



DNA/STP-AO-250 0-35VDC, 250 mA Current Buffer Board — User Manual

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PN Man-DNA-STP-AO250-0211

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Contacting United Electronic Industries

Mailing Address:

27 Renmar Avenue
Walpole, MA 02081
U.S.A.

For a list of our distributors and partners in the US and around the world, please see

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Support:

Telephone: (508) 921-4600

Fax: (508) 668-2350

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Chapter 1 Introduction

This document outlines the feature set and use of the DNA-STP-AO-250 Current Buffer Board.

1.1 Organization of this Manual

This DNA-STP-AO-250 User Manual is organized as follows:

- **Introduction**
Provides an overview of DNA-STP-AO-250 High Current Output Buffer Board list of features, technical specifications, and accessories. This product is designed for use with UEI DNx-AO-308 series analog output boards.
- **Appendix A: Accessories**
This appendix provides a list of accessories available for DNA-STP-AO-250 current buffer boards.
- **Index**
This is an alphabetical listing of the topics covered in this 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 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**.”

1.2 The DNA-STP-AO-250 Board

A photo of the DNA-STP-AO-250 high current buffer board is shown in **Figure 1-1** below.

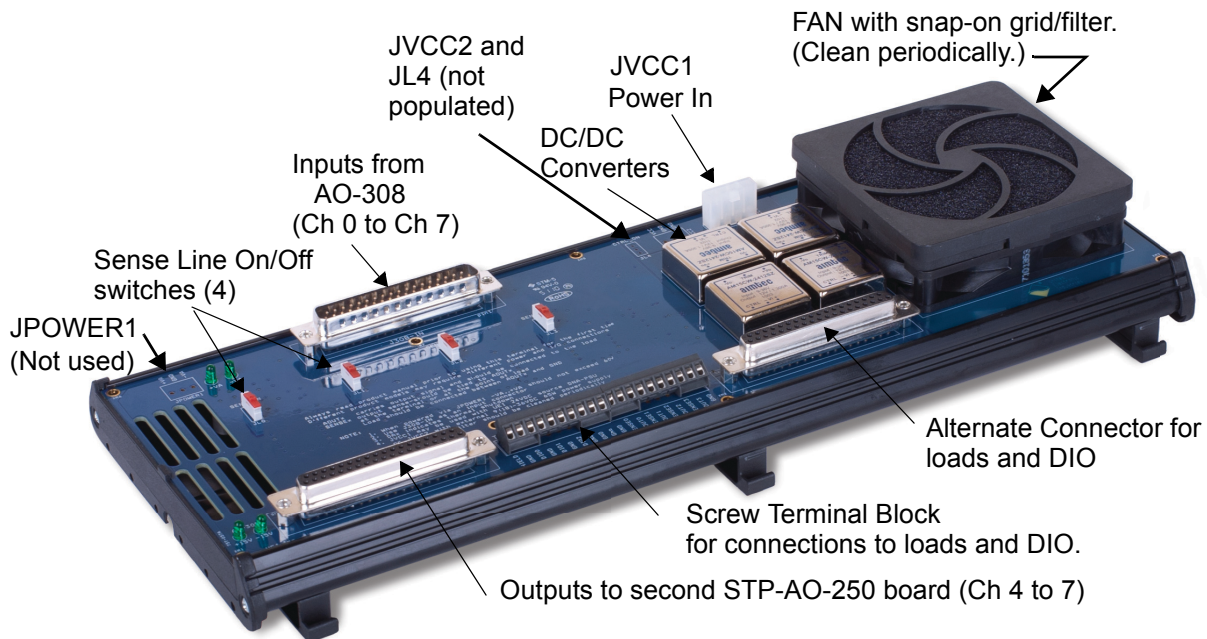


Figure 1-1. Photo of STP-AO-250 Current Buffer Board

Note also that the top of DNA-STP-AO-250 board, although not physically covered, has no active signals exposed except those on the various connectors and screw terminals.

