



EQUIPMENT INSTALLATION MANUAL

for the

GDC18 DATA CONVERTER

P/N 1018-4000-01-001()

DAC International
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Austin, TX 78729

RELEASED

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RECORD OF REVISIONS

REV	DESCRIPTION	DATE	APPROVED
IR	INITIAL RELEASE	010320	JEM
A	Change references from Galaxy Avionics to DAC International E418	5/19/05	LM



INTRODUCTION:

This manual contains installation data and specifications for the DAC International, Model GDC18 ARINC Data Converter, Part Number 1018-4000-01-001().

DESCRIPTION:

GDC18 Data Converters with software version 001() are designed to receive GAMA 429 data from a Universal Avionics Systems Corporation UNS 1C Flight Management Unit, modify certain data, and then transmit the modified data in formats and at transmission rates expected by a Smith Industries EFIS.

- Transmission rates compatible with Smith Industries EFIS.
- Flight Plan records fixed at 25 waypoint records.
- Nearest fixed at 10 Nav Aid records and 4 Airport records.
- Nearest Nav Aids and Airports sent with modified waypoint number fields.
- Source Destination Identifier (SDI) fixed at RNAV 1.
- Discrete word Sign Status Matrix (SSM) values sent in binary SSM format.

PART NUMBERS:

The GDC18 Data Converter is available under the following part number:

1018-4000-01-001()

UNS to SI EFIS 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.

REGULATORY COMPLIANCE:

Software

The Model GDC18 software was developed in accordance with RTCA/DO-178B to criticality level C.



SUPPLIED EQUIPMENT

Each Data Converter is shipped with the following items:

Part Number	Description	Qty
1018-4000-01-001()	GDC18 Data Converter	1
1018-4200-01	Installation Kit, GDC18 Data Converter	1

Complete installation kits are available under kit part number 1018-4200-01. Individual pieces are available under the part numbers shown. Contact DAC International sales to place orders.

Part Number	Description	Qty
1018-4200-01	Installation Kit, GDC18	
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
1018-2510-01	Equipment Installation Manual for the GDC18	1



SPECIFICATIONS:

Physical:

The GDC18 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.....less than 0.6 lb.

Electrical:

Input Voltage28 VDC Nominal
Input Current.....0.05 Amp at 28 VDC

Data Input / Output:

FormatARINC 429 Low Speed
Input Protocol.....GAMA 429
Output Protocol.....Smith Industries SDD 1380-1
Baud Rate.....12.5 kBaud



OPERATION:

The operation of the GDC18 Data Converter fitted with software –001() is described in the paragraphs and tables on the following pages.



ARINC 429 Input

The GDC18 accepts low speed GAMA 429 data on pins J1-5 and J1-6. The following labels, when received, are saved for retransmission on the output port.

Label (octal)	Parameter	Data Format	Expected RX Rate (ms)
074	Flight Plan Header Record	DSC	Note 1
075	Active Waypoint TO/FROM Data	BCD	100
113	Message Checksum	BNR	Note 2
114	Desired Track	BNR	500
115	Bearing to waypoint (true)	BNR	100
116	Cross-Track Distance	BNR	100
121	Horizontal Steering Command	BNR	100
147	Magnetic Variation	BNR	500
251	Distance to waypoint	BNR	500
252	Time to waypoint	BNR	500
275	RNAV status word	DSC	500
300	Station Mag Var, Type, Class & Freq.	BNR	Note 2
303	Message Length/Type/Number	BNR	Note 2
304	Message Characters 1-3	BNR	Note 2
305	Message Characters 4-6	BNR	Note 2
306	Navaid/Waypoint/Airport Latitude	BNR	Note 2
307	Navaid/Waypoint/Airport Longitude	BNR	Note 2
310	Present Position Latitude	BNR	500
311	Present Position Longitude	BNR	500
312	Groundspeed	BNR	500
314	True Heading	BNR	100
315	Wind Speed	BNR	500
316	Wind Direction (true)	BNR	500
321	Drift Angle	BNR	100
351	Distance to destination (via flight plan)	BNR	500
352	Time to destination (via flight plan)	BNR	500
371	Specific Equipment ID	DSC	1000

Note 1: This label is expected once at the start of each new flight plan transmission.

Note2: This label is expected every 100 ms if the current record type requires the label to be sent.



ARINC 429 Output

The GDC18 transmits low speed data on pins J1-7 and J1-8 according to Smith Industries document SDD 1380-1. The GDC18 always transmits 39 records of flight plan data, 25 flight-plan records and 14 nearest records. If less than 25 flight-plan records or 14 nearest records are received, the GDC18 inserts blank records to bring the totals to 25 and 14. A blank record as defined in SDD 1380-1 consists of labels 303 (Message/Length/Type/Number) followed by 113 (Message Checksum). If more than 25 flight-plan records or 14 nearest records are received the output is truncated after the first 25 or 14.

