☆☆☆ Updating of FBs OS V4.31

10/26/2005

- FUN140 instruction supports the new command DRVZ for machine zero return; it can have 3 operation modes for application's choice.

- FUN141 instruction supports the new motion parameter's settings to work with the machine zero return operation
  . Parameter 6 : Creep speed for machine zero return
  . Parameter 9-1 : Zero return direction
  . Parameter 13 : Linear interpolation time constant
  . Parameter 15-0 : DOG input
  . Parameter 15-1 : Stroke limit input
  . Parameter 15-2 : PG0 (Zero point signal) input
  . Parameter 15-3 : Clear output
  . Parameter 16 : Machine zero point address
  . Parameter 17 : Number of zero point signals

- Enhance the password protection
  . The PLC main unit verifies the password while being on line connected with the WinProladder software if the ladder program existing the password protection; only passing the correct password, it can allow to have the connection for programming tool.

- It needs WinProladder software V2.34 or later version to support above functions

- Remove the bug - while M1913=1 (Turn off outputs), it had incorrect input status reading from expansion I/O module(s).

- Only passing correct password to allow the ROM PACK operation if the ladder program existing the password protection

- Remove the OS V4.30's bug – The FUN140 instruction can't execute the endless pulse output function for motion control

.Description of machine zero return command (DRVZ)

Please refer to Chapter 13 (The NC positioning control of FBs-PLC) of Manual II for detailed information about FUN140 instruction; here we only focus the subject on the new command DRVZ for machine zero return application.

The DRVZ command supports three modes of operation for different application requirement; conjoining the FUN141 motion parameter's setting of machine zero return related, it can be listed as below:

	DRVZ MD0	DRVZ MD1	DRVZ MD2
Parameter 6 (Creep speed)	Must be	Must be	Must be
Parameter 9-1 (Return direction)	Must be	Must be	Must be
Parameter 15-0 (DOG input)	Must be	Must be	Must be
Parameter 15-1 (Limit input)	Optional	Optional	Optional
Parameter 15-2 (PG0 input)	No need	No need	Must be
Parameter 15-3 (CLR output)	Optional	Optional	Optional
Parameter 16 (Zero point address)	Must be	Must be	Must be
Parameter 17 (No. of PG0 signal)	No need	No need	Must be

The FUN140 instruction can't be executed for machine zero return while encountering the following situations with the error indications:

Error indication	Error code
R4060 (Ps 0)	42 : DRVZ can't follow DRVC
R4061 (Ps 1)	50 : Illegal operation mod of DRVZ
R4062 (Ps 2)	51 : Illegal DOG input
R4063 (Ps 3)	52 : Illegal PG0 input
	53 : Illegal CLR output

