

※ Thank you for selecting the Tracer LPLI series lithium battery MPPT solar charge controller with built-in LED driver. Please read this manual carefully before using the product and pay attention to the safety information.

Tracer-LPLI Lithium Battery Solar Charge Controller ---with built in LED Driver

1. Safety Information

- Read all of the instructions in the manual before installation.
- DO NOT disassemble or attempt to repair the controller.
- Install external fuse or breaker as required.
- Do disconnect the solar module and fuse/ breakers near to battery before installing or moving the controller.
- Power connections must remain tight to avoid excessive heating from a loose connection.
- Only charge batteries that comply with the parameters of controller.
- Battery connection may be wired to one battery or a bank of batteries.
- Risk of electric shock, the PV and load can produce high voltages when the controller is working.

2. Overview

The Tracer LPLI series lithium battery MPPT solar charge controller combines solar charge controller and LED constant current driver into one unit which is ideal for solar LED Lighting, especially when dimmer function is needed. The advanced Maximum Power Point Tracking charging methods enables the system charging and discharging management to obtain the most radical optimization. Increase the system flexibility, yet lower down the system cost. The features are listed below:

- Adopt high quality components of ST,IR and Infineon, make sure product using lifespan
- Wide working environment temperature(-40℃~60℃)
- Apply to lithium battery
- Lithium battery self-activating function
- Lithium battery low temperature protection function
- Load reduce power automatically
- Maximum conversion efficiency of 98%
- Advanced Maximum Power Point Tracking (MPPT) technology, with tracking efficiency no less than 99.5%
- Ultra-fast tracking speed and guaranteed tracking efficiency
- Accurately recognizing and tracking of multiple power points
- 12/24VDC automatically identifying system voltage or user-defined working voltage
- Digital precision constant current control and the control accuracy are less than ±2%
- Maximum output efficiency of 96%
- PV and Load power limitation function
- The output current can be adjusted among the rated power and current range
- Monitoring and setting parameter via Mobile APP, PC Monitor setting software with RS485 communication interface.
- Aluminum housing for better cooling
- Real-time energy statistics function
- IP68 waterproof degree
- Long lifespan design, five years warranty

3. Product Features



Figure 1 Tracer1305/26**/39**LPLI



Figure 2 Tracer52**LPLI

①	Charging Status LED indicator	⑤	Temperature Sensor
②	Battery Status LED indicator	⑥	PV Positive and Negative Wires
③	Infrared Receiver Module	⑦	Battery Positive and Negative Wires
④	Infrared LED	⑧	Load Positive and Negative Wires



Optional Accessory:

Name: Fixed Plate
Quantity: Four
Overall dimension: 20mm×18mm×6mm
Mounting hole size: Φ3.5mm

4. Wiring

• Reference for Serial connection of LED

System Voltage	Serial connection	Min. Output Voltage	Max. Output Voltage
12V	5~18 LED	15V	60V
24V	10~18 LED	30V	60V



NOTE: The above one LED (1W, 3.3V) is calculated. If the user uses the unconventional LED, The actual LED voltage must less than the Max. Load Output Voltage.



WARNING: DO NOT electric shock! The product built-in boost LED driver, the output voltage is higher than the human safety voltage.

• Connection Order

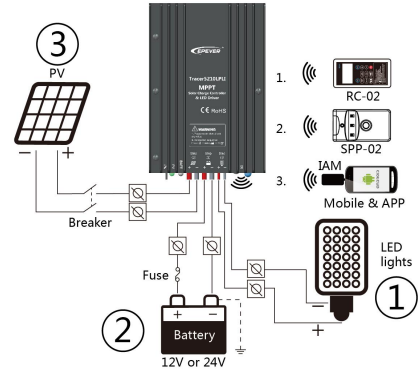


Figure 3 Wiring

- 1) Connect components to the charge controller in the sequence as shown above and pay much attention to the "+" and "-". Please don't insert the fuse or turn on the breaker during the installation. When disconnecting the system, the order will be reserved.
- 2) After power on the controller, check the battery LED indicator on the controller, it will be green. If it's not green, please refer to chapter 9.
- 3) Connecting a fuse in series through battery positive (+) in the circuit and the battery circuit fuse must be 1.25 to 2 times to the rated current. The installed distance is within 150mm.
- 4) The process of charging and discharging can't operate simultaneously, and the discharging process is prior to charging.

