

MidNite Solar MNDC250 Plus

MidNite Solar MNDC250 Plus Mini-DC Disconnect User Manual

Model: MNDC250 Plus

1. INTRODUCTION

The MidNite Solar MNDC250 Plus Mini-DC Disconnect is designed for use in various renewable energy installations. This manual provides detailed instructions for installation, operation, and maintenance of the MNDC250 Plus, ensuring safe and efficient integration into your solar or wind power system.

The MNDC Plus version expands upon the popular MNDC by incorporating an additional DIN rail, accommodating up to ten DIN rail mount breakers. It includes two DIN rail cover plates and two panel mount plates, allowing for the installation of 3/4" 125VDC breakers ranging from 60 amps to 100 amps. The enclosure can also house an MNDC-GFP80 along with four additional panel mount breakers, or a configuration of one MNDC-GFP, one 3/4" panel mount breaker, five DIN rail breakers, and a large 125-250A inverter breaker. Provisions are made for mounting a 500 amp shunt and an MNTBB-R terminal bus bar. A battery negative stud and a ground busbar are also included.



MNDC INSTRUCTIONS

Model: MNDC125, MNDC175, MNDC250



Shown with 250 amp sized breaker



MNDC closed

The Mini-DC was designed to take into account many different types of renewable energy installations. These installation instructions will describe and show some of the more common possibilities.

Features:

- Aluminum chassis. (no rust in the tropics or around salt water)
- Hinged door for easy access to electrical circuits
- Inverter breaker included (125, 175 or 250 amp)
- Din rail for DC circuits such as PV in, Chg Cntrl out, DC-GFP, DC loads, PV combiner
- Ground bus bar with 14 poles
- Six mounting spots for 500 amp, 50mV shunt
- Mounting spot for insulated bus bar (for PV negative connection point)
- Knock outs for inverter and battery cables, charge control mounting, DC & PV in & out
- 5/16" diameter stud for battery negative tie point

Figure 1.2: Views of the MNDC enclosure, showing the unit with its door open (left) and closed (right), illustrating its compact design.

2. FEATURES

The MNDC250 Plus Mini-DC Disconnect offers several key features designed for durability and ease of installation:

- **Aluminum Chassis:** Constructed from aluminum, providing resistance to rust, even in humid or salty environments.
- **Hinged Door:** Features a hinged door for convenient access to internal electrical circuits during installation and

maintenance.

- **DIN Rail for DC Circuits:** Includes a DIN rail suitable for various DC circuits, such as PV input, charge control output, DC loads, and PV combiners.
- **Ground Bus Bar:** Equipped with a 14-pole ground bus bar for comprehensive grounding.
- **Shunt Mounting Spots:** Provides six mounting spots for 500 amp, 50mV shunts.
- **Negative Connection Point:** Dedicated mounting spot for an insulated bus bar, ideal for PV negative connection points.
- **Knockouts:** Pre-drilled knockouts for inverter and battery cables, charge control mounting, and DC input/output.
- **Battery Negative Tie Point:** Features a 5/16" diameter stud for the battery negative tie point.
- **ETL Listed:** Listed by ETL for compliance with safety standards in both the US and Canada.
- **Compact Size:** Dimensions of 17"L x 9"W x 4"D and a weight of 8 lbs.
- **Made in the USA:** Manufactured in the United States.

3. SETUP AND INSTALLATION

3.1. Dimensions and Layout

Understanding the physical dimensions and internal layout is crucial for proper installation planning.

