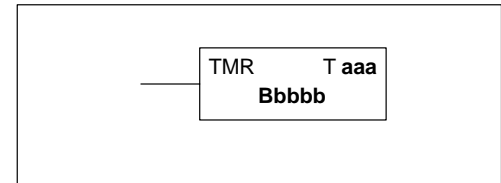


Timer, Counter, and Shift Register Instructions

Timer (TMR) DL330/DL340 Only

The Timer instruction provides a single input timer with a 0.1 second increment (0–999.9 seconds) in the normal operating mode, or a 0.01 second increment (0–99.99 seconds) in the fast timer mode when relay 770 is turned on. The timer will time up to 9999 and stop. It will reset to zero when the input is turned off. The discrete bit associated with the timer will be on when the current value is equal to or greater than the preset value.

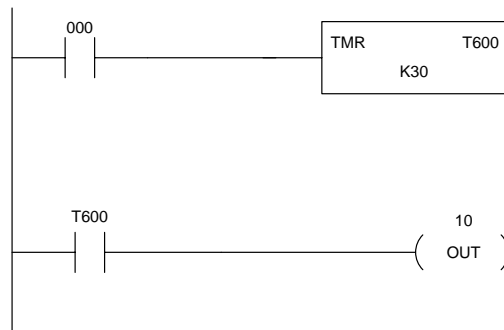


Operand Data Type		D3–330 Range		D3–340 Range		D3–330P Range	
	B	aaa	bbbb	aaa	bbbb	aaa	bbbb
Timers	T	600–677	—	600–677	—	—	—
Data registers	R	—	400–577	—	400–577 700–777	—	—
Constant	K	—	0–9999	—	0–9999	—	—

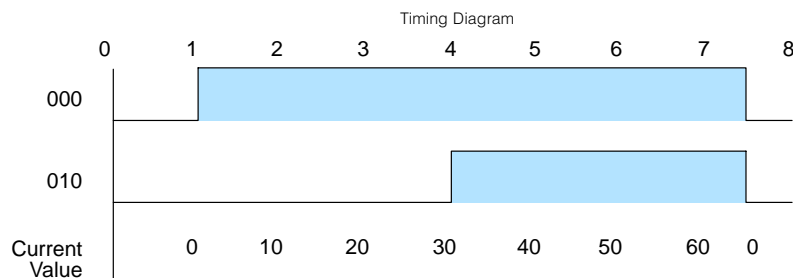
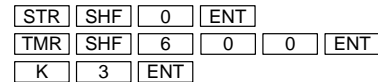
* See Chapter 12 for similar RLL *PLUS* instructions

In the following Timer example, timer 600 will begin timing up when input 000 turns on. The timer bit associated with timer 600 will turn on when the current value in timer 600 is \geq the preset value K30 (3 seconds). When input 000 turns off the timer discrete bit and current value are reset.

DirectSOFT Display

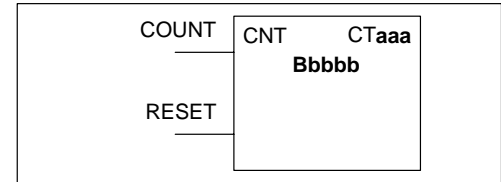


Handheld Programmer Keystrokes



Counter (CNT) DL330/DL340 Only

The Counter instruction provides a counter with a count and reset input. The range of this counter is 0–9999 and it will increment when the count input transitions from off to on. The counter is reset to 0 when you turn on the reset input. The counter bit associated with the counter will turn on when the current value is equal to or greater than the preset value.



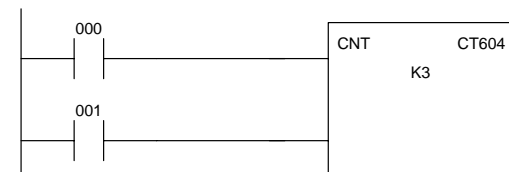
Operand Data Type		D3–330 Range		D3–340 Range		D3–330P Range	
	B	aaa	bbbb	aaa	bbbb	aaa	bbbb
Counters	CT	600–677	—	600–677	—	—	—
Data registers	R	—	400–577	—	400–577 700–777	—	—
Constant	K	—	0–9999	—	0–9999	—	—

