EQUIPMENT INSTALLATION MANUAL

for the

ARINC ALTITUDE ALERTER INTERFACE

P/N 1085-4000-01

RELEASED

DAC International
6702 McNeil Drive
Austin, TX 78729

RECORD OF REVISIONS

REV	DESCRIPTION	DATE	APPROVED
IR	INITIAL RELEASE E907	9/18/08	BH

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1. INTRODUCTION:

This manual contains installation data and specifications for an ARINC 429 Altitude Alerter Interface. The system contains a single LRU.

Glossary

A/C	Aircraft
AAAI	ARINC Altitude Alerter Interface
AHRS	Attitude and Heading Reference System
BITE	Built-In Test Equipment
GND	Ground
LRU	Line Replaceable Unit
USAF	United States Air Force

2. DESCRIPTION:

The unit accepts selected altitude data in RS-232 digital format from an IS&S Altitude Alterter. It then produces an ARINC digital output formatted for a Raytheon APX-119 Mode-S Transponder.

3. PART NUMBERS:

The Model GDC54 ARINC Altitude Alerter Interface (AAAI) is available under the following part number:

1085-4000-01-001( ) Analog Rate Converter

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Software part number, where ( ) contains the number zero for initial release, or any letter, A – Z to denote a minor change.

4. REFERENCE DOCUMENTS

OKC-08-0281, Rev. A	Statement of Work for the ARINC Altitude Alerter Interface
MIL-STD-461E	Requirements for Control of Electromagnetic Interference Characteristics of Subsystems and Equipment
MIL-STD-810C	Environmental Test Methods
RTCA/DO-160D	Environmental Conditions and Test Procedures for Airborne Equipment
RTCA/DO-178B	Software Considerations in Airborne Systems and Equipment Certification
ARINC 429	Mark 33 Digital Information Transfer System

5. REGULATORY COMPLIANCE:

5.1. Software

The AAAI software was developed in accordance with RTCA/DO-178B to criticality level C.

5.2. Hardware

The AAAI is produced under DAC International's FAA approved quality system. The units of this system are intended for installation on USAF C-9 aircraft.

6. SUPPLIED EQUIPMENT

Each unit is shipped with the following items:

Part Number	Description	Qty
1085-4000-01-001( )	ARINC 429 Altitude Alerter Interface	1
1085-4200-01	Installation Kit, Rate Converter	1

Complete installation kits are available under kit part number 1085-4200-01. Individual pieces are available under the part numbers shown. Contact DAC International sales to place orders.

Part Number	Description	Qty
1085-4200-01	Installation Kit, Analog Rate Converter	
M24308/2-2F	Connector, Receptacle, 15 pin D-Sub	1
M39029/63-368	Socket, Crimp Style, female	15
P10053	Slide Latch Kit	1
P10067	Backshell, 15-Pin D-Sub	1
1085-2510-01	Equipment Installation Manual	1

7. GDC-54 SPECIFICATIONS:

7.1. Physical:

The AAAI attaches to the airframe using four (4) #8 screws. See the paragraph titled Outline Drawing for additional details.

Height.....1.25 inches

Width (LRU).....4.22” inches

Width (base).....5.22 inches

Depth.....3.54 inches

Weight.....0.4 lb.

7.2. Electrical:

Input Voltage .....28 VDC Nominal (10Vdc – 32Vdc operational)

Input Current.....0.05 Amp at 28 VDC

7.3. RS-232 Input:

Baud Rate.....9600

Data bits 8

Stop bits 1

Parity.....None

7.4. ARINC 429 Output:

Label 102 .....High speed

7.5. Reliability:

MTBF.....Greater than 40,000 hours.

8. OPERATION:

The AAAI accepts RS-232 data and converts digital selected altitude information to corresponding Mode-S register data on label 102.

