



ACDC

User Manual

Version 1.1

10/16/2020

Document Number: Doc-ACDC-2020-JLee-rev1

Product Number: KF-20DW/ZCDC12V

The latest version of this manual is available at
www.fleetwelcome.com

Velo Solar LLC
3450 Sterling Woods Drive
Eugene, OR 97408



Table of Contents

1. Introduction	4
2. Installation	5
2.1 Mount Outdoor Unit.....	5
2.2 Mount Indoor Unit	5
2.3 Connect Outdoor and Indoor Unit	6
2.4 Connect Batteries	6
3. Getting Started	7
3.1 Fuse Considerations	7
3.2 Battery Considerations.....	7
3.3 Powering Up the ACDC System	7
3.4 Remote Controller Operation	7
3.5 Exiting the System	7
4. System Upgrade Recommendation	8
4.1 Battery System.....	8
4.2 Solar Panels and Inverter	8
4.3 Shore Power	8
4.4 Diesel Heater	Error! Bookmark not defined.
5. Maintenance and Troubleshooting.....	9
5.1 Regular Maintenance	9
5.2 Troubleshooting	9
5.3 Support	9

List of Tables

Table 1 - Support Points of Contact	9
---	---

1. Introduction

This user manual provides the information necessary to effectively use the ACDC 12V air conditioner. ACDC 12V air conditioner is an ideal no-idle air conditioning solution for heavy-haul truck and RV. Features of ACDC can be represented as:

- High efficiency. 2000W cooling capacity with 6000BTU cooling power.
- Less power consumption. Typical power consumption ranges in 300W-795W, and rated current 25A-66A. For example, LiFePO4 200Ah battery can support 4-7hour long operation.
- Low voltage disconnect protection. Automatically disconnects power to the system if the battery power is lower than the vehicle's starting voltage.
- Outdoor unit can be installed in any direction, either wall-mounted or horizontally on the rooftop in a suitable position outside the vehicle.
- Vibration-resistant flexible rubber hoses.
- Cooling comfort without idling engine saves fuel, reduces engine wear, extends maintenance interval.
- No CO2 emission.
- Quiet operation. Ductless split type air conditioner makes the cab quiet.

2. Installation

Unpack the shipping box and check if the equipment is damaged, missing, or misplaced. The overall assembly is very simple and straightforward and can be done independently.

2.1 Mount Outdoor Unit

The outdoor unit is mounted on backside of the truck. Special installation equipment is required to mount the unit on the outer wall. First, mark the hole positions according to the corrugated template (see below). There are 4 hole marks at 0.5" from the edges of the corrugated template and another 4 hole marks at 4.25" apart from the outer hole marks. Inner hole marks are reserved optional for the wall-mounted orientation. Drill holes that are just large enough to slide the rivet nuts into. Drill bit size of 11mm (7/16") is recommended for M8 rivet nuts. You may Rubber gaskets have already been attached on the bottom of the 4 fixture legs. Keep the distance between the outdoor unit and the indoor unit within 3m so the refrigerant hoses and electrical cable can reach each other.

