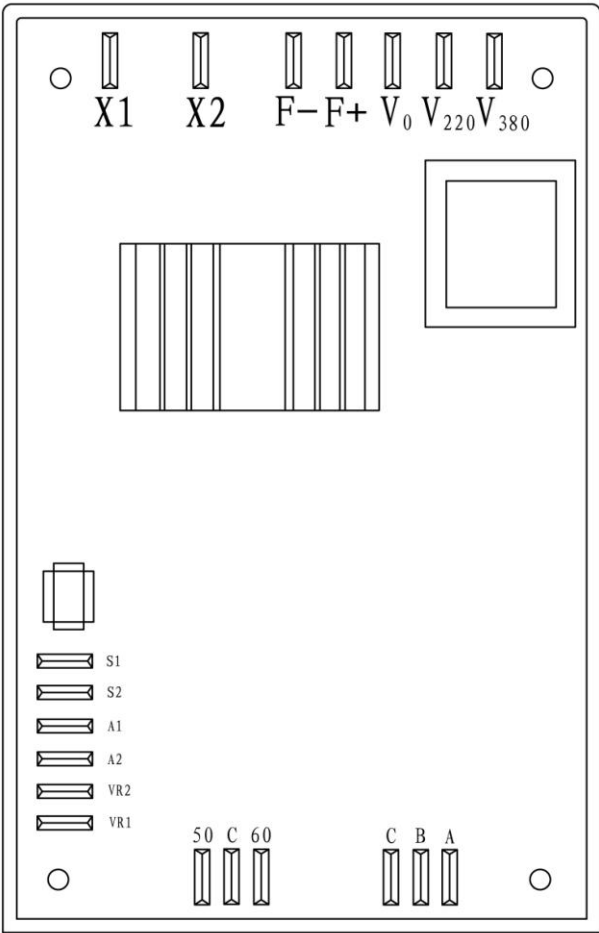


EVC600C User Manual

Ver 1.0 Date: 2014/07/31

EVC600C SERIES



Version

Date	Version	Note
2014-07-31	1.0	Original release

Introduction

EVC600C Automatic Voltage Regulator (AVR) is alternator output voltage regulating equipment, its design is based on half-wave phase-controlled rectifier principles and our company generator excitation characteristics. It can be used for the auxiliary winding, phase power Excitation Generator. The feature is high stability, fast response, easy installation and maintenance, etc.

Specifications

Output

Volatage: Max 96V @220Vac

Continual current :8A

Max transient current:10A,≤10 second

Field winding resistance

Min. 9Ω

Power input voltage (AC)

180~250Vac,50/60Hz

Power :Max 1000VA (240 Vac)

Sense voltage (AC)

180~250Vac (220Vac System) single phase, 50/60 Hz;

350~480Vac (400Vac System) single phase, 50/60 Hz;

Power consumption: 5 VA

Voltage adjustment range

180~300 Vac ;350~500Vac

Regulation ±1%

Thermal drift <0.05% /°C

Response time 1.5s

Build voltage

The generator remaining excitation voltage will build voltage automatically,5Vac、25Hz

Power consumption: Max 40W

Quadrature droop input

CT:rated current ratio is 5A, Droop

0 ~6%,0.8 power factor

Operating temperature

-30°C ~ +80°C

Relative humidity 95%

Vibration

12 Gs,5~26 Hz;

0.036 inch amplitude,27~52 Hz;

5.0 Gs,53~1000 Hz

Impugnable

Above three orthogonal planes is 20 Gs

Weight

Net weight : 0.62 kg

Installation

Use M4 bolts installed in the generator terminal box

(Dimensions in the Picture 1)

Operating Instructions

Jumper selection

- (1) when generator capacity is less than 90KW,**STABILITY** set to A-C,
- (2) when generator capacity is between 90-550KW,**STABILITY** set to B-C,
- (3) when generator capacity is more than 550KW,**STABILITY** set to A-B,
- (4) when rated frequency is 50Hz,**FREQUENCY** set to 50;
when rated frequency is 60Hz,**FREQUENCY** set to 60.