The following label is produced by the AAAI:

```
102 :  (%01100000 00000000 00000000 01000010 BNR)
       (%pSS+[m---data---- --l][pd] [ Label]
       p=parity(odd), SS=SSM, +=polarity, data= sel alt (integer), pd=pad
```

9. INSTALLATION:

9.1. Aircraft Interconnect Wiring

ARINC-429 outputs are all connected using twisted shielded pairs (M2750022SD2T23 or equivalent). RS-232 data is connected with a single shielded conductor (M27500/22TG1T14 or equivalent). Power signals should be connected using M22759/34-20-9 or equivalent.

9.2. Mounting

The AAAI is secured with installer provided hardware. 4, 8-32 x ½" screws, 4 #8 flat washers, and 4 #8 lock washers are required for proper installation. See section 15 for the hole location dimensions. It is recommended that at least 4 inches of clearance should be provided on the connector side of the AAAI to allow room for the mating connector and cable.

10. REMOVAL AND REPLACEMENT

10.1. Removal

1. Open the circuit breaker powering the GDC54.
2. Remove the connector.
3. Remove four (4) screws securing the unit to the airframe.

10.2. Replacement

1. Open the circuit breaker powering the GDC54.
2. Attach the unit to the airframe with four (4) screws.
3. Attach the connector. Rotate the connector outer housing until the red band on the J1 connector is fully covered.
4. Close circuit breaker.
5. Perform operational test of the GDC54 as prescribed in the aircraft maintenance manual.

11. EQUIPMENT CHECKOUT

The GDC54 provides ARINC 429 data conversion. There are no operator controls associated with the GDC54 unit. The RS-232 port (from the IS&S 1G-80309 Altitude Alterter) that forms the input for the GDC54 must be operational in order to perform this functional checkout.

1. Apply power to the IS&S data source system.
2. Perform the functional test of those systems receiving GDC54 output data according to existing, approved maintenance data.

12. CONTINUED AIRWORTHINESS:

This section provides data intended to assist the installer with establishing Instructions for Continued Airworthiness as required by FARs 23.1529, 25.1529, 27.1529 and 29.1529.

1. Maintenance Manual information for the GDC54, which includes system description, removal instructions, installation instructions and functional testing, is contained in DAC International Installation Manual, 1085-2510-01 (this document).

2. Line Replaceable Unit (LRU) part numbers and other parts contained in the installation data package should be placed in the aircraft operator's appropriate airplane Illustrated Parts Catalog (IPC).

3. Wiring diagram information contained in the installation data package should be placed in the aircraft operator's appropriate airplane Wiring Diagram Manual.

4. Scheduled Maintenance Program tasks are as follows:

    a. Recommended Periodic Scheduled Servicing: ..... None required

    b. Recommended Periodic Scheduled Preventive Maintenance Tests..... None Required

    c. Recommended Periodic Inspections: ..... None Required

    d. Recommended Periodic Overhaul Period ..... None Required

    e. Special Inspection Requirements ..... None Required

5. Application of Protective Treatments ..... None Required

6. Special Tools..... None Required

7. Electrical Loads for this appliance are as specified in the DAC International Installation Manual, 1085-2510-01 (this manual).

8. There are no Airworthiness limitations associated with the installation of this appliance.

13. ENVIRONMENTAL:

NOMENCLATURE: Model GDC54 ARINC Altitude Alerter Interface
PART NO: 1085-4000-01-XXXX
MANUFACTURER: DAC International
ADDRESS: 6702 McNeil Drive, Austin, TX 78729

