EQUIPMENT INSTALLATION MANUAL

Model GDC34A

ARINC 429 TO RS232 CONVERTER

P/N 1052-4000-50-00X( )

DAC International
6702 McNeil Drive
Austin, TX 78729

RECORD OF REVISIONS

REV	DESCRIPTION	DATE	APPROVED
IR	Initial Release E454-04	10/13/05	LW

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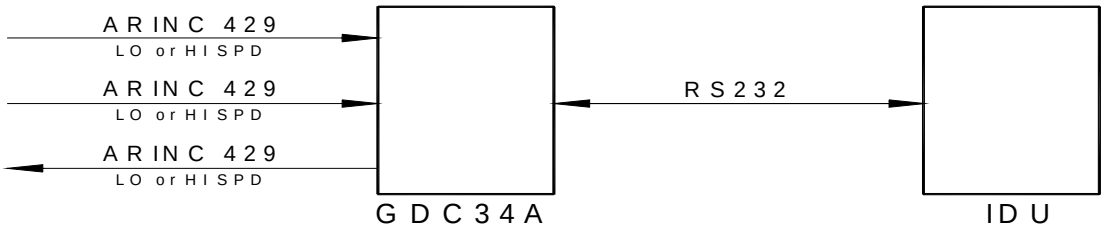
INTRODUCTION:

This manual contains installation data and specifications for the DAC International Model GDC34A ARINC 429 to RS232 Converter, Part Number 1052-4000-50-005( ).

DESCRIPTION:

The DAC International Model GDC34A with software version 0050 is designed to interface with an IDU and accepts ARINC 429 input data on two channels and retransmits it out as an RS-232 serial link. It also accepts RS-232 input data, formats it for ARINC 429, and transmits in either high or low speed on the ARINC 429 output port. This product is for use in experimental aircraft.

This manual provides installation data for the GDC34A. Refer to the data supplied with the TCAS system equipment for installation and operating instructions of those parts of the system.



Block Diagram

PART NUMBERS:

The GDC34A Data Converter is available under the following part numbers:

1052-4000-50-005( )

Inputs: ARINC 429, Hi or Lo Speed
RS232, 34,800 Baud

|

Output: ARINC 429, Hi or Lo Speed
RS232, 34,800 Baud

|

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

REGULATORY COMPLIANCE:

Software

The Model GDC34A software was developed in accordance with RTCA/DO-178B to criticality level E. The GDC34A shall support the conversion and transmission of ARINC 429 data and TCAS TA (traffic alert) files as defined in ARINC 735A, Attachment 6A. Any other use of the GDC34A output data must be evaluated according to applicable regulations.

Environmental

The Model GDC34A meets the DO-160D environmental categories listed later in this manual.

Airworthiness

The GDC34A is designed for installation in experimental aircraft only. Any other use of the GDC34A output data must be evaluated according to applicable regulations. The GDC34A is not approved for installation in aircraft certified under 14 CFR Parts 23, 25,27 or 29. Additional design data is available by contacting DAC International's Engineering and Certification division at 1-800-527-2531.

SUPPLIED EQUIPMENT

Each Data Converter is shipped with the following items:

Part Number	Description	Qty
1052-4000-50-005( )	GDC34A ARINC 429 to RS232 Converter, ARINC 429 Hi or Lo Speed	1
1052-4200-50	Installation Kit, GDC34A	1

Complete installation kits are available under kit part numbers 1052-4200-50. Individual pieces are available under the part numbers shown. Contact DAC International sales to place orders.

Part Number	Description	Qty
1052-4200-50	Installation Kit, GDC34A	
M24308/2-2F	Connector, Receptacle, 15 pin D-Sub	1
M39029/63-368	Socket, Crimp Style, female	20
P10053	Slide Latch Kit	1
P10067	Backshell, 15-Pin D-Sub	1
1052-2510-50	Equipment Installation Manual for the GDC34A	1

SPECIFICATIONS:

Physical:

The GDC34A attaches to the airframe via four mounting holes. See the paragraph titled Outline Drawing for further details.

Height.....1.25”

Width.....5.22” (Includes mounting flange)

Depth.....3.54”

Weight.....0.4 lb.

