

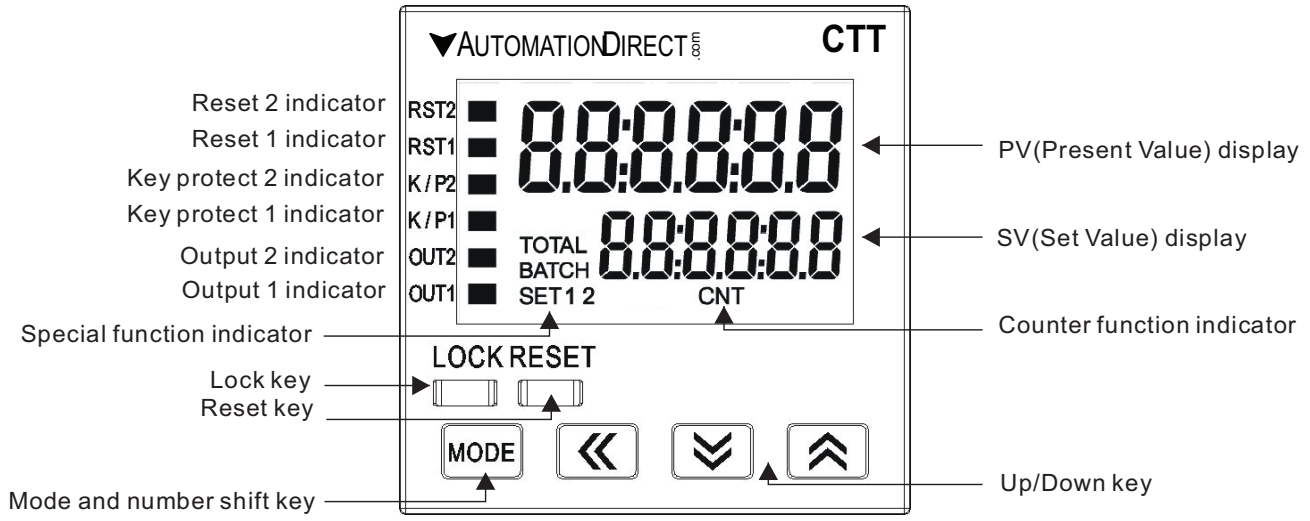
COUNTER



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Display, Indicators and Keys



LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	BATCH	"Batch Counting Mode" in Counter
K/P 1/2	Light on when key-protected mode is enabled	SET 1 2	SV1, SV2 display
OUT 1/2	Light on when output is executing	CNT	Light on in Counter function
TOTAL	"Total Counting Mode" in Counter function		
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press and at the same time to disable key-protected mode. (Lock 1) disables the functions of all keys. (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to select digit to change. The indicator of the selected digit will flash. After the change is made, press to save the setting. If SV or parameters are not changed, press once to switch between SET1 and SET2.		
Configuration	Press in operation mode for more than 3 seconds to enter configuration mode. Press once to switch among parameters. To return to operation mode, press for more than 3 seconds.		

Getting Started with Counters

Step 1: Determine Required Counter Function

Counter Functions

1-Stage Counting (SEGE 1)

A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily or will be maintained ON depending on the Output Mode selected.

2-Stage Counting (SEGE 2)

In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Outputs will turn ON momentarily or will be maintained ON depending on the output mode selected.

Batch Counting (BATCH)

In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Total Counting (TOTAL)

A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily or will be maintained ON depending on the Output Mode selected.

Dual Counting (DUAL)

A single count setting value SV is available in Dual Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily or will be maintained ON depending on the Output Mode selected.

Step 2: Determine Required Counter Input Mode

Counter Input Modes:

Counting Up (UP)*

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting Down (DOWN)*

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting Up / Command Counting Down (UD)*

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

Counting Up / Counting Down (UD D)*

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.

Quadrature (UD)*

When the quadrature input signal at CP1 changes before the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 changes before the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.

Addition (ADD)**

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will increment the count present value PV by 1.

Subtraction (SUB)**

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.

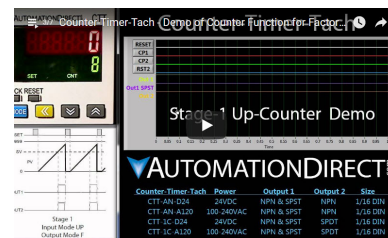
*Available only with counter functions 1-stage, 2-stage, batch, total

**Available only with counter function dual

Step 3: Determine the Counter Output Mode by Visiting the Page Numbers Shown for Your Desired Counter Function and Input Mode

Counter Output Modes:

Counter Function	Counter Input Mode	Page Number
1-Stage	Counting Up (UP)	2-5
	Counting Down (DOWN)	2-9
	Counting UP/Command Counting Down (UDR)	2-13
	Counting UP/Counting Down (UDB)	2-18
	Counting Quadrature (UDL)	2-23
2-Stage	Counting Up (UP)	2-28
	Counting Down (DOWN)	2-33
	Counting UP/Command Counting Down (UDR)	2-38
	Counting UP/Counting Down (UDB)	2-45
	Counting Quadrature (UDL)	2-52
Batch	Counting Up (UP)	2-59
	Counting Down (DOWN)	2-64
	Counting UP/Command Counting Down (UDR)	2-69
	Counting UP/Counting Down (UDB)	2-75
	Counting Quadrature (UDL)	2-81
Total	Counting Up (UP)	2-87
	Counting Down (DOWN)	2-92
	Counting UP/Command Counting Down (UDR)	2-97
	Counting UP/Counting Down (UDB)	2-103
	Counting Quadrature (UDL)	2-109
Dual	Addition (ADD)	2-115
	Subtraction (SUB)	2-120



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0004> for a short Counter demo video.



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0003> for a Counter Set-up video.

CTT Counter Functions

1-Stage Counting (SEAL) (i)

Counting Up (UP)

1-Stage Counting (SEAL) (i)

A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the Output Mode selected.

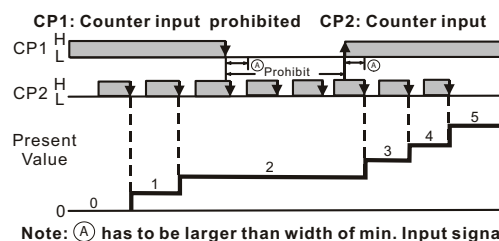
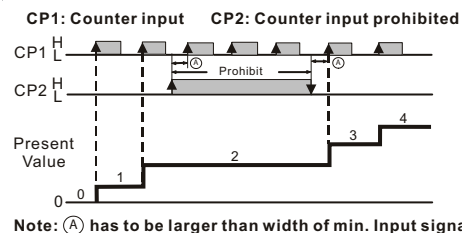
Input Mode:

Counting Up (UP)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



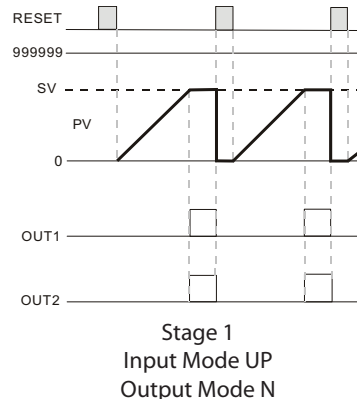
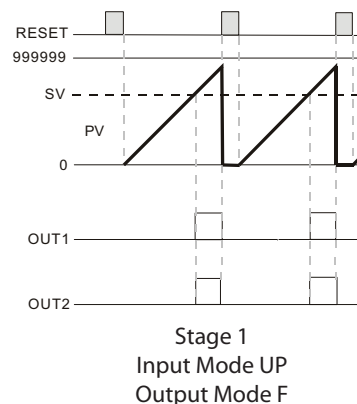
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

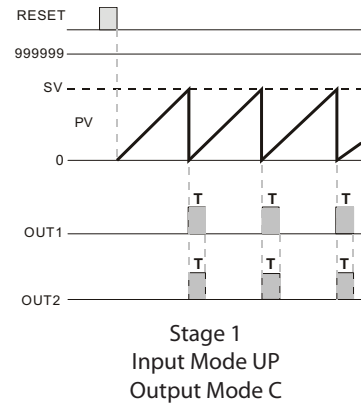


Mode C

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

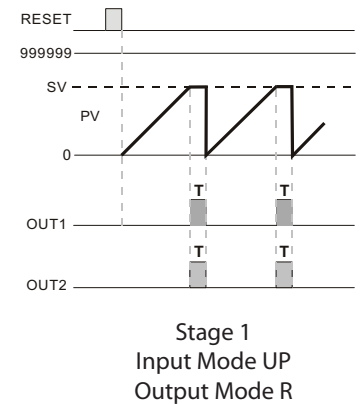


Mode R

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2).

The count PV is prohibited from incrementing until the end of the output pulse time (EOUTE2) when the outputs turn OFF and the count PV is reset automatically to 0. The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

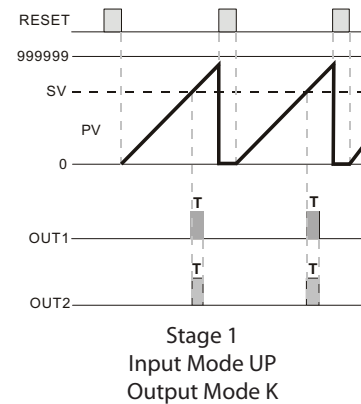


Mode K

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

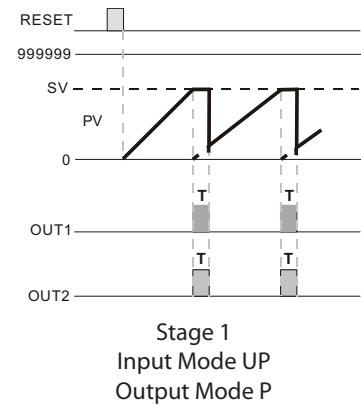


Mode P

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV display is prohibited from incrementing until the end of the output pulse time, when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

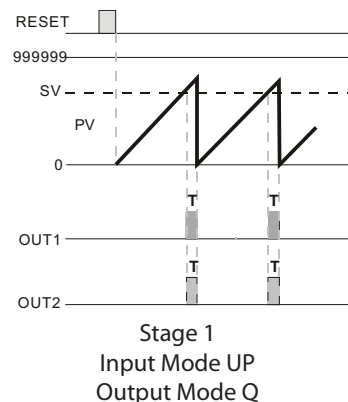


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal until the end of the output pulse time, when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

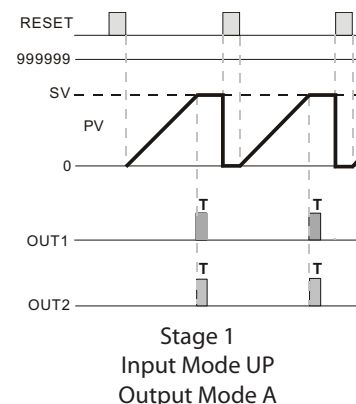


Mode A (A)

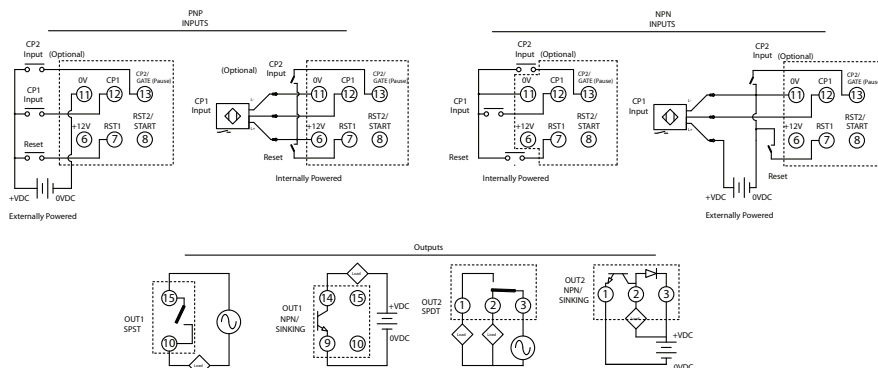
When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/or/▲] **ctm** [▼/or/▲] **Cont** [▼/or/▲] **tach** [▼/or/▲] **ctc**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

ctmFunc [▼/or/▲] **STAGE1** [▼/or/▲] **STAGE2** [▼/or/▲] **BATCH** [▼/or/▲] **TOTAL** [▼/or/▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

ctmPUL [▼/or/▲] **UP** [▼/or/▲] **down** [▼/or/▲] **Ud_A** [▼/or/▲] **Ud_b** [▼/or/▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

ctmOut [▼/or/▲] **F** [▼/or/▲] **n** [▼/or/▲] **C** [▼/or/▲] **n** [▼/or/▲] **E** [▼/or/▲] **P**

MODE [▼] [▼/or/▲] **Q** [▼/or/▲] **A** [▼/or/▲] **S** [▼/or/▲] **E** [▼/or/▲] **D**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

ctmSPEED [▼/or/▲] **10K** [▼/or/▲] **5K** [▼/or/▲] **1K** [▼/or/▲] **200** [▼/or/▲] **30** [▼/or/▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

ctmOut1 [▼/or/▲] **0.02** [▼/or/▲] **0.00**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

ctmOut2 [▼/or/▲] **0.02** [▼/or/▲] **0.00**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

ctmDec [▼/or/▲] **0** [▼/or/▲] **1** [▼/or/▲] **2** [▼/or/▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

ctmPSCALE [▼/or/▲] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

ctmPERS [▼/or/▲] **CLEAR** [▼/or/▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

ctmRST [▼/or/▲] **20** [▼/or/▲] **1**

MODE [▼] Select input signal types: NPN and PNP

ctmPULC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE [▼]
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CTT Counter Functions

1-Stage Counting (STAGE 1)

Counting Down (DOWN)

1-Stage Counting (STAGE 1)

A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

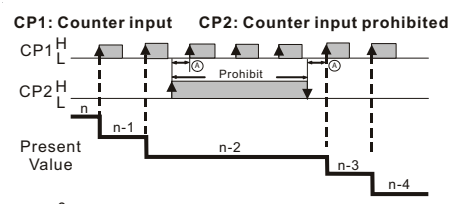
Input Mode:

Counting Down (DOWN)

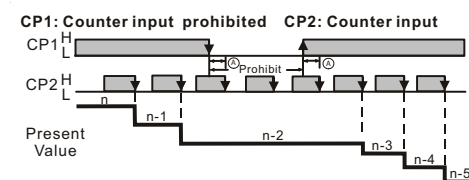
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

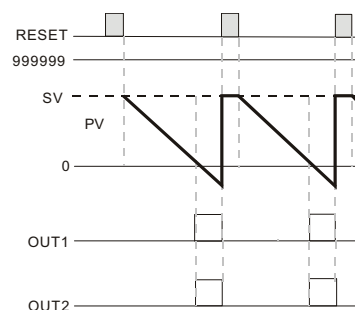
Output Modes:

Mode F (F)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RSTPW) or DIP Switch 8.



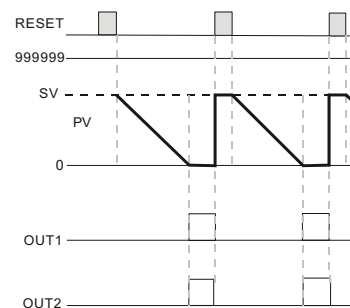
Stage 1
Input Mode DOWN
Output Mode F

Mode N (N)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RSTPW) or DIP Switch 8.



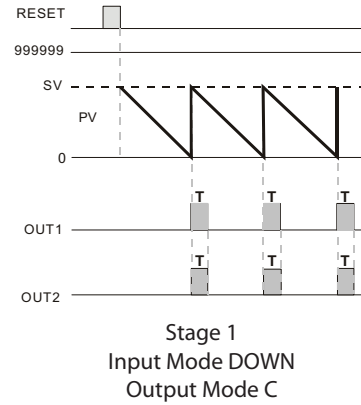
Stage 1
Input Mode DOWN
Output Mode N

Mode C

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the count PV will reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

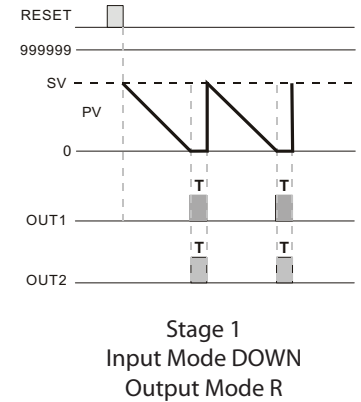


Mode R

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV is prohibited from decrementing until the end of the output pulse time (tout2) when the outputs turn OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

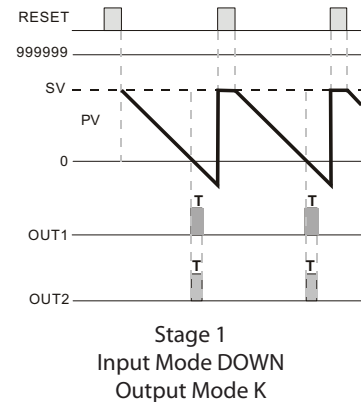


Mode K

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

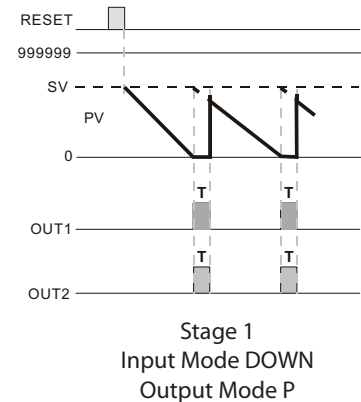


Mode P

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to the count setting value SV and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

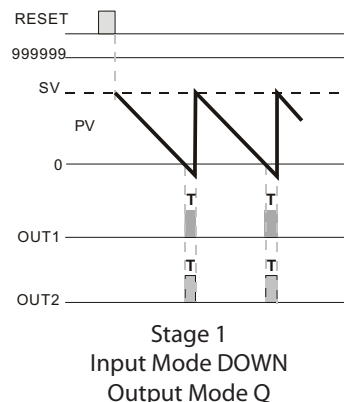


Mode Q (Q)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will continue to decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

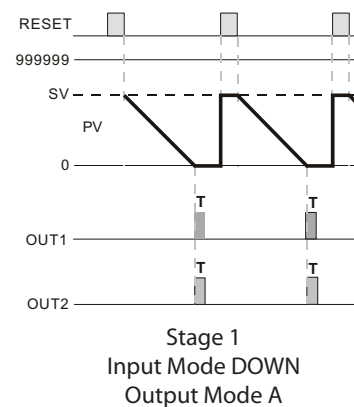


Mode A (A)

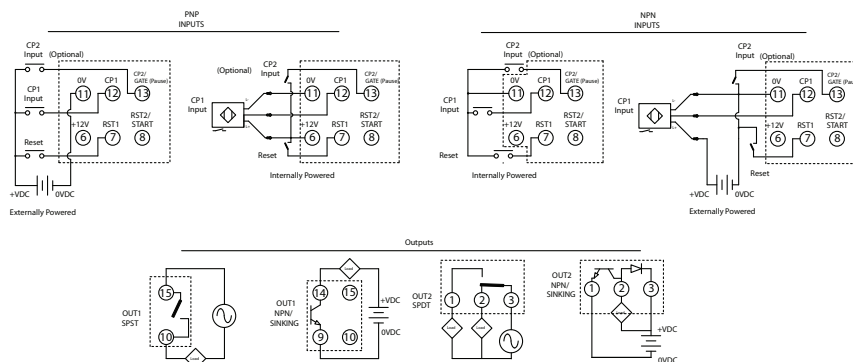
When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **timer** [▼] or [▲] **Count** [▼] or [▲] **tach** [▼] or [▲] **CTC**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountPt [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

CountOut [▼] or [▲] **A** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **n** [▼] or [▲] **L** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **A** [▼] or [▲] **S** [▼] or [▲] **L** [▼] or [▲] **d** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CountSPED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

CountOut1 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

CountOut2 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

CountPt [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1.000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

CountRSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

CountPULC [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE [▼]

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CTT Counter Functions

1-Stage Counting (S1A) (S1B)

Counting Up / Command Counting Down (U1A)

1-Stage Counting (S1A) (S1B)

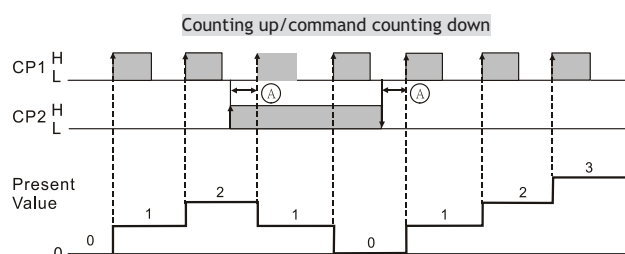
A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Command Counting Down (U1A) (U1B)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



Note: (A) has to be larger than width of min. input signal.

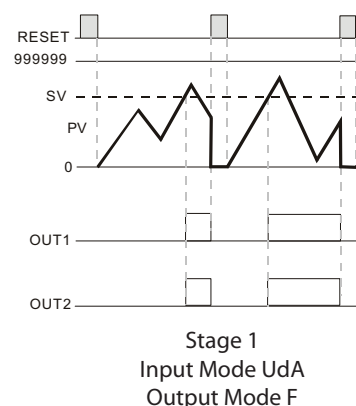
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (R15r) or DIP Switch 8.

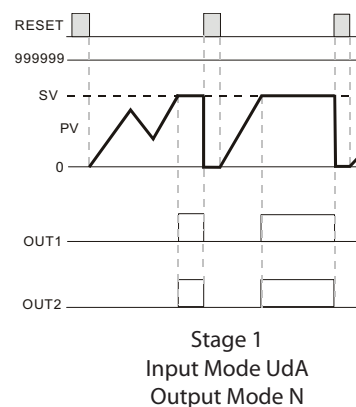


Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (R15r) or DIP Switch 8.

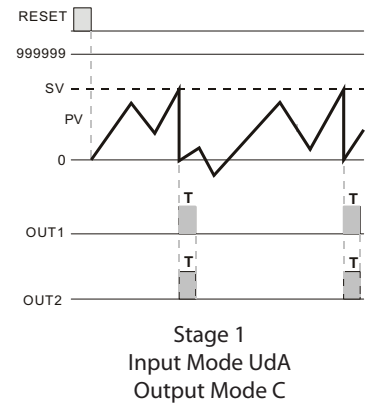


Mode C

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

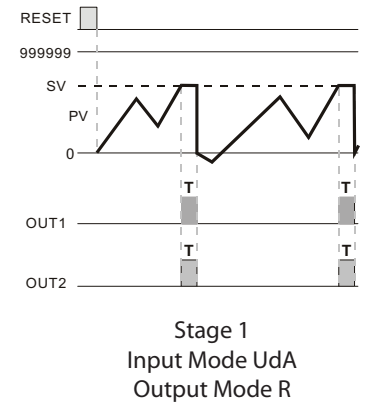


Mode R

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (EOUTE2) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

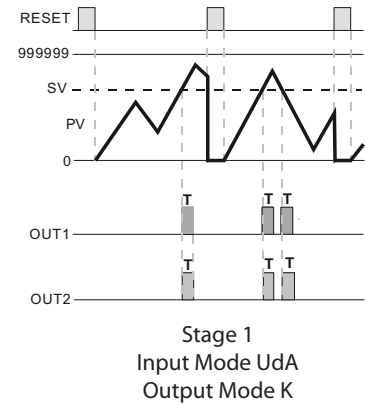


Mode K

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

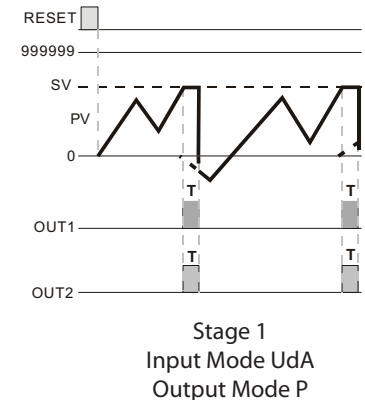


Mode P

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

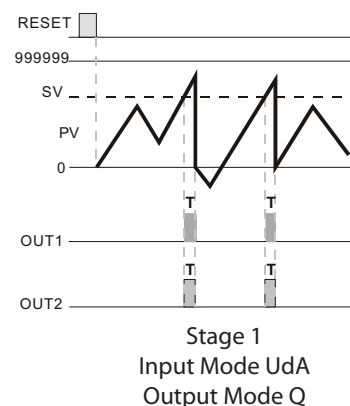


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

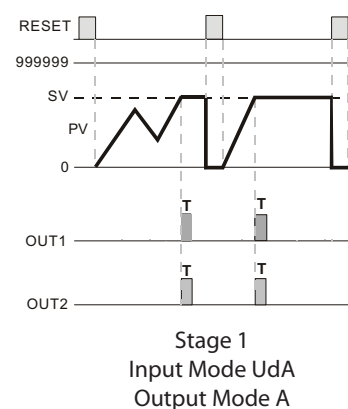


Mode A (A)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

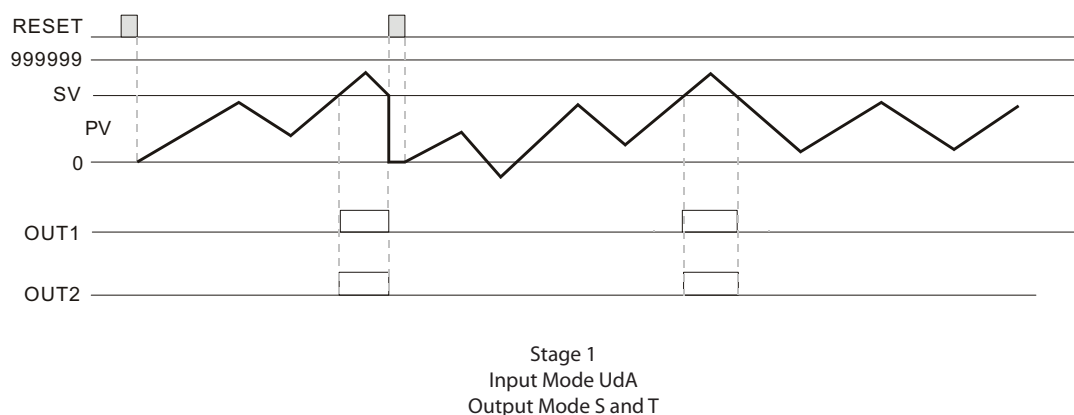


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV, both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

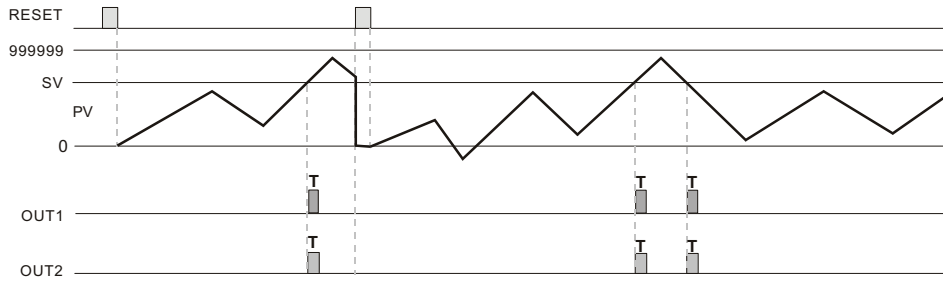


Mode D

When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment or decrement with each input signal.

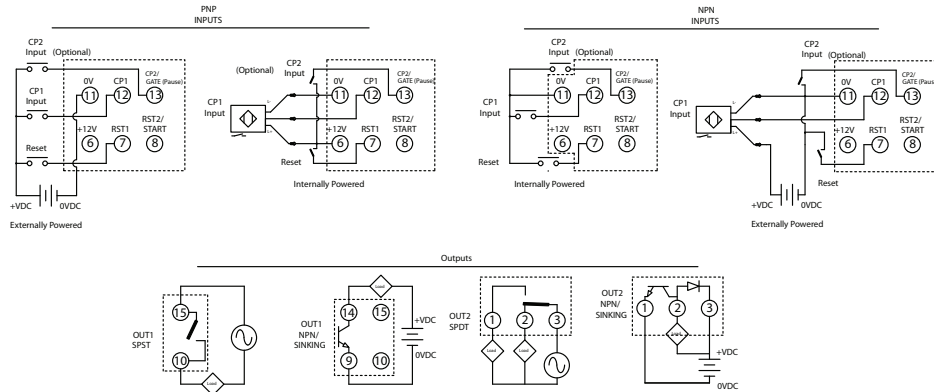
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 1
Input Mode Uda
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/or/▲] **TIME** [▼/or/▲] **Cont** [▼/or/▲] **TACH** [▼/or/▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFUN [▼/or/▲] **STAGE1** [▼/or/▲] **STAGE2** [▼/or/▲] **BATCH** [▼/or/▲] **TOTAL** [▼/or/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntPnt [▼/or/▲] **UP** [▼/or/▲] **down** [▼/or/▲] **Ud_A** [▼/or/▲] **Ud_b** [▼/or/▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Outnd [▼/or/▲] **A** [▼/or/▲] **B** [▼/or/▲] **C** [▼/or/▲] **D** [▼/or/▲] **E** [▼/or/▲] **F**

MODE ↓ [▼/or/▲] **G** [▼/or/▲] **H** [▼/or/▲] **S** [▼/or/▲] **T** [▼/or/▲] **D** [▼/or/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPED [▼/or/▲] **10K** [▼/or/▲] **5K** [▼/or/▲] **1K** [▼/or/▲] **200** [▼/or/▲] **30** [▼/or/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

out1 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

out2 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/or/▲] **0** [▼/or/▲] **1** [▼/or/▲] **2** [▼/or/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/or/▲] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼/or/▲] **CLEAR** [▼/or/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

CntPLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE ↓
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CTT Counter Functions

1-Stage Counting (SETAGE 1)

Counting Up / Counting Down (UDB)

1-Stage Counting (SETAGE 1)

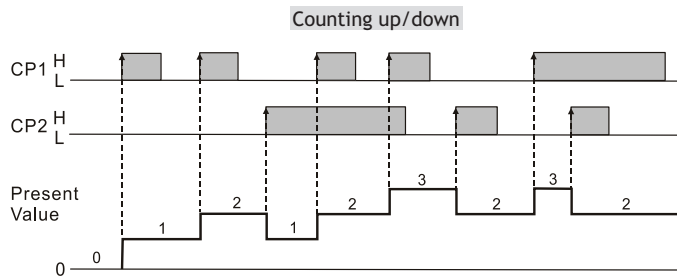
A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Counting Down (UDB)

Each leading edge of the input signal at CP1 will increment the count present value (PV) by 1.

Each leading edge of the input signal at CP2 will decrement the count present value (PV) by 1.