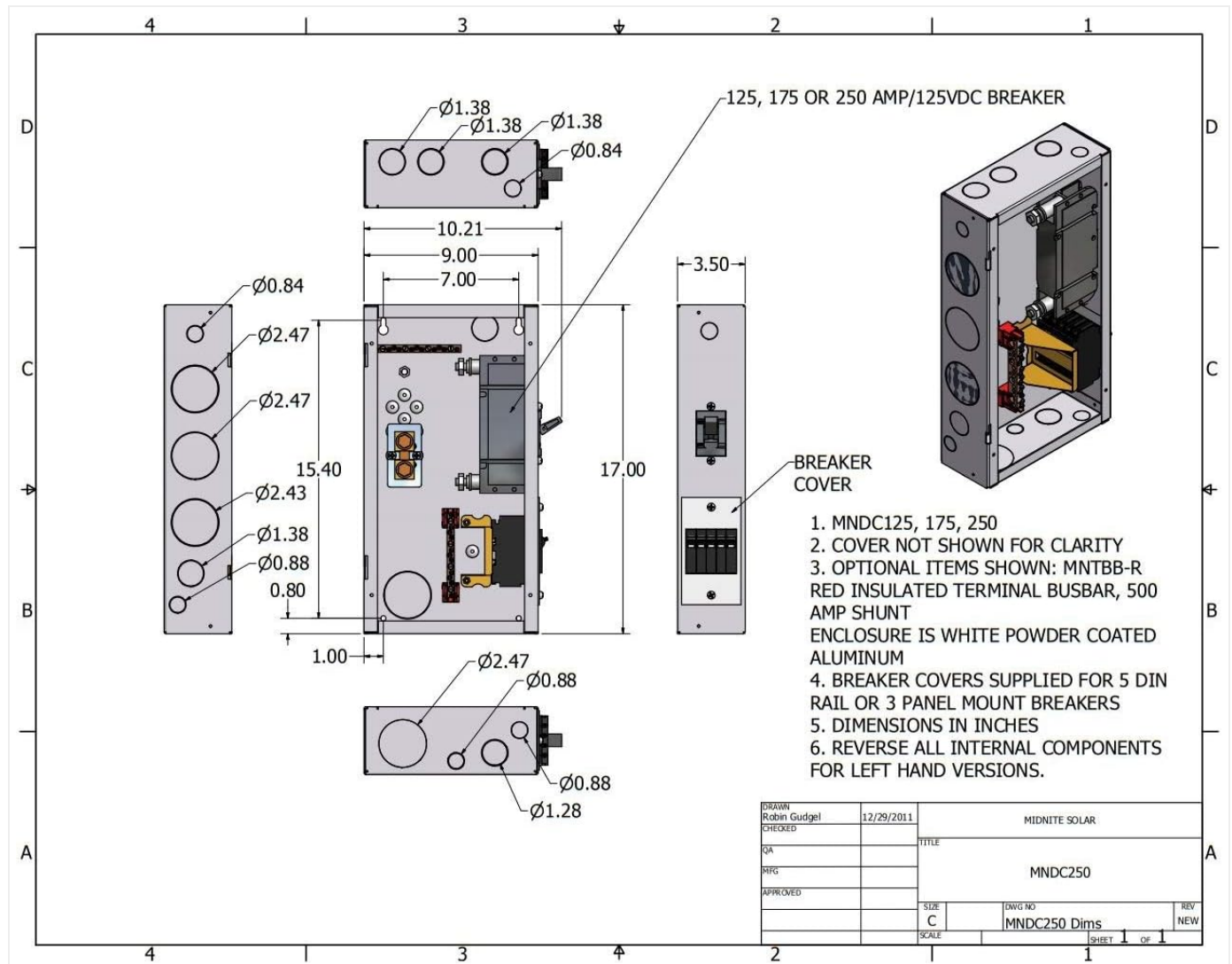


Figure 3.1: Detailed dimensional drawing of the MNDC250 Plus, including measurements for various components and mounting points. All dimensions are in inches.

- The enclosure is made of white powder-coated aluminum.

- Breaker covers are supplied for 5 DIN rail or 3 panel mount breakers.
- Reverse all internal components for left-hand versions.

