



Dear Customer,

Congratulations on your new Photovoltaic System! Thank you for choosing SunEdison. Here at SunEdison it is our goal to provide you with the best service and support in the industry.

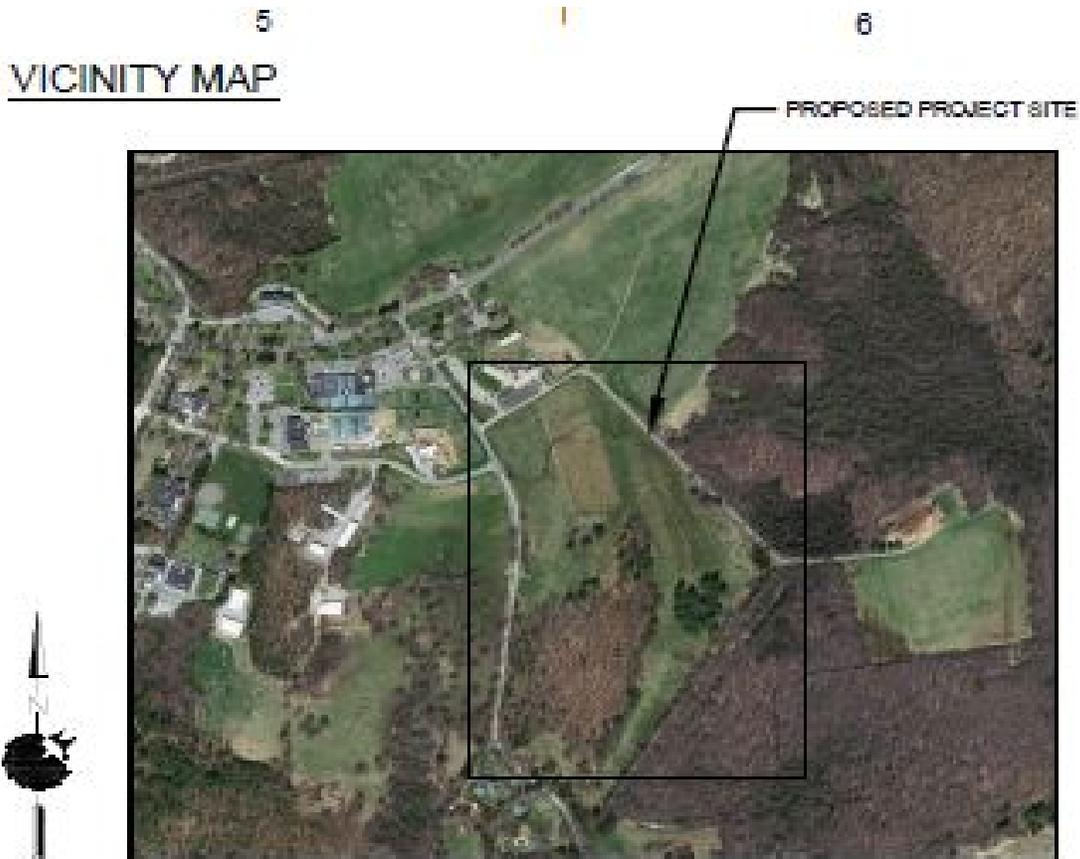
This manual was designed to provide you with all the necessary information about the system. In the event that it becomes necessary to contact us for further assistance, please call the SunEdison Service Department.

**Dial (888-786-3347) and ask for the SunEdison Service Manager.**

## Introduction and Overview to PV Systems

---

### 2.6 MW DC Photovoltaic System 200 Westboro Road NORTH GRAFTON, MA 01536



THIS EQUIPMENT IS MAINTAINED AND OPERATED BY SUNEDISON AND ITS AFFILIATES ONLY. UNAUTHORIZED PERSONNEL **SHALL NOT** PERFORM WORK ON OR SHUTDOWN THIS SYSTEM UNLESS IN AN EMERGENCY. CALL 911 IN AN EMERGENCY WHEN NECESSARY. CONTACT SUNEDISON AT 888-786-3347 AND ASK FOR THE SERVICE MANAGER.

