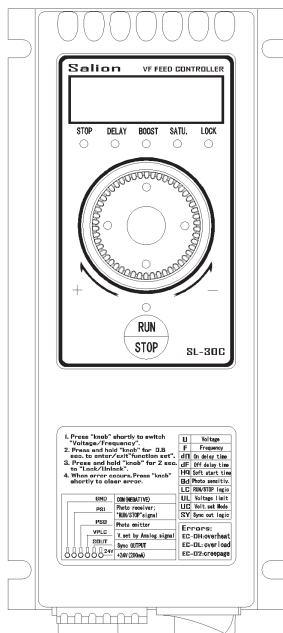


# Digital electromagnetic frequency vibrating feeder controller



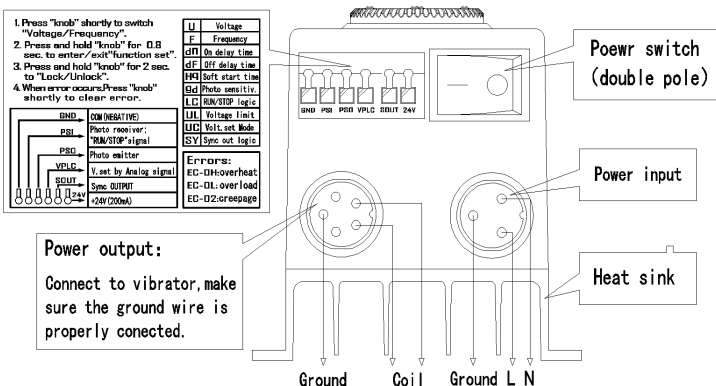
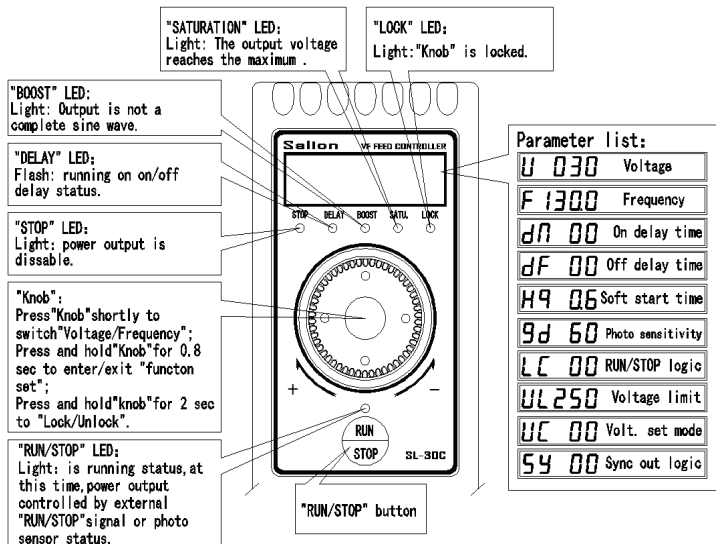
**Product features:**

1. Using digital frequency variable method, stable and reliable, high power factor, energy saving and environment friendly.
2. Built-in photoelectric sensor interface for run/stop control, adaptive ambient light, you can set to 99 optimal sensitivity, identification of small or translucent work-pieces .
3. The feed speed can be controlled by the analog output voltage of the PLC .
4. Output voltage limiting function, preventing misoperation from damaging the vibration plate due to excessive output voltage.
5. With a set of synchronous output ports that can directly drive solenoid valves or be connected to the PLC input ports for status detection.
6. Soft start and Soft stop function, ensuring smooth feeding at the start and stop movement.
7. Output 24V 200mA DC power supply to common sensors or solenoid valves.
8. The rotary encoder switch is used for parameter setting, easy to operate, reliable and durable.
9. High-precision voltage regulator, making the output voltage unaffected by the grid voltage, and can effectively suppress the frequency effect of frequency beat.
10. With high-performance power devices, lower heat loss, lower temperature, and more stable and reliable operation.
11. Highly integrated system, optimized dimension, light weight, small dimension and easy installation.
12. Fully enclosed enclosure for harsh working conditions.
13. With over-voltage, under-voltage, overheating, overload, output short circuit, electromagnet coil leakage protection.

