

WECON

Programming



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RAMP Instructions

1. Instruction Description

Name	Function	Bits(bits)	Pulse type	Instruction format	Step
RAMP	Slope signal	16	No	RAMP (S1) (S2) (D) (n)	9

Operand	Bit component				Word component										
	X	Y	M	S	K	H	KnX	KnY	KnM	KnS	T	C	D	V	Z
(S1)													✓		
(S2)													✓		
(D)													✓		
(n)	Constant, 1~32767														

This function of command is carrying on linear interpolation among two given data or appointed time sector in order to output procedure value according to the turn of scanning execution time, until sector terminal endpoint. Address:

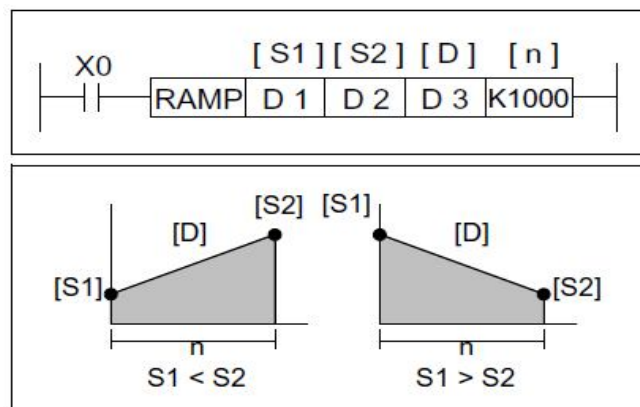
(S1) The starting value unit of slope signal

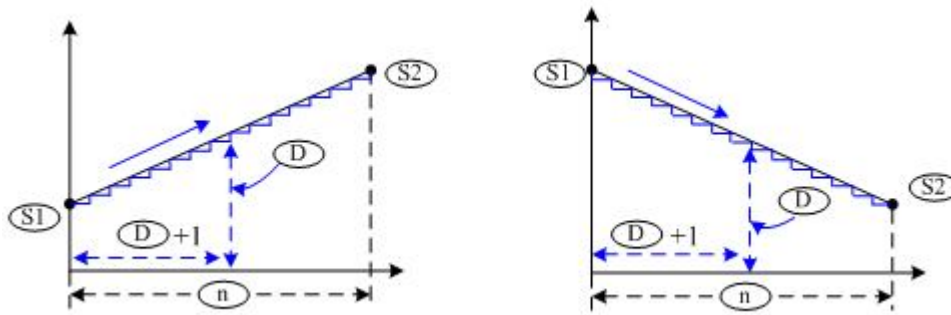
(S2) The end-point value unit of slope signal

(D) The memory point for procedure value of linear interpolation signal , yet the timer which is used to count the times of interpolation is stored in unit (D) +1.

(n) The times of program scanning execution for process of interpolation .Because the output of interpolation is carried on during main loop, it's necessary to set the program execution to fixed scanning mode .(the demonstration is on M8039 ,D8039)

The interpolation calculation is based on integer number and has discarded the computation decimal. Command function is showed in the chart followed:





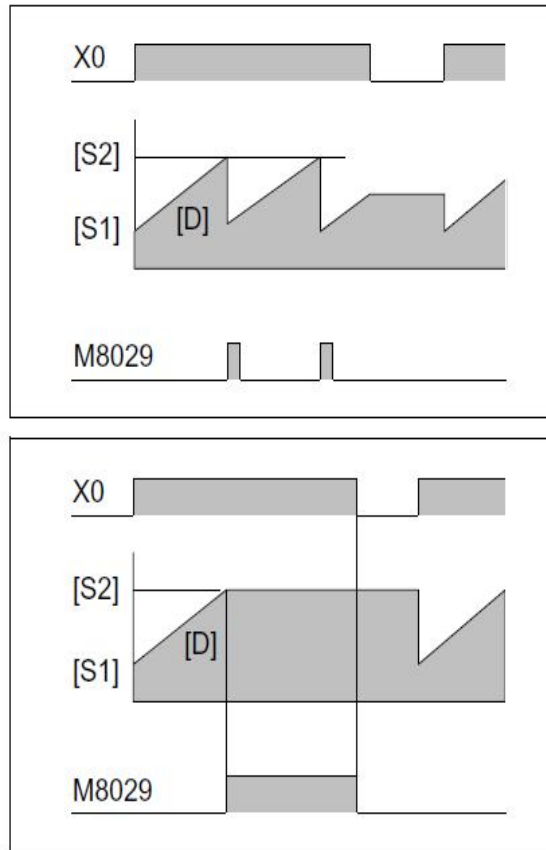
2.Operation:

The RAMP instruction varies a current value (D) between the data limits set by the user (S1 and S2). The 'journey' between these extreme limits takes n program scans. The current scan number is stored in device D+1. Once the current value of D equals the set value of S2, the execution complete flag M8029 is set ON.

The RAMP instruction can vary both increasing and decreasing differences between S1 and S2.

Points to note:

a) FX users may set the operation mode of the RAMP instruction by controlling the state of special auxiliary relay M8026. When M8026 is OFF, the RAMP instruction will be in repeat mode. This means when the current value of D equals S2, the RAMP instruction will automatically reset and start again, i.e. the contents of D will be reset to that of S1 and the device D+1 (the number of current scans) will reset to '0' (zero). This is shown in the diagram opposite. When M8026 is set ON, FX users will be operating the RAMP instruction in 'Hold mode'. This means once the current value of D equals that of S2, the RAMP instruction will 'freeze' in this state. This means the M8029 will be set ON for as long as the instruction remains energized and the value of D will not reset until the instruction is re-initialized, i.e. the RAMP instruction is turned from OFF to ON again.



b) Users of FX0 and FX0N PLC's cannot change the operating mode of the RAMP instruction. For these PLC's the mode is fixed as in the same case as FX PLC's when M8026 has been set ON, i.e. HOLD mode.

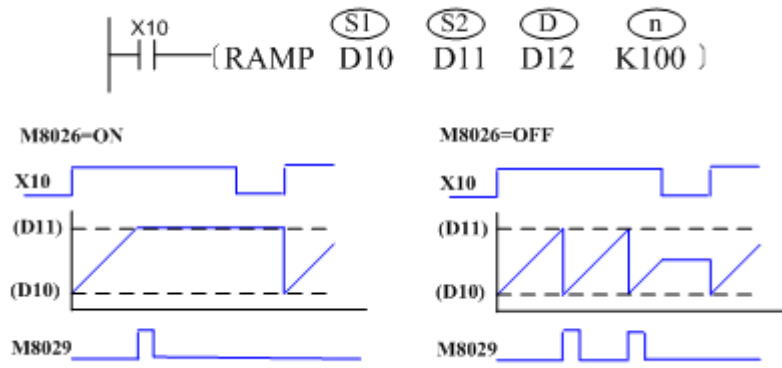
c) If the RAMP instruction is interrupted before completion, then the current position within the ramp is 'frozen' until the drive signal is re-established. Once the RAMP instruction is redriven registers D and D+1 reset and the cycle starts from its beginning again.

d) If the RAMP instruction is operated with a constant scan mode, i.e. D8039 is written to with the desired scan time (slightly longer than the current scan time) and M8039 is set ON. This would then allow the number of scans n (used to create the ramp between S1 and S2) to be associated to a time. If 1 scan is equal to the contents of D8039 then the time to complete the ramp is equal to $n \times D8039$.

