

Installation and Operations Manual

Enphase Micro-Inverter Models M175 and M200





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FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.



Table of Contents

- Important Safety Information 5
 - Read this First 5
 - Safety Instructions 5
- 1 The Enphase Micro-Inverter System 6
 - How the Micro-Inverter Works 6
 - Enphase Micro-Inverter Models 7
- 2 Enphase Micro-Inverter Installation 8
 - Parts Included 8
 - Other Parts and Tools Required 8
 - Installation Procedure 9
 - Step 1 - Install the AC Branch Circuit Junction Box..... 10
 - Step 2 - Attach the Enphase Micro-Inverters to the Racking 10
 - Step 3 - Connecting the Enphase Micro-Inverter Wiring Harnesses 10
 - Step 4 - Grounding the System 11
 - Step 5 - Completing the Enphase Installation Map and Connecting the PV Modules 11
- 3 Commissioning 13
- 4 Operating Instructions 13
- 5 Troubleshooting 14
 - Micro-Inverter Indications and Error Reporting 14
 - Normal Operation: 14
 - GFDI Fault: 14
 - Other Faults: 14
 - Troubleshooting an Inoperable Micro-Inverter 15
 - Disconnecting the Enphase Micro-Inverter from the PV Module 15
- 6 Technical Data 16
 - Technical Considerations 16
 - Technical Specifications 16
 - Enphase Micro-Inverter Operating Parameters..... 16
 - Voltage and Frequency Limits for Utility Interaction..... 18
- 7 Appendix 19
 - Limited Warranty 19
 - Enphase Installation Map 21
 - Wiring Diagram – M175-24-240-S0x, M200-32-240-S0x..... 22
 - Wiring Diagram – M175-24-208-S0x, M200-32-208-S0x..... 23

Important Safety Information

Read this First

This manual contains important instructions to follow during installation and maintenance of the Enphase Micro-inverter.

To reduce the risk of electrical shock, and to ensure the safe installation and operation of the Enphase Micro-inverter, the following safety symbols appear throughout this document to indicate dangerous conditions and important safety instructions.



WARNING: This indicates a situation where failure to follow instructions may cause a serious hardware failure if not applied appropriately. Use extreme caution when performing this task.



NOTE: This indicates information particularly important for optimal system operation. Follow these instructions closely.

Safety Instructions

- Perform all electrical installations in accordance with all local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.
- Be aware that only qualified personnel should install and/or replace Enphase Micro-inverters.
- Do not attempt to repair the Enphase Micro-inverter; it contains no user-serviceable parts. If it fails, please return the unit to your distributor for maintenance. Tampering with or opening the Enphase Micro-inverter will void the warranty.
- Before installing or using the Enphase Micro-inverter, please read all instructions and cautionary markings in the technical description and on the Enphase Micro-inverter system and the PV-array.
- Connect the Enphase Micro-inverter to the electrical utility grid only after receiving prior approval from the utility company.
- Be aware that the body of the Enphase Micro-inverter is the heat sink and can reach a temperature of 80°C. To reduce risk of burns, do not touch.
- Do NOT disconnect the PV module from the Enphase Micro-inverter without first removing AC power.



NOTE: For Enphase Micro-inverter Warranty Terms and Conditions, see the Appendix of this manual.

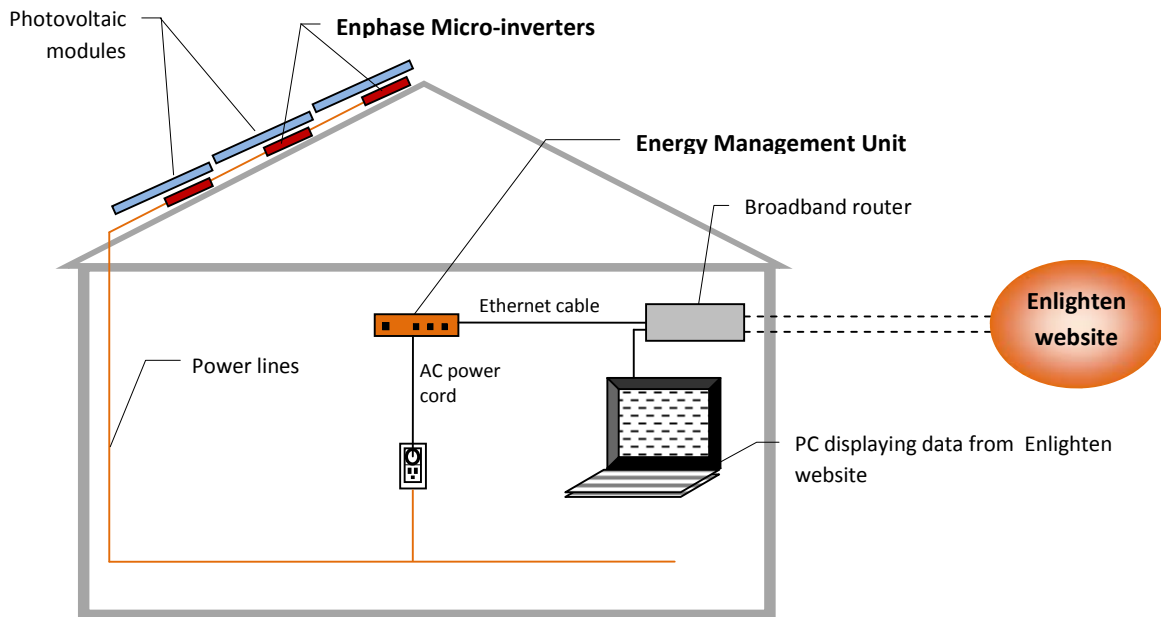
1 The Enphase Micro-Inverter System

The Enphase Micro-inverter system is the world's most technologically advanced inverter system for use in utility interactive applications. This manual details the safe installation and operation of the Enphase Micro-inverter.