Electrical:

Input Voltage .....14 / 28 VDC (10Vdc – 32Vdc operational)

Input Current.....0.1 Amp maximum at 28 VDC

ARINC 429 Input (Dual):

Labels.....All Labels. ARINC labels 357, 130, 131, and 132 shall be excluded from normal ARINC data processing and treated as a part of the ARINC 735 TCAS TA data file transfer structure (as defined in ARINC 735A, Attachment 6A).

Baud Rate.....High or Low Speed

Serial Data Input:

Format.....RS232

Baud Rate.....34,800 Baud

ARINC 429 Output:

Labels.....All Labels.

Baud Rate.....High or Low Speed

Serial Data Output:

Format.....RS232

Baud Rate.....34,800 Baud

Certification:

DO-178B.....Level E

DO-160D.....D1/BADSXXXXXXABBBAVBXXXX

Reliability:

MTBF.....Greater than 50,000 hours.

OPERATION - SOFTWARE -005( ):

The GDC34A fitted with software version -005( ) accepts input of ARINC 429 data from up to two sources and retransmits it in a RS232 format to an IDU. The GDC34A also accepts input of RS232 data from an IDU that is converted then transmitted as high or low speed ARINC 429 data.

ARINC 429 Input

The GDC34A receives ARINC data on pins J1-5 and J1-6 and J1-14 and J1-15. Both ARINC 429 receiver ports are configured for high speed or low speed data. The GDC34A supports the conversion and transmission of TCAS TA (traffic alert) files as defined in ARINC 735A, Attachment 6A.

The GDC34A processes all ARINC 429 input labels. ARINC labels 357, 130, 131, and 132 shall be excluded from normal ARINC data processing and treated as a part of the ARINC 35A TCAS TA data file transfer structure (as defined in ARINC 735A, Attachment 6A). In addition, it will discard any input labels that do not have odd parity.

ARINC 429 Ouput

The GDC34A shall transmit ARINC data on pins J1-7 and J1-8. The ARINC 429 transmit port is configured for high speed or low speed data as specified by the most recently received RS232 ARINC Port Initialization Command. If no ARINC Port Initialization Command has been received, the GDC34A shall default to transmitting low speed data.

INSTALLATION

This section provides details for the installation of the GDC34A ARINC 429 to RS232 Converter, including configuration, wiring, mounting and checkout procedures. Follow the procedures and recommendations found in this section to assure a successful installation.

Read this entire section before beginning the installation.

Suggest completing an electrical load analysis in accordance with AC 43.13-1B, Chapter 11 prior to starting the aircraft modification to insure the aircraft has sufficient load capability.

Suggest completing an aircraft weight and balance prior to aircraft modification to insure the aircraft has sufficient weight and CG margin.

Material Not Supplied

The following items are required for the installation but not supplied:

- Wire: MIL-W-22759/16 or equivalent
- Shielded Wire: MIL-C-27500 or equivalent
- Mounting screws: MS35206 6-32, 4 each
- Circuit Breaker: Klixon 7277-2-1 or equivalent
- Tie straps or lacing cord
- Ring terminals (for grounding)
- Splices

Special Tools

Use the following crimp tool to ensure reliable crimp contact connections to connector J1.

- Crimp tool M22520/2-01
- Positioner M22520/2-08

Mounting Considerations

The GDC34A ARINC 429 to RS232 Converter can mount in the avionics bay, shelf or other suitable structure. It can be mounted in any orientation.

Wiring Considerations

Wiring should be done in accordance with AC 43.13-1B, Chapter 11. Refer to the typical interconnect diagram later in this manual for specifics. Use 22 to 24 AWG wire for all connections.

Fabricate wiring harness, refer to the interconnect diagrams and pin description. Test all the wiring for continuity and for shorts. Insure aircraft power is on the correct pins of J1; refer to Table 1. Install slide latch assembly onto J1 using instructions found later in this manual.

REMOVAL AND REPLACEMENT

Removal

1. Open the circuit breaker powering the GDC34A.
2. Remove the connector by disengaging the slide latch then pulling the connector free.
3. Remove four (4) screws securing the unit to the airframe.

Replacement

1. Open the circuit breaker powering the GDC34A.
2. Attach the unit to the airframe with four (4) screws.
3. Seat the connector then engage the slide latch to secure.
4. Close circuit breaker.
5. Perform operational test of the GDC34A as prescribed in the aircraft maintenance manual.

EQUIPMENT CHECKOUT

The GDC34A provides conversion of ARINC 429 data into RS232 format for use by an Integrated Display Unit (IDU). The 429 source equipment and the IDU must both be operational in order to perform this functional checkout.

