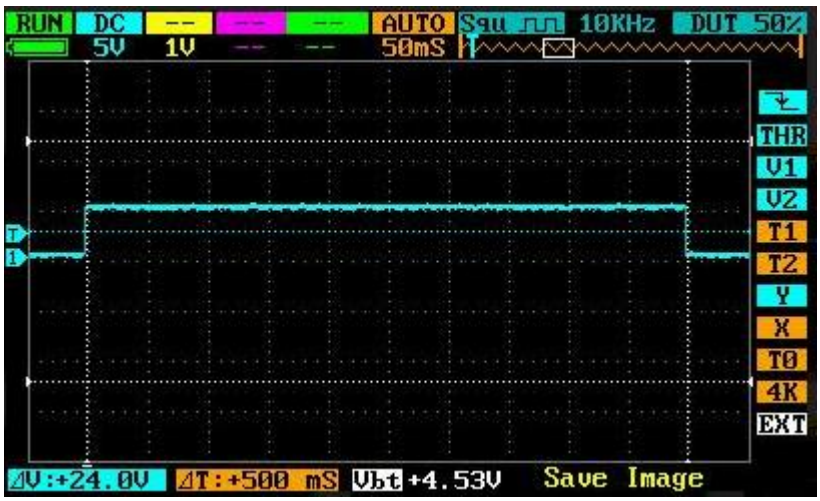
  - 498ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(498);
  digitalWrite(13,LOW);
  delay(498);
}
```



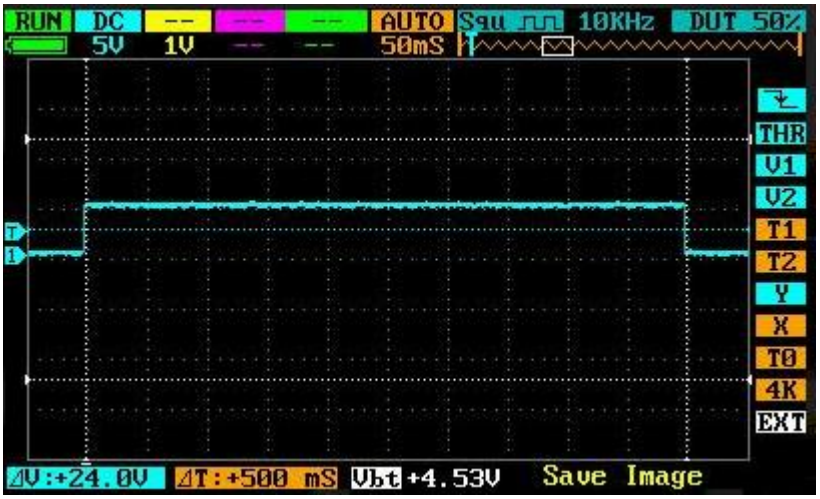

  - 499ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(499);
  digitalWrite(13,LOW);
  delay(499);
}
```



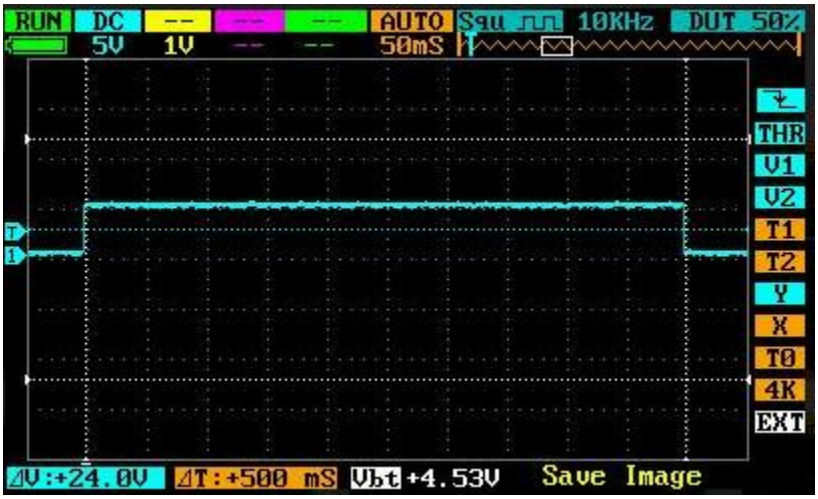
- 500ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(500);
  digitalWrite(13,LOW);
  delay(500);
}
```



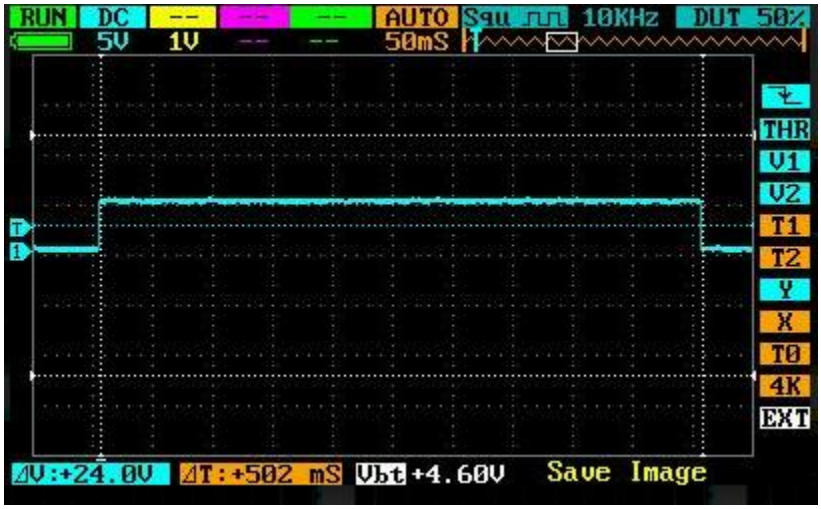

- 501ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(501);
  digitalWrite(13,LOW);
  delay(501);
}
```