Voltage (VOLT) ---Adjust the generator output voltage

The generator output voltage can be adjusted according to the characteristics of the generator set, usually, the built-in voltage adjustment potentiometer "VOLT" can adjust a big range of voltage (350~480 V or 180 ~300V),If you want to adjust the voltage from the control panel or screen,you can connect a suitable potentiometer to **VR1** and **VR2** terminal (Mini power 2W,Resistance is 10 KΩ-100KΩ) .



⇒ **Voltage rise**

Stability (STAB)

The voltage regulator provides a built-in stable adjustment circuit,wide range of applications,This operation can set the field winding's react, to meet the characteristics of the factories and different engines. (Such as diesel engine, turbine), get the best voltage response, change the stability characteristics of the regulator needs to be set by **STAB** potentiometer on the regulator.



⇒ **Increase response time, improve stability**

LF protection (UFRO) ---low-speed protection settings

Usually, the factory's setting is in order to reduce the generator excitation current when the generator speed is lower than 95% rated speed of the generator,Adjust the protection point's speed via adjust the potentiometer **UFRO**.Such as:Rated frequency 50Hz set the LF protection point 47Hz,Rated frequency 60Hz set the LF protection point 57Hz

Note:The factory has been set up, please do not adjust again



⇒ **Reduce the protection point's speed**

Parallel compensation (DROOP)

The voltage regulator is suit for two similar generators operating in parallel, provide the total reactive power to all generators in parallel running, and makes correct allocation, can achieved it via a external 5A current transformer to sense the generator U-phase current and a build-in voltage regulator **DROOP** circuit.

The voltage regulator provides two inputs **S1** and **S2** are connected to the current transformers. When the generator is running in stand-alone, these terminals are usually shorted. Clockwise increases the amount of C.T. signal injected into the AVR and increases the droop with lagging power factor (cos Ø). With the control fully anti-clockwise there is no **DROOP**. CT detection signal and the voltage regulator phase sequence must be correct, otherwise, the generator would not normally work in parallel. CT must be installed in different phases and the detection of the detection voltage.

