6. MODES

SWITCH POSITION 1 determines HH:MM or MM:HH. With POSITION A *on* the pins, the timer displays MM:SS. OFF the pins is HH:MM. Positions 2,3,4,5 determine the other behaviours as in chart.

MODE	SWITCH POSITION					DESCRIPTION
	1	2	3	4	5	
1	L / R	R	R	R	R	MANUAL STOP - EARLY WARNING ON LED1
2	L / R	L	R	R	R	MANUAL STOP - CANNOT CANCEL
3	L / R	R	L	R	R	FUTURE USE
4	L / R	L	L	R	R	FUTURE USE
5	L / R	R	R	L	R	AUTOMATIC STOP - WITH CANCEL
6	L / R	L	R	L	R	MANUAL STOP - EARLY WARNING ON LED2
7	L / R	R	L	L	R	FUTURE USE
8	L / R	L	L	L	R	FUTURE USE
9	L / R	R	R	R	L	FUTURE USE
10	L / R	L	R	R	L	FUTURE USE
11	L / R	R	L	R	L	REPEATING
12	L / R	L	L	R	L	RINSE TANK FLUSH
13	L / R	R	R	L	L	RINSE TANK FLUSH, RELAY OFF DURING CD
14	L / R	L	R	L	L	ANDON - PAUSING-RUNTIME
15	L / R	R	L	L	L	LOCKOUT
16	L / R	L	L	L	L	FUTURE USE

TIMER - PROJECT DESCRIPTION - rev. 002-25

1. Mode 1 - MANUAL STOP, EARLY LED1

MSw has no effect.

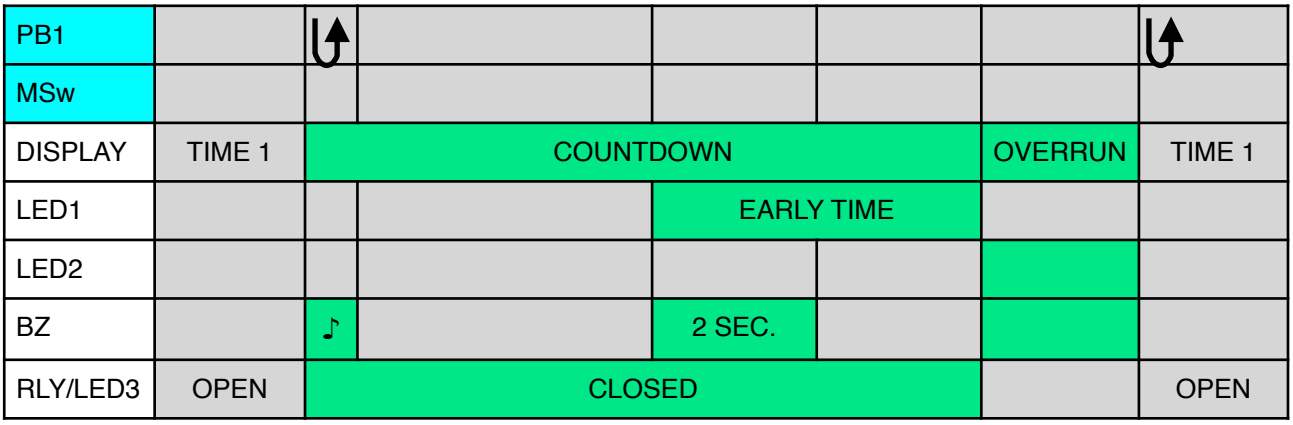


CHART 1.1 — STANDARD OPERATION

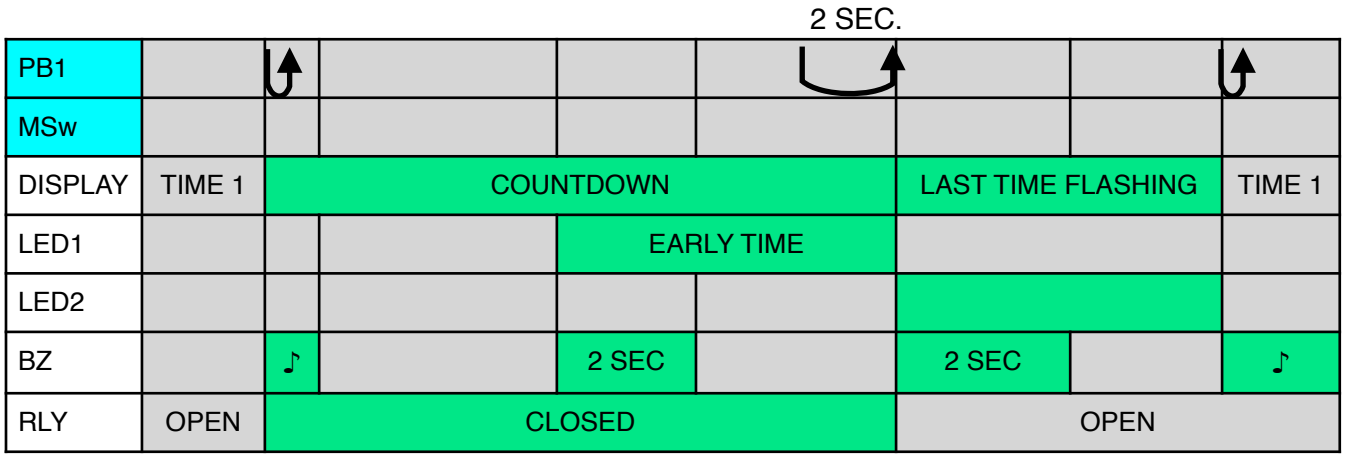


CHART 1.2 — CYCLE CANCELLED

PB1		↺			↺			
MSw								
DISPLAY	00:00	COUNTUP			00:00			
LED1								
LED2					2 sec.			
BZ		♪			♪			
RLY/LED3	OPEN	CLOSED			OPEN			