- 502ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(502);
  digitalWrite(13,LOW);
  delay(502);
}
```

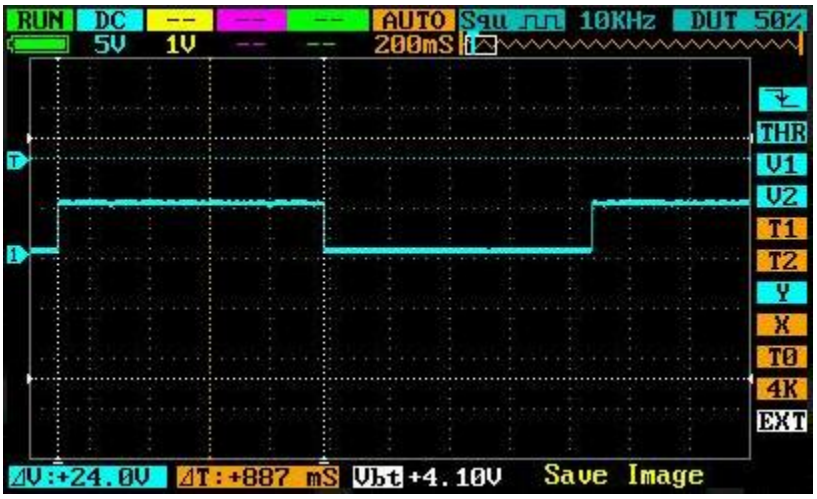


**Window Lifter Test Log (State Machine implementation with infinite loop and scheduler)**

- **SEMI-AUTOMATIC ACTIVATION TESTING [ CONSIDERING LED TRANSITION TIMES: 500MS + 400MS = 900MS ]:** (TEST PASSED)
  - Signal Generator's Testing Time Constraints:
    - 887ms → PASS: No action is performed provided the time length of input signal.
    - 900ms → PASS: No action is performed provided the time length of input signal
    - 901ms → PASS: Enters in semi-automatic mode (either up or down).
    - 903ms → PASS: Enters in semi-automatic mode (either up or down).
  - Signal Generator's Code Snippet:

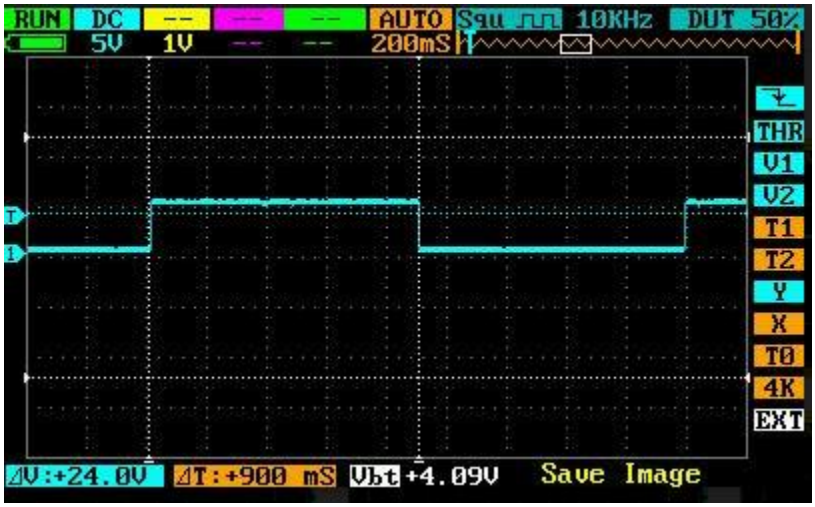
  - 887ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(887);
  digitalWrite(13,LOW);
  delay(887);
}
```



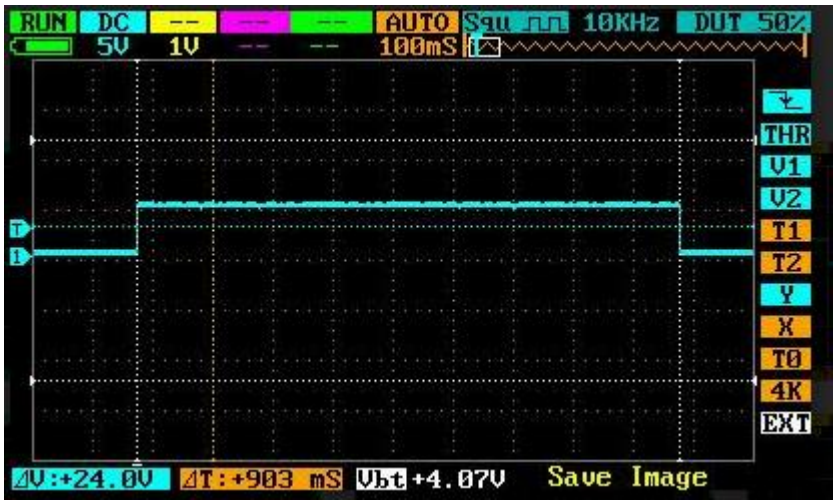

  - 900ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(900);
  digitalWrite(13,LOW);
  delay(900);
}
```



- 903ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(903);
  digitalWrite(13,LOW);
  delay(903);
}
```