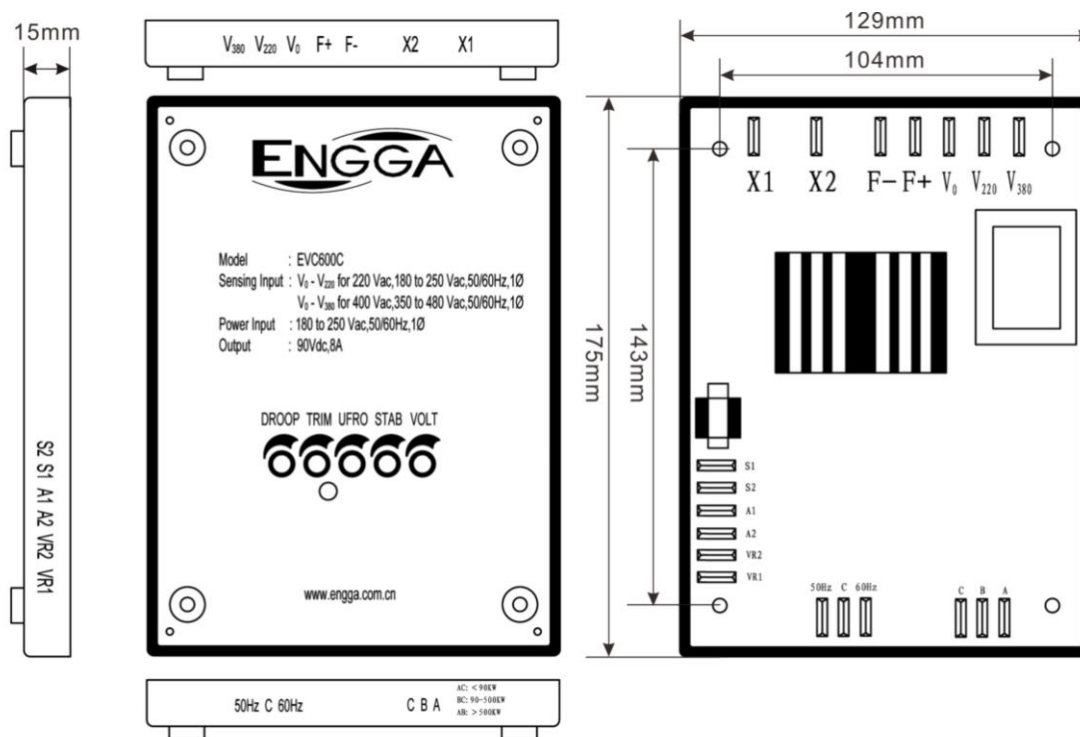


⇒ **Increase DROOP sensitivity**

Level of sensitivity (TRIM)

An analogue input (A1 A2) is provided to connect to the Newage Power Factor Controller or other devices. It is designed to accept dc signals up to ± 5 volts.

⇒ Increase sensitivity



Picture 1.

Wiring

Such as **Picture 2, 3,4**

- 1、**VR1**、**VR2** is remote voltage adjustment terminal. When you need to adjust the voltage remotely, can connect a 10K Ω -100K Ω 2W potentiometer between **VR1**、**VR2**; otherwise, must be shorted.
- 2、**F+**、**F-** is excitation outputs, connect the field winding inputs
- 3、**X1**、**X2** is power supply inputs, can connect an auxiliary winding, phase power supply, etc.
- 4、**V0**、**V220**、**V380** is detection signal inputs, connect to output terminal line voltage of generator, 400Vac system generator output line voltage connect to **V0** and **V380** (Picture 2 as a reference); 220Vac system generator output line voltage connect to **V0** and **V220** (Picture 3 as a reference).
- 5、**S1**、**S2** is current compensation input terminal, when parallel operation, current transformer ratio is $I_n/5A$, capacity is 5VA droop current transformer (CT)'s output terminal, if the direction of rotation of the generator is A-B-C, The generator **S1** connect to CT's positive, **S2** connect to CT's negative; if the direction of rotation of the generator is, must reverse.

(Note: CT must install on the generator output terminal, the phase line which one not provides the signals to the voltage regulator) .

- 6、**A1**、**A2** is voltage adjustment inputs. can connect the external $\pm 5V_d$, Each 1Vdc can adjust 5% generator terminal voltage, pay attention to the polarity when connect.