## Table of Contents

- 1. Introduction and Overview of PV Systems**
  - Introduction to this Manual
  - Quick System Overview
  - General PV System Safety
  - Working Safely with PV Systems Document
  
- 2. System Installation and Commissioning Notes – upon completion of full construction**
  
- 3. System Operation and Maintenance - upon completion of full construction**
  - Normal Operating Parameters
  - Preventative Maintenance Schedule
  - Troubleshooting and Repair Guidelines
  - Preventative Maintenance and Repair Log
  
- 4. System Drawings- 50% set included, Complete set upon completion of full construction**
  
- 5. Photovoltaic Module**
  - Manufacturers Specification Sheet
  
- 6. Inverter**
  - Manufacturers Specification Sheet
  - Installation and Operations User Manual
  
- 7. Bill of Materials**

## 1 Introduction

This manual describes the 2604 kW dc photovoltaic system installed at:

### **2.6 KW DC Photovoltaic System 200 Westboro Road NORTH GRAFTON, MA 01536**

It should not be used to maintain or troubleshoot any other photovoltaic systems. The National Electrical Code, local building codes and OSHA safe work practices should take precedence in case of a conflict with any statements made within this manual.

Throughout this manual, the following symbols will be used to highlight important notes and steps. They are:



**WARNING:** A dangerous voltage or condition exists. Use extreme caution when performing these tasks.



**CAUTION:** This procedure is critical to the safe installation or operation of the system. Follow these instructions closely.

## Quick PV System Overview

This section pertains to the ground mounted photovoltaic system sized at

### **2.6 KW DC Photovoltaic System 200 Westboro Road NORTH GRAFTON, MA 01536**

This PV system shall be maintained and operated by SunEdison authorized employees **only**. Unauthorized personnel **shall not** operate this system unless in an emergency situation. This document provides the necessary steps to shutdown this system in the case of an emergency **only**. In the event of an emergency call 911 when necessary.



This system is comprised of electrical components that operate at both DC and AC voltages. System voltages range from 0 – 600 VDC, and 0 – 480 VAC. SunEdison employees or SunEdison authorized employees **only** shall maintain and operate this system.

#### **PHOTOVOLTAIC SYSTEM MAJOR COMPONENTS AND LOCATION:**

The Photovoltaic system is located on the ground at the New Bedford MA. This photovoltaic system has 5 major components:

1. Solar modules (MEMC-M320BMC, 8140 modules. ) – Figure 1
2. Inverter (Advanced energy 500 TX, FOUR. each) – Figures 2
3. Game change Racking structure – 4\*3 tables – Figure 3

There are 8140 MEMC-M320BMC.PV modules in the system. The modules are ground mounted on a light gauge steel supporting structure tilted at 20 degree FIXED TILT The (4) AE 500 TX inverters are located on the Northwest side of the array,





**Figure 2: Advanced Energy 500 TX inverter**



## General PV System Safety

All maintenance, service and repair work should be performed by qualified personnel. All electrical work should be performed by trained electricians who are experienced working with voltages up to 600 VDC and 480 VAC.



This voltage will be present whenever the photovoltaic modules are exposed to sunlight. They can only be “turned off” by covering them with an opaque material.



These voltages are produced by a photovoltaic array whenever sunlight reaches the photovoltaic cells, and are present within the DC section of the inverter.

Photovoltaic system installations are “governed” by local building jurisdictions, which typically base their electrical inspection requirements on the National Electrical Code (NEC), and most specifically NEC Article 690. This article provides rules for the safe installation of PV systems, including DC and AC conductor sizing, selection and over-current protection, as well as placement of disconnect switches and the interconnection between the system and the utility grid.

All personnel supervising the installation of a photovoltaic system should be familiar with and understand the provisions of the NEC - especially Article 690.

The NEC requires that all components of a Photovoltaic system be listed to the appropriate Underwriters Laboratories standards. For photovoltaic modules, this is UL 1703 and for inverters this is UL 1741.

The NEC also requires a means to disconnect the array from the inverter and the inverter from the point of interconnection to the utility grid. The interconnection with the utility grid is accomplished by the use of a disconnect switch between the output of the inverter and the utility metering.



Extreme caution should be used when working around existing electrical distribution equipment, as this equipment may be energized during preparations to install the interconnection equipment.