# WINDOW LIFTER'S

# [STATE MACHINE IMPLEMENTATION WHIT SCHEDULER BPS]

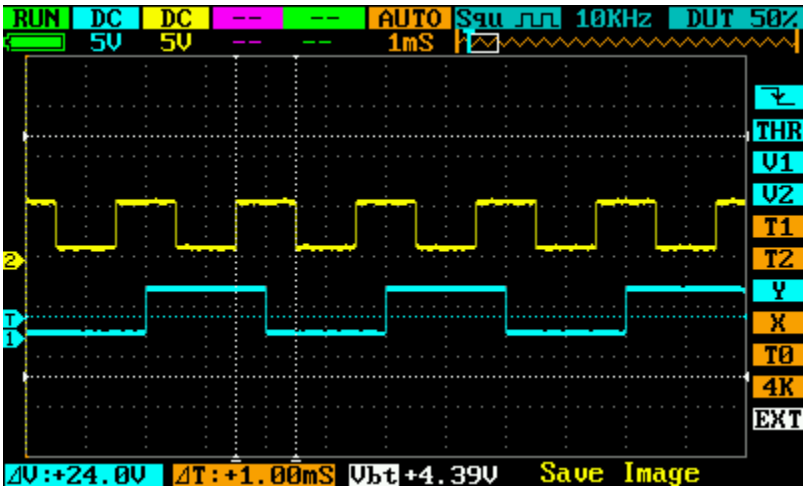
# TEST LOG

- **Period of the tasks Testing**
- **Transition time of the Led Bar Testing**
- **Debounce Testing**
- **Automatic work validation Testing**
- **Semiautomatic work validation Testing**
- **Semiautomatic work validation (Considering the time transition) Testing**

- **PERIOD OF THE TASKS:** (TEST PASSED)

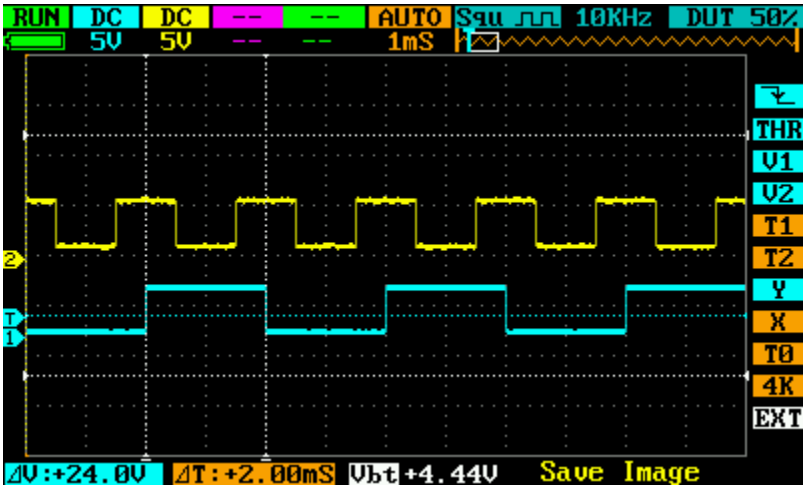
```
void SchM_1MS_Task  ( ){
    ruw_CounterTime1ms++;

    Dio_PortTooglePin(PORTCH_D, TASK_1MS);
    windowlifter_void_MefWindowLifter(&ruw_CounterTime1ms);

}
```

Added code in function SchM_1MS_Task ()
//file SchM_Tasks.c




```
void SchM_2MS_Task ()
{

    Dio_PortTooglePin(PORTCH_D, TASK_2MS);

}
```

Added code in function SchM_2MS_Task ()
//file SchM_Tasks.c



- **TRANSITION TIME OF THE WINDOWS´LEDS TESTING:** (TEST PASSED)

  We modified the code to test the transition time of the window´s leds. The system works in automatic down mode and automatic up mode for this test.

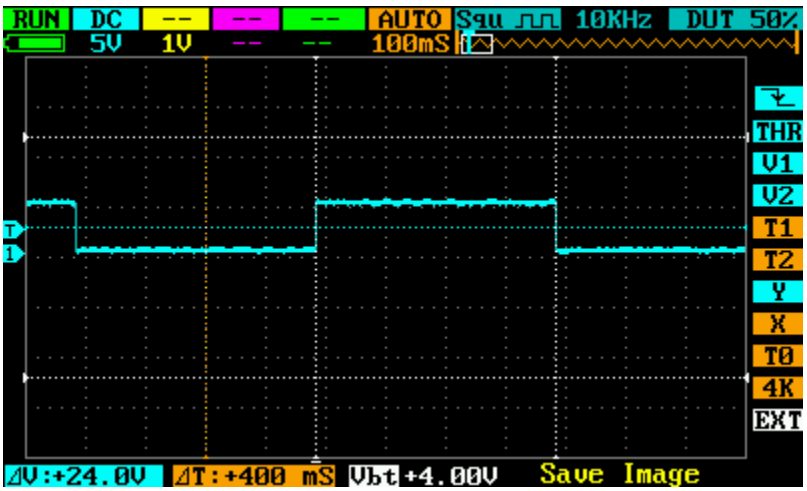
  We added the following code to the system (Always Automatic work)

```
void SchM_1MS_Task  ( ){

    Dio_PortTooglePin(PORTCH_D, TASK_1MS);

   static unsigned char state = 0;
   ruw_lpit0_ch0_counter1ms++;

   if(rub_Percentwindow==0){
    rs_Fg.bi1_flagUp=1;
    rs_Fg.bi1_flagAutomaticUp=1;
    state=4;
   }

   if(rub_Percentwindow==10){
    rs_Fg.bi1_flagDown=1;
    rs_Fg.bi1_flagAutomaticDown=1;
    state=4;
   }
```