1. Apply power to the 429 source / IDU equipment.
2. Perform operational check of IDU according to IDU maintenance instructions.
3. Test complete

ENVIRONMENTAL:

The GDC34A meets the environmental test categories detailed below in accordance with RTCA/DO-160D, Environmental Conditions and Test Procedures for Airborne Equipment.

NOMENCLATURE: Model GDC34A Data Converter
PART NO: 1052-4000-50-005( )
MANUFACTURER: DAC International
ADDRESS: 6702 McNeil Drive, Austin, TX 78729

Section	Category	Remarks
4.0 Temperature and Altitude	D1	50,000 Ft Temperature controlled
5.0 Temperature Variation	B	Partially controlled temperature
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, Turbofan, Turboprop and reciprocating Instrument Panel or Fuselage
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	0.3 meter to 1.0 meter
16.0 Power Input	B	Alternator / Rectifiers
17.0 Voltage Spike	B	56 volts
18.0 AF Conducted Susceptibility – Power Inputs	B	Alternator / Rectifiers
19.0 Induced Signal Susceptibility	A	
20.0 Radio Frequency Susceptibility (Radiated and Conducted)	V	50 volts/meter
21.0 Emission of Radio Frequency Energy	B	
22.0 Lightning Induced Transient Susceptibility	X	Not Tested
23.0 Lightning Direct Effects	X	Not Tested
24.0 Icing	X	Not Tested
25.0 ESD	X	Not Tested

CONNECTOR PIN OUT:

The GDC34A contains a single 15-pin male connector, J1, per MIL-C-24308. The mating connector, P1, is described previously under the section "Equipment Supplied".

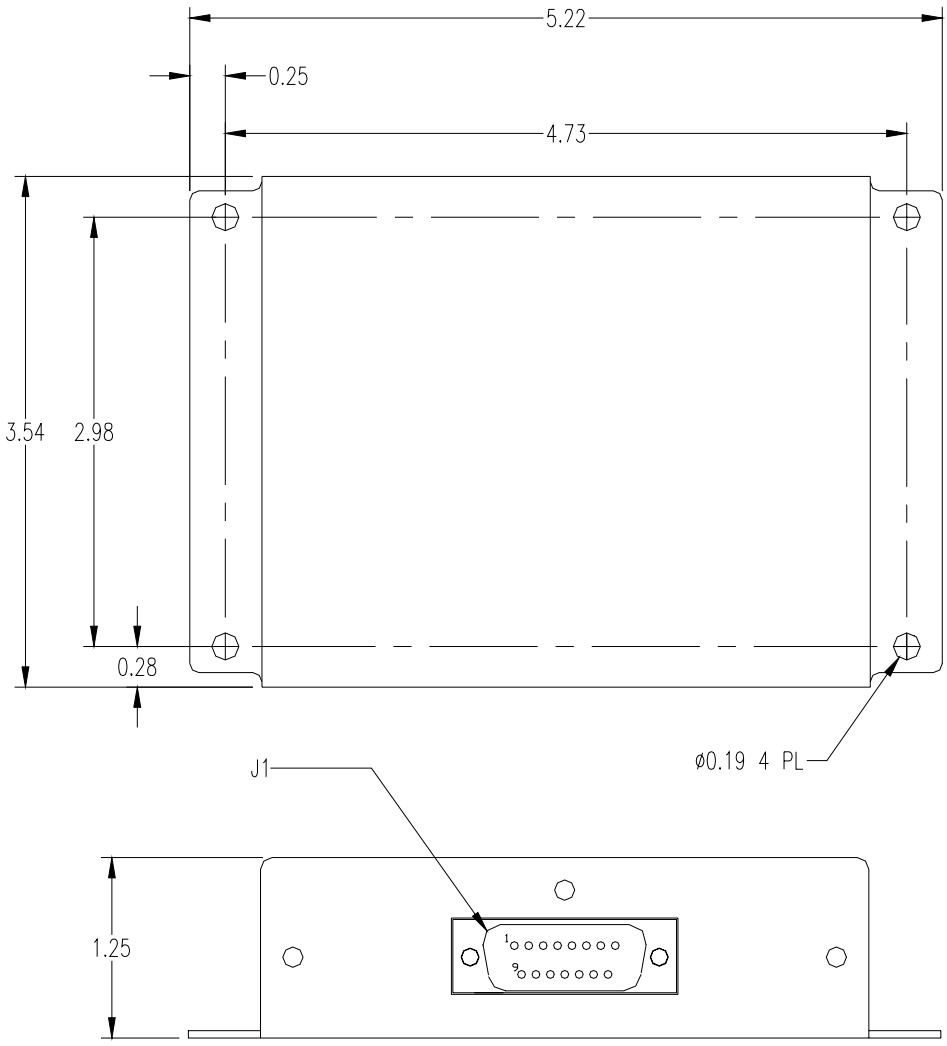
Pin	Signal	Function
1	A+	28 Vdc Primary Power
2	RS232 Output	Serial Output
3	RS232 Input	Serial Input
4		Reserved (+12Vdc Vpp)
5	RX1-A	429 Receive A, Port 1
6	RX1-B	429 Receive B, Port 1
7	TX-A	ARINC 429 Transmit A
8	TX-B	ARINC 429 Transmit B
9	Power Common	28 Vdc Return
10	Aircraft Common	Chassis ground
11	RS232 return	Common
12		Reserved (/PGM Enable)
13	Common	RX Shield
14	RX2-A	ARINC 429 Receive A, Port 2
15	RX2-B	ARINC 429 Receive B, Port 2