3. Programming example

Example 1 for instruction:

There are 2 modes for RAMP command execution which is selected by M8026 sign; After every interpolation, M8029 set a scanning cycle. The execution features is showed in the follow example:

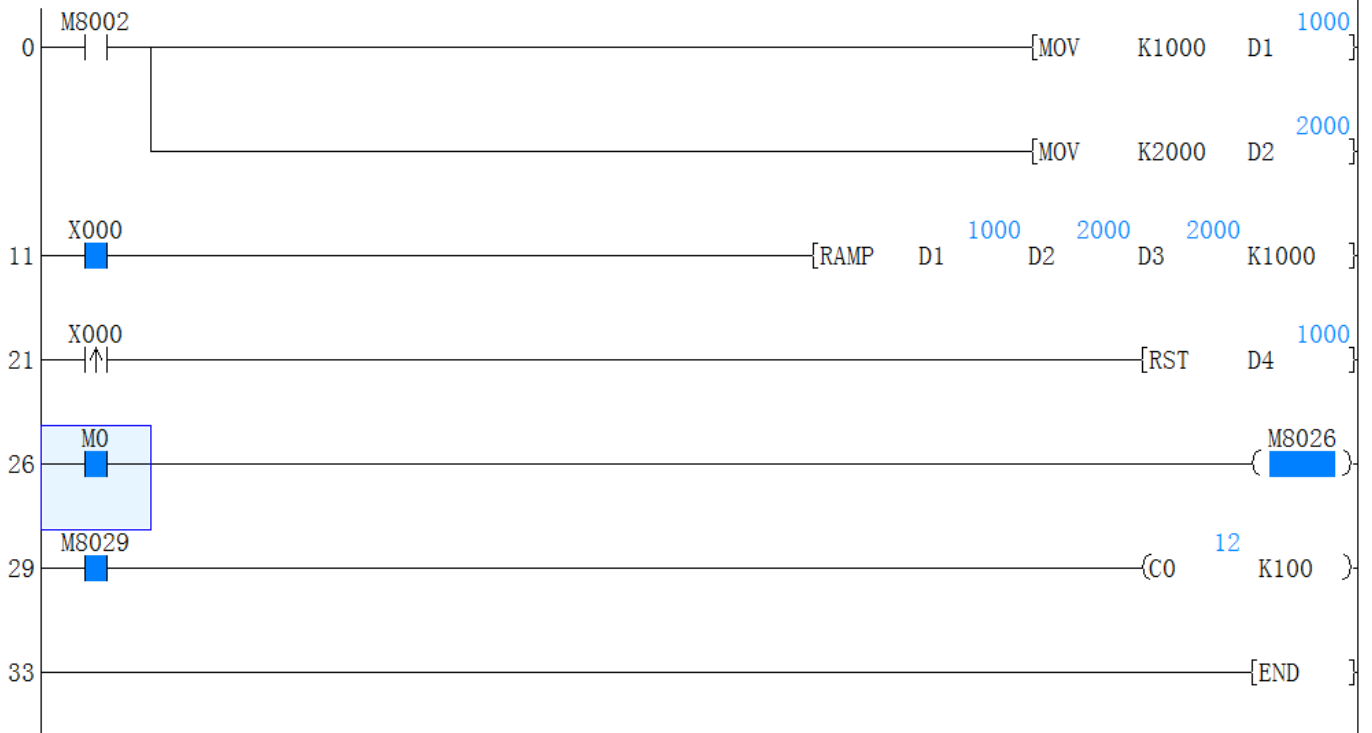


PLC monitor

16

- * RAMPinstruction

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Example 2 for instruction:

If you want to set a time to control Ramp. Please check the demo below.

D8000: Monitor timer of user program operation

D8039: Constant scan time, default 0, the unit is ms

M8039: After you change D8039, you need to set on M8039

Note: D8039 need less than D8000.

Example 2 for instruction: D8139=1200ms. How to change K1000(S1) to K2000(S2) in one hour?

The total time = $D8039 \times n = 1200\text{ms} \times K30000 = 36000000\text{ms} = 1\text{Hour}$