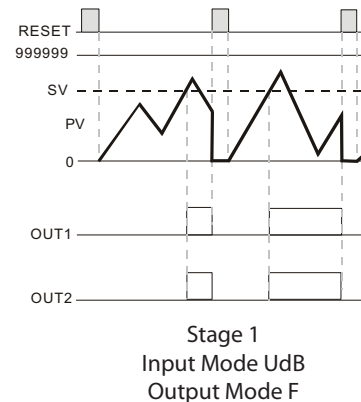
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

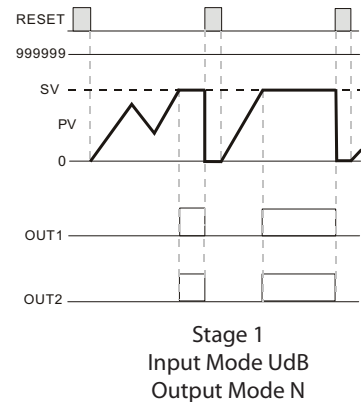


Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

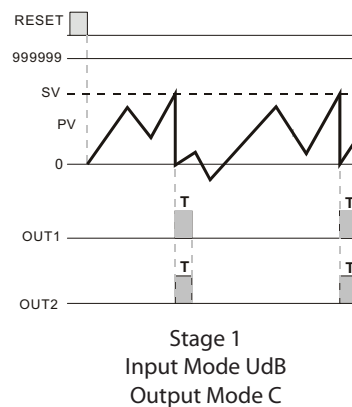


Mode C

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

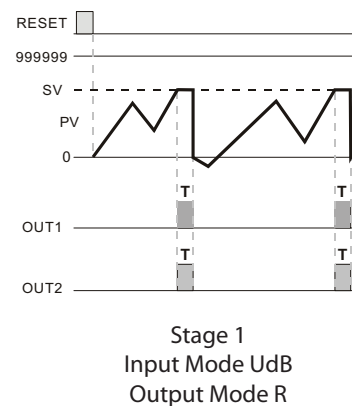


Mode R

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (EOUT2) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

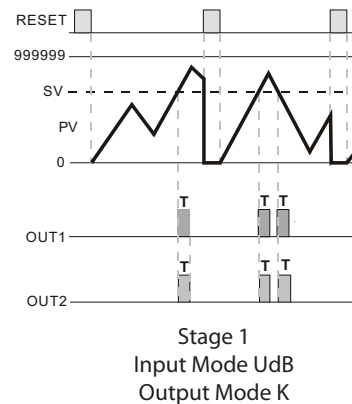


Mode K

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

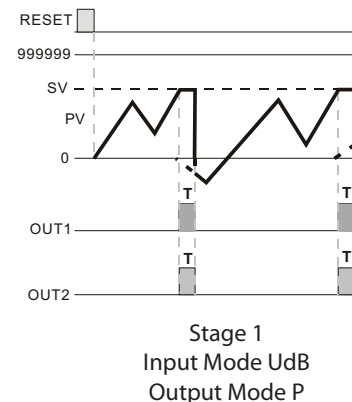


Mode P

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

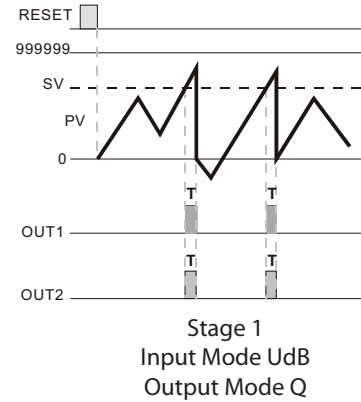


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

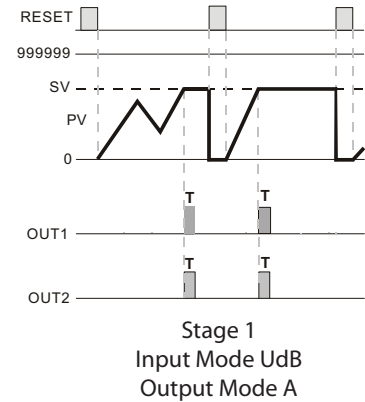


Mode A (A)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

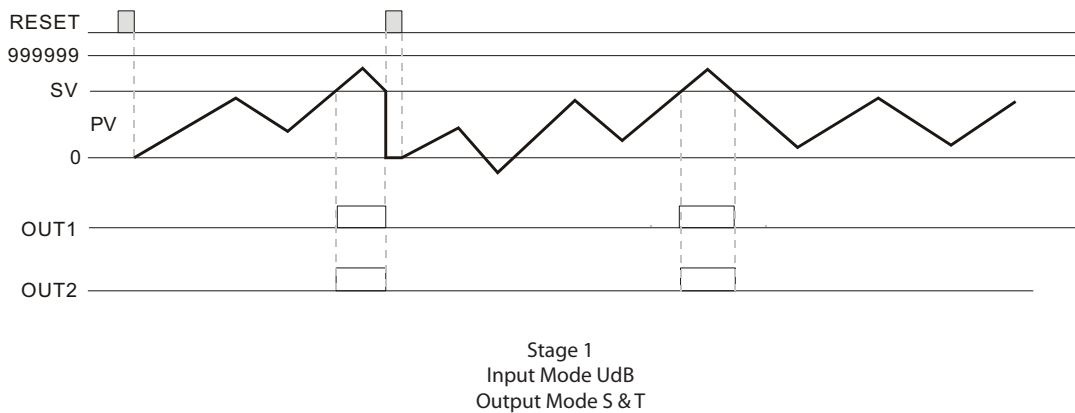


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV, both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

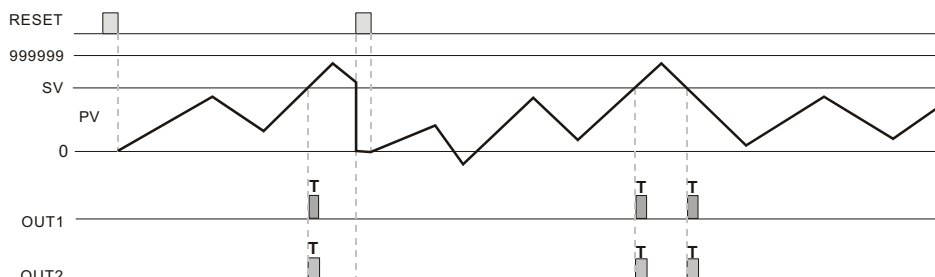


Mode D (E)

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**PULSE**). The count PV will continue to increment or decrement with each input signal.

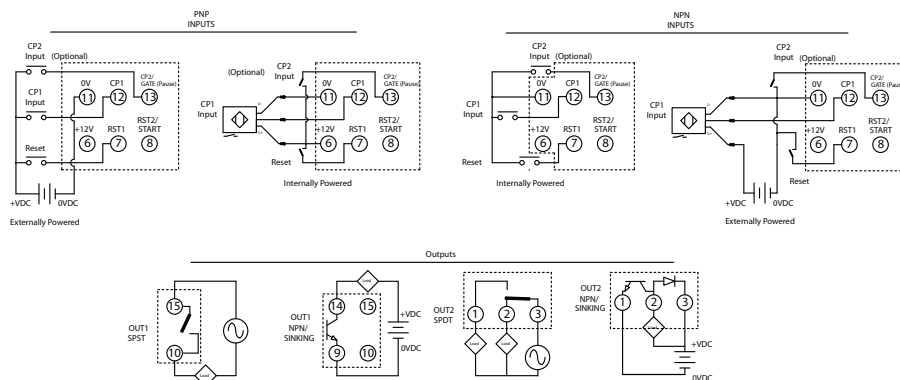
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Stage 1
Input Mode UdB
Output Mode D

Counter Wiring Examples



DIP Switch Set up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [v]or[^] **TIME** [v]or[^] **Cont** [v]or[^] **TACH** [v]or[^] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunc [v]or[^] **STAGE1** [v]or[^] **STAGE2** [v]or[^] **BATCH** [v]or[^] **TOTAL** [v]or[^] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CnPT [v]or[^] **UP** [v]or[^] **down** [v]or[^] **Ud A** [v]or[^] **Ud b** [v]or[^] **Ud C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

CnOut [v]or[^] **A** [v]or[^] **n** [v]or[^] **E** [v]or[^] **r** [v]or[^] **H** [v]or[^] **P**

MODE ↓ [v]or[^] **9** [v]or[^] **A** [v]or[^] **S** [v]or[^] **E** [v]or[^] **D** [v]or[^]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [v]or[^] **10K** [v]or[^] **5K** [v]or[^] **1K** [v]or[^] **200** [v]or[^] **30** [v]or[^] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out 1 [v]or[^] **002** [v]or[^] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

t out 2 [v]or[^] **002** [v]or[^] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [v]or[^] **0** [v]or[^] **1** [v]or[^] **2** [v]or[^] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [v]or[^] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PtERS [v]or[^] **CLEAR** [v]or[^] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rESr [v]or[^] **20** [v]or[^] **1**

MODE ↓ Select input signal types: NPN and PNP

CnPTLC [v]or[^] **nPN** [v]or[^] **pNP**

MODE ↓
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CTT Counter Functions

1-Stage Counting (SEAR6 1)

Quadrature (UdC)

1-Stage Counting (SEAR6 1)

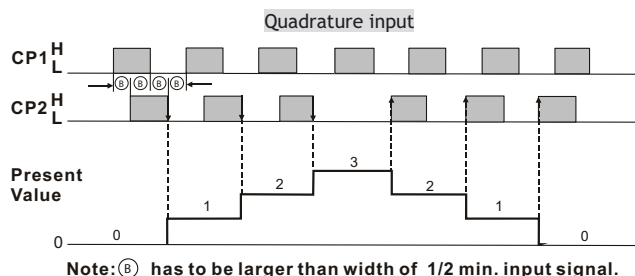
A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTP2) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Quadrature (UdC)

When the quadrature input signal at CP1 changes before the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 changes before the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

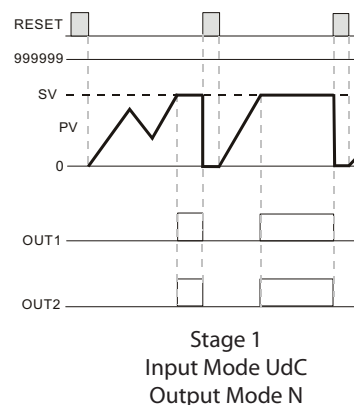
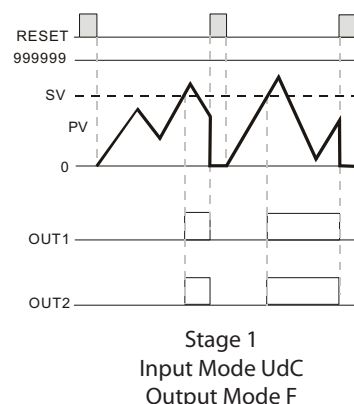
The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESN) or DIP Switch 8.

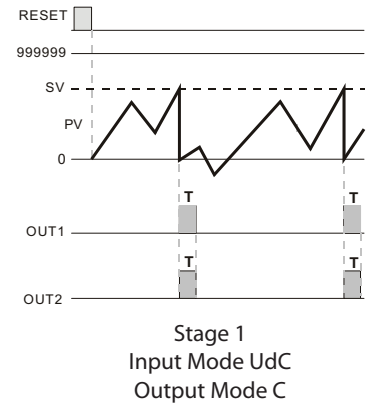


Mode C (C)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RTPSR) or DIP Switch 8.

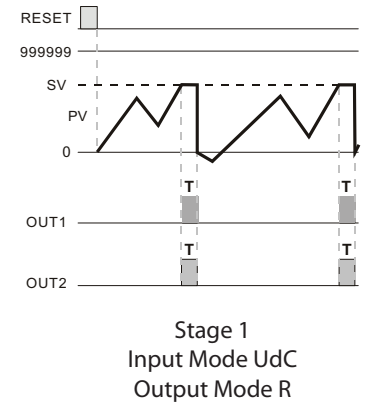


Mode R (R)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (EOUTP2) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RTPSR) or DIP Switch 8.

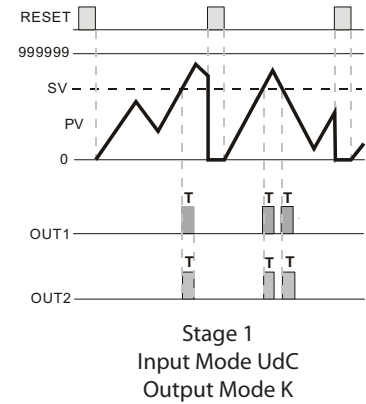


Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RTPSR) or DIP Switch 8.

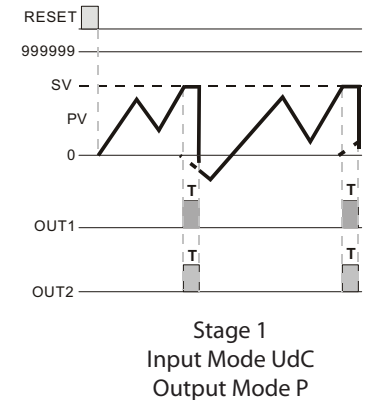


Mode P (P)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RTPSR) or DIP Switch 8.

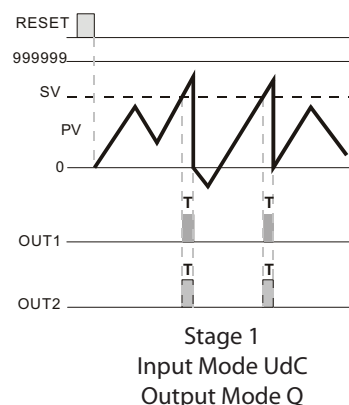


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

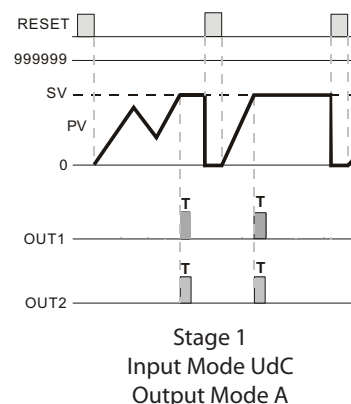


Mode A (A)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

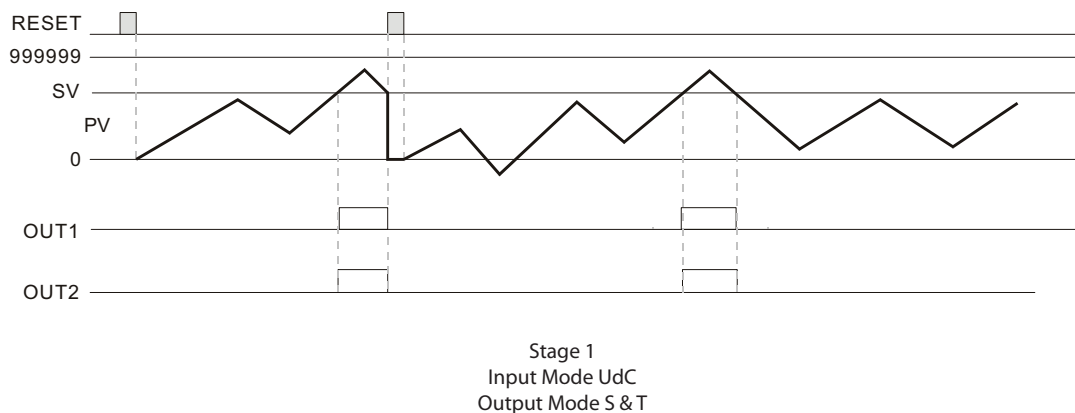


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV, both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

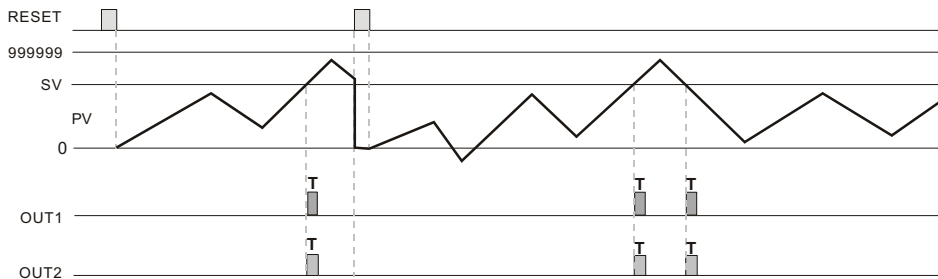


Mode D

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal.

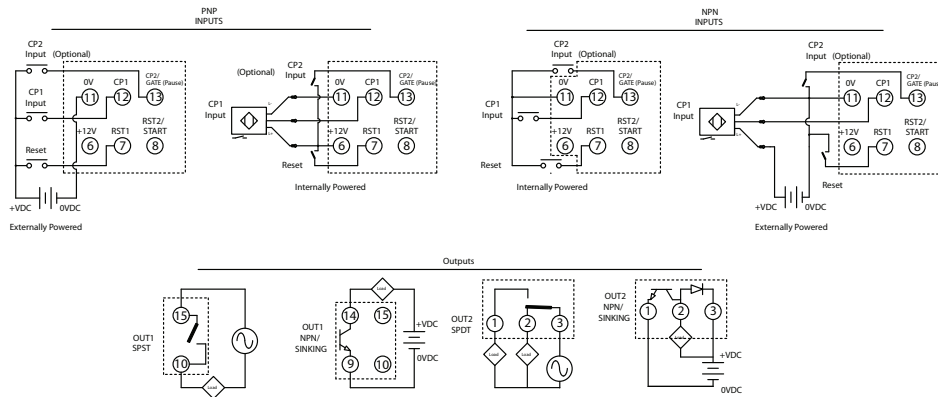
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



Stage 1
Input Mode UdC
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼/or/▲] **timer** [▼/or/▲] **Cont** [▼/or/▲] **tACH** [▼/or/▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFun [▼/or/▲] **STAGE1** [▼/or/▲] **STAGE2** [▼/or/▲] **BATCH** [▼/or/▲] **total** [▼/or/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CnPT [▼/or/▲] **UP** [▼/or/▲] **down** [▼/or/▲] **Ud_A** [▼/or/▲] **Ud_b** [▼/or/▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

OutMod [▼/or/▲] **A** [▼/or/▲] **n** [▼/or/▲] **C** [▼/or/▲] **r** [▼/or/▲] **E** [▼/or/▲] **P**

MODE ↓ [▼/or/▲] **Q** [▼/or/▲] **R** [▼/or/▲] **S** [▼/or/▲] **T** [▼/or/▲] **D** [▼/or/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CSPED [▼/or/▲] **10K** [▼/or/▲] **5K** [▼/or/▲] **1K** [▼/or/▲] **200** [▼/or/▲] **30** [▼/or/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Out1 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Out2 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/or/▲] **0** [▼/or/▲] **1** [▼/or/▲] **2** [▼/or/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/or/▲] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼/or/▲] **CLEAR** [▼/or/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtsr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

CnPTLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE ↓

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CTT Counter Functions

2-Stage Counting (STAGE 2)

Counting Up (UP)

2-Stage Counting (STAGE 2)

In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOLTE1) or will be maintained ON (tout1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOLTE2) or will be maintained ON depending on the output mode selected.

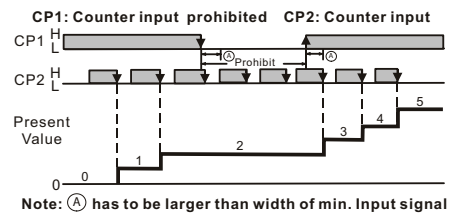
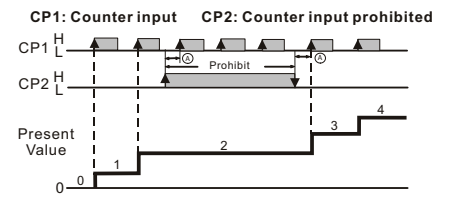
Input Mode:

Counting Up (UP)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



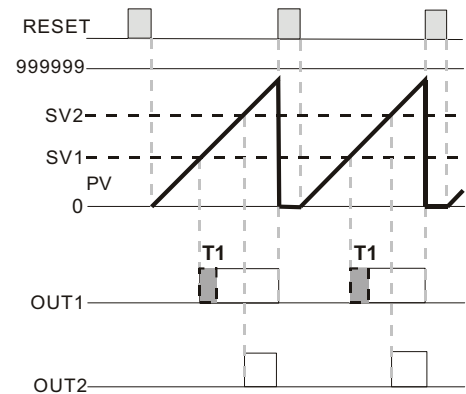
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOLTE1) or will be maintained ON if the output pulse width parameter (EOLTE1) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode F

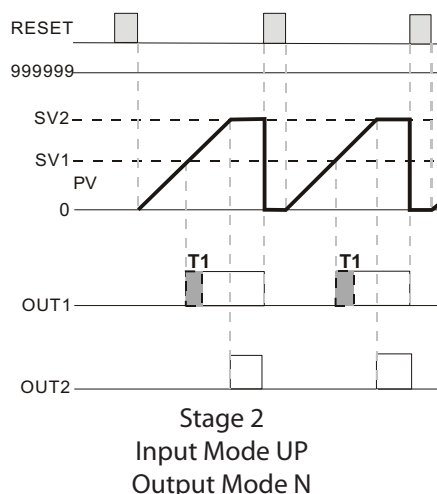
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8



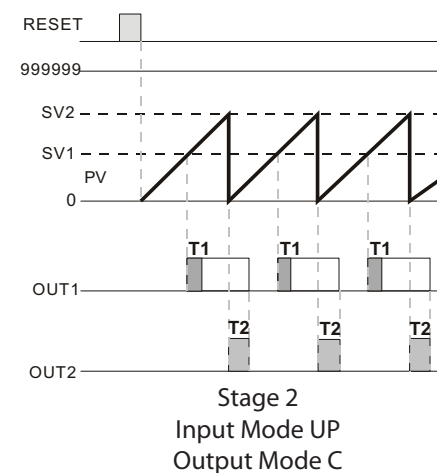
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



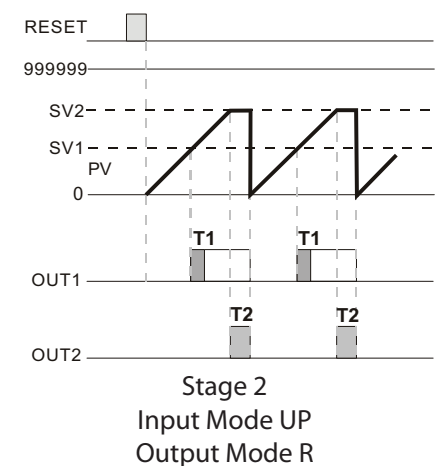
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**). The count PV is prohibited from incrementing until the end of the output pulse time (**EOU2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



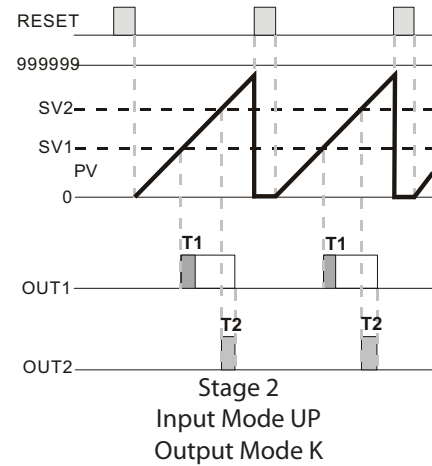
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



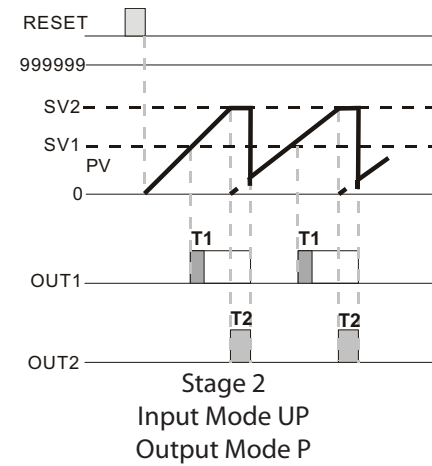
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from incrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



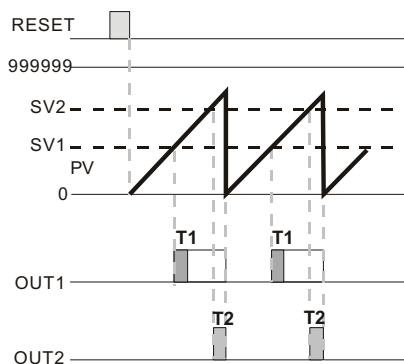
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tout2**). The count PV will continue to increment with each input signal until the end of the output pulse time (**tout2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**reset**) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode Q

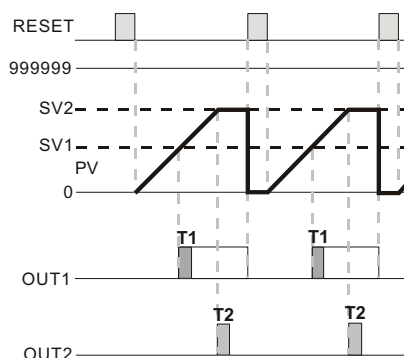
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tout2**). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

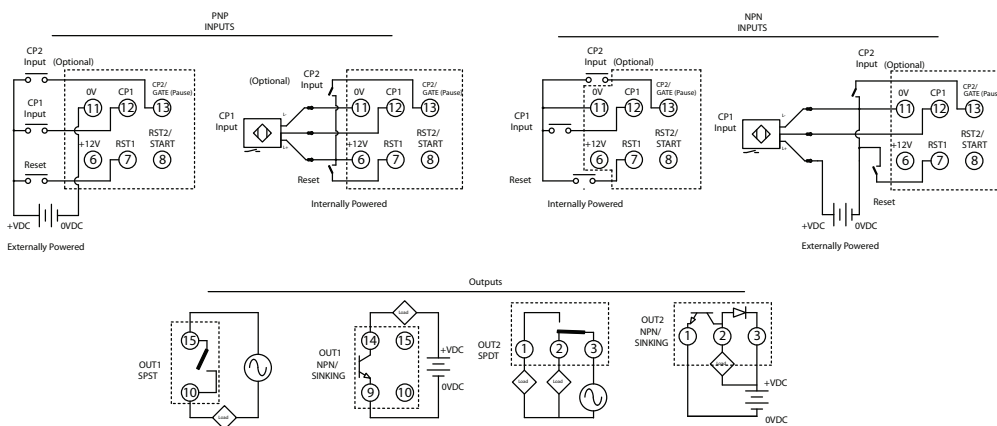
The “reset” signal minimum pulse width is set by reset pulse width parameter (**reset**) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode A

Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [] or [] **TIME** [] or [] **Cont** [] or [] **TACH** [] or [] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

ContFun [] or [] **STAGE1** [] or [] **STAGE2** [] or [] **BATCH** [] or [] **TOTAL** [] or [] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

ContPtl [] or [] **UP** [] or [] **down** [] or [] **Ud_A** [] or [] **Ud_b** [] or [] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Contnd [] or [] **F** [] or [] **A** [] or [] **C** [] or [] **R** [] or [] **E** [] or [] **P**

MODE ↓ [] or [] **A** [] or [] **B** [] or [] **S** [] or [] **T** [] or [] **D** [] or []

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPED [] or [] **10K** [] or [] **5K** [] or [] **1K** [] or [] **200** [] or [] **30** [] or [] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [] or [] **002** [] or [] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT2 [] or [] **002** [] or [] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [] or [] **0** [] or [] **1** [] or [] **2** [] or [] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [] or [] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [] or [] **CLEAR** [] or [] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtS [] or [] **20** [] or [] **1**

MODE ↓ Select input signal types: NPN and PNP

ContPtl [] or [] **nPN** [] or [] **pNP**

MODE ↓
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CTT Counter Functions

2-Stage Counting (STAGE 2)

Counting Down (DOWN)

2-Stage Counting (STAGE 2)

In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON (TOUT1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2) or will be maintained ON depending on the output mode selected.

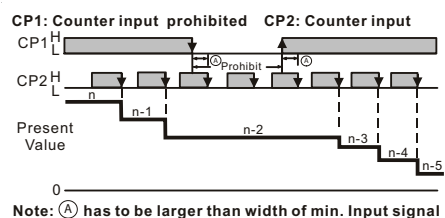
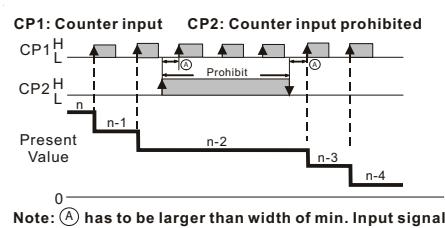
Input Mode:

Counting Down (DOWN)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



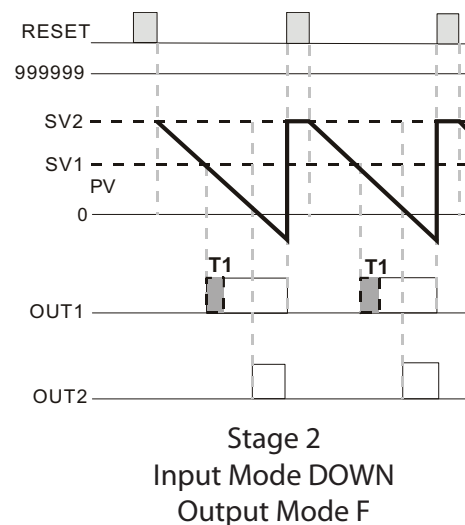
Output Modes:

Mode F (F)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RSTP) or DIP Switch 8.



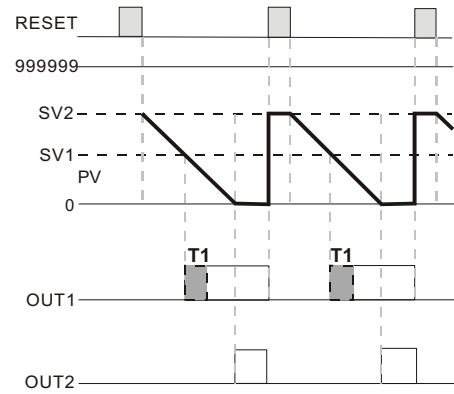
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode N

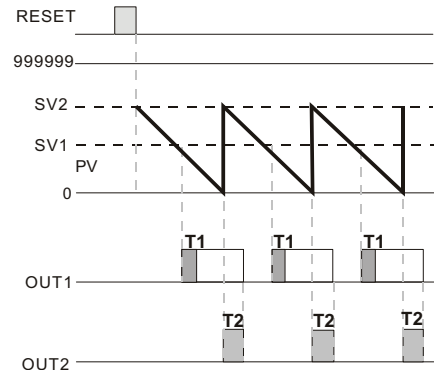
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the count PV will reset automatically to the count SV2. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode C

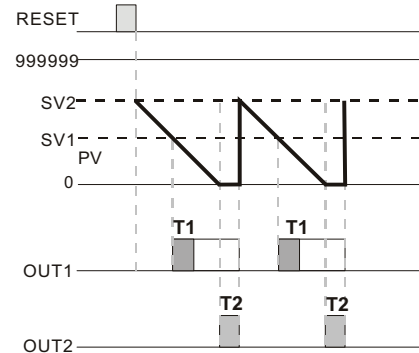
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV is prohibited from decrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to the count SV2.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode R

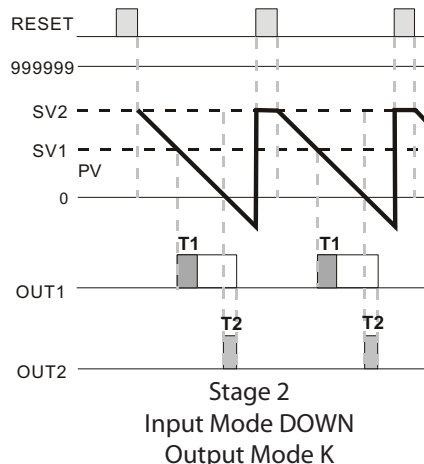
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW) or DIP Switch 8.