Table 1 - J1 Pin Description

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

OUTLINE DRAWINGS

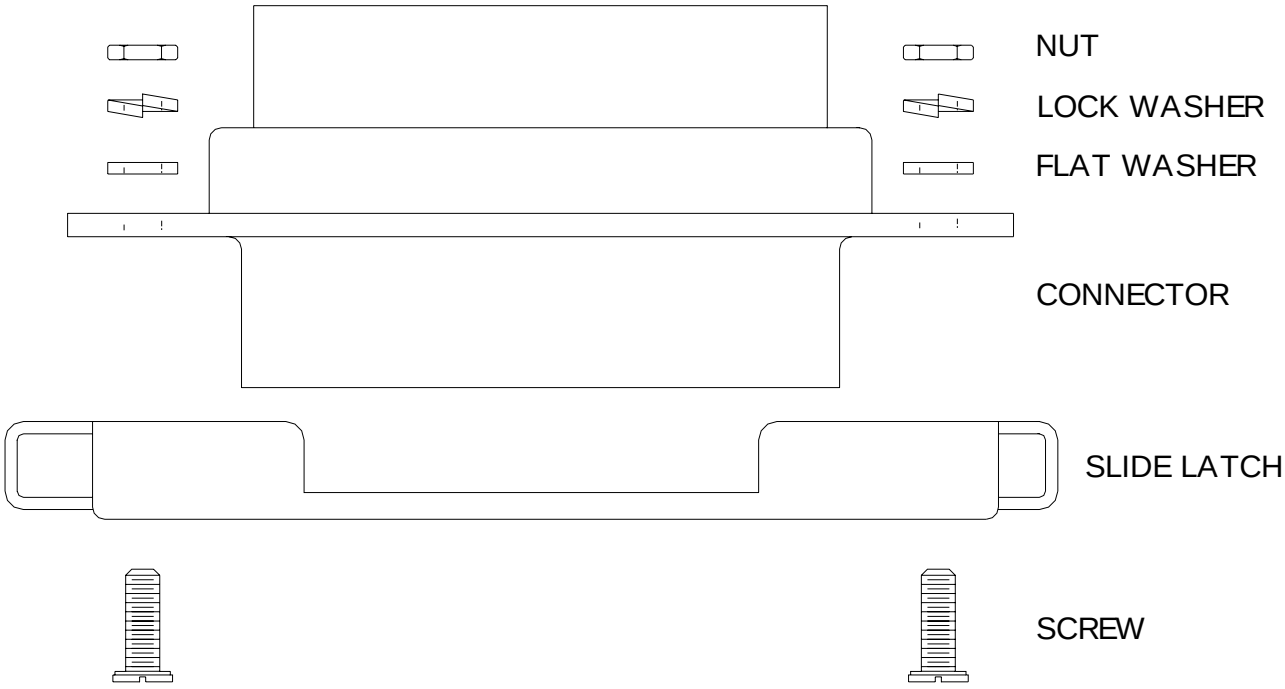
GDC34A Outline



Note: Dimensions are in inches.

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.



APPENDIX A - TYPICAL INTERCONNECT