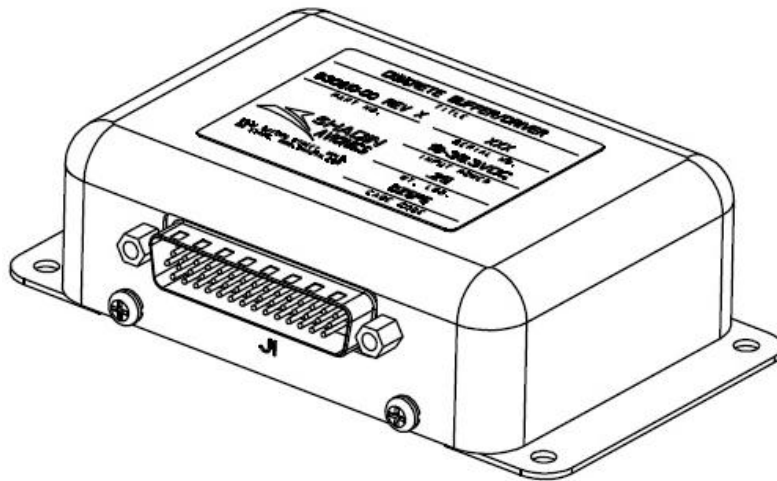




## **DISCRETE BUFFER/DRIVER**



**P/N: 930610-00**

**INSTALLATION MANUAL**

**MANUAL P/N: M930610-00**

**REV -**

Shadin Avionics  
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**Revision Log**

<b>REV</b>	<b>DATE</b>	<b>APP'D</b>	<b>CHANGE</b>	<b>CVS Version</b>
–	31 OCT 2012	RJW	Baseline Release	1.8

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The information in this manual is subject to change without notification.

## **1 OVERVIEW**

### **1.1 THE MANUAL**

This manual is intended to determine a proper installation of the Discrete Buffer/Driver. Installation instructions should be read and followed.

### **1.2 PRODUCT DESCRIPTION**

The Discrete Buffer/Driver is a robust logic device which translates signal levels, drives high-current outputs, and provides glue logic for interfacing multiple systems. The buffering function takes in up to 6 logic-level inputs in the range of 2.0 to 28.0 VDC and provides high-current outputs which source up to 300 mA each. An additional input buffer accepting a voltage level of 0 to 5.0 VDC drives a low-side switch which sinks up to 300 mA. The unit contains 6 inverters, 5 OR gates, and 5 AND gates. The diagram in Figure 1 shows each function and the associated pin numbers on the unit.

The Discrete Buffer/Driver is designed for operation in harsh environments including a severe salt atmosphere and high EMI immunity meeting category R HIRF levels as defined by DO-160F.

