

Power Conditioner/Electronic Voltage Regulator Instruction Manual



1、 Product Overview

The Larson Electronics MT-LCVR Series Power Conditioner/Electronic Voltage Regulator is ideal for protecting machines from sudden voltage fluctuations and low-quality electrical currents. The MT-LCVR Series features a solid-state and no-fan design for quiet and efficient operation. All controls are microprocessor based for consistent performance. This unit comes with a backlit LCD display for seamless monitoring. Constructed of carbon steel, the voltage regulator is housed in a NEMA 1 enclosure, making it suitable for indoor environments.

2、 Product usage conditions

This product is mainly used indoors (customized for outdoor use), and the normal usage conditions are:

2.1. Altitude: $\leq 2000\text{m}$;

2.2. Environmental temperature: $-20^{\circ}\sim+45^{\circ}\text{C}$;

2.3. Relative temperature: $\leq 90\%$

2.4. The installation site is free from insulation gases, steam, chemical deposits, dust, dirt, and other explosive and corrosive media that may seriously affect this product;

2.5. The installation site should have no obvious vibration or turbulence;

2.6. The product should be placed in a well ventilated area, and no other debris should be placed on the top. A minimum of about 60cm should be left around to ensure ventilation and heat dissipation around the unit.

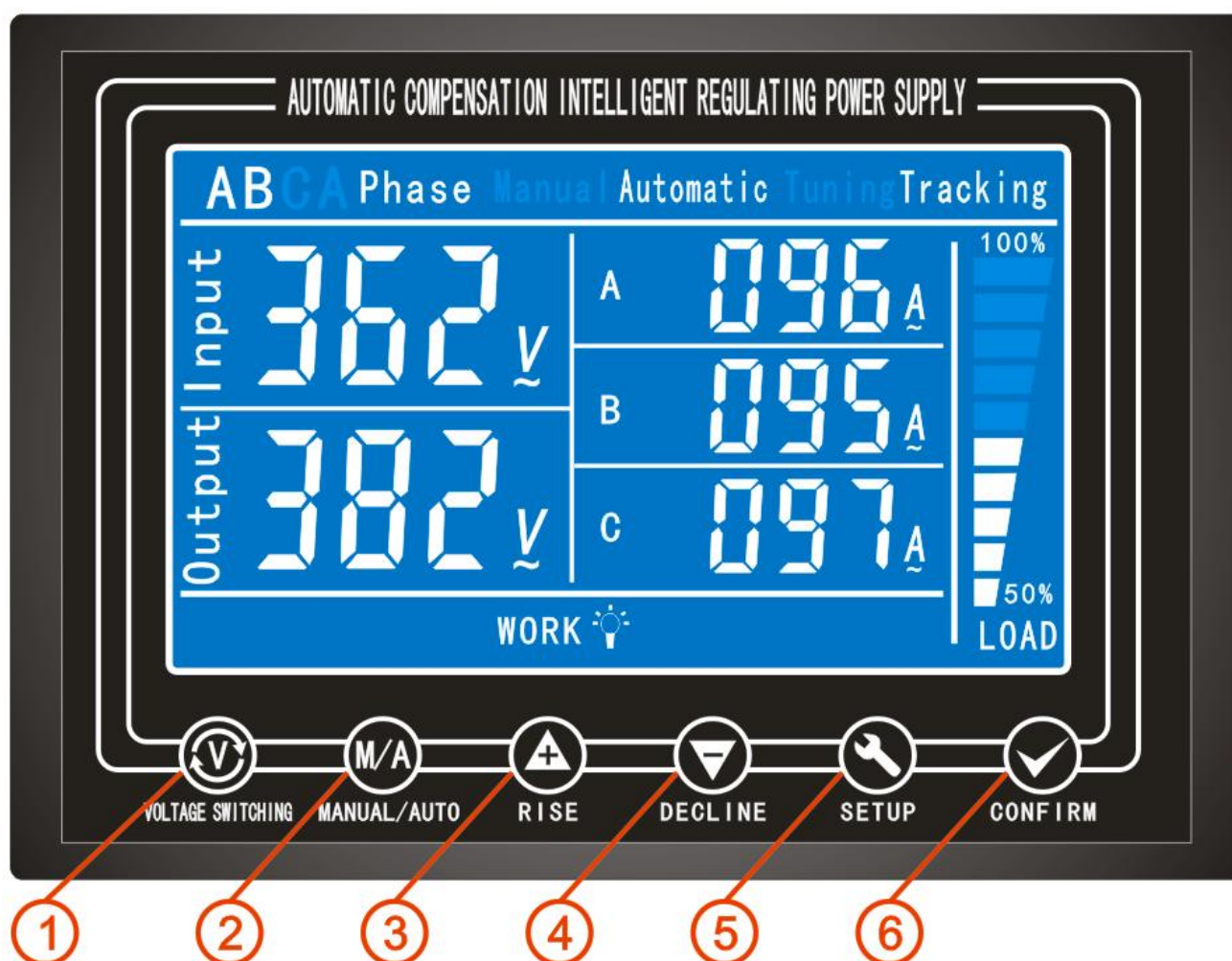
Any special usage conditions that do not meet the above regulations should be determined through consultation with our company when placing an order.