Added code in function SchM_1MS_Task ()
//file SchM_Tasks.c

```
if((*lpub_Time)>=400){

Dio_PortTooglePin(PORTCH_D,TRANSITION_400MS);
```

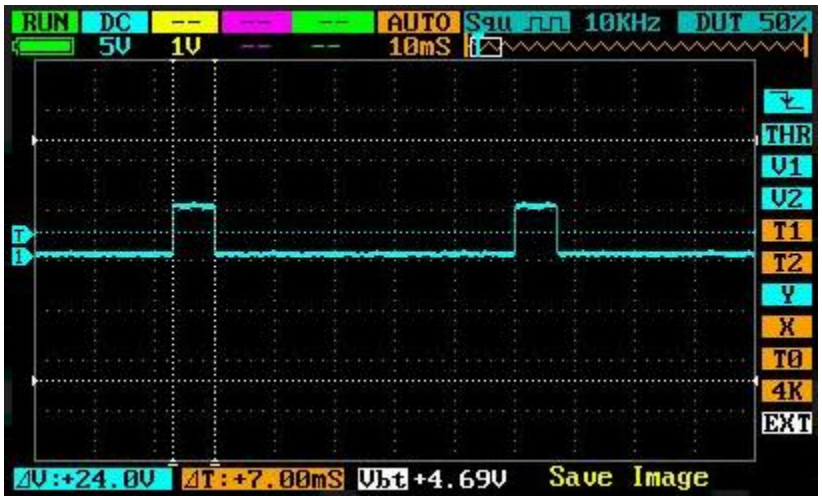
Added code in function wc_WindowUp () and wc_WindowDown ()
//file app_windowcontrol.c



- **DEBOUNCE TESTING:** (TEST PASSED)
  - Signal Generator's Testing Time Constraints [ > 9ms ]:
    - 7ms → PASS: No action is performed provided the time length of input signal.
    - 8ms → PASS: No action is performed provided the time length of input signal.
    - 9ms → PASS: No action is performed provided the time length of input signal.
    - 10ms → PASS: No action is performed provided the time length of input signal.
    - **11ms → PASS: Enters in automatic mode (either up or down).**
  - Signal Generator's code snippets:

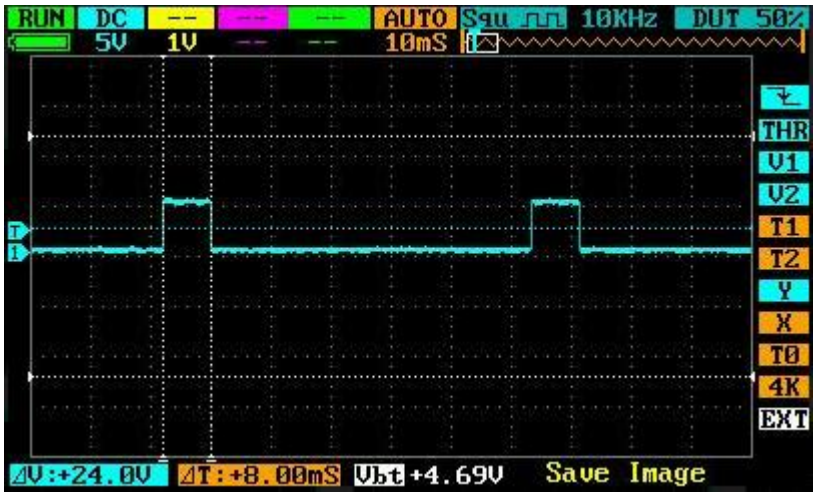
  - 7ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(7);
  digitalWrite(13,LOW);
  delay(50);
}
```



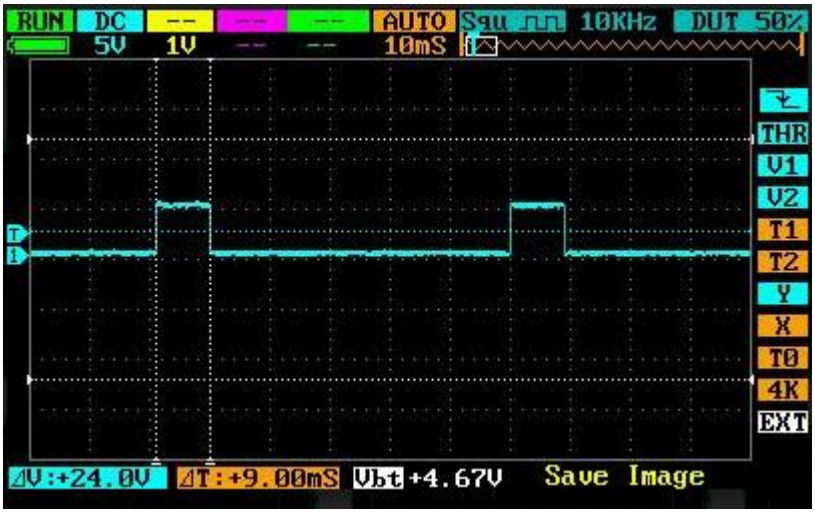

  - 8ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(8);
  digitalWrite(13,LOW);
  delay(50);
}
```