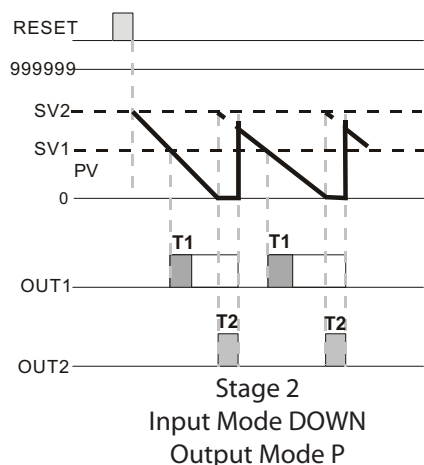
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from decrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to the count SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW) or DIP Switch 8.



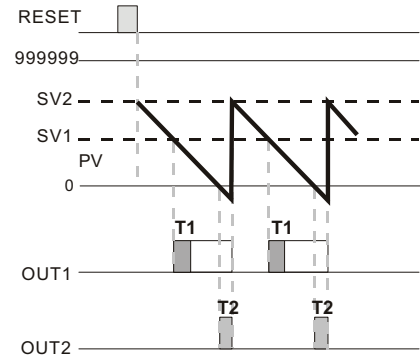
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV will continue to decrement with each input signal until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to the count SV2.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode Q

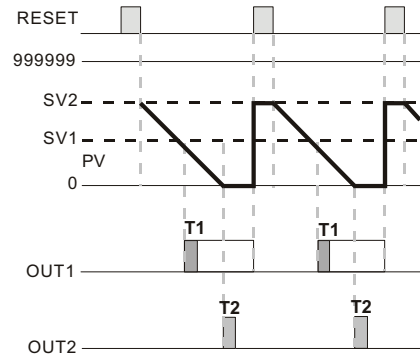
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV will remain at 0 regardless of additional input signals.

The leading edge of "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

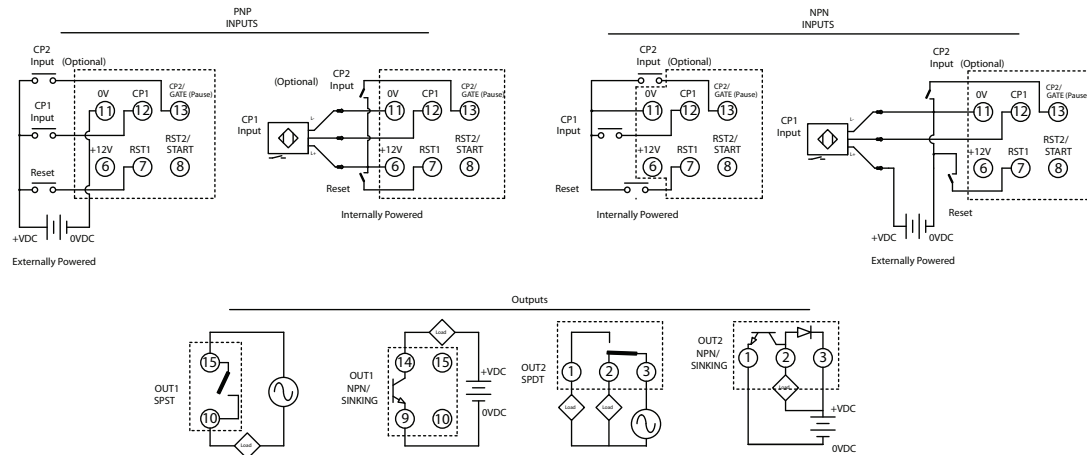
The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode A

Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunc [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntPUL [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

OutMod [▼] or [▲] **F** [▼] or [▲] **N** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D**

MODE [▼] [▼] or [▲] **F** [▼] or [▲] **N** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PEES [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

CntPULC [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE [▼]

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CTT Counter Functions

2-Stage Counting (STAGE 2)

Counting Up / Command Counting Down (UdA)

2-Stage Counting (STAGE 2)

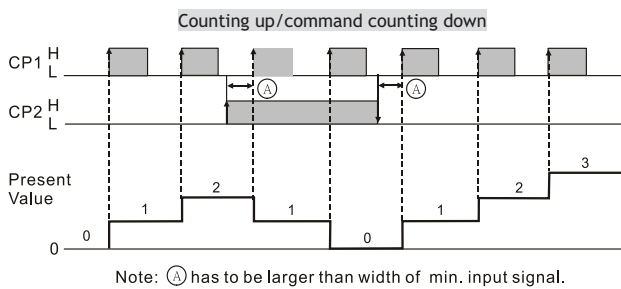
In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON (TOUT1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2) or will be maintained ON depending on the output mode selected.

Input Mode:

Counting Up / Command Counting Down (UdA)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



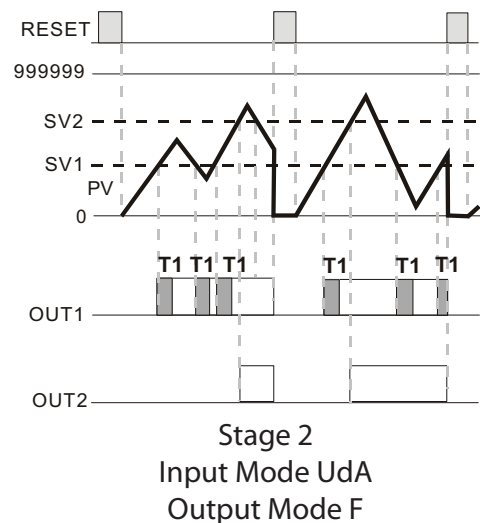
Output Modes:

Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



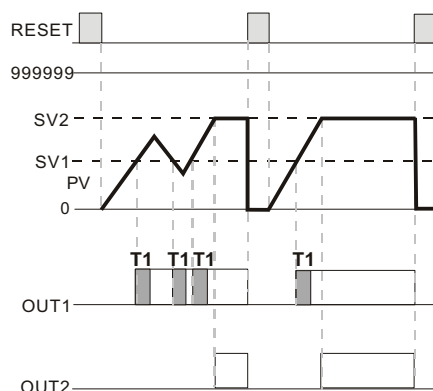
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N (N)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**TOU1E1**) or will be maintained ON if the output pulse width parameter (**TOU1E1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**R1E5R**) or DIP Switch 8



Stage 2
Input Mode UdA
Output Mode N

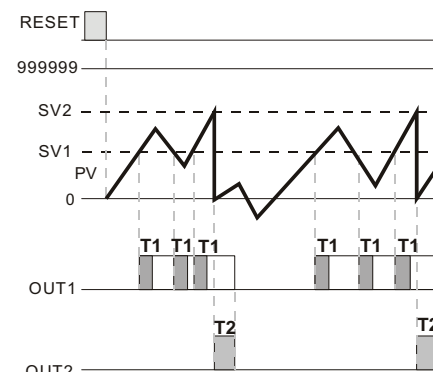
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C (C)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**TOU1E1**) or will be maintained ON if the output pulse width parameter (**TOU1E1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**TOU2E2**) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**R1E5R**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode C

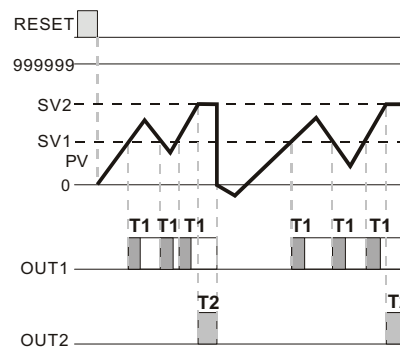
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R (R)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**TOU1E1**) or will be maintained ON if the output pulse width parameter (**TOU1E1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**TOU2E2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**TOU2E2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**R1E5R**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode R

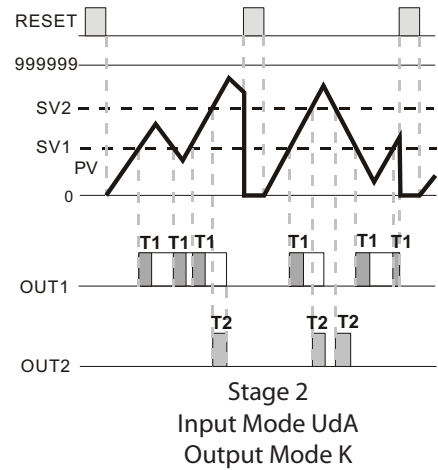
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up or counts down to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



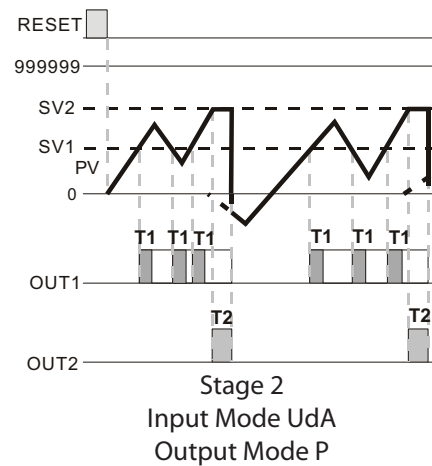
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



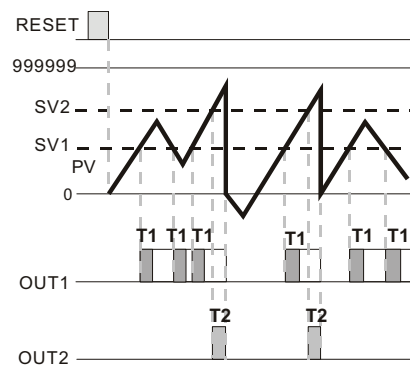
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP1**) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (**OUTP2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode Q

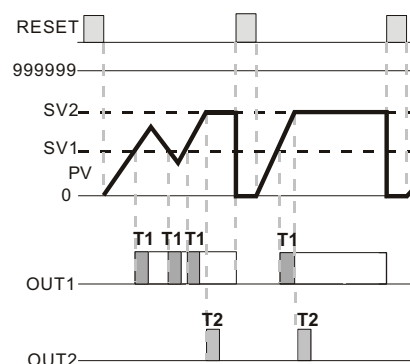
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP1**) or will be maintained ON if the output pulse width parameter (**OUTP1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode A

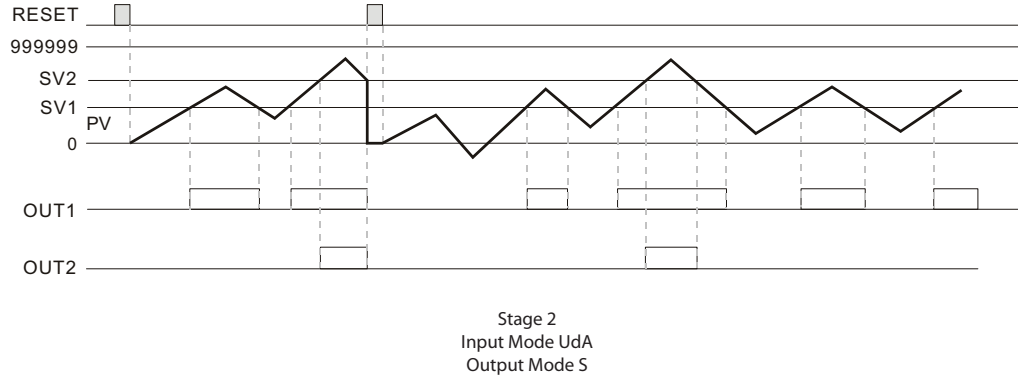
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode S (S)

When the count present value PV counts up to the count setting value SV1 Output 1 will turn ON. When the count PV counts down to the count SV1 Output 1 will turn OFF. When the count PV counts up to the count setting value SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

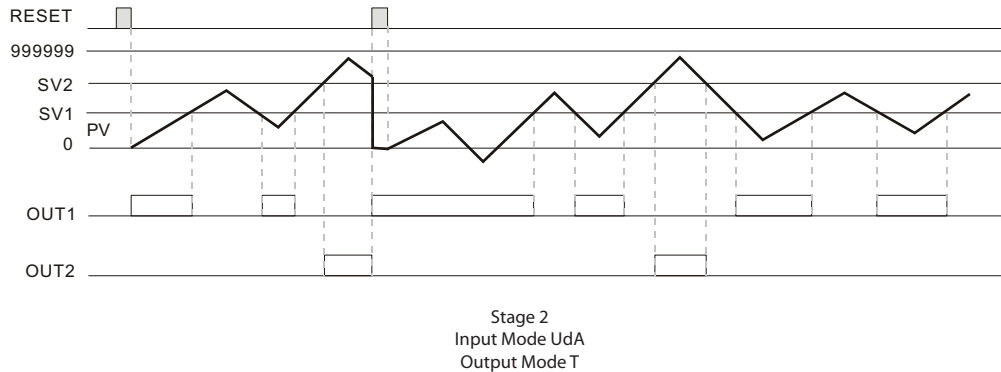


Mode T (T)

When the count present value PV is less than count setting value SV1, Output 1 will be ON and will turn OFF when the count PV counts up to the count SV1. When the count PV counts down to the count SV1 Output 1 will turn ON. When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.

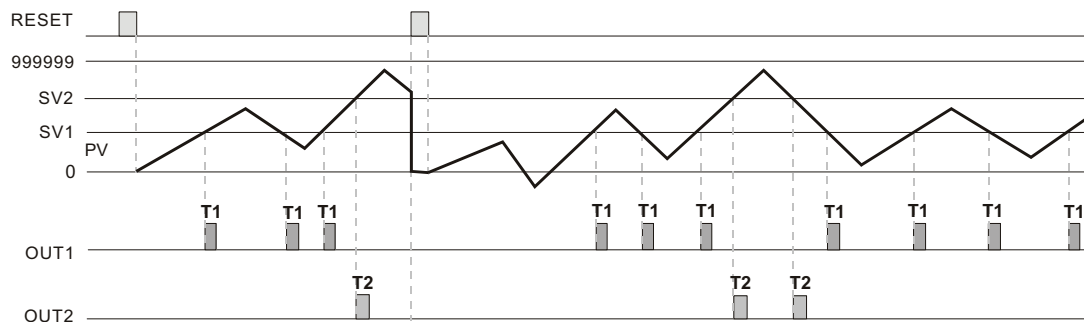


Mode D (D)

When the count present value PV counts up or counts down to the count setting value SV1 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE1**). When the count PV counts up or counts down to the count SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

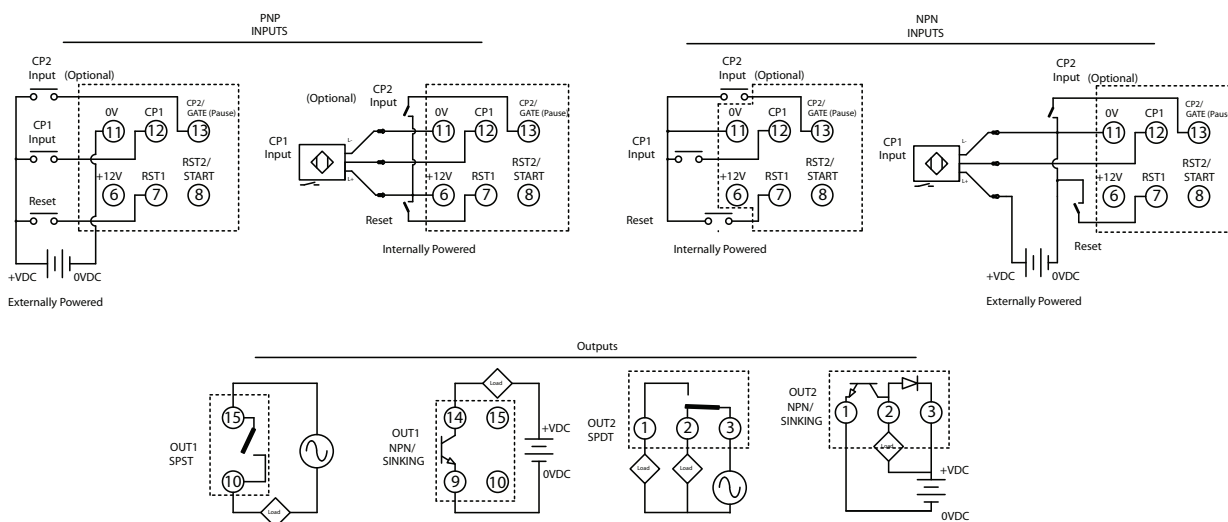
The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode D

Note: T1 momentary ON time set in output pulse parameter (tout1),
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼/▲] **TIME** [▼/▲] **Cont** [▼/▲] **BATCH** [▼/▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunct [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **TOTAL** [▼/▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntPnt [▼/▲] **UP** [▼/▲] **down** [▼/▲] **Ud_A** [▼/▲] **Ud_b** [▼/▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

CntOutd [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **r** [▼/▲] **L** [▼/▲] **P**

MODE [▼] [▼/▲] **9** [▼/▲] **A** [▼/▲] **S** [▼/▲] **E** [▼/▲] **d** [▼/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Out1 [▼/▲] **0.02** [▼/▲] **0.00**

MODE [▼] Pulse width of output 2: This paramter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Out2 [▼/▲] **0.02** [▼/▲] **0.00**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

Reset [▼/▲] **20** [▼/▲] **1**

MODE [▼] Select input signal types: NPN and PNP

CntPntC [▼/▲] **NPN** [▼/▲] **PNP**

MODE [▼]
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CTT Counter Functions

2-Stage Counting (STAGE 2)

Counting Up / Counting Down (UdD)

2-Stage Counting (STAGE 2)

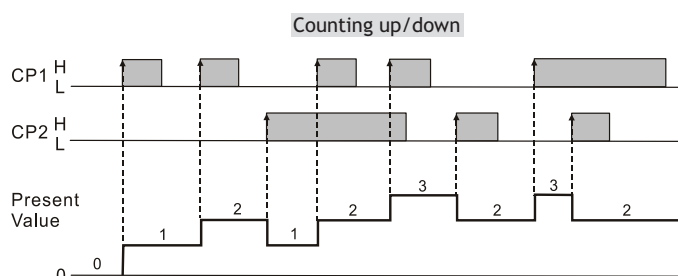
In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON (TOUT1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2) or will be maintained ON depending on the output mode selected.

Input Mode:

Counting Up / Counting Down (UdD)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.



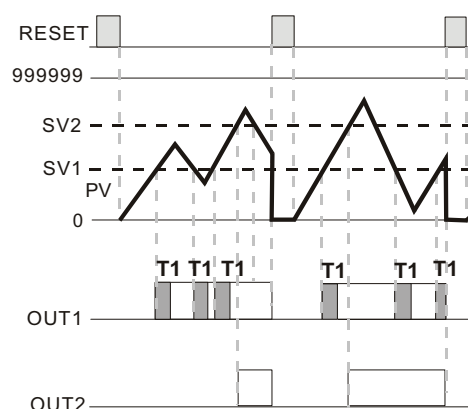
Output Modes:

Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESW) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode F

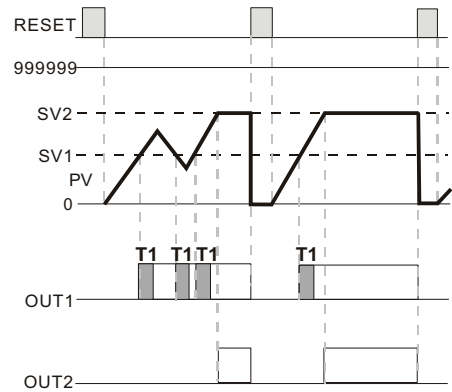
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode N

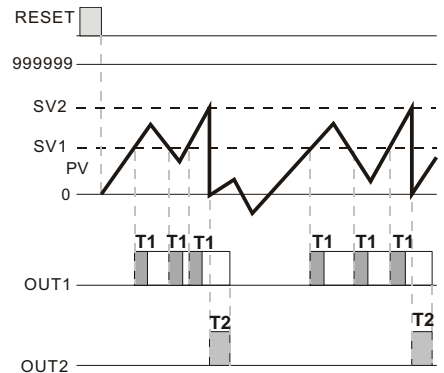
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode C

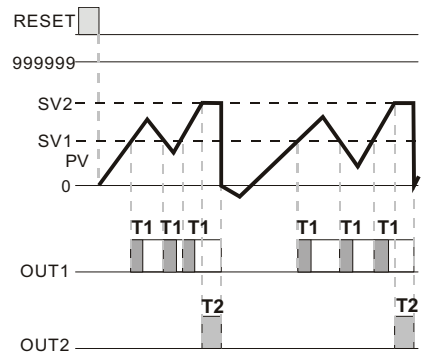
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (EOUT2) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode R

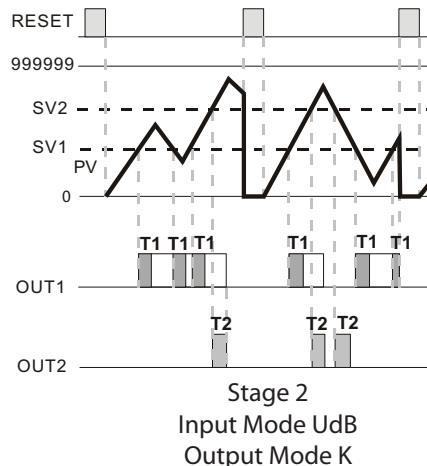
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up or counts down to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.



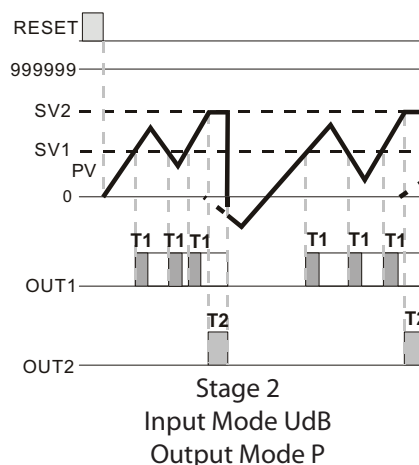
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (TOUT2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.



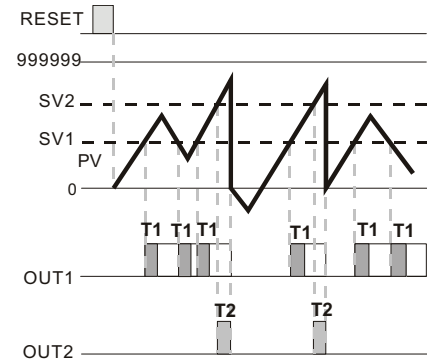
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (EOUT2) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode Q

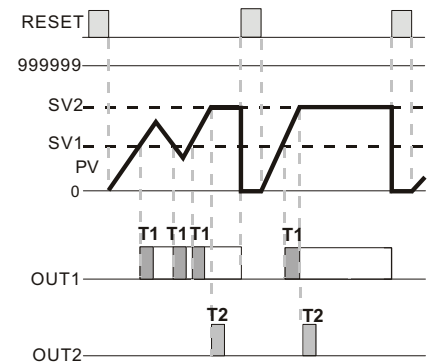
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8



Stage 2
Input Mode UdB
Output Mode A

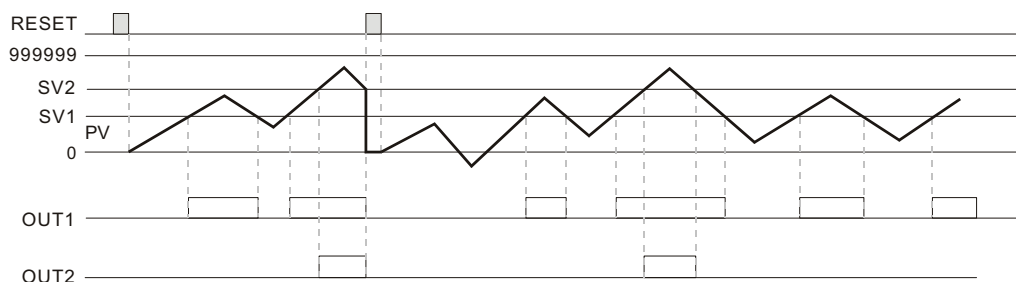
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode S (S)

When the count present value PV counts up to the count setting value SV1 Output 1 will turn ON. When the count PV counts down to or below the count SV1 Output 1 will turn OFF. When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



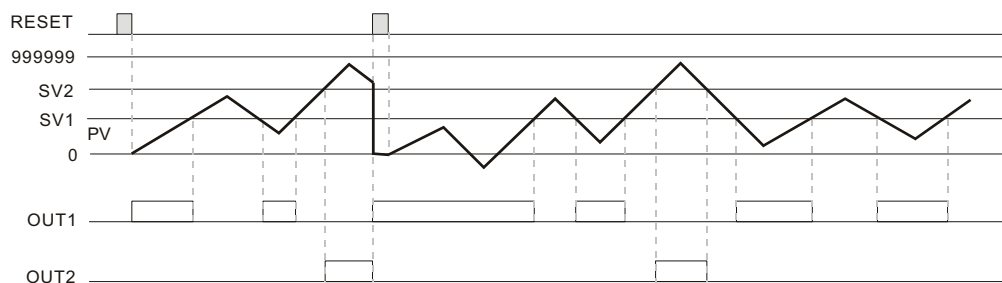
Stage 2
Input Mode UdB
Output Mode S

Mode T (T)

When the count present value PV is less than the count setting value SV1, Output 1 will be ON and will turn OFF when the count PV counts up to the count SV1. When the count PV counts down to the count SV1 Output 1 turn ON. . When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



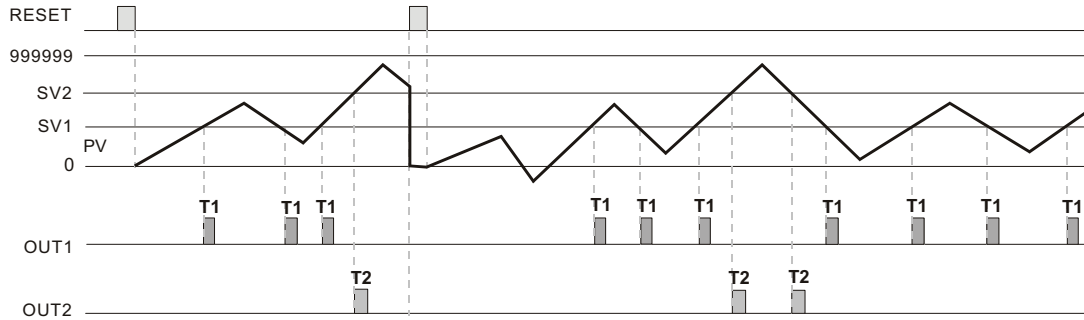
Stage 2
Input Mode UdB
Output Mode T

Mode D (D)

When the count present value PV counts up or counts down to the count setting value SV1 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE1**). When the count present value PV counts up or counts down to the count SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

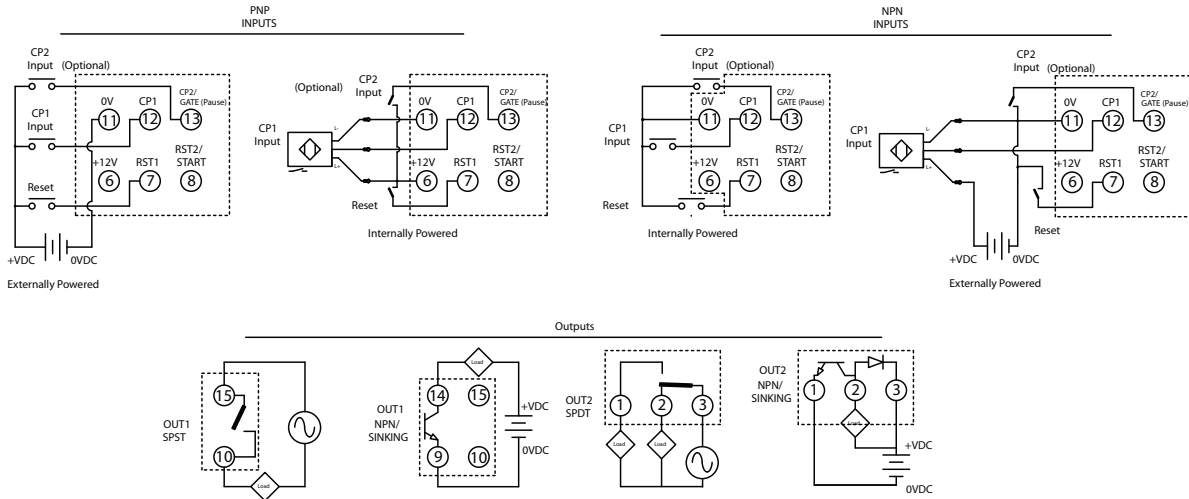
The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode D

Note: T1 momentary ON time set in output pulse parameter (tout1),
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [v] [a] **TIME** [v] [a] **Cont** [v] [a] **TACH** [v] [a] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunct [v] [a] **STAGE1** [v] [a] **STAGE2** [v] [a] **BATCH** [v] [a] **TOTAL** [v] [a] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntInpt [v] [a] **UP** [v] [a] **down** [v] [a] **Ud_A** [v] [a] **Ud_b** [v] [a] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

CntOutd [v] [a] **A** [v] [a] **n** [v] [a] **C** [v] [a] **R** [v] [a] **L** [v] [a] **P**

MODE ↓ [v] [a] **9** [v] [a] **8** [v] [a] **5** [v] [a] **6** [v] [a] **d** [v] [a]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CntSPeEd [v] [a] **10K** [v] [a] **5K** [v] [a] **1K** [v] [a] **200** [v] [a] **30** [v] [a] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

tOut1 [v] [a] **002** [v] [a] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

tOut2 [v] [a] **002** [v] [a] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [v] [a] **0** [v] [a] **1** [v] [a] **2** [v] [a] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [v] [a] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [v] [a] **CLEAR** [v] [a] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtsr [v] [a] **20** [v] [a] **1**

MODE ↓ Select input signal types: NPN and PNP

CntPLC [v] [a] **NPN** [v] [a] **PNP**

MODE ↓
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CTT Counter Functions

2-Stage Counting (SEAGE 2)

Quadrature (UdC)

2-Stage Counting (SEAGE 2)

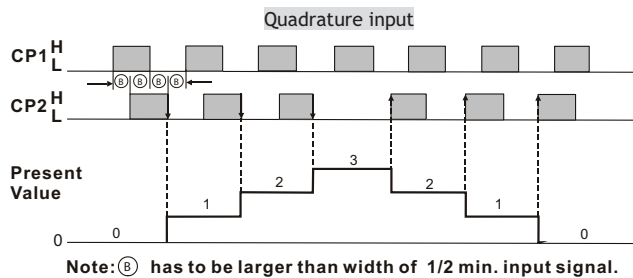
In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected

Input Mode:

Quadrature (UdC)

When the quadrature input signal at CP1 leads the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 leads the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



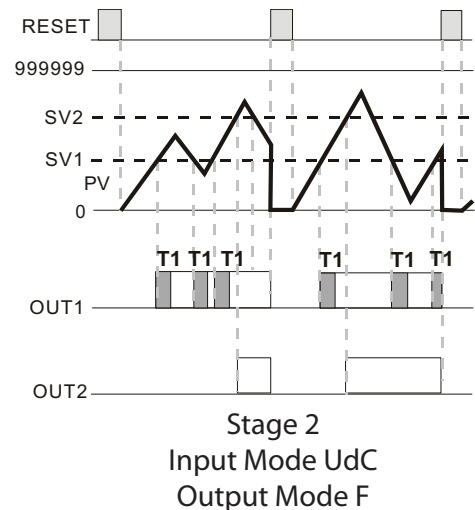
Output Modes:

Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



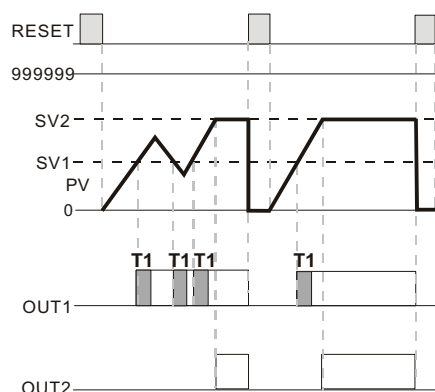
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N (N)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST1) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode N

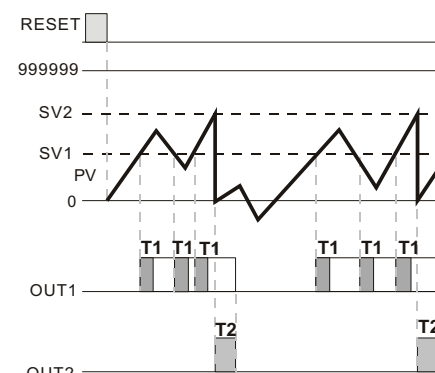
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C (C)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST1) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode C

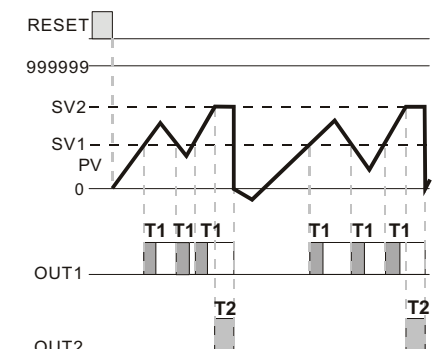
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R (R)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (EOUT2) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST1) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode R

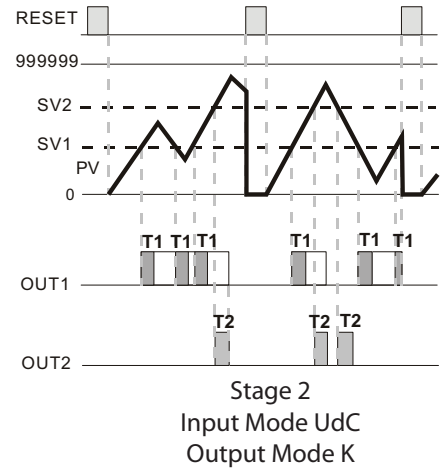
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up or counts down to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.