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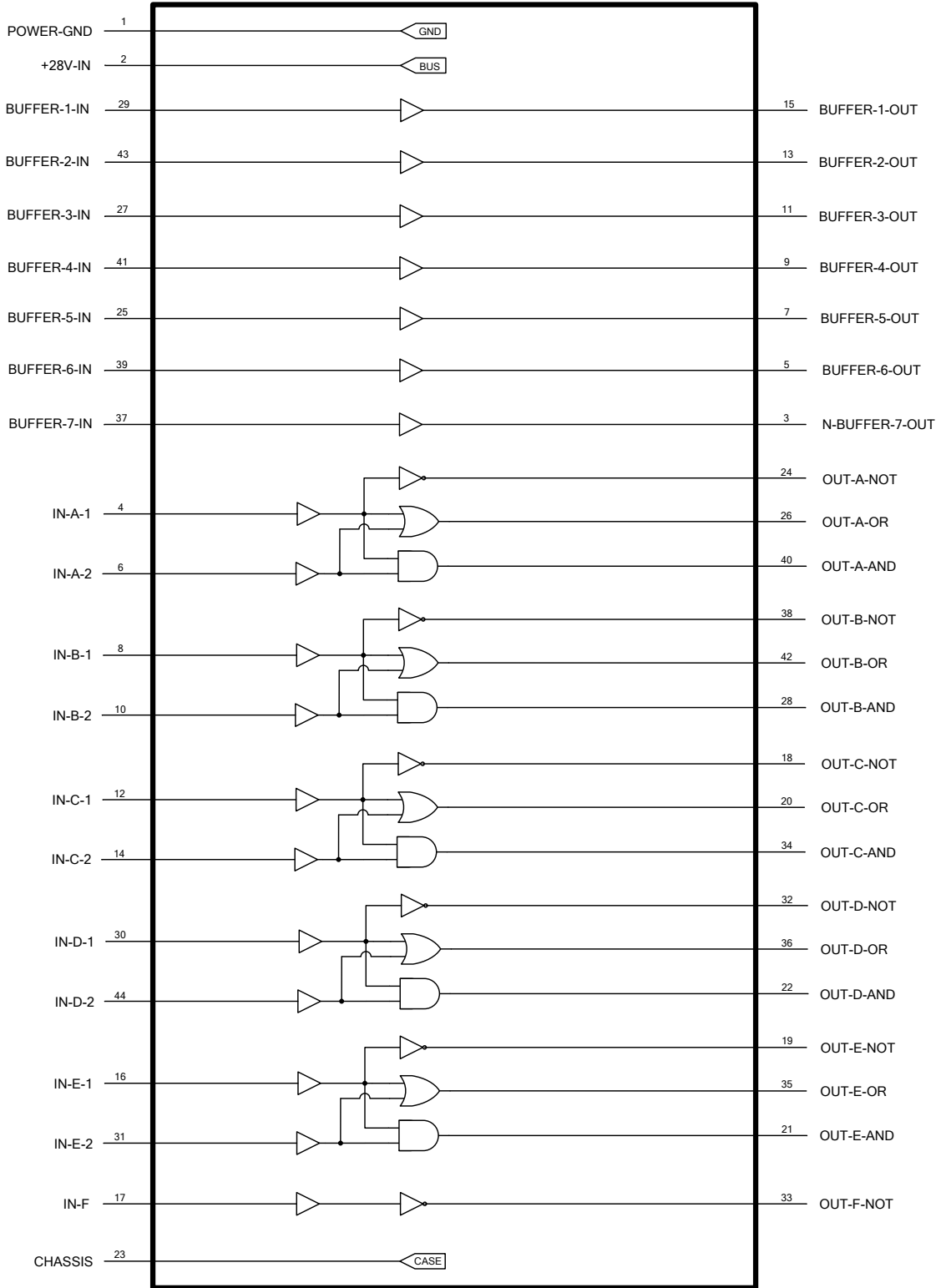


FIGURE 1 DISCRETE BUFFER/DRIVER

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**1.3 SPECIFICATIONS**

Physical Specifications (without mounting tray)

Dimensions: 1.18H x 4.30L x 2.78W (inches)

Weight: 0.25 lbs.

Electrical and Functional

Power Supply Voltage: +28VDC

Supply Current: 10mA at 28VDC

Environmental RTCA/DO-160F

Categories: B1XBAA[U2(F, F1)]XXXXXTXA(XX)AZ[AC][RR]M[XXXXX][XXXX]XXX

Operating Temperature: -20° to +55°C

Operating Altitude: Up to 25,000 ft

Storage Temperature: -55° to +85°C

In-Flight loss of Cooling: Equipment can run indefinitely with no cooling

**1.4 INPUTS**

Input	Function	Maximum Input Voltage (Volts DC)	Logic Threshold (Volts DC)
Buffers 1 – 6 with connection to High-Side Switches	28V/Open Discrete Input Buffer	33.0	VIH = 2.00 VIL = 1.00
Buffer 7 with connection to Low-Side Switch	5V/Open Discrete Input Buffer	5.25	VIH = 4.00 VIL = 0.50
Logic Input pairs IN (A – E) (5 pairs = 10 inputs)	Logic Input	33.0	VIH = 3.24 VIL = 2.76
Logic Input IN (F) 1 signal line referenced to ground pin 1	Logic Input	33.0	VIH = 3.00 VIL = 2.40

**Note:**

VIH = Voltage Input High. Signal levels at or above this level will provide a logic high (1) to the internal logic.  
VIL = Voltage Input Low. Signal levels at or below this level will provide a logic low (0) to the internal logic.

