USER MANUAL — WIND AND SOLAR BATTERY BOX

CAUTION
THINK SAFETY FIRST

The warnings, precautions, and instructions discussed in this instruction guidelines cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator. **While Cutting Edge Power is proud to be an American company dedicated to producing a high quality product, we are not responsible for any property or personal damage to you or your device(s) due to use/misuse of this product. Always use good judgement and never try to modify or disassemble this product.**

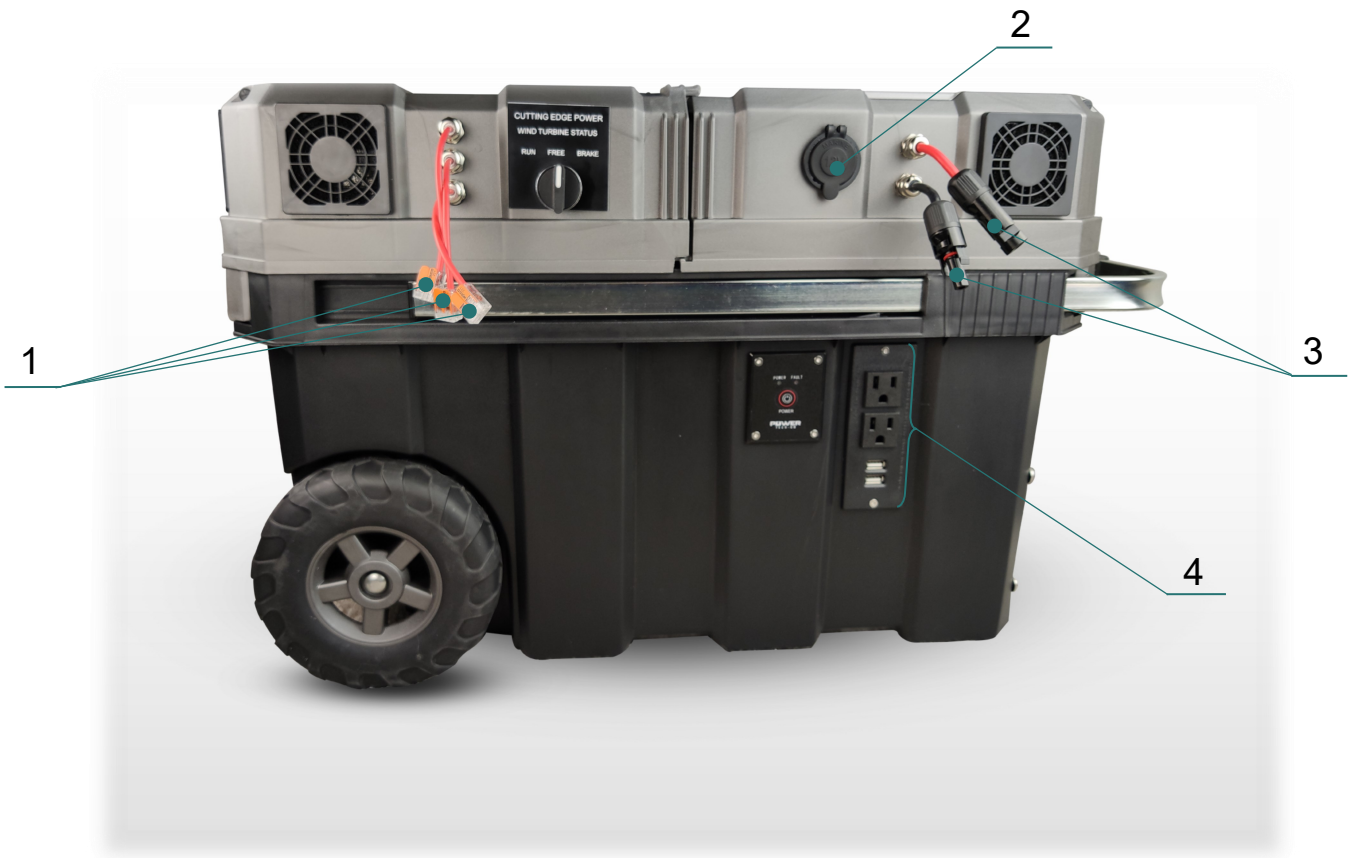
INPUTS AND OUTPUTS

1. Wind Turbine Input

2. 12V Socket Input/Output

3. Solar Panel Input

4. AC & USB Outputs vary according to inverter, if equipped.



WIND SIDE INSTRUCTIONS

Connect your 12VDC NOMINAL battery with the provided 5/16" ring terminal connectors.

"BRAKE" should be used when raising and lowering the Wind Turbine. Or, if damaging winds are imminent. Use extreme caution if you attempt to brake a turbine that's rotating.

Connect your 3 phase Wind Turbine (up to 400W), to the 3 input wires on the wind side. There isn't an specific order. The best way to splice wires is to solder them and insulate with heat shrink. We have supplied Wago quick connectors in case you are in a hurry. These Wago connectors should only be used temporarily and they are not intended to be used for a permanent installation.

To connect your Wind Turbine using Wago connectors, please, follow the instructions below.

Measure and strip your Wind Turbine wires. Refer to the length guide printed on the side of the WAGO connector.

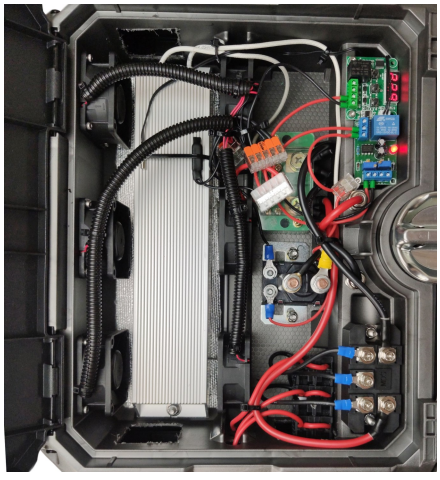
Lift lever to open clamping unit and insert the turbine wire. (Accepts wire size: 24-14 AWG)

Lower the lever to close the clamping unit. Your wire is now connected!

WIND SIDE INSTRUCTIONS

Set the switch to “RUN” when you are ready to use the Wind System.