Label (octal)	Parameter	Data Format	Nominal TX Rate (ms)*
074	Flight Plan Header Record	DSC	Note 1
075	Active Waypoint TO/FROM Data	BCD	100
113	Message Checksum	BNR	Note 2
114	Desired Track	BNR	50
115	Bearing to waypoint (true)	BNR	50
116	Cross-Track Distance	BNR	50
121	Horizontal Steering Command	BNR	100
147	Magnetic Variation	BNR	1000
251	Distance to waypoint	BNR	200
252	Time to waypoint	BNR	200
275	RNAV status word	DSC	200
300	Station Mag Var, Type, Class & Freq.	BNR	Note 2
303	Message Length/Type/Number	BNR	Note 2
304	Message Characters 1-3	BNR	Note 2
305	Message Characters 4-6	BNR	Note 2
306	Navaid/Waypoint/Airport Latitude	BNR	Note 2
307	Navaid/Waypoint/Airport Longitude	BNR	Note 2
310	Present Position Latitude	BNR	200
311	Present Position Longitude	BNR	200
312	Groundspeed	BNR	200
314	True Heading	BNR	100
315	Wind Speed	BNR	100
316	Wind Direction (true)	BNR	100
321	Drift Angle	BNR	50
351	Distance to destination (via flight plan)	BNR	1000
352	Time to destination (via flight plan)	BNR	1000
371	Specific Equipment ID	DSC	1000

Note 1: This label is transmitted once at the start of each new flight plan transmission.

Note2: This label is transmitted every 100 ms if the current record type requires the label to be sent.

* Transmit rate as defined in Smiths Industries SRD 1380-1, Revision 4



ENVIRONMENTAL:

The GDC18 meets the environmental test categories detailed below in accordance with RTCA/DO-160D, Environmental Conditions and Test Procedures for Airborne Equipment.

NOMENCLATURE: Model GDC18 Data Converter
 PART NO: 1018-4000-01-XXXX
 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	L, M, C	Fixed Wing – Turbojet, Turbofan, Turboprop and reciprocating
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 GDC18 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”.

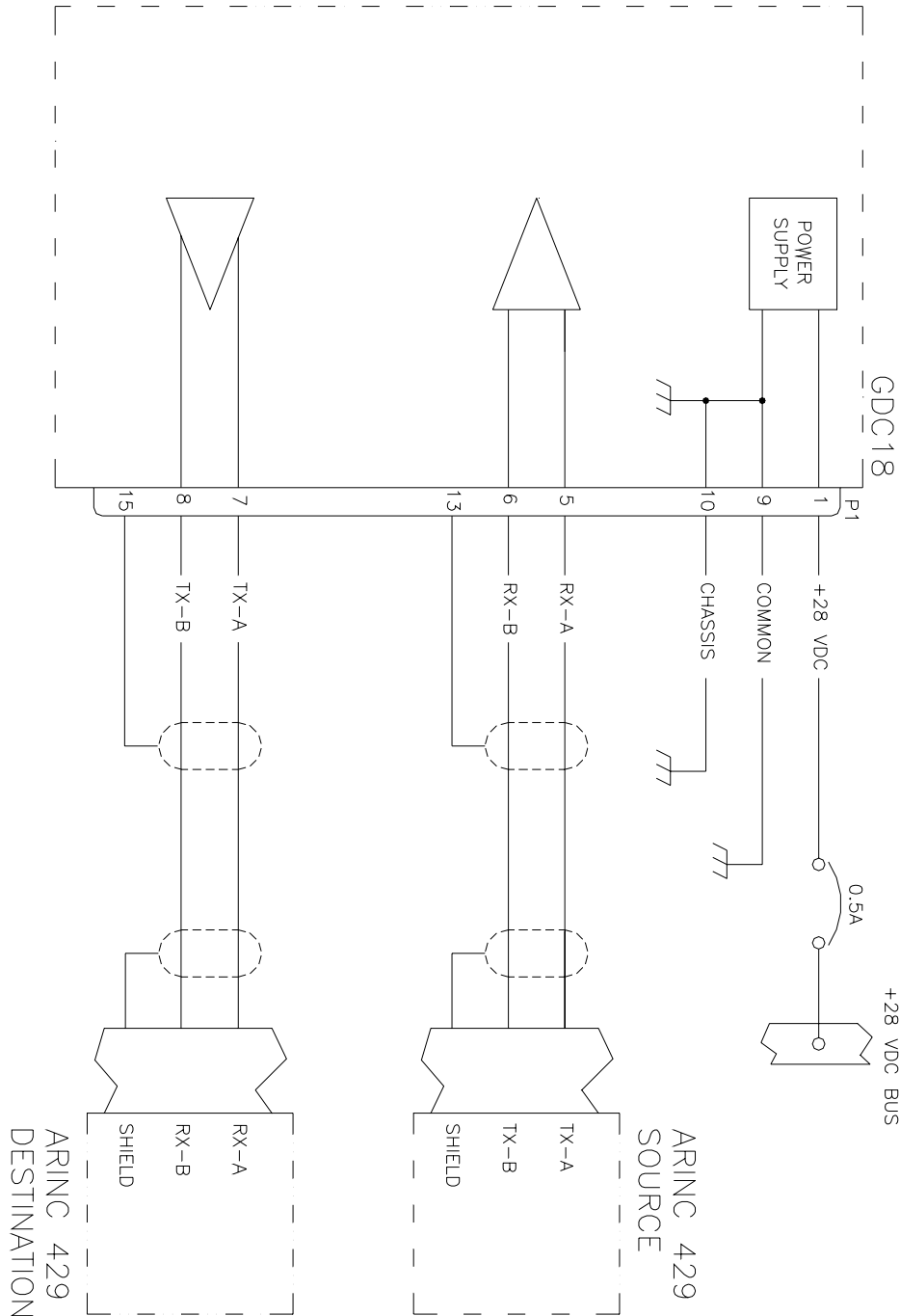
Pin	Signal	Function
1	A+	28 Vdc Primary Power
2		Reserved (RS232 Output)
3		Reserved (RS232 Input)
4		Reserved (+12Vdc Vpp)
5	RX-A	429 Receive A
6	RX-B	429 Receive B
7	TX-A	429 Transmit A
8	TX-B	429 Transmit B
9	Power Common	28 Vdc Return
10	Aircraft Common	Chassis ground
11		Reserved (RS232 return)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

