



## ARINC 429 LOW TO HIGH SPEED CONVERTER

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**P/N: 933800-12**

**INSTALLATION MANUAL**

**REV E**

**Shadin Avionics  
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USA**

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**MANUAL P/N: IM3800-12**

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**PAGE CONTROL CHART**

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<u>Drawing No.</u>	<u>Description/ Part Number</u>	<u>DATE</u>	<u>REV</u>
4036-087	Installation, ARINC 429 Low to High Speed Converter, P/N 933800-12	4-15-03	C
4038-055	Installation DWG, Remote Mounting Tray P/N 613253-6	4-15-03	B
N/A	Parts List, Install Kit P/N IK3802	3-31-06	B

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**REVISION LOG**

REV.	DATE	APP'D	CHANGE
-	08-23-01	ZK	Baseline Release
A	08-08-02	ZK	Updated Product Description
B	09-27-02	PH	Updated Install Drawing
C	04-15-03	ZK	Release Cfg B. Removed Heater Assy, updated Specifications and EQF.
D	10-13-03	ZK	Added MTBF and Section 22.0 Lightning Test (XXE3)
E	03-31-06	CB	Updated Company Name

The information in this manual is subject to change without notification. To ensure complete and current updates, note the Revision Log above and call Technical Assistance for updated information.

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## 1. OVERVIEW

### 1.1 THE MANUAL

This manual is intended to guide the proper installation of the ARINC 429 Low to High Speed Converter. Installation instructions should be read and followed.

### 1.2 PRODUCT DESCRIPTION

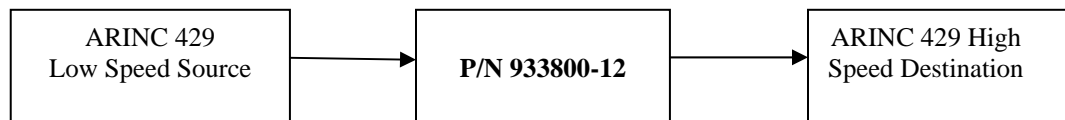
The P/N 933800-12 is a general purpose converter, and could be used in any application where low speed ARINC 2-wire needs to be converted to high speed.

This converter receives any label on the ARINC 429 Low Speed input and outputs it on an ARINC 429 High Speed bus with up to 1.1msec delay.

All label data is unchanged and the update rate remains almost identical in the conversion. (See example below).

Receive Low Speed ARINC 429				Output High Speed ARINC 429		
Label	Rate	Description	Data	Label	Rate	Delay
314	50msec	True Heading	Unchanged	314	50msec	1.1msec

The Block Diagram below depicts the intended use of the converter in the aircraft installation.



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### 1.3 SPECIFICATIONS

#### Physical Specifications

Box Size:	8.56L x 3.30W x 3.68H (inches)
Weight:	1.5 lbs
Mounting:	Rack

#### Electrical and Functional

Power Supply Voltage:	+14 to +28VDC
Supply Current:	300mA (at P1 connector)
Protection:	Not internally fused
<b>Inputs:</b>	ARINC 429: Low Speed, 12-14.5Kbps±1%
<b>Outputs:</b>	ARINC 429: High Speed, 100Kbps±1%

#### Environmental

RTCA/DO-160D (By similarity to 933800-26, except section 22.0)

Categories: B1-BAB[S(B)]XXXXXXXXCBA[BZ]Z[WWX]L[XXE3]XXX

Operating Temperature:	-20°C to +55°C
Storage Temperature:	-55°C to +85°C
Operating Altitude:	Up to 25,000ft
In-Flight loss of Cooling:	Equipment can run indefinitely with no cooling
MIL-HDBK-217 MTBF	19,500 hours

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## **1.4 INPUTS**

This section specifies the interfaces for the Shadin ARINC 429 Low to High Speed Converter.

ARINC 429 Low Speed

## **1.5 OUTPUTS**

ARINC 429 High Speed

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## 2. INSTALLATION PROCEDURE

### 2.1 MOUNTING

The ARINC 429 Low to High Speed Converter (P/N 933800-12) should be mounted in a dry location and the equipment may be installed in a controlled temperature, non-pressurized location.

