

Tecmate TM-281-CA

Optimate Lithium 8s 5A Battery Charger & Maintainer User Manual

Model: TM-281-CA

INTRODUCTION

The Optimate Lithium 8s 5A is an advanced 10-step battery saving charger and maintainer specifically engineered for 25.6V/26.4V Lithium Iron Phosphate (LiFePO₄ / LiFe / LFP) batteries. This device ensures optimal battery performance, extends battery life, and provides comprehensive protection against common battery issues. Its intelligent design allows for automatic adjustment of charging parameters based on battery condition and ambient temperature.



Figure 1: Optimate Lithium 8s 5A Charger with included accessories.

KEY FEATURES

- **10-Step Charging Program:** Utilizes the most advanced charging and battery saving program for Lithium batteries.
- **BMS Wake-up Mode:** Safely wakes batteries with integrated Battery Management Systems (BMS) out of sleep mode.
- **TUNE Mode:** Provides stable battery support during ECU programming or vehicle diagnostics.
- **High Performance:** Guarantees longer battery life and more battery power.
- **Ultimate Protection:** Offers comprehensive protection for high-performance Lithium (LiFePO4 / LiFe / LFP) batteries.



Figure 2: Recommended battery types and voltages.



Figure 3: Automatic charging and health testing.

SETUP

Before connecting the Optimate Lithium 8s 5A, ensure your battery is a 25.6V/26.4V LiFePO4, LiFe, or LFP type. The charger comes with two connection options: a weatherproof battery lead with ringlets for permanent connection and a battery clip set for temporary connections.

What's in the Box:

- 1 x Optimate Lithium 8s 5A Charger & Maintainer
- 1 x Weatherproof Battery Lead (M8 / 5/16" - M10 / 3/8" ringlets)
- 1 x Battery Clip Set (custom designed for various terminals)

WHAT'S IN THE BOX

1 Sealed Battery Saving Charger & Maintainer



2 Weatherproof Battery Lead



3 Battery Clip Set



With adjustable M8 / 5/16" - M10 / 3/8" ringlets that fit most automotive and marine battery terminals.



Custom designed battery clips to fit all batteries.



Figure 4: Included components in the product package.

Connection Steps:

1. **Choose Connection Method:** Decide whether to use the permanent ringlet lead or the temporary battery clips.
2. **Connect to Battery:**
 - For ringlets: Securely attach the red (+) ringlet to the positive battery terminal and the black (-) ringlet to the negative battery terminal.
 - For clips: Attach the red (+) clip to the positive battery terminal and the black (-) clip to the negative battery terminal. Ensure a secure connection.
3. **Connect Charger to Power:** Plug the charger's AC cord into a suitable wall outlet (100-240V, 50-60Hz).
4. **Connect Charger to Battery Lead:** Connect the charger's output cable to the chosen battery lead.

SAFE INTERACTIVE MAINTENANCE

battery tested hourly, float charge when needed



Figure 5: Example of connecting the charger to a battery.

OPERATING INSTRUCTIONS

The Optimate Lithium 8s 5A operates automatically once connected. The 10-step program intelligently diagnoses, recovers, charges, and maintains your battery.

Charging Process:

1. **Initialization:** Upon connection, the charger performs a quick diagnostic check of the battery's state.
2. **Recovery (if needed):** If the battery is deeply discharged (as low as 0 volts), the charger will attempt to recover it safely.
3. **Bulk Charge:** The charger delivers a controlled current to bring the battery to approximately 80% charge.
4. **Absorption Charge:** The voltage is held constant while the current decreases, bringing the battery to full

charge.

5. **Optimization:** A unique pulse charge ensures cell balancing and optimal performance.
6. **Maintenance:** Once fully charged, the charger enters a long-term maintenance mode, testing the battery hourly and delivering charge only when needed. This prevents overcharging and sulfation.

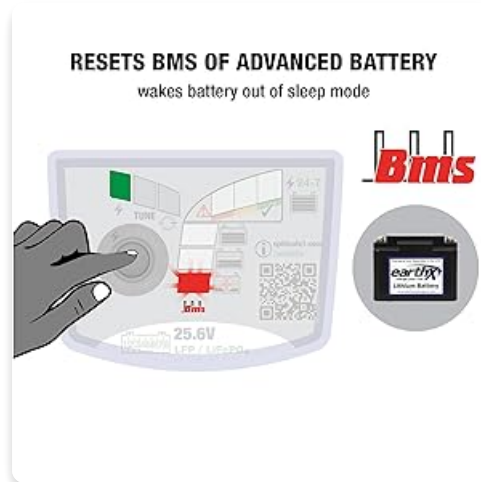


Figure 6: The charger's smart automatic control adapts to temperature and battery size.

Indicator Lights:

The charger features LED indicators to display the current charging status and battery health. Refer to the charger's label for a detailed legend of each light's meaning.

TUNE Mode:

To activate TUNE mode, press and hold the 'TUNE' button on the charger. This mode provides a stable power supply, ideal for tasks like ECU programming or updating vehicle software, preventing voltage drops that could disrupt sensitive electronics.

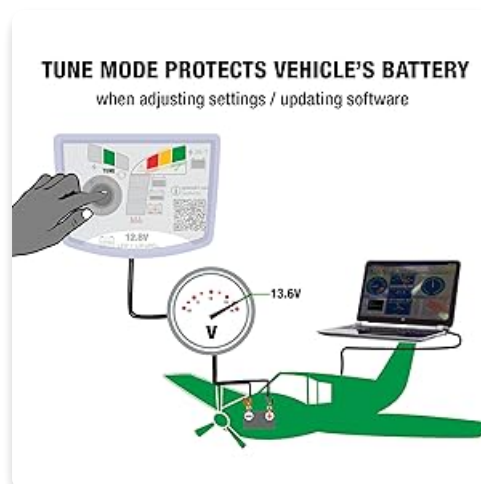


Figure 7: TUNE mode provides stable power for vehicle electronics.