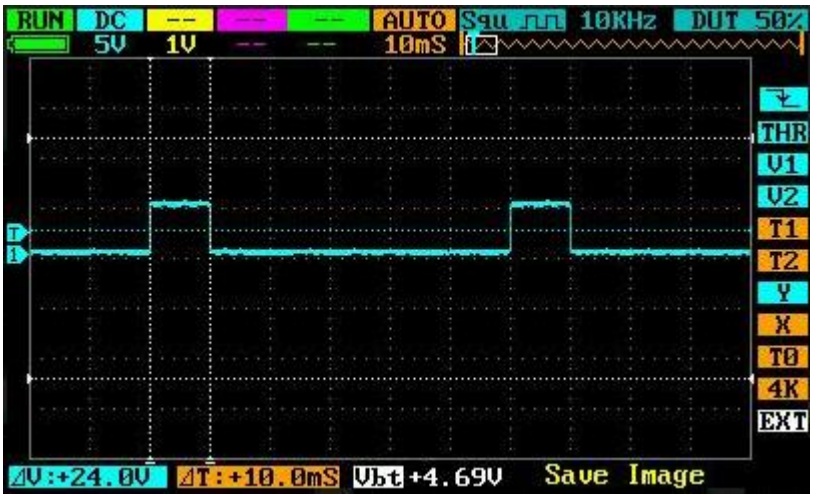

  - 9ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(9);
  digitalWrite(13,LOW);
  delay(50);
}
```



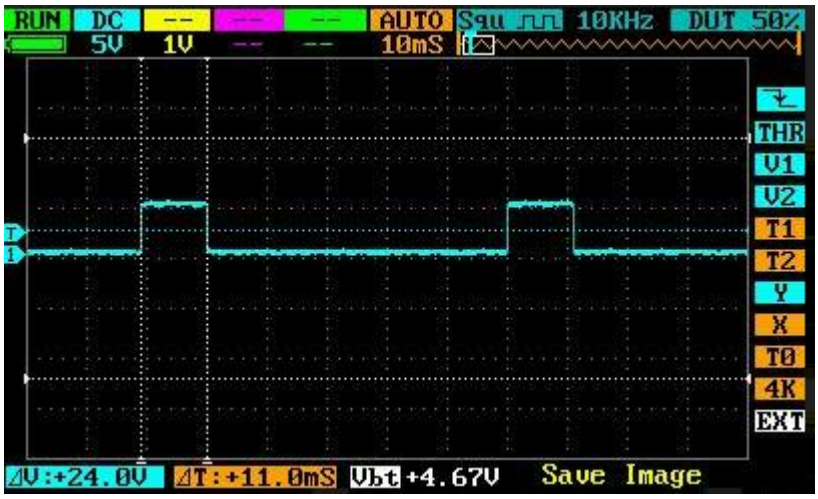

- 10ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(10);
  digitalWrite(13,LOW);
  delay(50);
}
```



- 11ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(11);
  digitalWrite(13,LOW);
  delay(50);
}
```

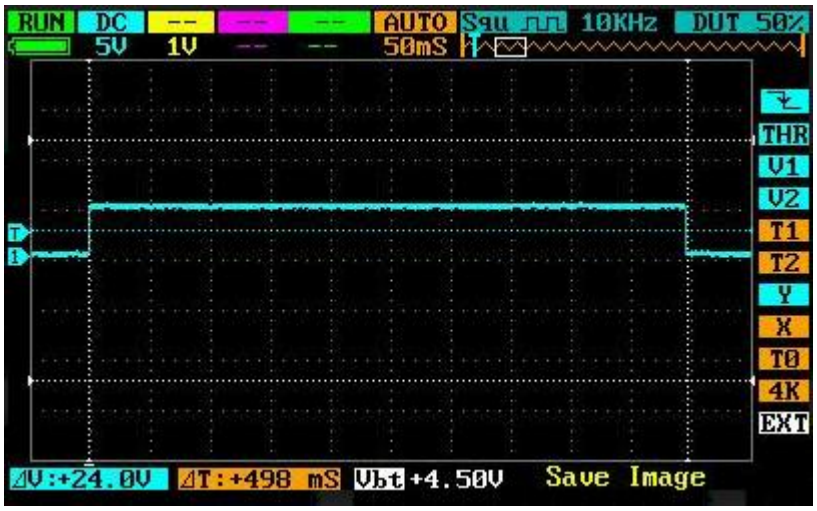


**Window Lifter Test Log (State Machine implementation with infinite loop and scheduler)**

- **AUTOMATIC ACTIVATION TESTING:** (TEST PASSED)
  - Signal Generator's Testing Time Constraints [ < 500ms ]:
    - 498ms → PASS: Enters in automatic mode (either up or down).
    - 499ms → PASS: Enters in automatic mode (either up or down).
    - **500ms → UNDIFINED:**
    - 501ms → PASS: No action is performed provided the time length of input signal.
    - 502ms → PASS: No action is performed provided the time length of input signal.
  - Signal Generator's Code Snippet:

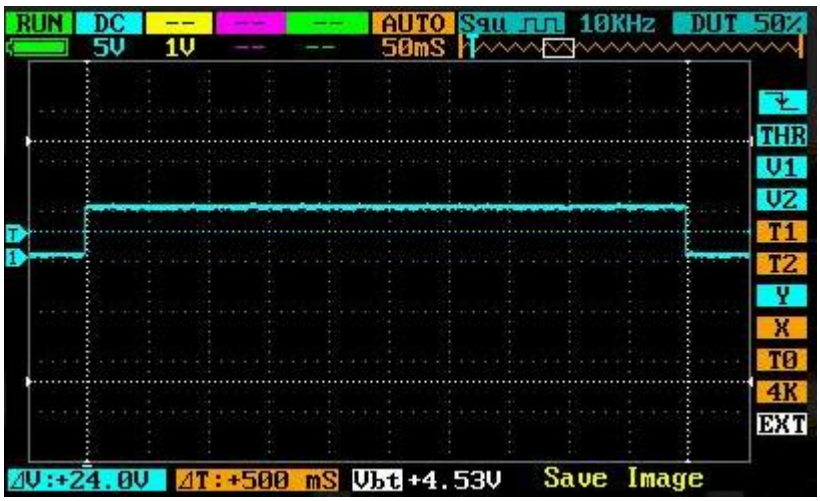
  - 498ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(498);
  digitalWrite(13,LOW);
  delay(498);
}
```