### General PV System Operation:

Photovoltaic systems consist of two main subsystems: the photovoltaic array composed of photovoltaic modules, interconnection wiring, and support structure, and the power conversion unit (PCU), which is commonly referred to as the inverter.

### Photovoltaic Modules:

The modules are composed of photovoltaic cells, which convert sunlight into direct current (DC) electricity.

The module data sheet (included in a following section of this manual) lists the voltages and currents produced by the photovoltaic modules under standard test conditions. However, the exact voltage and current produced by a photovoltaic module will vary depending upon the amount of sunlight and the temperature of the modules.

As a general rule, a photovoltaic module's voltage is most affected by the temperature of the photovoltaic cells and a module's current is proportional to the amount of sunlight striking the top surface of the photovoltaic cells.



This voltage will be present whenever the photovoltaic modules are exposed to sunlight. They can only be "turned off" by covering them with an opaque material.



Even modules that have been turned "face down" may still be able to produce their full voltage if the sunlight is strong enough to penetrate its rear surface material and reach the cells.

Additionally, the voltage produced by a photovoltaic module is relatively independent of the amount of sunlight striking the cell. Therefore, modules typically achieve their full voltage approximately half an hour after sunrise and maintain this voltage until dusk.



Because photovoltaic modules produce direct current, the danger posed by an electrical shock is increased. Unlike AC current, DC current will not "throw" a victim off a live part, but instead cause their muscles to contract.

### **Photovoltaic Array:**

A photovoltaic array is composed of a series of strings of photovoltaic modules. A series string is a term used to describe a group of modules wired in a series. This is done because the module voltages add when the modules are wired in series, while the module currents are the same. Therefore, a series string minimizes the current produced by a group of photovoltaic modules.

Several series strings are wired together in parallel using what is commonly referred to as a combiner box. The combiner box is required to have a fuse for each series string “before” the point where the strings are combined together.

The combiner box is typically located either near the array or near the inverter.

For every combination of sunlight and temperature, the array has a best operating current and voltage that produces the maximum amount of power. This is referred to as the Max Power Point (MPP) and will differ from the open circuit voltage and short circuit current.

### **Inverter:**

The main function of the inverter is to convert the DC electricity produced by the array into AC electricity, which can be fed to a building’s electrical distribution system as well as to a utility’s electrical grid.

Inverters used in North America must be tested and listed to UL standard 1741. This standard ensures that the inverters are capable of synchronizing their output with a utility grid and will shut down if the grid frequency or voltage goes outside of a specified range.

Almost all inverters are based on solid state switching devices (commonly Mosfets or IGBTs) that handle high currents out and involve no moving parts except for cooling fans. Although this minimizes hazards to personnel, inverters also make use of the high voltage capacitors (temporary energy storage devices) which may retain a high voltage charge for up to 15 minutes or more after an inverter has been shut down.”



The high voltage capacitors within an inverter require time to discharge after an inverter is shut down. Therefore, it is important to be familiar with the inverter’s installation and operations manual before starting to work.



The terminals within the DC section of an inverter will be energized to the array voltage whenever sunlight is present.

## 2. System Installation and Commissioning Notes

### 3. System Operation and Maintenance

This section applies specifically to the 2640 kW dc Photovoltaic system installed at:

#### **2.6 KW DC Photovoltaic System 200 Westboro Road NORTH GRAFTON, MA 01536**

This manual should not be used to maintain, troubleshoot, or repair any other photovoltaic power systems.



Photovoltaic equipment normally operates at high DC and AC voltages. Only trained personnel should perform maintenance, troubleshooting and repair work. Proper protective equipment must be worn for all work being performed.

