



# USER MANUAL

MODEL EX-25DC

EXPION360

# MOBILE CHARGER MODEL EX-25C

## DESCRIPTION

The Expion360 DC to DC mobile charger is designed to charge Lithium Iron Phosphate (LiFePO<sub>4</sub>/LFP) chemistry deep cycle house batteries from the vehicle alternator through the chassis battery. The mobile charger is unique in that it uses a 2-stage constant current (CC) constant voltage (CV) charge profile at 14.6V / 25A. The charger is compact, easy to install, and simple to use. The mobile charger is specifically designed to charge the Expion360 VPR 4Ever Classic and Platinum batteries. It can also be used with other LFP chemistry batteries that recommend the same charge profile.

## INSTALLATION

The Expion360 mobile charger needs to be installed in a location with some air movement. It is convection air-cooled using a heat sink. The charger is IP68 rated and can be installed on an outside location such as a vehicle frame rail. Make sure to secure the charger to its mounting location to prevent its movement. If the charger is installed on an outside location, make sure it stays clean and free of debris to prevent overheating. Do not install in the engine compartment to prevent overheating. Install the charger with the LED green and red indicator lights visible by the user for troubleshooting purposes if needed. Please make sure to follow all wiring diagram instructions provided in this manual.

## MULTIPLE CHARGER CONNECTION

You can parallel connect up to two Expion360 mobile chargers. By parallel connecting the chargers, the charge rate will increase from 25A to 50A while maintaining 14.6V. For the charger to boost the voltage to 14.6V it requires additional current from the alternator and may draw up to 35A on the input circuit to achieve this. Because of the input load requirement, we do not recommend parallel connecting more than two chargers as two can draw up to 70A. Combining more than two chargers can exceed the vehicle alternator's surplus output capability especially when at idle with high load items running such as air conditioning.

## CHARGE PROFILE

The Expion360 mobile charger uses the CC/CV (bulk/absorption) 2-stage charge profile with no float or equalization stages. LFP batteries have a very low self-discharge rate and do not sulfate by being left at a partial state of charge, so a maintenance float stage and desulfation equalization stage are not required.

**Constant Current Stage (Bulk):** During this stage, the charger will provide the full rated current at 25A (1 charger) or 50A (2 chargers) until the maximum charge voltage has been achieved at 14.6V. The battery is approximately 97% full and will now transition to the constant voltage stage. The red LED indicator light will be lite when in the constant current stage (bulk).

**Constant Voltage Stage (Absorption):** During this stage, the charger will hold the full charge voltage while gradually decreasing the current to zero or near zero. This stage will take 15-20Min on average, depending on how many batteries are being charged. During this stage, the final cell balancing is completed. The charger will then enter a standby mode waiting for the batteries voltage to drop to provide another charge cycle. The red and green indicator lights will be lite simultaneously during the constant current – absorption stage. The green light will be lite when fully charged and in standby mode.

# MODEL EX-25DC TECHNICAL SPECIFICATIONS

## MECHANICAL PARAMETERS

DIMENSIONS (L X W X H)	7.08 X 4.72 X 1.57
WEIGHT	2.5Lbs
CHARGER WIRE SIZE	10Ga
CASE TYPE	DIE-CAST ALUMINUM
CASE PROTECTION	IP68
INTERNAL ELECTRONIC PROTECTION	EPOXY POTTING
COOLING	HEAT SINK CONVECTION
BATTERY ISOLATION	YES
SAFETY	RoHS / CE

## INPUT PARAMETERS

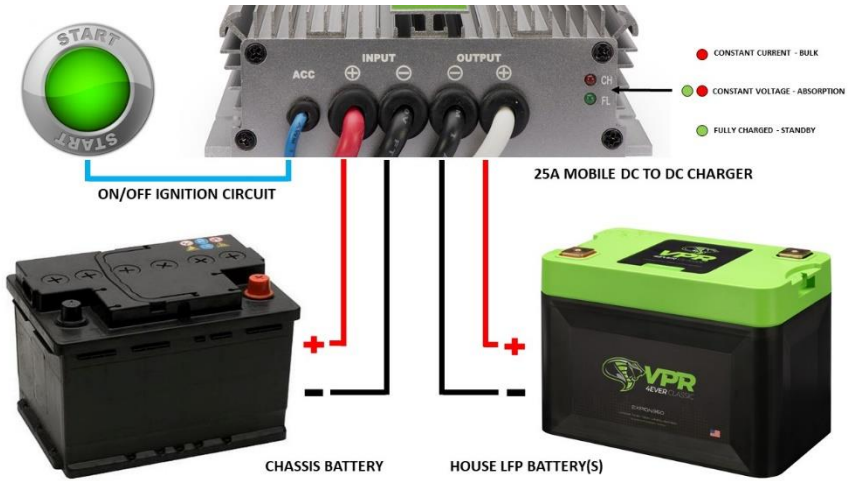
NOMINAL VOLTAGE	12.8V
MINIMUM VOLTAGE	10.0V
MAXIMUM VOLTAGE	16.0V
MAXIMUM CURRENT	35A
FUSE SIZE REQUIRED	45A
EFFICIENCY	91%

