Alternative Track
Motive Battery Charger

CHARGER USER MANUAL

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1. Introduction

Thank you for choosing an Alternative Track Chargers. These intelligent, high-efficiency chargers are designed for a variety of industrial motive applications, including electric vehicles, aerial work platforms (MEWP), floorcare, golf carts (LSEV), forklifts, and automated guided vehicles (AGV).

Each charger is built with high power density, IP67-rated protection, and multiple safety features to ensure long-term reliability. This guide provides general usage instructions, safety guidelines, and troubleshooting steps.

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2. Safety Instructions

- Use only with compatible battery types and charging algorithms.
- Never charge a frozen or non-rechargeable battery.
- Ensure adequate ventilation during charging.
- Keep away from sparks, open flames, and moisture.
- Disconnect from AC power before making any connections or maintenance.
- Do not open or disassemble the charger.

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3. Charger Overview

Alternative Track Chargers support multiple battery types, including:

- Lead-Acid (Flooded, AGM, GEL)
- Lithium-Ion

Key Features:

- IP67-rated waterproof and dustproof casing
- Built-in Bluetooth connectivity for mobile app control
- Multiple preset charging curves
- CANBus*
- Advanced fault detection and error codes

*** This feature is available on selected models (or as an accessory) ONLY**

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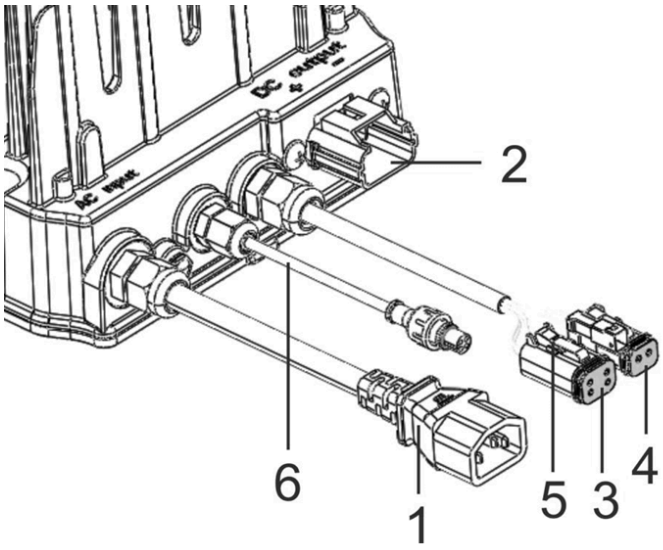
4. Installation & Connections



Connection Diagram

Port	Description
1	AC Input – Connects to a 100-240V power source.
2	DC Output – Connects to the battery pack.
3	CAN Communication – Used for lithium battery communication [ORANGE / GREY]
4	Interlock (NC) – Optional interlock functionality [CLEAR / BLUE]
5	Battery Temp Sensor – Supports external temperature sensors [YELLOW / WHITE]
6	Portable LED Charge Indicator Port – Connects to external LED display.

5. App Configuration

The **Alternative Track App** allows users to monitor, configure, troubleshoot, update firmware, and adjust charging algorithms wirelessly via Bluetooth.

Features:

- **Real-time Monitoring:** Displays charging status, voltage, current, and fault notifications.
- **Charging Profile Selection:** Users can select preset or custom charging algorithms for different battery types.
- **Firmware Updates:** The charger firmware can be updated via the app for performance improvements and bug fixes.
- **Error Logs & Diagnostics:** Provides historical fault codes and troubleshooting assistance.
- **Historical Charging Logs:** Records past charging events, including start/stop times, voltage, current, and error codes.

Firmware Update:

1. Ensure Charger is Connected:

- Connect the charger to an AC power source.
- Pair the charger with the Alternative Track App.

2. Check for Updates:

- Open the app and navigate to the Firmware Update section.
- The app will scan for available updates.

3. Download & Install:

- If an update is available, download the firmware package.
- Follow the on-screen instructions to install the update.

4. Monitor Update Process: Do not disconnect the charger during the update.

5. Confirmation & Testing: Perform a test charge to verify functionality.

Charging Algorithm Update:
1. Open the Alternative Track App and connect to the charger.

2. Navigate to the Charging Profiles section.

3. Select the desired charging algorithm based on battery brand and type (AGM, GEL, Lithium, etc.).

4. Apply the profile, and the charger will automatically update to the selected algorithm.

5. Confirm the change by monitoring the charging status or viewing the active profile on the display panel.

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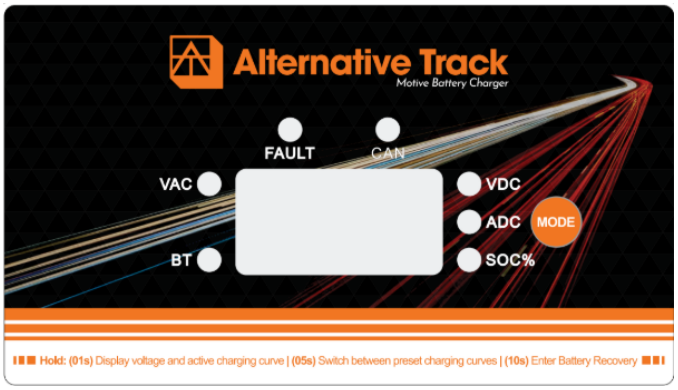
6. Display Panel & Fault Codes
Display Panel:



Indicator	Description
FAULT	Signals errors or malfunctions.
CAN	Signals active CAN communication.
VAC	Confirms AC power availability.
BT	Confirms Bluetooth connectivity.
VDC	Signals and displays battery voltage on LED display.
ADC	Signals and displays battery current value on LED display.
SOC%	Signals and displays battery state of charge % on LED display.
MODE	Triggers additional functions when pressed.

MODE Function

Action	Description
Hold (1s):	Display voltage and active charging curve.
Hold (5s):	Switch between preset charging curves.
Hold (10s):	Enter Battery Recovery Mode

Fault Codes:

Code	Fault Indicator	Description
E01	1-Flash	No battery pack voltage detected, short circuit, reversed connection, or high voltage.
E02	2-Flashes	Abnormal AC input voltage.
E03	3-Flashes	High temperature protection inside the charger.
E04	4-Flashes	Battery high temperature protection.
E05	5-Flashes	Charger output overcurrent or no output detected.
E06	6-Flashes	Output relay stuck or closed timeout.
E07	7-Flashes	Lithium battery communication timeout or CANBUS cable not properly connected.
E08	8-Flashes	No charging curves or missing curve parameters inside the charger.

7. Charging Algorithms
Alternative Track chargers support:

- IUIa, IUa, IUUa, IIa charging modes for lead-acid batteries.
- Custom CANBus profiles for lithium batteries (available on selected models).

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8. Supported Models and Specifications

- **Input Voltage:** 100-240V AC
- **Frequency:** 50/60Hz
- **Operating Temperature:** -20°C to 50°C
- **Protection:** Overvoltage, Overcurrent, Short Circuit, Reverse Polarity
- **Efficiency:** 93%

Model	Output Voltage	Max Current
ALT400	24V DC	17A max
ALT700	24V DC	30A max
ALT900	24V DC	36A max
ALT1700	48V DC	35A max
ALT3000	48V DC	60A max

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9. Customer Support

- Customer Support: Contact your distributor for troubleshooting and claims.
- For software updates and additional charging profiles, visit our website.

Alternative Track
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TREKon APP USER MANUAL

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1. App Installation & Login

Download & Installation:

- Select the correct app version for your device Android/iOS).
- Download the TREKon on App Store or Google Play. Alternatively scan the QR Code (Apple devices) or download the APK file (Android devices) on the Alternative Track website.
- Tap "Install" and complete the installation.
- For Android: If installation fails, enable "Allow installation from unknown sources" in your mobile device settings.

First Launch Requirements:

- Enable Bluetooth, mobile data, and location services.
- Grant all permissions (e.g., camera, storage) for full functionality.

User Registration & Login:

- Tap "Register" to create a new account.
- Enter a username and password, confirm, and log in.
- Existing users can directly log in with their credentials.
- If credentials are forgotten, a new account can be created.

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2. App-Charger Connection

Before pairing, ensure:

- Charger is connected to AC or DC power.
- Mobile device is within 10 meters of the charger.

Connection Methods:

- Device List: Select the charger from the scanned list.
- SN Code Entry: Manually input the serial number from the charger label.
- QR Scan: Scan charger QR code with camera from mobile device.

Successful Connection Indicator:

- "BT" (Bluetooth) LED on the front panel of charger will illuminate green.

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3. App Interface Overview
Five main tabs:

Home:

- Displays charger status, voltage, current, and faults.
- Errors are highlighted in red.

Curve:

- View available charging and repair curves.
- Green: Cloud server curves
- Blue: Built-in device curves
- Red: Default curve

Settings:

- Language selection and system configurations.
- Work mode (standard or recovery mode).

Firmware (OTA):

- Shows firmware version and allows updates.

History:

- App logs and charger charging history.
- Allows export of session data to Excel.

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4. Charging Curve Management
STEP 1: Add Charging Curves:

- Go to "Curve" tab > Charging Curve section.
- Tap "+" to add up to 8 curves.
- If full, delete old curves using the "X" icon.

STEP 2: Set Charging Curve:

- Select a curve from the dropdown to apply.

STEP 3: Confirm Curve Selected:

- App home screen under "Curve Number"
- Charger panel button (tap once)
- Startup display when AC is connected

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5. Battery Recovery (BR) Mode

STEP 1: Download & Apply Recovery Curve:

- Go to "Curve" > Recovery Curve section.
- Tap "+" to add curves and download them to the charger.

STEP 2: Activate BR Mode:

- Settings > Work Mode > BR
- This setting persists even after rebooting.