3.2. Conduit Knockout Locations

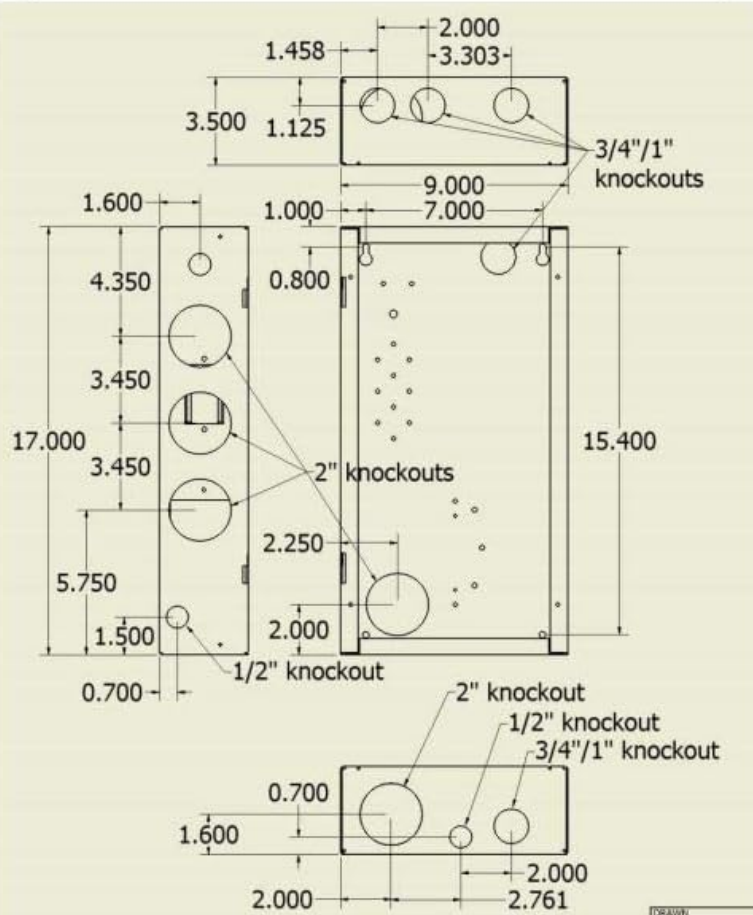
The MNDC chassis features various knockout sizes and locations for conduit entry. Plan your conduit runs carefully based on your system's requirements.

MNDC Instructions (continued)

Dimensioned drawing showing conduit locations and sizes

Top view showing three 1" knockouts. The left two knockouts fit charge controllers such as the Classic, MX60, C-40 and Tristar controllers

The left side of the MNDC chassis has three 2" knockouts and two 1/2" knockouts. The 2" knockouts are intended for inverter DC cables. If installing to a Trace or Xantrex SW inverter, use a 2" offset nipple to attach to the SWCB conduit box. If routing cables directly through the hole with no conduit, make sure a plastic grommet is installed to avoid chafing.



The bottom surface is normally where the battery cables will enter. The 1" knockout can be increased in size to accommodate a second 2" conduit opening if required. This is one way to hook up to a Trace or Xantrex DR Series conduit box.

Wire type

Due to the small size of this box and limited wire bending room, it is required that the super flexible type battery cable be utilized. Cobra Cable X-Flex is one approved type of cable. Welding cable although not listed for use in residential wiring will also meet the flexibility requirement. Wiring for the din rail mount breakers such as 6AWG for PV circuits may be the stiff THHN or similar type of wire.

Figure 3.2: Top and side views illustrating the various conduit knockout locations and their respective sizes on the MNDC enclosure.

- The top view shows three 1" knockouts. The left two knockouts are designed to fit charge controllers such as the

Classic, MX60, C-40, and Tristar controllers.

- The left side of the MNDC chassis has three 2" knockouts and two ½" knockouts. The 2" knockouts are intended for inverter DC cables. If installing to a Trace or Xantrex SW inverter, use a 2" offset nipple to attach to the SWCB conduit box.
- If routing cables directly through the hole without conduit, ensure a plastic grommet is installed to prevent chafing.
- The bottom surface is typically where battery cables enter. The 1" knockout can be increased in size to accommodate a second 2" conduit opening if required. This is suitable for connecting to a Trace or Xantrex DR Series conduit box.