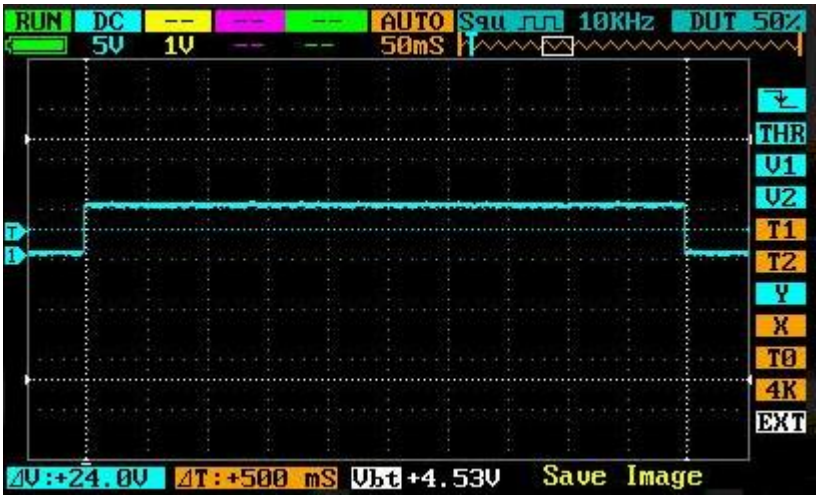

  - 499ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(499);
  digitalWrite(13,LOW);
  delay(499);
}
```



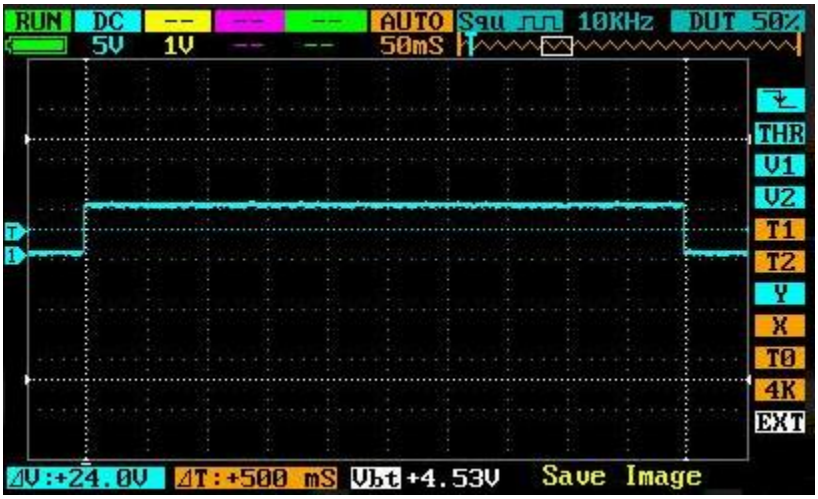
- 500ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(500);
  digitalWrite(13,LOW);
  delay(500);
}
```



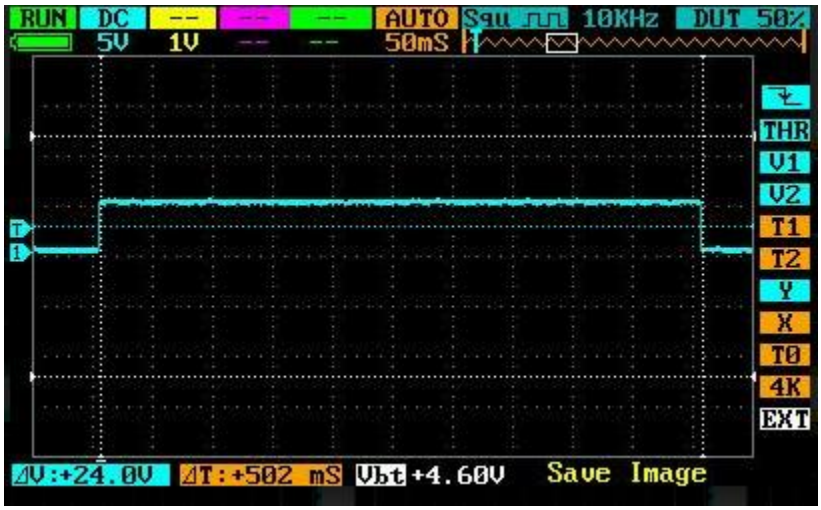

- 501ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(501);
  digitalWrite(13,LOW);
  delay(501);
}
```



- 502ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(502);
  digitalWrite(13,LOW);
  delay(502);
}
```