1.2.1 Features

The STP-AO-250 high current buffer board has the following features:

DNA-STP-AO-250

0- 35 VDC, 250 mA Current Buffer Board

- 4 channels
- 250 mA per channel, continuous
- Resettable output fuse on each channel
- 0-35 VDC Volt output, minimum
- Direct connect cable to DNx-AO-308
- High Accuracy
- Drives capacitive and inductive loads

Figure 1-2. DNA-STP-AO-250 Product Features

Note that the STP-AO-250 has four independent analog output channels from the host DNx-AO-308 board (Channels 0 to 3). Channels 4 through 7 from the host AO-308 can be passed through one STP-AO-250 to a second STP-AO-250 and then to loads for Channel 4 through 7 as shown in **Figure 1-4**. Sense/GND line connections can also be made to all loads to improve accuracy. Refer to **Figure 1-3** for accuracy curves for various loads and types of connections. Refer to **Figure 1-10** for the Output Circuit used to connect the STP-AO-250 to its associated loads.

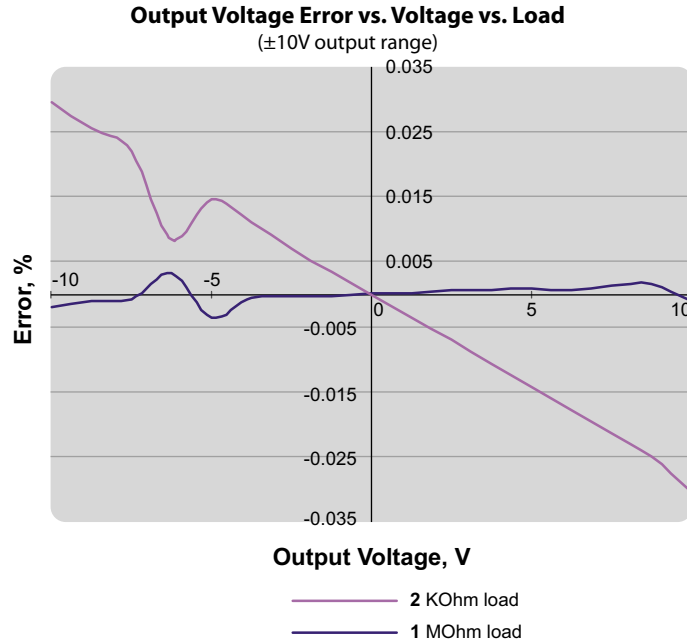


Figure 1-3. Accuracy Curves for Host AO-308 Output vs. Load

In **Figure 1-3** above, note how increasing load resistance reduces error. Also, note that we only use a voltage range of 0 to +10VDC from the AO-308. No negative polarity voltage is used.

1.3.2 Use of Two STP-AO-250 Boards with one Host AO-308.

Figure 1-4 shows how two STP-AO-250 boards may be connected to handle 8 independent channels and loads.