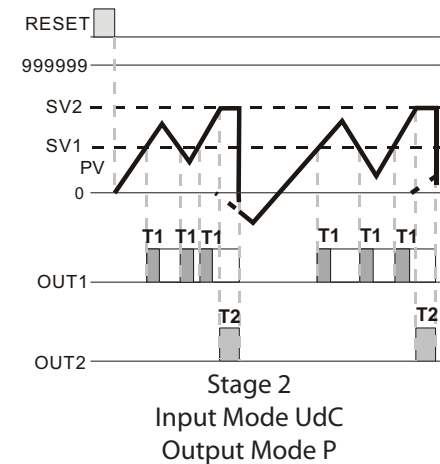
Stage 2
Input Mode UdC
Output Mode K
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (TOUT2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.



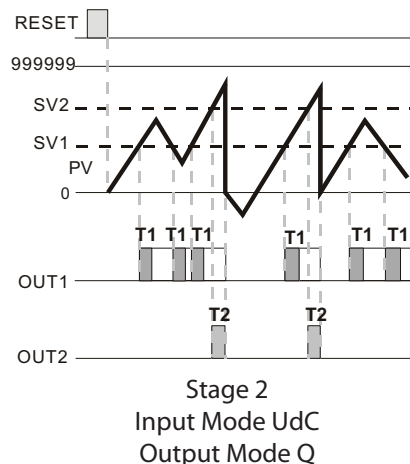
Stage 2
Input Mode UdC
Output Mode P
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (TOUT2) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



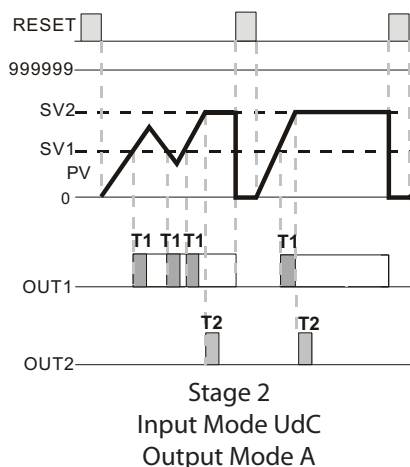
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



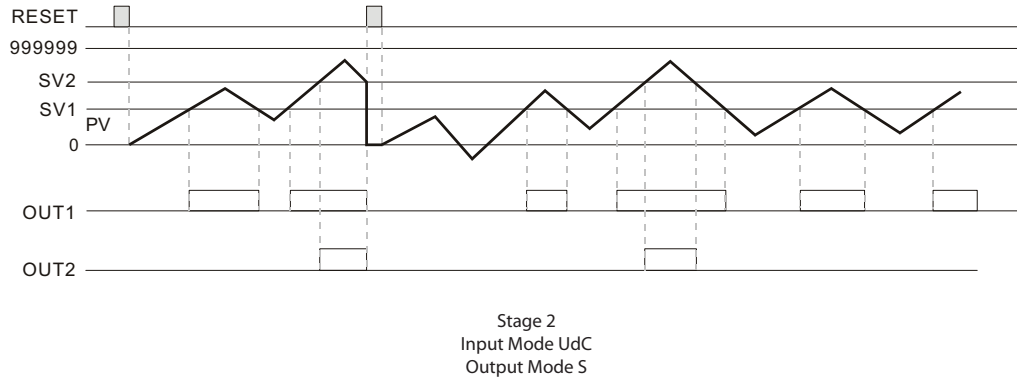
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode S (S)

When the count present value PV counts up to the count setting value SV1 Output 1 will turn ON. When the count PV counts down to or below the count SV1 Output 1 will turn OFF. When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

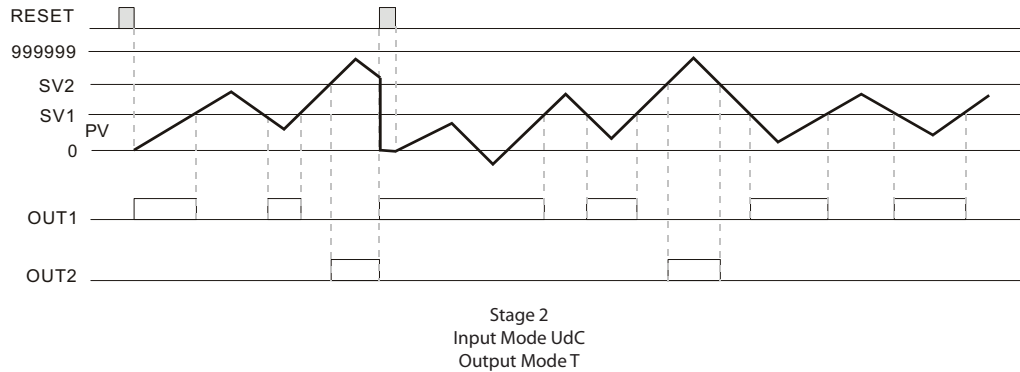


Mode T (T)

When the count present value PV is less than count setting value SV1, Output 1 will be ON and will turn OFF when the count PV counts up to the count SV1. When the count PV counts down to the count SV1 Output 1 turn ON. . When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.

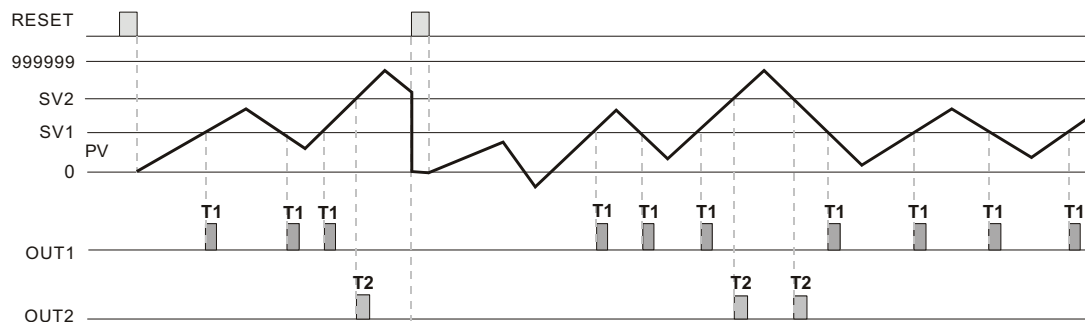


Mode D (D)

When the count present value PV counts up or counts down to the count setting value SV1 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE1**). When the count present value PV counts up or counts down to the count SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

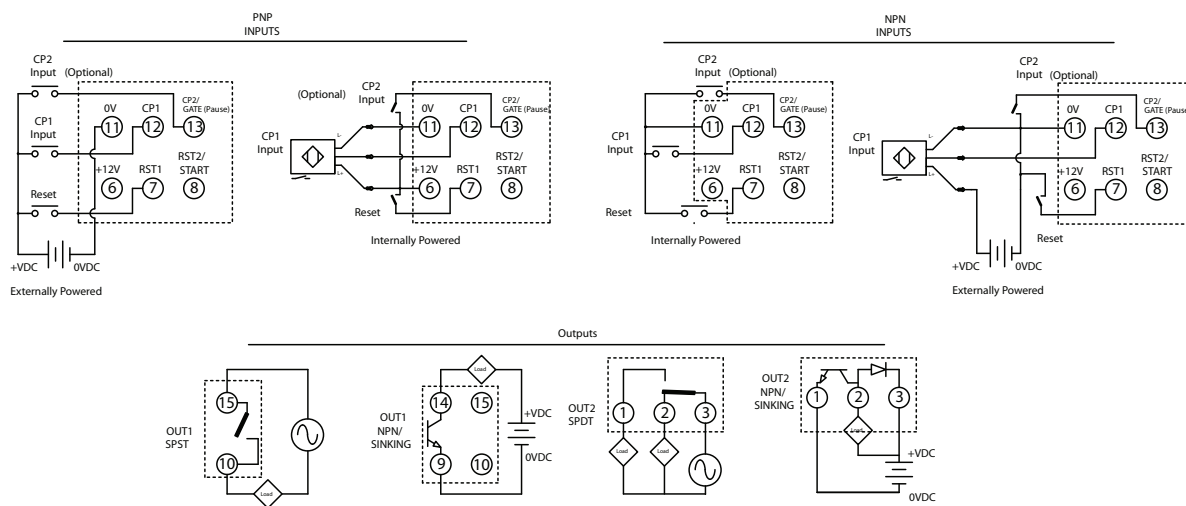
The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode D

Note: T1 momentary ON time set in output pulse parameter (tout1),
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **TIME** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TC**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFun [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **TOTAL** [▼/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

Input [▼/▲] **UP** [▼/▲] **down** [▼/▲] **Ud_A** [▼/▲] **Ud_b** [▼/▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **r** [▼/▲] **L** [▼/▲] **P**

MODE ↓ [▼/▲] **9** [▼/▲] **A** [▼/▲] **S** [▼/▲] **T** [▼/▲] **D** [▼/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Out1 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Out2 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1.000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

InputType [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓
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CTT Counter Functions

Batch Counting (**BATCH**)

Counting Up (**UP**)

Batch Counting (**BATCH**)

In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

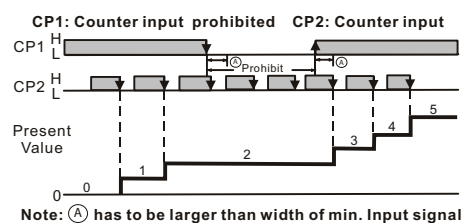
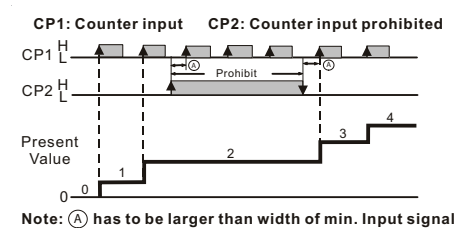
Input Mode:

Counting Up (**UP**)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



Output Modes:

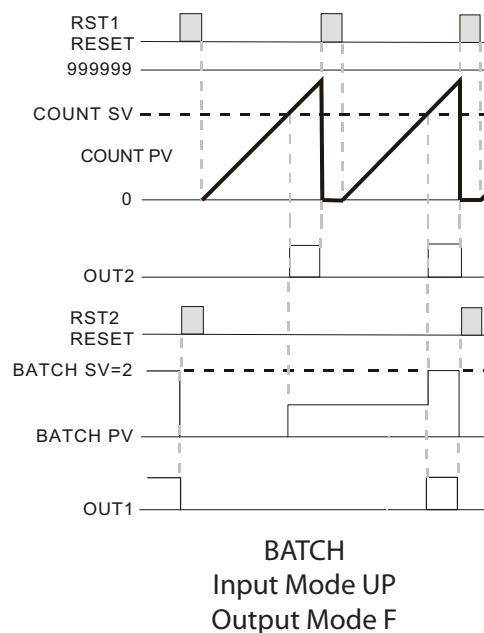
Mode F (**F**)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



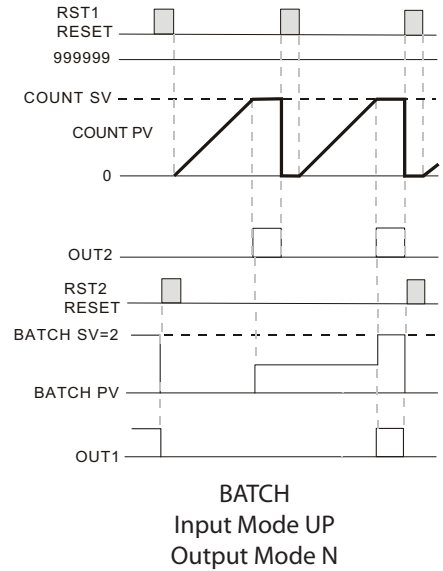
Mode N (N)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.



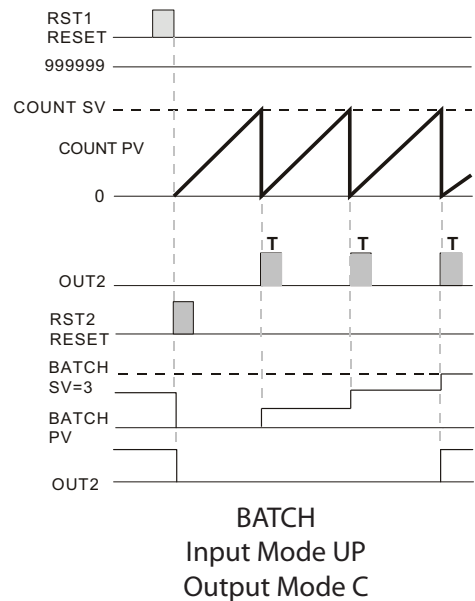
Mode C (C)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.



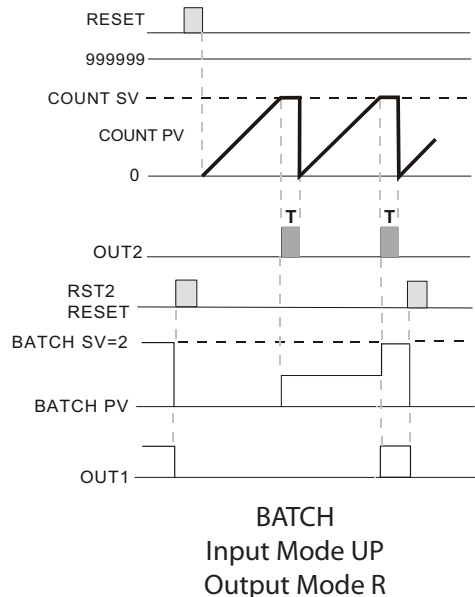
Mode R (R)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing until the end of the output pulse time (EOUT2) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.



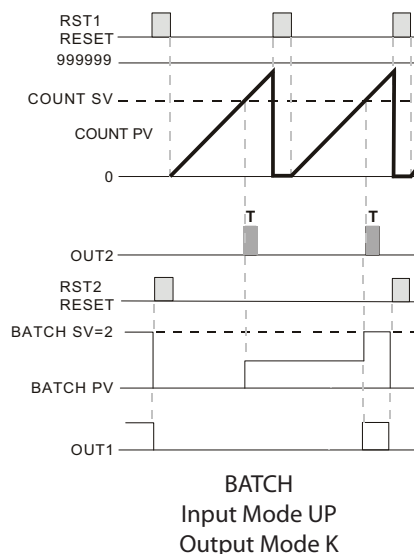
Mode K (K)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



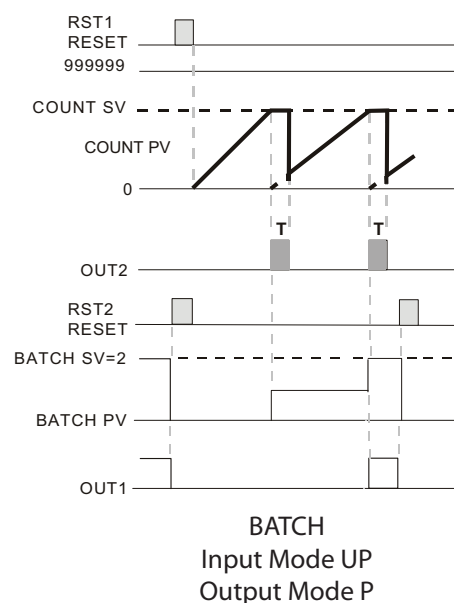
Mode P (P)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

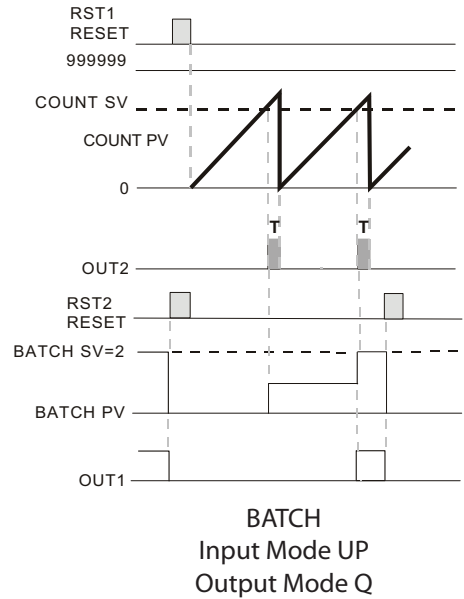


Mode Q

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



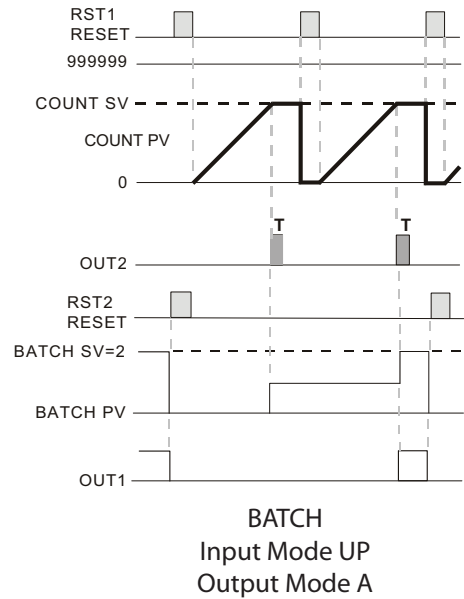
Mode A

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

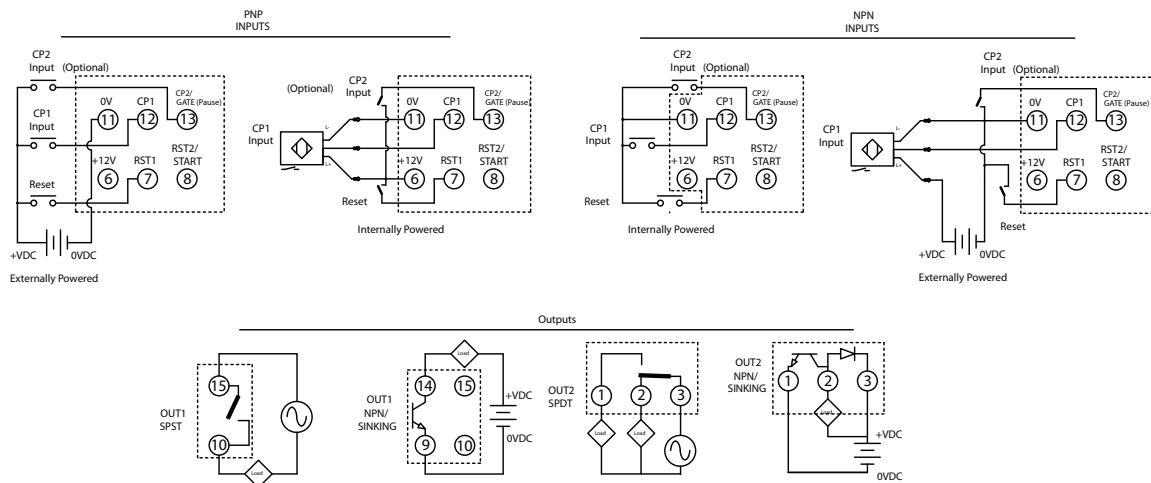
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

Input [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **r** [▼] or [▲] **L** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **A** [▼] or [▲] **5** [▼] or [▲] **t** [▼] or [▲] **d** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESR [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

InputType [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE [▼]

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CTT Counter Functions

Batch Counting (**BATCH**)

Counting Down (**DOWN**)

Batch Counting (**BATCH**)

In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

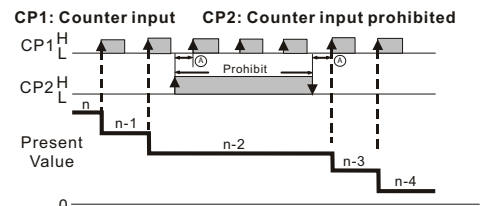
Input Mode:

Counting Down (**DOWN**)

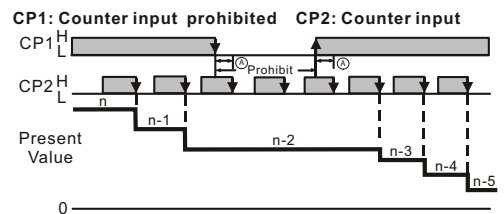
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

Output Modes:

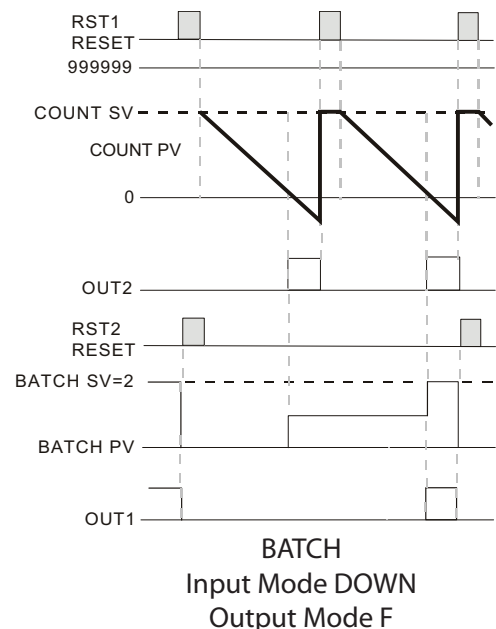
Mode F (F)

When the count present value PV counts down to 0, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



BATCH
Input Mode DOWN
Output Mode F

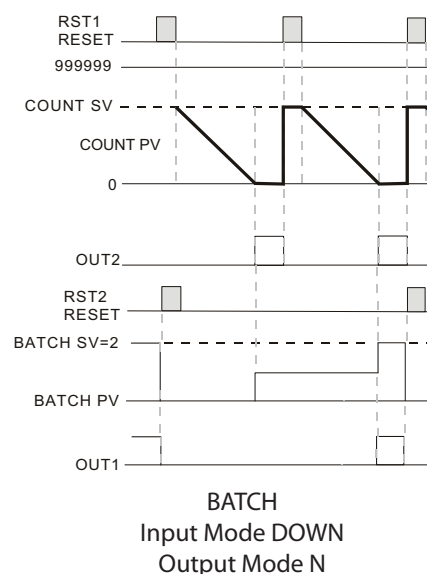
Mode N (N)

When the count present value PV counts down to 0, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (R15P) or DIP Switch 8.



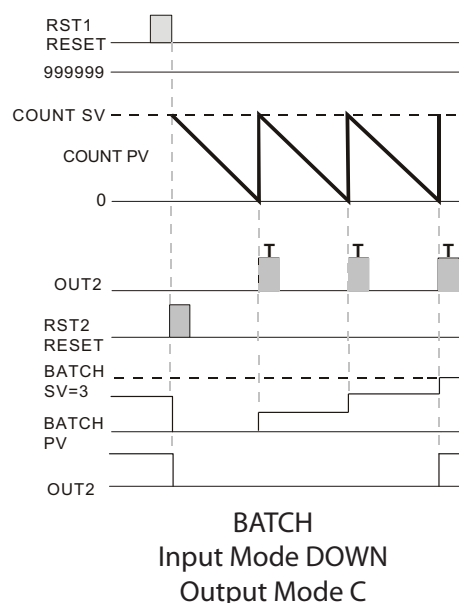
Mode C (C)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2), the count PV will reset automatically to the count setting value SV, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (R15P) or DIP Switch 8.



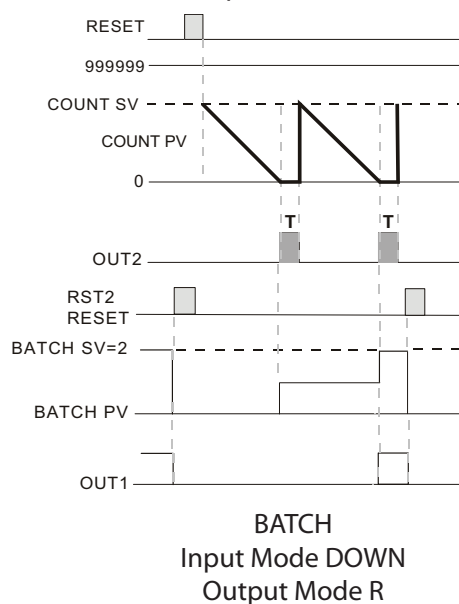
Mode R (R)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from decrementing until the end of the output pulse time (EOUT2) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (R15P) or DIP Switch 8.



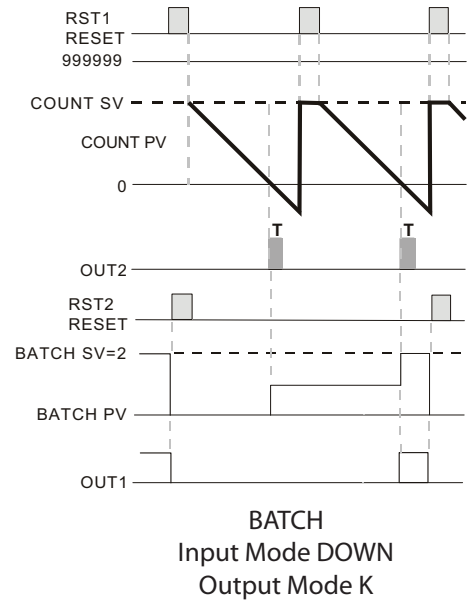
Mode K

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2) and the batch count present value BATCH PV will increment by one. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST) or DIP Switch 8.



BATCH
Input Mode DOWN
Output Mode K

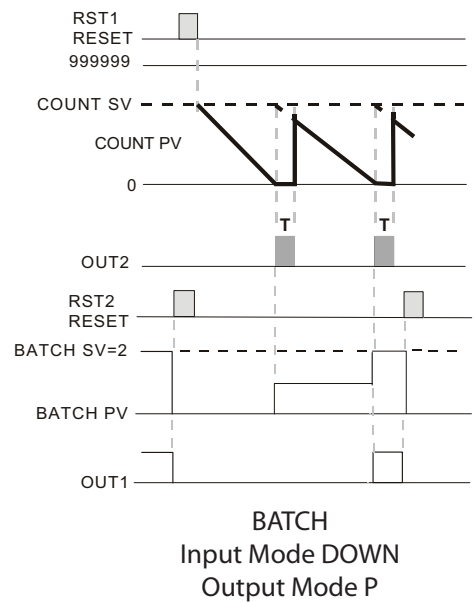
Mode P

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST) or DIP Switch 8.



BATCH
Input Mode DOWN
Output Mode P

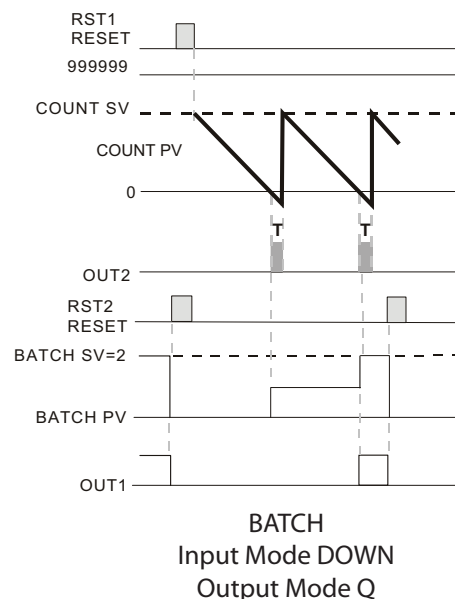
Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) and the batch count present value BATCH PV will increment by one. The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a "reset" input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a "reset" input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the "reset" signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RTR) or DIP Switch 8.