## OUTPUT PARAMETERS

CHARGE PROFILE	CC/CV 2-STAGE LFP
VOLTAGE	14.6±0.1V
OVERVOLTAGE PROTECTION	YES
MAXIMUM CURRENT	25A
FUSE SIZE REQUIRED	35A
POWER	365W
PARALLEL CONNECTION	2 CHARGERS / 50A
NO LOAD CURRENT	60mA

## TEMPERATURE PARAMETERS

OPERATING TEMPERATURE	-4 TO 132°F
HIGH TEMPERATURE PROTECTION	YES
STORAGE TEMPERATURE	-20 TO 150°F
OPERATING HUMIDITY	0-100%RH



# NOTICE

**TO PREVENT DAMAGE AND EXTEND THE LIFE OF THE CHARGER PLEASE FOLLOW THESE PRECAUTIONS**

- ⚠ DO NOT DROP THE CHARGER
- ⚠ DO NOT OPEN THE CHARGER
- ⚠ DO NOT SHORT CIRCUIT THE CHARGER
- ⚠ DO NOT SUBMERGE THE CHARGER IN WATER
- ⚠ DO NOT CONNECT MORE THAN 2 CHARGERS IN PARALLEL
- ⚠ DO NOT ATTEMPT TO REPAIR THE CHARGER IF MALFUNCTIONING
- ⚠ DO NOT USE THE CHARGER TO CHARGE OTHER BATTERY CHEMISTRIES
- ⚠ DO NOT USE THE CHARGER AS A 12VDC POWER SUPPLY ONLY USE TO CHARGE

# **EXPION360 24 MONTH WARRANTY**

Expion360 warrants The Expion360 branded DC to DC mobile charger sold by Expion360 or any of its authorized dealers, distributors, and OEM partners to be free of defects for 24 months from the date of sale as determined by the customer's sales receipt for proof of purchase.

Within the 24-month warranty period, subject to the exclusions listed below, Expion360 will repair or replace the charger and or parts of the components in question are determined to be defective in material and or workmanship.

## **INSTALLATION**

Expion360 recommends a professional installation by a qualified RV, Marine, or 12VDC technician. However, the full warranty applies whether professionally installed or not if installation instructions are followed in the User Manual.

## **NON-TRANSFERABLE**

This Limited Warranty is for the original purchaser only. It is not transferable to any other person or entity.

## **WARRANTY EXCLUSIONS**

Expion360 has no obligation under this Limited Warranty for the Expion360 Mobile DC to DC charger subject to the following conditions (including but not limited to):

- Damage is caused by road debris or collision.
- Damage due to short circuits or other electrical conditions caused by mishandling.
- Damage due to improper installation, incorrect parallel connections, wrong wire, and or fuse sizing.
- A charger that has been opened, tampered with, and or modified.
- Environmental damage, such as water, moisture, and fire.

## **WARRANTY DISCLAIMER**

THIS LIMITED WARRANTY REPRESENTS THE TOTAL LIABILITY OF EXPION360 FOR ANY BATTERY. ALL OTHER WARRANTIES IMPLIED BY LAW APPLICABLE TO THE BATTERY SHALL BE LIMITED TO THE WARRANTY PERIOD STATED. EXPION360 MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. EXPION360 SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

## **LEGAL RIGHTS**

Some states do not limit how long an implied warranty lasts or exclude or limit incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state. This warranty shall be governed by and interpreted by the laws of Oregon. This warranty is understood to be the exclusive agreement between the parties relating to the subject matter hereof. No employee or representative of Expion360 is authorized to make any warranty in addition to those made in this agreement.

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