The three key elements of an Enphase Micro-inverter System are:

- the Enphase Micro-inverter
- the Energy Management Unit (EMU)
- the Enphase Enlighten™ web-based monitoring and analysis

This integrated system maximizes energy harvest, increases system reliability, and simplifies design, installation and management.



How the Micro-Inverter Works

The Enphase Micro-inverter maximizes energy production from your photovoltaic (PV) array. Each Enphase Micro-inverter is individually connected to one PV module in your array. This unique configuration means that an individual Maximum Peak Power Point Tracker (MPPT) controls each PV module. This insures that the maximum power available from each PV module is exported to the utility grid regardless of the performance of the other PV modules in the array. That is, although individual PV modules in the array may be affected by shading, soiling, orientation, or module mismatch, the Enphase Micro-inverter insures top performance for its associated PV module. The result is maximum energy production from your PV system.



Micro-inverter systems are also inherently more reliable than centralized or string inverters. The distributed nature of the Micro-inverter System insures that there is no single point of failure in the PV system. Enphase Micro-inverters are designed to operate at full power at temperatures as high as 65°C (150°F). The inverter housing is designed for outdoor installation and complies with the NEMA6 environmental enclosure rating standard:

NEMA6 rating definition: Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, and the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation.

PV systems using Enphase Micro-inverters are very simple to design and install. You will not need string calculations, and you can install individual PV modules in any combination of module quantity, type, age and orientation. You won't need to install cumbersome centralized or string inverters. Each Micro-inverter quickly mounts on the PV racking, directly beneath each PV module. Low voltage DC wires connect from the PV module directly to the co-located Micro-inverter, eliminating the risk of personnel exposure to lethal 600Vdc power.

Indoors, you can install the Energy Management Unit (EMU) communications gateway by plugging it into any convenient 120Vac wall socket and providing an Ethernet connection. After installation of the EMU, the full network of Enphase Micro-inverters automatically begins reporting to the Enphase Enlighten web server. The Enlighten software presents current and historical system performance trends, and it informs you when the PV system is not performing as expected.

These are just a few of the ways in which the Enphase Micro-inverter System provides tremendous time, material and cost savings, while maximizing energy production and providing better return on investment from your system.

Enphase Micro-Inverter Models

The Enphase M175 Micro-inverters operate with most 72-cell PV module configurations; sometimes referred to as "24V modules". The Enphase M200 Micro-inverters operate with 96-cell configurations; sometimes referred to as "32V modules". See the table below for basic model differences. For more information, see the Technical Data section on page 16 of this manual. You may also refer to the Enphase website (www.enphaseenergy.com/support/support-downloads.php) for a list of approved PV module racking systems.

Model	Works with PV Module Type	Maximum inverters per AC branch circuit
M175-24-208-S0x*	24V, 72 cell	24
M175-24-240-S0x*	24V, 72 cell	16
M200-32-208-S0x*	32V, 96 cell	21
M200-32-240-S0x*	32V, 96 cell	14

- The "x" stands in place of a "1" or a "2" in the model name. These numbers indicate different DC connector types.

2 Enphase Micro-Inverter Installation

PV systems using Enphase Micro-inverters are simple to install. Each Micro-inverter quickly mounts on the PV racking, directly beneath each PV module. Low voltage DC wires connect from the PV module directly to the co-located Micro-inverter, thus eliminating the risk of personnel exposure to lethal 600Vdc power.



WARNING: Before installing the Enphase Micro-inverter, read all instructions and cautionary markings in the user manual, on the Enphase Micro-inverter, and on the photovoltaic array.



WARNING: Perform all electrical installations in accordance with all local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.



WARNING: Connect the Enphase Micro-inverter to the electrical utility grid only after receiving prior approval from the utility company.



WARNING: Be aware that only qualified personnel should connect the Enphase Micro-inverter to the electrical utility grid.



WARNING: Be aware that installation of this equipment includes risk of electric shock. Normally grounded conductors may be ungrounded and energized when a ground fault is indicated.

Parts Included

In the Micro-inverter installation kit, you'll find the following items:

- Protective caps
- Mounting Bracket (adapter plate)
- AC interconnect cable

Other Parts and Tools Required

In addition to your PV array and its associated hardware, you will need to provide the following:

- Junction box
- Continuous grounding cable
- Number 2 Phillips screwdriver
- 1/2 and 9/16 inch socket wrenches
- Wire cutters
- Wire strippers