The FREE setting in the switch disconnects and enables the wind turbine to “free turn”. (Free wheeling a wind turbine is generally only for temporary or testing purposes.)



The fans will automatically start when needed. When the battery approaches the maximum voltage, the charge controller will disconnect the battery. When the battery voltage is low, the controller will automatically cut off the load from the system. The charge controller also will turn on and off the dump load resistor to prevent over-loading the battery.

WIND SIDE CHARGE CONTROLLER GENERAL INFORMATION

This charge controller is designed to engage and disengage excess power dissipation (dumping) from your wind turbine, by measuring the battery voltage of your system to protect your battery from being over-charged.

How it works

The charge controller “package” consists of a control board and a 12 volt relay. The larger contacts on the relay are normally open. When 12 volts is applied to the smaller contacts on the relay, the large contacts are closed and current is able to pass through the large contacts. In the general theory of this wind turbine charge controller, when current is allowed to pass through the large relay terminals, the current will continue through dump load resistor(s) and the power dissipation is “engaged”. You can follow this in the wiring diagram in this manual.

You will be able to hear a click when the relay engages and disengages, so take note on where you should place this battery box. (It might not be a good idea to mount it inside a cabin or bedroom).

Please note: This charge controller is designed to operate with a 12 volt battery only. It will be destroyed by 24V or 48V voltage. If you need to use this with a 24V or 48V system, you can do so by sampling only one (1) of the 12V batteries. This is not recommended but it can work if needed.