. Example program 1 for DRVZ

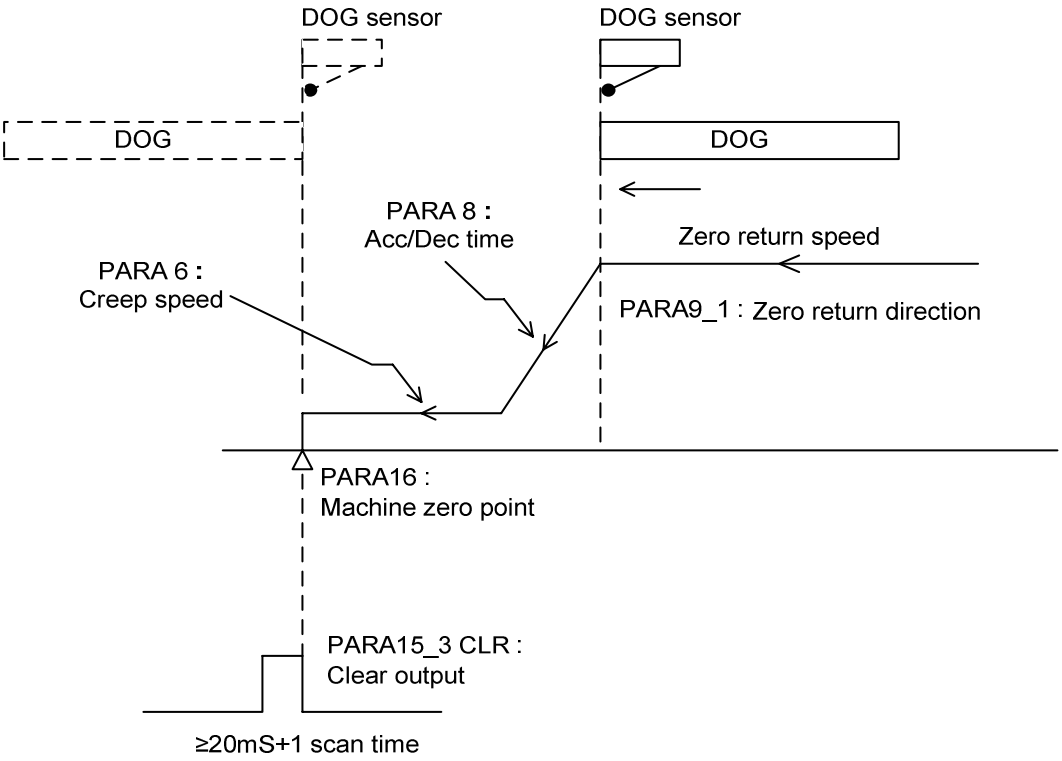
```
SPD     R1000
DRVZ    MD0
MEND
```

. Example program 2 for DRVZ

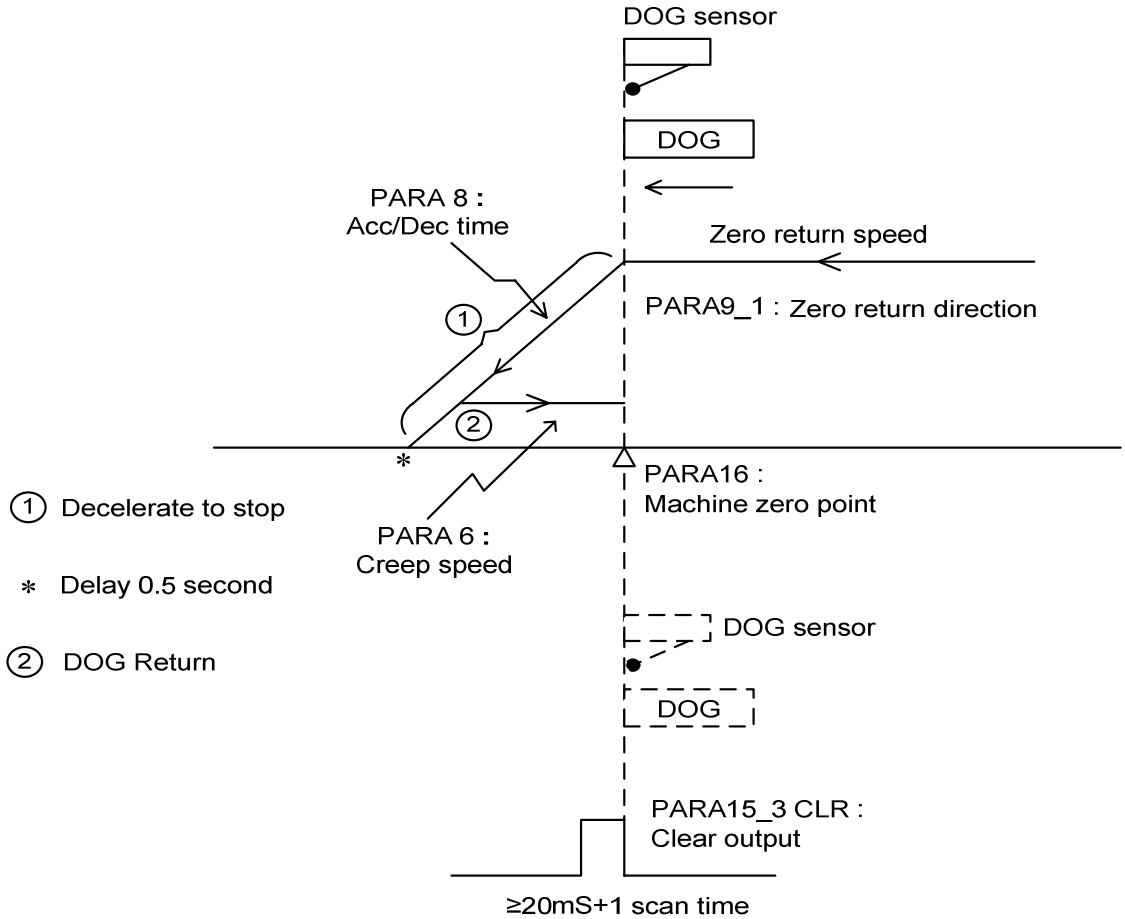
```
SPD     R1000
DRVZ    MD1
WAIT    M0  GOTO    NEXT
```