STEP 3: Switch Back to Normal Charging:

- Settings > Work Mode > Charger

Note: Recovery mode is designed for specific battery brands. Use only under technical supervision.

Refer to Appendix B

6. Firmware Updates (OTA)

To Perform Firmware Update:

1. Ensure the charger is powered (AC or DC).

2. Connect the app via Bluetooth.

3. Navigate to "Firmware" (OTA) tab.

4. Select the available update and tap "Update".

5. Wait for the process to complete (100%).

6. The display will show "UPt" and then shut off.

7. Restart the charger to confirm update via Settings > System Info.

7. Export Charging History

To Export Data:

1. Connect charger to power.

2. Open the app and go to the "History" tab.

3. Select your device and tap "Export".

Report Includes:

Date & Start Time
Charging Duration
Curve Number
Mode (e.g., BMS, BR)
Battery Type
Fault/Event Codes
Start/End Voltage
Charging Capacity (Ah) and Energy (Wh)
Mains Voltage
Battery Temperature

Appendix A - Battery Refresh Algorithms

1. Overview

Batteries that remain unused or stored for extended periods—especially in a partial state of charge—can degrade over time. Common symptoms include reduced runtime, poor rechargeability, and increased internal resistance due to sulphation. To combat these effects, battery manufacturers recommend a refresh or reconditioning charge. This typically involves a low-current overcharge administered over an extended period to balance cells and restore performance.

In the past, reconditioning required experienced technicians and specialized lab-grade equipment. With Alternative Track chargers and the TREKon app, this process is automated and simplified. Users can select preloaded refresh algorithms tailored to different battery models and conditions. This eliminates guesswork and helps prevent human error.

BRAND: DISCOVER BATTERY

RANGE: DRY CELL AGM

COMPATIBLITY: ALT1700 Chargers only

INSTRUCTIONS: The algorithms below apply to all series connections up to 48V. Depending on the last recharge, find the battery model then select the algorithm specified in the table.

Caution: If battery temperature exceeds 55℃, stop charging.

Model	<1 Yr	1-2 Yrs	>2 Yrs
EVU1A	Algo#800 (1.5A×16h)	Algo#801 (1.5A×24h)	Algo#802 (1.5A×30h)
EV22A, EV34A	Algo#803 (2.5A×16h)	Algo#804 (2.5A×24h)	Algo#805 (2.5A×30h)
EV24A, EV27A	Algo#806 (3.5A×16h)	Algo#807 (3.5A×24h)	Algo#808 (3.5A×30h)
EV31A, EV12A, EVGC8A, EVGT8A	Algo#809 (5.0A×16h)	Algo#810 (5.0A×24h)	Algo#811 (5.0A×30h)

EV627A, EV4DB, EVGC6A, EV185A, EV506A-230, EV4DA, EVGT6A, EV8DA	Algo#812 (8.0A×16h)	Algo#813 (8.0A×24h)	Algo#814 (8.0A×30h)
EV305A, EVL16A	Algo#815 (12.0A×16h)	Algo#816 (12.0A×24h)	Algo#817 (12.0A×30h)

Appendix B - Extended Charge (BR) Function

1. Overview

The Extended Charge (also referred to as BR or Battery Recovery) function is an optional feature that enhances battery conditioning by applying additional charge time after the standard algorithm completes. This function is available to battery manufacturers, OEMs, and fleet operators seeking to prolong battery life or recover performance in units subjected to harsh operating conditions.

The feature is especially useful for reconditioning batteries that have undergone partial state-of-charge operation, over-discharge, chronic undercharging, or long-term storage.

2. How It Works

This feature is accessible directly on the front panel of the charger. To initiate the Extended Charge (BR) function, press and hold the **MODE** button for **10 seconds**. This action is visually represented on the charger interface, as shown by the label beneath the display: Hold: (10s) Enter Battery Recovery.

If a charging algorithm is configured that supports the BR function, it can be activated manually:

- Ensure charger is powered and the target algorithm is selected.
- Press and hold the MODE button for 10 seconds.
- If successful, the charger display will show "ON" to confirm entry into the extended BR charge mode.
- If the algorithms selected does not support this feature, the display will show "---".

3. Functional Characteristics

- One-Time Operation: The extended charge function runs once per activation. After completion, the charger automatically returns to its original profile.
- Power Interruption: If power is lost during the extended charge cycle, the function is canceled. To restart, users must reactivate using the MODE button.

Note: Algorithms that include the BR function typically apply a prolonged charge with an elevated voltage. This process helps recondition batteries and reduce sulphation buildup. As such, it should only be used as advised by the battery manufacturer and/or periodically when there are signs of battery deterioration, such as reduced runtime, poor rechargeability, or inconsistent voltage readings.

Battery and Original Equipment Manufacturers or fleet owners requiring a tailored refresh strategy can request customized profiles with embedded BR settings. For integration support, contact Alternative Track technical support (support@alternativetrack.com).