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**1.5 OUTPUTS**

<b>Output</b>	<b>Function</b>	<b>Maximum Output Current Drive (DC mA)</b>
Buffers 1 – 6 High-Side Switches	High-side switch which sources +28 VDC.	300
Buffer 7 Low-Side Switch	Low-side switch which sinks current to ground.	300
Logic Output NOT (for signal 1 of each IN A – E)	NOT	50
Logic Output OR (for signal pairs IN A – E)	OR	50
Logic Output AND (for signal pairs IN A – E)	AND	50
Logic Output NOT (for signal IN F)	NOT	50

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## 2 INSTALLATION PROCEDURE

### 2.1 MOUNTING

The Discrete Buffer/Driver (P/N 930610-00) should be mounted in a dry location and the equipment may be installed in a partially controlled temperature and pressurized location.

Installation Drawing D930610-00 provides connector pinout information.

### 2.2 ELECTRICAL CONNECTIONS

Pin connections are described below.

Connections to Power Supply +28 VDC

930610-00		Description
J1:1	To	POWER-GND-IN
J1:2	To	+28 VDC-IN
J1:23	To	CHASSIS-IN

Inputs

930610-00		Description
J1:29	To	BUFFER-1-IN
J1:43	To	BUFFER-2-IN
J1:27	To	BUFFER-3-IN
J1:41	To	BUFFER-4-IN
J1:25	To	BUFFER-5-IN
J1:39	To	BUFFER-6-IN
J1:37	To	BUFFER-7-IN
J1:4	To	IN-A-1
J1:6	To	IN-A-2
J1:8	To	IN-B-1
J1:10	To	IN-B-2
J1:12	To	IN-C-1
J1:14	To	IN-C-2
J1:30	To	IN-D-1
J1:44	To	IN-D-2
J1:16	To	IN-E-1
J1:31	To	IN-E-2
J1:17	To	IN-F



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## Outputs

930610-00		Description
J1:15	To	BUFFER-1-OUT
J1:13	To	BUFFER-2-OUT
J1:11	To	BUFFER-3-OUT
J1:9	To	BUFFER-4-OUT
J1:7	To	BUFFER-5-OUT
J1:5	To	BUFFER-6-OUT
J1:3	To	N-BUFFER-7-OUT
J1:24	To	OUT-A-NOT
J1:26	To	OUT-A-OR
J1:40	To	OUT-A-AND
J1:38	To	OUT-B-NOT
J1:42	To	OUT-B-OR
J1:28	To	OUT-B-AND
J1:18	To	OUT-C-NOT
J1:20	To	OUT-C-OR
J1:34	To	OUT-C-AND
J1:32	To	OUT-D-NOT
J1:36	To	OUT-D-OR
J1:22	To	OUT-D-AND
J1:19	To	OUT-E-NOT
J1:35	To	OUT-E-OR
J1:21	To	OUT-E-AND
J1:33	To	OUT-F-NOT

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### **3 ENVIRONMENTAL QUALIFICATION FORM (EQF)**

