

# WECON

# Programming



**WECON Technology Co., Ltd.**

Website: <http://www.we-con.com.cn/en>

Technical Support: [chengxf@we-con.com.cn](mailto:chengxf@we-con.com.cn)

Skype: Jason.chen842

Phone: 86-591-87868869

# DRVI Instructions

## 1. Instruction Description(Relative position control)

Name	Function	Bits(bits)	Pulse type	Instruction format	Step
DRVI	Relative	16	No	DRVI (S1) (S2) (D1) (D2)	9
DDRVI	Positioning	32	No		17

Operand	Bit component				Word component											
	X	Y	M	S	K	H	KnX	KnY	KnM	KnS	T	C	D	V	Z	
(S1)					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(S2)					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
(D1)		✓														
(D2)		✓	✓	✓												

Based on the assigned port and frequency, and the assigned pulse output value and the operating direction, the instruction allows machines to perform offset movement according to its present position. Only the PLC with the transistor output can execute the instruction, among:

**S1:**represents the assigned output pulse value. When it is in 16-bit, the range is from -32,768 to 32,767; when it is in 32-bit, the range is from -2,147,483,648 to 2,147,483,647. The negative symbol indicates the opposite direction.

**S2:**represents the assigned output pulse frequency. When instruction is in 16-bit, the range is 10~32,767Hz; when in 32-bit, the range is 10~100,000Hz;

**D1:**is the pulse output port; for LX 1S only Y0 or Y1 can be assigned. Th e LX 2N can assign Y0/Y1/Y2/Y3;

**D2:**is the operating direction output port or variant. When the output is in ON state, the system is operating in the forward direction, and vice versa.

Output pulse value is treated as the relative position when comparing with the current value of the register described below:

When exporting to [Y000], the current register value is [D8141 (high byte), D8140 (low byte)] (in 32-bit).

When exporting to [Y001], the current register value is [D8143 (high byte), D8142 (low byte)] (in 32-bit).

When exporting to [Y002], the current register value is [D8151 (high byte), D8150 (low byte)] (in 32-bit).

When exporting to [Y003], the current register value is [D8153 (high byte), D8152(low byte)] (in 32-bit).

Even if the operand contents are being changed during the instruction execution process, it will not effect in the currently running operation.

When the instruction-driven contacts become OFF during the execution process, the machine will start to decelerate and eventually stop. The completion signal of M8029 will be executed at this time and not further action will be carried out.

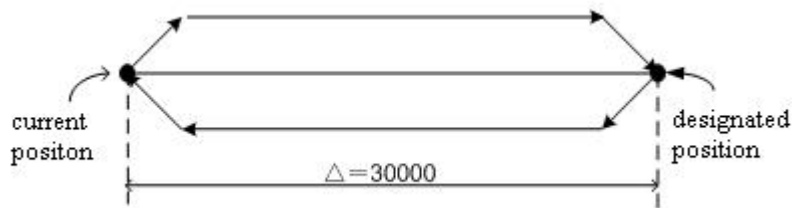
After the instruction-driven contacts become OFF, and the pulse output interruption signals M8147 (Y000), M8148 (Y001), M8149 (Y002), M8150 (Y003), are in ON state, re-initiation instruction will not be accepted.