#### **Normal Operating Parameters**

The following list of parameters gives a general description of the photovoltaic system and equipment. Specific operating settings for the inverter can be found in Section 6 of this Operation and Maintenance Manual:

#### **The data below correlates to the array feeding First AE 500 TX inverter**

- Array open circuit voltage (VOC): 591.58 Volts dc
- Array operating voltage (Vmp): 408.1 Volts dc
- Array short circuit current (Isc): 228.13 Amps dc
- Array operating current (Imp): 138.88Amps dc
  
- Inverter DC operating voltage: 310 – 595 V dc
- Inverter AC operating voltage: 480 Vac 3 phase
- Inverter AC operating current: 608 amps ac
  
- Utility disconnect switch location: Northwest side of the array, inside inverter enclosure

**The data below correlates to the array feeding Second AE 500 TX inverter**

- Array open circuit voltage (VOC): 591.58 Volts dc
- Array operating voltage (Vmp): 408.1 Volts dc
- Array short circuit current (Isc): 228.13 Amps dc
- Array operating current (Imp): 138.88Amps dc
  
- Inverter DC operating voltage: 310 – 595 V dc
- Inverter AC operating voltage: 480 Vac 3 phase
- Inverter AC operating current: 608 amps ac
  
- Utility disconnect switch location: Northwest side of the array, inside inverter enclosure

**The data below correlates to the array feeding Third AE 500 TX inverter**

- Array open circuit voltage (VOC): 591.58 Volts dc
- Array operating voltage (Vmp): 408.1 Volts dc
- Array short circuit current (Isc): 228.13 Amps dc
- Array operating current (Imp): 138.88Amps dc
  
- Inverter DC operating voltage: 310 – 595 V dc
- Inverter AC operating voltage: 480 Vac 3 phase
- Inverter AC operating current: 608 amps ac
  
- Utility disconnect switch location: Northwest side of the array, inside inverter enclosure

**The data below correlates to the array feeding fourth AE 500 TX inverter**

- Array open circuit voltage (VOC): 591.58 Volts dc
- Array operating voltage (Vmp): 408.1 Volts dc
- Array short circuit current (Isc): 228.13 Amps dc
- Array operating current (Imp): 138.88Amps dc
  
- Inverter DC operating voltage: 310 – 595 V dc
- Inverter AC operating voltage: 480 Vac 3 phase
- Inverter AC operating current: 608 amps ac
  
- Utility disconnect switch location: Northwest side of the array, inside inverter enclosure

### Preventative Maintenance Schedule

The following preventative maintenance (PM) schedule is necessary to ensure proper operation of the PV system. The maintenance log sheets on the following pages should be filled out every time preventative maintenance is performed.

#### Every 6 months:

1. Inspect the PV array by “walking” each row of modules. Inspect for damaged or cracked modules, loose wires, damaged wires, loose conduit connectors.



Cracked or damaged PV modules can pose risk of high voltage DC electrical shock. Only qualified and trained personnel should attempt to remove or replace a PV module.

2. Wash array modules as needed. Only clean modules during the first few hours of the morning or late in the day when module temperatures are lower.

3. Ensure inverter's aluminum heatsink is clean and free of debris. Clean heatsink if necessary.



Normal heatsink operating temperatures can approach 60 degrees Celsius (140 degrees Fahrenheit).

4. Verify proper operation of the heatsink cooling fan and filter and ensure fan is free of debris.

5. Verify proper operation of the inverter's internal circulation fan/filter.

6. Verify proper operation of the Inductor Enclosure cooling fan.

7. Verify all conduit connectors are tight and secure on inverter's DC and AC enclosures.

8. Shut down PV system and inspect all mechanical electrical connections (terminal blocks, lugs, etc) in both the DC and AC portion of the inverter. Verify that all terminal blocks and lugs are tightened to the specified torque per manufacturer's instructions. Ensure that the inverter is shut down and disconnected from all sources of electricity. This may require opening of each series fuse holder.



Failure to properly isolate all DC and AC voltage sources could pose serious risk of electric shock.

9. Verify all AC conduit connectors are tight and secure.

**8. Every 12 months:**

1. Complete all PM tasks as outlined to be completed every 6 months.
2. Perform the following array inspection steps during a period of constant irradiance (i.e., pick a day with clear skies).
3. Inspect array wiring underneath modules for loose connections at the multiconnectors.



Use appropriate personal protective equipment when performing any inspections.

4. Measure short circuit current of each series string within combiner boxes. Use a clamp-on DC amp meter. All strings should be within 5% of each other. Note any under-performing series strings in the maintenance log and notify the SunEdison Service Manager.