Build-up excitation

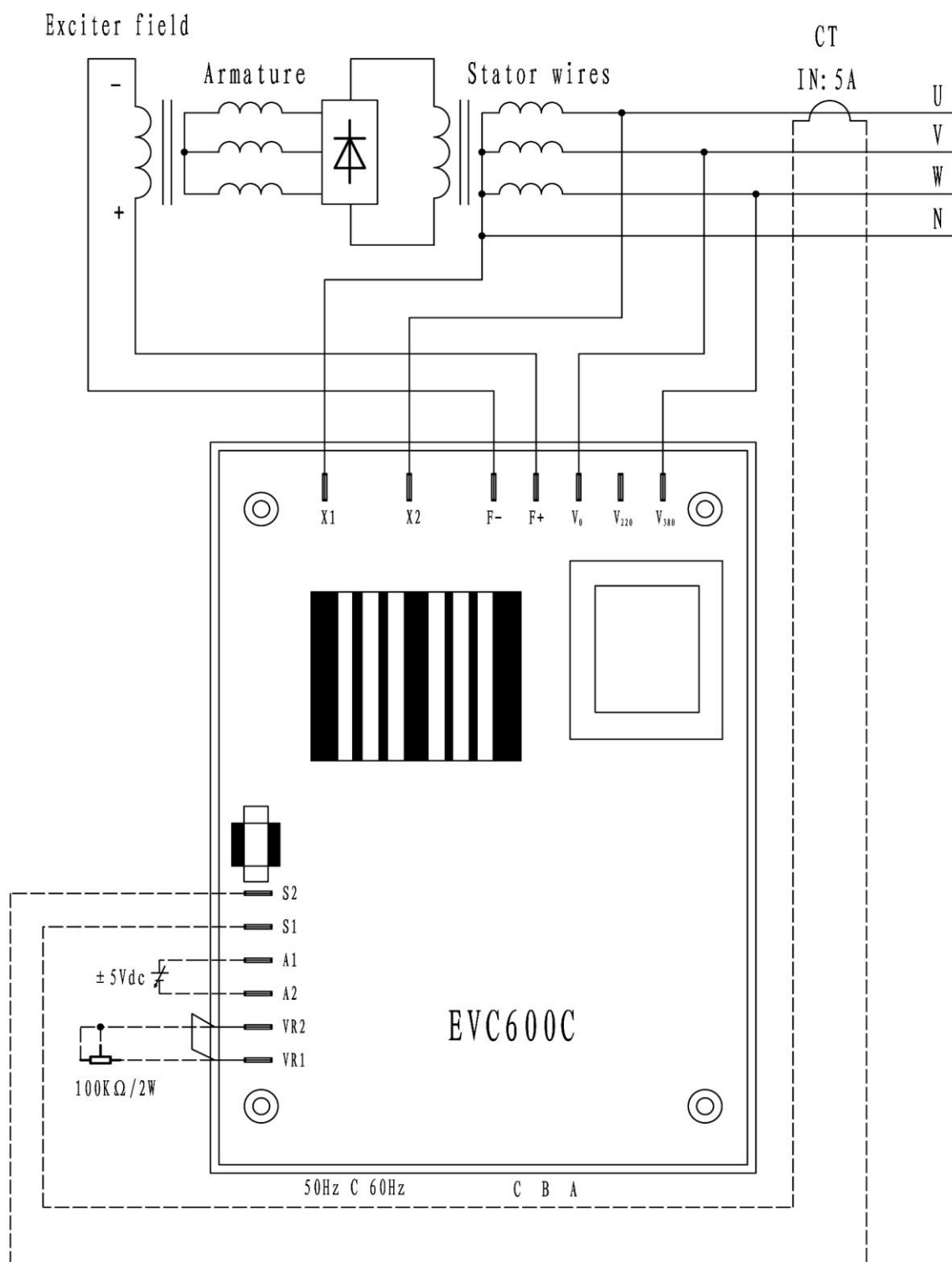
When the first start of the regulator and generator, maybe the residual magnetism can't reach the start-up requirement of the regulator, we need to do as following steps:

- a、Prime mover in a stopped state, use a DC power supply, don't higher than 12Vdc, connect to the generator **E1**, **E2**, magnetizing to the generator, please pay attention to that the polarity, the power supply's positive pole connect **E1**, negative pole connect to **E2**.
- b、Build-up excitation about 2s after power ups;
- c、After finished the a and b steps, if the voltage is still not established, please check the DC power supply