**Attentions in operation:**

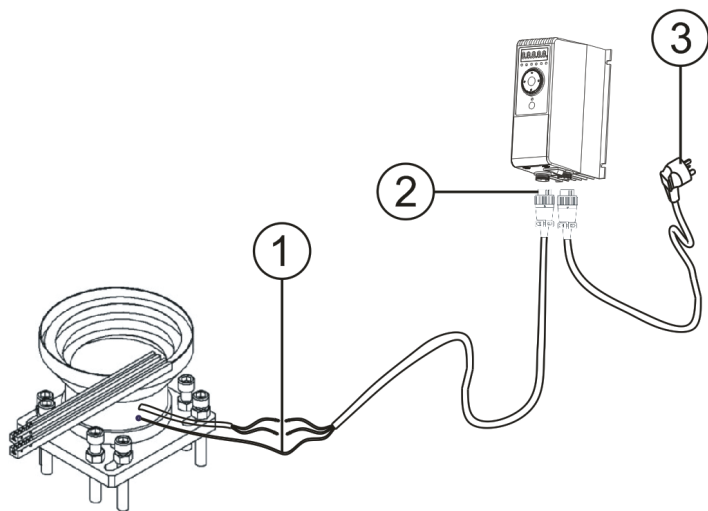
1. Power supply voltage range: 85V~265V AC 50/60Hz, the input power supply voltage should not exceed 285V, otherwise it will cause irreparable damage.
2. In order to prevent accidental electric shock accidents, the grounding port of the power plug must be reliably connected, and the power supply needs to have overcurrent and leakage protection measures.
3. In order to ensure long-term stable operation, the controller should not be fix in a position where the vibration amplitude is too large.
4. The controller will generate heat when it works. To ensure long-term stable operation, the controller should be vertically installed in a ventilated place.
5. To ensure long-term stable operation, avoid any dust, liquid contact with the controller
6. The output port has a ground wire, and the vibration plate must be reliably connected to the ground wire.
7. It is strictly forbidden to use any way to cut off the input power and cut off the power output to control the run/stop of the vibration plate, which will seriously shorten the service life of the controller. The external run/stop control signal should be used for run/stop control.
8. The load current on the output port of the controller's 24V dc power supply cannot be greater than 200mA, otherwise it will lead to the disconnection of the 24V power supply or the failure of saving parameter.
9. To prevent electric shock, it is strictly forbidden to pull out the power output port when the controller is powered on.
10. No connecting the power input cable and turning on the power switch of the controller before all wiring is completed, .

## Operation panel and port introduction:



## Operation panel and port introduction:

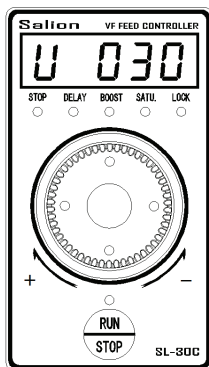
1. Connect the output cable to the vibration plate, and ensure a reliable ground connection.
2. Connect the aviation plug of the power input cable to the controller.
3. Plug the power input cable into the power socket and turn on the power switch on the controller.



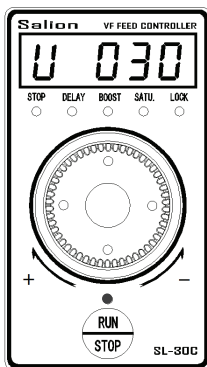
4. At this point, the panel will display “U”, indicating that current is “output voltage” parameter. Rotate the “knob” to adjust the output voltage to the appropriate voltage value (90~120V power supply: 30V recommended, 220~240V power supply: 60V recommended)

5. Press the “Run/Stop” button, the green indicator on next to the button will be on, indicating that it is in operation, and the vibration plate should be able to feel some vibration.

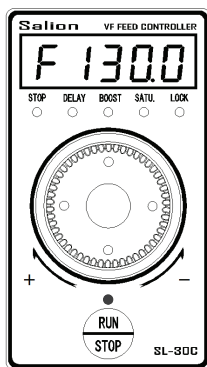
6. Short press “knob”, the panel will display “F”, indicating that the current is “output frequency” parameter. Rotate “knob” to adjust the output frequency, and find the frequency (resonant frequency) with the maximum amplitude of vibration plate.



④



⑤



⑥

7. Short press "knob", the panel will display "U". Increase the "output voltage" to the ideal feed speed. At this time, in order to achieve the best feeding effect, it is recommended to perform a detailed "Step 6" operation, and the setting is completed.