.Description in diagram for machine zero return operation

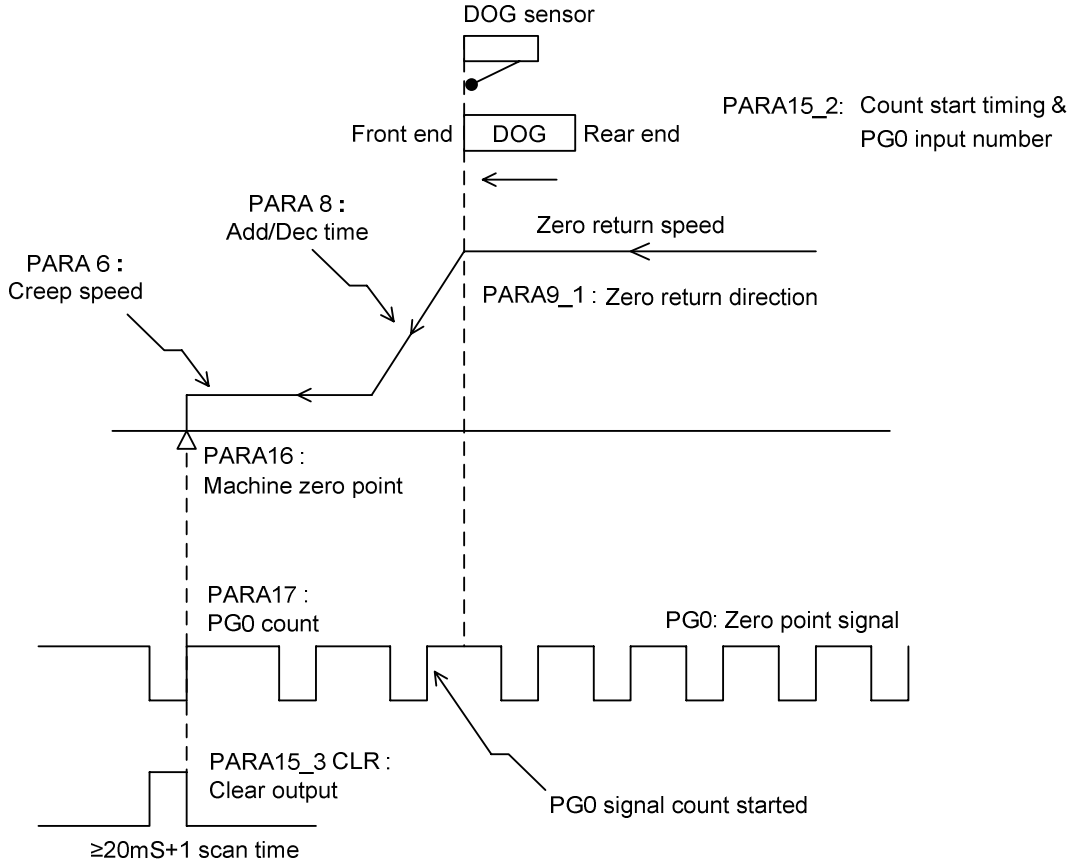
Mode 0


DOG sensor
DOG sensor
DOG
DOG
PARA 8 :
Acc/Dec time
Zero return speed
PARA 6 :
Creep speed
PARA9_1 : Zero return direction
PARA16 :
Machine zero point
PARA15_3 CLR :
Clear output
≥20mS+1 scan time