Test

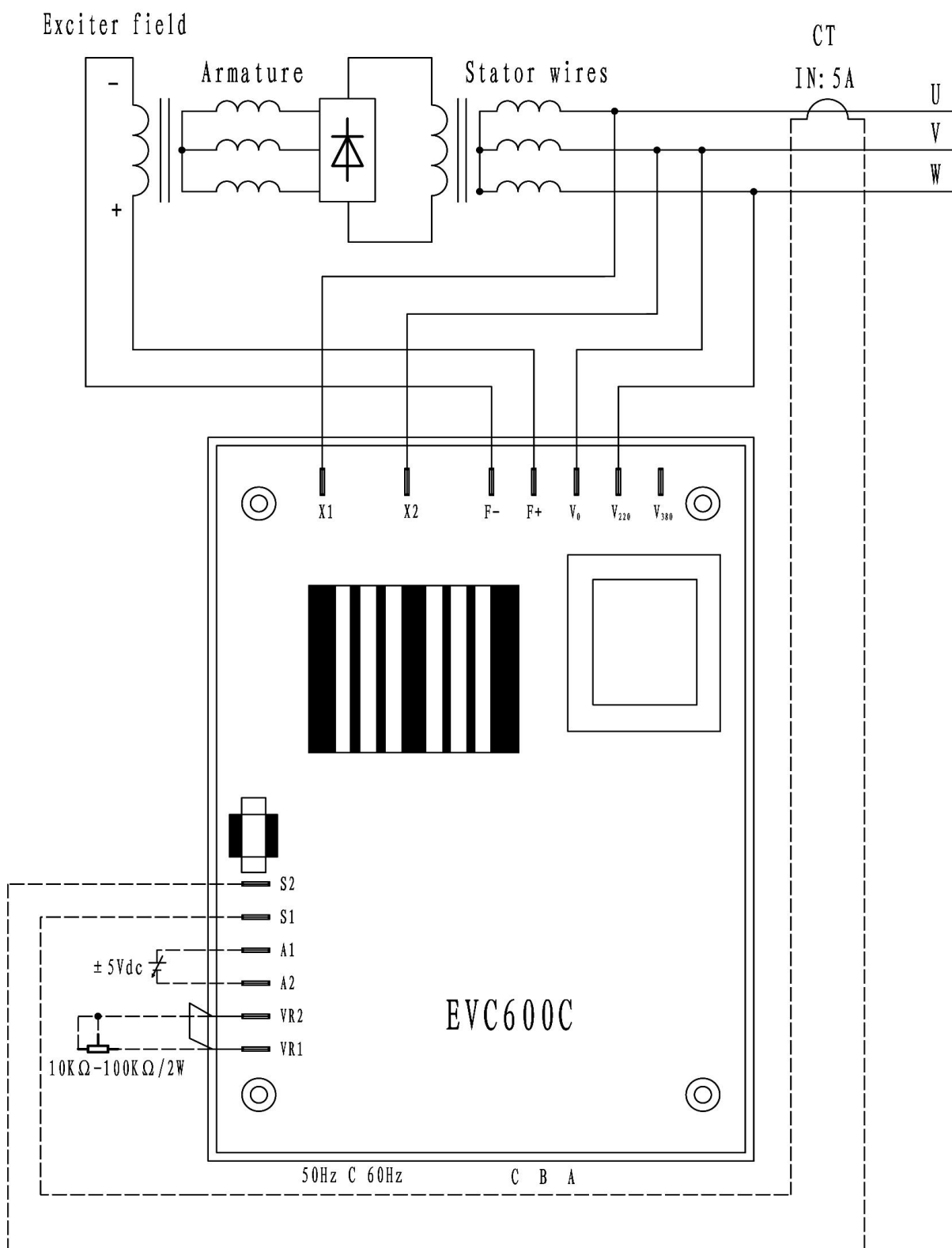
EVC600C Performance tests and operation steps (Picture 4 for reference)

- 1、Adjust the **VOLT** potentiometer clockwise to the MAX, the bulb should be off;
- 2、Adjust the **VOLT** potentiometer counterclockwise to the MAX, the bulb should be light;
- 3、**VOLT** potentiometer, can control the bulb just beginning to shine.