Installation Procedure

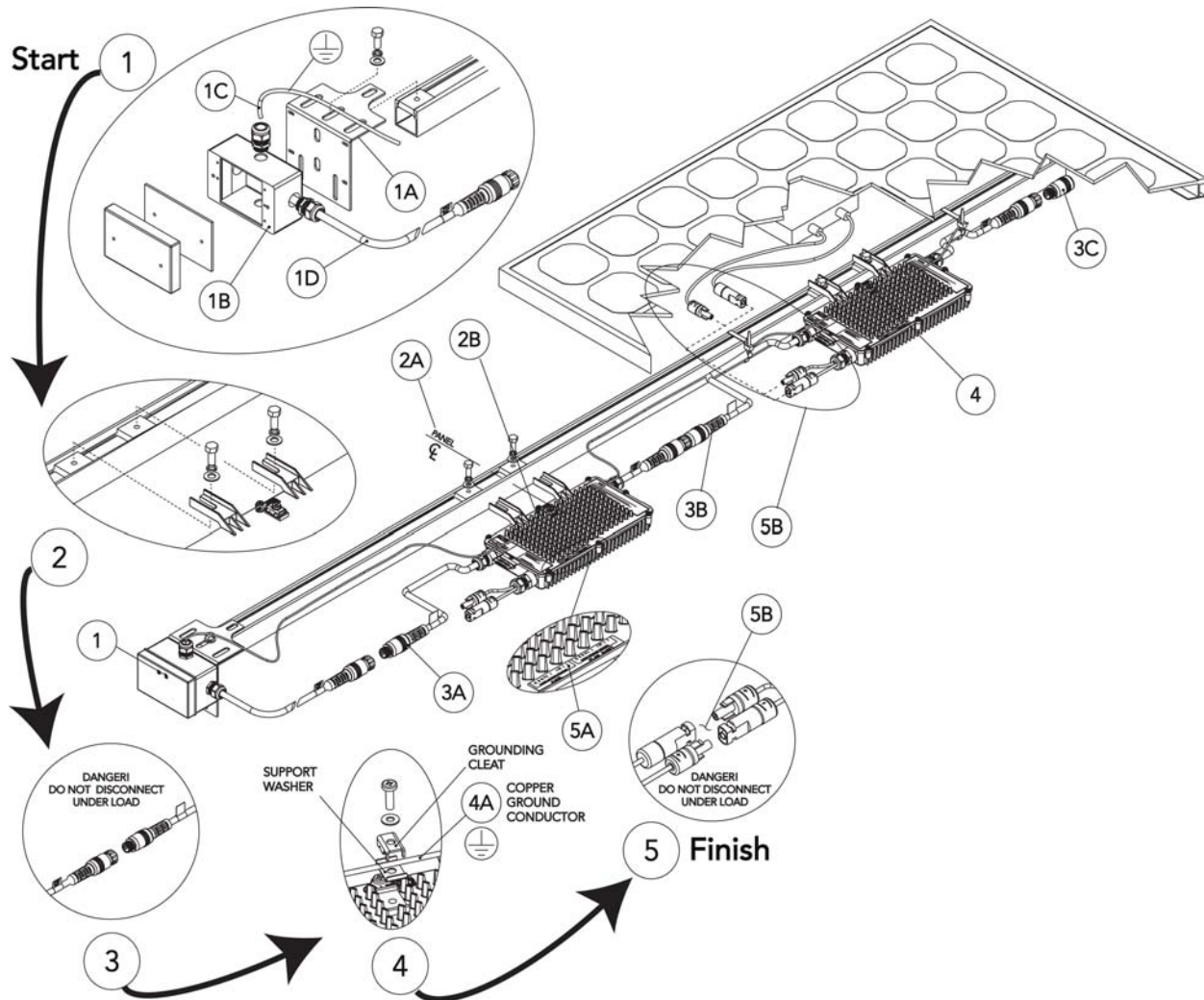
Installing the Enphase Micro-inverter System involves five key steps:

1. Installing the AC branch circuit junction box
2. Attaching the Enphase Micro-inverters to the racking
3. Connecting the Enphase Micro-inverter wiring harnesses
4. Grounding the system
5. Completing the Enphase Installation map and connecting the PV modules

Each of the detailed installation steps in the following sections is numerically referenced in the installation diagram below.



WARNING: DO NOT connect Enphase Micro-inverters to the utility grid or energize the AC circuit(s) until you have completed all of the installation procedures as described in the following sections.



Step 1 - Install the AC Branch Circuit Junction Box

- a. Mount the Enphase Adapter Plate at a suitable location on the PV racking system (typically at the end of a row of modules).
- b. Install an appropriate junction box with a 15A AC disconnect switch (optional as required by local code requirements) to the adapter plate.



WARNING: Use electrical system components approved for wet locations only.

- c. Connect the open wire end of the Enphase AC interconnect cable into the junction box using an appropriate gland or strain relief fitting.
- d. Route the continuous Grounding Electrode Conductor (GEC) through the AC branch circuit junction box. Check local code requirements for the gauge of the GEC.

Step 2 - Attach the Enphase Micro-Inverters to the Racking

- a. Mark the approximate centers of each PV module on the racking system.



WARNING: Allow a minimum of .75 inches between the top of the roof and the bottom of the Micro-inverter. We also recommend that you allow 1.0 inches between the back of the PV module and the top of the inverter.

- b. Mount one Micro-inverter at each of these locations using hardware recommended by your PV racking vendor.

Step 3 - Connecting the Enphase Micro-Inverter Wiring Harnesses

Each Micro-inverter comes with two, 36-inch AC wire harnesses with multi-pin connectors. (The DC input wires are approximately six inches long and are terminated with single pole MC connectors.) The AC connectors are oppositely sexed, so that multiple inverters can be connected to form one continuous AC branch circuit. When you perform this step, refer to the wiring diagram for your Micro-inverter model. These diagrams are located in the Appendix of this manual.

