

WECON

Programming



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ZRN Instructions

1. Instruction Description

Name	Function	Bits(bits)	Pulse type	Instruction format	Step
ZRN	Regression through the Origin	16	No	ZRN (S1) (S2) (S3) (D)	9
DZRN		32	No		13

Operand	Bit component				Word component											
	X	Y	M	S	K	H	KnX	KnY	KnM	KnS	T	C	D	V	Z	
(S1)					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(S2)					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(S3)	✓	✓	✓	✓												
(D)		✓														

When servo driver cooperates with PLC, this instruction is used to enable actuator to move toward DOG with designated impulse speed and impulse-output port, until condition of encountering original point is satisfied .

(S1) is start speed of the regression through the origin action which range is 10~32,767Hz when in 16bit modle,while 10~100,000Hz in 32bit modle.

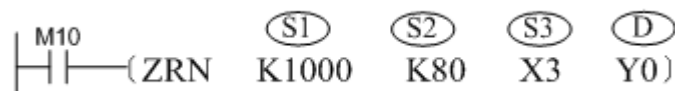
(S2) is crawling speed when original point signal turns ON which is ranging 10Hz to 32767Hz.

(S3) is input of DOG,Although signal XYMS is well,timeliness of signal X function best.

(D) is start address of impulse output.With regard to LX 1S,only Y0 and Y1 can be allocated,while others can only be allocated Y0/Y1/Y2/Y3.As to type of LX3V.

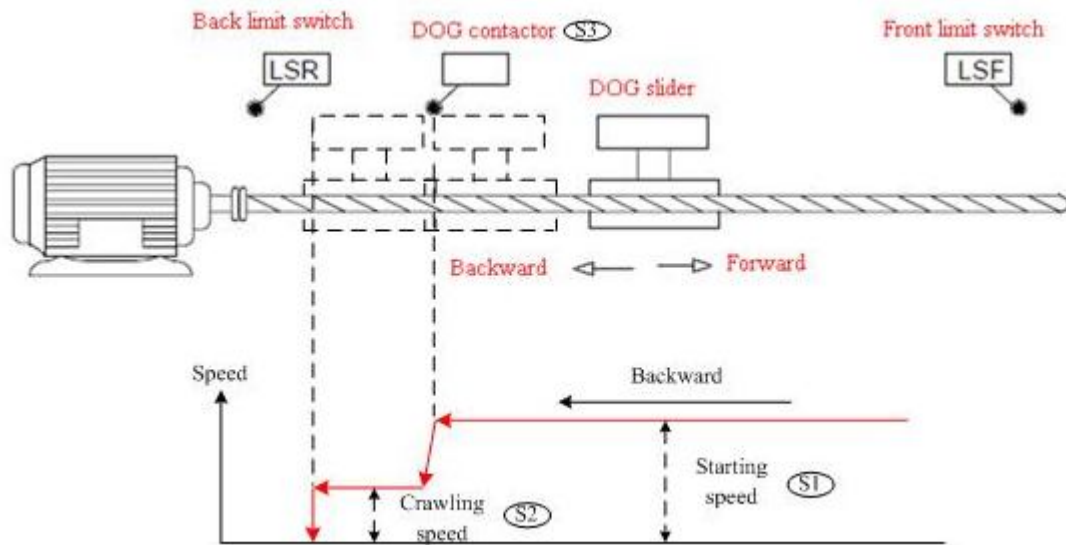
When DRVI and DRVA are excuted, contrller can calculate pulse number of positive rotation and inversions and save them to register [D8141, D8140] (Y000) and [D8143, D8142] (Y001). But data in that register will disappear after power failure, so instruction ZRN must be executed when system is power on and initialized run, so the data of original position of mechanical movement can be read in beforehand.

2.Operation:



This instruction means that, after M10 turns ON,PLC send out pulses at speed of 1000Hz from out-put port Y0 and to make stepper motor draw back toward original point. While when DOG turns ON(when slide block just touch contactor) output frequency turns to 80Hz creeping at lower speed, until DOG turns OFF again, and at the same time Y0 stops outputing pulse, input 0 to current register Y000:[D8141,D8140],Y001:[D8143 , D8142]. In addition,when M8140 turns ON,Y0 resets.Whereafter, M8029 is set ON,at the same Y000:[M8147],Y001:[M8148] turns OFF.