Section	Category	Remarks
4.0 Temperature and Altitude	D2	50,000 Ft, (-55° to +70° C)
5.0 Temperature Variation	B	5° per minute
6.0 Humidity	A	Standard Humidity
7.0 Operational Shock and Crash Safety	D	Fixed wing
8.0 Vibration	S	Curves L, M, and C, Fixed Wing – Turbojet
9.0 Explosion Proofness	X	Not Tested
10.0 Waterproofness	X	Not Tested
11.0 Fluids Susceptibility	X	Not Tested
12.0 Sand and Dust	X	Not Tested
13.0 Fungus Resistance	X	Not Tested
14.0 Salt Spray	X	Not Tested
15.0 Magnetic Effect	A	Between 0.3 and 1.0 meters
16.0 Power Input	B	Alternator / Rectifiers with battery
17.0 Voltage Spike	B	E = 56 volts
18.0 AF Conducted Susceptibility – Power Inputs	A	Alternator / Rectifiers with battery
19.0 Induced Signal Susceptibility	AC	No interruption of operation
20.0 Radio Frequency Susceptibility (Radiated and Conducted)	QQ	50 volts/meter, 0.075 amps/meter
21.0 Emission of Radio Frequency Energy	M	At or below acceptable limit per DO-160E.
22.0 Lightning Induced Transient Susceptibility	XXXXX	Not Tested
23.0 Lightning Direct Effects	X	Not Tested
24.0 Icing	X	Not Tested
25.0 ESD	X	Not Tested
MIL-STD-461F	CS101	Power leads, 30Hz to 150 KHz

14. CONNECTOR PIN OUT:

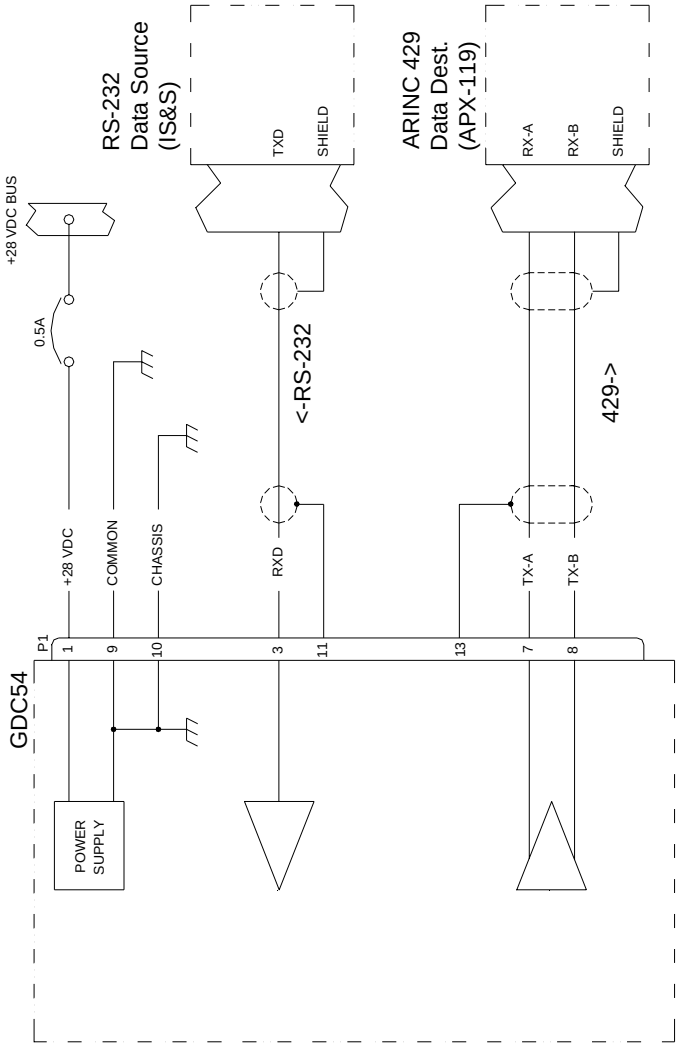
The GDC54 contains a single 15-pin male connector, J1, per MIL-C-24308, part number M24308/4-260F. The mating connector, P1, is described previously under the section “Equipment Supplied”.