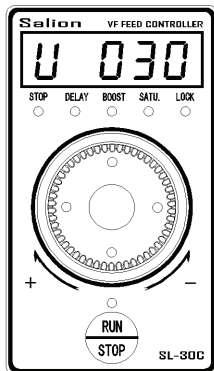
#### Remark:

Remark: In step 7, it is recommended to operate the vibration plate at the maximum load (full workpiece state) so that the optimum resonant frequency is the most accurate.

### Parameter settings:

#### U(Output voltage):

The panel displays "U" by default, indicating that it is in the output voltage setting state. Rotate the "knob" to set, the setting range is 0~250V, and it is stepped by 1V.

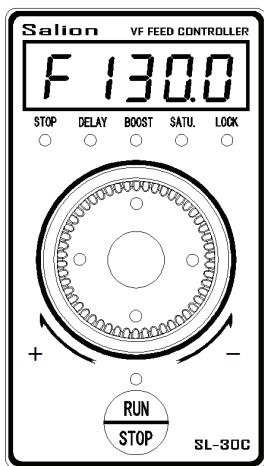


**Remark:**

1. When the output voltage is set higher, if the “boost” indicator of the panel is lit, it indicates that the current output is in the boost state, the output voltage waveform is not a complete sine wave, and the anti-beat frequency capability will be affected.
2. When the output voltage is set higher, if the “saturation” indicator of the panel is lit, it indicates that the current output voltage has reached the limit and the voltage regulation capability will be affected.
3. This output voltage is limited by the “UL (Output Voltage Limit)” parameter.
4. When “UC” (voltage control mode)=1, it is the external analog control mode, the output voltage can not be set by the “knob” of the panel, and the “lock” LED will flash.

**F(output frequency):**

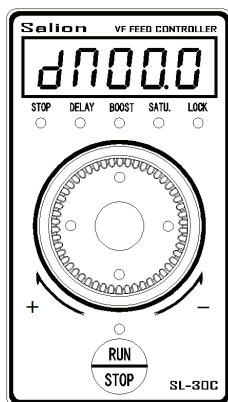
Short press “Knob” and the panel will display “F”, indicating that it is in the output frequency setting state. Rotate the “knob” to set. Setting range is 40.0~400.0Hz, and stepped by 0.1Hz.

**Remark:**

1. Pressing “Knob” again can switch to the “U (Output Voltage Setting)” status.

**dn(Start delay time):**

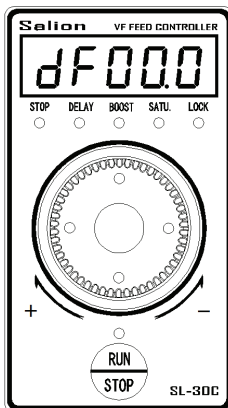
Press and hold the “knob” for 0.8 seconds to enter the function setting, rotate the “knob” to select the function parameters until the panel displays “dn”, then press “knob” shortly, “dn” will flash, then rotate “knob” and the parameters can be set. Setting Range: 0.0~25.0 seconds, stepped by 0.1 second.

**Remark:**

1. In the operating state (the operating indicator is on), when the external run/stop or the signal of the photoelectric sensing port meets the run condition, the output needs to be started after the "on delay time", and in delay time, the "delay" indicator on the panel will flash.
2. For the run/stop conditions, please refer to the "LC (run/stop Logic)" description.

**dF(off delay time):**

Press and hold the "knob" for 0.8 seconds to enter the function setting, rotate the "knob" to select the function parameters until the panel displays "Hq", then press "knob" shortly, "Hq" will flash, then rotate "knob" to set parameters. Setting range: 0.1 to 25.0 seconds, stepped by 0.1 second.

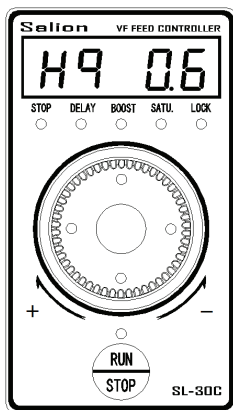


**Remark:**

1. In the operating state (the operating indicator is on), when the external run/stop or the signal of the photoelectric sensing port meets the stop condition, the output needs to be stopped after the "off delay time", and in the delay time, the "delay" indicator on the panel will flash.
2. For the stop condition, please refer to the "LC (run/stop Logic)" description.