CHART 1.3 — COUNT UP FROM ZERO

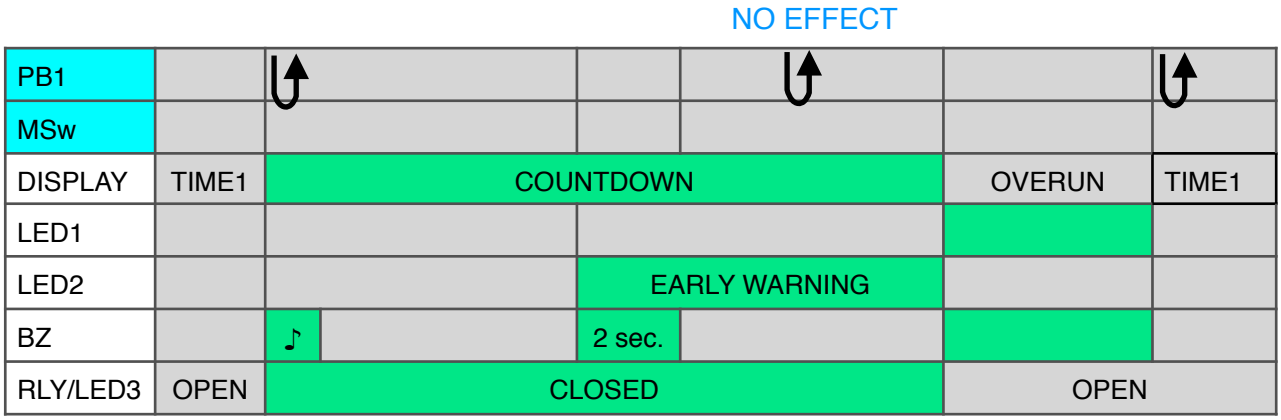
NO EFFECT ↓ NO EFFECT ↓

PB1			↺				↺	
MSw								
DISPLAY	TIME 1	COUNTDOWN					OVERRUN	TIME 1
LED1				EARLY TIME				
LED2								
BZ		♪		2 SEC.				
RLY/LED3	OPEN	CLOSED						OPEN

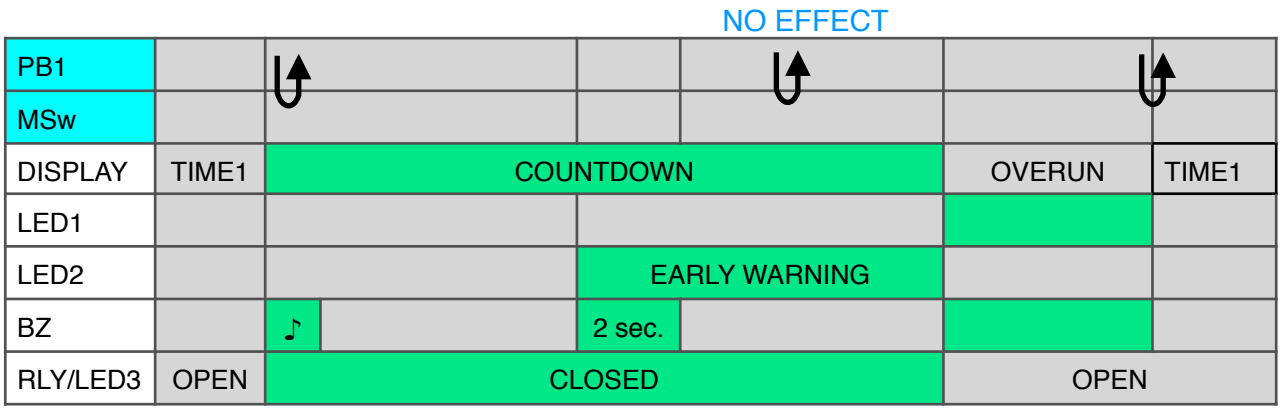
CHART 1.4 — MSw OPERATION

2. Mode 2 - MANUAL STOP, CANNOT CANCEL

- Same as cycle 1 but cycle cannot be cancelled with PB1.
- Setting “early warning” is the same as other modes. (hold PB1) See mode 1 for details.
- MSw can be held open for any length of time. A new cycle cannot be started until MSw is released however. (same as other modes)



MODE 2.1 - CANNOT CANCEL



MODE 2.1 - CANNOT CANCEL

3. Mode 3 - MECHANICAL TRIGGER

- This mode has been replaced by other modes. The mechanical trigger is incorporated in most other modes.

4. Mode 4 - PAUSING

- This mode has been deleted. This function is performed by mode 14.

5. Mode 5 -AUTO STOP WITH CANCEL

- After countdown, the cycle stops and resets automatically.
- LED2 is energized at the end of cycle for a variable time. (T2) This T2 counts down the time with flashing dots displayed. Default time for T2 after programming with ICD is 5 seconds.
- T2 It is set by holding PB1 to enter a programming mode. (like other cycles)
- T2 output is steady. (not flashing)
- Cycle can be started with either MSw *or* PB1. (gives more flexibility for short and long contact closes) MSw can be any length of time. If MSw exceeds T1, cycle runs to completion but can't start a new cycle until MSw re-opens.
- Cycle can be cancelled mid-way by holding PB1 for 2s.