The converter should be mounted according to Installation Dwg, P/N 933800-12 Drawing No: 4036-087, using the hardware included in the Install Kit P/N IK3802 provided.

### 2.2 ELECTRICAL CONNECTIONS

Connection to Power Supply +28 VDC

933800-12		Description
J1:1, 2	To	+14 to +28VDC Power IN
J1:8, 9	To	Power GND

Inputs

933800-12		Description
J2:11	To	ARINC 429 Low Speed Input, GND
J2:12	To	ARINC 429 A Low Speed Input
J2:13	To	ARINC 429 B Low Speed Input

Outputs

933800-12		Description
J4:1	To	TX ARINC 419 B High Speed Output
J4:3	To	TX ARINC 419 A High Speed Output
J4: 4	To	GND (Shield)

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All tests, except section 22.0 are qualified by similarity to tests conducted on P/N 933800-26, A-582 to A-429 HS Converter.

### 3.0 ENVIRONMENTAL QUALIFICATION FORM (EQF)

**NOMENCLATURE:** ARINC 429 Low to High Speed Converter

**TYPE/MODEL/PART NO:** 933800-12 **TSO NUMBER:**

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

Report 4038-12, RTCA/DO-160D

**MANUFACTURER:** Shadin Avionics

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

<u>CONDITIONS</u>	<u>SECTION</u>	<u>DESCRIPTION OF TESTS CONDUCTED</u>
Temperature and Altitude	4.0	Tested to Category B1.
Low Temperature		
High Temperature		
Altitude		
Decompression		
Overpressure		
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 B.
Vibration	8.0	Tested to Category S(B).
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.)**

<b><u>CONDITIONS</u></b>	<b><u>SECTION</u></b>	<b><u>DESCRIPTION OF TESTS CONDUCTED</u></b>
Sand and Dust	12.0	Identified as Category X. Not tested.
Fungus	13.0	Identified as Category X. Not tested.
Salt Spray	14.0	Identified as Category X. Not tested.
Magnetic Effect	15.0	Tested to Category C.
Power Input	16.0	Tested to Category B.
Voltage Spike	17.0	Tested to Category A.
Audio Frequency Susceptibility	18.0	Tested to Category BZ.
Induced Signal Susceptibility	19.0	Tested to Category Z.
Radio Frequency Susceptibility	20.0	Tested to Category WWX.
Radio Frequency Emission	21.0	Tested to Category L.
Lightning Induced Transient Susceptibility	22.0	Tested to Category XXE3.
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