- a. Orient the first micro-inverter in each branch with its male connector facing the junction-box. The junction-box AC interconnect cable has a female connector. Connect the first Micro-inverter to the AC interconnect cable. All AC interconnect cables have four conductors. Wire them as follows depending on your Micro-inverter model:
 - M175-24-240-S0x - Black to L1, Red to L2, Blue to neutral, Orange is unused and must be capped.
 - M175-24-208-S0x - Black to L1, Red to L2, Orange to L3, Blue to neutral.
 - M200-32-240-S0x - Black to L1, Red to L2, Blue to neutral, Orange is unused and must be capped.
 - M200-32-208-S0x - Black to L1, Red to L2, Orange to L3, Blue to neutral.

- b. Plug the AC connector of the first Micro-inverter into the connector of the next Micro-inverter, and so forth, to form a continuous AC branch circuit. Please check the Micro-inverter rating label for the maximum allowable number of Micro-inverters on one AC branch circuit.



WARNING: Do NOT exceed the maximum number of Micro-inverters in an AC branch circuit, as displayed on the unit-rating label. Each Micro-inverter AC branch circuit must be sourced from a dedicated branch circuit protected by a 15A maximum breaker.

- c. Install a protective end cap on the open AC connector of the last Micro-inverter in the AC branch circuit.



WARNING: Make sure protective end caps have been installed on all unused AC connectors. Unused AC Micro-inverter wire harness connectors may be live when the system is energized by the utility system.



NOTE: Be sure to size the AC wire gauge to account for voltage drop between the AC branch circuit junction box and the point of utility inter-connection.

Step 4 – Grounding the System

Each Enphase Micro-inverter comes with a ground clip that can accommodate a 6-10 AWG conductor.



- a. Route a continuous GEC through each of the Micro-inverters and AC branch circuit junction box to the NEC approved AC grounding electrode.

NOTE: The AC output neutral is not bonded to ground inside the Micro-inverter.

Step 5 – Completing the Enphase Installation Map and Connecting the PV Modules

The Enphase Installation Map is a diagrammatic representation of the physical location of each Enphase Micro-inverter in your PV installation. Enphase creates this map from information that you provide in a system map. You can use the blank map in the Appendix to record Micro-inverter placement for your system. When your map is complete, send it to Enphase as described below. Enphase then uses this information to provide you with detailed information about the performance of your PV system and to allow you to see a graphic representation of your PV system on the Enphase Enlighten web-based monitoring and analysis. Feel free to provide your own layout if a larger or more intricate installation map is required.

- To complete your map:
 - a. Each Enphase Micro-inverter has a removable serial number label located on the top cover. Peel the removable serial number label from each Enphase Micro-inverter and affix it to the respective location on the Enphase installation map.



- b. Send the installation map to Enphase after completion. See the Appendix section of this manual for an example installation map. You can also download installation maps and examples from www.enphaseenergy.com/quickstart. Enphase prefers to receive a digital copy of the installation map via an upload to the Enlighten web site during installation set up, or you may send it via email. If you are not able to digitally scan the map, please provide the map via fax or mail. See the contact information at the beginning of this manual for a fax number, email address, and mailing address. Remember to make a copy of the installation map for yourself if you are sending the original.
- c. After Enphase creates a graphical representation of your PV system on the Enlighten website, use the Enlighten website to view detailed performance information for your PV system. Please go to www.enphaseenergy.com for more information on the Enphase Enlighten web-based monitoring and analysis.

- To connect your PV modules:



NOTE: Completely install all Micro-inverters and all system inter-wiring connections prior to installing the PV modules.

Best Practice: Test AC first. Before you rack-mount the PV, pull and terminate all AC wiring, energize the branches, and power up the Micro-inverters to make sure that they all report into the EMU and are operating correctly.

- a. Mount the PV modules above their corresponding Micro-inverters. Each Micro-inverter comes with two oppositely sexed multi-contact connectors.
- b. First connect the positive DC wire from the PV module to the negatively marked DC connector (female socket) of the Micro-inverter. Then connect the negative DC wire from the PV module to the positively marked DC connector (male socket) of the Micro-inverter. Repeat for all remaining PV modules using one Micro-inverter for each module.

3 Commissioning



WARNING: Connect the Enphase Micro-inverter to the electrical utility grid only after receiving prior approval from the utility company.



WARNING: Be aware that only qualified personnel must connect the Enphase Micro-inverter to the electrical utility grid.



WARNING: Ensure that all AC and DC wiring is correct. Ensure that none of the AC and DC wires are pinched or damaged. Ensure that all junction boxes are properly closed.



Note: Each Micro-inverter will beep six times to indicate normal start-up operation once AC or DC power is applied.

To commission the Enphase Micro-inverter PV system:

1. Turn ON the AC disconnect on each Micro-inverter AC branch circuit junction box.
2. Turn ON the main utility-grid AC circuit breaker. Your system will start producing power after a five-minute wait time.
3. Verify operation and production by reading the display on the LCD panel of the EMU. Please refer to the *EMU Installation and Operation Manual* for information on the EMU.

4 Operating Instructions

When the Enphase Micro-inverter is powered on, you will hear six beeps indicating proper start-up.



NOTE: In the event of a GFDI failure, you will hear a five-minute long continuous tone when the fault occurs. This will repeat when AC and DC power are cycled to the Micro-inverter.

You can verify proper operation of the Enphase Micro-inverters via the EMU. See the *EMU Installation and Operation Manual* for more information.