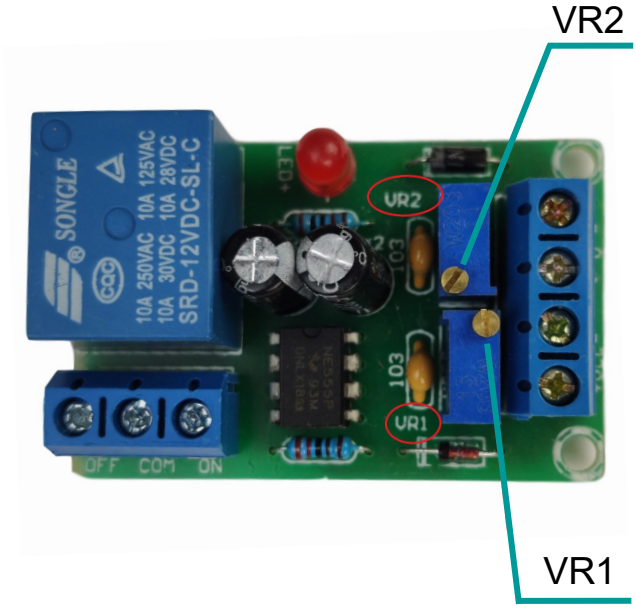
WIND SIDE CHARGE CONTROLLER PROGRAMMING

This unit will arrive pre-programmed. Changing the settings is not recommended.

Default charge controller settings	14.2	High voltage (Dumping engaged)
	12.9	Low voltage (Dumping disengaged)

As stated before, leaving these default settings is highly recommended.

If you need to adjust these settings, you may do so using the 1/16 slotted fine adjustment screws from the front of the charge controller. Take extreme care when turning these fine adjustment screws. Most adjustments only need around ¼ turn.