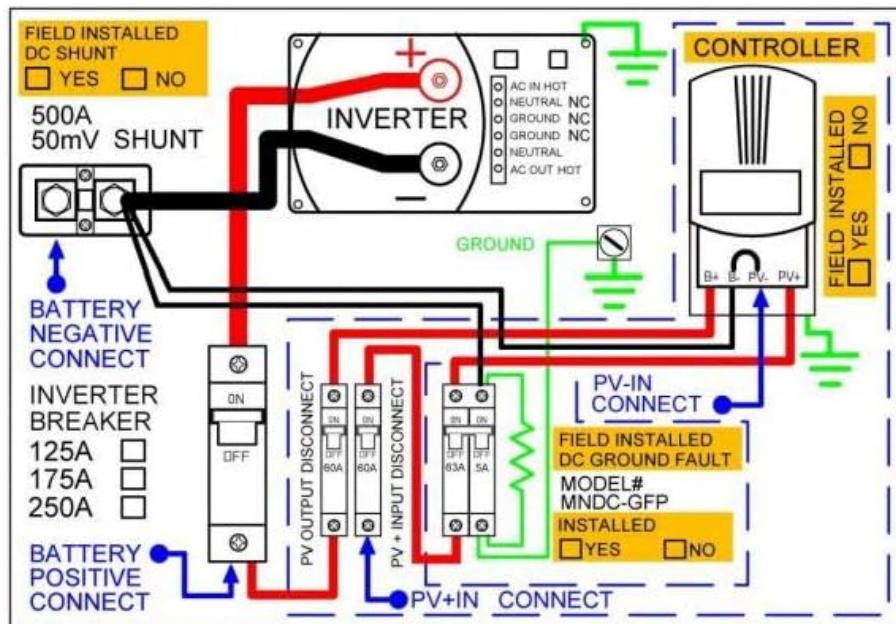
3.3. Wire Type Considerations

Due to the compact size of this box and limited wire bending room, the use of super flexible type battery cable, such as Cobra Cable X-Flex, is recommended. While welding cable is not listed for use in residential wiring, it may also offer the necessary flexibility. For DIN rail mount breakers, 6AWG THHN or similar type wire is suitable for PV circuits.

3.4. Wiring Diagram

Refer to the wiring diagram provided on the inside of the MNDC door for correct connections.

MNDC Instructions (continued)



Wiring diagram supplied on the door of MNDC

Grounding

There are various ground circuits that need to be considered in the renewable energy system. The MNDC chassis should be grounded to your earth ground rod through a 6AWG wire connected to the ground bus bar located in the top left section of the MNDC chassis. The MNDC ground bus bar will then become your primary system DC ground. The ground bus bar is also where DC surge suppressors like the MNSPD get grounded. It is advisable to use one of the 1/2" conduit knockouts to mount a DC lightning arrestor to the MNDC box. It is also common to have a DC lightning arrestor out at the PV Panels that are grounded through their own ground rod. In dry climates it is advisable to also run a ground wire from the PV panels to the MNDC ground. The MNDC ground bus bar is an ideal place to ground a DC-GFP when installed as well as the inverter chassis and the charge control chassis. Do the grounds first since they normally lie in the bottom of the chassis.



Ground Bus Bar

Battery Negative connection

The wiring diagram shows a 500 amp shunt. The voltage drop across the shunt is used to aid in calculating battery state of charge. The shunt does not ground the battery negative circuit. If this shunt is not installed, then you may use the 5/16" stud directly above the shunt area as a battery negative tie point. Using this tie point will ground the battery negative to the chassis. Grounding the battery negative is not allowed when employing a DC-GFP device. The inverter side of the shunt or the 5/16" stud are also an ideal tie point for PV negative or other DC negative circuits.

Figure 3.3: Wiring diagram located on the inside of the MNDC door, illustrating the various electrical connections within the system.

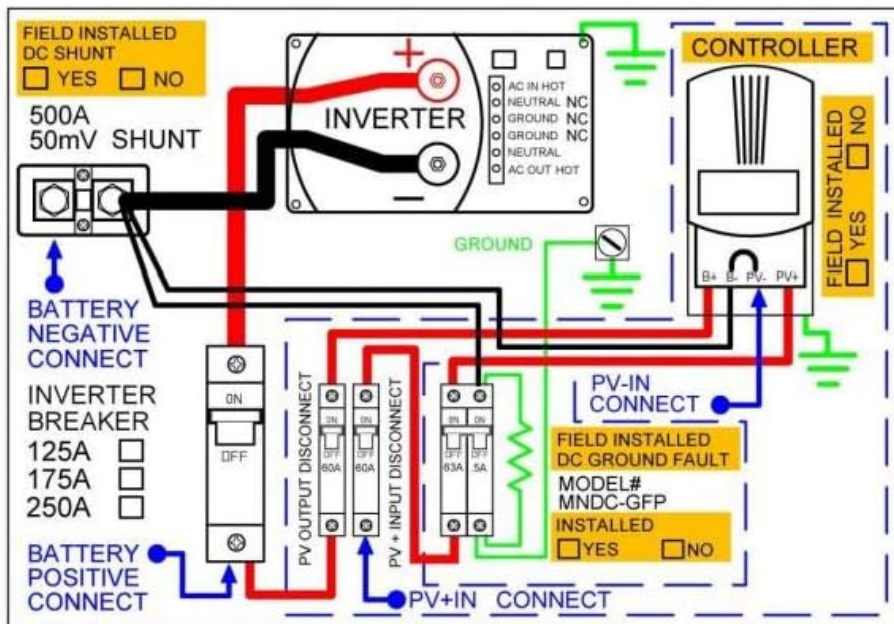
4. GROUNDING

Proper grounding is essential for safety and system performance in renewable energy installations. The MNDC chassis

should be grounded to your earth ground rod through a 6AWG wire connected to the ground bus bar located in the top left section of the MNDC chassis. This MNDC ground bus bar will become your primary system DC ground.