## 2.Operation:

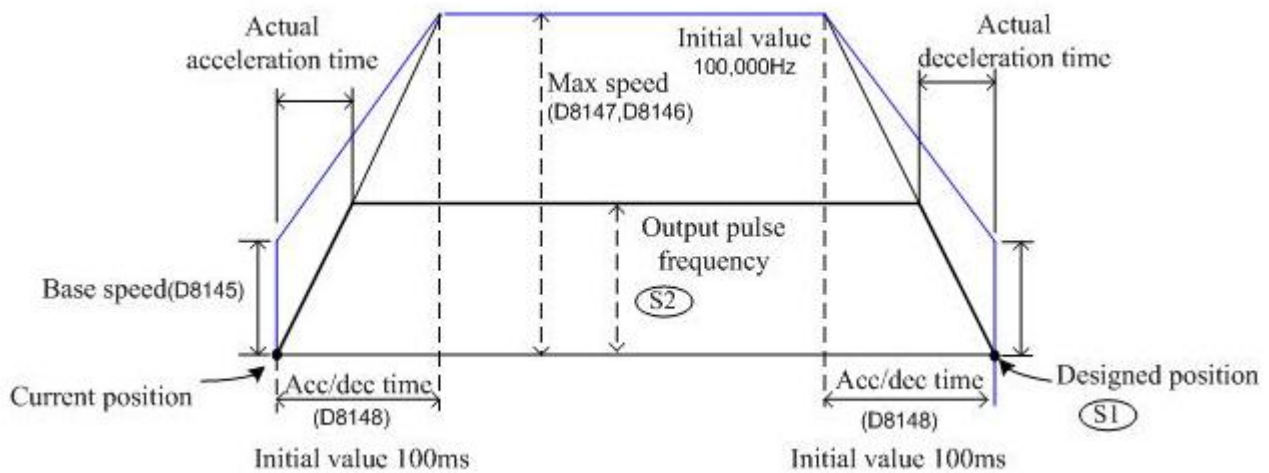


With 30000 pulses exported from the Y0 port at the frequency of 4 kHz, the external server allows the machine

to operate in directions that are determined by Y3.



During the pulse output process, the frequency will either accelerate or decelerate according to the preset value.



The actual minimum pulse output frequency is determined according to the following formula:

$$\text{Minimum pulse output frequency} = \sqrt{\text{Max speed}[\text{D8147}, \text{D8146}]\text{HZ} \div (2 \times \text{Acc/dec time}[\text{D8148}]\text{ms} \div 1000)}$$

Even if the assigned value is lower than the above calculated result, the frequency to be exported will still be the calculated value. The frequencies in the initial stage of acceleration and in the final section of deceleration must not be lower than the above calculated result.

During the instruction execution, the involved system variables are as follows:

[D8145]: Base speed when executing FNC158 (DRVI) and FNC159 (DRVA) instructions. During the operation of stepping motor, the stepping motor's resonance region and automatic start frequency must be considered when setting up the speed. Setting Range: below 1/10 of the maximum speed (D8147, D8146). When the setting surpasses the indicated range, the operating speed will automatically decelerate to the 1/10 of the highest speed.

[D8147 (high byte), D8146 (low byte)]: Maximum speed when executing FNC158 (DRVI) and FNC159 (DRVA) instructions. The assigned output pulse frequency must be lower than the maximum speed. Setting range: 10 ~ 100,000 (Hz)

[D8148]: acceleration and deceleration time when executing FNC158 (DRVI) and FNC159 (DRVA) instructions. Acceleration/Deceleration time means the time required in order to reach the maximum speed (D8147, D8146). Therefore, when the output pulse frequency **S2**: is lower than the maximum speed (D8147, D8146), the actual acceleration/deceleration time will reduce. Setting range: 50 ~ 5,000 (ms)

[M8145] : Y000 pulse output stopping (immediate stopping)

- [M8146] : Y001 pulse output stopping (immediate stopping)
- [M8152] : Y002 pulse output stopping (immediate stopping)
- [M8153] : Y003 pulse output stopping (immediate stopping)
- [M8147] : Y000 pulse output monitoring (BUSY/READY)
- [M8148] : Y001 pulse output monitoring (BUSY/READY)
- [M8149] : Y002 pulse output monitoring (BUSY/READY)
- [M8150] : Y003 pulse output monitoring (BUSY/READY)

**Notice:**

Positioning instruction (ZRN/PLSV/DRVI/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 (Y000: [M8147], Y001: [M8148], Y002: [M8149], Y003: [M8150], 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