3、 Technical parameters

Model	Three-phase	Single-phase
Input voltage	AC304~456V	AC176~264V
Output voltage	AC380V	AC220V
Stabilization accuracy	AC380V $\pm 1\sim 5\%$	AC220V $\pm 1\sim 5\%$
Bypass	Manual bypass	Manual bypass
Power frequency	50/60Hz	50/60Hz
Protection	overvoltage, undervoltage, overcurrent, fault	overvoltage, undervoltage, overcurrent, fault
Usage efficiency	$\geq 95\%$	$\geq 95\%$
Waveform distortion	No additional waveform distortion	No additional waveform distortion
Response speed	$\leq 1.5\text{S}$	$\leq 1.5\text{S}$
Insulation resistance	$\geq 10\text{M}\Omega$	$\geq 10\text{M}\Omega$
Electrical strength	power frequency sine wave voltage	power frequency sine wave voltage

	2000V1min, no breakdown or flashover phenomenon	2000V1min, no breakdown or flashover phenomenon
Voltage regulation method	Three phase simultaneous regulation	Single-phase regulation
Cooling method	AN/AF	AN/AF
Conforming to standard	JB/T8749.1 JB/T8749.8	JB/T8749.1 JB/T8749.8
Sound level	> 70dB (A)	> 70dB (A)

4、 Display screen operation function



Before using this product, please first understand the content displayed on the display screen, as well as the functions and location of each button on the display screen.

4.1. Voltage switching: Press this button to switch and display the current voltage values of AB, BC, and CA phases for input and output.

4.2. Manual and automatic keys: Press this key to switch between manual voltage regulation or automatic voltage

regulation modes. When switching to manual voltage regulation, pressing the up button can increase or decrease the output voltage. Pressing the down button can also increase or decrease the output voltage, and can also add or subtract values in the settings; When switching to automatic mode, the voltage regulator enters the automatic voltage regulation state (it must be switched to automatic mode when the voltage regulator is operating normally).

4.3. Up and down keys: This key can be used to increase or decrease pressure, as well as to increase or decrease values during the various parameter settings.

4.4. Setting key: This key is the unlock key (before setting parameters, you must first press this key to unlock, otherwise parameter settings cannot be changed), and this key is also a menu selection. If parameter settings are changed, you must first press this key for menu selection before proceeding with parameter settings.

4.5. Confirmation key: This key is used to confirm the parameters after setting. Once for each menu setting, if the confirmation key is not pressed after setting the parameters, the setting is invalid.

5、 Parameter settings

When a user wants to change or view a certain parameter, first press and hold the setting button for 5-10 seconds. When a beep is heard, the control operation program is unlocked, and parameter changes or views can be made at this time. To change or view parameters, please follow the steps below.

5.1. Press the setting button once, and 380 will be displayed at the input and F-1 will be displayed at the output. This is to adjust the voltage stabilization value. The default is to output a stable voltage value of 380V. At this time, you can press the up or down button to adjust the required voltage value (the adjustment value should not exceed $\pm 5\%$ of the default voltage. If the default value is increased, the overvoltage protection value should be adjusted accordingly. In principle, the overvoltage protection value is $+10\%$ of the default output voltage). After adjustment, press the confirm button to save, At this point, it has been saved and returned to the main interface.

5.2. Press the setting button twice, and 420 will be displayed at the input and F-2 will be displayed at the output. This is the overvoltage protection value for adjusting the output voltage. The default is output voltage of 420V overvoltage protection. At this time, you can press the up or down button to adjust the desired value. After adjustment, press the confirm button to save. At this point, it has been saved and returned to the main interface.

5.3. Press the setting button three times, and 260 will be displayed at the input and F-3 will be displayed at the output. This is to adjust the output undervoltage protection value. The default is output voltage of 260V undervoltage protection. At this time, you can press the up or down button to adjust the desired value. After

adjustment, press the confirm button to save. At this point, it has been saved and returned to the main interface.

5.4. Press the setting button 4 times, where 010 is displayed at the input and F-4 is displayed at the output. (010) indicates that the output voltage stabilization accuracy is $380V \pm 10V$, which is the output voltage stabilization accuracy. The default is $380V \pm 10V$. At this time, you can press the up or down button to adjust the required value (the stabilization accuracy is one level every 5V). After adjustment, press the confirm button to save. At this time, it has been saved and returned to the main interface.