Use caution when working in the combiner boxes, as terminals will be energized with high DC voltage.

4. Inspect disconnect switch, meter base, AC contactor for signs of wear and/or damage.
5. Inspect "Disconnect Switch Gear" for signs of wear and/or damage.
6. SunEdison will also be responsible for mowing the land fill cover for the first two years
7. SunEdison will Maintain the access road around the array and storm water basins.

### Troubleshooting and Repair Guidelines

The following suggestions are general guidelines and recommendations provided in order to assist with the troubleshooting and repair of the photovoltaic system. They are not intended to supersede the specific instructions contained in the preventative maintenance section of this manual.



All personnel attempting to troubleshoot or repair this system should be qualified to work on 600 Volt electrical systems and familiar with the General PV System Safety section of this manual.



All personnel attempting to troubleshoot or repair this system should be trained to work with PV systems and familiar with the General PV System Safety section of this manual.

Problem/Symptom	Possible Cause/Solution
Inverter voltage or frequency error	Check disconnect switches Check DC & AC side fuses Check utility voltage and frequency
Underperforming (low current) series string	Isolate string from array by opening fuse Check series string fuse Check series string voltage between positive and negative Replace fuse, check series string voltage to ground – voltage indicates ground Fault Inspect series string connections for loose MC connectors and/or pinched conductors.



## 4. System Drawing Package

## 5. Photovoltaic Modules Manufacturers Specification Sheet

**MEMC**



Preliminary



## MEMC SILVANTIS™ M320 MODULE

MEMC is a recognized authority on silicon technology and manufacturing processes developed through more than 50 years of experience. With our vertically-integrated business model, MEMC delivers best-in-class solar modules by continuously leveraging new technology and manufacturing techniques that maximize efficiency, minimize cost, and extend product lifetime.

Our Solaicx® CCz solar modules address our core strategy to deliver high power energy solutions at the lowest cost per watt.

MEMC Silvantis solar module family continues our tradition of excellence by delivering the highest levels of performance and with over 40 locations worldwide, MEMC is dedicated to providing local, responsive customer service.



### HIGH EFFICIENCY – 3 BUSBARS

SILVANTIS M320 modules are built with proprietary Solaicx® p-type CCz process with uniform resistivity and maximum efficiency.



### QUALITY

Manufactured in automated, state-of-the-art facilities certified to ISO9001 and ISO14001 for highest industry standards.



1000 V UL

### RELIABLE AND ROBUST DESIGN

1000 V UL by CSA, high-quality materials, ARC glass, and high-load capability are part of each module.

#### KEY FEATURES

- Solaicx CCz p-type Mono-crystalline wafer with high carrier lifetime that enables solar cells to operate at peak efficiency
- Advanced Mono-crystalline cells for higher conversion efficiency
- Textured glass with Anti-Reflective Coating (ARC) for superior energy production
- Positive power tolerance provide increased power output
- Withstands loads up to 5400 Pa as tested to IEC standards
- Non-corroding anodized aluminum frame for ruggedness
- Modules with a range of power output available

#### MODULE FAMILY

SILVANTIS SERIES: MEMC-M305AMC, MEMC-M310AMC  
MEMC-M315AMC, MEMC-M320AMC

#### QUALITY & SAFETY

- IEC61215 certified by TÜV SÜD to ensure long-term operation in a variety of climates (pending)
- IEC61730 certified by TÜV SÜD to ensure electrical safety (pending)
- Stringent outgoing quality acceptance criteria benchmarked to industry standards
- UL1703 (1000 V) listed by CSA for Canada and USA (pending)
- CE marked and CEC listed (pending)

#### LINEAR WARRANTY INFORMATION

- 10-year limited warranty for materials and workmanship
- 25-year linear power warranty with coverage for power loss greater than 3.5% in the first year and 0.7% degradation per year thereafter
- Backed by MEMC



For more information about MEMC SILVANTIS™ Modules, please visit [www.memc.com](http://www.memc.com)