**Hq(Soft start time):**

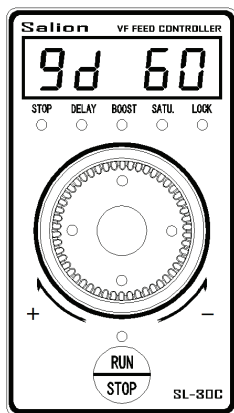
Press and hold the "knob" for 0.8 seconds to enter the function setting, rotate the "knob" to select the function parameters until the panel displays "Hq", then press "knob" shortly, "Hq" will flash, then rotate "knob" to set parameters. Setting range: 0.1 to 25.0 seconds, stepped by 0.1 second.

**Remark:**

- 1 When the controller starts the output, the output voltage will gradually increase (from the soft start time) linearly from 0V to the set output voltage to eliminate the impact on the vibration plate and to prevent the workpiece from falling.
- 2 This parameter represents the time required for the output voltage to go from 0V to 250V. For example, "Hq=10.0" means that 10.0 seconds is required from 0V to 250V, and 1.0 seconds is required from 0V to 25V.

**gd(Photoelectric sensing sensitivity):**

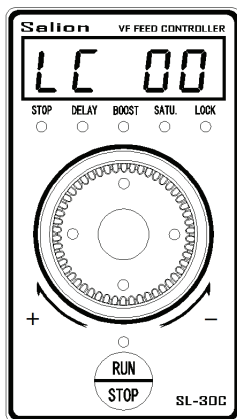
Press and hold the "knob" for 0.8 seconds to enter the function setting, rotate the "knob" to select the function parameters until the panel displays "gd", then press "knob" shortly, "gd" will flash, then rotate "knob" to set parameters. setting range: 1~99, and the higher the value, the higher the sensitivity.

**Remark:**

1. Using photoelectric sensor for run/stop control, this parameter can be used to detect translucent workpiece

**LC(Run/stop control):**

Press and hold the “knob” for 0.8 seconds to enter the function setting, rotate the “knob” to select the function parameters until the panel displays “LC”, then press “knob” shortly, “LC” will flash, then rotate “knob” to set parameters, setting range: 0-1.



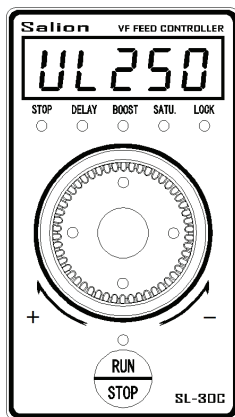
**Remark:**

“LC” =0: When the external run/stop control port is in low level or the photoelectric sensor receives a valid signal, the controller stops the output;

“LC” =1: When the external run/stop control port is in low level or the photoelectric sensor receives a valid signal, the controller starts the output;

**UL(Output voltage limit)**

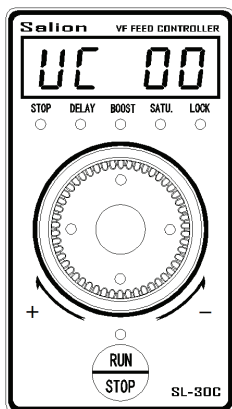
Press and hold the “knob” for 0.8 seconds to enter the function setting, rotate the “knob” to select the function parameters until the panel displays “UL”, then press “knob” shortly, “UL” will flash, then rotate “knob” to set parameters, setting range: 0V~250V.

**Remark:**

1. Setting the upper limit value of this parameter can prevent the vibration plate from being damaged by the high output voltage caused by the misoperation of the user.
2. When the setting of this parameter is less than “U (output voltage)”, “U (output voltage)” will be automatically reduced.
3. This parameter is also applicable to the external analog voltage regulation mode.
4. When “UC” (output voltage control mode)=1, it is the external analog voltage control mode, the “UL” parameter will automatically adjust the external analog voltage control range: VPLC=0~10V, corresponding to output voltage: 0~ “UL” .

**UC(Output voltage control method)**

Press and hold the “knob” for 0.8 seconds to enter the function setting, rotate the “knob” to select the function parameters until the panel displays “UC”, then short press the “knob”, “UC” will flash, then rotate “knob” to set parameters, setting range: 0~1.