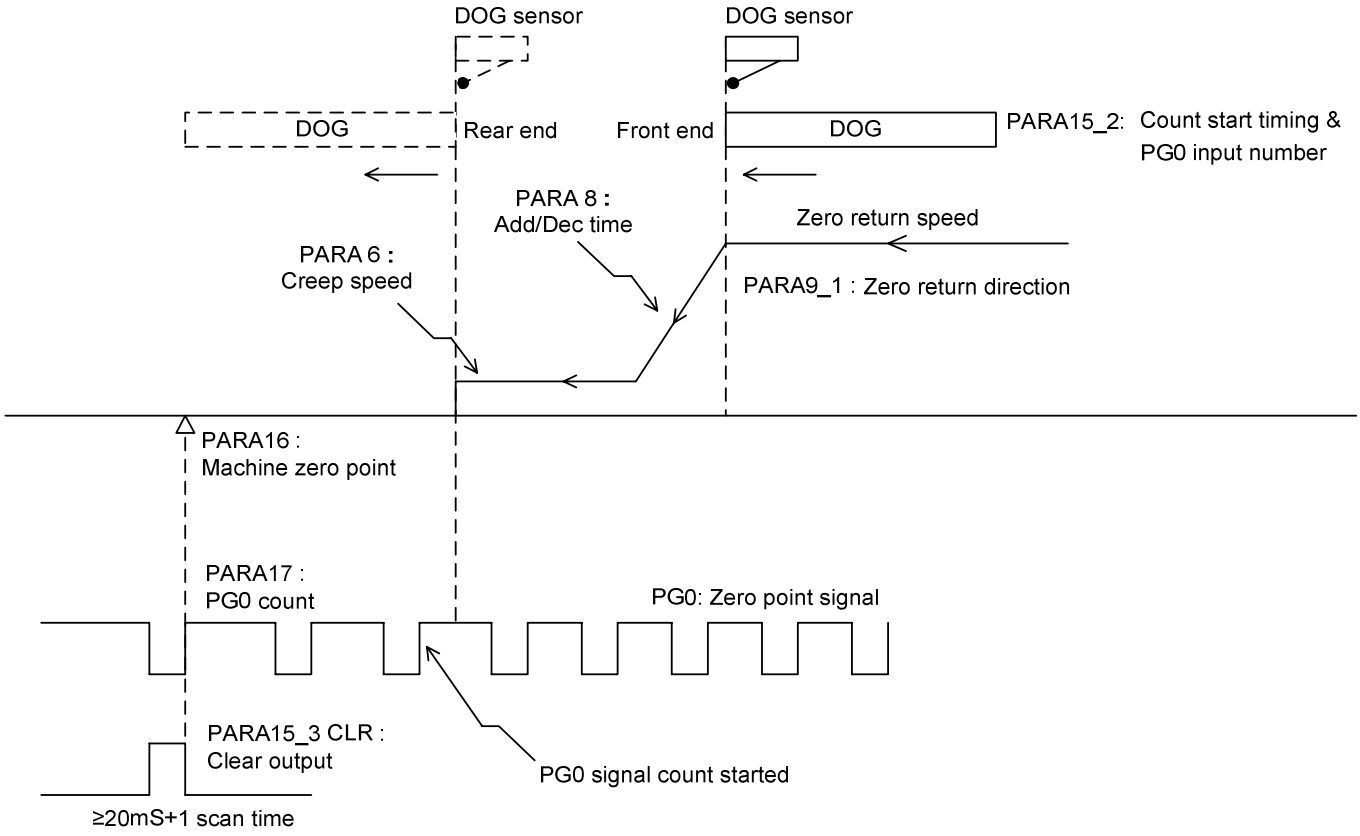
Mode 1


DOG sensor
DOG
PARA 8 :
Acc/Dec time
Zero return speed
PARA9_1 : Zero return direction
1
2
*
PARA16 :
Machine zero point
PARA 6 :
Creep speed
DOG sensor
DOG
PARA15_3 CLR :
Clear output
≥20mS+1 scan time
1 Decelerate to stop
* Delay 0.5 second
2 DOG Return

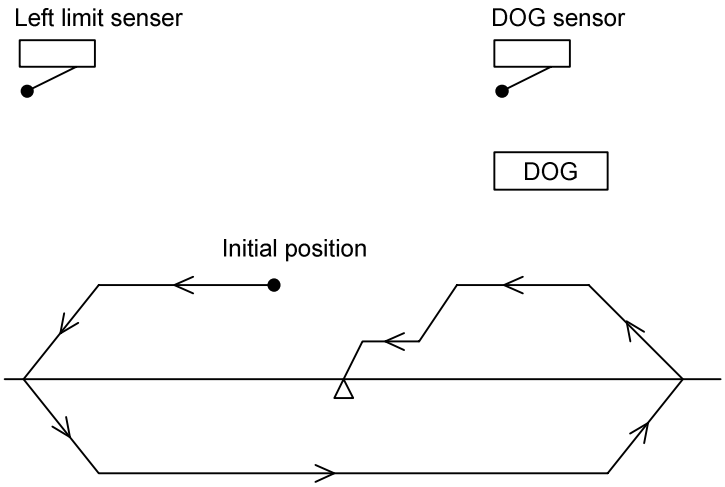
Mode 2(Front end counter)



Mode 2(Rear end counter)



When initial position behind the DOG sensor



.Description of machine zero return related parameters

Please refer to Chapter 13 (The NC positioning control of FBs-PLC) of Manual II for detailed information about FUN141 instruction; here we only focus the subject on the new parameters working with command DRVZ for machine zero return application.