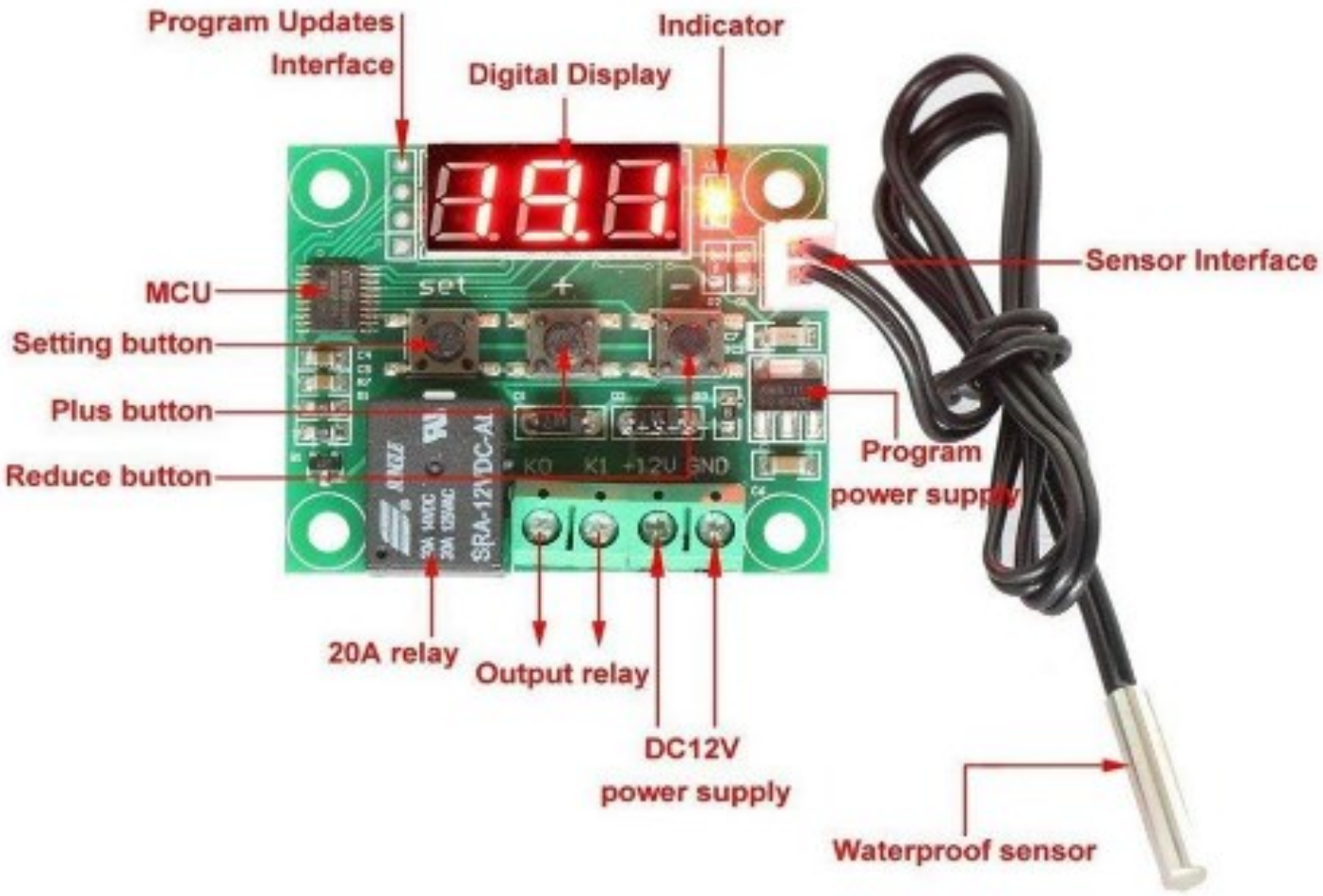


The VR2 screw adjusts the low voltage setting. After the controller reaches the high setting, it will wait until the low voltage setting is reached to resume charging the battery. Clockwise is lower and counterclockwise is higher.

The VR1 screw adjusts the high voltage setting. This is the setting when dumping will be engaged. Clockwise is lower and counterclockwise is higher.

WIND SIDE SECONDARY TEMPERATURE SAFETY CONTROL

A secondary high temperature safety control is supplied with this battery box. It is installed at our factory with no function. The probe continually measures the dump load resistor temperature. This device is intended to be used as a redundant temperature safety control. It includes relay contacts that can be wired to an external alarm, buzzer, light, fan or any 12V accessory.