**NOMENCLATURE:** DISCRETE BUFFER/DRIVER

**TYPE/MODEL/PART NO:** 930610-00

**MANUFACTURER'S SPECIFICATION AND/OR OTHER APPLICABLE SPECIFICATION:**

Report SD-120042, RTCA/DO-160F

**MANUFACTURER:** Shadin Avionics

**ADDRESS:** 6831 Oxford Street, St. Louis Park, Minnesota 55426-4412

<b><u>CONDITIONS</u></b>	<b><u>SECTION</u></b>	<b><u>DESCRIPTION OF TESTS CONDUCTED</u></b>
Temperature and Altitude	4.0	Tested to Category B1
Low Temperature		-20°C
High Temperature		+55°C
Short Time Operating Range		-40°C to +70°C
Ground Survival Range		-55°C to +85°C
Altitude		25,000ft
Temperature Variation	5.0	Tested to Category B
Humidity	6.0	Tested to Category A
Operational Shock and Crash Safety	7.0	Tested to Category A
Vibration	8.0	Tested to Category U2 (F, F1)
Explosion	9.0	Identified as Category X Not tested
Waterproofness	10.0	Identified as Category X Not tested
Fluids Susceptibility	11.0	Identified as Category X Not tested

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**ENVIRONMENTAL QUALIFICATION FORM (Cont.)**

<u>CONDITIONS</u>	<u>SECTION</u>	<u>DESCRIPTION OF TESTS CONDUCTED</u>
Sand and Dust	12.0	Identified as Category X Not tested
Fungus	13.0	Identified as Category X Not tested
Salt Fog	14.0	Tested to Category T
Magnetic Effect	15.0	Identified as Category X Not tested.
Power Input	16.0	Tested to Category A
Voltage Spike	17.0	Tested to Category A
Audio Frequency Conducted Susceptibility- Power Inputs	18.0	Tested to Category Z
Induced Signal Susceptibility	19.0	Tested to Category AC
Radio Frequency Susceptibility (Radiated and Conducted)	20.0	Tested to Category RR
Emission of Radio Frequency Energy	21.0	Tested to Category M
Lightning Induced Transient Susceptibility	22.0	Identified as Category X Not tested.
Lightning Direct Effects	23.0	Identified as Category X Not tested.
Icing	24.0	Identified as Category X Not tested.
Electrostatic Discharge	25.0	Identified as Category X Not tested.
Fire, Flammability	26.0	Identified as Category X Not tested.