5 Troubleshooting

Adhere to all the safety measures described throughout this manual. Qualified personnel can use the following troubleshooting steps if the PV system does not operate correctly:



WARNING: Do not attempt to repair the Enphase Micro-inverter; it contains no user-serviceable parts. If it fails, please return the unit to your distributor for maintenance.

Micro-Inverter Indications and Error Reporting

Normal Operation:

Listen for six short beeps when AC or DC power is first applied to the Micro-inverter. This indicates normal Micro-inverter operation.

GFDI Fault:

A long constant tone after AC and DC power has been cycled, indicates the Micro-inverter has detected a ground fault (GFDI) error. This tone will sound for five minutes, after which the Micro-inverter will remain silent. The fault will continue to be reported by the EMU. The error can only be cleared via the EMU after the ground fault condition has been remedied. Contact Enphase customer support at 877-797-4743 for assistance.

Other Faults:

All other faults are reported to the EMU. Refer to the *EMU Installation and Operation Manual* for a list of additional faults and troubleshooting procedures.



WARNING: Be aware that only qualified personnel should troubleshoot the PV array or the Enphase Micro-inverter.



WARNING: Never disconnect the DC wire connectors under load. Ensure that no current is flowing in the DC wires prior to disconnecting.



WARNING: Always disconnect AC power before disconnecting the PV module wires from the Enphase Micro-inverter. The AC connector of the first micro-inverter in a branch circuit is suitable as a disconnecting means once the AC branch circuit breaker in the load center has been opened.



WARNING: The Enphase Micro-inverters are powered both by AC power from the utility grid and DC power from the PV modules. Make sure you disconnect both the AC and the DC connections and reconnect either AC or DC power to hear the six start-up beeps.

Troubleshooting an Inoperable Micro-Inverter

To troubleshoot an Inoperable Micro-inverter, follow the steps in the order shown

1. Check the connection to the utility grid. Verify the utility voltage and frequency are within allowable ranges shown in the Technical Data section on page 16 of this manual. Verify utility power is present at the inverter in question by removing AC, then DC power. **Never disconnect the DC wires while the Micro-inverter is producing power.** Re-connect the AC power conductor and listen for six short beeps.
2. Check the AC branch circuit interconnection harness between all the Micro-inverters. Verify each inverter is energized by the utility grid as described in the previous step.
3. Make sure that all the AC switches in the junction boxes are functioning properly and are closed.
4. Verify the PV module DC voltage is within the allowable range shown in the Technical Data section on page 16 of this manual.
5. Check the DC connections between the Micro-inverter and the PV module.
6. If the problem persists, please call customer support at Enphase Energy.



WARNING: Do not attempt to repair the Enphase Micro-inverter; it contains no user-serviceable parts. If troubleshooting methods fail, please return the Micro-inverter to your distributor for maintenance.

Disconnecting the Enphase Micro-Inverter from the PV Module

To insure the Micro-inverter is not disconnected from the PV modules under load, adhere to the following disconnection steps in the order shown:

1. Turn off the AC disconnect on the AC branch circuit junction box.
2. Turn off the utility-grid AC circuit breaker.
3. Disconnect the AC branch circuit wire harness connector(s).
4. Using a DC current probe, verify there is no current flowing in the DC wires between the PV module and the Micro-inverter.
5. If there is measurable DC current, cover the PV module connected to the Micro-inverter with an opaque material.
6. Disconnect the PV module DC wire connectors from the Micro-inverter.
7. Remove the Micro-inverter from the PV array racking.

6 Technical Data

Technical Considerations

The Enphase M175 Micro-inverters are designed to operate with most 72-cell PV module configurations; sometimes referred to as "24V modules". Enphase M200 Micro-inverters operate with 96-cell configurations; sometimes referred to as "32V modules". Be sure to verify the voltage and current specifications of your PV module match with those of the Micro-inverter. For more information, refer to the Enphase website (www.enphaseenergy.com/support/support-downloads.php) for a list of approved PV module racking systems.



WARNING: You must match the DC operating voltage range of the PV module with the allowable input voltage range of the Enphase Micro-inverter.



WARNING: The maximum open circuit voltage of the PV module must not exceed the specified maximum input voltage of the Enphase Micro-inverter.

The output voltage and current of the PV module depends on the quantity, size and temperature of the PV cells, as well as the solar insolation on each cell. The highest PV module output voltage occurs when the temperature of the cells is the lowest and the module is at open circuit (not operating). The maximum short circuit current rating of the module must be equal to or less than the maximum input DC short circuit current rating of the Micro-inverter. A list of compatible PV modules is maintained on the Enphase website (www.enphaseenergy.com).