WIND SIDE SECONDARY TEMPERATURE SAFETY CONTROL

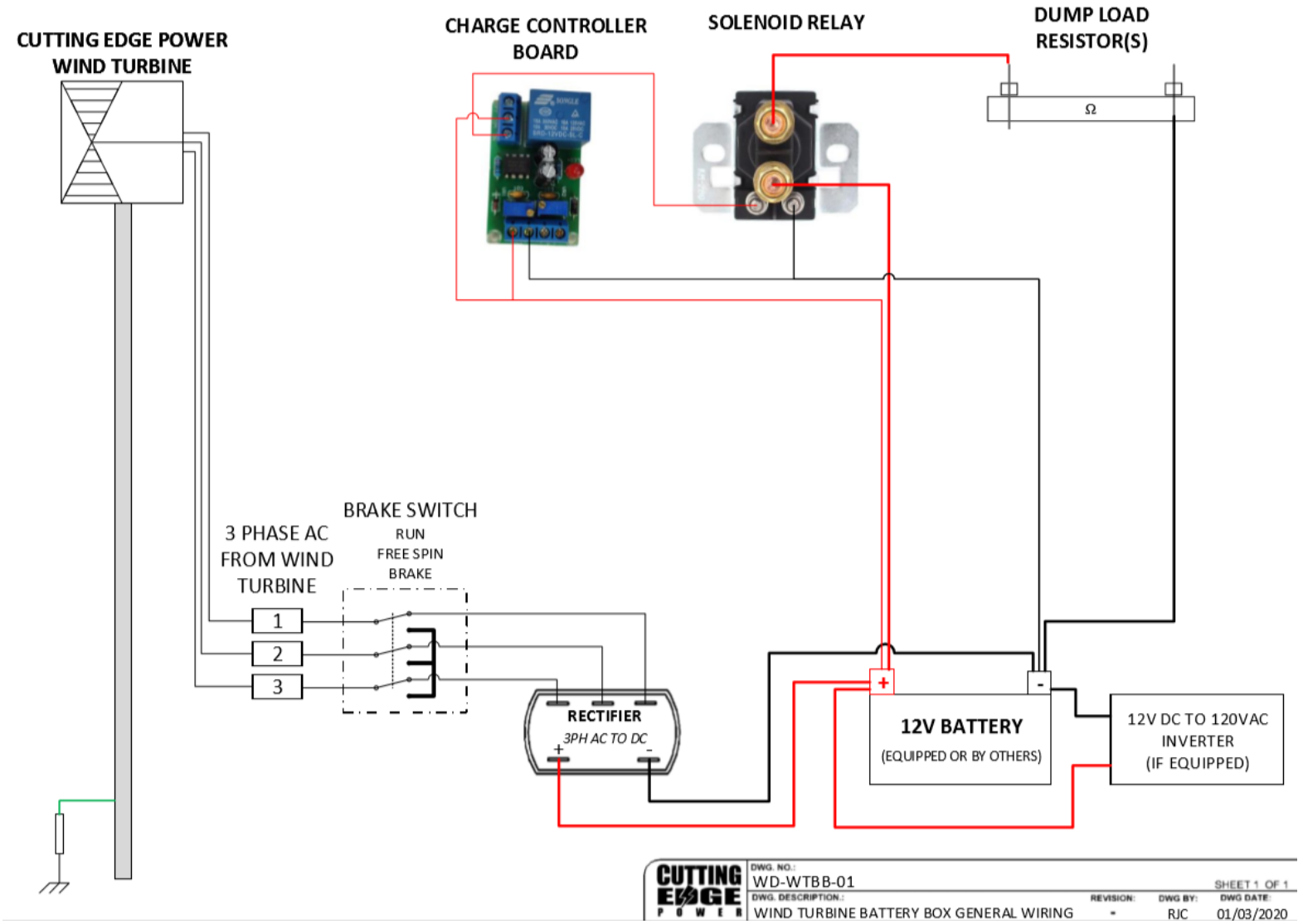
Setting Chart			
Long press SET go to the menu Long press +- will reset to default value			
Code	Description	Range	Default value
P0	Heat/cooking	C/H	C
P1	Backlash set	0.1-15	2
P2	Upper limit	110	110
P3	Lower limit	-50	-50
P4	Correction	-7.0~7.0	0
P5	Delay start time	0-10 min	0
P6	High temp alarm	0-110	OFF

Specifications							
Temp Control mode	Temp Range	Control Accuracy	Refresh Rate	High Temp Protection	Supply Voltage	Output Power	Measurement Input
ON / OFF	-50°C to 110°C	0.1 degree	0.5s	0°C to 110°C	12VDC	20A relay	NTC (10K 0.5%) Sensor

WIND SIDE SPECIFICATIONS

Wiring	Premium marine grade 200°C rated silicone insulated wire
Battery voltage	12VDC NOMINAL ONLY
Maximum rated power input	400W
Maximum charging current	35A
Configuration	3 phase AC
Dump load normal operating temperature	70°C (158°F)
AC Output	Refer to inverter manual
Maximum ambient operating temperature	30°C (86°F)

WIND SIDE WIRING DIAGRAM



CUTTING EDGE POWER	DWG. NO.: WD-WTBB-01				SHEET 1 OF 1
	DWG. DESCRIPTION.: WIND TURBINE BATTERY BOX GENERAL WIRING	REVISION: -	DWG BY: RJC	DWG DATE: 01/03/2020	

SOLAR SIDE INSTRUCTIONS

Connect your 12VDC / 24VDC NOMINAL battery with the provided 5/16” ring terminal connectors.