See figure below:



During this command is excuted, systemic variables concerned are:

1. D8141(high-order), D8140(low-order):Y000 outputs value of current register(using 32 bit)
2. D8143(high-order), D8142(low-order):Y001 outputs value of current register(using 32 bit)
3. M8145 : Y000 represents the pulse output stopped (instantly)
4. M8146 : Y001 represents the pulse output stopped (instantly)
5. M8147 : Y000 represents monitoring during the pulse output process (BUSY/READY)
6. M8148 :Y001 represents monitoring during the pulse output process (BUSY/READY)

Since servo driver has the function of power-fail-safeguard towards location information, this command does not need to excute after power-on every time. Meanwhile, for servo driver can only move one way, movement of backing to original point must be done before DOG.

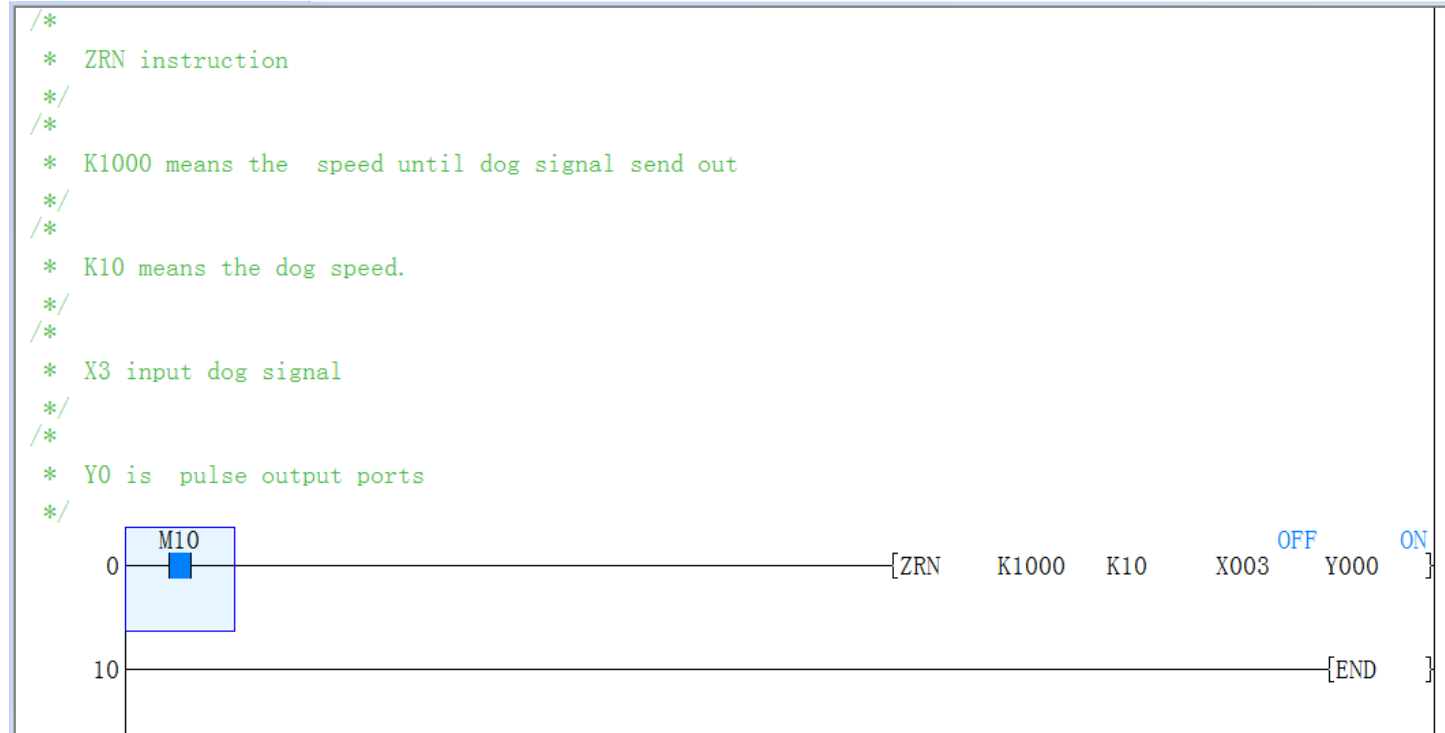
Notice:

Positioning instruction (ZRN/PLSV/DRVL/DRVA) can be reused in the program, but do not output to the same port;

If the drive power flow for an instruction turns OFF and ON again, it can only be driven after one operation cycle when status bit (Y 000: [M8147], Y001: [M8148]) turns OFF.

When positioning instruction is driven again, there should be at least one cycle of OFF time. If the re-drive is implemented in the time less than above condition, there will be calculation error when firstly implementing calculation instruction.

3. PLC monitor



When X3 off--→on (rising edge) ,then the speed change k1000HZ into k10HZ.When X3 on--→off (falling edge) .then the speed will change into 0HZ.