Technical Specifications

Enphase Micro-Inverter Operating Parameters				
Topic/Model	Unit	Min	Typical	Max
DC Operating Parameters				
MPPT voltage range				
M175 models	V	25	32	40
M200 models	V	44	54	65
Maximum DC input voltage				
M175 models	V			54
M200 models	V			80
Maximum DC input short circuit current				
M175 models	A			10
M200 models	A			7
Maximum DC input current				
M175 models	A			8
M200 models	A			5
Ground fault protection	mA			1000

Enphase Micro-Inverter Operating Parameters				
Topic/Model	Unit	Min	Typical	Max
AC Operating Parameters				
Maximum AC output Power (-25 to 65 °C)				
M175 models	W	175		
M200 models	W	200		
Output power factor		0.95	0.99	1
Nominal AC output voltage range				
M175-24-240-SOx	Vrms	211	240	264
M175-24-208-SOx	Vrms	183	208	229
M200-32-240-SOx	Vrms	211	240	264
M200-32-208-SOx	Vrms	183	208	229
Extended AC output voltage range				
M175-24-240-SOx	Vrms	206	240	269
M175-24-208-SOx	Vrms	179	208	232
M200-32-240-SOx	Vrms	206	240	269
M200-32-208-SOx	Vrms	179	208	232
Maximum AC output current				
M175-24-240-SOx	mA		750	830
M175-24-208-SOx	mA		840	956
M200-32-240-SOx	mA		833	1020
M200-32-208-SOx	mA		962	1173
Nominal AC output frequency range	Hz	59.3	60	60.5
Extended AC output frequency range	Hz	59.2	60	60.6
Maximum AC output over current protection	A			15 A
Maximum AC output fault current & duration	A/ms			20/0.1
AC Voltage trip limit accuracy	%	±2.5		
Frequency trip limit accuracy	Hz	±0.1		
Trip time accuracy	ms	±33		
Miscellaneous Operating Parameters				
Maximum inverters per AC branch circuit				
M175-24-240-SOx		1		16
M175-24-208-SOx		1		24
M200-32-240-SOx		1		14
M200-32-208-SOx		1		21
Peak inverter efficiency				
M175-24-208-SOx	%			95.0
M200-32-240-SOx	%			95.3
CEC weighted efficiency				
M175 models	%			94.5
M200 models	%			95.0
Nominal MPP tracking efficiency				
M175 models	%			99.6
M200 models	%			99.8
Total Harmonic Distortion	%		2.5	5
Operating temperature range	°C	-25		65

Enphase Micro-Inverter Operating Parameters				
Topic/Model	Unit	Min	Typical	Max
Night Tare Loss				
M175-24-240-SOx	mW		580	
M175-24-208-SOx	mW		560	
M200-32-240-SOx	mW		464	
M200-32-208-SOx	mW		438	
Storage temperature range	°C	-40	65	
Features				
Dimensions (approximate)	11" x 5 ¾" x 1 ½"			
Weight	under 4.0 Lbs			
Enclosure environmental rating	NEMA6			
Cooling	Convective – no fan			
Communication	Powerline			
Standard warranty term	15 years			
Compliance	UL1741, IEEE1547, FCC Part 15 Class B			

Voltage and Frequency Limits for Utility Interaction			
Condition	Simulated utility source		Maximum time (sec) (cycles) at 60 Hz before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$< 0.50 V_{\text{Typical}}$	Rated	0.16
B	$0.50 V_{\text{Typical}} \leq V < 0.88 V_{\text{Typical}}$	Rated	2
C	$1.10 V_{\text{Typical}} < V < 1.20 V_{\text{Typical}}$	Rated	1
D	$1.20 V_{\text{Typical}} \leq V$	Rated	0.16
E	Rated	$f > 60.5$	0.16
F	Rated	$f < (59.8 - 57.0)$	0.16 – 300
G	Rated	$f < 57.0$	0.16

7 Appendix

Limited Warranty

Enphase Energy Inc. ("**Enphase**") has developed a highly reliable Micro-inverter that is designed to withstand normal operating conditions when used for its originally intended purpose in compliance with the Enphase User Manual supplied with the originally shipped system. The Enphase limited warranty ("**Limited Warranty**") covers defects in workmanship and materials of the Enphase Micro-inverter ("**Defective Product**") for a period of fifteen (15) years from the date of original purchase of such Micro-inverter at point of sale to the original end user customer (the "**Warranty Period**").

During the Warranty Period, Enphase will, at its option, repair or replace the Defective Product free of charge, provided that Enphase through inspection establishes the existence of a defect that is covered by the Limited Warranty. Enphase will, at its option, use new and/or reconditioned parts in repairing or replacing the Defective Product. Enphase reserves the right to use parts or products of original or improved design in the repair or replacement of Defective Product. If Enphase repairs or replaces a Defective Product, the Limited Warranty continues on the repaired or replacement product for the remainder of the original Warranty Period or ninety (90) days from the date of Enphase's return shipment of the repaired or replacement product, whichever is later.

The Limited Warranty covers both parts and labor necessary to repair the Defective Product, but does not include labor costs related to un-installing the Defective Product or re-installing the repaired or replacement product. The Limited Warranty also covers the costs of shipping repaired or replacement product from Enphase, via a non-expedited freight carrier selected by Enphase, to locations within the United States (including Alaska and Hawaii) and Canada, but not to other locations outside the United States or Canada. The Limited Warranty does not cover, and Enphase will not be responsible for, shipping damage or damage caused by mishandling by the freight carrier and any such damage is the responsibility of the freight carrier.

To obtain repair or replacement service under this Limited Warranty, the customer must comply with the following policy and procedure:

- All Defective Product must be returned with a Return Merchandise Authorization Number (RMA) which customer must request from Enphase. Before requesting the RMA, however, the customer should contact an Enphase technical support representative to evaluate and troubleshoot the problem while the Enphase Micro-inverter is in the field, since many problems can be solved in the field.
- If in-field troubleshooting does not solve the problem, Customer may request the RMA number, which request must include the following information:
 - Proof-of-purchase of the Defective Product in the form of (1) the dated purchase receipt from the original purchase of the product at point of sale to the end user, or (2) the dated dealer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or (3) the dated invoice or purchase receipt showing the product exchanged under warranty.