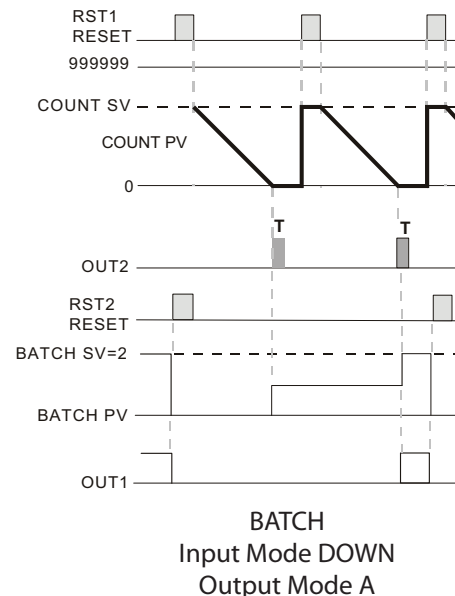
Mode A (A)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) and the batch count present value BATCH PV will increment by one. The count PV will remain at 0 regardless of additional input signals.

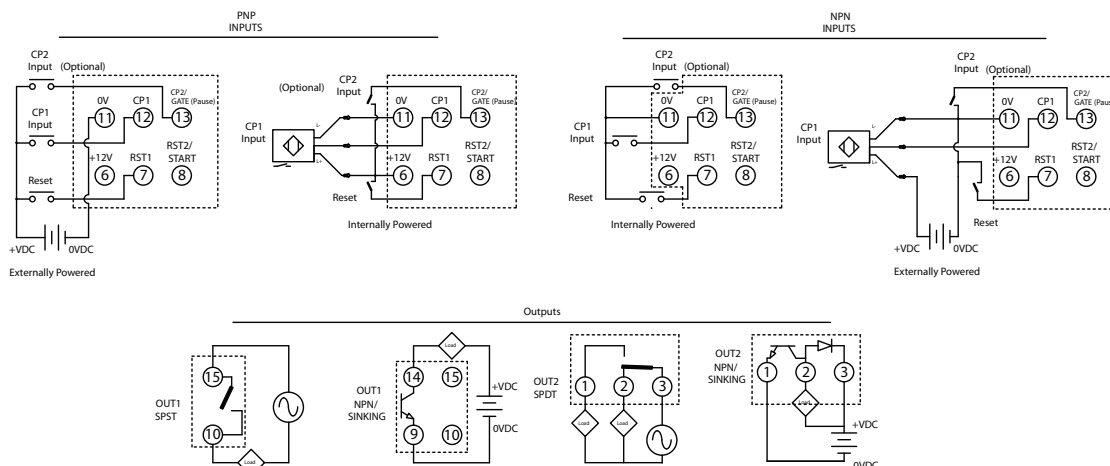
The leading edge of a "reset" input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a "reset" input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the "reset" signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RTR) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad setup of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **timer** [▼] or [▲] **count** [▼] or [▲] **tach** [▼] or [▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountP [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud A** [▼] or [▲] **Ud b** [▼] or [▲] **Ud C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **r** [▼] or [▲] **L** [▼] or [▲] **P**

MODE ↓ [▼] or [▲] **Q** [▼] or [▲] **R** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Output1 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Output2 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

Reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

InputType [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE ↓

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CTT Counter Functions

Batch Counting (BATCH)

Counting Up / Command Counting Down (UD A)

Batch Counting (BATCH)

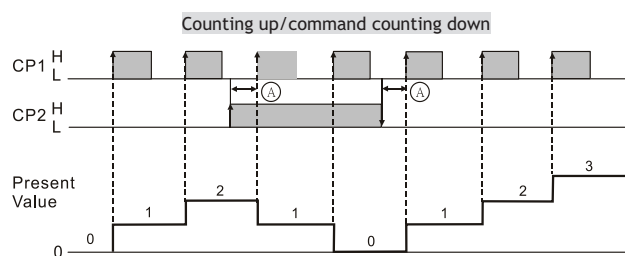
In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Input Mode:

Counting Up / Command Counting Down (UD A)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



Note: (A) has to be larger than width of min. input signal.

Output Modes:

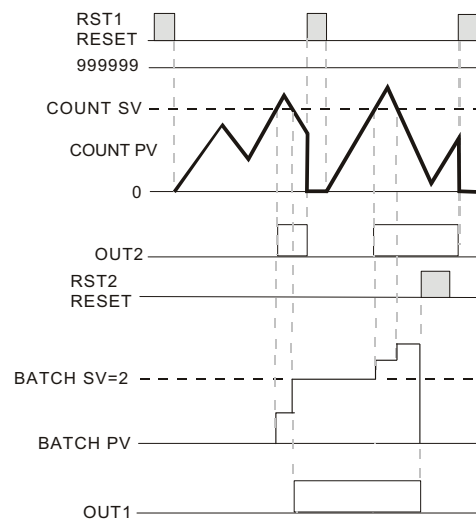
Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



BATCH
Input Mode UdA
Output Mode F

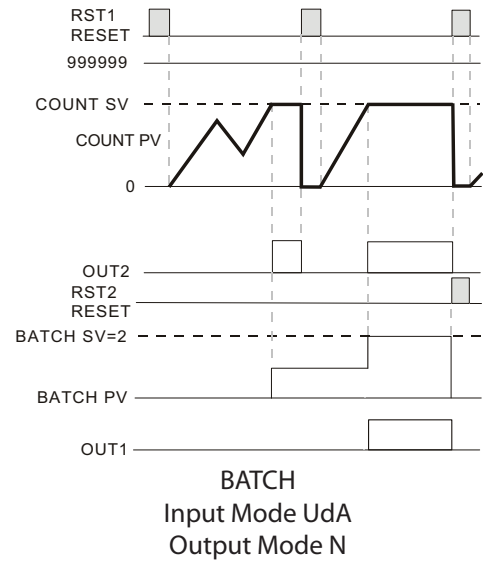
Mode N 

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



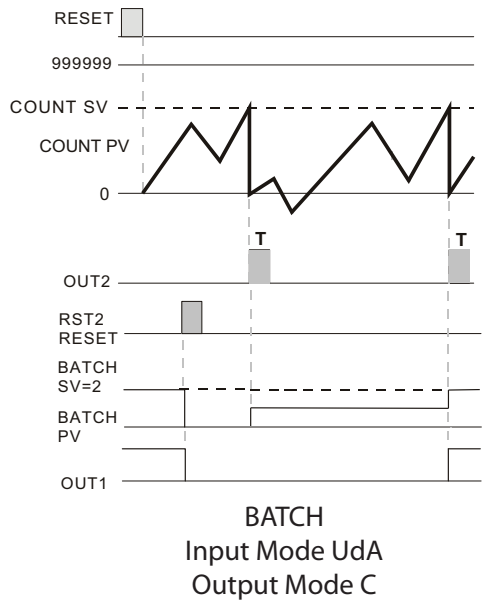
Mode C 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



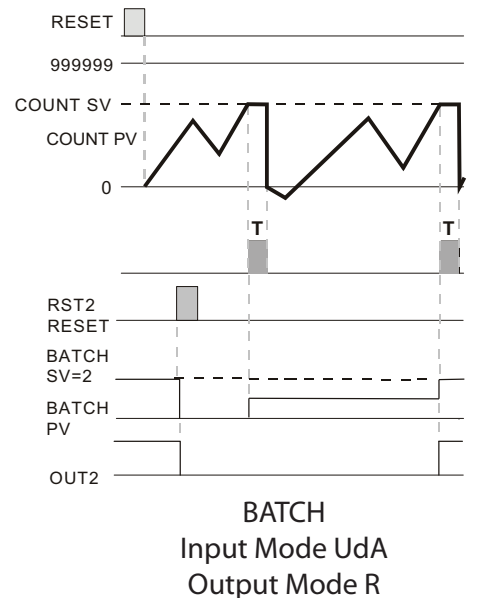
Mode R 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



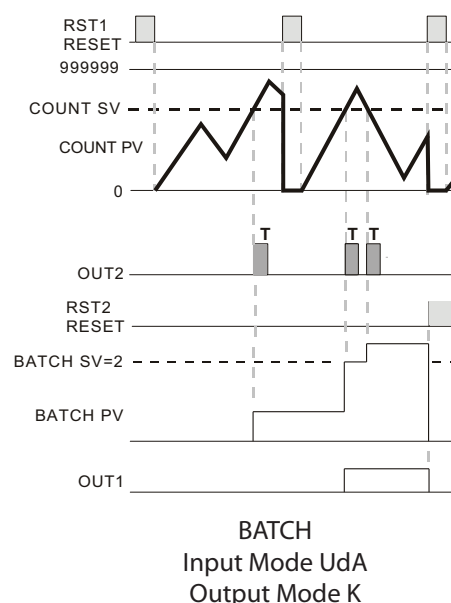
Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tOUT2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**tRES**) or DIP Switch 8.



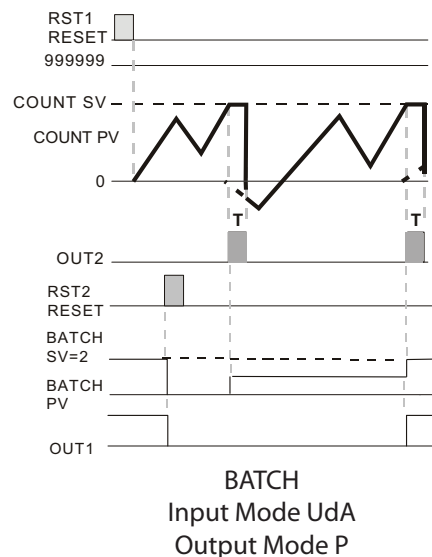
Mode P (P)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tOUT2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (tout2) when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**tRES**) or DIP Switch 8.



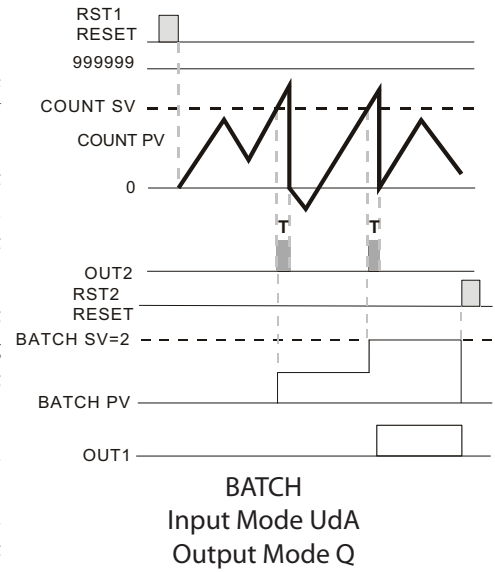
Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the batch count present value BATCH PV will increment by one. When the count present value PV counts down to the count SV, the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (tout2) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



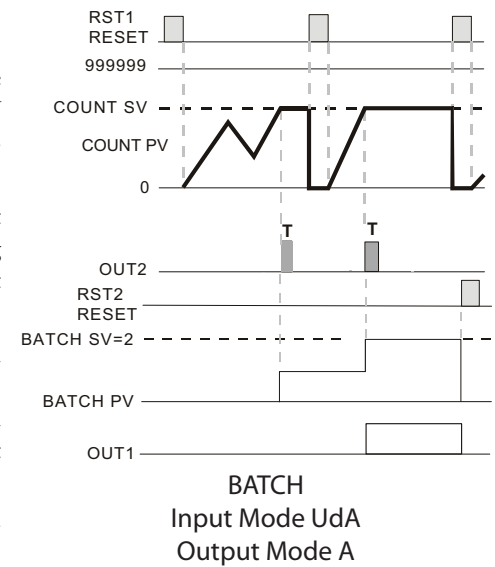
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



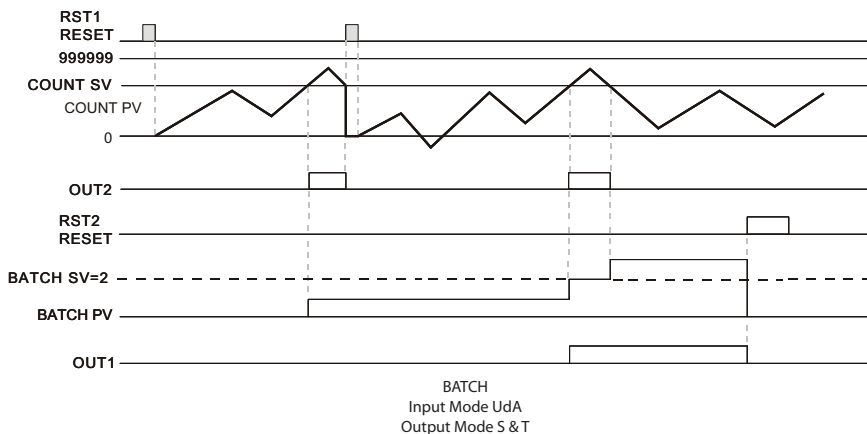
Mode S (S) & **Mode T** (T)

When the count present value PV counts up the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. When the count PV counts down to the count SV, Output 2 will turn OFF and the batch count BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



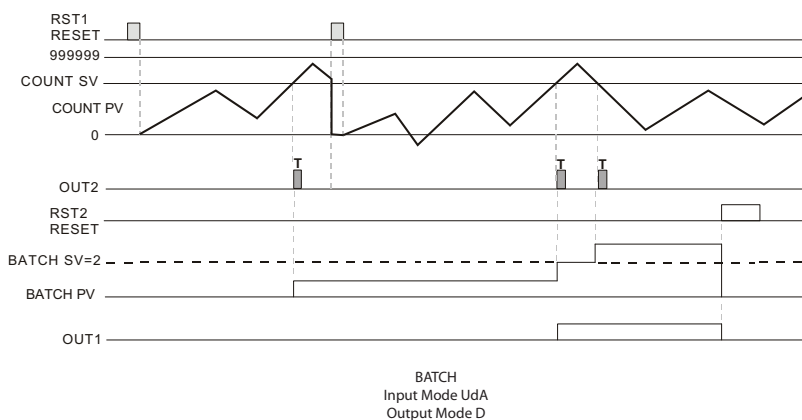
Mode D

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

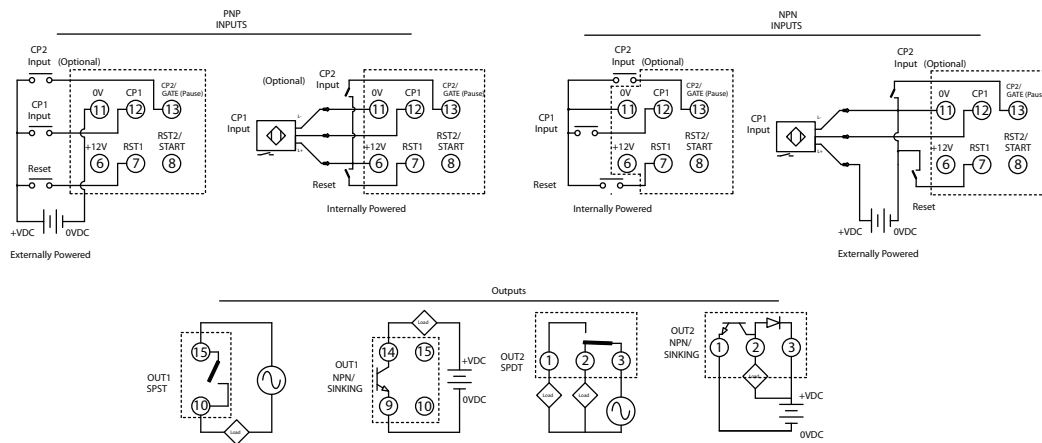
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**rst5r**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] or [▲] **TIME** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

EntFUN [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

Count [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Outnd [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **r** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **8** [▼] or [▲] **5** [▼] or [▲] **10** [▼] or [▲] **1** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PEES [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

Input [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE [▼]

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CTT Counter Functions

Batch Counting (**BATCH**)

Counting Up / Counting Down (**UD** **ED**)

Batch Counting (**BATCH**)

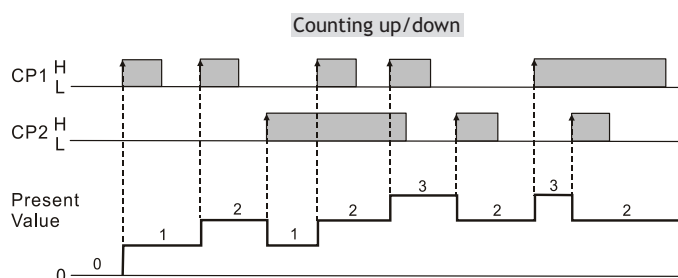
In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Input Mode:

Counting Up / Counting Down (**UD** **ED**)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.



Output Modes:

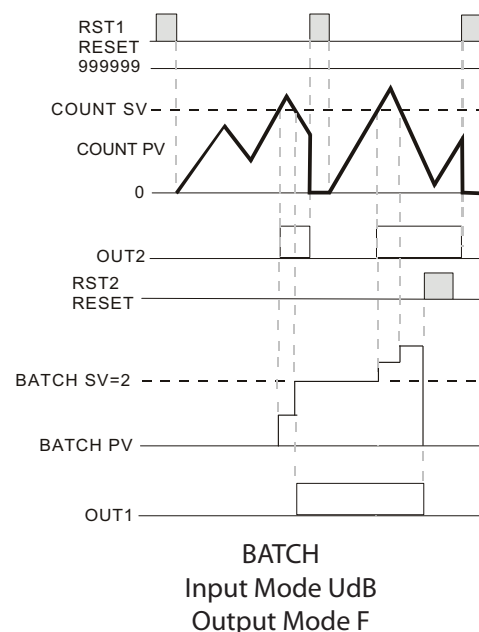
Mode F (**F**)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



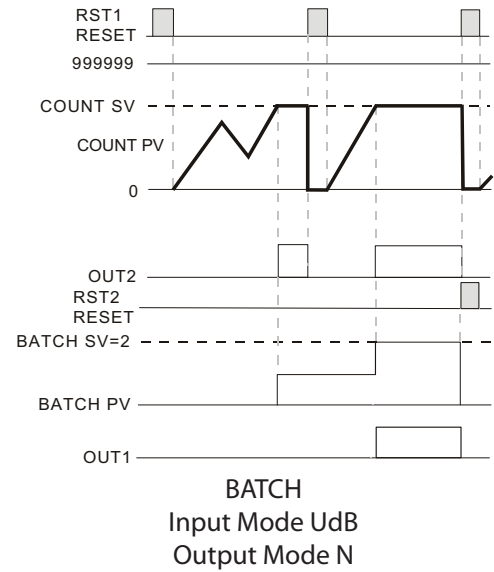
Mode N 

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



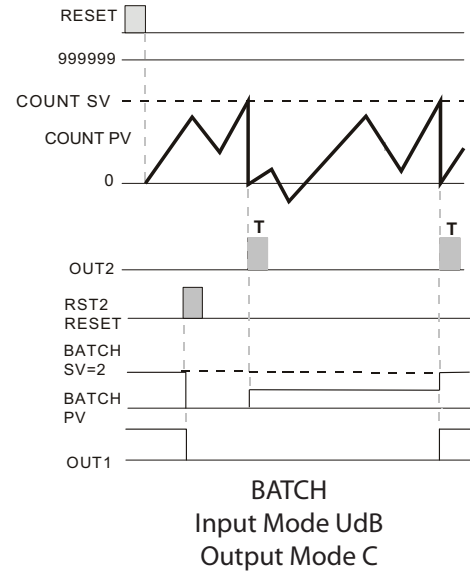
Mode C 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



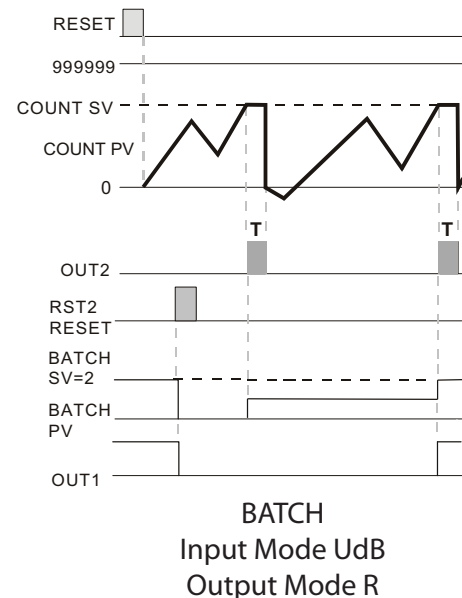
Mode R 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**OUT2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



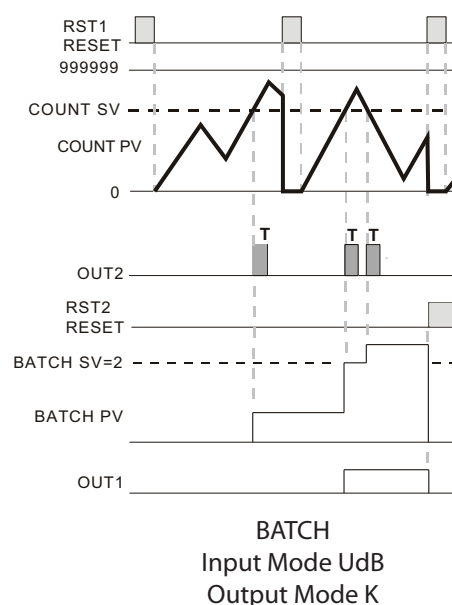
Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



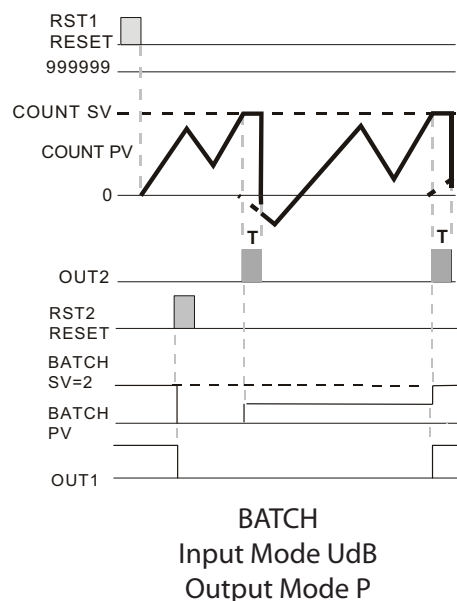
Mode P (P)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



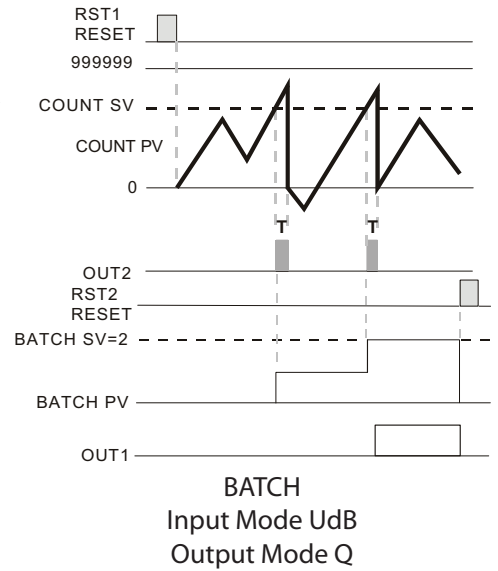
Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2PW**) and the batch count present value BATCH PV will increment by one. When the count present value PV counts down to the count SV, the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (**OUT2PW**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



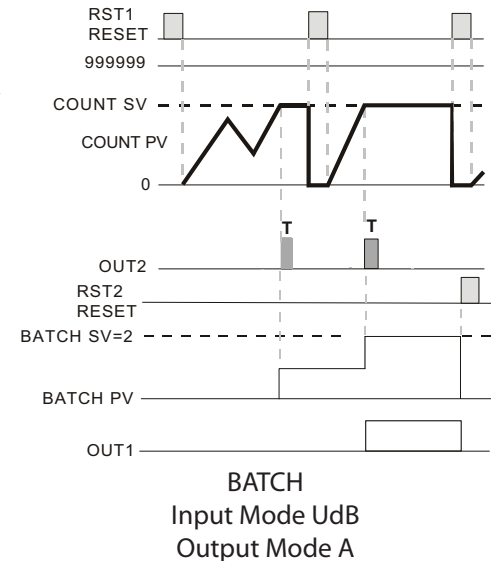
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2PW**) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



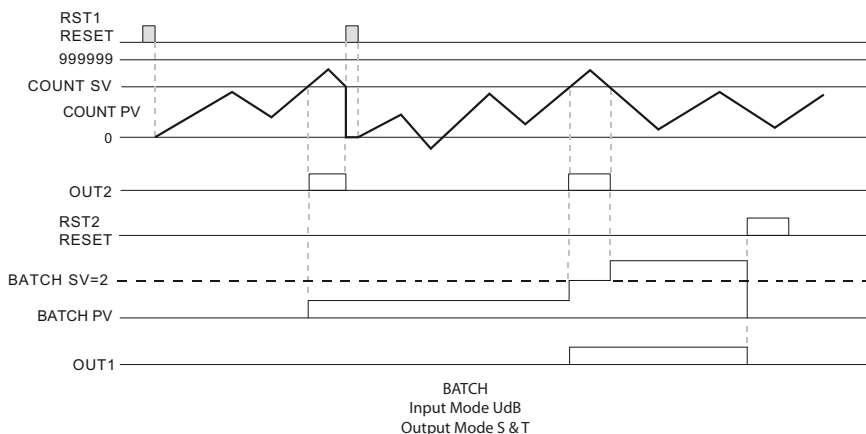
Mode S (S) & Mode T (T)

When the count present value PV counts up the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. When the count PV counts down to the count SV, Output 2 will turn OFF and the batch count BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



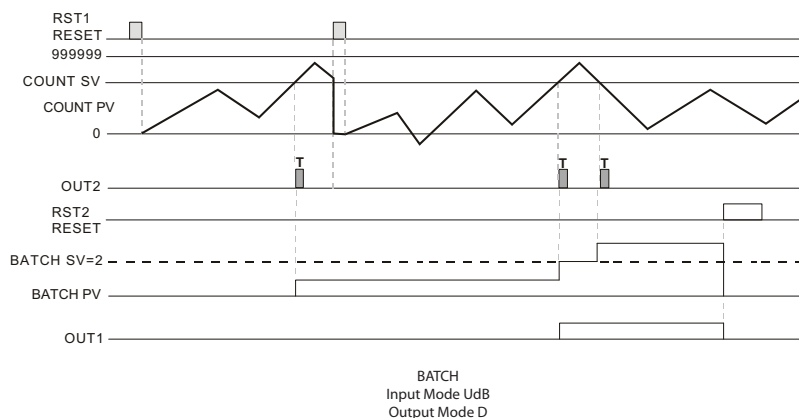
Mode D

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLW**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

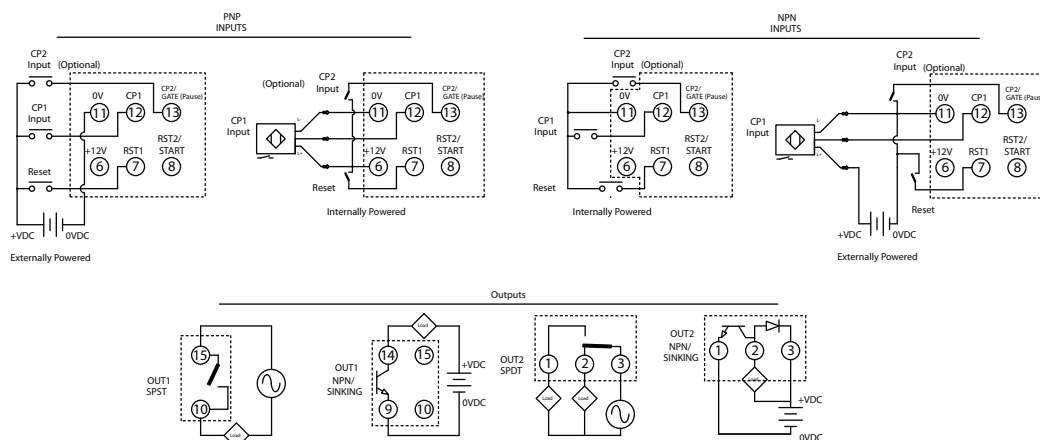
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLS**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼]or[▲] **TIME** [▼]or[▲] **COUNT** [▼]or[▲] **BATCH** [▼]or[▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CNTFUN [▼]or[▲] **STAGE1** [▼]or[▲] **STAGE2** [▼]or[▲] **BATCH** [▼]or[▲] **TOTAL** [▼]or[▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CINPT [▼]or[▲] **UP** [▼]or[▲] **DOWN** [▼]or[▲] **Ud_A** [▼]or[▲] **Ud_b** [▼]or[▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

COUTD [▼]or[▲] **F** [▼]or[▲] **n** [▼]or[▲] **r** [▼]or[▲] **e** [▼]or[▲] **P**

MODE [▼] [▼]or[▲] **9** [▼]or[▲] **8** [▼]or[▲] **5** [▼]or[▲] **4** [▼]or[▲] **3** [▼]or[▲] **2** [▼]or[▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CSPED [▼]or[▲] **10K** [▼]or[▲] **5K** [▼]or[▲] **1K** [▼]or[▲] **200** [▼]or[▲] **30** [▼]or[▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [▼]or[▲] **002** [▼]or[▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT2 [▼]or[▲] **002** [▼]or[▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINTE [▼]or[▲] **0** [▼]or[▲] **1** [▼]or[▲] **2** [▼]or[▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼]or[▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼]or[▲] **CLEAR** [▼]or[▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESR [▼]or[▲] **20** [▼]or[▲] **1**

MODE [▼] Select input signal types: NPN and PNP

CNPTE [▼]or[▲] **nPN** [▼]or[▲] **pNP**

MODE [▼]
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CTT Counter Functions

Batch Counting (BATCH)

Quadrature (UD)

Batch Counting (BATCH)

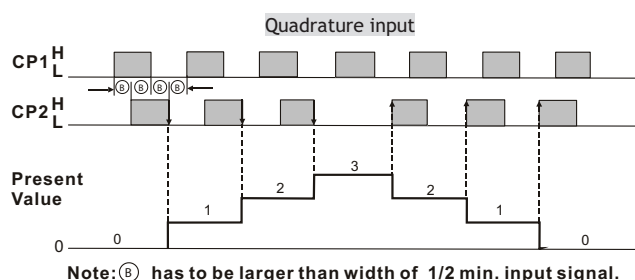
In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Input Mode:

Quadrature (UD)

When the quadrature input signal at CP1 leads the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 leads the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



Output Modes:

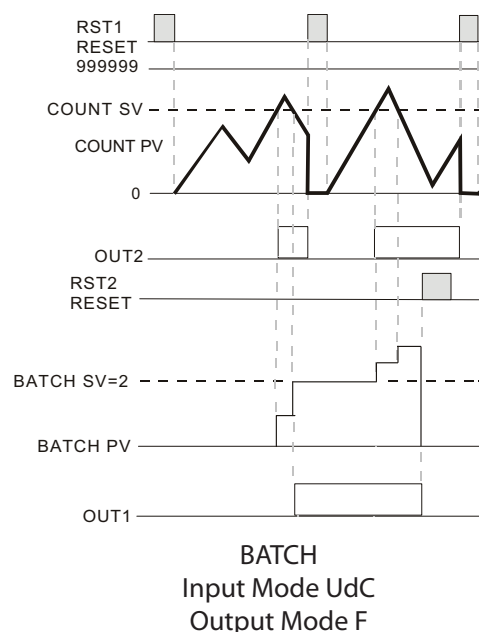
Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a "reset" input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the "reset" signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



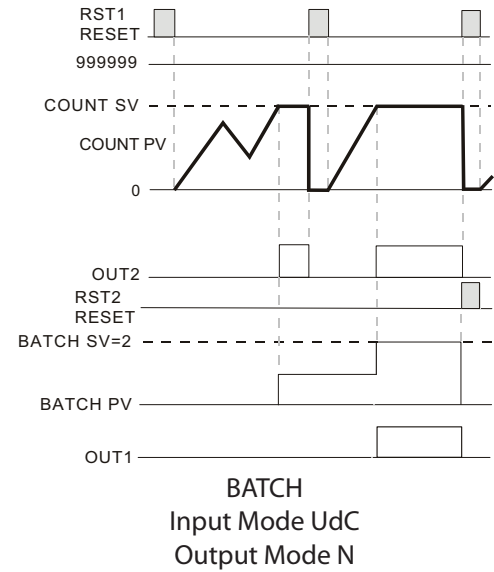
Mode N

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**) or DIP Switch 8.