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**4 INSTALLATION DRAWINGS AND INSTALL KIT PARTS LIST**

Appendix A: Installation Drawing, D930610-00

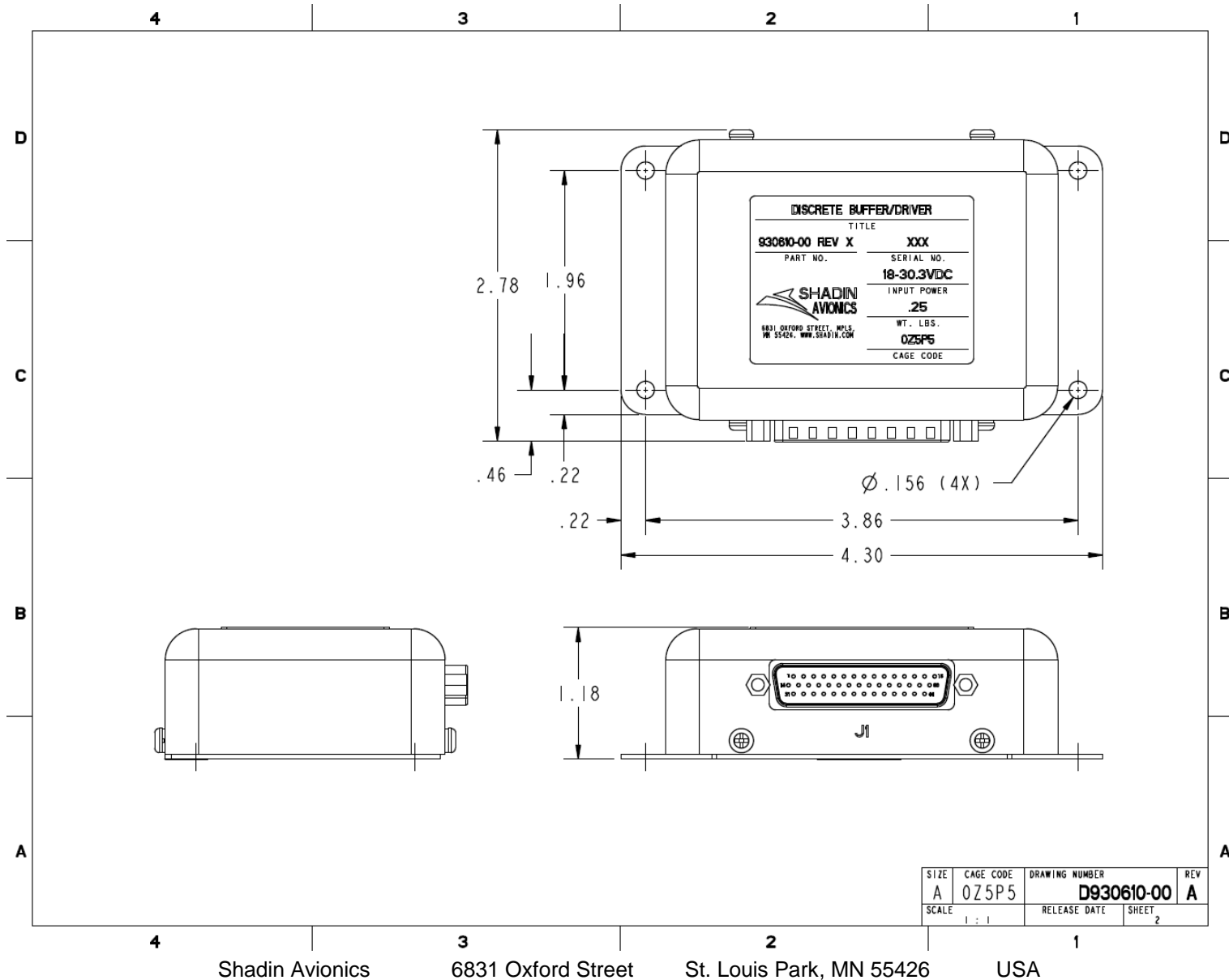
Appendix B: Install Kit, K930610-00



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**Appendix A: INSTALLATION DRAWING - D930610-00**



SIZE	CAGE CODE	DRAWING NUMBER	REV
A	OZ5P5	D930610-00	A
SCALE	1 : 1	RELEASE DATE	SHEET 2

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**Appendix B: INSTALL KIT – K930610-00**

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Shadin Avionics CAGE CODE: 0Z5P5  
File Name: K930610-00-DOC  
DIRECTORY: IK

ECO #: 1209/012  
Release Date: 9/24/2012  
Approved: RJW

**PARTS LIST**

Part #: **K930610-00**

Drawing #s: NA

Description: INSTALLATION KIT, BUFFER 930610-00

<u>FN</u>	<u>P/N</u>	<u>QTY.</u>	<u>DESCRIPTION</u>	<u>MFG.</u>	<u>MFG.#</u>	<u>DESIGNATION</u>	<u>COMMENTS</u>
5	232007	1	CONN SHELL, HD D-Sub 44 Pin,Female Crimp w/o 22AWG Contacts	COE	164X11969X		
10	232507	1	CONN, Backshell, 25P D-Sub, Zinc Die Cast	APH	17E-1657-25		
15	237072	44	CONTACT SOCKET, Crimp, 22-28 AWG HD	COE	162A18419X		
20	239004	1	TOOL, INSERT/EXTRACT M81969/1-04	NWK	59K0052		
25	753217	1	Thermal Label, 4"x 1"	ULI	S-8601		
30	PK1001	2	BAG, 2.5 x 3, 4 MIL Zip Lock				
35	PK1007	1	BAG, 6 x 8, 4 MIL				

51 items

MFG ABBREVIATIONS:

- APH – Amphenol
- COE – Conec
- DAN – Daniels Mfg. Corp.
- NWK – Newark
- ULI – Uline

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