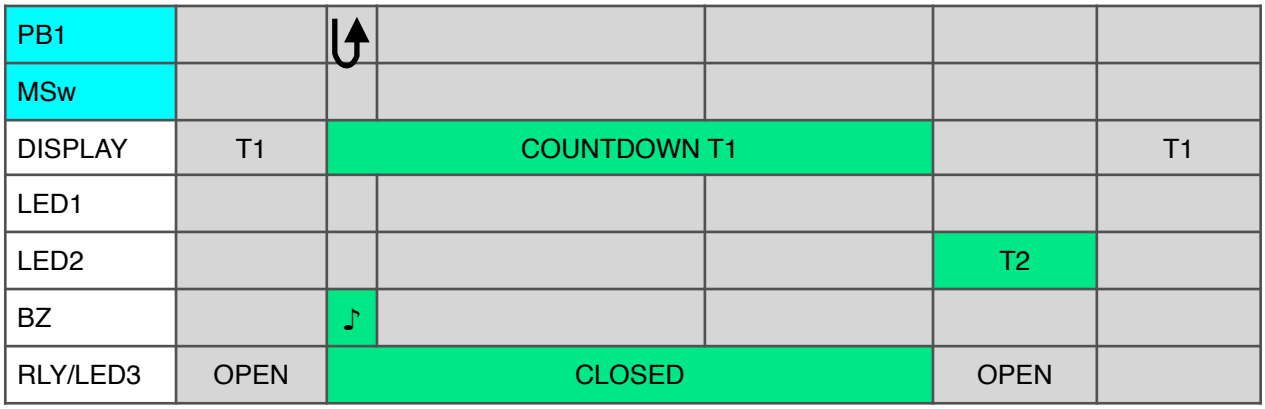


CHART 5.1 — AUTO-STOP STANDARD OPERATION

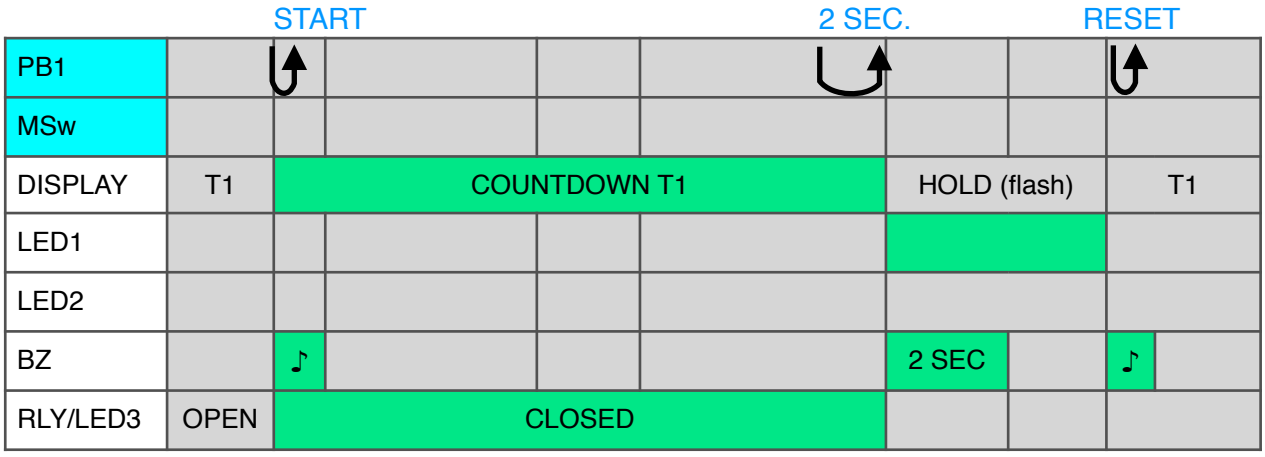


CHART 5.2 — WITH A CANCELLATION

6. EARLY LED2

Identical to mode 1 except the behaviors of LED1 and LED2 are reversed from mode 1. See mode 1 for written description.

PB1		↺			↺
MSw	OPEN				
DISPLAY	TIME 1	COUNTDOWN		OVERRUN	TIME 1
LED1					
LED2			EARLY TIME		
BZ		♪	2 SEC.		
RLY/LED3	OPEN	CLOSED		OPEN	

CHART 6.1 - STANDARD CYCLE

PB1		↺	2 SEC.			↺
MSw	OPEN					
DISPLAY	TIME 1	COUNTDOWN			LAST TIME FLASHING	TIME 1
LED1						
LED2			EARLY TIME			
BZ		♪	2 SEC		2 SEC	♪
RLY/LED3	OPEN	CLOSED			OPEN	

CHART 6.2 - WITH CANCELLATION

PB1		↺		↺
MSw	OPEN			OPEN
DISPLAY	00:00	COUNT UP		00:00
LED1				
LED2		EARLY TIME		
BZ		♪		♪
RLY	OPEN	CLOSED		OPEN

CHART 6.3 — COUNT UP FROM ZERO

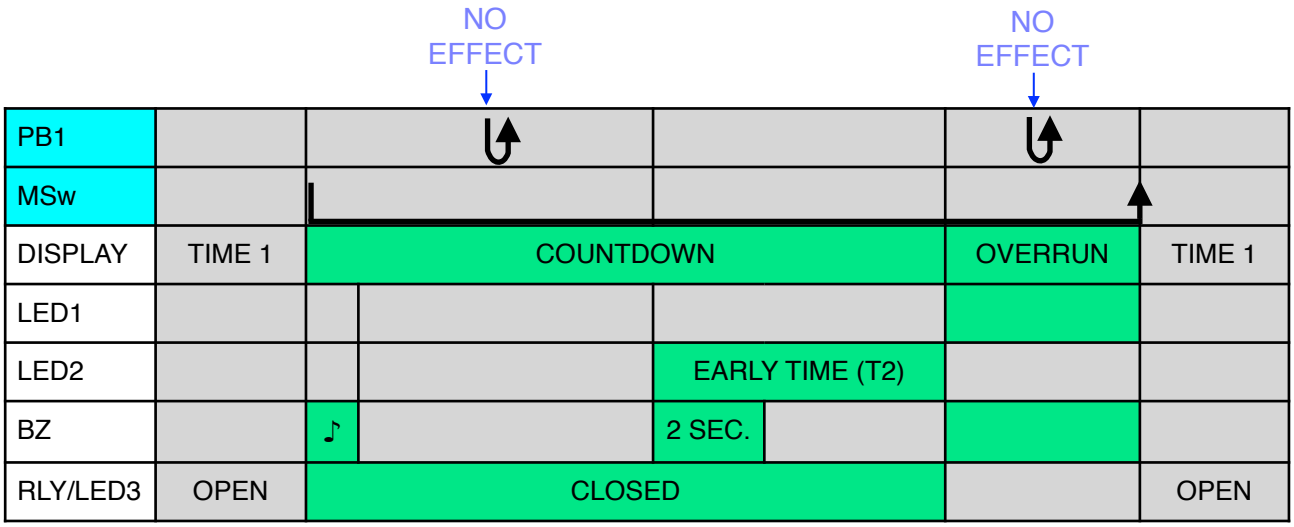


CHART 6.4 — MSw OPERATION

7. Mode7 - GUARD DUTY

- This mode has been deleted. This is available in firmware V52_510_02.

8. Mode 8 - SPRAY RINSE

- This is a specialty mode available in firmware V52_510_02.

9. Mode 9 - MACHINE RUN TIME

- This mode has been deleted. This function is available in mode 14. There is a feature whereby the buzzer chirps every 15 minutes in firmware V52_510_02.

10. Mode 10 - RELAY DELAY

- Replaced by mode 13.

11. Mode 11 REPEAT

- Once activated, the timer will have a repeating behavior until deactivated. Timer can be activated either by MSw or PB1.
- The “interval time” or T2 is set by holding down all three buttons like the “early warning” time in other mode
- Dots displayed while counting T2.
- Cycle can be activated by either PB1 or MSw. (whichever happens first) If MSw closes during a PB1 countdown there is no effect.

START END

PB1		↑				↑
MSw	OPEN	OPEN				OPEN
DISPLAY	T1	COUNT DOWN T1	COUNT DOWN T2 (dots)	COUNT DOWN T1	COUNT DOWN T2 (dots)	T1
LED1						4 s
LED2						
BZ		♪		♪		2s
RLY/LED3	OPEN	CLOSED	OPEN	CLOSED	OPEN	

CYCLE 11.1 - ACTIVATED BY PB1

START PB1 no effect END

PB1				↑			
MSw	OPEN	CLOSED					OPEN
DISPLAY	TIME1	COUNT DOWN T1	COUNT DOWN T2 (dots)	COUNT DOWN T1	COUNT DOWN T2 (dots)		TIME1
LED1						4 s	
LED2							
BZ		♪		♪		2s	
RLY/LED3		CLOSED	OPEN	CLOSED	OPEN		

CHART 11.2 ACTIVATED BY MSw

12.Mode 12 RINSE TANK FLUSH

- After the countdown, the relay closes for a second programmed time to flush a rinse tank. (T1)
- Programming T2 is done by holding 3 buttons for 5s to enter a programming mode. (same as some other programs)
- MSw inputs allow timer to run from a sustained contact close instead of momentary PB1. (so a cycle can be started by proximity switch - see chart 12.2, and 12.3)
- When running from pushbutton, cycle can be cancelled at any point by holding PB1 for two seconds; display will then flash and hold display when cancelled. Another PB1 press resets time to set time.
- As time T1 counts down there should be a message to distinguish from T2. I propose the display alternates between time T1 and the text " rinS".