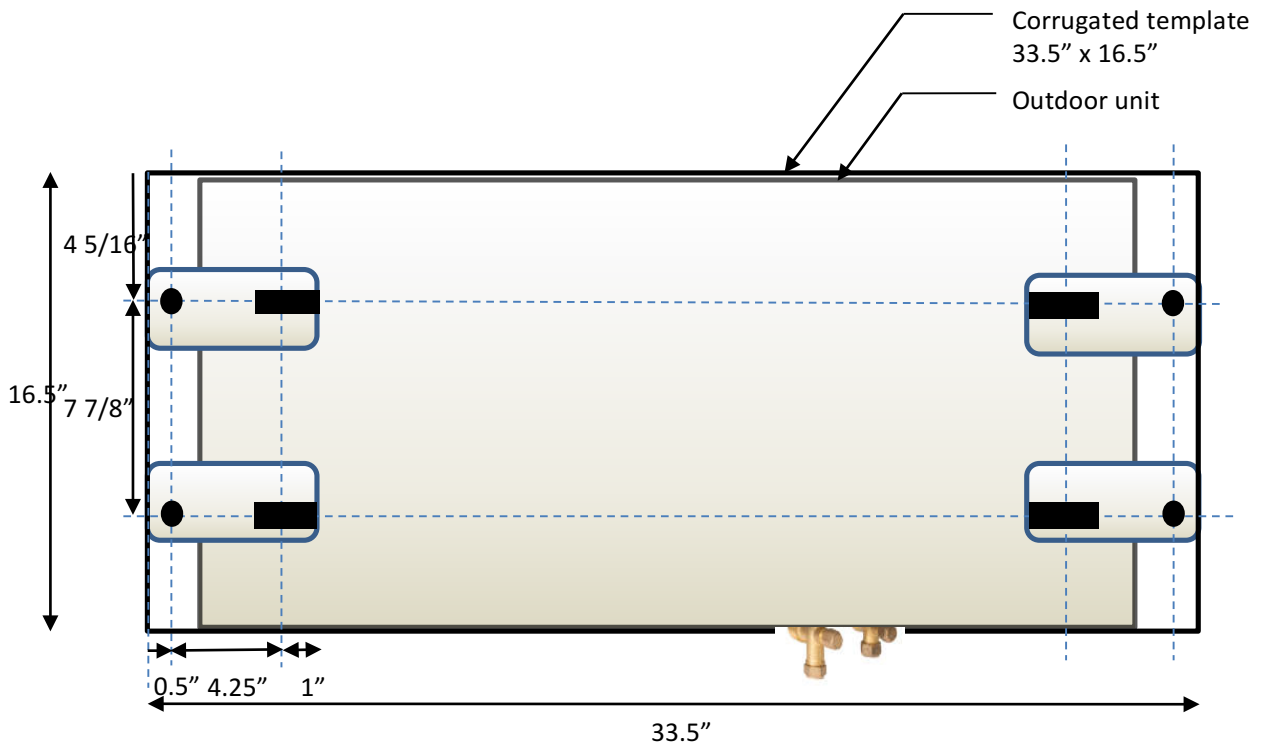


Figure. Overlapping the corrugated template on the outdoor unit

2.2 Mount Indoor Unit

The indoor unit is mounted inside the cab on the rear or side wall. Maintain the level so the water can be drained properly. First, use the wooden board to provide a level surface. Open the connector-retaining caps. You should be able to hear a hissing sound when you open them.

Otherwise, it could indicate that pressure leakage may have occurred during the transit. Contact customer support for the troubleshooting.

2.3 Connect Outdoor and Indoor Unit

Connect the indoor and outdoor units by the rubber hoses. The low pressure hose is bigger in diameter than the high pressure hose. Route all hoses and electrical wire through the opening hole. A round hole with a diameter of 65mm is recommended for the opening hole. Attach the retaining wall covers and sealing mud block to protect the hoses from sharp edges. Air purge and vacuum the refrigerant hoses before commissioning the pre-filled R-134a for the first time. Open the high pressure valve first, then the low pressure valve. Consult the local HVAC specialist for the technical support.

2.4 Connect Batteries

A 12V battery is required to operate ACDC air conditioner. The power cable with in-line fuse protection connects the outdoor unit and the battery. The battery can be placed in the outside battery box or inside luggage compartment.

3. Getting Started

ACDC 12V air conditioner should be connected to DC 12V battery. Battery should be able to power up ACDC with 10.5V or above and 16.5V or less. Electrical cable is equipped with the in-line fuse for protection.

3.1 Fuse Considerations

1. Visually inspect if the in-line fuse is OK. Replace the fuse with 100A or higher.
2. To ensure moisture ingress protection degree IP65, make sure the cover is correctly positioned and sealed with o-ring.

3.2 Battery Considerations

1. Check the polarity of the DC voltage before you connect the battery.
2. Provide an additional fuse for battery protection as recommended by battery manufacturer.
3. ACDC has a low voltage protection at 10.0V. Contact battery manufacturer if battery voltage curve falls in adequate range.

3.3 Powering Up the ACDC System

Remote controller can turn on and off the ACDC system. Press the ON button to power up. Indoor unit can indicate the working condition and display the temperature setpoint. Check if the outdoor unit power up to cool down the temperature.

3.4 Remote Controller Operation

Press the mode button to change the air conditioning condition from AUTO to COOL to DRY to FAN. AUTO mode controls the cooling mode and fan speed automatically. Push the TEMP UP and DOWN button to change the target temperature. Refer to the remote controller manual for detailed operation.

3.5 Exiting the System

ON/OFF button can turn the ACDC off.

4. System Upgrade Recommendation

Understanding how electrical system works helps ACDC deliver the high efficiency and safety. Here are some recommendations to keep ACDC up to the best performance.

4.1 Battery System

ACDC 12V air conditioner runs on 12V DC electricity. Extend your run-time and stay comfortable throughout the day and night with auxiliary power unit. Add an isolator relay to ensure that main battery will be able to charge and always stay healthy at the same time regardless of the state of the auxiliary battery. Add a cutoff switch for the cold weather period.

4.2 Solar Panels and Inverter

Sun does not send a bill for the free solar energy. Cost per Watt for solar panels drops every year due to the advance in technology and the economy of scale. Trickle charging by the solar energy makes sense especially when you need the air conditioning. Add an inverter so you can use the off-grid AC appliance.

4.3 Shore Power

Shore power connection makes you enjoy 120V power source to keep batteries charged and ACDC systems running in full speed.

5. Maintenance and Troubleshooting

5.1 Regular Maintenance

Every 6 months the following check should be done.

- Check in-line fuse
- Check fan of the outdoor unit
- Check air filter of the indoor unit
- Check crimp connection of the battery

5.2 Troubleshooting

- Power up trouble can be mostly determined by the battery condition. Check if the in-line fuse needs to be replaced.
- Check if the fan of the outdoor unit works
- Fan makes noise if the air filter needs to be cleaned
- Always check the battery status.

5.3 Support

Feel free to get in touch at customer support. We would be happy to help. In an attempt to practice safe social distancing we prefer using email or phone communication. Visit www.fleetwelcome.com for more technical details.

Table 1 - Support Point of Contact

Contact	Website	Phone	Email	Role
<i>JinWoo Lee</i>	<i>www.fleetwelcome.com</i>	<i>(520) 609-3254</i>	<i>noidlesolar@gmail.com</i>	<i>Customer Support</i>