# SILVANTIS™ M320 SOLAR MODULE



## M320 SOLAR MODULE DIMENSIONS mm[inch]

Module Dimensions	Cable Length	
A – 990 [39.0]	D – 30 [1.2]	H – 1,000 [39.4]
B – 1,976 [77.8]	E – 22 [0.9]	
C – 50 [2.0]		
Mounting Hole Spacing		
F – 950 [37.4]	G – 1,188 [46.8]	

## PHYSICAL PARAMETERS

Module Dimensions (mm)	1,976 x 990 x 30
Module Weight (kg)	22
Cell-Type	Solatrix CCz Mono-crystalline
Number of Cells	72
Frame Material	Anodized Aluminum
Glass (mm)	3.2 Tempered ARC glass

## TEMPERATURE COEFFICIENTS AND PARAMETERS\*

Nominal Operating Cell Temperature (NOCT), (°C)	46 ± 2
Temperature Coefficient of $P_{max}$ (%/°C)	-0.45
Temperature Coefficient of $V_{oc}$ (%/°C)	-0.34
Temperature Coefficient of $I_{sc}$ (%/°C)	0.05
Operating Temperature (°C)	-40 to +85
Maximum System Voltage (V)	1000 (UL & IEC)
Limiting Reverse Current (A)	9.10
Maximum Series Fuse Rating (A)	15
Power Range (W)	-0/+5

\* Temperature coefficients may vary by ±10%.

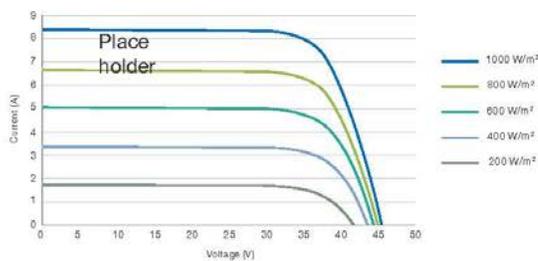
## ELECTRICAL CHARACTERISTICS\*

Model #	MEMC-M305 AMC	MEMC-M310 AMC	MEMC-M315 AMC	MEMC-M320 AMC
Rated Maximum Power $P_{max}$ (W)	305	310	315	320
Open-Circuit Voltage $V_{oc}$ (V)	45.9	45.9	46.0	46.1
Short Circuit Current $I_{sc}$ (A)	9.00	9.02	9.05	9.14
Module Efficiency (%)	15.6	15.8	16.1	16.4
Maximum Power Point Voltage $V_{mppt}$ (V)	36.8	36.9	37.0	36.9
Maximum Power Point Current $I_{mppt}$ (A)	8.29	8.40	8.52	8.68

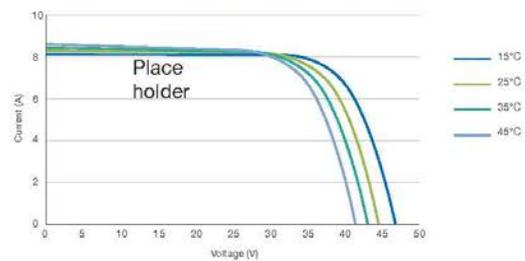
All electrical data at standard test conditions (STC): 1000 W/m<sup>2</sup>, AM1.5, 25°C  
Electrical characteristics may vary by ±5% and power by -0/+5W

\* Listed specifications are subject to change without prior notice.

