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The High-Performance Alternative

UEI-STP-AO-200

—

User Manual

**8-Channel, unity gain buffer, screw-terminal panel (STP-AO-200)
and unity gain buffer board with optional DC/DC converter (STP-AO-200D)
for the PowerDNA Cube and PowerDNR RACKtangle**

Release 4.5

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PN Man-UEI-STP-AO-200-212

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Table of Contents

List of Figures

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Vers: **4.5**
UEI-STP-AO-200-ManualLOF.fm

Chapter 1   Introduction

This document outlines the feature-set of the UEI-STP-AO-200 buffer board.

1.1   Organization of Manual

This UEI-STP-AO-200 User Manual is organized as follows:

- **Introduction**
  This section provides an overview of the UEI-STP-AO-200 buffer board features, device architecture, and connectivity.

- **Appendix A - Accessories**
  This appendix provides a list of accessories available for use with the UEI-STP-AO-200 current buffer board.

- **Index**
  This is an alphabetical listing of the topics covered in this manual.

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Vers: **4.5**
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Manual Conventions

To help you get the most out of this manual and our products, please note that we use the following conventions:

Tips are designed to highlight quick ways to get the job done or to reveal good ideas you might not discover on your own.

NOTE: Notes alert you to important information.

CAUTION! Caution advises you of precautions to take to avoid injury, data loss, and damage to your boards or a system crash.

Text formatted in **bold** typeface generally represents text that should be entered verbatim. For instance, it can represent a command, as in the following example: "You can instruct users how to run setup using a command such as **setup.exe**."

Text formatted in `fixed` typeface generally represents source code or other text that should be entered verbadim into the source code, initialization, or other file.

Examples of Manual Conventions

Before plugging any I/O connector into the Cube or RACKtangle, be sure to remove power from all field wiring. Failure to do so may cause severe damage to the equipment.

Usage of Terms

Throughout this manual, the term "Cube" refers to either a PowerDNA Cube product or to a PowerDNR RACKtangle™ rack mounted system, whichever is applicable. The term DNR is a specific reference to the RACKtangle, DNA to the PowerDNA I/O Cube, and DNx to refer to both.

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1.2 The STP-AO-200 and -200D Terminal Panels

The UEI-STP-AO-200 is a unity gain, high current output buffer board for use with DNA-AO-308 and PD2/PDXI series analog output boards.The unit provides a gain of 1 ±0.2% and can drive continous output currents up to 250 mA on each of the 8 channels up to ±10 Volt. 500 mA resettable fuses are provided on each output and the output buffers themselves are protected from thermal overload.

The board provides excellent gain and offset performance and is an ideal solution in applications requiring both high current and high accuracy. The 1 V/ uS slew rate provide ensures the UEI-STP-AO-200 is fast enough to keep up with almost all high current system requirements. The outputs are designed to drive capacitive and inductive loads and should be compatible with almost all systems, including those driving long distances of wire

The 37-pin D input to the UEI-STP-AO-200 can be connected to the DNA-AO-308 board using a standard, straight connection 37-pin cable. PD2/PDXI series boards are connected to the unit via UEI's PD-5B-CONN interconnect boards.

A fan mounted on the unit assures the buffer stays within temperature limits. The fan is thermostatically controlled and turns on if the internal tempeature of the unit exceeds 45°C.

Seperate LEDs illuminate to display over current conditions at approximately 280 mA. A third LED per channel illuminates to indicate the output buffer is in thermal overload.

The UEI-STP-AO-200 requires a ±13 to ±15 volt bipolar power supply with adequate capability to support the output current. The UEI-STP-AO-200D includes a DC/DC converter and allows the buffer to be powered by a single, unipolar supply from +9 to +36V.

The UEI-STP-AO-200 is fully enclosed. Though there is no cover on the top of the unit, the top of the printed circuit board has no active signals exposed other than those on the various connectors and screw terminals..