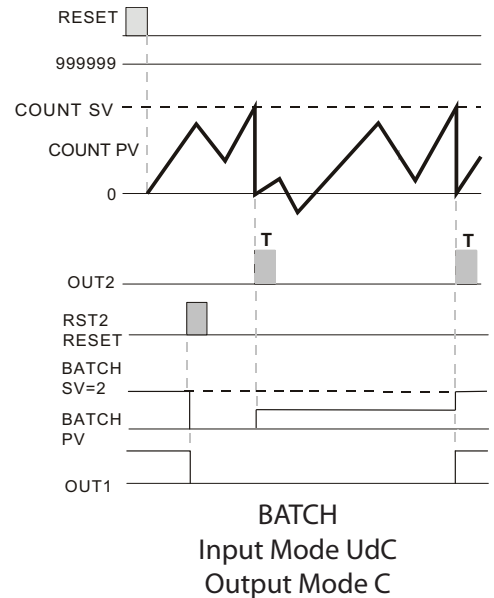
Mode C

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**) or DIP Switch 8.



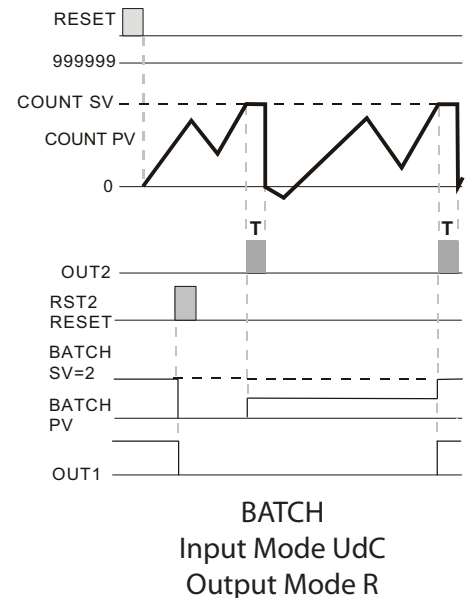
Mode R

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**) or DIP Switch 8.



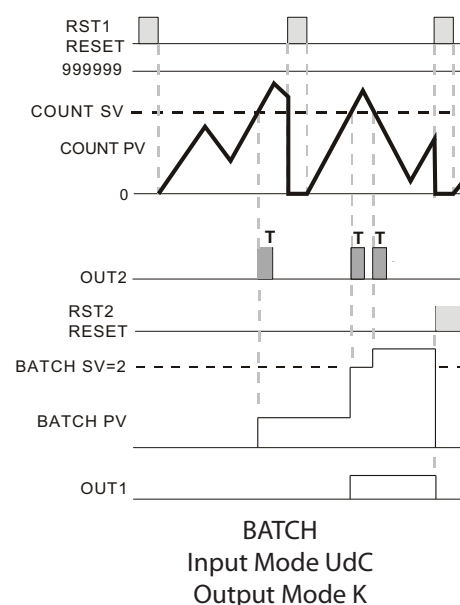
Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



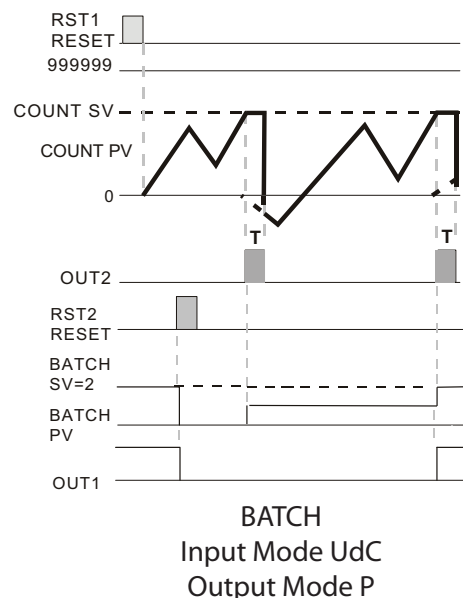
Mode P (P)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (**OUT2**) when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



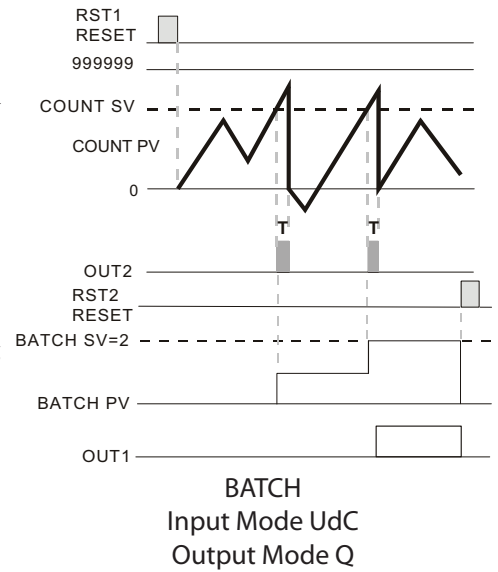
Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. When the count present value PV counts down to the count SV, the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (**OUT2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



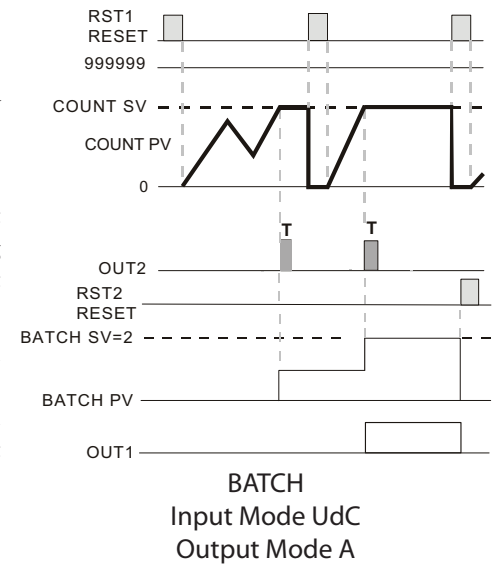
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



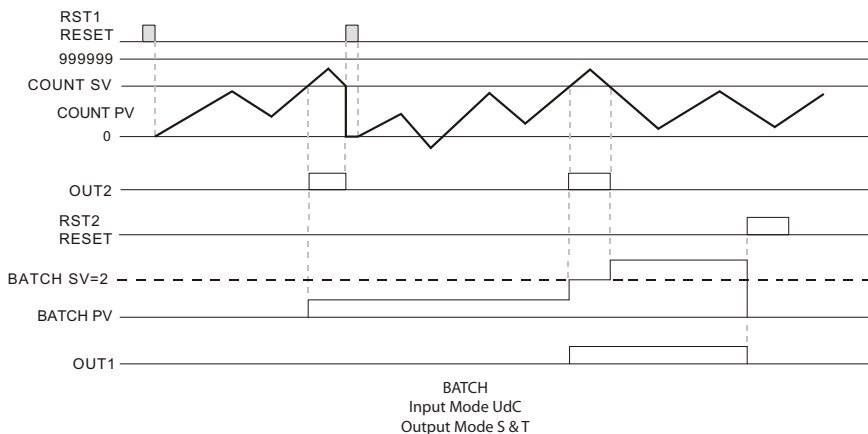
Mode S (S) & Mode T (T)

When the count present value PV counts up the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. When the count PV counts down to the count SV, Output 2 will turn OFF and the batch count BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



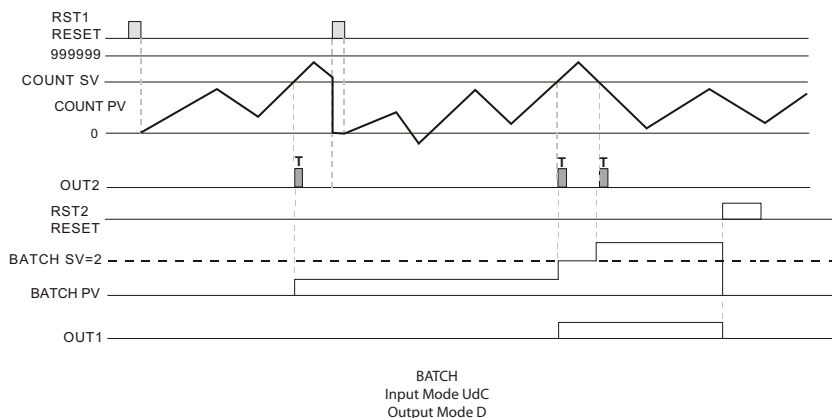
Mode D (S)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

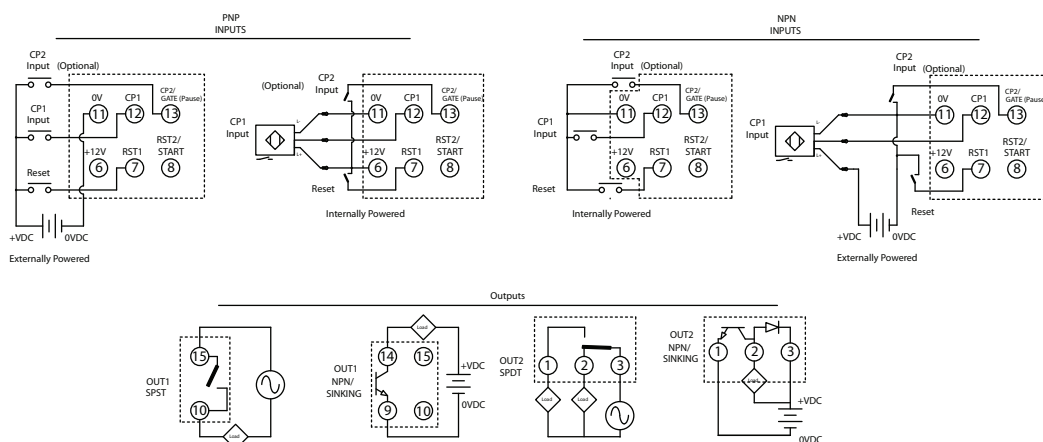
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kcps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad setup of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNCT [▼] or [↔] **TIME** [▼] or [↔] **Count** [▼] or [↔] **TACH** [▼] or [↔] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [↔] **STAGE1** [▼] or [↔] **STAGE2** [▼] or [↔] **BATCH** [▼] or [↔] **TOTAL** [▼] or [↔] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command down, counting up/counting down, quadrature input.

Count [▼] or [↔] **UP** [▼] or [↔] **down** [▼] or [↔] **Ud_A** [▼] or [↔] **Ud_b** [▼] or [↔] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [↔] **F** [▼] or [↔] **n** [▼] or [↔] **e** [▼] or [↔] **r** [▼] or [↔] **t** [▼] or [↔] **d**

MODE [▼] [▼] or [↔] **9** [▼] or [↔] **8** [▼] or [↔] **5** [▼] or [↔] **4** [▼] or [↔] **3** [▼] or [↔] **2** [▼] or [↔] **1**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [▼] or [↔] **10K** [▼] or [↔] **5K** [▼] or [↔] **1K** [▼] or [↔] **200** [▼] or [↔] **30** [▼] or [↔] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Out1 [▼] or [↔] **002** [▼] or [↔] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Out2 [▼] or [↔] **002** [▼] or [↔] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [↔] **0** [▼] or [↔] **1** [▼] or [↔] **2** [▼] or [↔] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [↔] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PEERS [▼] or [↔] **CLEAR** [▼] or [↔] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [↔] **20** [▼] or [↔] **1**

MODE [▼] Select input signal types: NPN and PNP

Input [▼] or [↔] **nPN** [▼] or [↔] **pNP**

MODE [▼]

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CTT Counter Functions

Total Counting (TOTAL)

Counting Up (UP)

Total Counting (TOTAL)

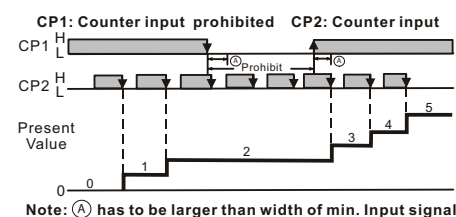
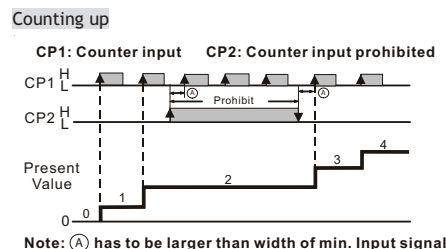
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up (UP)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.



Output Modes:

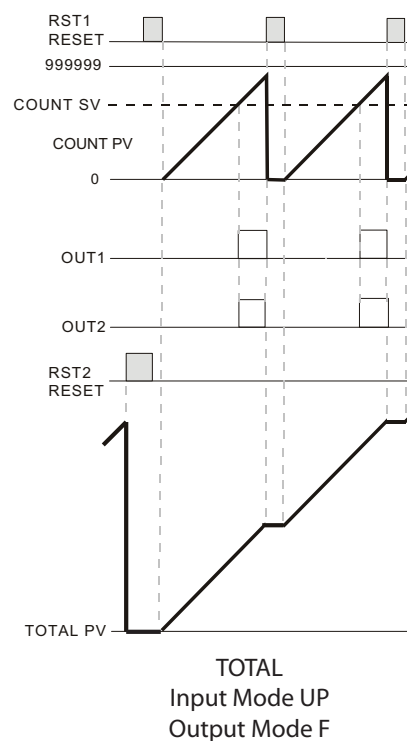
Mode F (F)

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV and Total PV will continue to increment with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The leading edge of a "reset" input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the "reset" signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RSTPW) or DIP Switch 8.



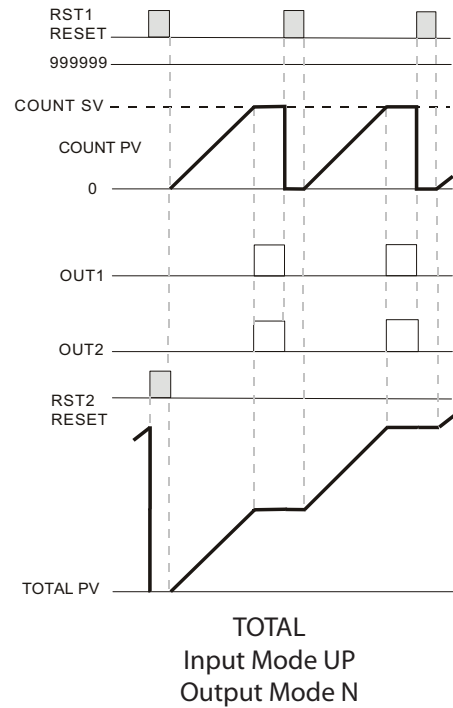
Mode N

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV and Total PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



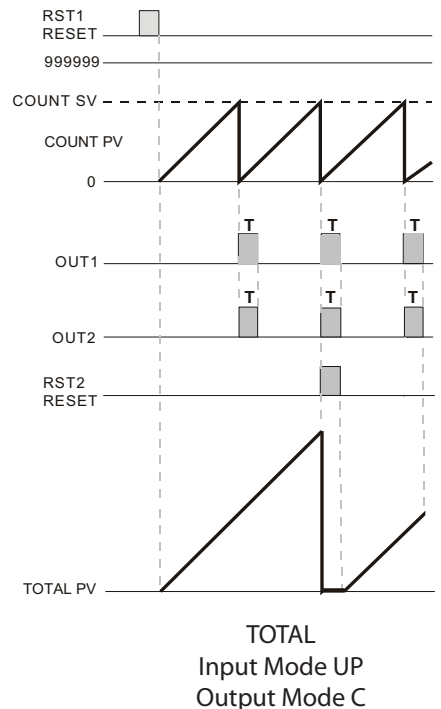
Mode C

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Mode R

Not available in Total Counting

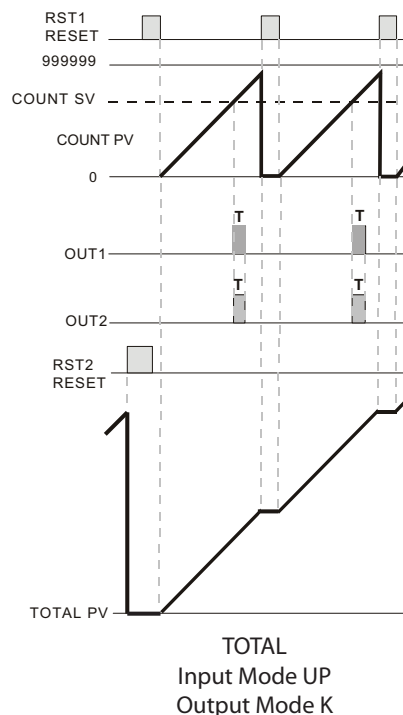
Mode K

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV and Total PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

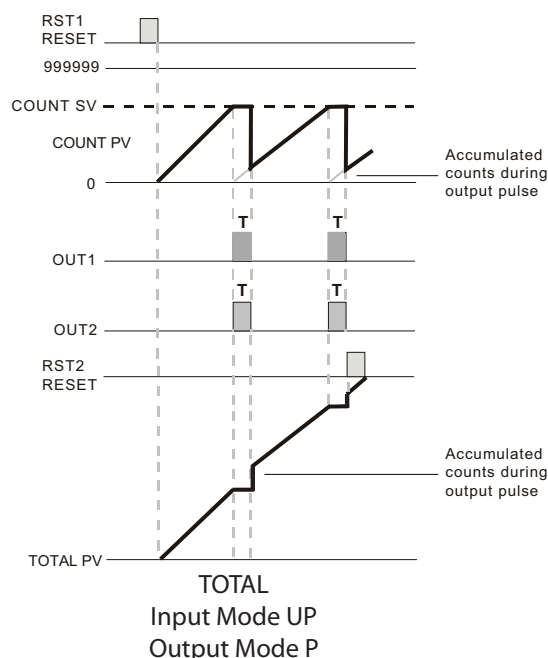


Mode P

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



Mode Q

Not available in Total Counting

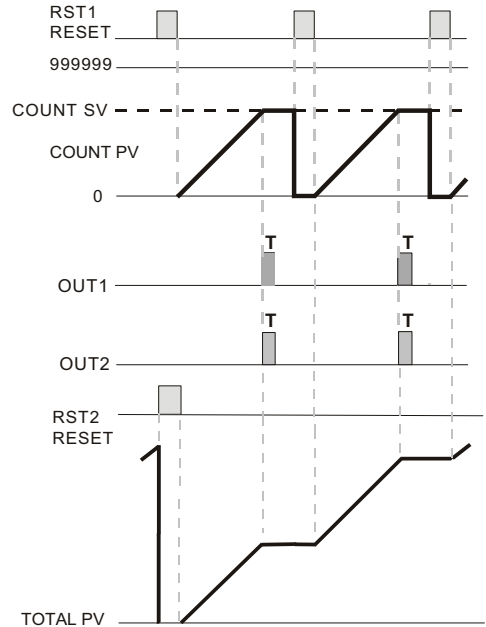
Mode A

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter. The count PV and Total PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

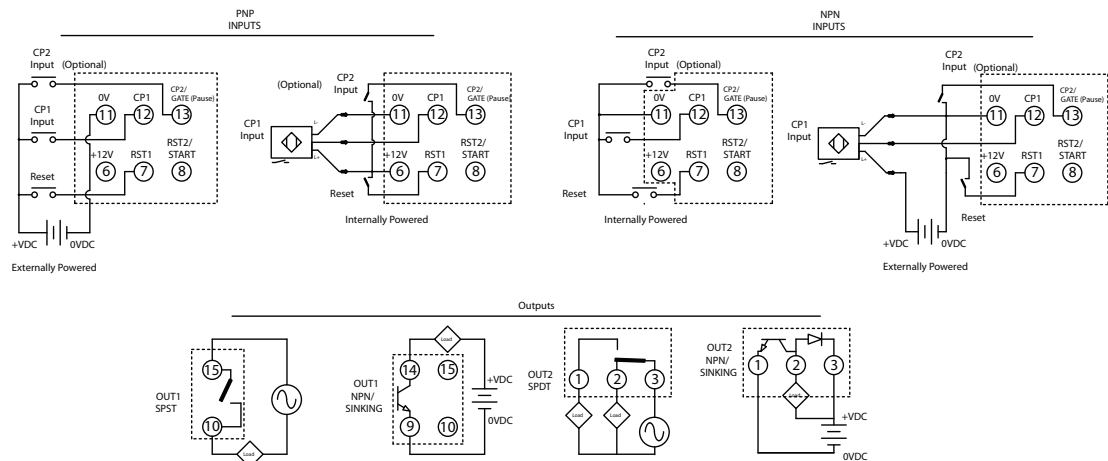
The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter or DIP Switch 8.



TOTAL
Input Mode UP
Output Mode A

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **timer** [▼] or [▲] **count** [▼] or [▲] **tach** [▼] or [▲] **ctt**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

cttfunc [▼] or [▲] **stage1** [▼] or [▲] **stage2** [▼] or [▲] **batch** [▼] or [▲] **total** [▼] or [▲] **dual**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

input [▼] or [▲] **up** [▼] or [▲] **down** [▼] or [▲] **ud_a** [▼] or [▲] **ud_b** [▼] or [▲] **ud_c**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

output [▼] or [▲] **f** [▼] or [▲] **n** [▼] or [▲] **c** [▼] or [▲] **r** [▼] or [▲] **t** [▼] or [▲] **d**

MODE ↓ [▼] or [▲] **9** [▼] or [▲] **A** [▼] or [▲] **S** [▼] or [▲] **t** [▼] or [▲] **d** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

speed [▼] or [▲] **10k** [▼] or [▲] **5k** [▼] or [▲] **1k** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

pscale [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

pers [▼] or [▲] **clear** [▼] or [▲] **save**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

input [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓

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CTT Counter Functions

Total Counting (Total)

Counting Down (Down)

Total Counting (Total)

A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (Pulse) or will be maintained ON depending on the Output Mode selected.

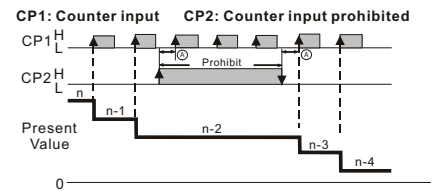
Input Mode:

Counting Down (Down)

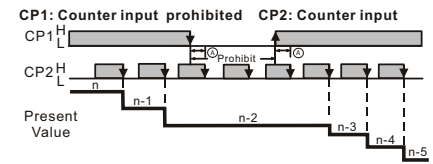
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

Output Modes:

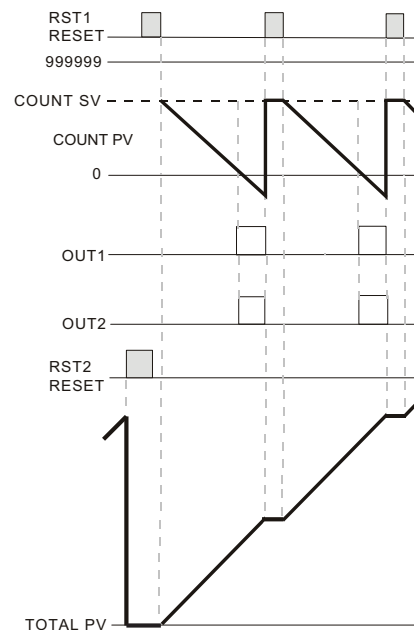
Mode F (F)

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (Pulse) or DIP Switch 8.



TOTAL
Input Mode DOWN
Output Mode F

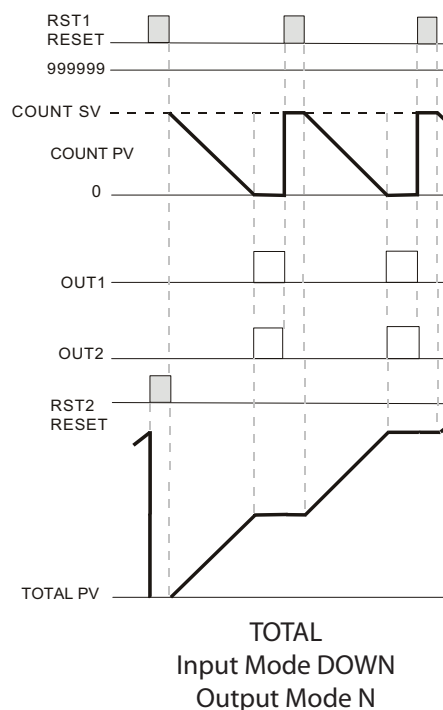
Mode N

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



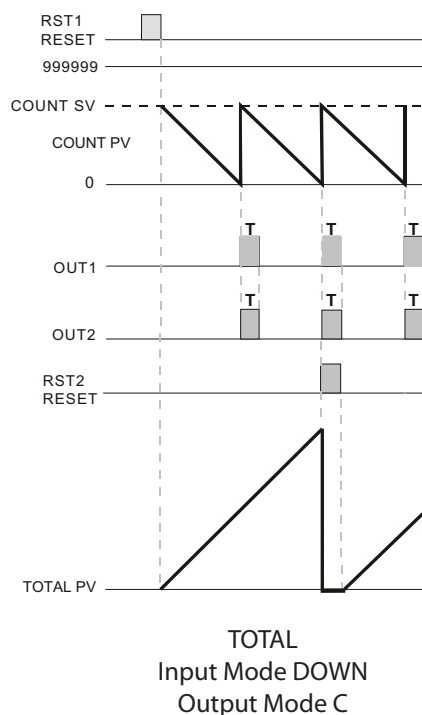
Mode C

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP**) and the count PV will reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Mode R

Not available in Total Counting

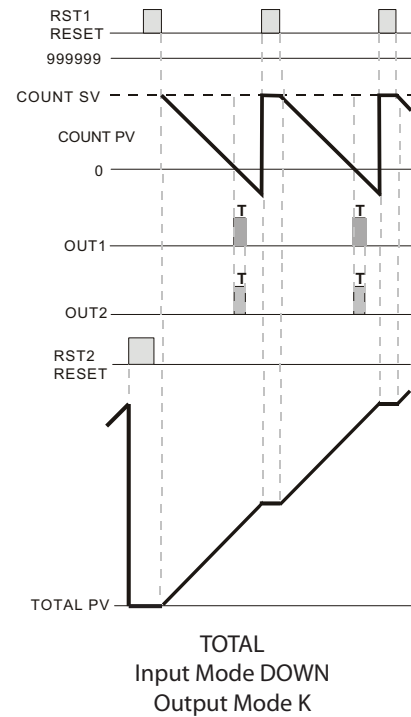
Mode K

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



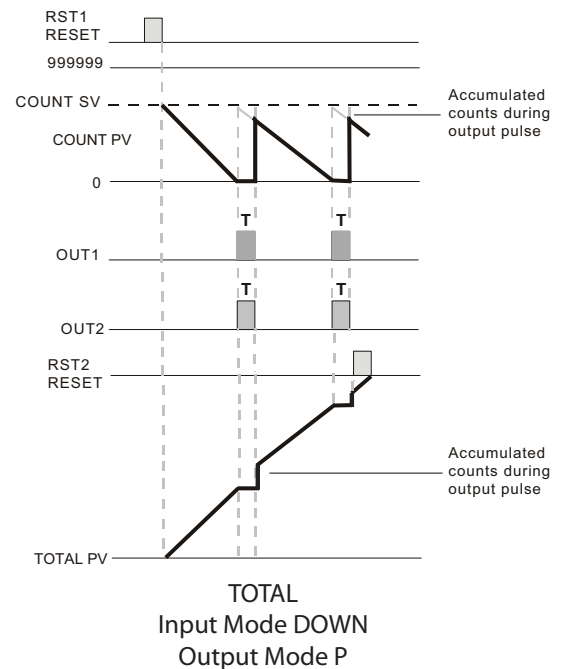
Mode P

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV is prohibited from decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to the count setting value SV and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Mode Q (Q)

Not available in Total Counting

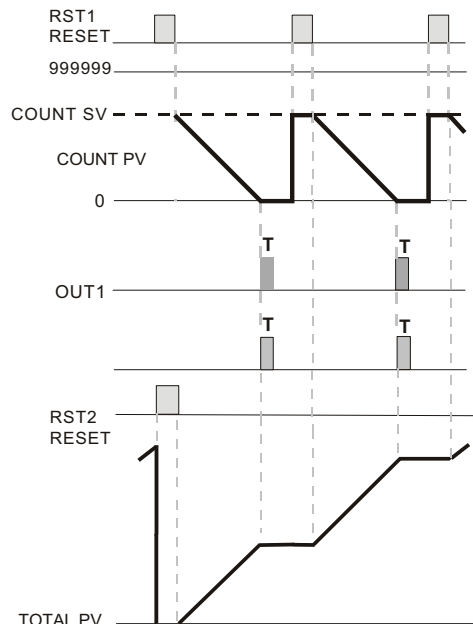
Mode A (A)

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

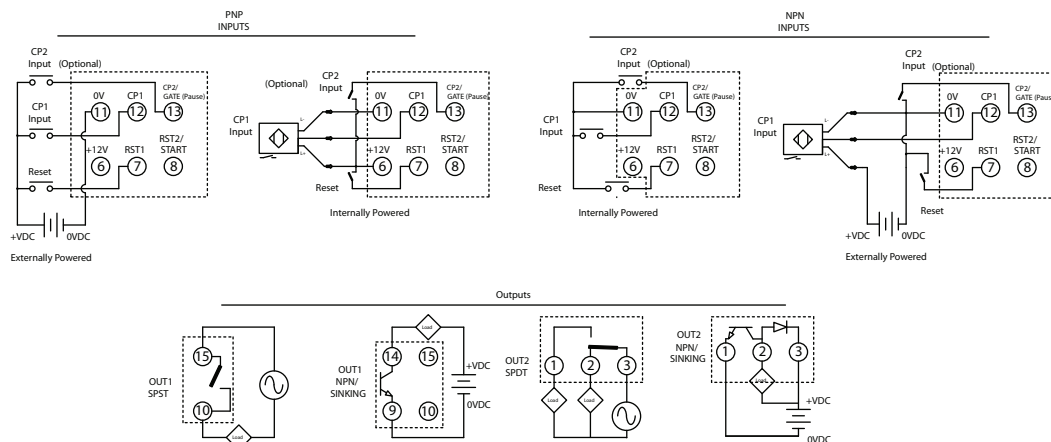
The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



TOTAL
Input Mode DOWN
Output Mode A

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] [▲] **TIME** [▼] [▲] **Count** [▼] [▲] **TACH** [▼] [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFunc [▼] [▲] **STAGE1** [▼] [▲] **STAGE2** [▼] [▲] **BATCH** [▼] [▲] **TOTAL** [▼] [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

Input [▼] [▲] **UP** [▼] [▲] **down** [▼] [▲] **Ud_A** [▼] [▲] **Ud_b** [▼] [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] [▲] **F** [▼] [▲] **n** [▼] [▲] **r** [▼] [▲] **L** [▼] [▲] **P**

MODE [▼] [▼] [▲] [▲] [▲] [▲] [▲] [▲] [▲] [▲] [▲] [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼] [▲] **10K** [▼] [▲] **5K** [▼] [▲] **1K** [▼] [▲] **200** [▼] [▲] **30** [▼] [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [▼] [▲] **002** [▼] [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT2 [▼] [▲] **002** [▼] [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] [▲] **0** [▼] [▲] **1** [▼] [▲] **2** [▼] [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼] [▲] **CLEAR** [▼] [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RTSR [▼] [▲] **20** [▼] [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

InputType [▼] [▲] **NPN** [▼] [▲] **PNP**

MODE [▼]
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CTT Counter Functions

Total Counting (TOTAL)

Counting Up / Command Counting Down (UdA)

Total Counting (TOTAL)

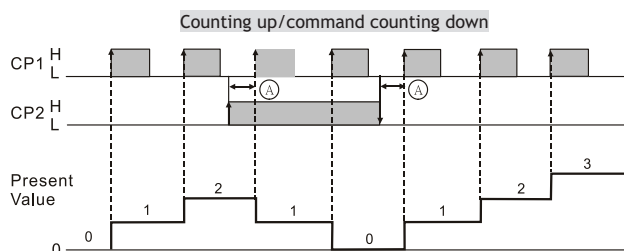
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Command Counting Down (UdA)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



Note: (A) has to be larger than width of min. input signal.