MAINTENANCE

The Optimate Lithium 8s 5A is designed for safe, interactive long-term maintenance. Once the battery is fully charged, the charger automatically switches to a float charge mode, testing the battery hourly and delivering

charge only when necessary. This 'Connect and Forget' feature ensures your battery remains optimally charged and healthy without risk of overcharging.

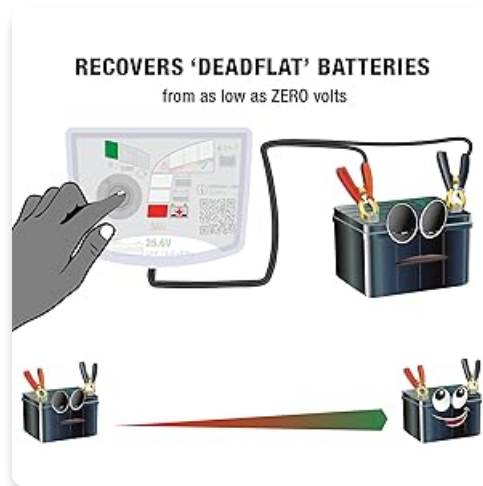


Figure 8: The 'Connect and Forget' feature for long-term battery care.

TROUBLESHOOTING

The Optimate Lithium 8s 5A is equipped with advanced features to address common battery issues.

Recovering 'Dead' or Flat Batteries:

If a LiFePO4 battery has discharged to a very low voltage (even as low as 0 volts), the Optimate charger can attempt to recover it. The charger will automatically initiate a low-voltage recovery sequence. If the battery has an integrated BMS that has shut down the battery, the charger can safely wake it up.

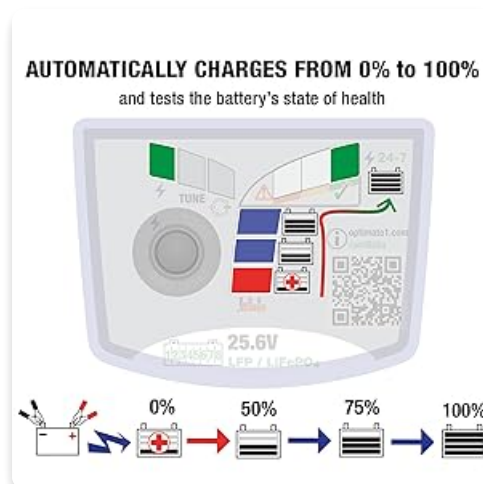


Figure 9: The charger's ability to save deeply discharged batteries.

BMS Reset:

For advanced batteries with a BMS that has put the battery into sleep mode, the Optimate Lithium 8s 5A can reset the BMS. Press and hold the 'BMS Reset' button on the charger to initiate this function.



Figure 10: Resetting the Battery Management System.

SPECIFICATIONS

Feature	Specification
Model Number	TM-281-CA
Input Voltage	100-240V, 50-60Hz
Output Voltage	25.6V / 26.4V
Output Current	5A
Recommended Battery Capacity	2Ah - 60Ah
Battery Type	LiFePO4 / LiFe / LFP (8-cell in-series)
Dimensions	9.25 x 4.88 x 2.6 inches
Item Weight	3.28 pounds (1.49 kg)

WARRANTY INFORMATION

For detailed warranty information regarding your Optimate Lithium 8s 5A charger, please refer to the official Tecmate website or the warranty card included with your product. Protection plans may also be available for purchase separately.


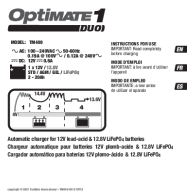


SUPPORT

For further assistance, technical support, or additional product information, please use the following resources:

- **Official Product Page:** <https://www.optimate1.com/oml8s5a>
- **User Guide (PDF):** [Download User Guide](#)
- **Tecmate Store on Amazon:** [Visit Tecmate Store](#)

Note: No official seller videos were available for embedding based on the provided criteria.

Related Documents - TM-281-CA

	<p>OptiMATE 2 Automatic Maintenance Charger User Manual</p> <p>Comprehensive user manual for the OptiMATE 2 automatic battery charger (Models TM420/TM421). Includes safety instructions, charging procedures, LED indicators, maintenance, and warranty information for 12V lead-acid batteries.</p>
	<p>OptiMate 1 DUO Automatic Battery Charger - Model TM409 User Manual</p> <p>Comprehensive user manual for the OptiMate 1 DUO (Model TM409), an automatic maintenance charger for 12V lead-acid and 12.8V LiFePO4 batteries (2Ah-20Ah). Covers safety, operation, charging stages, LED indicators, troubleshooting, and warranty.</p>
	<p>OptiMATE 7 12V 10A Automatic Battery Charger - User Manual</p> <p>Comprehensive user manual and safety instructions for the TecMate OptiMATE 7 automatic battery charger. Covers operation, maintenance, and safety precautions for 12V lead-acid batteries.</p>
	<p>OptiMATE 4 Dual Program Battery Charger User Manual</p> <p>Comprehensive user manual for the TecMate OptiMATE 4 Dual Program battery charger, detailing operation, safety instructions, and diagnostics for 12V lead-acid batteries. Supports STD, AGM, MF, and GEL types.</p>