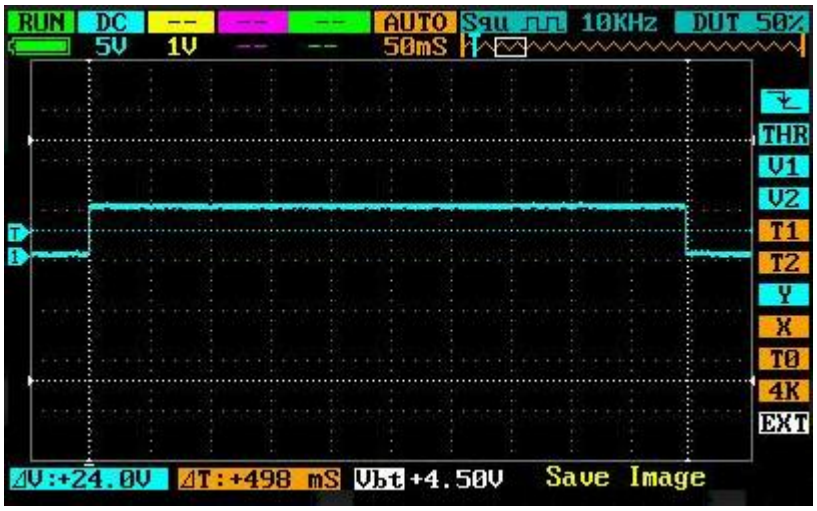


**Window Lifter Test Log (State Machine implementation with infinite loop and scheduler)**

- **SEMI-AUTOMATIC ACTIVATION TESTING [ >= 500MS ]**: **(TEST PASSED)**
  - Signal Generator's Testing Time Constraints:
    - 498ms → PASS: Enters in automatic mode (either up or down).
    - 499ms → PASS: Enters in automatic mode (either up or down).
    - **500ms → UNDIFINED.**
    - 501ms → PASS: No action is performed provided the time length of input signal.
    - 502ms → PASS: No action is performed provided the time length of input signal.
  - Signal Generator's Code Snippets:

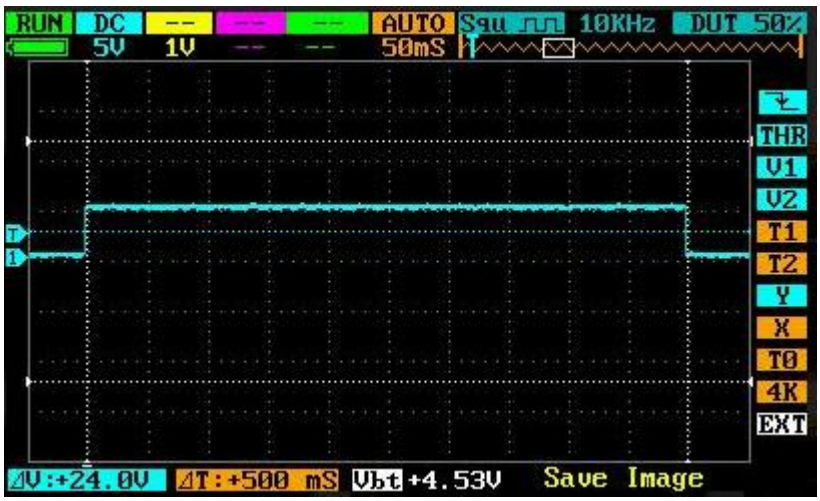
  - 498ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(498);
  digitalWrite(13,LOW);
  delay(498);
}
```



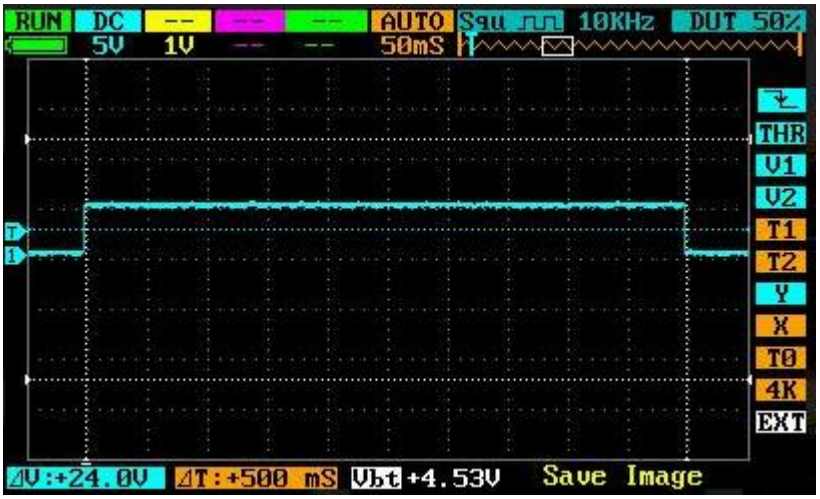

  - 499ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(499);
  digitalWrite(13,LOW);
  delay(499);
}
```