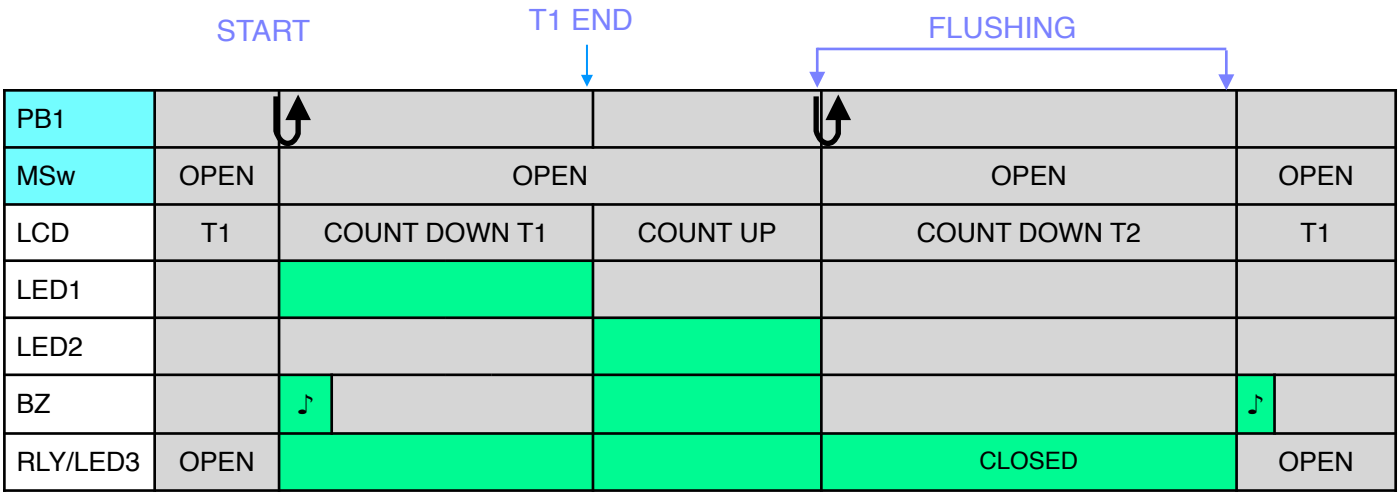


CHART 12.1 - PB1 OPERATION

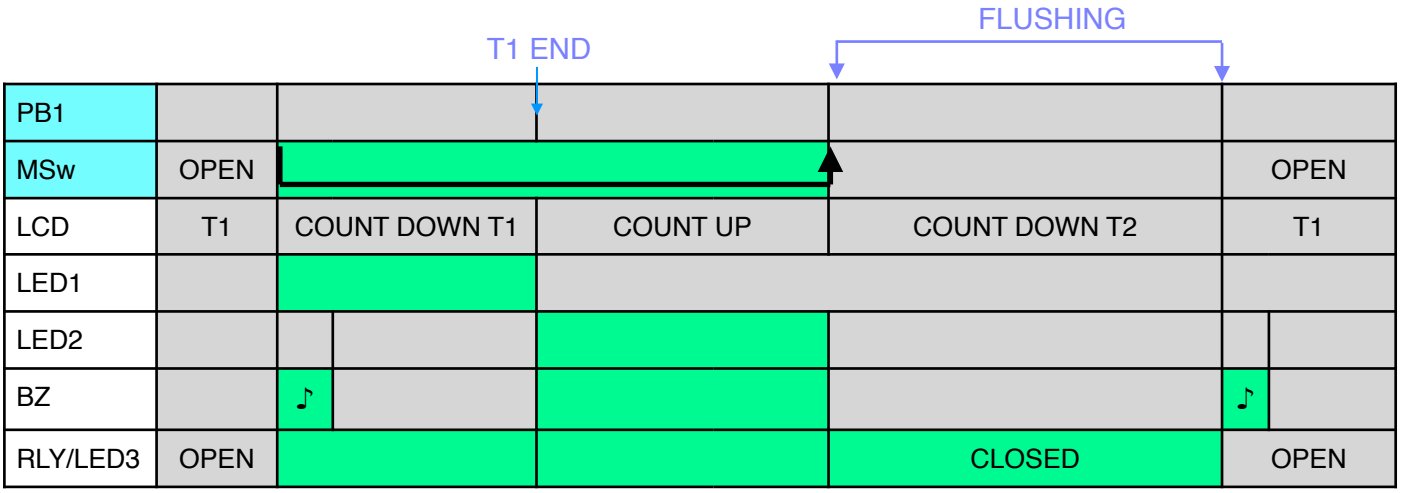


CHART 12.2 - MSw OPERATION

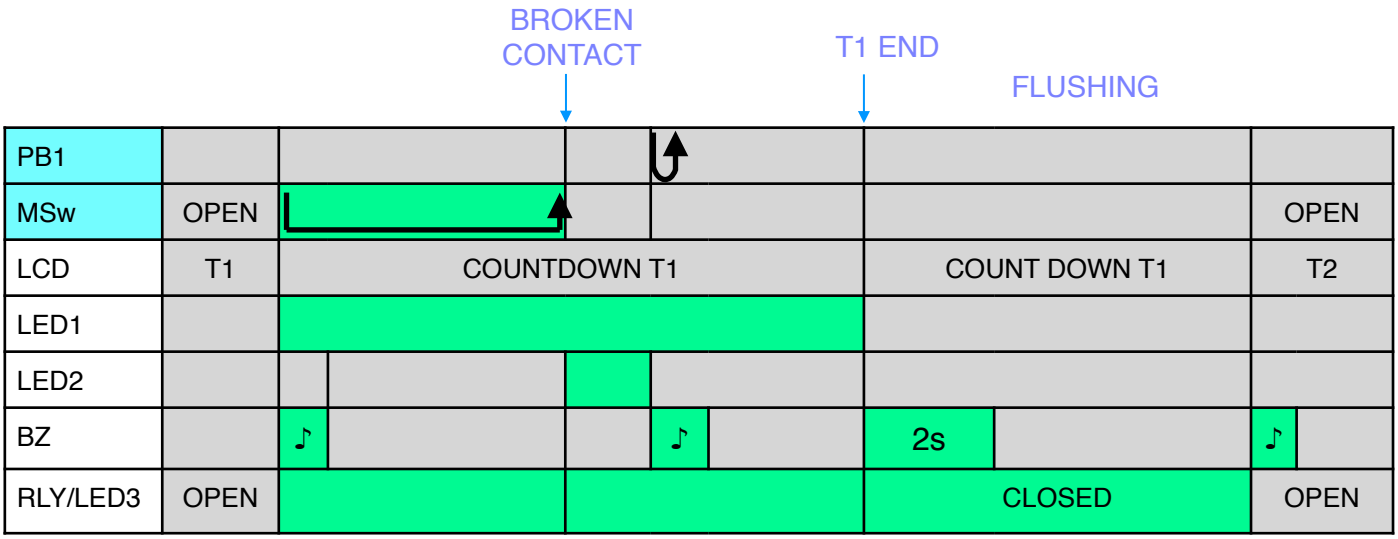


CHART 12.3 - MSw CONTACT BROKEN

12.3 If contact with the machine switch is broken before the end of the cycle then PB1 must be pressed to stop buzzer.

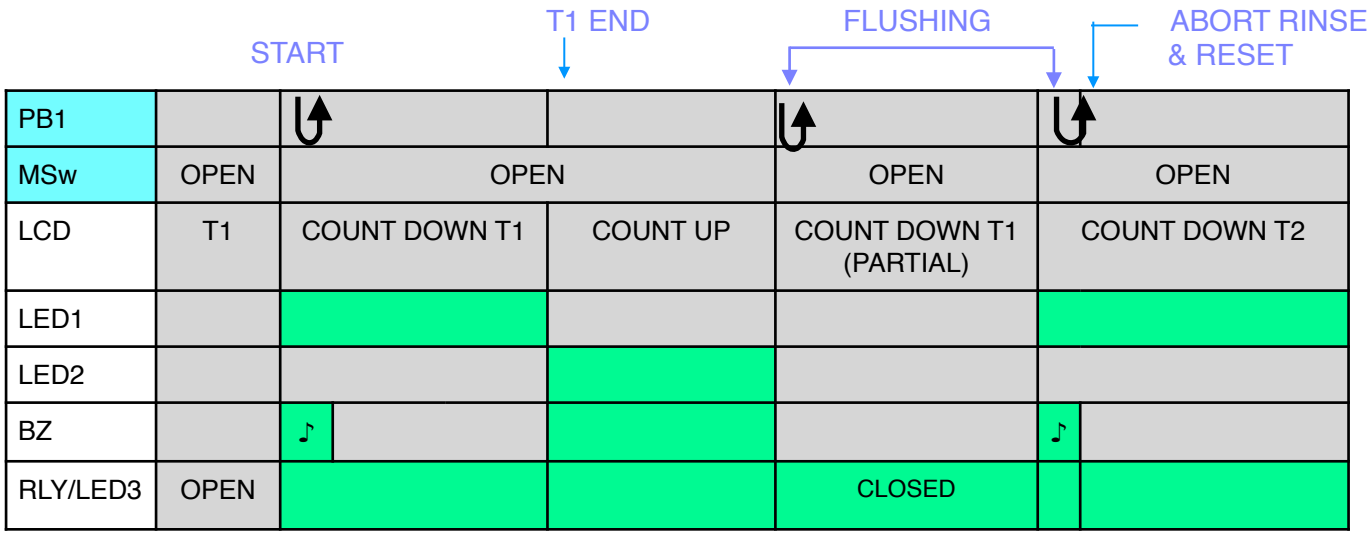


CHART 12.4 - ABORTED RINSE (PB OPERATION)

12.4 Aborted rinse cycle is when an operator wants to start a new load in the tank before the rinsing from a previous