Plug your solar panel(s) to the MC4 connectors. You can use any size solar panel, any combination, up to 100A (0-1200W) (whichever limitation comes first). For example, a max of qty (4). 300W 12V panels. Or, you could also use it with qty (1) 100W 12V solar panel.

The solar panels can be wired in series or parallel, or combination of both. Refer to the charge controller manual for further information.

NOTE: Maximum solar input voltage is tipically 23V for charging a 12V battery. And 46V for charging a 24V battery. Not following these guideliness could result in damage to the charge controller.

12V Cigarette socket input is meant for Cutting Edge Power Mini Wind Turbines. Those use this socket to charge your battery. 30A circuit breaker protects the 12V socket and control circuit. This socket is also an output.

The fans will automatically start when needed. When the battery approaches the maximum voltage, the charge controller will disconnect the battery. When the battery voltage is low, the controller will automatically cut off the load from the system. Refer to charge controller manual for further information.

SOLAR SIDE SPECIFICATIONS

Built-in short-circuit protection, open-circuit protection, reverse polarity protection, and over-load protection.

Wiring	Premium marine grade 200°C rated silicone insulated wire
Battery voltage	12VDC / 24VDC NOMINAL
Maximum rated power input	1200W at 12VDC 2400W at 24VDC
Maximum rated working current	100A
Maximum solar voltage input	23VDC for 12V battery 46VDC for 24V battery
Circuit breaker	30A
AC Output	Refer to inverter manual
USB Output	Charge controllers' USB output:5V/2.4A
12V socket	12V, 10A, 80W
Maximum ambient operating temperature	30°C (86°F)

SAFETY INFORMATION

- This product is not waterproof. It is designed to be used indoors, or outdoors temporarily without rain or water ingress.

- Follow the directions for the charge controller and the inverter. Manuals are included in your package.

- Check the wattage of any device before using this item to power it. And make sure your inverter can handle it. Some rechargeable appliances may damage the Power Inverter or the appliance. When first using a rechargeable device, check its temperature for the first 10 minutes. If it becomes abnormally hot, stop using and contact customer service.

- Maximum solar input voltage is typically 23V for charging a 12V battery. And 46V for charging a 24V battery. Not following these guidelines could result in damage to the charge controller.

- Do not touch the dump load resistor. A temperature of only 44°C can cause skin burns. The dump load resistor may run up to 70°C during normal operation. Therefore, it is extremely important to keep hands, objects etc. away from the resistor.

- Keep away from any combustible material.

- Allow adequate ventilation. Keep the box open if possible, while using it. This unit generates heat; without proper ventilation it may overheat, potentially causing a fire hazard.

- Leave the inverter power switch “off” whenever the box is not in use to help prevent draining and perhaps damaging the battery.

- Switch any device to be powered off before plugging into this device.

- Keep it away from children.

- Inspect before every use; do not use if parts are loose or damaged.

- Use as intended only.

CUTTING EDGE
POWER

"Innovative Renewable Energy Solutions"

Our name is Cutting Edge Power because we will always remain at the forefront of technology in our industry. Using cutting edge manufacturing techniques and cutting-edge design tools, we are able to produce the highest quality products for our customers at the lowest prices. We also have a full line of cutting-edge monitoring electronics for wind and solar systems.

All of our Cutting-Edge Power product design and manufacturing is located in Dallas, TX & Houston, TX USA. However, we are proud to compete in the global market with sales and service representatives in Canada and Latin America.

Cutting Edge Power provides the highest quality solar energy and wind turbine products. Headquartered in Dallas TX, a 12.5-acre research facility in Honey Grove TX is used to evaluate various types wind and solar energy systems.

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