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1.3   Features   The common features of the UEI-STP-AO-200 are listed below:

- Eight (8) independent channels
- 250 mA per channel, continuous
- Resettable output fuse on each channel
- ±10 Volt output, minimum
- High Accuracy
- Wide power supply input range
- Drives capacitive and inductive loads

1.4   Layout   A photo of the UEI-STP-AO-200 unit is illustrated below.

LEDs indicate current conditions on board:
DT0 to DT7: indicates thermal shutdown
DSNx: output overload / sinking current
DSRx: output overload w/ sourcing current

FAN with snap-on grid/filter.
(Clean periodically.)

JVCC2 for +9(18)..+36V
65W supply (200D only)

Input connector (DB-37)
from DNx-AO layer

JPOWER1:
±13 to ±15V, 2A/rail
PSU only

Outputs as screw terminal block
for connections to loads (TB1-TB3)

Outputs as DB-37 male connnector
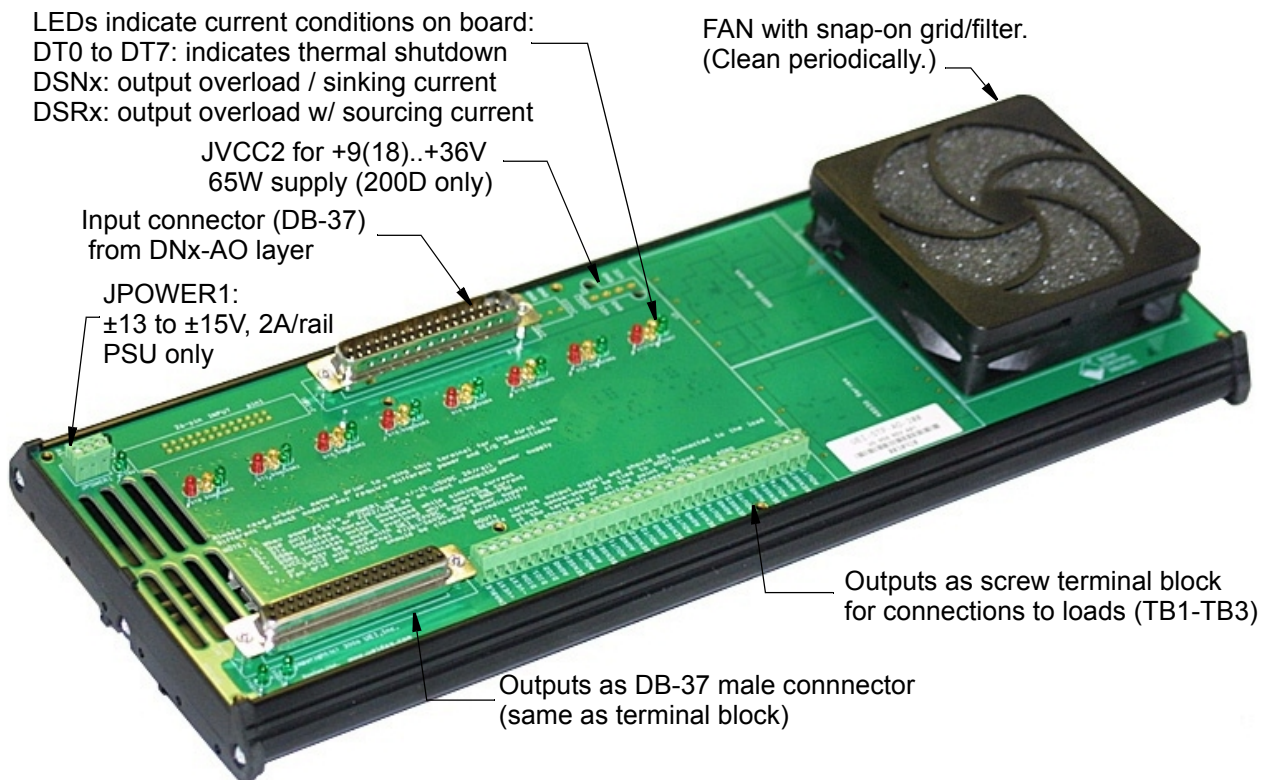(same as terminal block)

Figure 1-1. The UEI-STP-AO-200 Current Buffer Terminal Panel

Note that the top of the STP-AO-200 terminal panels, although not physically covered, has no active signals exposed except those on the various connectors and screw terminals.