cycle is completed. This is chart 12.4. A single press of the button curing T1 starts a new cycle. (countdown T2)

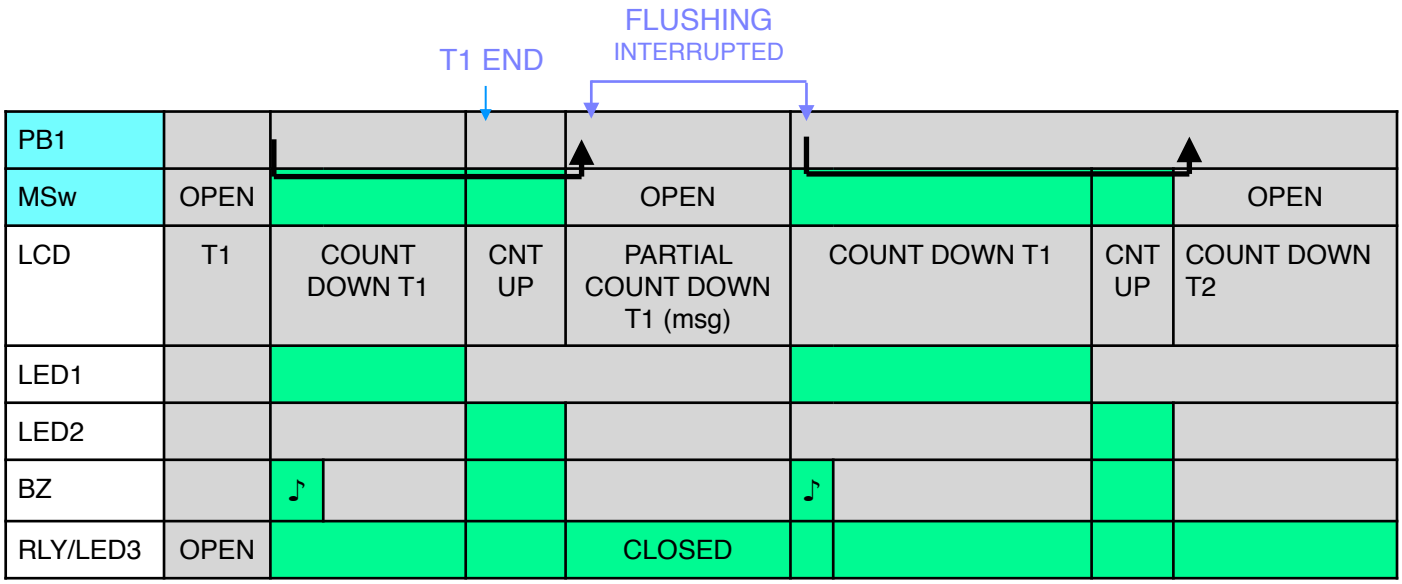


CHART 12.5 MSW OPERATION WITH ABORTED RINSE

12.5 is an aborted rinse cycle when an operator wants to start a new load in the tank before the T2 rinsing from a previous cycle is completed. Closing MSw simply starts a new cycle from the beginning.

13.Mode 13 RELAY ON AFTER DWELL

- Same as mode 12 but the relay only comes on after the dwell time. Useful for replenishing chemicals.