Output Modes:

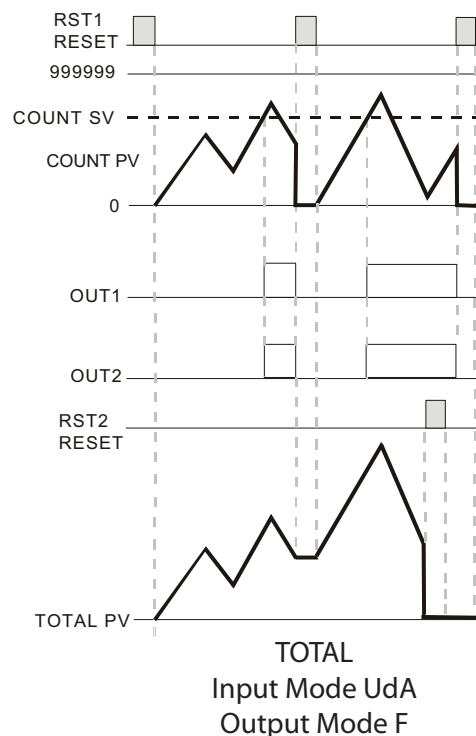
Mode F (F)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



TOTAL
Input Mode UdA
Output Mode F

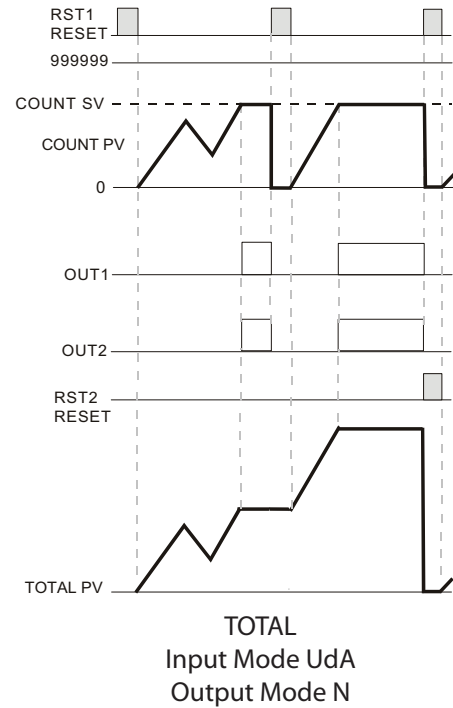
Mode N (N)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



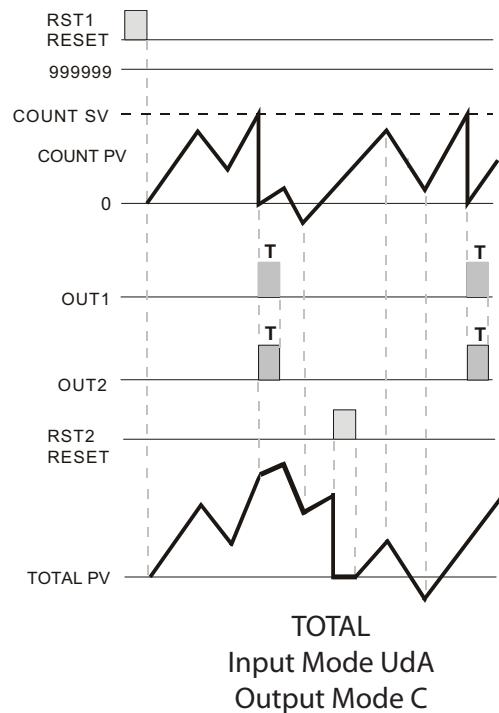
Mode C (C)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTT**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Mode R (R)

Not available in Total Counting

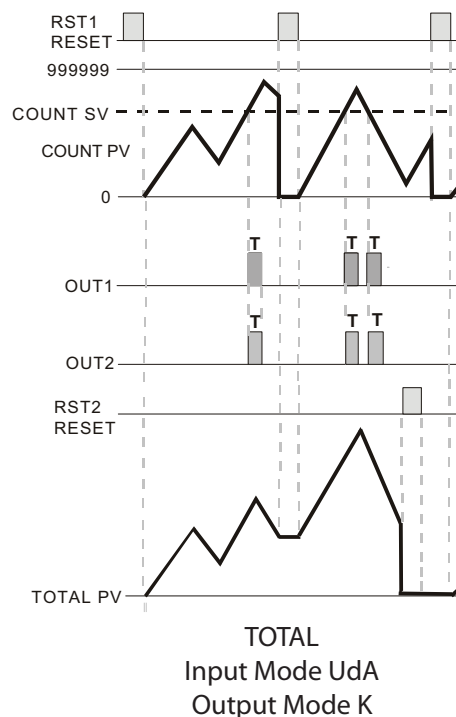
Mode K

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLW**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



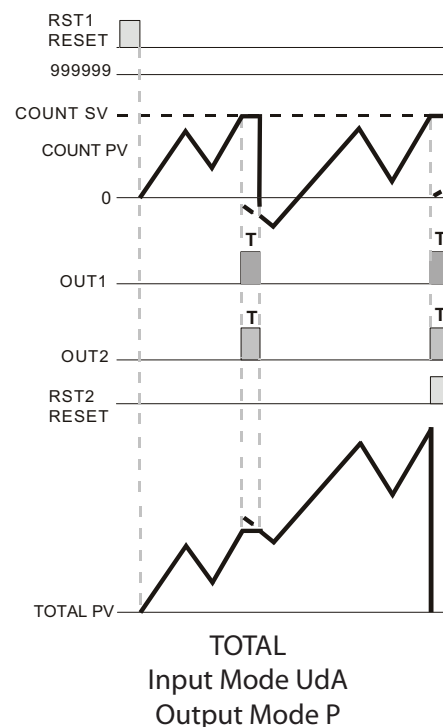
Mode P

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLW**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Mode Q

Not available in Total Counting

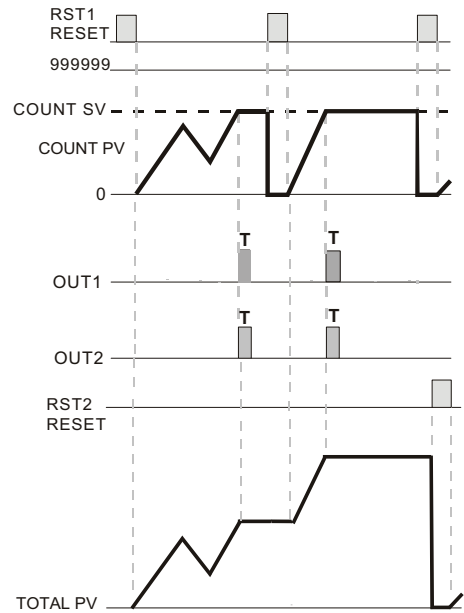
Mode A

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



TOTAL
Input Mode UdA
Output Mode A

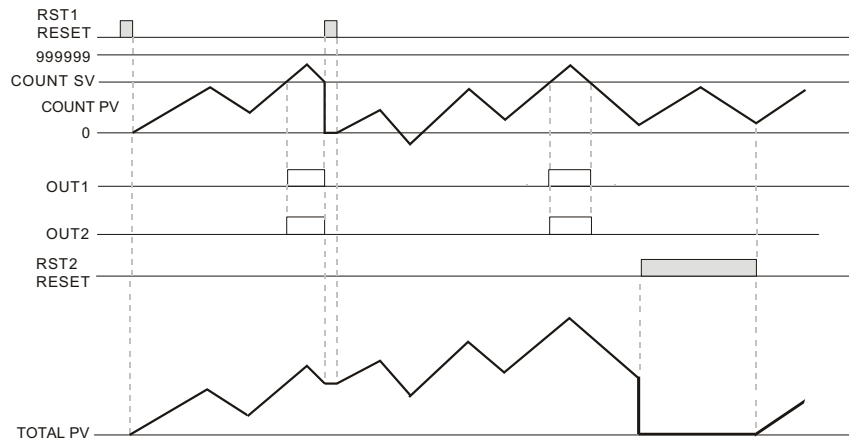
Mode S and Mode T

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (rtSr) or DIP Switch 8.



TOTAL
Input Mode UdA
Output Mode S & T

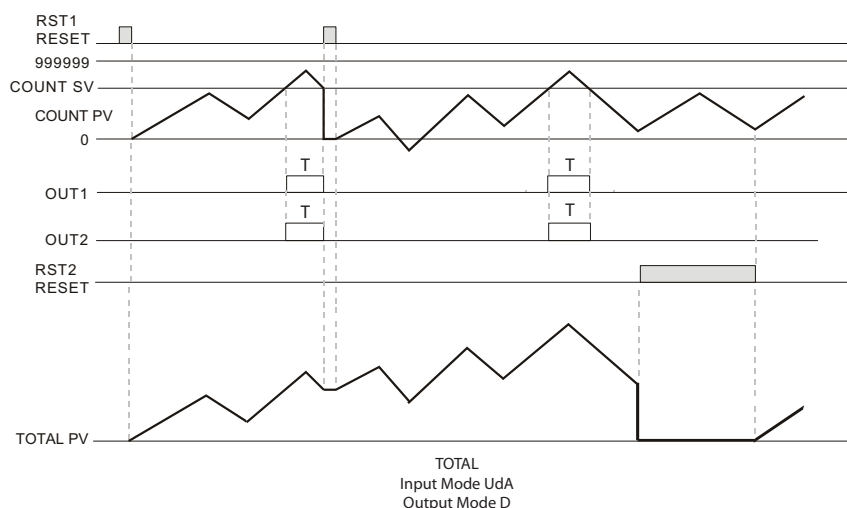
Mode D

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EQU2**). The count PV will continue to increment or decrement with each input signal.

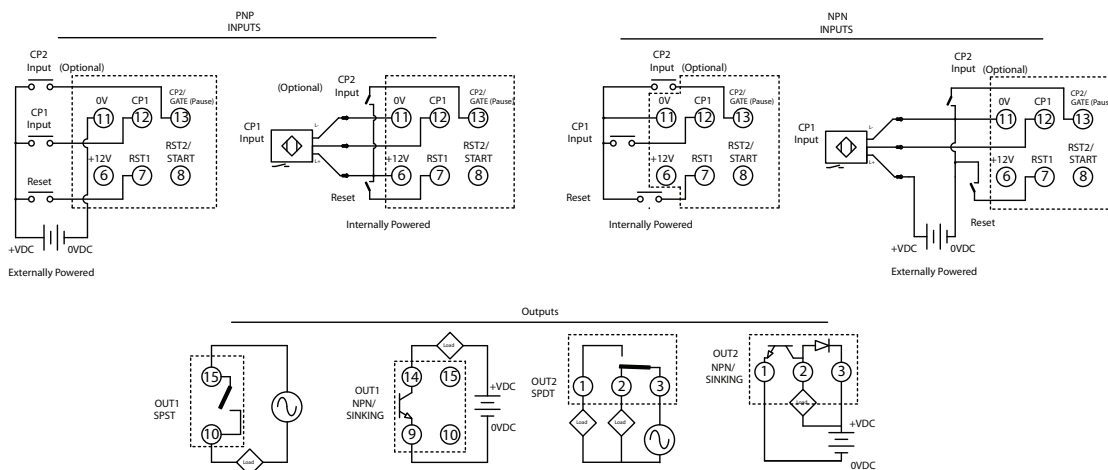
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] or [▲] **TIME** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunc [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntPtl [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

OutMod [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **r** [▼] or [▲] **t** [▼] or [▲] **D**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **8** [▼] or [▲] **5** [▼] or [▲] **6** [▼] or [▲] **0** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

CntPtl [▼] or [▲] **nPN** [▼] or [▲] **PNP**

MODE [▼]

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CTT Counter Functions

Total Counting (TOTAL)

Counting Up / Counting Down (UD)

Total Counting (TOTAL)

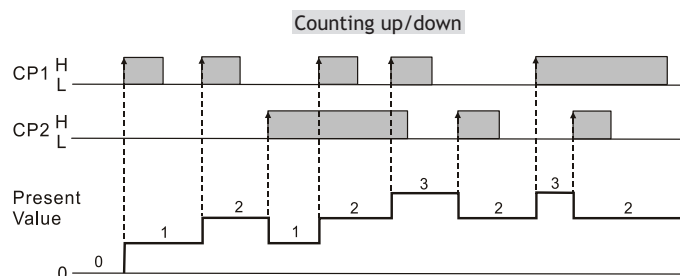
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Counting Down (UD)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.



Output Modes:

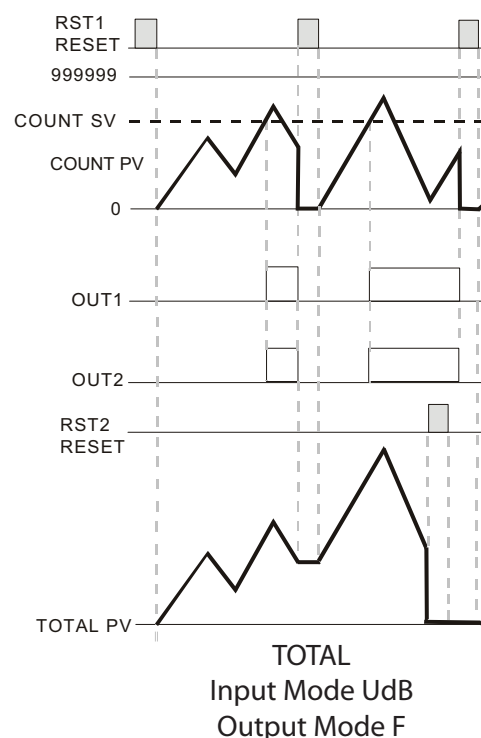
Mode F (F)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



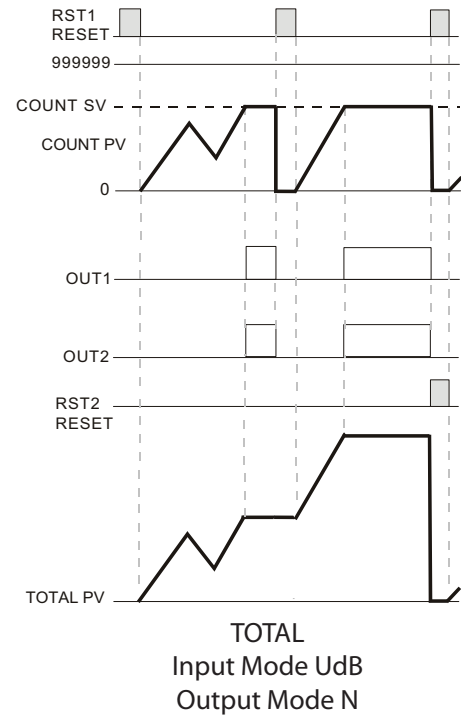
Mode N (N)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



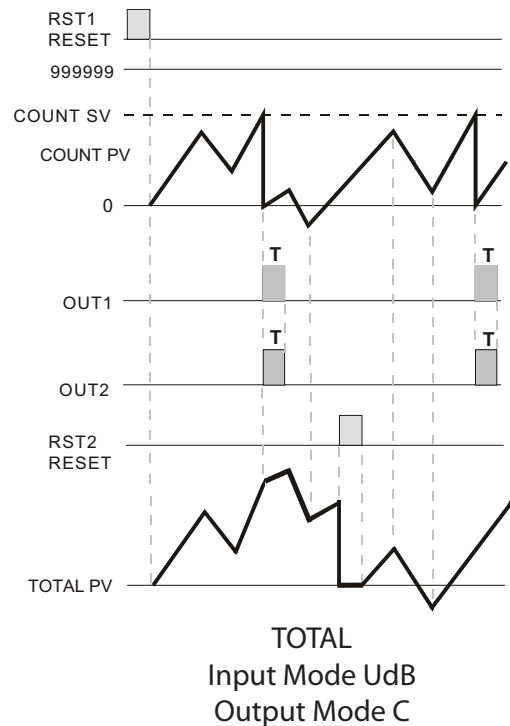
Mode C (C)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Mode R (R)

Not available in Total Counting

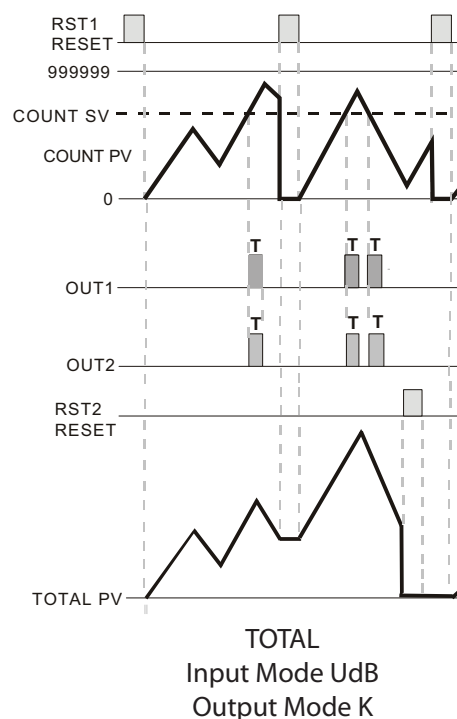
Mode K

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



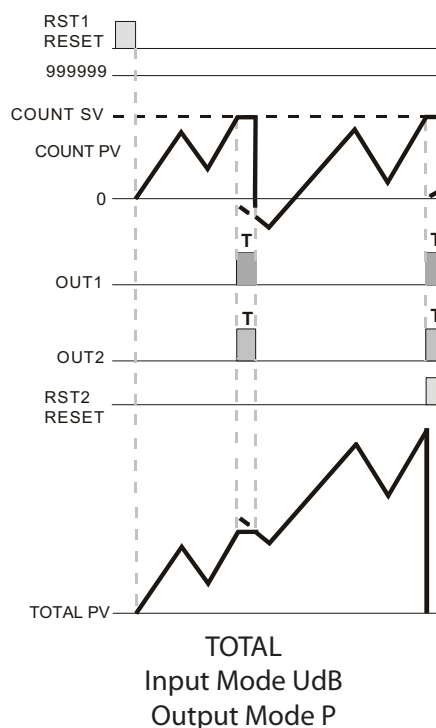
Mode P

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



Mode Q

Not available in Total Counting

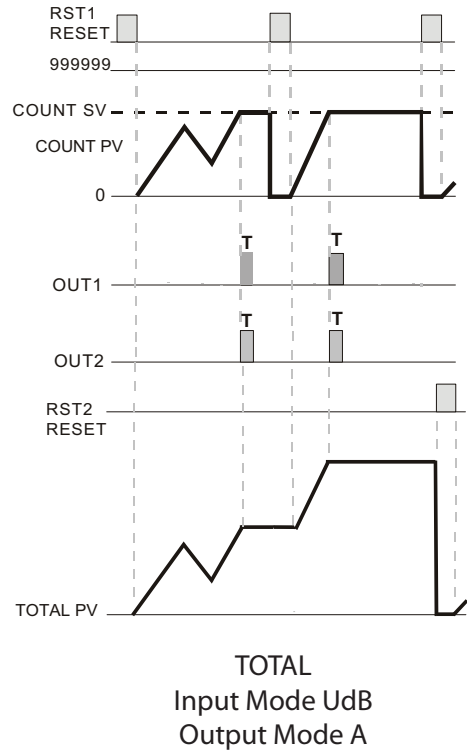
Mode A (A)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



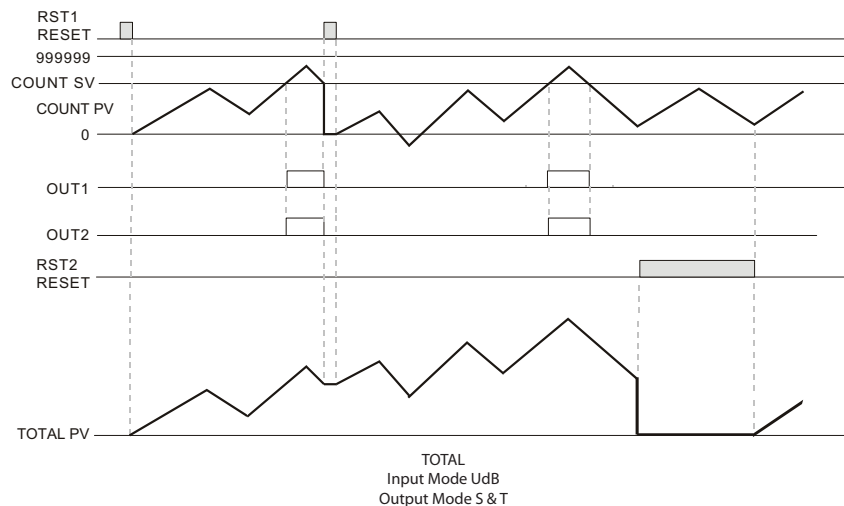
Mode S (S) and Mode T (T)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



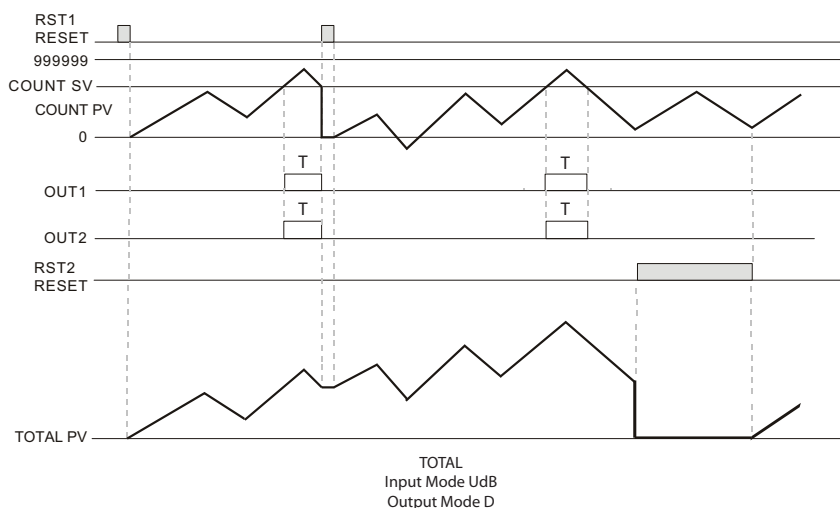
Mode D

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUTE**). The count PV will continue to increment or decrement with each input signal.

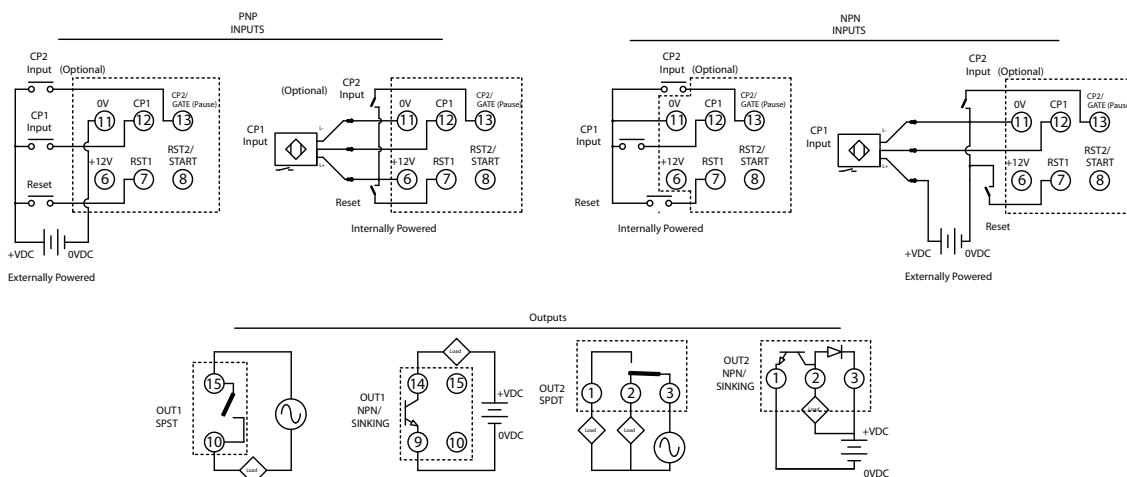
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kcps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] [▲] **TIME** [▼] [▲] **Count** [▼] [▲] **TACH** [▼] [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFunc [▼] [▲] **STAGE1** [▼] [▲] **STAGE2** [▼] [▲] **BATCH** [▼] [▲] **TOTAL** [▼] [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

Input [▼] [▲] **UP** [▼] [▲] **down** [▼] [▲] **Ud_A** [▼] [▲] **Ud_b** [▼] [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] [▲] **F** [▼] [▲] **n** [▼] [▲] **C** [▼] [▲] **r** [▼] [▲] **L** [▼] [▲] **P**

MODE [▼] [▼] [▲] **9** [▼] [▲] **8** [▼] [▲] **5** [▼] [▲] **6** [▼] [▲] **0** [▼] [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼] [▲] **10K** [▼] [▲] **5K** [▼] [▲] **1K** [▼] [▲] **200** [▼] [▲] **30** [▼] [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

out1 [▼] [▲] **002** [▼] [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

out2 [▼] [▲] **002** [▼] [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] [▲] **0** [▼] [▲] **1** [▼] [▲] **2** [▼] [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼] [▲] **CLEAR** [▼] [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] [▲] **20** [▼] [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

InputType [▼] [▲] **nPN** [▼] [▲] **pNP**

MODE [▼]
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CTT Counter Functions

Total Counting (E0EAL)

Quadrature (Ud C)

Total Counting (E0EAL)

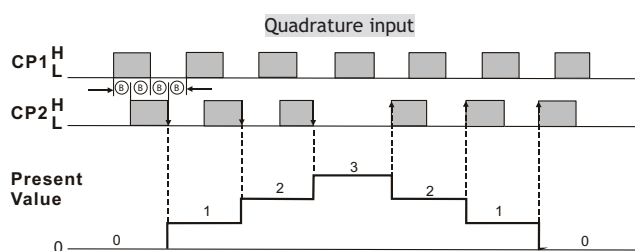
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (E0UEE) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Quadrature (Ud C)

When the quadrature input signal at CP1 leads the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 leads the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



Note: Ⓞ has to be larger than width of 1/2 min. input signal.

Output Modes:

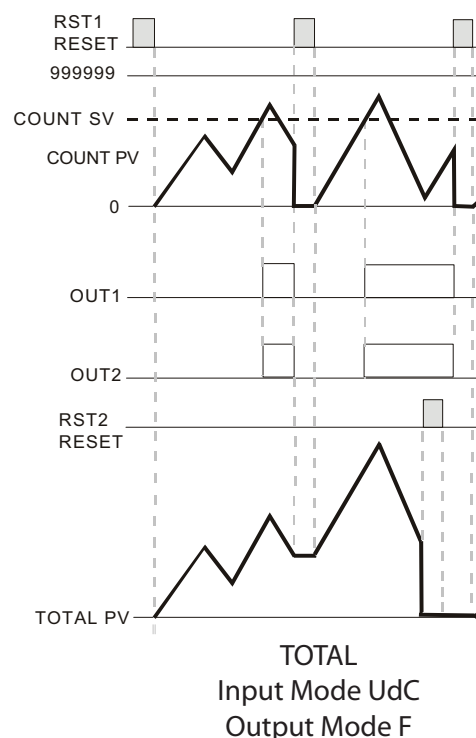
Mode F (F)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (E0E5E) or DIP Switch 8.



