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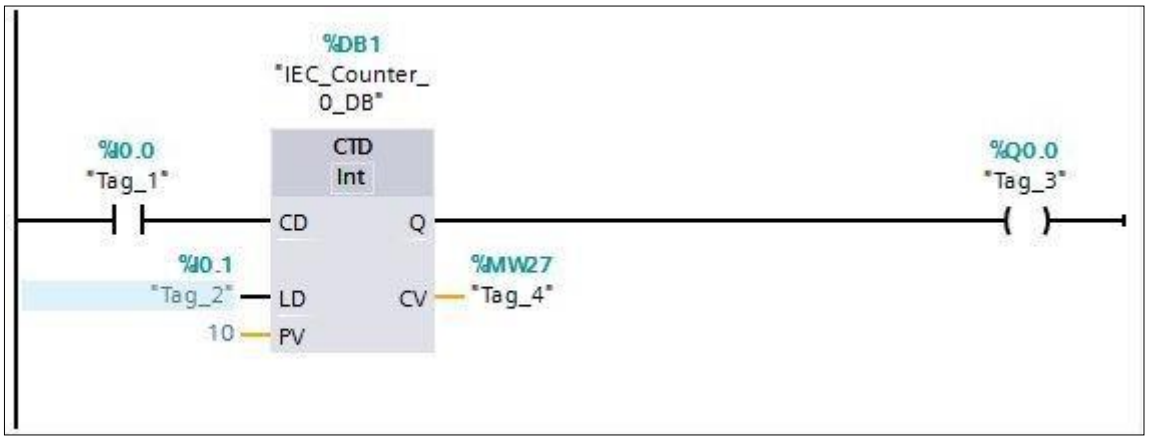
Basics of PLC

Down Counter and UP-Down Counter

CTD - Counter Down

You can use the "Count down" instruction to decrement the value at output CV. When the signal state at the CD input changes from "0" to "1" (positive signal edge), the instruction executes and the current counter value at the CV output is decremented by one. When the



instruction executes the first time, the counter value of the CV parameter is set to the value of the PV parameter. Each time a positive signal edge is detected, the counter value is decremented until it reaches the low limit value of the specified data type. When the low limit is reached, the signal state at the CD input no longer has an effect on the instruction.

You can scan the counter status at the Q output. If the current counter value is less than or equal to zero, the Q output is set to signal state "1". In all other cases, the Q output has signal state "0".

The value at the CV output is set to the value of the PV parameter when the signal state at the LD input changes to "1". As long as the LD input has signal state "1", the signal state at the CD input has no effect on the instruction.

When the signal state of the "I0.0" operand changes from "0" to "1", the "Count down" instruction is executed and the value at the "CV" output is decremented by one. With each additional positive signal edge, the counter value is decremented until the low limit of the specified data type (INT = -32768) is reached.

The "Q0.0" output has signal state "1" as long as the current counter value is less than or equal to zero. In all other cases, the "Q0.0" output has signal state "0".

Parameters

Parameter	Declaration	Data type	Description
CD	Input	BOOL	Count down input
LD	Input	BOOL	Load input
PV	Input	Integers	Value at which the output QU is set.
Q	Output	BOOL	Status of the down-counter
CV	Output	Integers	Current counter value

1. *CTUD - Counter Up and Down*

You can use the "Count up and down" instruction to increment and decrement the counter value at the CV output. If the signal state at the CU input changes from "0" to "1" (positive signal edge), the current counter value is incremented by one and stored at the CV output. If the signal state at the CD input changes from "0" to "1" (positive signal edge), the counter value at the CV output is decremented by one. If there is a positive signal edge at the CU and CD inputs in one program cycle, the current counter value at the CV output remains unchanged.

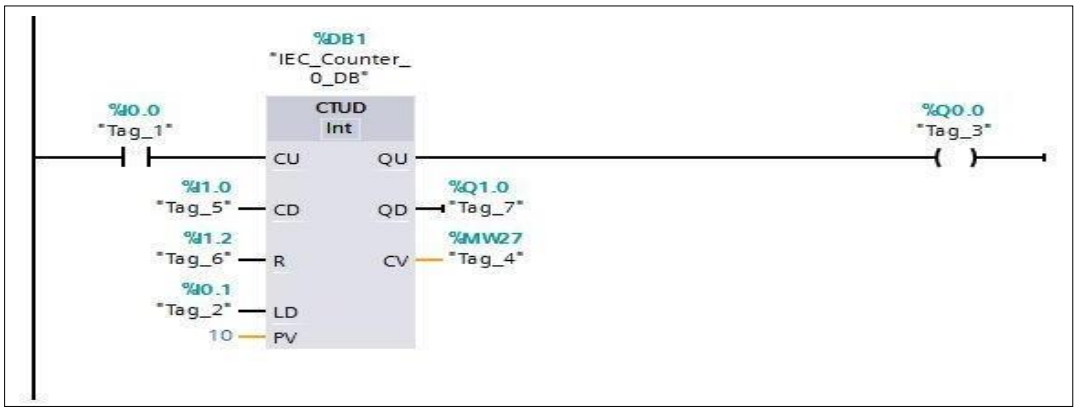
The counter value can be incremented until it reaches the high limit of the data type specified at the CV output. When the high limit value is reached, the counter value is no longer incremented on a positive signal edge. When the low limit of the specified data type is reached, the counter value is not decremented any further.

When the signal state at the LD input changes to "1", the counter value at the CV output is set to the value of the PV parameter. As long as the LD input has the signal state "1", the signal state at the CU and CD inputs has no effect on the instruction.

The counter value is set to zero when the signal state at the R input changes to "1". As long as the R input has signal state "1", a change in the signal state of the CU, CD and LD inputs has no effect on the "Count up and down" instruction.

You can scan the current status of the up counter at the QU output. If the current counter value is greater than or equal to the value of the PV parameter, the QU output is set to signal state "1". In all other cases, the QU output has signal state "0".

You can scan the current status of the down counter at the QD output. If the current counter value is less than or equal to zero, the QD output is set to signal state "1". In all



other cases, the
QD output has signal state "0".If the signal state at the "I0.0" or "I1.0" input changes from "0" to "1" (positive signal edge), the "Count up and down" instruction is executed.

When there is a positive signal edge at the "I0.0" input, the current counter value is incremented by one and stored at the "CV" output.

When there is a positive signal edge at the "I1.0" input, the counter value is decremented by one and stored at the "CV" output.

When there is a positive signal edge at the CU input, the counter value is incremented until it reaches the high limit of 32767. If input CD has a positive signal edge, the counter value is decremented until it reaches the low limit value of INT = -32768.

The "Q0.0" output has signal state "1" as long as the current counter value is greater than or equal to the value at the "PV" input. In all other cases, the "Q0.0" output has signal state "0".

The "Q1.0" output has signal state "1" as long as the current counter value is less than or equal to zero. In all other cases, the "Q1.0" output has signal state "0".

Parameters

Parameter	Declaration	Data type	Description
CU	Input	BOOL	Count up input
CD	Input	BOOL	Count down input
R	Input	BOOL	Reset input
LD	Input	BOOL	Load input
PV	Input	Integers	Value at which the output QU is set.

QU	Output	BOOL	Status of the counter up
QD	Output	BOOL	Status of the down-counter

CV	Output	Integers	Current counter value