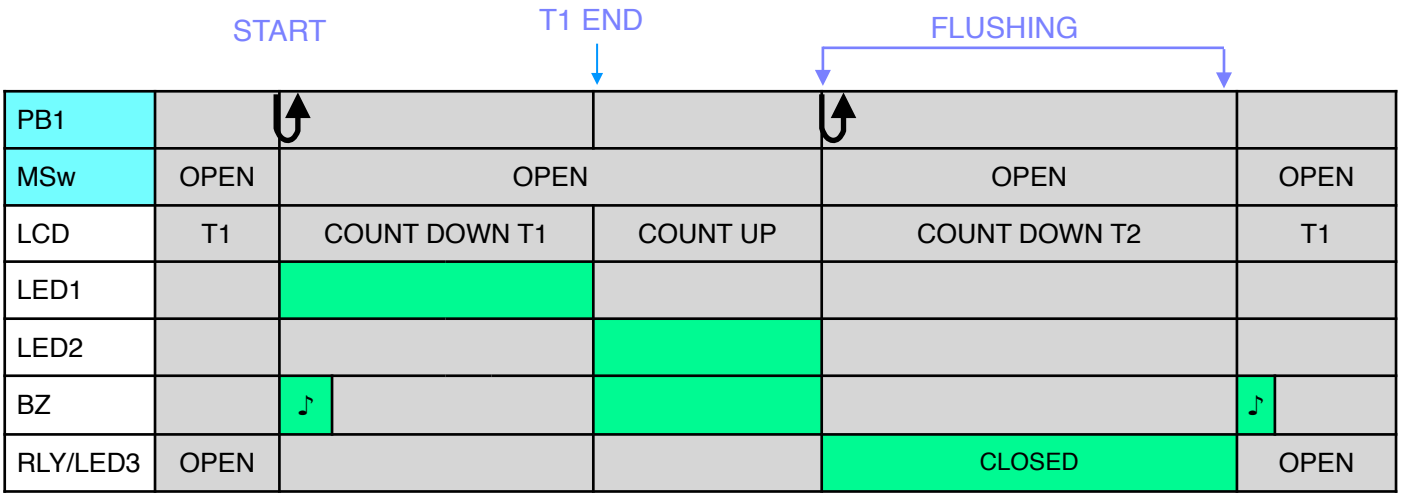


CHART 13.1 - PB1 OPERATION

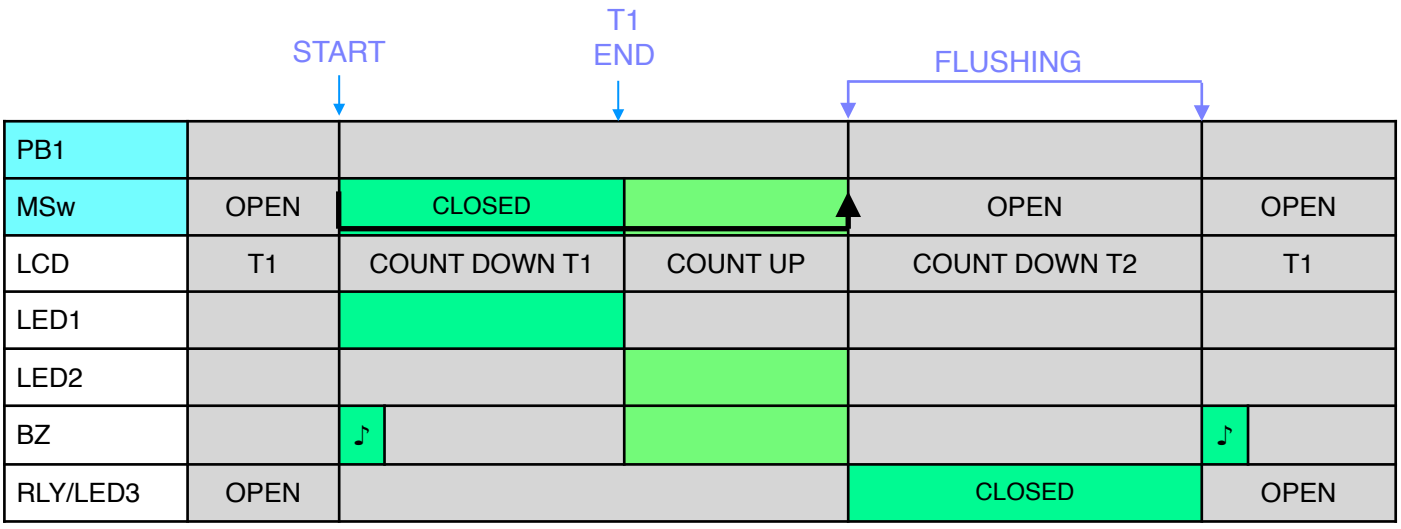


CHART 13.2 - MSw OPERATION (NORMAL CYCLE)

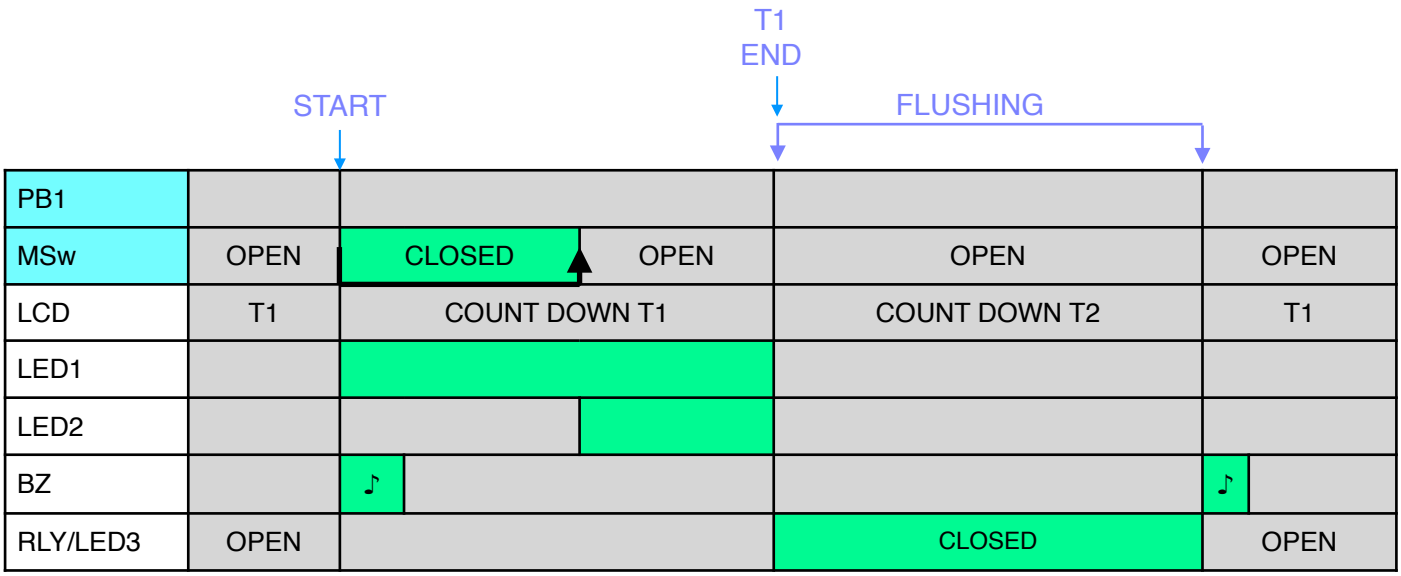


CHART 13.3 - MSw OPERATION WITH A CONTACT BREAK

14.Mode 14 RUNTIME - ANDON

- Green light (LED1) is energized when *not* timing. When the count starts, the green light turns off and LED3 turns on. (with relay)
- MSw can be started and stopped in chart 14.3
- MSw is inactive if cycle is started by PB1 (chart 14.1)