## IV CURVES AT MULTIPLE IRRADIANCES\* [25°C]

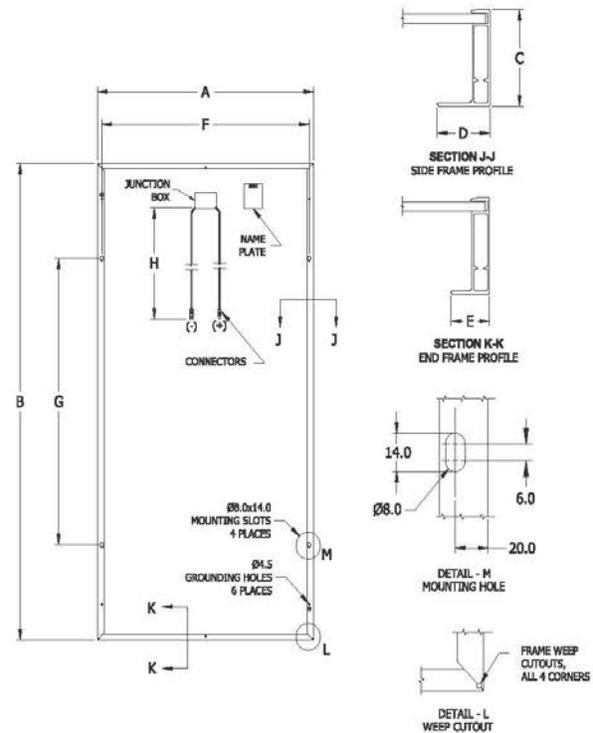


## IV CURVES AT MULTIPLE TEMPERATURES\* [1000 W/m²]



© 2012 MEMC Electronic Materials Inc. All rights reserved. MEMC, SunEdison, the MEMC logo, the SunEdison Logo and the Joint MEMC SunEdison logo are registered trademarks or trademarks of MEMC Electronic Materials, Inc. and/or its affiliates in the United States and certain other countries. All other trademarks mentioned in this document are the property of their respective owners. The use of the word "partner" does not imply a partnership relationship between MEMC Electronic Materials Inc. and any other company.

M320 AMC Data Sheet\_Q3 2012



## 6. Inverter Information

### (INVERTER1)



#### AE 500TX

(Formerly known as PVP500kW)

The complete inverter solution for large commercial and utility-scale projects

Leading the industry in reliability, performance, and innovation, AE Solar Energy introduces the AE 500TX for large commercial and utility-scale projects. New options include an integrated DC circuit breaker subcombiner that enables low cost compliance with NEC 2011 and improves serviceability. Subcombiner monitoring, a revenue grade meter, and a performance monitoring gateway can be factory installed for a completely integrated solution. Communication interfaces, remote disable inputs, and optional 24 V auxiliary power supply are housed in a dedicated low power compartment for safe and easy access. The entire system, including the isolation transformer, is contained within a single NEMA 4 rated cabinet significantly reducing installation time and expense.

Designed for DC loading up to 175%, the AE 500TX maximizes energy harvest and accelerates payback with a 97% weighted CEC efficiency, wide DC operating range, fast convergence MPPT, and the ability to produce full power all the way to 55 °C. Uptime and revenue generation are assured by superior built-in reliability consisting of engineered busbar power connections, redundant cooling system and power supply, card cage circuit board design, and solder-free intelligent power modules.

Advanced power controls provide essential utility support functions including power factor and curtailment with controlled ramp rate making it easy to comply with interconnection requirements.

Total integration, reliability, and utility-support functionality make the AE 500TX the complete inverter solution for large commercial and utility-scale projects.



AE Solar Energy is a US based company.



The AE 500TX is backed with an industry-leading, 10-year, nationwide warranty and a comprehensive optional 20-year warranty, plus the most responsive service and support team in the business.

#### Superior Reliability

- Redundant power supply and cooling system with Smart Air Management™
- Increased availability with >99% monitored fleet availability
- Rated for full power operation up to 55 °C
- Low parts count reduces potential failure points
- Engineered busbar power connections
- Card cage circuit board system minimizes electronic interconnections

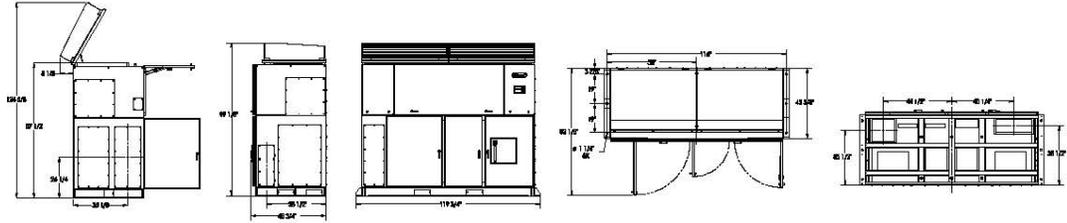
#### Exceptional Installability

- No external transformer to connect in the field
- Optional DC circuit breaker subcombiner
- DC loading up to 175%
- Bottom and side entry with bottom side chases, generous bending area and oversized busbar landings
- Exterior mounting flanges for fast and easy anchoring with no pre-drilling