- Model number of the Defective Product
 - Serial number of the Defective Product
 - Detailed description of the defect
 - Shipping address for return of the repaired or replacement product
- All Defective Product authorized for return must be returned in the original shipping container or other packaging that is equally protective of the product
 - The returned Defective Product must not have been disassembled or modified without the prior written authorization of Enphase

The Limited Warranty does not cover normal wear and tear of Enphase Micro-inverters or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. The Limited Warranty does not apply to, and Enphase will not be responsible for, any defect in or damage to any Enphase Micro-inverter: (1) that has been misused, neglected, tampered with, altered, or otherwise damaged, either internally or externally; (2) that has been improperly installed, operated, handled or used, including use under conditions for which the product was not designed, use in an unsuitable environment, or use in a manner contrary to the Enphase User Manual or applicable laws or regulations; (3) that has been subjected to fire, water, generalized corrosion, biological infestations, acts of God, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Enphase Micro-inverter specifications, including high input voltage from generators or lightning strikes; (4) that has been subjected to incidental or consequential damage caused by defects of other components of the solar system; or (5) if the original identification markings (including trademark or serial number) of such Micro-inverter have been defaced, altered, or removed. The Limited Warranty does not extend beyond the original cost of the Enphase Micro-inverter.

THE LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY ENPHASE AND, WHERE PERMITTED BY LAW, IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, QUALITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OR WARRANTIES AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN MANUALS OR OTHER DOCUMENTATION. IN NO EVENT WILL ENPHASE BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, COSTS OR EXPENSES HOWEVER ARISING, WHETHER IN CONTRACT OR TORT, INCLUDING WITHOUT LIMITATION ANY ECONOMIC LOSSES OF ANY KIND, ANY LOSS OR DAMAGE TO PROPERTY, OR ANY PERSONAL INJURY.

To the extent any implied warranties are required under applicable law to apply to the Enphase Micro-inverter, such implied warranties shall be limited in duration to the Warranty Period, to the extent permitted by applicable law. Some states and provinces do not allow limitations or exclusions on implied warranties or on the duration of an implied warranty or on the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply. This Limited Warranty gives the customer specific legal rights, and the customer may have other rights that may vary from state to state or province to province.