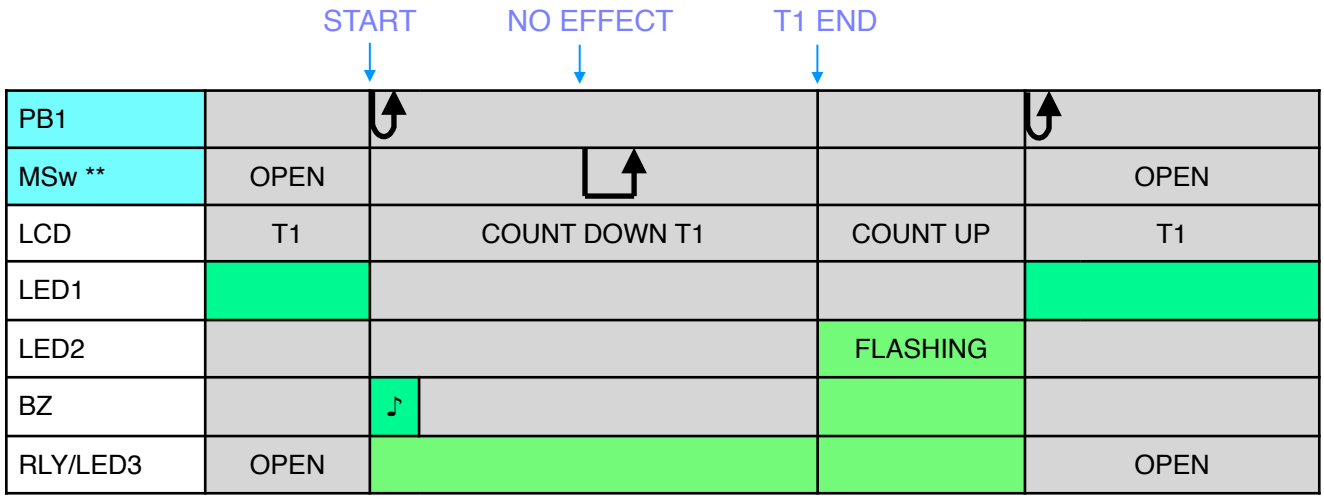


CHART 14.1 - PB OPERATION

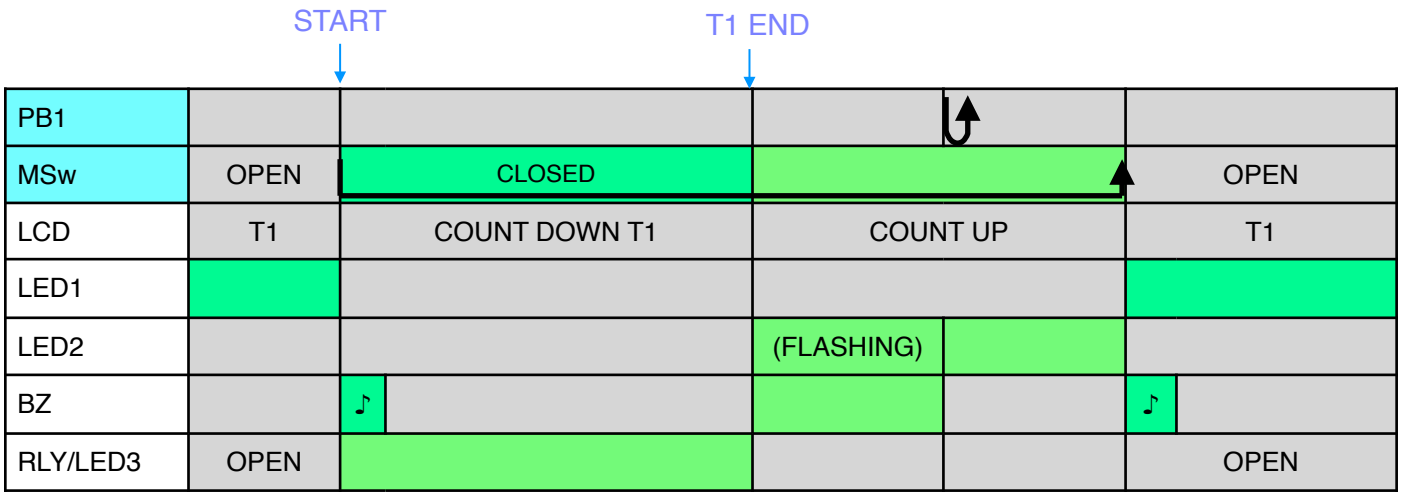


CHART 14.2 - MSw OPERATION

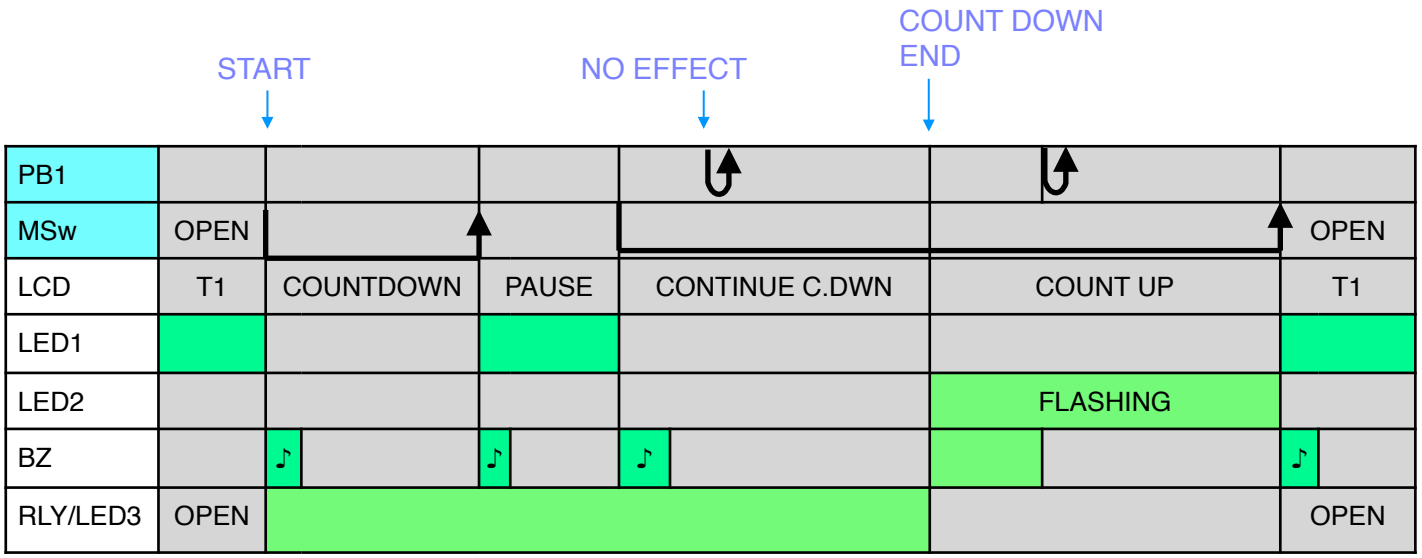


CHART 14.3 - MSw OPERATION (INTERRUPTIONS)