5.5. Press the setting button 5 times, and the input will display 000, while the output will display F-5. This is the password set by the manufacturer for this machine, and users are not allowed to change it. Any unauthorized changes will cause the voltage regulator to crash, and after the crash, the unit will no longer function properly.

5.6. Press the setting button 6 times, and the input will display 000, while the output will display F-6. This is the unlock code that the manufacturer has set for this machine after setting the password. Users are not allowed to change it. Any unauthorized changes will cause the voltage regulator to crash, and after the crash, the unit will no longer function properly.

5.7. Press the setting button 7 times, and F-7 will be displayed at the input and numerical value will be displayed at the output. Here is the selection of transformer ratio, which is set by the manufacturer based on the rated power of the voltage regulator and cannot be changed by the user.

5.8. Press the setting button 8 times, and F-8 will be displayed at the input and numerical value will be displayed at the output. This is the current overload protection setting, which is set by the manufacturer based on the rated power of the voltage regulator. If the load current exceeds the set current protection value during use, the machine will cut off the output to protect the machine. The user needs to reduce the load and restart the machine for normal use, This parameter cannot be changed by the user.

6、 LCD display fault codes

When the product malfunctions, the output displays "E" as a motor fault;

The output shows "P" as overload protection;

The output shows "H" as overvoltage protection;

The output shows "L" as undervoltage protection.

7、 Voltage viewing

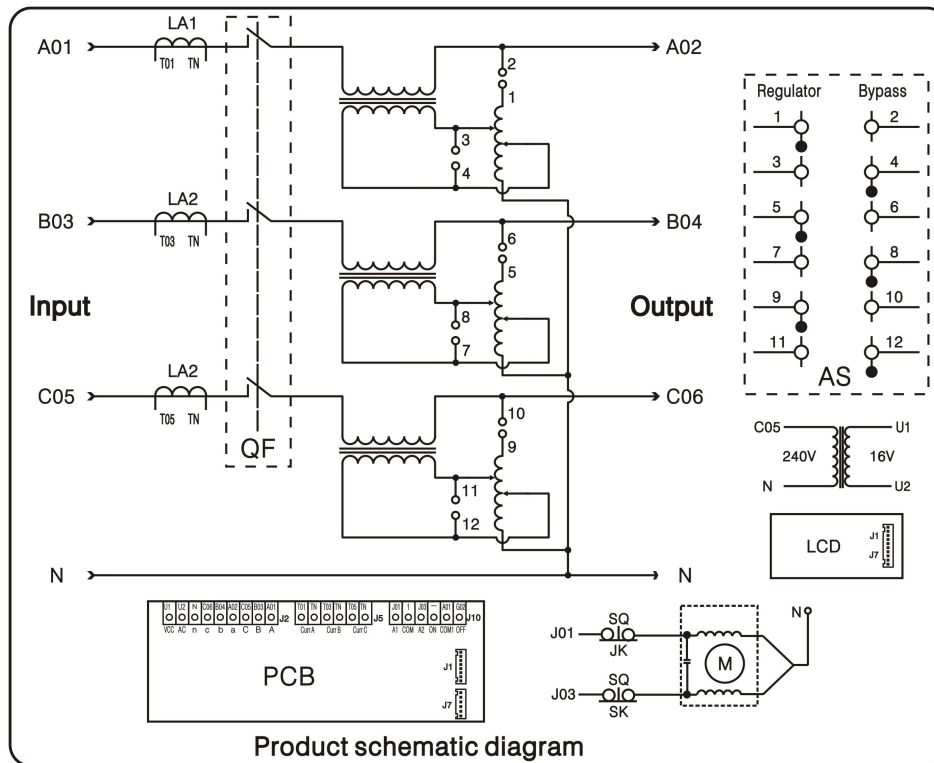
The input and output voltages displayed on the main interface are the voltages between phases A and B. If you want to view the voltages of phases B, C, or C, A, press the voltage switch button to view them. After viewing, it will automatically switch to the default voltages of phases A and B.

8、 Specification parameters

PRODU CT NAME		CAPACI TY	INPUT VOLTAGE AND CURRENCY		OUTPUT VOLTAGE AND CURRENT		OVERALL DIMENSIONS	WEIGHT
		KVA	V	A	V	A	(W*L*H) mm	Kg
Three phase		30	AC304V~4 56V	45	AC380V	45	600*880*1020	215
		50		75		75		230
		63		95		95		245
		80		121		121	620*950*1080	270
		100		152		152		290
		125		190		190		315
		150		242		242	650*1050*1180	430
		200		303		303		460
		250		378		378		620
		315		477		477	700*1200*1180	680
		350		530		530		730
		400		606		606		890
		500		757		757	780*1250*1450	1050
		600		909		909		1200
Single phase		30	AC176V~2 64V	136	AC220V	136	600*880*1020	180
		50		227		227		200
		63		286		286		215
		80		364		364	620*950*1080	245
		100		454		454		260
		125		568		568		290
		150		727		727	650*1050*1180	390
		200		909		909		420

Note: Due to the continuous updating and improvement of the company's products, if there are any changes in numerical values or functions, no further notice will be given. Please refer to the actual product.