* See Chapter 12 for similar RLL *PLUS* instructions

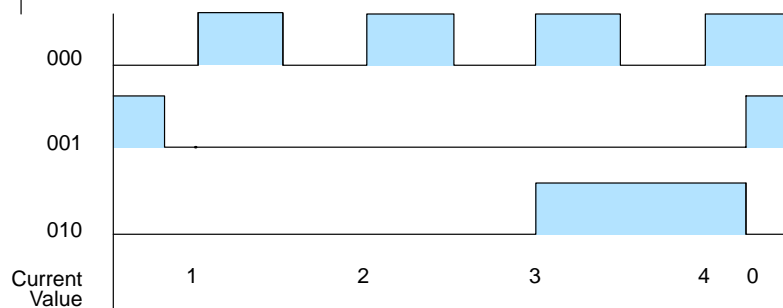
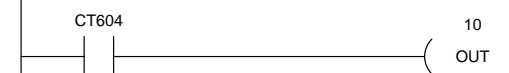
In the following Counter example, counter 604 will increment by one count when input 000 transitions from off to on. When input contact 001 is turned on the counter will reset to zero. The counter bit associated with counter 604 will turn on when the current value in counter 604 is \geq the preset constant value K3 (3).

DirectSOFT Display

Handheld Programmer Keystrokes



STR SHF 0 ENT
STR SHF 1 ENT
CNT SHF 6 0 4 ENT
SHF 3 ENT

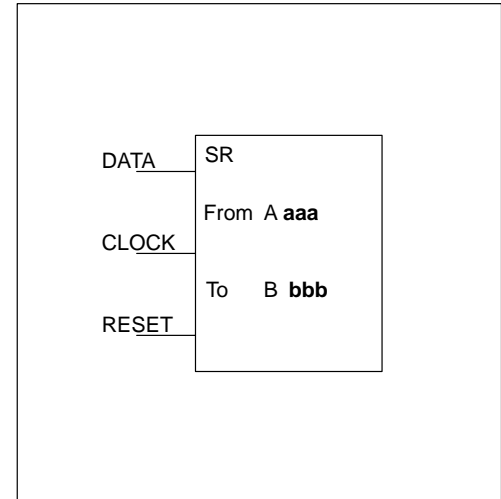


Shift Register (SR) DL330/340 Only

The Shift Register instruction shifts data through a predefined number of shift register bits. There are 128 bits allocated for use in shift registers. There is no limit to the number of shift registers which can be used in a program, however the total number of bits used cannot exceed 128.

The Shift Register has three contacts.

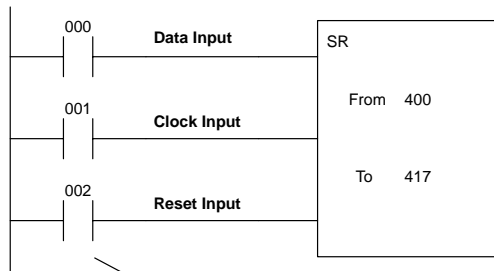
- Data — determines the value (1 or 0) that will enter the register
- Clock — shifts the bits one position on each off to on transition
- Reset — resets the Shift Register to all zeros.



With each off to on transition of the clock input, the bits which make up the shift register block are shifted by one bit position and the status of the data input is shifted into the starting bit position in the block. The direction of the shift depends on the entry in the From and To fields. From 400 to 407 would define a block of eight bits to be shifted from bit 400 to bit 407. From 407 to 400 would also define a block of eight bits, but would shift from bit 407 to bit 400. The maximum size of the shift register block is limited to 128 bits. There is no minimum block size.

Operand Data Type	D3–330 Range		D3–340 Range		D3–330P Range	
	aaa	bbbb	aaa	bbbb	aaa	bbbb
Shift Register Bits	400–577	400–577	400–577	400–577	—	—

DirectSOFT Display



Handheld Programmer Keystrokes

STR	SHF	0	ENT		
STR	SHF	1	ENT		
STR	SHF	2	ENT		
SR	SHF	4	0	0	ENT
SHF	4	1	7	ENT	

Inputs on Successive Scans

Shift Register Bits

Data	Clock	Reset		400	417
1	1	0	—	■	
0	1	0	—	■	
0	1	0	—		■
1	1	0	—	■	■
0	1	0	—	■	■
0	0	1	—		

■ - indicates on □ - indicates off