

# USER MANUAL

**Pinnacle™ 20 kW  
(400–1000 Vdc)**

**DeviceNet™ with MDXL User,  
Terminal Block Output**

**5702199-A**

**April 2001**

**Advanced Energy Industries, Inc.**

1625 Sharp Point Drive  
Fort Collins, CO 80525 USA  
970.221.4670

[technical.support@aei.com](mailto:technical.support@aei.com)





# User Manual

Pinnacle™ 20 kW

5702199-A



## Copyright

This manual and the information contained herein is the property of Advanced Energy Industries, Inc. No part of this manual may be reproduced or copied without the express written permission of Advanced Energy Industries, Inc. Any unauthorized use of this manual or its contents is strictly prohibited. Copyright © 4/13/01 by Advanced Energy Industries, Inc. All Rights Reserved.

## Disclaimer and Limitation of Liability

The information contained in this manual is subject to change by Advanced Energy Industries, Inc. without prior notice. Advanced Energy Industries, Inc. makes not warranty of any kind whatsoever, either expressed or implied, with respect to the information contained herein. Advanced Energy Industries, Inc. shall not be liable in damages, of whatever kind, as a result of the reliance on or use of the information contained herein.

## Product Usage Statement



### **WARNING:**

Read this entire manual and all other publications pertaining to the work to be performed before you install, operate, or maintain this equipment. Practice all plant and product safety instructions and precautions. Failure to follow instructions can cause personal injury and/or property damage. All personnel who work with or who are exposed to this equipment must take precautions to protect themselves against serious or possibly fatal bodily injury.

Advanced Energy Industries, Inc., (AE) provides information on its products and associated hazards, but it assumes no responsibility for the after-sale operation of the equipment or the safety practices of the owner or user. This equipment produces or uses potentially lethal high-voltage, high-current, radio frequency (RF) energy. **NEVER DEFEAT INTERLOCKS OR GROUNDS.**

## Trademark Information



is a registered trademark of Advanced Energy Industries, Inc.

**Advanced Energy** is a registered trademark of Advanced Energy Industries, Inc.

**AE** is a registered trademark of Advanced Energy Industries, Inc.

**DeviceNet** is a trademark of Open DeviceNet Vendor Association, Inc., Boca Raton, FL.

**Pinnacle** is a trademark of Advanced Energy Industries, Inc.

# Table of Contents

<b>Chapter 1. Introduction</b> .....	<b>1-1</b>
Read This Section! .....	1-1
Interpreting the Manual .....	1-1
Type Conventions .....	1-1
Icons (Symbols) .....	1-1
Safety .....	1-3
Product Safety/Compliance .....	1-4
Directives .....	1-4
Standards .....	1-4
Installation Requirements .....	1-5
Conditions of Use .....	1-5
<b>Chapter 2. Theory</b> .....	<b>2-1</b>
General Description .....	2-1
Output Impedance Range .....	2-1
Output Regulation .....	2-1
Interfaces .....	2-1
Microprocessor Advantages .....	2-2
Displays .....	2-2
Arc-Suppression Feature .....	2-2
Theory of Operation .....	2-2
Input .....	2-3
Housekeeping Supply .....	2-3
Inverter .....	2-3
Output .....	2-3
Output Measurement .....	2-4
Logic Control .....	2-4
Remote Interfaces .....	2-4
<b>Chapter 3. Specifications</b> .....	<b>3-1</b>
Functional Specifications .....	3-1
Physical Specifications .....	3-3
Electrical Specifications .....	3-4
Environmental Specifications .....	3-8
Coolant Specifications .....	3-9

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.