9、 Product schematic diagram



10、 Usage and Maintenance

10.1. Visual inspection

- Each unit has undergone various functional tests before leaving the factory. Users should conduct the following inspections after receiving the voltage regulator.
- Is there any serious damage or damage to the surface of the product packaging box due to careless shipping? If so, please refuse and contact logistics/shipping company to file claim.
- After the product is unpacked, determine whether the appearance and internal damage or deformation of the product cabinet were caused by careless shipping. If so, please contact shipping company to file claim.
- According to the sales contract, confirm that the parameters related to the regulated power supply still comply with the product you ordered.

10.2. Safe usage steps

- Before starting the machine for the first time, check whether the local power grid voltage and frequency meet the product's usage parameters. Connect according to the wiring markings inside the machine, do not make mistakes, and ensure reliable grounding. Ensure that the main switch of the input power supply in the regulated power supply is set to the "OFF" position.
- After the preparation work is complete, first send the supply power to the voltage regulator. At this time, the

voltage regulator display screen has been turned on and the input voltage value is displayed, and the output voltage is "0". Next, turn on the main switch of the power supply and place it in the "ON" position. At this time, there is an output voltage value. Check whether the input and output voltage values comply with the product parameters.

- After gradually loading, the product installation and first use are completed, but take care not to overload. When not carrying a load, please turn off the main power switch and use it again to directly turn on the main power switch.
- On the left side of the main power switch, there is a "voltage stabilization and bypass conversion" switch. The conversion switch is always set to voltage stabilization when the product is in normal working state. The bypass switch is set to work by bypassing when the input voltage is normal and does not require voltage stabilization or when the machine fails but cannot be stopped.

10.3. Precautions

- Please refer to the "Product Usage Conditions" above for the product placement location.
- The product must be grounded safely and reliably, and cannot be short circuited to zero to ensure personal safety.
- The product generates a certain amount of heat during use, and it is strictly prohibited to cover it with any objects which may affect normal heat dissipation and cause damage.
- It is a normal phenomenon for external voltage fluctuations to cause friction sound between the servo motor transmission mechanism and carbon brushes during voltage regulation of products.
- Reasonably select the input and output wire area based on the power of the voltage regulator or normal working current, and generally use 2-5A/mm for copper wires according to the length of the distance ² Calculate to halve the aluminum wire.
- When the product malfunctions or the input power frequency is unstable, if urgent power needs to be used, please use a voltage regulator or bypass conversion switch. Place the conversion switch in the bypass state for temporary use. At this time, the output voltage is not through the voltage regulator, and the input and output voltages are equal.

10.4. Maintenance and upkeep

- This regulated power supply does not require daily maintenance and upkeep, but regular maintenance and upkeep are necessary to extend the service life of the regulated power supply and detect potential faults that

may occur during long-term use of the product as soon as possible.

- Turn off the load first and place the main power switch in the "OFF" position. Cut off the input power of the regulated power supply;
- Open the fenders on both sides of the cabinet, use a tip cleaner or industrial air gun to remove dust from the surface and interior of the product, and then use a soft cloth with a small amount of alcohol to clean any oil stains on the product;
- Visually and manually check whether the fasteners of this machine are loose or have poor contact, moisture, oxidation, high temperature deformation, etc. If any problems are found, please handle them in a timely manner or contact the manufacturer's customer service;
- Check the wear of the carbon brush and whether the contact between the carbon brush and the copper column is good. If they are found to be in poor condition, replace with like parts;
- Power on and test the working status of the stable power transmission mechanism, check the input voltage accuracy, set the display screen to manual mode, press the up and down buttons to check the working status of the transmission mechanism.

Note: Do not perform maintenance while the machine is in operation!

THESE INSTRUCTIONS MAY NOT COVER ALL DETAILS OR VARIATIONS OF THIS PRODUCT FOR YOUR EQUIPMENT OR INSTALLATION REQUIREMENTS. SHOULD FURTHER INFORMATION NOT COVERED BY THESE INSTRUCTIONS BE REQUIRED, PLEASE CONTACT LARSON ELECTRONICS BY EMAIL AT SALES@LARSONELECTRONICS.COM OR BY PHONE AT 1-877-348-9680 FOR FURTHER ASSISTANCE.

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