J1 Pin Description

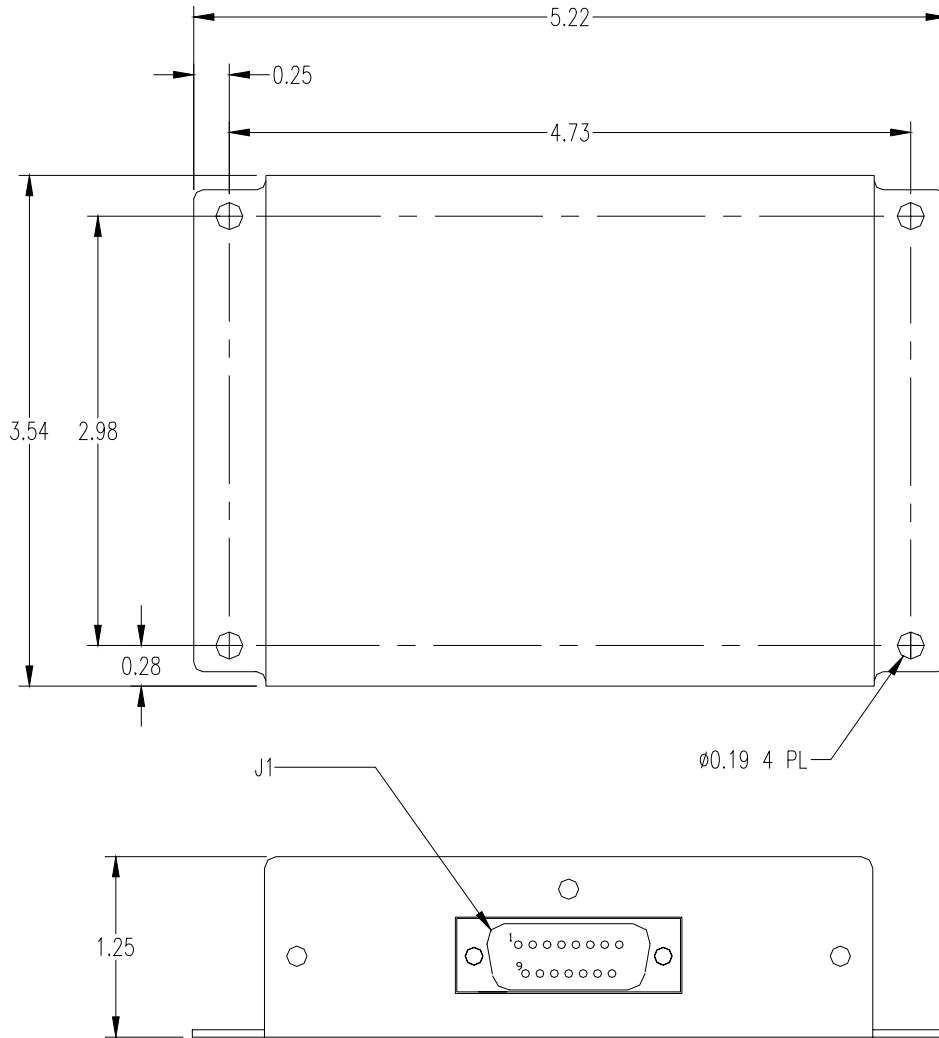
NOTE: Do not use pins labeled Reserved. These are for factory test and In-Circuit-Programming



TYPICAL INTERCONNECT



OUTLINE DRAWING



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.