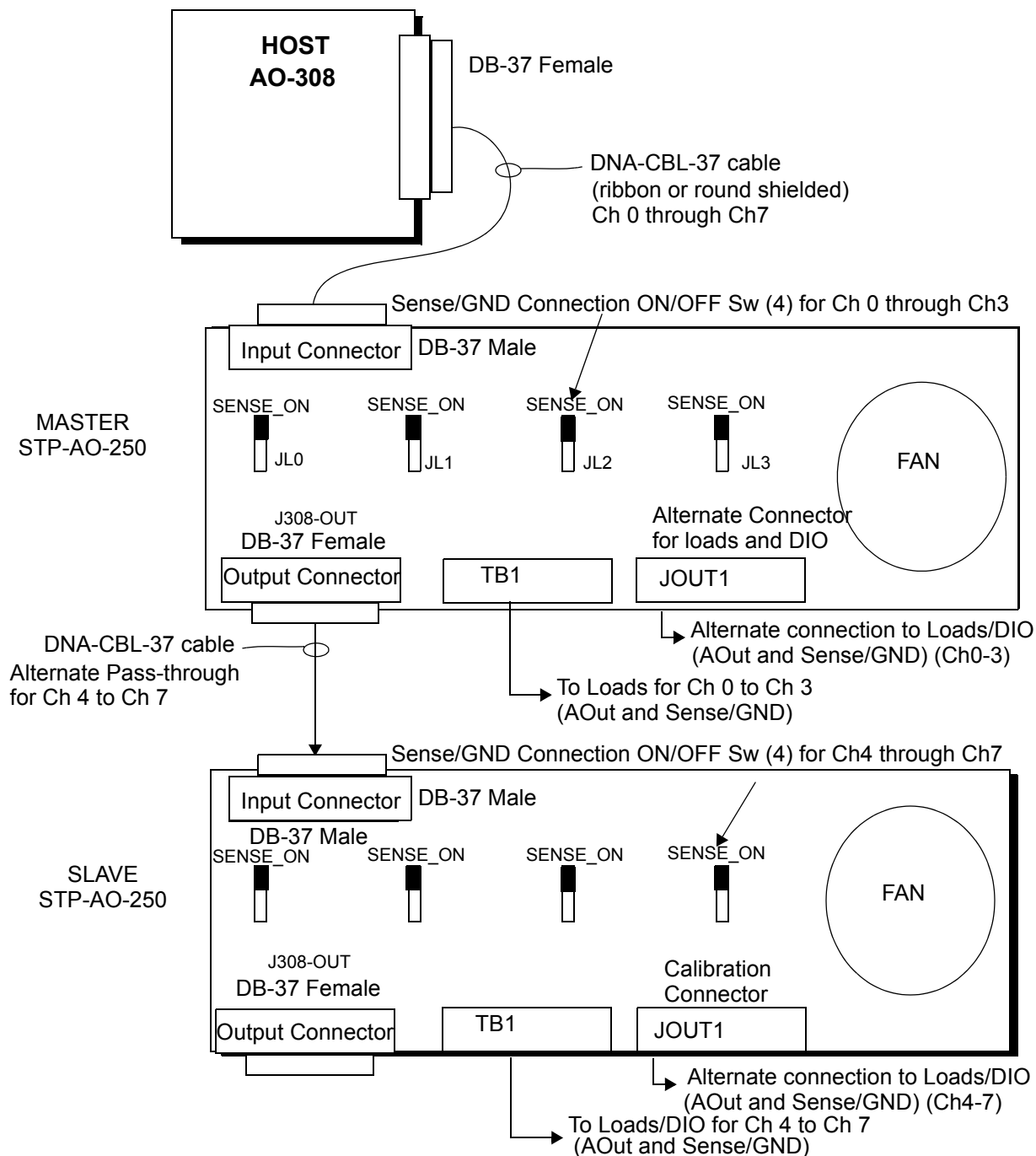


Figure 1-4, Interconnection Diagram for One AO-308 and Two STP-AO-250 Current Buffer Boards (Master/Slave)

Technical Specifications:

Number of Channels	4
Gain	3.5 x
Output Range	0 to 35 VDC
Gain error	±0.2%, max
Offset error	±3 mV, max
Output slew rate	5 V/μS
Output current	250 mA, at 0 - 35 V, min
Output current limit	Current limited at 300 mA
Output protection	500 mA, resettable fuse per channel
Thermal overload	LED display of output buffer over temp
Input power required	+28 VDC ±5%
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	0 - 95%, non-condensing

Figure 1-5. STP-AO-250 Technical Specifications

1.4 Pinout Diagrams

Figure 1-6 below shows the pinout of the DB-37 Output Connector from the Host DNx-AO-308 analog output board:

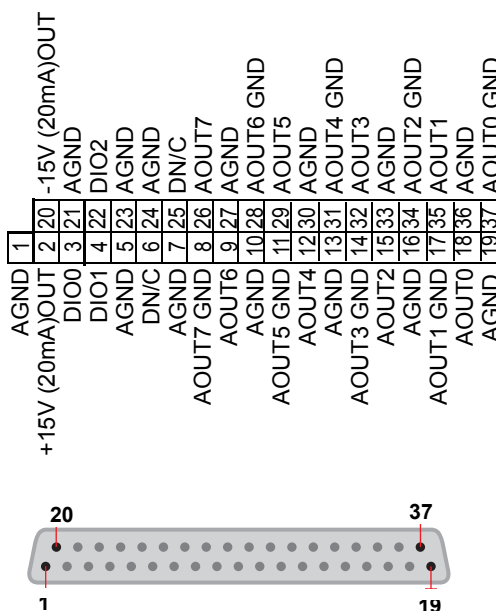


Figure 1-6. Pinout of DB-37 Female Output Connector from AO-308 Host

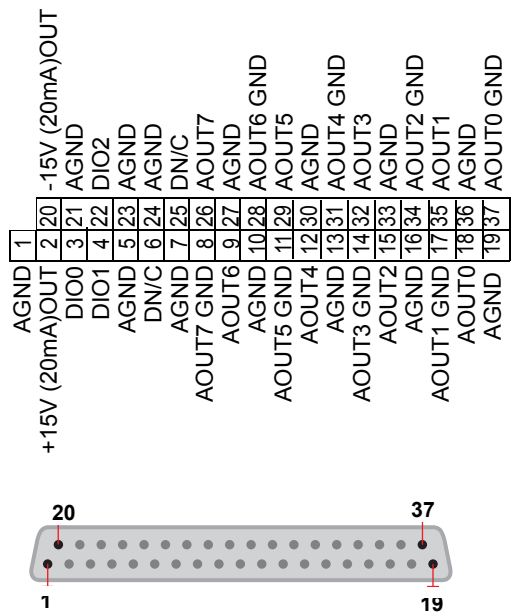


Figure 1-7. Pinout of STP-AO-250 DB-37 Male Input Connector

below shows the pinout of the DB-37 Output and Alternate Connectors.

JOUT1

DB-37 (female)
37-pin Connector

GND	1	
+15V	2	20 -15V
RSVD	3	21 GND
RSVD	4	22 RSVD
GND	5	23 GND
+VA OUT	6	24 GND
GND	7	25 -VA OUT
RSVD	8	26 RSVD
RSVD	9	27 GND
GND	10	28 RSVD
RSVD	11	29 RSVD
RSVD	12	30 GND
GND	13	31 RSVD
SENSE/GND3	14	32 AOUT3
AOUT2	15	33 GND
GND	16	34 SENSE/GND2
SENSE/GND1	17	35 AOUT1
AOUT0	18	36 GND
GND	19	37 SENSE/GND0

DB-37 (female)
37-pin Connector

GND	1	
+15V	2	20 -15V
RSVD	3	21 GND
RSVD	4	22 RSVD
GND	5	23 GND
RSVD	6	24 GND
GND	7	25 RSVD
RSVD	8	26 RSVD
RSVD	9	27 GND
GND	10	28 RSVD
RSVD	11	29 RSVD
RSVD	12	30 GND
GND	13	31 RSVD
GND	14	32 AOUT7
AOUT6	15	33 GND
GND	16	34 GND
GND	17	35 AOUT5
AOUT4	18	36 GND
GND	19	37 GND

JOUT1 Alternate Connector



J308-OUT Output Connector



Figure 1-8. Pinouts of DB-37 Output Connectors

The figure below shows the pinout of the DB-37 Calibration Connector:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SHIELD	GND	DIO0	GND	DIO1	GND	DIO2	GND	GND	GND	GND	SENSE/GND0	AOUT0	SENSE/GND1	AOUT1	SENSE/GND2	AOUT2	SENSE/GND3	AOUT3	GND

Note: AOUT0 to AOUT3 are for Master STP-AO-250 CH 0 through Ch3. For Slave STP, these terminals apply to Ch 4 through Ch7.

Figure 1-9. Pinout of TB1 Screw Terminal Block

Appendix A

Accessories

A. Accessories

The following cables and accessory boards are available for the DNA-STP-AO-250 High Current Buffer Board.

DNA-CBL-37

A 3ft, 62-way flat ribbon cable that connects the DNx-AO-308 board to a DNA-STP-AO-250.



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

DNA-CBL-37S Round, Shielded Cable

Interconnecting cable that connects an STP-AO-250 screw terminal master panel to a similar slave panel.



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

(available in several lengths)

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