• Load self-test function

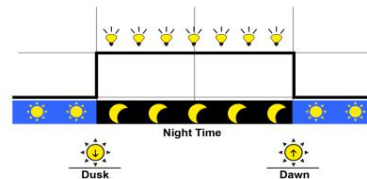
The load is ON when the controller power on 10seconds. After 10 seconds it will restore to set working mode.

5. LED Indicators

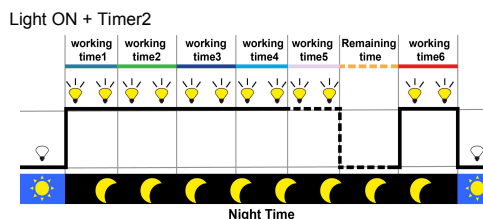
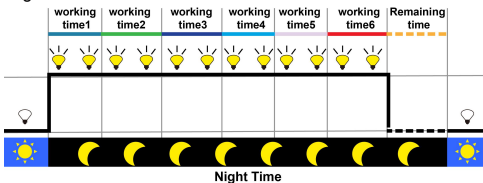
Indicator	Color	Status	Instruction
PV	Green	On Solid	PV connection normal but low voltage(irradiance) from PV, no charging
		OFF	No PV voltage(night time) or PV connection problem
	Green	Slowly Flashing(1Hz)	In charging
	Green	Fast Flashing(4Hz)	PV Over voltage
	Green	On Solid	Normal
BATT	Green	Slowly Flashing(1Hz)	Full
	Green	Fast Flashing(4Hz)	Over voltage
	Orange	On Solid	Under voltage
	Red	On Solid	Over discharged
	Red	On Solid	Low temperature
	Red	Fast Flashing(4Hz)	Battery Overheating

6. Load Working Mode

- 1) Manual Mode
- 2) Light ON/OFF(Default)



- 3) Light ON + Timer



- 4) Real-time Control

Control the load ON/OFF time through setting real-time clock.

5) Intelligent Power Mode

After the mode of intelligent power reduction is turned on and the capacity of the storage battery is lower than 50%, the LED load will make adjustment by automatically reducing the power in a linear manner according to the capacity of the storage battery, and meanwhile the load will operate based on the minimum value between the set value and the value after power reduction. Moreover, the mode of intelligent power reduction will be exited after charging is started on the next day.



NOTE: In the mode of Light ON/OFF and Light ON/Timer, the Load is turned on after 10Min. delay.

7. Setting Operation



There are three methods that it can realize controller load modes and parameters through IR function:

- 1) IR Remote Control—RC-02.
- 2) Super Parameter Programmer—SPP-02.

This method can realize one-key setting operation which is suitable for bulk quantity products setting or applied in the projects.

- 3) Mobile APP, IAM(Ir-Android-Micro).

APP software can be downloaded from the website of <http://www.epsolarpv.com>.

Note: Please refer to the user manual of handheld device.

8. Protection

Protection	Conditions	Status
PV Reverse Polarity	When the battery is correct connecting, the PV can be reversed.	The controller is not damage
Battery Reverse Polarity	When the PV is not connecting, the battery can be reversed.	
Battery Over Voltage	The battery voltage reaches to the OVD	Stop charging
Battery Over Discharge	The battery voltage reaches to the LVD	stop discharging
Battery Overheating	Temperature sensor is higher than 65℃	Output is OFF
	Temperature sensor is less than 55℃	Output is ON
Lithium battery Low Temperature (Default 0℃)	Temperature sensor is less than the low temperature value	Lithium battery stop charging
	Temperature sensor is higher than the low temperature value	Lithium battery charging
Load Short Circuit	Load current ≥ 2.5 times rated current One short circuit, the output is OFF 5s; Two short circuit, the output is OFF 10s; Three short circuit, the output is OFF 15s; Four short circuit, the output is OFF 20s; Five short circuit, the output is OFF 25s; Six short circuit, the output is OFF	Output is OFF Clear the fault: Restart the controller or wait for one night-day cycle (night time>3 hours).

