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› LVSED TAL CM-30A/12/24/48V MPPT Solar Controller User Manual

## LVSED TAL CM-30A/12/24/48V

# LVSED TAL CM-30A/12/24/48V MPPT Solar Controller User Manual

Model: CM-30A/12/24/48V | Brand: LVSED TAL

## 1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your LVSED TAL CM-30A/12/24/48V MPPT Solar Controller. This device is designed for waterproof photovoltaic power generation control, ensuring stable and reliable performance for your solar energy system. Please read this manual thoroughly before installation and use.

## 2. SAFETY INSTRUCTIONS

- Ensure all connections are secure and correct before powering on the system.
- Do not attempt to disassemble or repair the controller yourself. Refer to qualified personnel.
- Install the controller in a well-ventilated area to prevent overheating.
- Avoid exposing the controller to direct sunlight or extreme temperatures.
- Always disconnect power from solar panels and batteries before performing any maintenance or wiring.
- Wear appropriate personal protective equipment (PPE) when working with electrical systems.

## 3. PRODUCT OVERVIEW

The LVSED TAL CM-30A/12/24/48V MPPT Solar Controller is a robust device designed to optimize power harvesting from your solar panels and efficiently charge your battery bank. Key features include:

- **Stability:** Engineered for long-term stable operation.
- **Battery Compatibility:** Supports various battery types and can be charged by solar, utility, or generator power. It allows flexible scheduling of inverter charging and discharging times.
- **Versatile Application:** Ideal for use as a backup power supply during utility outages.

- **LCD Display:** Features an intuitive LCD display for easy access to operating parameters, including battery status and operating temperature.
- **Comprehensive Protections:** Includes temperature-controlled cooling fan, low and high voltage protection, overload protection, short circuit protection, internal fuse, and battery reverse connection protection.



**Figure 3.1:** Front view of the LVSEDTAL CM-30A/12/24/48V MPPT Solar Controller, showing the LCD display and connection terminals.

model		CM-4830A	CM-4840A	CM-4850A	CM-4860A	CM-4880A	CM-48100A	
Charging mode		MPPT automatic maximum power point tracking						
Charging method		Three stages: constant current (MPPT), balanced charging, and float charging						
System Type	12V/124V/148V	Automatic recognition/manual setting						
System identification voltage range	12V system	DC9V-DC15V						
	24V system	DC18V-DC30V						
	48V system	DC36V-DC60V						
soft start time	12V/124V/148V	<10s						
Dynamic response recovery time	12V/124V/48V	<500us						
static power	12V/124V/48V	≤2W						
machine efficiency	12V/124V/48V	≥96.5%						
Utilization rate of photovoltaic modules	12V/124V/48V	≤99%						
Input characteristics	MPPT operating voltage range	12V system	DC18V-DC150V					
		24V system	DC34V-DC150V					
		48V system	DC65V-DC150V					
	Maximum input power of solar panels	12V system	420W	570W	700W	900W	1100W	1400W
	24V system	840W	1130W	1400W	1700W	2200W	2800W	
	48V system	1650W	2270W	2800W	3400W	4400W	5600W	
Output characteristics	Optional battery types	12V/24V/48V						
	current limiting protection	12V/24V/48V	32A	42A	52A	62A	82A	102A
	temperature accuracy	12V/24V/48V	-0.02%/C					
	Temperature compensation output adjustment precision	12V/24V/48V	14.2V (maximum temperature 25 °C)*0.3					
	12V/24V/48V	≤±15%						
protection	Input low voltage protection	Reference input characteristics						
	Input high voltage protection	Reference input characteristics						
	short circuit protection	After 5 trial runs, it will enter a protected state and restart to restore						
	Temperature protection	90°C						
	Temperature rise protection	Reduce power output when exceeding 85 °C						
Other parameters	.....	<50dB						
	Heat dissipation method	Forced air cooling, fan speed adjusted according to temperature						
	Protection level	IP21						
	humidity	0-90% 6BH (non condensing)						
photovoltaic Module configuration	Photovoltaic module configuration	Photovoltaic module load voltage (recommended value)						
	12V system	18V-60V (30V module * 1 set, 36V module * 1 set)						
	24V system	36V-72V (2 sets of 30V modules, 2 sets of 36V modules)						
	48V system	72V-144V (30V module * 3 sets, 36V module * 3 sets)						

Figure 3.2: Side view of the LVSEDTAL CM-30A/12/24/48V MPPT Solar Controller, illustrating the heat sink fins for efficient heat dissipation.

## 4. SETUP

Follow these steps for proper installation of your solar controller:

1. **Mounting:** Choose a suitable location for mounting the controller. Ensure it is protected from direct weather exposure (though waterproof, optimal performance is achieved in a sheltered environment) and has adequate ventilation.
2. **Battery Connection:** Connect the battery to the controller's battery terminals first. Ensure correct polarity (+ to + and - to -). The controller will automatically detect the system voltage (12V, 24V, or 48V).
3. **Solar Panel Connection:** Connect the solar panels to the controller's PV input terminals. Again, observe correct polarity. Ensure the open-circuit voltage of your solar array does not exceed the controller's maximum input voltage.
4. **Load Connection (Optional):** If using the controller's load output, connect your DC loads to the designated load terminals. Do not exceed the maximum rated current for the load output.
5. **Verify Connections:** Double-check all wiring for tightness and correct polarity before proceeding.