The ground bus bar also serves as the location where DC surge suppressors, such as the MNSPD, should be grounded. It is advisable to use one of the $\frac{3}{4}$ " conduit knockouts to mount a DC lightning arrestor to the MNDC box. It is also common practice to run a ground wire from the PV panels to the MNDC ground. In dry climates, it is particularly advisable to run a ground wire from the PV panels to the MNDC ground. The MNDC ground bus bar is an ideal place to ground a DC-GFP when installed, as well as the inverter chassis and the charge control chassis. Do the grounds first since they normally lie in the bottom of the chassis.

MNDC Instructions (continued)



Wiring diagram supplied on the door of MNDC

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Figure 4.1: Close-up view of the ground bus bar within the MNDC enclosure, showing connection points for grounding wires.

5. BATTERY NEGATIVE CONNECTION

The wiring diagram indicates a 500 amp shunt. The voltage drop across this shunt is used to calculate the battery state of

charge. If this shunt is not installed, you can use the 5/16" stud directly above the shunt area as a battery negative tie point. This tie point will ground the battery negative to the chassis. Grounding the battery negative is not required when employing a DC-GFP device. The inverter side of the shunt or the 5/16" stud also serves as an ideal tie point for PV negative or other DC negative circuits.

6. OPERATING INSTRUCTIONS

The MidNite Solar MNDC250 Plus is primarily a DC disconnect and enclosure for circuit breakers. Operation involves the proper use of installed breakers and understanding the system's electrical flow.

- **Breaker Operation:** Ensure all circuit breakers are correctly installed and rated for their respective circuits. To disconnect power, switch the corresponding breaker to the "OFF" position. To restore power, switch it to the "ON" position.
- **System Monitoring:** If a shunt is installed, monitor battery state of charge through your connected battery monitor.
- **Safety First:** Always ensure power is disconnected before performing any maintenance or modifications within the enclosure.

7. MAINTENANCE

Regular maintenance helps ensure the longevity and safe operation of your MNDC250 Plus Mini-DC Disconnect.

- **Visual Inspection:** Periodically inspect the enclosure for any signs of damage, corrosion, or loose connections. Check for dust or debris accumulation.
- **Cleanliness:** Keep the interior and exterior of the enclosure clean. Use a dry, soft cloth to wipe surfaces. Do not use abrasive cleaners or solvents.
- **Connection Checks:** Annually, or as recommended by your system installer, verify that all electrical connections are secure and free from corrosion. Ensure all breakers are seated properly.
- **Ventilation:** Ensure that any ventilation openings are clear and unobstructed to allow for proper airflow.

8. TROUBLESHOOTING

This section provides basic troubleshooting steps for common issues. For complex problems, consult a qualified electrician or contact MidNite Solar support.

Problem	Possible Cause	Solution
No power to DC loads/inverter	Breaker tripped or off; loose connection; faulty component.	Check all breakers and reset if tripped. Verify all wiring connections are secure. Inspect for damaged wires or components.
Enclosure feels hot	Overloaded circuit; poor ventilation; loose connection causing resistance.	Reduce load on circuits. Ensure ventilation is not obstructed. Check for loose connections at terminals. Consult a professional if problem persists.
Unusual noises from enclosure	Loose components; arcing.	Immediately disconnect power if safe to do so. Inspect for loose hardware or signs of electrical arcing. Contact a qualified electrician.

9. SPECIFICATIONS

Attribute	Value
Brand	MidNite Solar
Model Number	MNDC250 Plus
Product Dimensions (L x W x H)	9" x 4" x 17"
AC Adapter Current (Max)	250 Amps
Number of Circuits	10
Phase Type	Single Phase
Item Weight	6 pounds
Manufacturer	Midnight Solar
ETL Listing	Listed for US & Canada

10. WARRANTY AND SUPPORT

For specific warranty information regarding your MidNite Solar MNDC250 Plus Mini-DC Disconnect, please refer to the documentation included with your purchase or visit the official MidNite Solar website. Warranty terms and conditions may vary.

For technical support, installation assistance, or any inquiries not covered in this manual, please contact MidNite Solar customer service directly. Contact information can typically be found on their official website or on the product packaging.

Manufacturer: Midnight Solar

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Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

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Anonymous

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question