**Remark:**

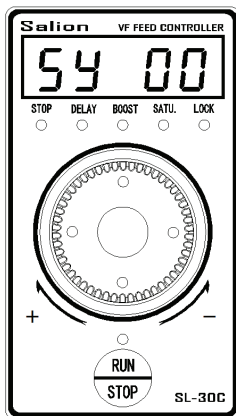
“UC” =0: Output voltage regulation by the “knob” of the panel.

“UC” =1: Output voltage regulation is performed through an external analog voltage regulator port.

When “UC” =1, rotate the “knob” of the panel, the “lock” indicator on panel will flash, indicating that the operation is invalid.

**SY(Synchronous output control)**

Press and hold the “knob” for 0.8 seconds to enter the function setting, rotate the “knob” to select the function parameters until the panel displays “Sy”, then press the “knob” shortly, “Sy” will flash, then rotate “knob” to set parameters, setting range: 0~1.



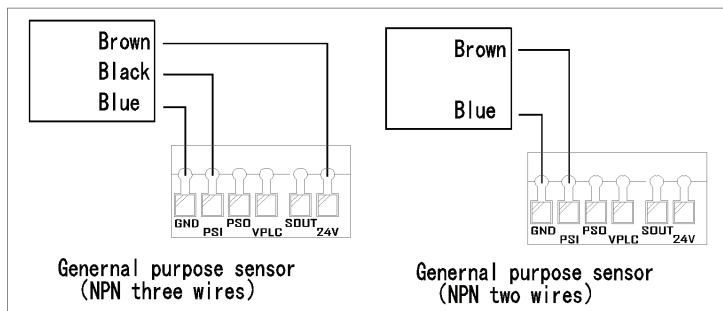
**Remark:**

“Sy” = 0: When the controller is in the output state, the synchronous output port “SOUT” breakover to “GND” port.

“Sy” =1: When the controller is in the output state, the synchronous output port “SOUT” is open to “GND” port.

**Panel lock**

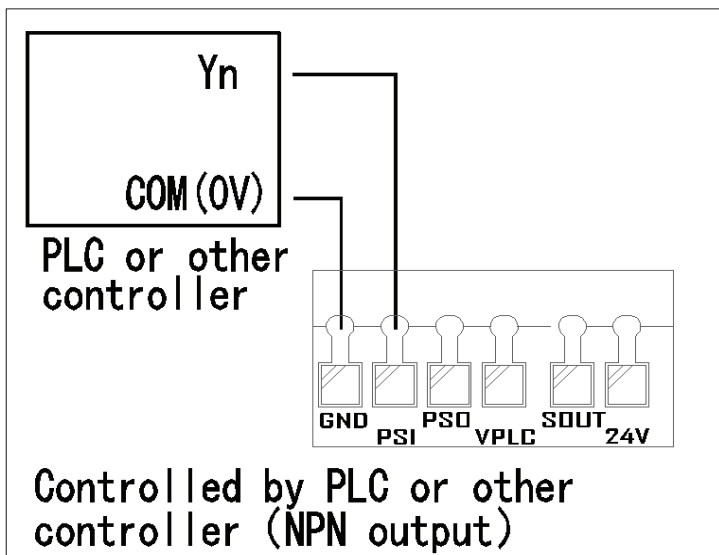
Press and hold the “knob” for 2 seconds, Except for the “RUN/STOP” button, the operation of other functions is locked. At the same time, the “LOCK” LED on the panel will be on. Press and hold the “knob” for 2 seconds again to unlock. In the locked status ,operate the “knob” , the “LOCK” LED on the panel will flash, indicating that it is locked.