## 5. OPERATING INSTRUCTIONS

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Once installed and powered, the controller will begin operation. The LCD display provides real-time information:

- **Monitoring:** The LCD displays parameters such as battery voltage, charging current, solar panel voltage, load current, and operating temperature.
- **Charging Stages:** The controller utilizes a three-stage charging method: constant current (MPPT), balanced charging, and float charging to optimize battery health and lifespan.
- **Parameter Adjustment:** Refer to the on-screen menu for any adjustable parameters, such as battery type or load control settings. Use the navigation buttons to browse and modify settings as needed.
- **Error Codes:** In case of a fault, the display may show an error code. Consult the troubleshooting section for guidance.

## 6. MAINTENANCE

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Regular maintenance ensures the longevity and optimal performance of your solar controller:

- **Cleaning:** Periodically clean the controller's exterior with a dry cloth. Ensure the display remains clear and readable. Do not use harsh chemicals or abrasive cleaners.
- **Connections Check:** Annually inspect all wiring connections for tightness and corrosion. Loose connections can lead to power loss or overheating.
- **Ventilation:** Ensure that the cooling fan and ventilation openings are free from dust and debris to maintain efficient heat dissipation.
- **Environmental Check:** Verify that the installation environment remains within the specified temperature and humidity ranges.

## 7. TROUBLESHOOTING

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If you encounter issues with your controller, refer to the following common problems and solutions:

- **No Display/No Power:** Check battery connections and voltage. Ensure the battery is adequately charged. Verify the internal fuse.
- **No Charging:** Check solar panel connections and ensure they are receiving sufficient sunlight. Verify solar panel voltage. Ensure the controller is not in a fault state.
- **Low Charging Current:** Inspect solar panels for shading or dirt. Check for loose connections. Ensure battery

voltage is not already high.

- **Overheating:** Ensure adequate ventilation around the controller. Clean any dust from the cooling fan and heat sinks. Reduce load if possible.
- **Error Codes:** Consult the specific error code displayed on the LCD with the manufacturer's support documentation (if available) or contact customer support.

For persistent issues, contact LVSEDTAL customer support.

## 8. SPECIFICATIONS

The following table details the technical specifications for the LVSEDTAL MPPT Solar Controller series, including the CM-30A/12/24/48V model.

Category	Parameter	Model					
		CM-4830A	CM-4840A	CM-4850A	CM-4860A	CM-4880A	CM-48100A
Charging	Charging Mode	MPPT automatic maximum power point tracking					
	Charging Method	Three stages: constant current (MPPT), balanced charging, and float charging					
System Type	12V/124V/148V	Automatic recognition/manual setting					
	12V system identification voltage range	DC9V-DC15V					
	24V system identification voltage range	DC18V-DC30V					
	48V system identification voltage range	DC36V-DC60V					
Response Time	Soft start time (12V/124V/148V)	<10s					
	Dynamic response recovery time (12V/124V/48V)	<500us					
Efficiency	Static power (12V/124V/48V)	<2W					
MPPT Efficiency	Machine efficiency (12V/124V/48V)	≥96.5%					
	Utilization rate of photovoltaic modules (12V/124V/48V)	<99%					
Input Characteristics	MPPT operating voltage range (12V system)	DC18V-DC150V					
	MPPT operating voltage range (24V system)	DC34V-DC150V					
	MPPT operating voltage range (48V system)	DC65V-DC150V					
	Maximum input power of solar panels (12V system)	420W	570W	700W	900W	1100W	1400W
	Maximum input power of solar panels (24V system)	840W	1130W	1400W	1700W	2200W	2800W
	Maximum input power of solar panels (48V system)	1650W	2270W	2800W	3400W	4400W	5600W
	Current limiting protection (12V/24V/48V)	32A	42A	52A	62A	82A	102A

Category	Parameter	Model					
		CM-4830A	CM-4840A	CM-4850A	CM-4860A	CM-4880A	CM-48100A
Output Characteristics	Temperature accuracy (12V/24V/48V)	-0.02%/°C					
	Temperature compensation output adjustment (12V/24V/48V)	14.2V (maximum temperature 25°C)*0.3					
	Precision (12V/24V/48V)	≤±15%					
Protection	Input low voltage protection	Reference input characteristics					
	Input high voltage protection	Reference input characteristics					
	Short circuit protection	After 5 trial runs, it will enter a protected state and restart to restore					
	Temperature protection	90°C					
	Temperature rise protection	Reduce power output when exceeding 85°C					
Other Parameters	Heat dissipation method	<50dB, Forced air cooling, fan speed adjusted according to temperature					
	Protection level	IP21					
	Humidity	0-90% 6BH (non-condensing)					
	Photovoltaic module configuration	Photovoltaic module load voltage (recommended value)					
	Photovoltaic Module Configuration (12V system)	18V-60V (30V module * 1 set, 36V module * 1 set)					
	Photovoltaic Module Configuration (24V system)	36V-72V (2 sets of 30V modules, 2 sets of 36V modules)					
	Photovoltaic Module Configuration (48V system)	72V-144V (30V module * 3 sets, 36V module * 3 sets)					

## 9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the documentation included with your purchase or contact LVSEDTAL customer service directly. Keep your purchase receipt for warranty claims.