TOTAL
Input Mode UdC
Output Mode F

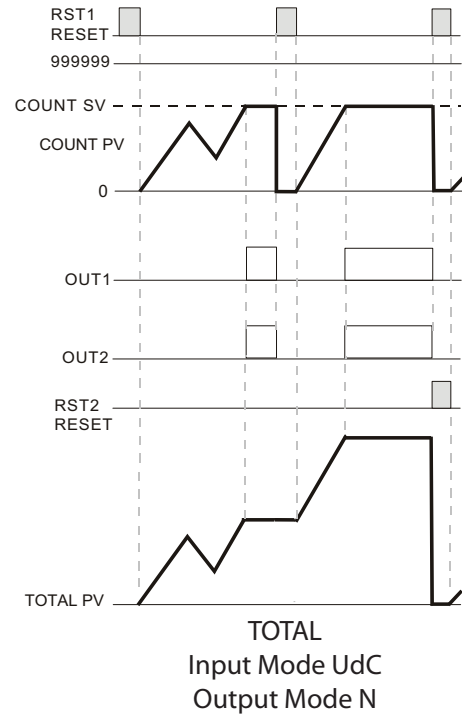
Mode N

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



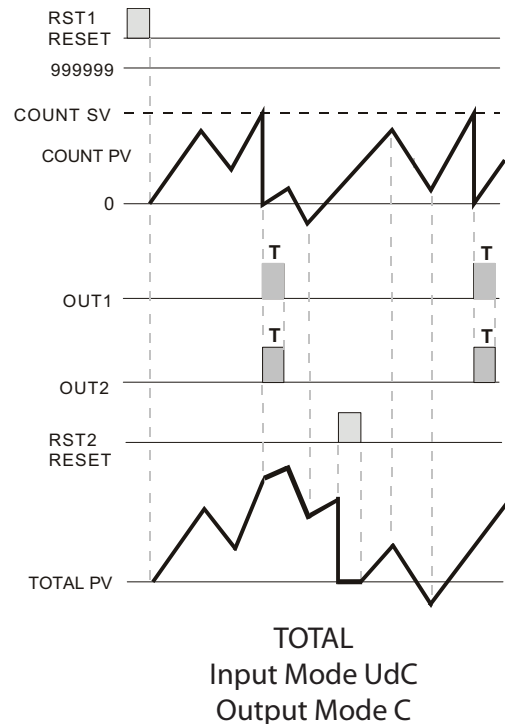
Mode C

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



Mode R

Not available in Total Counting

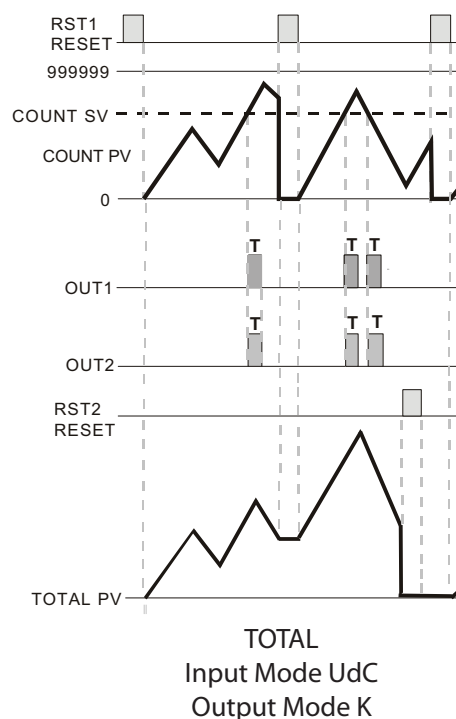
Mode K (K)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



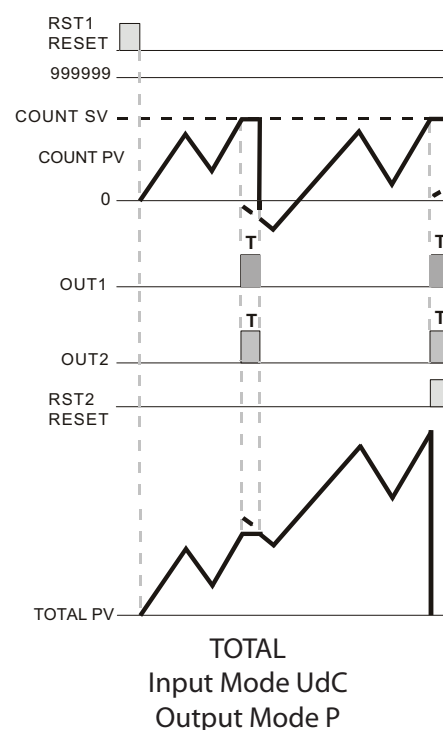
Mode P (P)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



Mode Q (Q)

Not available in Total Counting

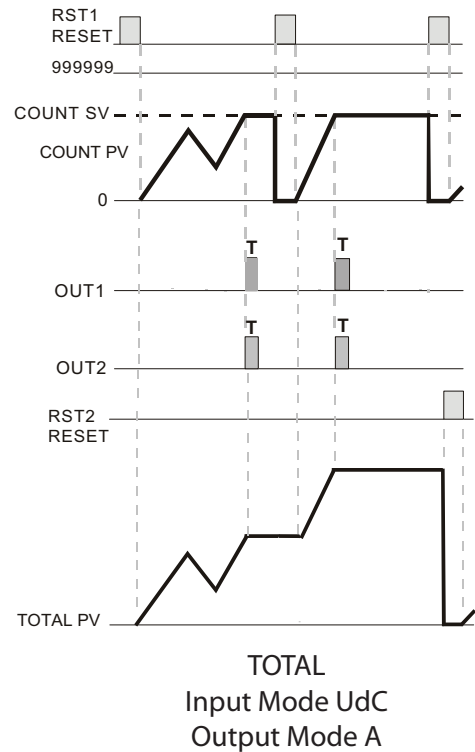
Mode A (A)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



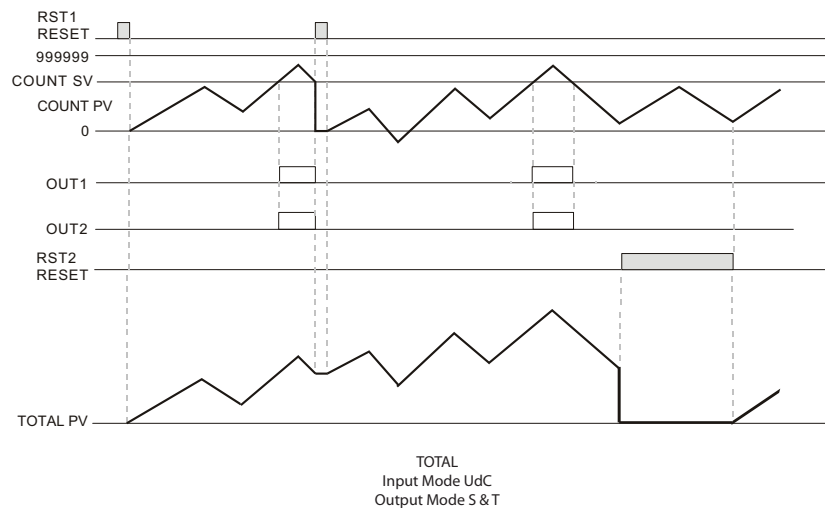
Mode S (S) and Mode T (T)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



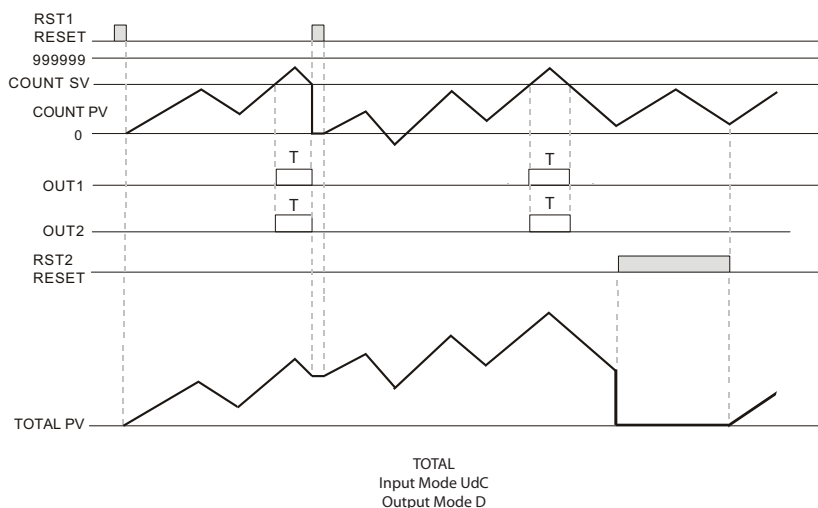
Mode D

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment or decrement with each input signal.

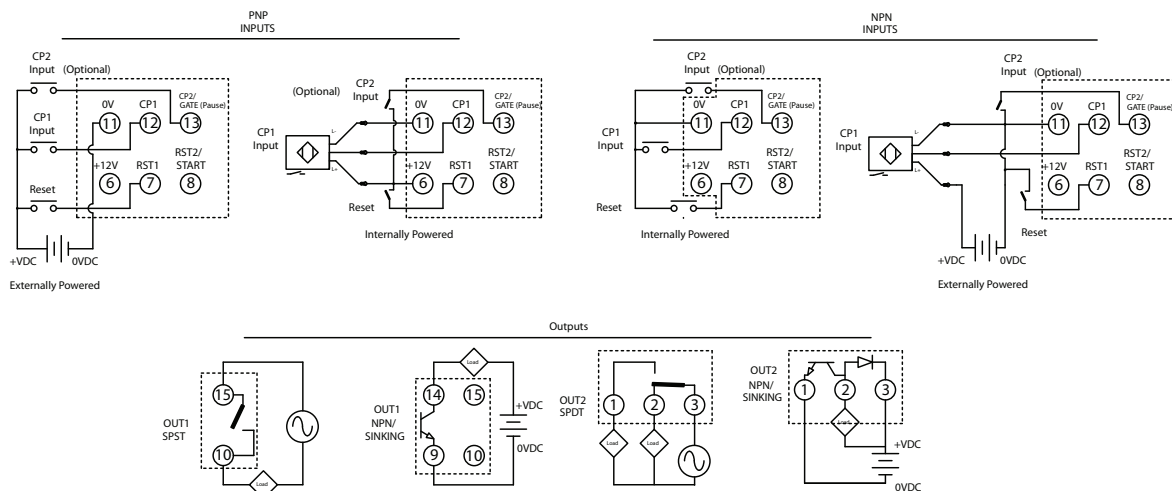
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [] or [] **TIME** [] or [] **Cont** [] or [] **TACH** [] or [] **TC**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

ContFUN [] or [] **STAGE1** [] or [] **STAGE2** [] or [] **BATCH** [] or [] **TOTAL** [] or [] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountP [] or [] **UP** [] or [] **down** [] or [] **Ud_A** [] or [] **Ud_b** [] or [] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [] or [] **F** [] or [] **A** [] or [] **B** [] or [] **C** [] or [] **R** [] or [] **T** [] or [] **D** [] or [] **S**

MODE ↓ [] or [] **F** [] or [] **A** [] or [] **S** [] or [] **T** [] or [] **D** [] or [] **S**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPED [] or [] **10K** [] or [] **5K** [] or [] **1K** [] or [] **200** [] or [] **30** [] or [] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [] or [] **002** [] or [] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT2 [] or [] **002** [] or [] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [] or [] **0** [] or [] **1** [] or [] **2** [] or [] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [] or [] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PEERS [] or [] **CLEAR** [] or [] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [] or [] **20** [] or [] **1**

MODE ↓ Select input signal types: NPN and PNP

CountLE [] or [] **nPN** [] or [] **pNP**

MODE ↓
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CTT Counter Functions

Dual Counting (**DUAL**)

Addition (**ADD**)

Dual Counting (**DUAL**)

A single count setting value SV is available in Dual Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Addition (**ADD**)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will increment the count present value PV by 1.

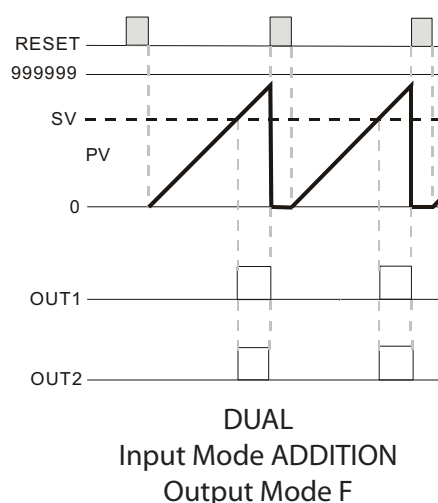
Output Modes:

Mode F (**F**)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RST**) or DIP Switch 8.

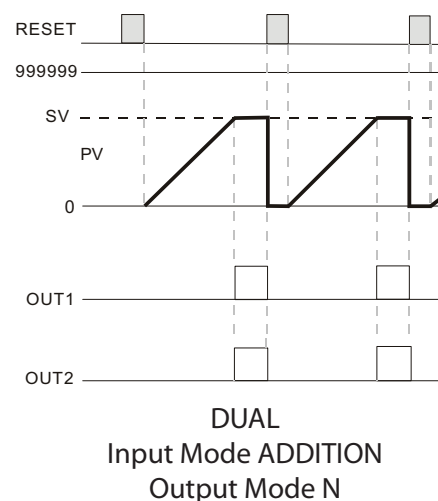


Mode N (**N**)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RST**) or DIP Switch 8.

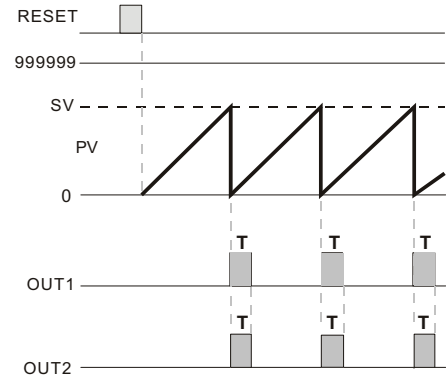


Mode C

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



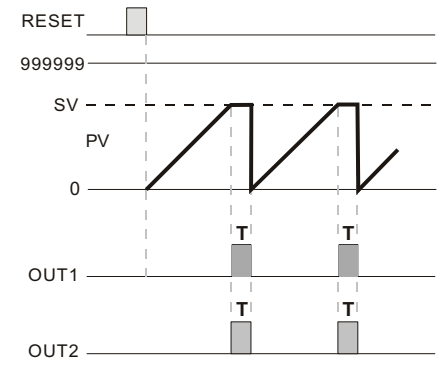
DUAL
Input Mode ADDITION
Output Mode C

Mode R

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV is prohibited from incrementing until the end of the output pulse time (EOUTE2) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



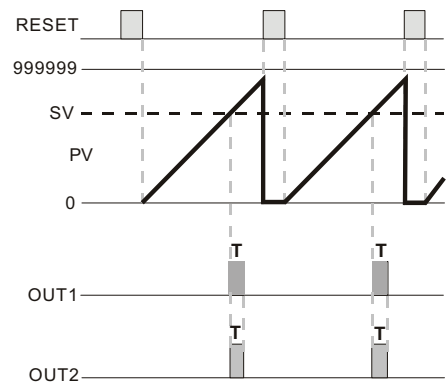
DUAL
Input Mode ADDITION
Output Mode R

Mode K

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



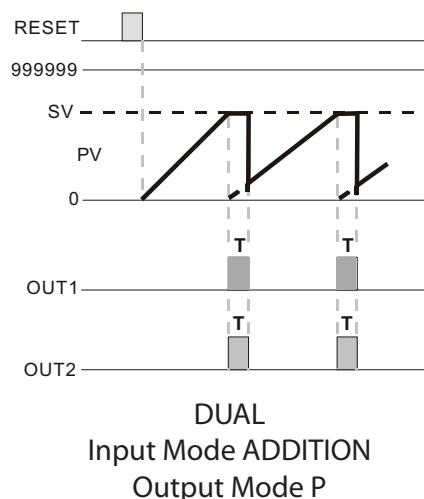
DUAL
Input Mode ADDITION
Output Mode K

Mode P (P)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP2). The count PV display is prohibited from incrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

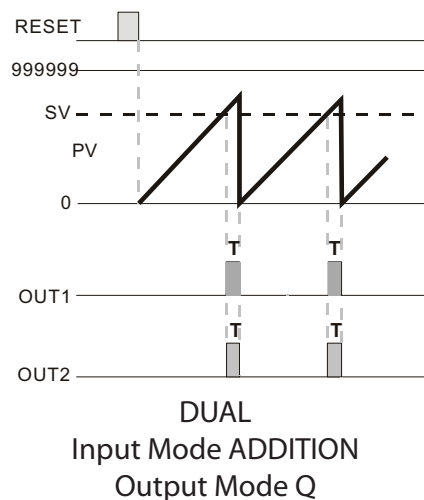


Mode Q (Q)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP2). The count PV will continue to increment with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

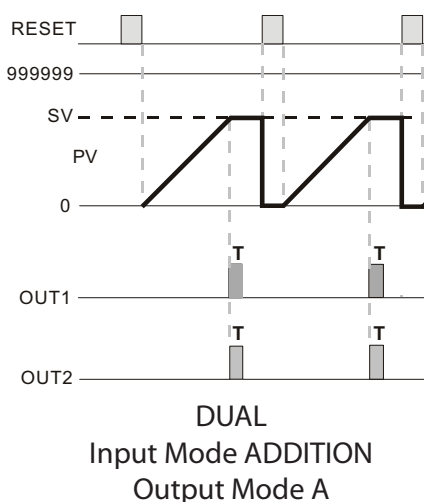


Mode A (A)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP2). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

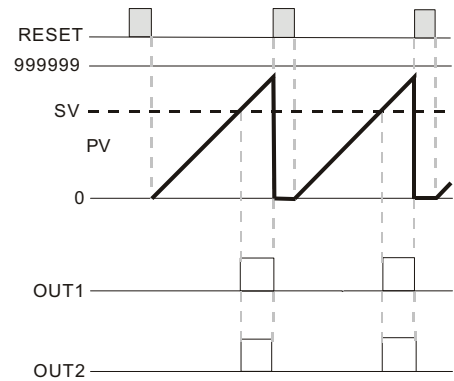


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**FESF**) or DIP Switch 8.



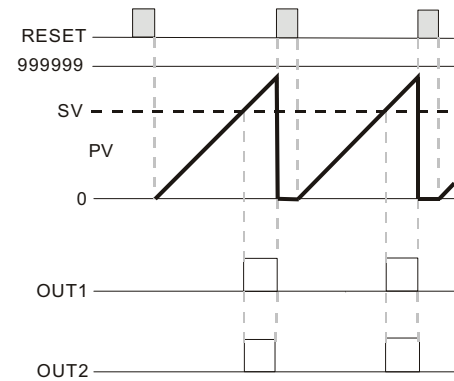
DUAL
Input Mode ADDITION
Output Mode S & T

Mode D (D)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE**). The count PV will continue to increment with each input signal.

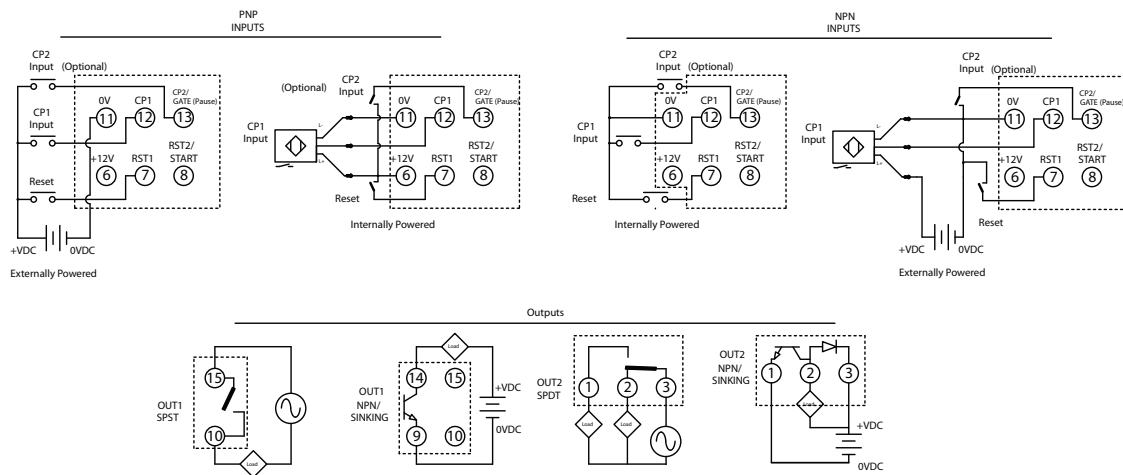
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**FESF**) or DIP Switch 8.



DUAL
Input Mode ADDITION
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kcps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Dual Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select dual mode: Add or Subtract

DUAL [▼] or [▲] **Add** [▼] or [▲] **Sub**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **A** [▼] or [▲] **C** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1cps**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

Output1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

Output2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

Reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

Input [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE [▼]

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CTT Counter Functions

Dual Counting (DUAL)

Subtraction (SUB)

Dual Counting (DUAL)

A single count setting value SV is available in Dual Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTP) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Subtraction (SUB)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.

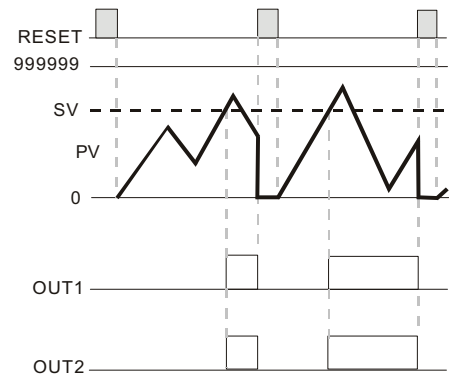
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTP) or DIP Switch 8.



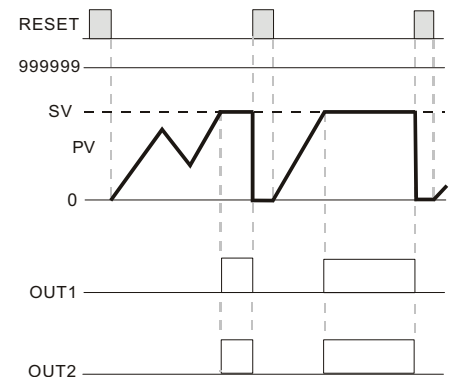
DUAL
Input Mode SUBTRACTION
Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTP) or DIP Switch 8.



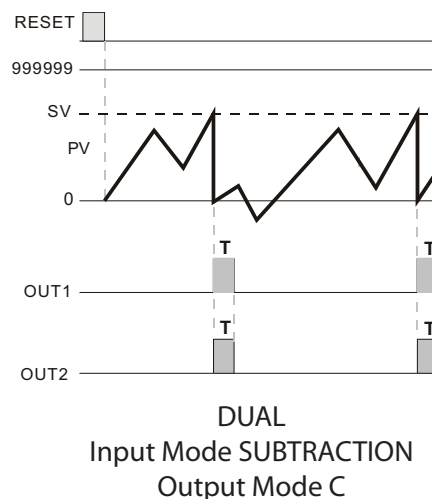
DUAL
Input Mode SUBTRACTION
Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUT2**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RTR**) or DIP Switch 8.

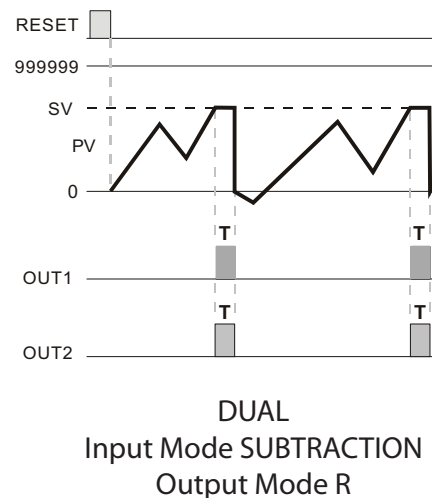


Mode R (R)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUT2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**EOUT2**) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RTR**) or DIP Switch 8.

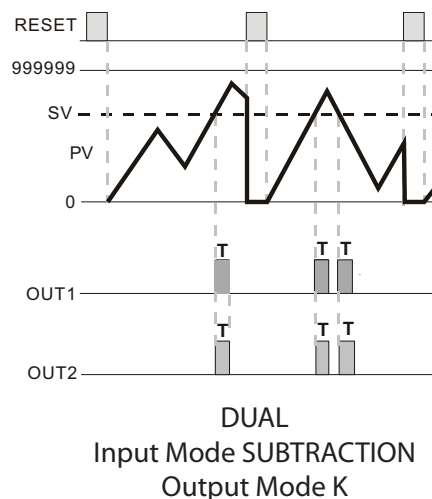


Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUT2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RTR**) or DIP Switch 8.

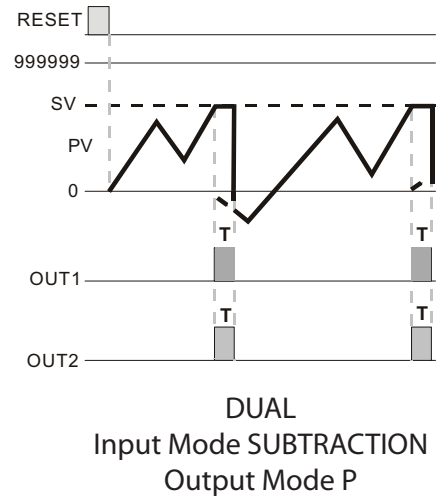


Mode P (P)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.

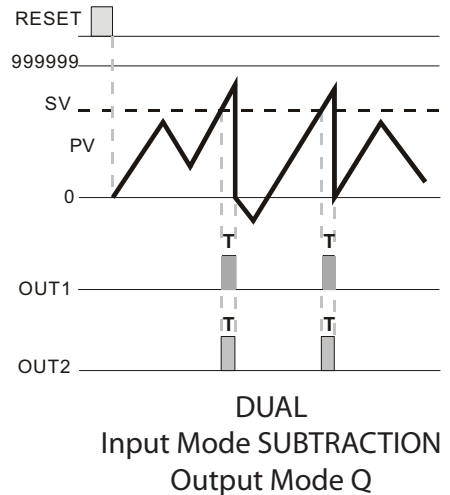


Mode Q (Q)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.

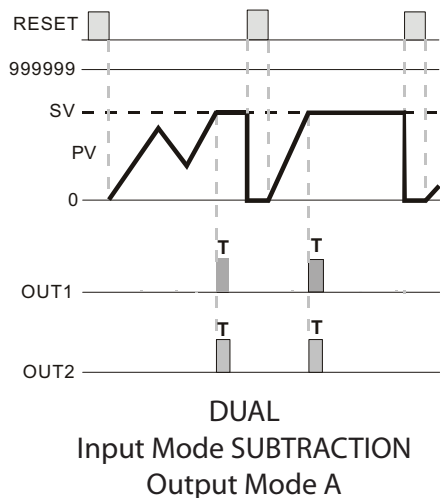


Mode A (A)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.

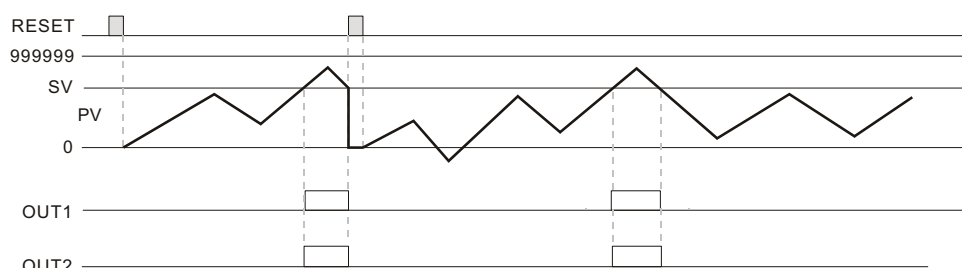


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



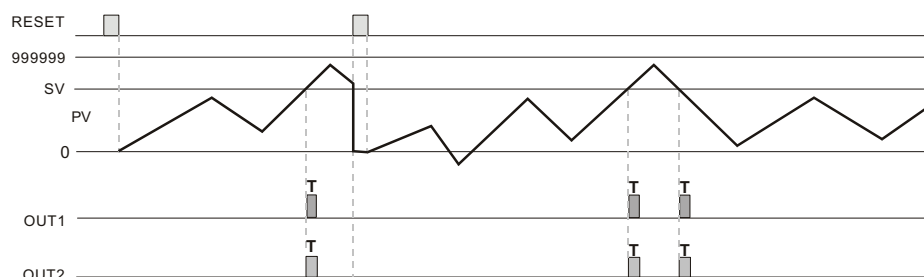
DUAL
Input Mode SUBTRACTION
Output Mode S & T

Mode D (D)

When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTD**). The count PV will continue to increment or decrement with each input signal.

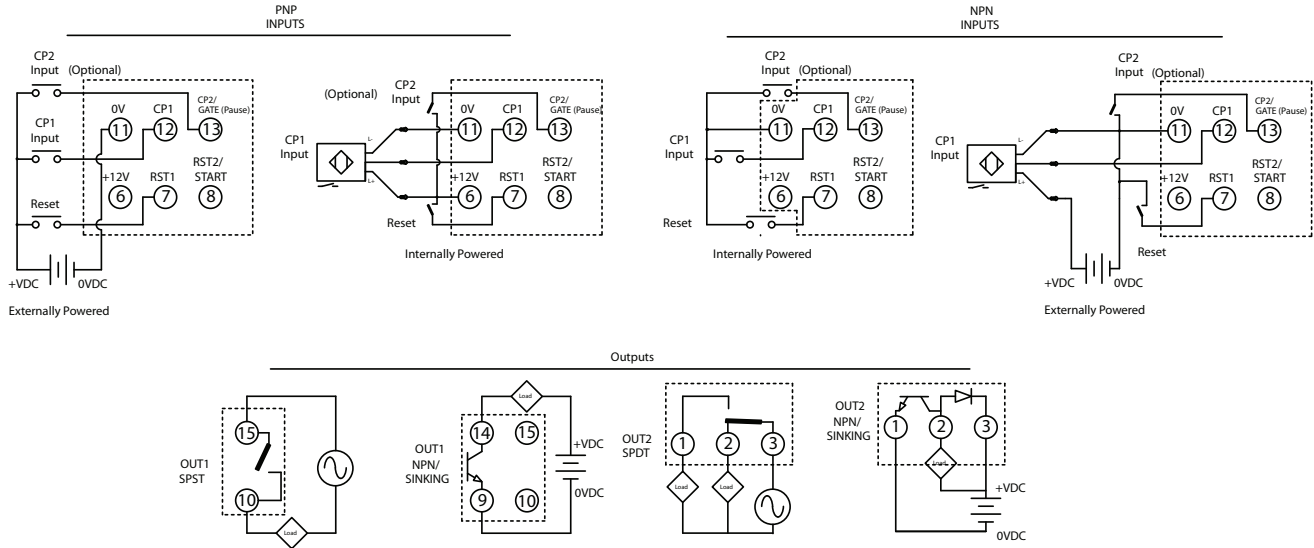
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



DUAL
Input Mode SUBTRACTION
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Dual Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] or [▲] **TIME** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

cntFUN [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **total** [▼] or [▲] **DUAL**

MODE [▼] Select dual mode: Add or Subtract

dUAL [▼] or [▲] **Add** [▼] or [▲] **SUB**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

output [▼] or [▲] **F** [▼] or [▲] **G** [▼] or [▲] **H** [▼] or [▲] **I** [▼] or [▲] **J** [▼] or [▲] **K** [▼] or [▲] **L** [▼] or [▲] **M** [▼] or [▲] **N** [▼] or [▲] **O** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **Q** [▼] or [▲] **R** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

output1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

output2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

input [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE [▼]
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