**Control port introduction:****External start and stop control port:****General sensor for run/stop control:****Remark:**

A general sensor that supports NPN output;

The “PSI” port provides a 12V 10mA power supply for two wire sensors. For reliable operation, we recommend that the sensor's static operating current be less than 5mA;

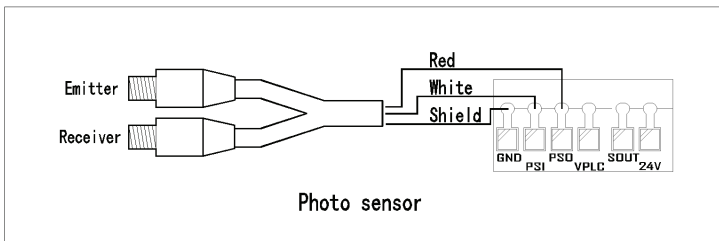
General sensor for run/stop control:



Remark:

PLC or other controller that supports NPN output;

Photoelectric sensing for run/stop control:



Remark:

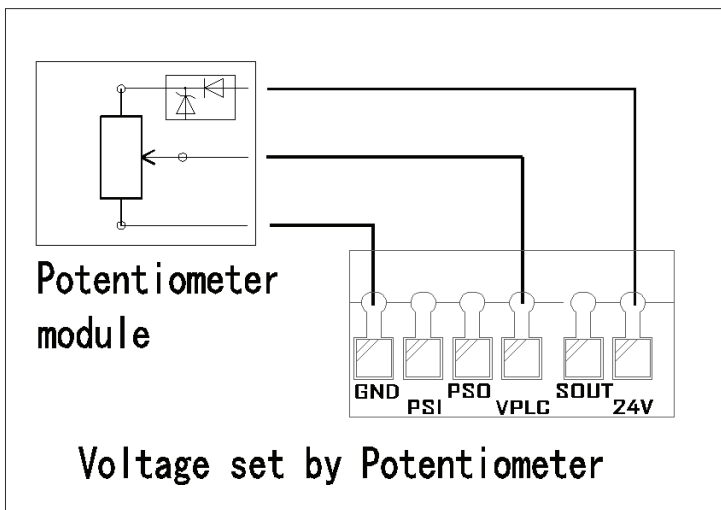
The photoelectric sensing incoming port (PSI) is sensitive only to the frequency signal of the output port (PSO), so the interference of ambient light can be effectively eliminated. However, It

is recommended that the installation direction of the receiving end should avoid strong ambient light sources, and also recommended to install the emitter and receiving end sideways, which can effectively prevent dust and foreign matter from entering the light hole, resulting in sensing failure.

The photoelectric sensor is optional accessory, need to pay attention that the emitter of the photoelectric sensor (Red wire) does not have current limiting protection. Red wire should not be connected to "24V" or it will cause irreparable damage to the photoelectric device.

### External analog voltage regulating port:

External potentiometer voltage regulating module for output voltage regulation:

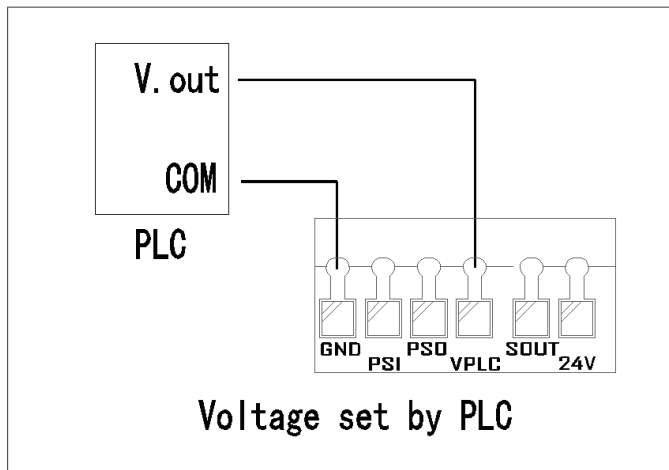


#### Remark:

The effective range of voltage controlled by VPLC port: 0V~10V, the corresponding output voltage is: 0V~"UL" (output voltage limit), that is, when the "UL" (output voltage limit) parameter is changed, the corresponding regulation range also changes automatically.

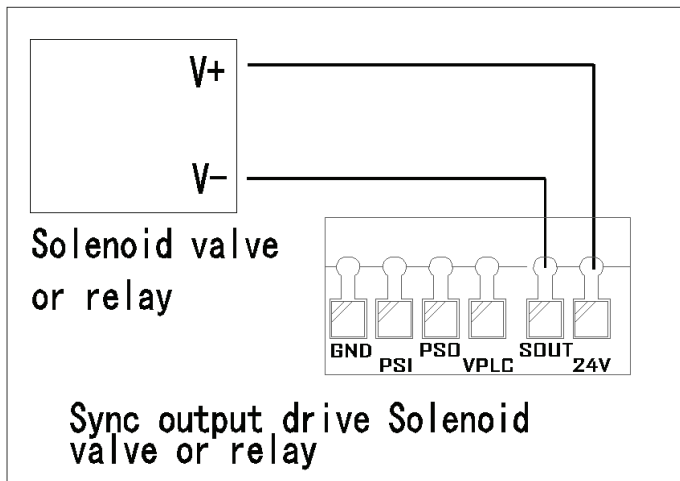
The potentiometer voltage regulator module is an optional accessory.