10. Technical Specifications

Item	Models	Tracer1305LPLI	Tracer2606LPLI	Tracer3906LPLI	Tracer5206LPLI	Tracer2610LPLI	Tracer3910LPLI	Tracer5210LPLI
Nominal system voltage		12VDC						
Battery input voltage range		8.5~16VDC						
Rated charge current		8.5~32VDC						
Rated charge power		10A/12V	10A	15A	20A	10A	15A	20A
		130W/12V	130W/12V 260W/24V	195W/12V 390W/24V	260W/12V 520W/24V	130W/12V 260W/24V	195W/12V 390W/24V	260W/12V 520W/24V
Max. PV open circuit voltage		50V (Min. Temp.) 45V (25℃)	60V at minimum operating environment temperature 46V at 25℃ environment temperature			100V at minimum operating environment temperature 92V at 25℃ environment temperature		
MPP Voltage range		(Battery voltage+2V)~36V						
Max. output current		3.3A	3.3A	4.5A	6.6A	3.3A	4.5A	6.6A
Max. output power		100W	100W	130W	200W	100W	130W	200W
Output voltage range		(Max. battery voltage+2V)~46V	(Max. battery voltage+2V)~58V			(Max. battery voltage+2V)~80V		
Load open circuit voltage		46V	58V			80V		
Load over voltage protection		50V	63V			100V		
Maximum output efficiency		96%						
Output current control accuracy		$\leq 2\%$						
Battery Type		LiFePO4 / Li-NiCoMn / User						
Boost Charging Voltage		LiFePO4:14.6V / Li-NiCoMn:12.51V / User:9-34V						
Float Charging Voltage		LiFePO4:14.4V / Li-NiCoMn:12.39V / User:9-34V						
Low Voltage Reconnect Voltage		LiFePO4:12.0V / Li-NiCoMn:10.8V / User:9-34V						
Low Voltage Disconnect Voltage		LiFePO4:10.6V / Li-NiCoMn:9.3V / User:9-34V						
Self-consumption		$\leq 15\text{mA}/12\text{V}; \leq 22\text{mA}/24\text{V}$						
Communication		IR communication						
Working environment temperature		-40℃~+60℃						
Enclosure		IP68(1.5m,72h)						
Overall dimension		124×89×30mm	150×93.5×32.7mm	153×105×52.1mm	124×89×30mm	150×93.5×32.7mm	153×105×52.1mm	
Mounting hole size		$\Phi 3.5\text{mm}$						
Mounting dimension		88×76mm	120×83mm	120×94mm	88×76mm	120×83mm	120×94mm	
Power cable		PV/BAT:14AWG(2.5mm ²) LOAD:18AWG(1.0mm ²)			PV/BAT:12AWG(4mm ²) LOAD:16AWG(1.5mm ²)	PV/BAT:14AWG(2.5mm ²) LOAD:18AWG(1.0mm ²)		PV/BAT:12AWG(4mm ²) LOAD:16AWG(1.5mm ²)
Net weight		0.52kg	0.52kg	0.71kg	1.18kg	0.52kg	0.71kg	1.18kg

Any changes without prior notice! Version number: V1.0

9. Troubleshooting

Faults	Possible reasons	Troubleshooting
LED Charging indicator turn off during daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV and battery wire connections are correct and tight
No LED indicator	Battery voltage maybe less than 8.5V	Measure battery voltage with the multi-meter. Min.8.5V can start up the controller
Battery LED indicator green fast Flashing	Battery over voltage	Check if battery voltage is higher than OVD, and disconnect the PV
Battery LED indicator red	Battery over discharged	When the battery voltage is restored to or above LVR point (low voltage reconnect voltage), the load will recover
Battery LED indicator red flashing	Battery Overheating	The controller will automatically turn the system off. But while the temperature decline to be below 50℃, the controller will resume.
Powering on normally, the load is off	①The connecting wires are error or virtually connected ②Load mode is not appropriate. ③This controller does not match with the LED light. ④Output short circuit.	① Check the connecting cable. ② Check the load's mode and parameters. ③The voltage of LED light is not within the output voltage range of controller. ④Check the connecting cables and LED light.
The dimming function is invalid	The controller does not match with the LED light source. This product is a step-up voltage control, If input voltage is lower than the rated voltage, it is not working.	①Replace the LED light ②Reduce system rated voltage grade and replace the product model For example 24V system change to 12V system, and replace the corresponding controller
Parameter settings fail	Infrared communication error	Refer to handheld the user device manual

11. Disclaimer

This warranty does not apply under the following conditions:

- Damage from improper use or use in an unsuitable environment.
- PV or load current, voltage or power exceeding the rated value of controller.
- The controller is working temperature exceed the limit working environment temperature.
- User disassembly or attempted repair the controller without permission.
- The controller is damaged due to natural elements such as lighting.
- The controller is damaged during transportation and shipment.