FUN141 Motion parameter table

SR+0	0～2		Parameter 0	Default =1
SR+1	1～65535 Ps/Rev		Parameter 1	Default =2000
SR+2	1～999999 uM/Rev 1～999999 mDeg/Rev 1～999999×0.1 mInch/Rev		Parameter 2	Default =2000
SR+4	0～3		Parameter 3	Default =2
SR+5	1～921600 Ps/Sec 1～153000		Parameter 4	Default =460000
SR+7	1～921600 Ps/Sec 1～153000		Parameter 5	Default =141
SR+9	1～65535 Ps/Sec		Parameter 6	Default =1000
SR+10	0～32767		Parameter 7	Default =0
SR+11	0～30000		Parameter 8	Default =5000
SR+12	0～1	0～1	Parameter 9	Default =0100H
SR+13	-32768～32767		Parameter 10	Default =0
SR+14	-32768～32767		Parameter 11	Default =0
SR+15	0～30000		Parameter 12	Default =0
SR+16	0～30000		Parameter 13	Default =500
SR+17	0～4294967295		Parameter 14	Default =0
SR+19	00H～FFH	00H～FFH	Parameter 15	Default =FFFFFFFFH
SR+20	00H～FFH	00H～FFH	Parameter 16	Default =0
SR+21	-999999～999999		Parameter 17	Default =1
SR+23	0～255			

●Parameter 6：Creep speed for machine zero return; the default is 1000
Motor and compound unit : 1～65535 Ps/Sec
Machine unit : 1～15300 (Cm/Min, ×10 Deg/Min, Inch/Min)

●Parameter 9：Rotation and zero return direction; the default is 0100H

	b15 b8 b7	b0
SR+12	Para 9-1	Para 9-0

●Parameter 9-0：Rotation direction setting; the default is 0
Setting value=0, the present value increases while in forward pulse output; the present value decreases while in backward pulse output
Setting value=1, the present value decreases while in forward pulse output; the present value increases while in backward pulse output

●Parameter 9-1：Zero return direction setting; the default is 1
Setting value=0, direction in which the present value increases
Setting value=1, direction in which the present value decreases

●Parameter 13：Interpolation time constant; the default is 500
.Setting range : 0～30000 mS
.Set the time required to achieve the speed specified by the program. (The initiate speed is always regarded as “0”.)
This parameter is valid while interpolation control

●Parameter 15：I/O control interface for DRVZ; the default is FFFFFFFFH

	b15 b8 b7	b0
SR+19	Para 15-1	Para 15-0
SR+20	Para 15-3	Para 15-2

●Parameter 15-0：Setting of DOG input; it must be the input of the main unit (SR+19)
b6～b0 **:** Reference number of DOG input
（0～15, it means X0～X15）
b7 = 0 **:** Contact A or Normal Open
= 1 **:** Contact B or Normal Close
b7～b0=FFH, Without DOG input

●Parameter 15-1：Setting of stroke limit input (SR+19)
b14～b8 **:** Reference number of limit input
(0～125, it means X0～X125）
b15 = 0 **:** Contact A or Normal Open
= 1 **:** Contact B or Normal Close
b15～b8=FFH, Without limit input

●Parameter 15-2：Setting of PG0 signal input; it must be the input of the main unit (SR+20)

b6～b0 **:** Reference number of PG0 input

（0～15, it means X0～X15）

b7 = 0 **:** Start counting at front end of sensing DOG input

b7 = 1 **:** Start counting at rear end of sensing DOG input

b7～b0 = FFH, Without PG0 input

●Parameter 15-3：Setting of CLR signal output; it must be the output of the main unit (SR+20)

b15～b8 **:** Reference number of CLR output

（0～23, it means Y0～Y23）

b15～b8=FFH, Without CLR output

●Parameter 16：Machine zero point address; the default is 0

Setting range : -999999～999999 Ps

●Parameter 17：Number of zero point signals (Sensing of PG0 input);

the default is 1.

Setting range : 0～255 Count