Pin	Signal	Function
1	A+	28 Vdc Primary Power
2	n/c	Reserved (RS232 Output)
3	DATA_IN	RS-232 Input (RS232 Input)
4	n/c	
5	n/c	Reserved (RX-1A)
6	n/c	Reserved (RX-1B)
7	TX-A	429 Transmit A
8	TX-B	429 Transmit B
9	Power Common	28 Vdc Return
10	Aircraft Common	Chassis ground
11	RS-232 Shield	RS232 shield/return
12	n/c	Reserved (/PGM Enable)
13	ARINC Shield	RX/TX Shield
14	n/c	Reserved (RX-2A)
15	n/c	Reserved (RX-2B)

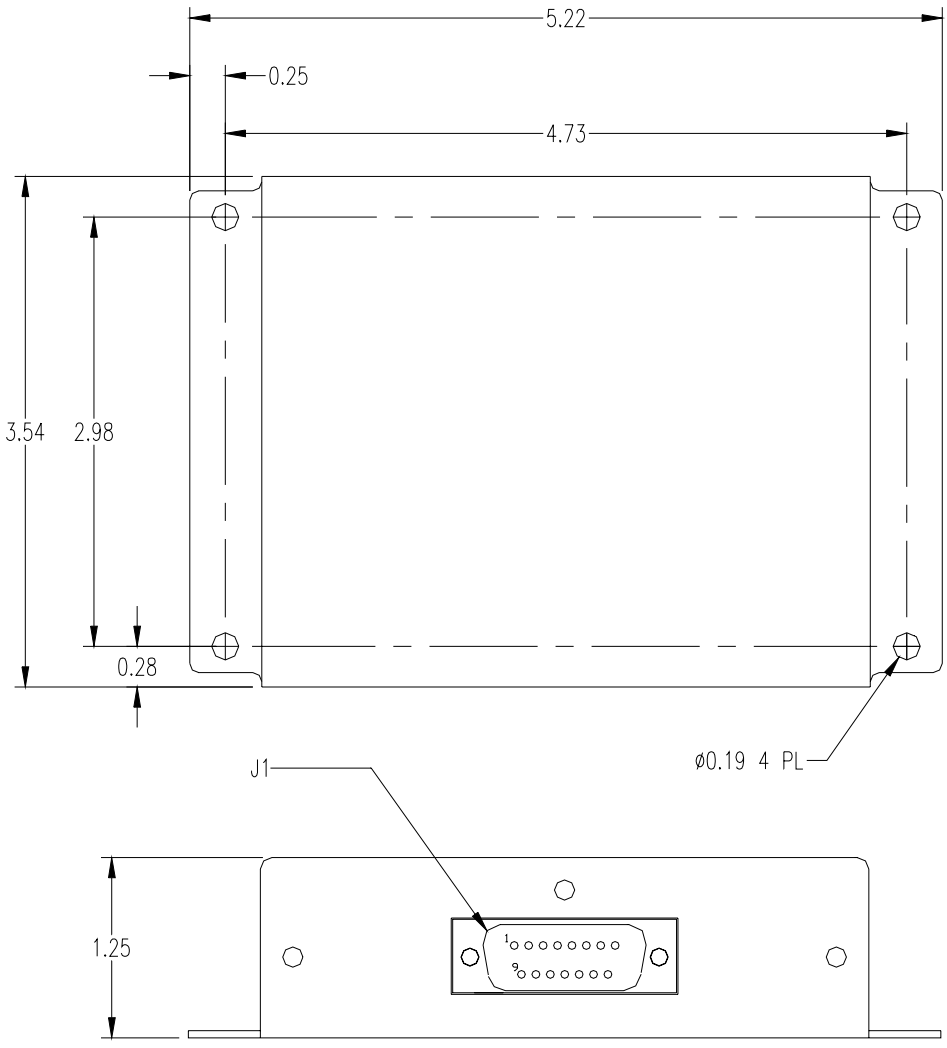
J1 Pin Description

NOTE: Do not use pins labeled Reserved. These are for factory test and In-Circuit-Programming.

15. TYPICAL INTERCONNECT



16. OUTLINE DRAWING



Note: Dimensions are in inches.

17. SLIDE LATCH ASSEMBLY

Assemble the slide latch mechanism, part number P10053, onto the mating connector as pictured using the hardware supplied with the slide latch.