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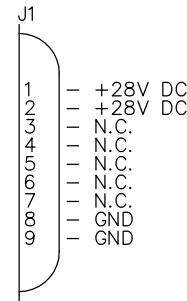
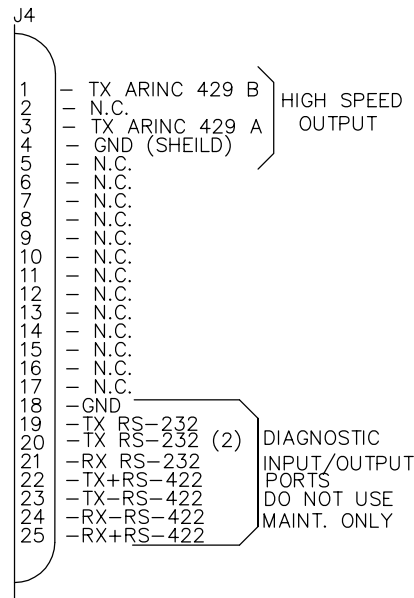
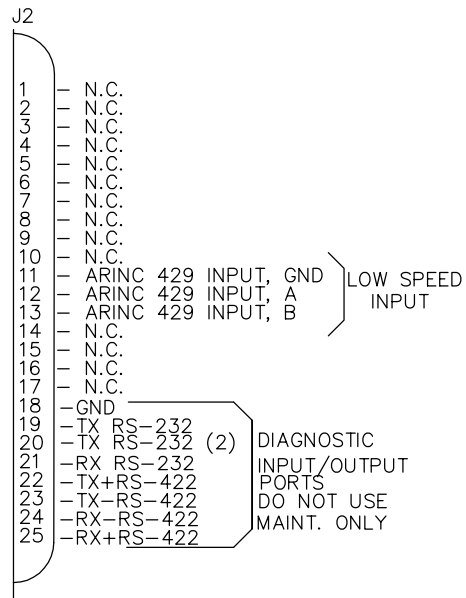
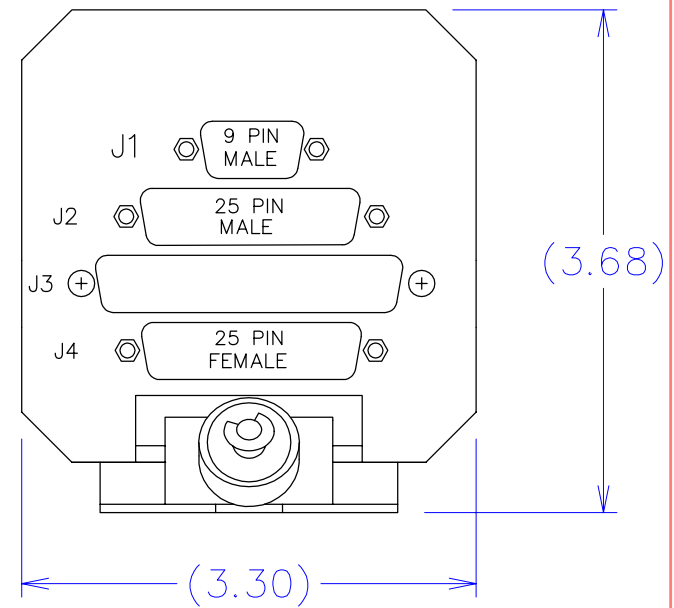
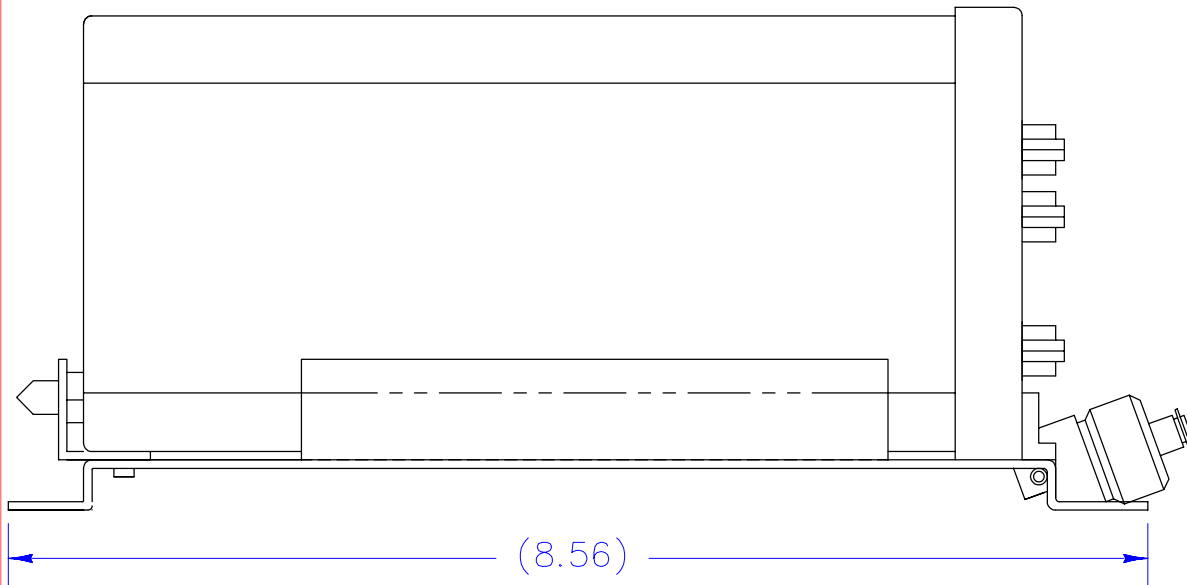
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**SECTION 4.0**

**INSTALLATION DRAWINGS AND  
INSTALL KIT PARTS LISTS**

The following drawings are arranged in the sequence specified on page i of the Page Control Chart.