15.Mode 15 LOCKOUT

- The timer forces operators to not re-use the process for a predetermined time. (the lockout time)
- Once started, this cycle cannot be cancelled during either T1 or T2

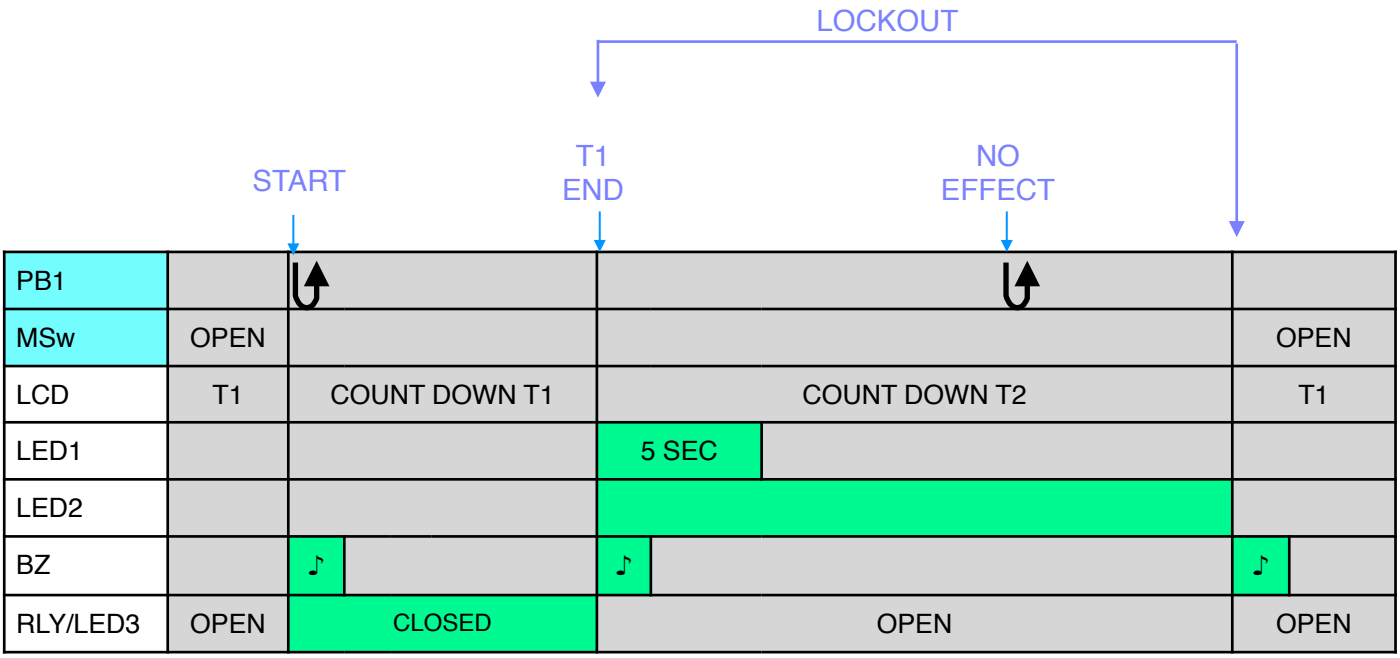


CHART 15.1 - PB1 OPERATION

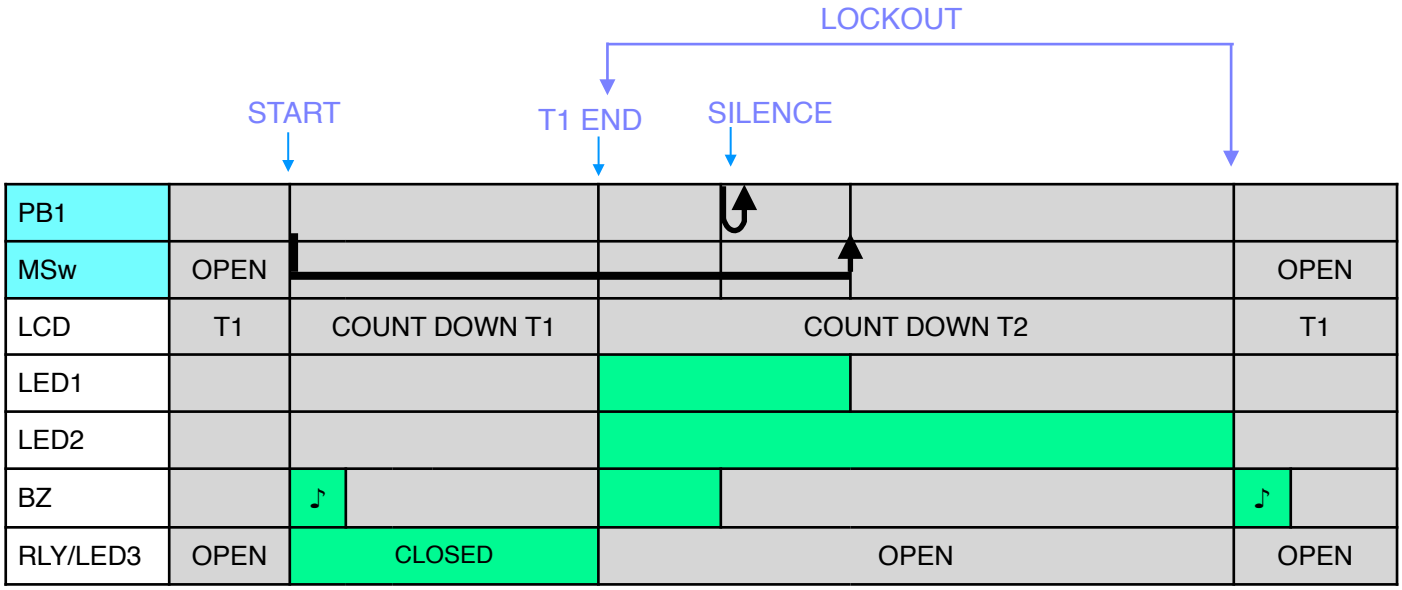


CHART 15.2 - MSw OPERATION

LAST PAGE