### Output voltage regulation by PLC:



Synchronous output port:

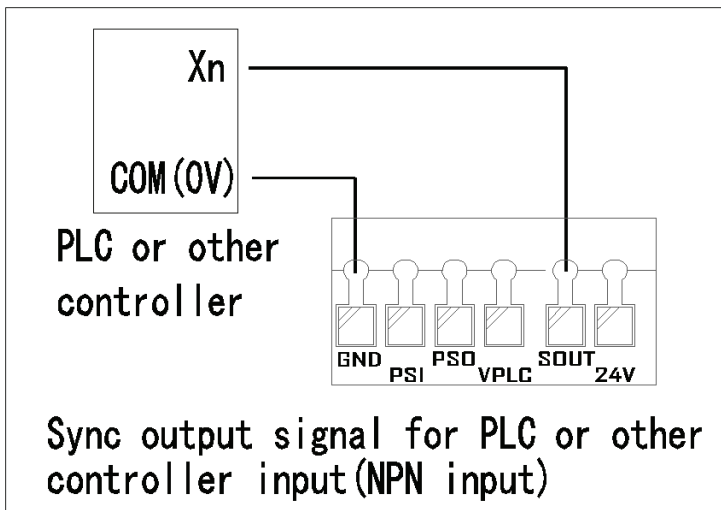
Drive solenoid valve or relay:



**Remark:**

The working voltage of the solenoid valve or relay is 24V DC, and the working current is not more than 200mA;

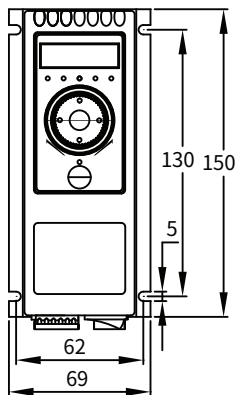
The "SOUT" port is open circuit when it is static, with surge suppression protection.

**Provide a synchronization signal to the PLC or other controller:****Remark:**

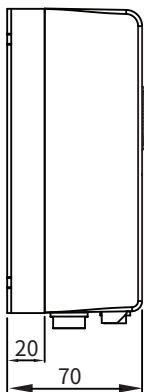
The input port of the PLC or other controller is the NPN input.

The "SOUT" port is open circuit when it is static.

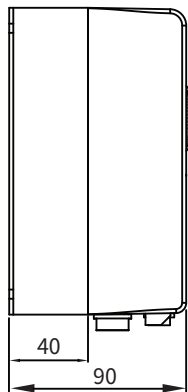
**Installation Dimension:**



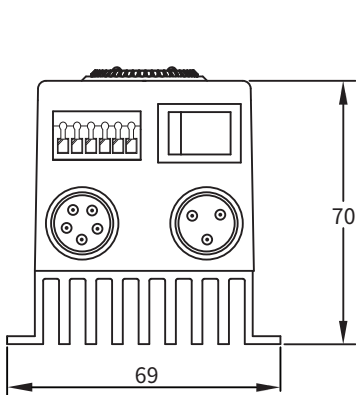
SL-30C



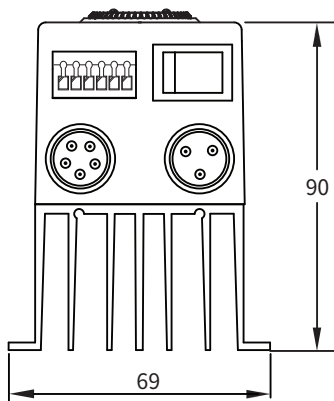
SL-30C 1.5A, 3A



SL-30C 4.5A



SL-30C 1.5A, 3A



SL-30C 4.5A

**Remark:**

SL-30C 1.5A, 3A: 150 (length) \* 69 (width) \* 70 (height) 4.5A: 150(length)\*69(width)\*90 (height)