J3 (NOT USED)

ECO #	REV.	DATE	BY	APP'D	DESCRIPTION
0303/041	C	4/15/03	PAB	ZK	REMOVED HEATER BD, ADJUSTED CORRESPONDING HARDWARE AND NOMENCLATURE
0209/018	B	9/27/02	PAB	PMH	REPLACED LATCH CLIPS W/JACK SCREWS
9508/043	A	8/25/95	DDF	SES	ADDED HEIGHT & WIDTH
9409/017	-	9/28/94	WMP	SES	BASELINE RELEASE

3D CAD FILE AVAIL: NO

UNLESS OTHERWISE NOTED  
DIMENSIONS ARE IN INCHES  
TOLERANCES: X.X - ±0.1  
X.XX - ±0.01  
X.XXX - ±0.005

FINISH: N/A

MATERIAL: N/A

SCALE: NONE

DRAWING DATE  
9/28/94

DRAFTER  
WMP

APPROVED  
SES

FILE NAME  
933800-12CJ.DWG

DIRECTORY  
933800-12

SHEET 1 OF 1

**SHADIN CO., INC.** MINNEAPOLIS, MN 55426

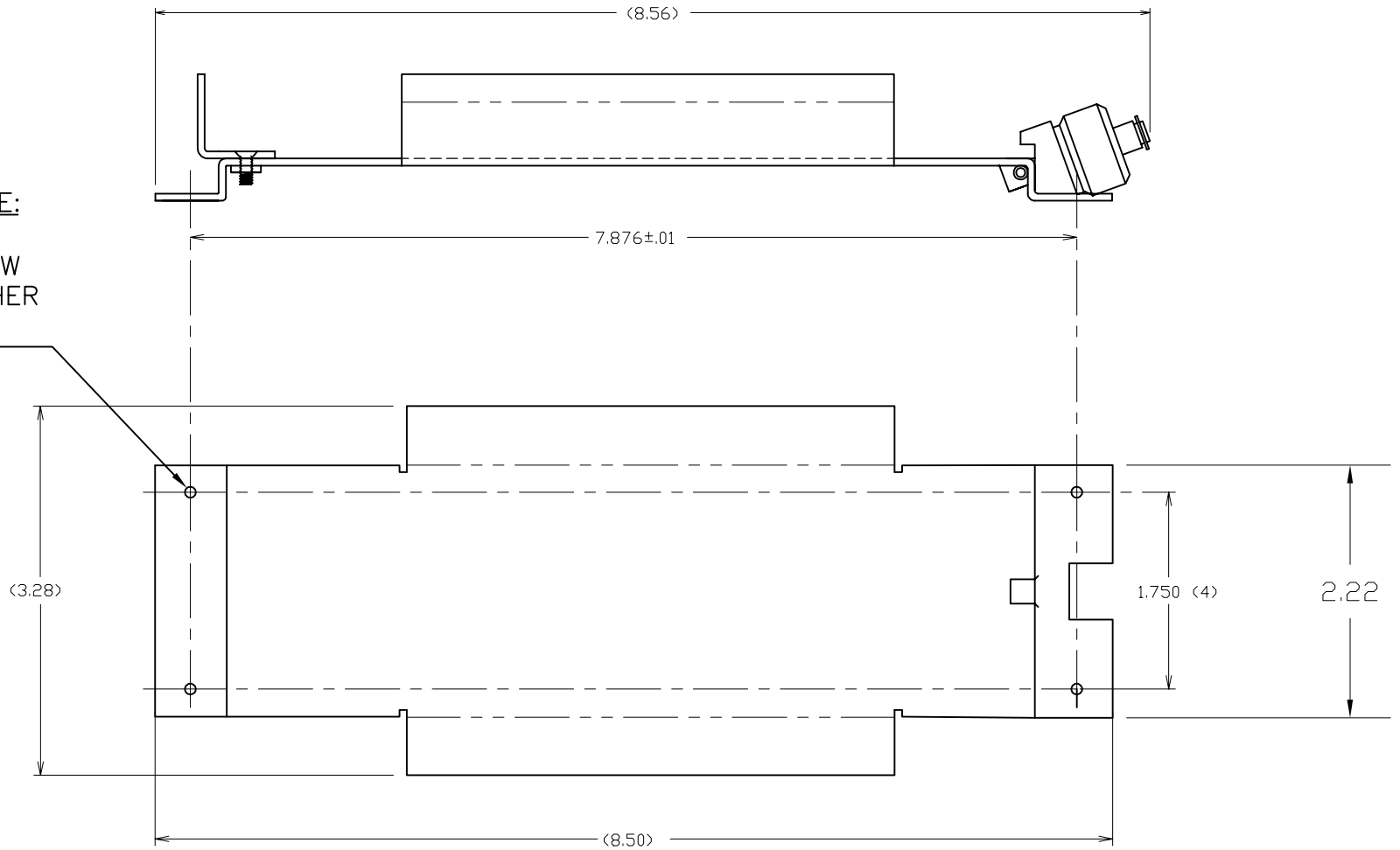
INSTALLATION DWG, ARINC 429  
LOW TO HIGH SPEED CONV.