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1.5   Specification   The technical specification for the STP-AO-200 is provided in the table below:

Table 1-1. UEI-STP-AO-200 Technical Specifications

Number of Channels	8
Gain	Unity gain (x 1)
Gain error	±0.2%, max
Offset error	±3 mV, max
Output slew rate	1 V/µS
Output current	250 mA, at ±10V, min
Output protection	500 mA, resettable fuse per channel
Output overload display	LEDs display current source/sink > 280 mA
Thermal overload	LED display of output buffer over temp
Input power required	±13 to ±15 V
Input power required with optional DC/DC	+9 to +36 VDC
Cooling	Fan based forced air cooling. Fan turns on when internal temperature exceeds 45°C.
Physical Dimensions	10.0" x 4.2" x 2.125"
Operating Temp. (tested)	0°C to +85°C
Storage Temp	-40°C to +85°C
Operating Humidity	5 - 90%, non-condensing

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1.6 Wiring & Connectors

The pinout for the STP-AO-200 DB-37 connectors is provided in **Figure 1-2**. These include the J302/308 female input connector from the DNA-AO layer and JOUT1 male output connector that provides the outputs of the screw terminal panel as a DB-37 output.

DB-37 (female)
37-pin Connector:

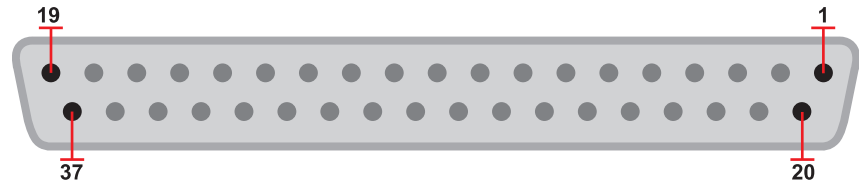|			
AOUT0 SNS	37	19	AGND
AGND	36	18	AOUT0
AOUT1	35	17	AOUT1 SENSE
AOUT2 SNS	34	16	AGND
AGND	33	15	AOUT2
AOUT3	32	14	AOUT3 SENSE
AOUT4 SNS	31	13	AGND
AGND	30	12	AOUT4
AOUT5	29	11	AOUT5 SENSE
AOUT6 SNS	28	10	AGND
AGND	27	9	AOUT6
AOUT7	26	8	AOUT7 SENSE
+VEXT	25	7	AGND
AGND	24	6	**−VEXT**
AGND	23	5	AGND
DIO2	22	4	DIO1
AGND	21	3	DIO0
−15V (20mA) OUT	20	2	+15V (20mA) OUT
		1	AGND

Figure 1-2. Pinout of UEI-STP-AO-200 input connector

The TB outputs are described as follows:

Line	Description
ENABLE	Enabled by default. When grounded disables current output.
VEXT	Carries +VEXT and -VEXT voltages.
DIO	Digital input lines 0 to 2 (for layers that support this feature).
AGND	The channel's ground reference line.
SENSE	Output sense-should be tied to channel's AOUT at the terminal or at the point of load. Load should be connected between AOUT and AGND.
AOUT	carries output signal and should be connected to the load.

Table 1-2. Terminal Block outputs

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Appendix A

A. Accessories

The following cables and I/O Layers are available for the UEI-STP-AO-200.

DNA-CBL-37

This is a 37-conductor cable with 37-pin D-sub connectors on both ends; 3 ft long. Connects the UEI-STP-AO-200 to the DNx-AO-308 or similar layer.

Figure A-1. Photo of DNA-CBL-37 Flat Ribbon Cable

DNA-CBL-37S - Round, Shielded Cable

This is a 37-conductor cable with 37-pin D-sub connectors on both ends. Connects an STP-AO-200 screw terminal master panel to a similar slave panel. It is made with round, heavy-shielded cable; 2.5 ft (75 cm) long, weight of 9.49 ounces or 269 grams; up to 10ft (305cm) and 20ft (610cm).

Figure A-2. Photo of DNA-CBL-37 Round, Shielded Cable

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File: **UEI-STP-AO-200 AppxA.fm**

Index

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