**Troubleshooting:**

<b>EC-OL</b>	Overload protection. Check whether the vibration plate power matches the controller, whether the electromagnet coil is damaged, the armature clearance is too large, and the output cable is short-circuited.
<b>EC-OH</b>	Overheating protection. Install the controller vertically in a ventilated area, if possible, install vertically on a metal table for heat dissipation.
<b>EC-LU</b>	-voltageUnder protection. To check if the input supply voltage is below 75V AC
<b>EC-OU</b>	Over-voltage protection. Check whether the input supply voltage is above 265V AC. If it is above 285V AC, disconnect the power immediately.
<b>EC-02</b>	Leakage Protection. Check whether the output cable is incorrectly wired; Check whether there is leakage in the electromagnet coil of the vibration plate.
<b>EC-01, SL30C</b>	Internal protection circuit self-check error, need to return to the factory for maintenance.
<b>No vibration in the vibrating disk</b>	Check whether the output cable is properly connected to the vibration plate; If the "stop" indicator on panel is on, check whether the "run/stop" button light is on, and whether the external run/stop control signal or "LC" parameter is correct; Whether the "U" output voltage parameter is too low; Check whether the vibration plate is normal.
<b>No display/display blink</b>	Check whether the power supply voltage is normal and the power connector is firm; Whether the 24V DC power supply port is overloaded or shorted.
<b>Slow feeding speed</b>	Reset the optimal resonant frequency (see "Installation and Test Step 6"); Check the vibration plate; check whether the power supply voltage is too low.
<b>Parameter cannot be set</b>	Whether the panel is in locked state; Whether the "UC" voltage control is in external control mode.
<b>Start and stop control failure</b>	Whether the panel is in locked state; Whether the "UC" voltage control is in external control mode.
<b>Parameter cannot be memorized</b>	Check whether the load current of the 24V DC power supply port exceeds 200mA;

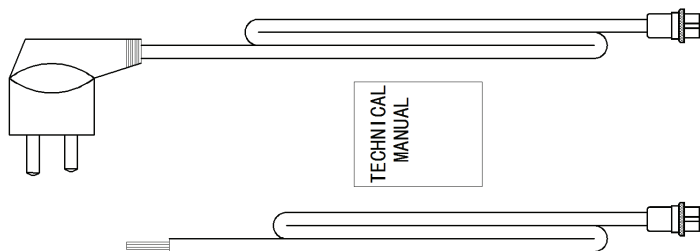
## Troubleshooting:

Parameters	Value	Remark
Input voltage	85~265V	50/60Hz AC
Output voltage	0~250V	AC
Static consumption	<3W	85~265V AC
Output frequency	40.0~400.0Hz	Sine wave
Output current	1.5A max	Small power
	3.0A max	Medium power
	4.5A max	High power
Working temperature	-20~40°C	
Working temperature	0~90%	No-condensate
Working relative humidity	<-25°C;>60°C	
Overheat protection temperature	>2830VDC >200 0VAC	100% Tested; "L" of Power input to case and control ports
Insulation capacity	8T	8 vibration cycles max
soft stop time	1K Ohm	Internal 1K resistor pull-up to 12V
"PSI" Port input impedance	60mS	General sensor, PLC level signal
"PSI" Port debounce time	10mS	Photoelectric sensor
"PSI" port logic level	<3.3V=LOW >3.3V=HIGH	
"PSI" port withstand voltage	-12V~+30V	
"PSO" port output voltage	5Vp-p	500Hz;50% duty cycle
"PSO" port drive current	18mA max	
"PSO" port withstand voltage	-20V~+60V	
"VPLC" port input impedance	136K Ohm	
"VPLC" port withstand voltage	-36V~+36V	
"VPLC" port debounce time	100mS	

“SOUT” port drive current	200mA	With over-current protection
“SOUT” port withstand voltage	-24V~+30V	
“24V” port output voltage	<25V	No load, 85~265V power input
	>21V	200mA load, 85~265V power input
“24V” port output current	200mA	With over-current protection
“24V” port output ripple	<2%	200mA load

### Standard accessories:

#### Power plug, output cable wire, specifications



### Optional accessories:

#### 1. Photoelectric sensor 2 potentiometer voltage regulating module