CODE IDENT. NO.  
4036-087

SIZE A P/N 933800-12

REV C

INSTALLATION HARDWARE:  
 (TYP. 4 PLACES)  
 AN 526-632R8 SCREW  
 AN 960-6 WASHER  
 AN 364-632 NUT



DRAWING DATE 10/31/94	<b>SHADIN</b> MINNEAPOLIS, MN 55426	
DRAFTER WMP	INSTALLATION, REMOTE MOUNTING TRAY	
APPROVED SES		
FILE NAME 613253-6B.J.DWG	DRAWING NO. 4038-055	SIZE A
DIRECTORY 613253-6	P/N 613253-6	REV B
SHEET 1 OF 1	SCALE: NONE	

ECD #	REV.	DATE	BY	APP'D	DESCRIPTION
0303/041	B	4/15/03	PAB	ZK	ADJUSTED DIMENSIONS
9912/005	A	12/10/99	LJM	AR	CONVERT FROM DESIGN CAD TO ACAD, ADD TEXT
9410/026	-	10/31/94	WMP	SES	BASELINE RELEASE

Report: 4038  
 ECO Date: March 2, 2006  
 Rev: B  
 Sec.: IX  
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ECO # 0603/009  
 Release date: 3-31-06  
 Approved: CB

**PARTS LIST**

Part #: **IK3802**

Drawing #: N/A

Description: **INSTALL KIT, 3 D-SUBS, 9F, 25F, 25M**

<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	230020-4	1	HOOD, 9 Pin D-Sub	CIN	DE-24657		
10	230054	25	PIN, Crimp D-Sub, Male, 20-24 AWG	POS	MC6020D		
15	230055	34	CONTACT, Crimp D-Sub, Fem, 20-24, M39029/63-368	POS	M39029/63-368 (FC6020D)		
20	230088	1	CONN SHELL, 25 Pin D Sub Fem Crimp Type	AMP	205165-1	J2	
25	230089	2	HOOD, 25 Pin D-Sub, ST	CIN	DB-24659		
30	230090	1	CONN SHELL, 25 Pin D Sub Male Crimp Type	AMP	205166-1	J4	
35	232001	1	CONN SHELL, 9Pin D-Sub Fem Crimp Type	AMP	205161-1	J1	
40	511002	6	SCREW, 4-40 x 1/4" Phil Pan HD SS	MCM	91772A106		
45	541001	6	WASHER, #4 Split Lock SS	MCM	92147A005		
	753217	1	COMPUTER LABEL, 3.5"x 15/16"	AVR	4013		
	PK1001	1	BAG, 2.5 x 3, 4 MIL Zip Lock				
	PK1007	1	BAG, 6 x 8, 4 MIL				

80 items