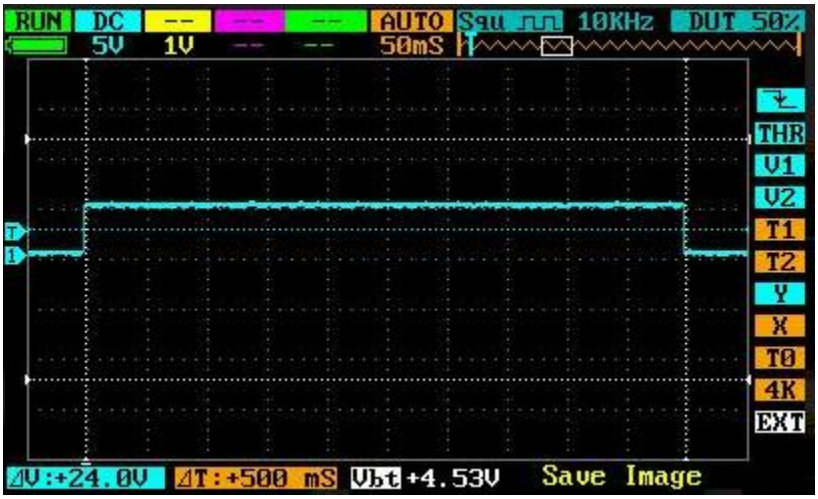
- 500ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(500);
  digitalWrite(13,LOW);
  delay(500);
}
```



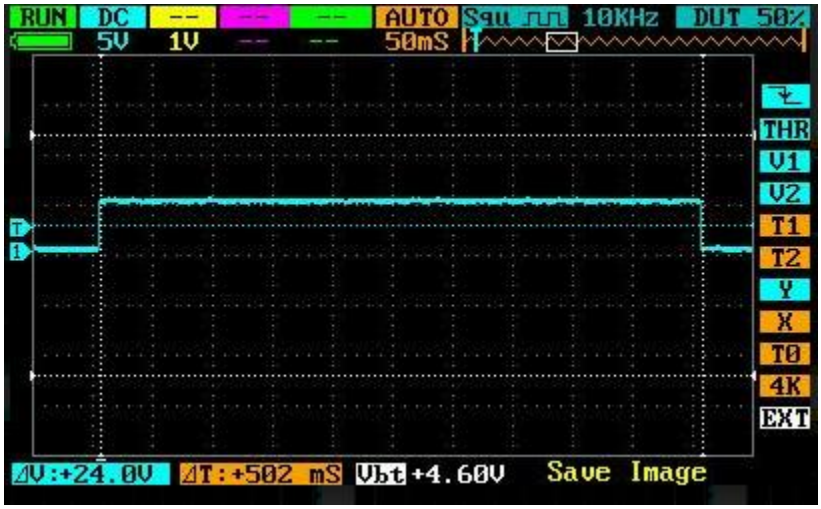

- 501ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(501);
  digitalWrite(13,LOW);
  delay(501);
}
```



- 502ms Test:

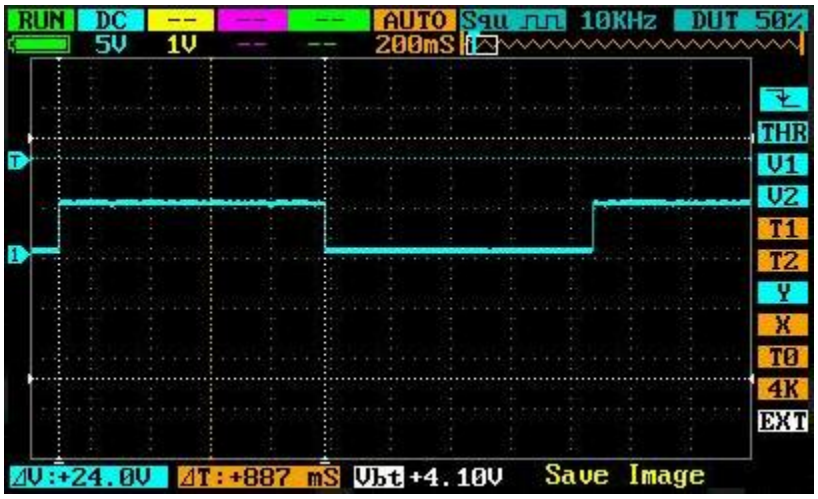
```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(502);
  digitalWrite(13,LOW);
  delay(502);
}
```



- **SEMI-AUTOMATIC ACTIVATION TESTING [ CONSIDERING LED TRANSITION TIMES: 500MS + 400MS = 900MS ]:** (TEST PASSED)
  - Signal Generator's Testing Time Constraints:
    - 887ms → PASS: No action is performed provided the time length of input signal.
    - 900ms → PASS: No action is performed provided the time length of input signal
    - 901ms → PASS: Enters in semi-automatic mode (either up or down).
    - 903ms → PASS: Enters in semi-automatic mode (either up or down).
  - Signal Generator's Code Snippet:

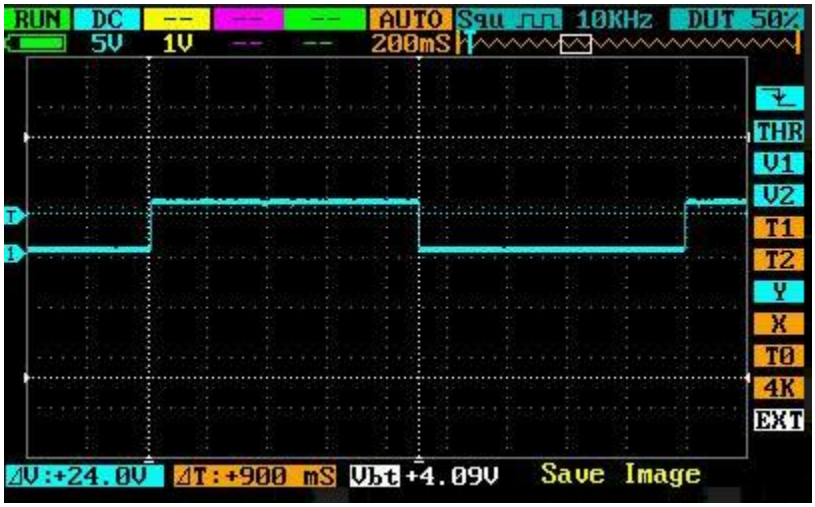
  - 887ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(887);
  digitalWrite(13,LOW);
  delay(887);
}
```




  - 900ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(900);
  digitalWrite(13,LOW);
  delay(900);
}
```



- 903ms Test:

```
void setup() {
  pinMode(13,OUTPUT);

}

void loop() {
  digitalWrite(13,HIGH);
  delay(903);
  digitalWrite(13,LOW);
  delay(903);
}
```