#### Easy to Maintain

- All maintenance and service via front and side access
- Fast change circuit board system shortens service time
- Optional load-break rated AC service disconnect
- Dedicated performance monitoring section separate from AC and DC modules

[Operation and Maintenance Manual]



**AE 500TX Summary Specifications\***

<b>Physical</b>	
Weight	8750 lbs
Construction	Powder Coated Steel
Environmental Rating	NEMA 4
Mounting	Pad Mount
Isolation Transformer	Integrated
Integrated AC/DC Disconnect	Optional AC Disconnect, DC Breakers
AC and DC Surge Protection	Included
<b>Electrical</b>	
<b>DC Inputs</b>	
Array Configuration	Positive or negative ground
Maximum Operating Input Current	1600 A
Maximum DC Input Voltage (VOC)	600 V
MPPT Voltage Range	310-595 V
Open-Circuit Turn-On Voltage	330 V
<b>AC Outputs</b>	
Continuous Output Power	500 kW
Nominal Voltage	480 V
Operating Voltage Range	-12% / +10%
Electrical Service Compatibility	3 phase, 4 wire, grounded Wye
Maximum Continuous Current	608 A
Short Circuit Fault Current	891 Arms @ 480 VAC, 60.3 ms
Nominal Frequency	60 Hz
Frequency Range	59.3 - 60.5 Hz, adjustable to 57.0 Hz
Total Harmonic Distortion	< 3% THD
<b>Efficiency</b>	
Efficiency: Peak / CEC	97.8% / 97.0%
Standby Losses	< 80 W
<b>Inverter Controls and Monitoring</b>	
Power Factor	> 0.99 at rated power; ± 0.90 PF range, ± 217 kVAr maximum
Power Curtailment	5 - 100%, 1% Increments
Communication Interfaces and Protocols	RS-485, Ethernet, Modbus, TCP/IP
<b>Environmental</b>	
Operating Ambient Temp. Range	-30 °C to 55 °C
Standby/Storage Ambient Temp. Range	-40 °C to 60 °C
Cooling	Forced Convection
Relative Humidity	0 to 95%, non-condensing
Elevation	6000 ft
<b>Regulatory</b>	
Agency Approvals / Regulatory Compliance	UL 1741, IEEE 519, IEEE 929, IEEE 1547, CSA 107.1-1, FCC Class A
Inverter Warranty	10 Year

Subject to change without notice. Refer to user manual for detailed specification.  
 \*Note: Not all performance window specifications can be achieved simultaneously. Performance varies per site. Consult your AE sales or service representatives for specific PV system design questions at sales.support@aei.com.

**Advanced Power Controls**

- Power Factor
- Curtailment
- Controlled ramp rate
- Remote enable/disable

**Options**

- DC Subcombiner circuit breakers: 8 - 20 inputs, 80 A - 400 A trips (max. total of 3500 A)
- Subcombiner monitoring (up to 16 inputs)
- Integrated AC Disconnect
- Integrated data monitoring
- Integrated revenue grade meter
- Positive ground
- 24 V auxiliary power supply
- Preventative maintenance program
- 20-year extended warranty

**Performance Monitoring**

Increase uptime and reduce maintenance costs with integrated performance monitoring hardware that enables connectivity to a variety of software solutions from industry leading monitoring partners. The tight integration between Advanced Energy and our monitoring partners creates a superior service and support experience while seamlessly delivering meaningful data. Factory integration and testing of our UL listed monitoring solution ensures high reliability and significantly reduces field installation costs.



AE Solar Energy • 20720 Brinson Blvd • Bend, OR 97701 U.S.A.  
 www.advanced-energy.com/solarenergy  
 877.312.3832 • sales.support@aei.com • invertersupport@aei.com  
 Please see www.advanced-energy.com for worldwide contact information.



© Advanced Energy Industries, Inc. 2012  
 All rights reserved. Printed in U.S.A.  
 ENG-AE500TX-250-08 11/12

Advanced Energy is a registered U.S. trademark of Advanced Energy Industries, Inc.

**Manufacturers Specification Sheet  
 Installation and Operation Users Manual**



**End of Manual**