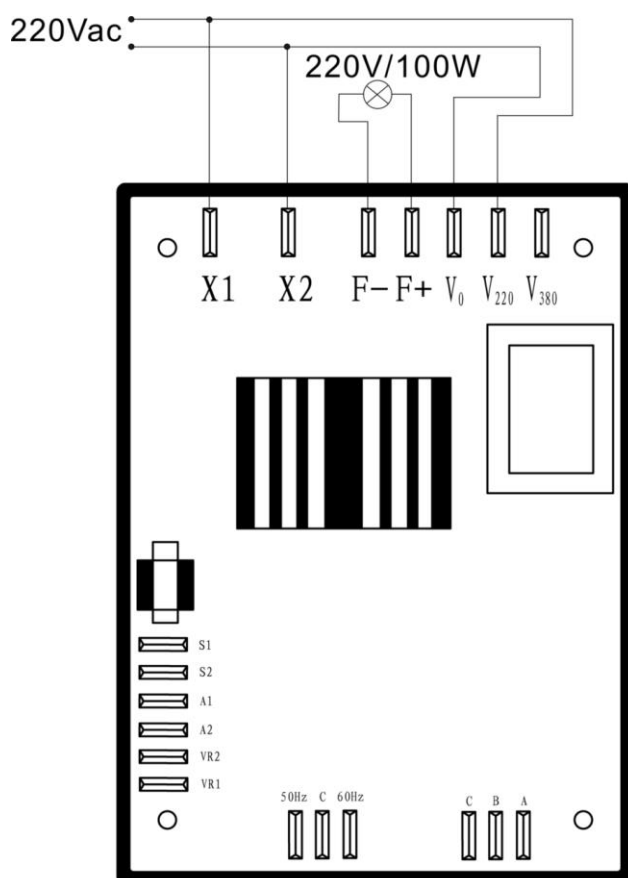
- 1、**S1**、**S2** is current reactive power compensation input terminal, when parallel operation, current transformer ratio is $I_n/5A$.
- 2、**A1** 、**A2** voltage regulator inputs, can connect the external $\pm 5V_{dc}$.
- 3、If need to adjust the voltage remotely, can connect a 10-100KΩ / 1W potentiometer between **VR1**, **VR2**, otherwise, MUST BE SHORTED!

Picture 2. 400V system self-motivation wiring diagram



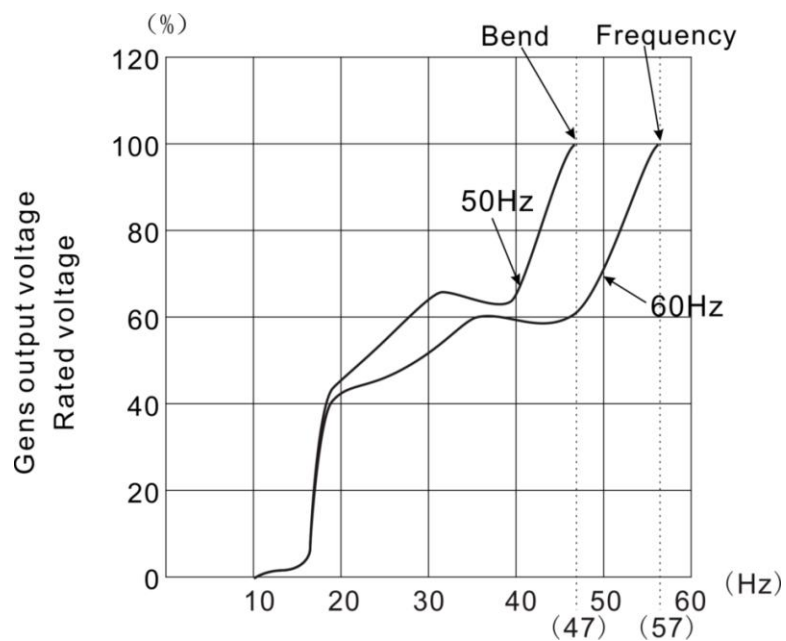
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Picture 3. 200V system self-motivation wiring diagram



Picture 4, VOLT knob on the back of the product can adjust the voltage (refer to above picture)

Picture 4. Test wiring diagram



- 1、 Output frequency 50Hz/60Hz can be adjusted via “**FREQUENCY**”.
- 2、 The above two curves were EVC600C 50Hz and 60Hz output frequency’ s low-frequency protection action curves.

Picture 5.generator frequency-output voltage relation (400V system)