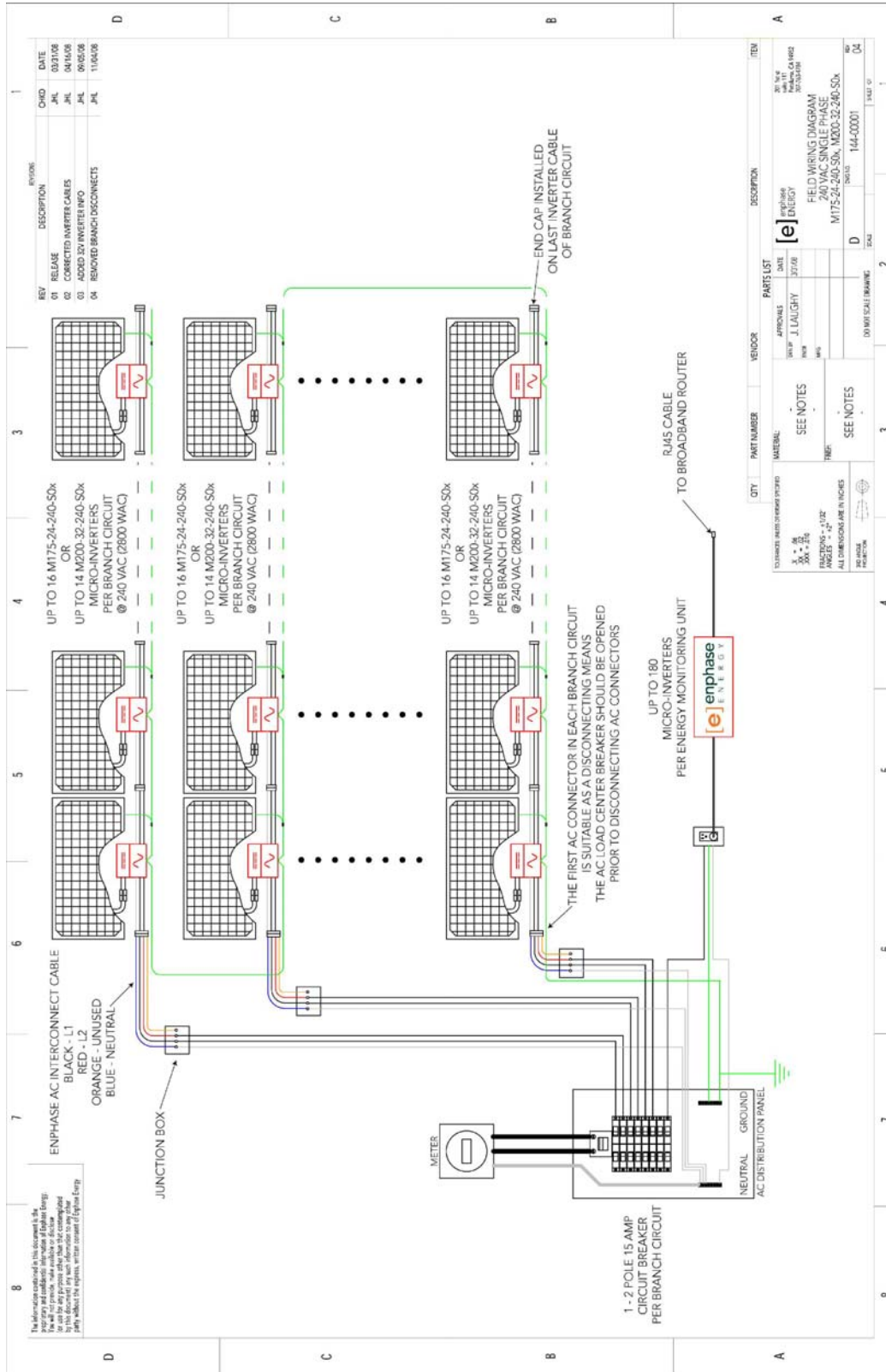


Enphase Installation Map

Panel Group: Azimuth: Tilt: sheet ___ of ___	Customer information:					Installer information:					N S E W (circle one) 	
	1	2	3	4	5	6	7	8	9	10		11
A												
B												
C												
D												
E												
F												
G												
H												
J												
K												
L												
M												
Fax to: 707-763-0784											DOCUMENT NUMBER 140-00003 REGION 01	
EMU Serial Label											INSTALLATION MAP	

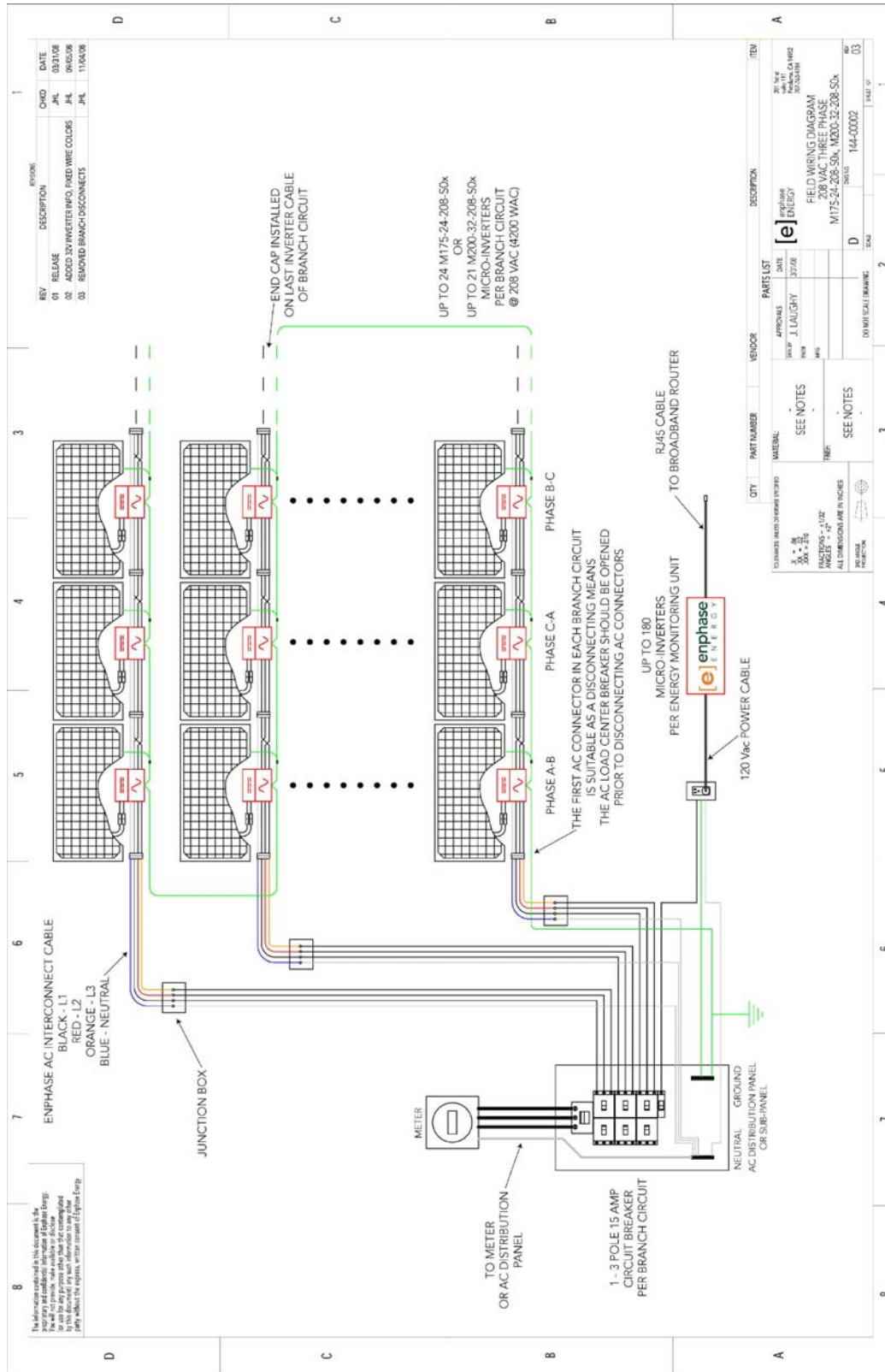


Sample Wiring Diagram – M175-24-240-S0x, M200-32-240-S0x





Sample Wiring Diagram – M175-24-208-S0x, M200-32-208-S0x





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